BONNEVILLE POWER ADMINISTRATION

Marys Peak

Bonneville Power Administration Communications Site Project

Draft Environmental Assessment

October 13, 2020

DOE/EA-2050

USFS #50453

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Table of Contents

Appendices

List of Tables

List of Maps, Figures, Photographs

Acronyms and Abbreviations

APE	Area of potential effects
BLM	Bureau of Land Management
BMPs	Best management practices
BPA	Bonneville Power Administration
CPI	Consumers Power Inc.
dBA	Decibels on the A-weighted scale
dbh	Diameter at breast height
DEQ	Oregon Department of Environmental Quality
DOE	U. S. Department of Energy
EMF	Electromagnetic field
EMR	Electromagnetic radiation
EPA	U.S. Environmental Protection Agency
ESA	U.S. Endangered Species Act
FCRTS	Federal Columbia River Transmission System
FR	Federal Register
GHG	Greenhouse gas
KVA	Key viewing area
MAP	Mitigation action plan
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
ORBIC	Oregon Biodiversity Information Center
SBSIA	Scenic Botanical Special Interest Area
SHPO	Oregon State Historic Preservation Office/Officer
SNF	U.S. Forest Service Siuslaw National Forest
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

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Chapter 1 Purpose of and Need for Action

1.1 Introduction

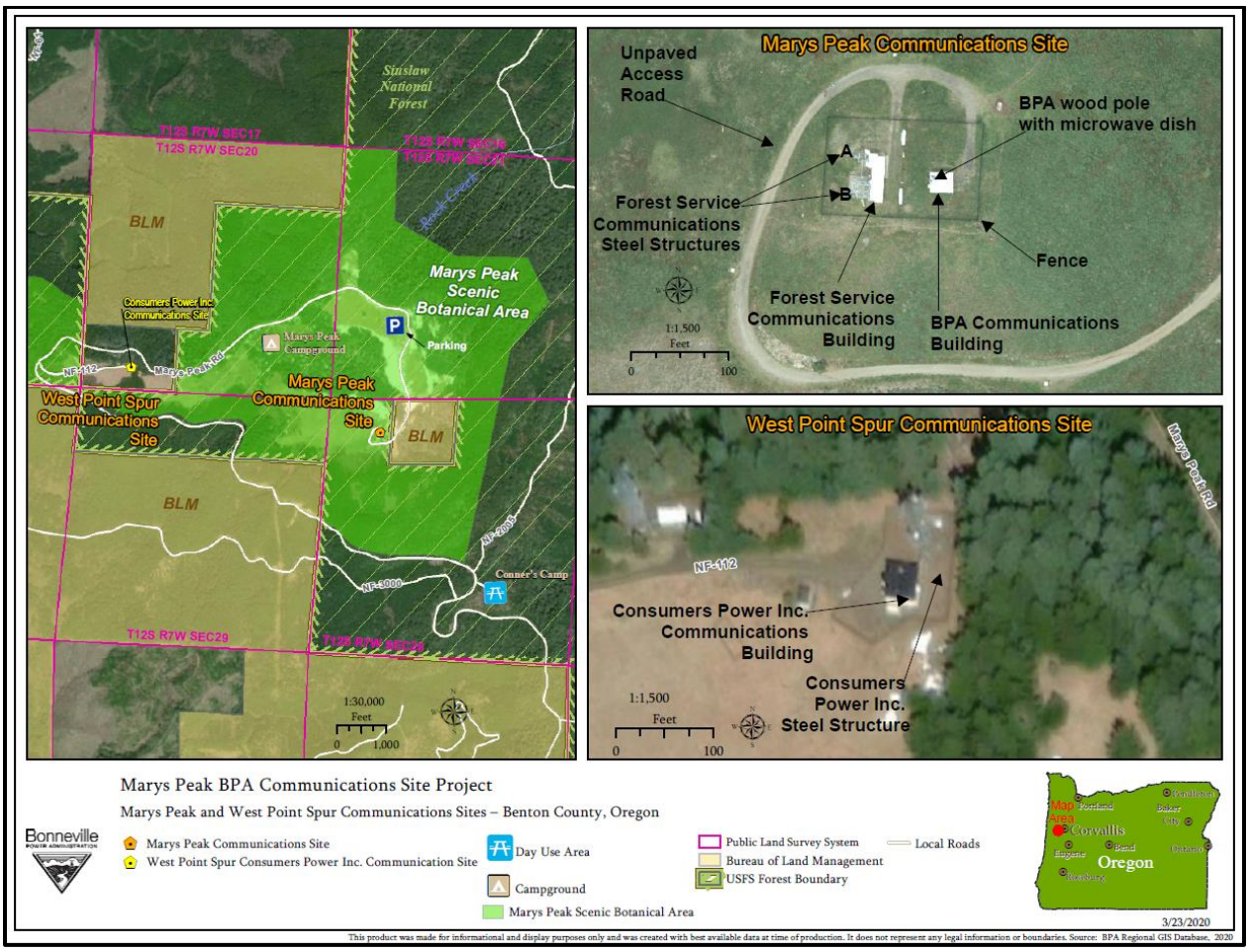
The Bonneville Power Administration (BPA) is proposing to maintain and upgrade existing BPA communications facilities located at the summit of Marys Peak. Marys Peak is located about 15 miles southwest of Corvallis, in Benton County, Oregon (see Map 1-1). BPA is proposing to conduct work at the Marys Peak BPA communications site because the communications equipment at the site is outdated and needs to be replaced and because the communications structure is unstable.

In addition to the proposal to conduct work at the existing BPA communications site, the Marys Peak BPA Communications Site Project (Project) includes two alternative communications sites that could replace the existing Marys Peak BPA communications site. The alternatives being considered are described in Section 2.1 of this ***environmental assessment (EA)***.[1]

The existing Marys Peak BPA communications site is located on lands managed by the U.S. Department of Agriculture Forest Service (USFS) Central Coast Ranger District of the Siuslaw National Forest (SNF). The site is located within the Scenic Botanical Special Interest Area (SBSIA), which is a USFS special interest area managed under the terms of the SNF Land and Resource Management Plan (USFS 1990) as amended by the Northwest Forest Plan. Some project activities could occur on lands administered by the Bureau of Land Management (BLM) Northwest Oregon District (formerly Salem District). Under one alternative, Project activities would occur on lands owned by the City of Corvallis.

BPA prepared this EA for this proposal pursuant to regulations implementing the ***National Environmental Policy Act (NEPA)*** (42 USC 4321 et seq.), which requires Federal agencies to assess the impacts their actions may have on the environment. This EA describes potential impacts to natural and human resources from the Project. It includes construction practices and mitigation measures that would help avoid or minimize these impacts.

[1] Technical terms that are in bold, italicized typeface are defined in Chapter 6, Glossary. Acronyms used in this EA are listed at the front of the document.



Map 1-1. *Marys Peak Project Vicinity Map.*

1.2 Background

BPA is a federal agency that owns and operates the Federal Columbia River Transmission System (FCRTS), which includes more than 15,000 miles of ***high-voltage*** transmission lines. BPA's transmission lines move most of the Pacific Northwest's high-voltage power from facilities that generate power to utility customers throughout the region. The Federal Columbia River Transmission System Act directs BPA to construct the improvements, additions, and replacements to its transmission system necessary to maintain electrical ***stability*** and ***reliability***, as well as to provide service to BPA's customers (16 United States Code [USC] 838b(b–d)). BPA's communications system directly supports the operation and maintenance of the FCRTS.

1.2.1 Communications Transmission

The path of communications signals between BPA staff working in the field (field staff) and dispatchers at BPA control centers is shown in Figure 1-1. Power systems are monitored, controlled, and regulated from control center facilities by BPA dispatchers.

BPA field staff and dispatchers communicate about the operation of transmission facilities. Dispatcher responsibilities include issuing electrical clearances to communicate to workers when it is safe to maintain and repair equipment. Field staff may report on the progress of repairs, confirm outages during repairs on electrical equipment, and receive directions. Field staff may report emergencies, such

as an injured worker or unsafe road conditions. It is essential that field staff and dispatchers communicate during maintenance and emergency situations to ensure timely restoration of power and to prevent worker injury or death.

BPA dispatchers and field staff communicate using mobile radios that transmit the audio signal using VHF radio waves. The VHF audio signal is sent from the field and received at a BPA communications site, such as the Marys Peak communications site. The signal is then relayed from the communications site to BPA dispatch via microwave radio signals. When dispatchers need to communicate with field staff, they send audio signals via microwave radio to BPA communications sites, where it is converted back to VHF audio signal and sent to field staff using the VHF radio.

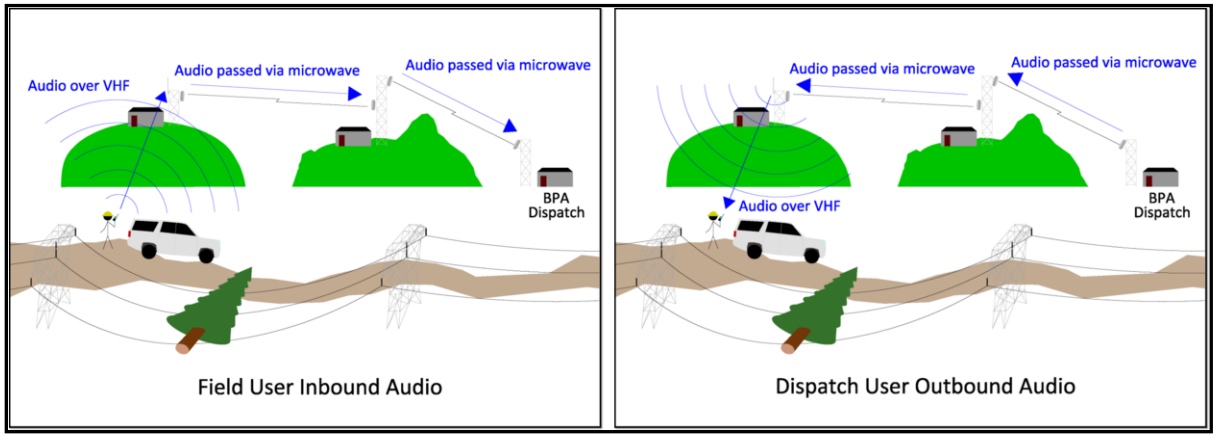


Figure 1-1. *Microwave Radio and VHF Transmittal of Audio Communications.*

1.3 Need for Action

BPA's communications network is essential to the safety and reliability of BPA's power transmission system. As part of that network, the Marys Peak BPA communications site provides real-time voice communications between BPA control centers that monitor and regulate the FCRTS and BPA field crews working in the region. This allows for critical information exchange during maintenance and emergencies, enabling safe and timely power restoration during outages.

However, for the Marys Peak communications site to maintain consistent and reliable communications signals, it requires upgrading or replacement. Some communications equipment at the site needs to be replaced because it is outdated. The existing ***microwave*** radio dish is attached to an aging and unstable wood-pole structure that sometimes shifts during high wind conditions in the winter, degrading or preventing the transmission of communications signals. The communications site also needs a more reliable back-up power source due to potential power outages and due to the difficulty of accessing the site during the winter months to conduct repairs.

BPA needs to either maintain and update the inadequate communications equipment at the Marys Peak communications site or construct an alternative site that meets BPA's communications requirements to continue delivering reliable power transmission in the region. All alternatives for the Marys Peak communications site Project must meet national and regional reliability criteria established by the ***North American Electric Reliability Corporation (NERC)*** and the ***Western Electricity Coordinating Council (WECC)***. They help coordinate the operation and planning of the bulk transmission system in the region. Utilities are required to meet the standards of both organizations when planning new facilities and during operation of existing facilities.

1.4 Purposes of Action

Purposes are the goals to be achieved while meeting the need for the Project. BPA has identified the following purposes that will be used to evaluate Project alternatives:

- Meet BPA and industry standards for public safety, reliability, and security to support the safe and reliable operation and maintenance of the FCRTS
- Provide VHF communications coverage equal or better to what currently exists
- Continue to meet BPA's contractual obligations
- Demonstrate responsible environmental stewardship by avoiding or minimizing environmental impacts
- Demonstrate cost-effectiveness
- Use facilities and resources efficiently

1.5 Agency Roles

1.5.1 Lead and Cooperating Agencies

BPA is the lead agency responsible for preparing this EA under NEPA. BPA will use this EA, along with comments from the public, other stakeholders, and interested and affected agencies, to decide whether to maintain and upgrade the existing communications site, select an alternative site and decommission the existing site, or take no action at this time.

The Council on Environmental Quality (CEQ) regulations for implementing NEPA allow for the designation of other federal, state, and local agencies and Indian Tribes as cooperating agencies for an EA where appropriate. BLM and USFS are cooperating agencies for this EA. Both agencies have special expertise and jurisdiction by law on the lands they manage that could be affected by the Project.

Two Project alternatives would affect lands managed by the City of Corvallis. BPA invited the City of Corvallis to become a cooperating agency, but the City did not respond. They are coordinating with BPA on the portion of the proposal that could affect the lands they manage.

As cooperating agencies, the roles of BLM and USFS are to provide information, comments, and technical expertise to BPA regarding the lands they manage in the Project area and to provide data and analyses for use in this EA. Both agencies may also need to make realty decisions that would require permits. BLM may need to grant a permit that would allow BPA to cut trees on BLM property. BPA would need to submit an SF-299 form to BLM to update the permit to use their portion of the access road to the summit of Marys Peak. BPA currently has a Land Use Grant Instrument with the USFS for the existing communications site that would need to be updated, depending on the selected alternative.

Although BPA is the lead agency with responsibility for the completion of this EA, BPA, BLM, and the USFS will each complete their own ***Finding of No Significant Impact (FONSI***) statements, if warranted.

In addition, USFS will have an administrative review process (a "45-day objection period") after the combined release of the final EA and draft Decision Notice. The objection period is available to those who submitted comments during the scoping periods or during the draft EA comment period. The USFS reviewing official can then respond to objections as they relate to the Project, particularly on SNF Forest Plan concerns.

1.5.2 Other Agencies that May Use this EA

Chapter 4, Environmental Consultation, Review, and Permit Requirements, of this EA identifies other federal agencies that may have permitting, review, or other approval responsibilities related to certain aspects of the Project. Some state, regional, and local agencies also may use all or part of this EA to fulfill their applicable environmental review requirements for any actions they may need to take for the Project (see Chapter 4).

1.6 Public Involvement

BPA conducted public outreach for the Project to help determine the topics that should be studied and discussed in this EA. Outreach was conducted to provide notice of and information on the Project proposal, the environmental process, and opportunities to comment.

1.6.1 Project Webpage

BPA created a Project-specific webpage where information can be accessed. The Project webpage went live on September 27, 2016, and has been updated throughout the environmental review process. The Project webpage contains current information about the Project and the environmental review process, links to Project materials, information on when and how to comment, comments received, and project contacts (see https://www.bpa.gov/goto/maryspeak).

1.6.2 Public Scoping Process

BPA held two scoping periods for the Project. The initial scoping period was held from September 27, 2016, to December 2, 2016, and an additional scoping period was held from January 8, 2018, to February 21, 2018.

BPA began the public scoping process for the Project on September 27, 2016, by sending a letter to people potentially interested in or affected by the Project. The Project mail list was reviewed by BLM and USFS. BPA notified landowners within a minimum distance of 1 mile from Marys Peak Road, the road that is used to access the existing communications site. BPA also notified Tribes and federal, state, and local governments and agencies, including elected officials and public interest groups such as the Marys Peak Alliance.

The letter explained the need for the proposal, the environmental process, how to participate, the scoping period dates, and contact information for BPA Project staff. The mailing included the notification letter, a project vicinity map, a comment form, reply card with document delivery options, and a postage-paid return envelope. The letter, map, and comment form were posted on the BPA Project website.

BPA sent a press release to local media with information about the initial scoping period and public scoping meeting and placed paid advertisements (5 inches by 6 inches in size) in the *Corvallis Gazette-Times* and the *Albany Democrat-Herald* newspapers on November 4, 6, and 9, 2016.

The initial scoping period for the Project closed on December 2, 2016. BPA invited comments through a variety of methods, including written comments submitted by U.S. Postal Service mail, through e-mail, and by fax. The Project website included an electronic comment form that allowed the public to submit online comments. Verbal comments could be submitted directly to a Project team member by calling a toll free BPA phone number.

BPA began the additional public scoping period on January 8, 2018, by sending a letter to people potentially interested in or affected by the Project. The mail list also included persons and groups that

expressed interest in the Project since the initial scoping period. BPA notified landowners within 1 mile from the road that is used to access the existing Marys Peak BPA communications site (Marys Peak Road) and within 1 mile of the BPA Albany Substation and the BPA Prospect Hill communications site. The same process was followed for the additional scoping period as for the first, described above.

BPA sent a press release to local media with information about the additional scoping period and public scoping meeting and placed paid advertisements (5 inches by 6 inches in size) in the *Corvallis Gazette-Times* and the *Albany Democrat-Herald* newspapers combined Sunday publication on January 14 and 21, 2018. The additional scoping period for the Project closed on February 21, 2018.

1.6.3 Public Scoping Meetings

Two Project scoping meetings were held to meet with interested persons to describe the need for the Project, answer questions, and solicit comments. BPA, USFS, and BLM staff attended both meetings. The initial scoping meeting was held on November 9, 2016, and an additional scoping meeting was held on January 25, 2018.

About 35 persons attended the initial scoping meeting on November 9, 2016. The meeting was held at Philomath High School's Community Room in Philomath, Oregon. Attendees included members of the public with a personal interest in the Project and representatives of the following organizations: Benton County Amateur Radio Emergency Service (ARES), Benton County Sheriff's Office, U.S. Hang Gliding and Paragliding Association, Marys Peak Alliance, and a private company, Silke Communications.

The initial scoping meeting featured 10 stations with topic-specific project information, including maps showing aerial imagery, topography, and the existing communications site. At the time of the initial scoping meeting, the Project was in the very early stages and action alternatives other than work at the existing BPA communications site were not developed. BPA, USFS, and BLM Project team members answered questions, discussed possible alternatives, and accepted comments relevant to the scope of the environmental analysis. Project staff recorded verbal public comments. A comment station provided members of the public an opportunity to complete and submit a comment form during the public meeting.

About 40 persons attended the additional scoping meeting on January 25, 2018. The meeting was held at Linus Pauling Middle School's Auditorium in Corvallis, Oregon. Attendees included members of the public with a personal interest in the Project and representatives of the following organizations: the Oregon Department of Forestry, Benton County ARES, Benton County Sheriff's Office, Philomath Fire and Rescue, Monroe Fire Department, Blodgett-Summit Rural Fire Protection District (RFPD), Corvallis 911, Corvallis Mountain Rescue, Marys Peak Search and Rescue, Cascade Paragliding Club, Marys Peak Alliance, Friends of Marys Peak, Corvallis Chapter of the Native Plant Society of Oregon, and the Marys Peak Group Sierra Club.

Unlike the initial scoping meeting, potential action alternatives were presented at this meeting. These alternatives were developed based on earlier public comments and agency input. BPA provided a presentation on five action alternatives being considered at that time. BPA, USFS, and BLM Project team members received information, listened to concerns, answered questions, and discussed other possible alternatives. Staff accepted comments relevant to the scope of the environmental analysis.

1.6.4 Scoping Period Comments

Comments received during the scoping comment periods, both written and verbal, were posted on the Project website. BPA received comments about a wide range of issues for consideration and some comments are very detailed. Comments from both scoping periods are summarized below; a more

detailed summary of the comments received during both scoping periods is posted on the Project website (https://www.bpa.gov/goto/maryspeak).

All comments were considered in the environmental analysis of the Project and these topics are addressed in appropriate sections of this EA. Comments helped shape the proposed alternatives. Most comments received during both comment periods focused on the Marys Peak communications site. Many comments emphasized the importance and value of Marys Peak to the local community and to visitors due to its high quality and unique resources, including botanical, wildlife, ecological, geological, visual, aesthetic, cultural, historic, spiritual, educational, and recreational resources. Others commented on the value of Marys Peak as a communications site (BPA site and/or USFS site) due to the 360-degree unobstructed view from the peak, emphasizing that Marys Peak serves as a critical component of the regional emergency and non-emergency communications infrastructure for Federal and state agencies, local governments, private companies, and amateur radio groups. While some people are concerned that the summit communications site is and will continue to be harmful to the scenic beauty, tranquility, and natural plant communities on Marys Peak, others are concerned that moving communications facilities off the summit would provide less effective communications.

During the second scoping period, comments were also received on the BPA Prospect Hill communications site and the BPA Albany Substation site. Those comments included concerns about the proximity of the BPA Albany Substation to neighborhoods and potential health effects, as well as the potential for Project structures decreasing property values. Commenters suggested that BPA use Prospect Hill instead of the BPA Albany Substation site because it is located in a less populated area. Another person stated that the use of the Prospect Hill site would not require the removal of any trees at Prospect Hill. A request was made for an explanation of which site would be better, the BPA Albany Substation or Prospect Hill, from BPA's and DOE's perspective.

The main topics of the suggestions, information, questions, and concerns include:

- History and use of the existing Marys Peak communications site
- Specific questions about the Project proposal
- Agencies involved, their roles and responsibilities, and how agencies would make decisions about the Project
- NEPA process, including public involvement and schedule
- Suggestions on Project alternatives
- Resources to consider in the environmental analysis
- Types of land use and recreation at Marys Peak
- Benefits of Marys Peak visitation to the local economy
- Concerns about impacts to visual resources
- Need for measures to protect soils, vegetation, wildlife, and cultural resources
- Concerns about the introduction or spread of weeds and suggested control measures
- Concerns about the effect of noise on recreation
- Concerns about public health and safety, such as fire danger, exposure to radiation and magnetic fields from electrical and communications equipment, and greenhouse gas emissions
- Request for seismic enhancement, weather resistance, and physical security at the communications site
- Potential impacts to resources from each alternative

- Suggested construction practices and mitigation measures to avoid or minimize impacts to resources, including restoration of construction work areas
- Statements that Marys Peak is essential to emergency services, including emergency responders and 911 services

1.6.5 Scoping Outreach and Post-Scoping Public Involvement

In addition to public scoping meetings, staff from BPA, USFS and BLM organized and attended various meetings related to the Project. USFS staff discussed the Project periodically with Marys Peak Alliance members, a group dedicated to conserving the ecological communities, physical features, and cultural importance of Marys Peak. From the scoping period until the release of the draft EA, BPA continued to update the Project website with new information and Project maps.

BPA consulted with two Tribes – the Confederated Tribes of Grand Ronde and the Confederated Tribes of Siletz – that have an interest in the Project. BPA requested information from these Tribes on cultural resources in the Project vicinity. BPA provided information about the alternatives during Project scoping to Tribal cultural resource program staff and solicited comments about these alternatives with respect to cultural resources. This information was used to shape the alternatives and the cultural resource field investigations for the Project. Throughout the Project, BPA continued consultation with Tribes and the Oregon State Historic Preservation Office (SHPO) to identify cultural resources in the Project area and any potential adverse effects to cultural resources.

Staff from BPA coordinated with federal and state agency staff about known and potential wildlife and botanical resources in the Project area. These meetings and coordination are described in more detail in Chapter 4, including consultation with the U.S. Fish and Wildlife Service (USFWS) under the federal ***Endangered Species Act (ESA)***.

BPA is releasing this draft EA for review and comment. In addition to distributing the draft EA to interested parties, the draft EA and other documents were posted on the Project website, including the draft EA distribution letter, comment form, and information on how to comment. BPA also notified landowners within 1 mile of Marys Peak Road (the road that is used to access the existing Marys Peak BPA communications site) and within 0.25 miles of the BPA Albany Substation and the BPA Prospect Hill communications site.

1.7 Draft EA Content and Organization

The remainder of this EA is organized as follows:

- Chapter 2, *No Action and Action Alternatives*, describes the No Action Alternative, the three action alternatives, and alternatives eliminated from detailed consideration. It describes the criteria that BPA engineers and other specialists used to evaluate potential communications site locations.
- Chapter 3, *Affected Environment, Environmental Consequences, and Mitigation Measures* describes, for each type of resource that could be affected by the Project, the existing environment, potential environmental consequences of the action alternatives and the No Action Alternative, and mitigation measures that have been or could be taken to avoid or minimize resource impacts.
- Chapter 4, *Environmental Consultation, Review, and Permit Requirements*, discusses the coordination activities, consultation requirements, permits, and other approvals that would need to be obtained to implement the Project and the Project's consistency with state

substantive standards. It provides an explanation of how BPA consulted and coordinated with agencies, consulted with Tribes, and any other permits or approvals required.

- Chapter 5, *Persons, Tribes, and Agencies Receiving this EA*, identifies the individuals, Tribes, agencies, and organizations notified of the availability of this EA.
- Chapter 6, *Glossary*, defines terms used in this EA. Terms defined in the glossary are shown in bold, italicized typeface the first time they are used in this EA.
- Chapter 7, *References*, provides the references cited, used as sources of information, or used to support the analysis in this EA.
- Supporting technical information is provided in appendices or referenced on the Project website.

Chapter 2 No Action and Action Alternatives

This chapter describes the No Action Alternative and the three action alternatives. Communications sites that would be used for the action alternatives are described in Section 2.3, followed by descriptions of Project design, construction, operation, and maintenance requirements at each communications site. Areas that would be temporarily or permanently impacted by construction and tree cutting under each alternative are also estimated.

While developing a reasonable range of action alternatives, BPA considered a variety of factors (environmental, technical, social, and economic) and all comments received from the public during the public scoping periods (see Section 1.6, *Public Involvement*). For each potential alternative, BPA assessed whether the alternative would meet the identified need for the Project (see Section 1.3, *Need for Action*) for reliable communications and achieve the Project's purposes (see Section 1.4, *Purposes of Action*). Alternatives that were considered but eliminated from detailed study in this EA are described in Section 2.10, along with the reasons why they were eliminated.

2.1 No Action Alternative (Alternative 1)

Under the No Action Alternative, existing BPA communications sites at Marys Peak and Prospect Hill would remain. Periodic routine and emergency maintenance would occur at both communications sites to ensure they continue to function within the larger BPA communications network. However, the reliability and safety concerns that prompted the proposal for action would persist. Because BPA would not have reliable communications between field staff and dispatch, BPA would likely need to seek alternative communications solutions in the future.

2.2 Action Alternatives

Each of the three action alternatives includes two communications sites between which BPA communications signals would pass. (An explanation of how BPA communications transmissions work is provided in Section 1.2.1.) For all action alternatives, Project activities would occur at the existing BPA Marys Peak communications site. Depending on the alternative, activities would also occur at either the existing BPA Albany Substation, the existing BPA Prospect Hill communications site, or the existing Consumers Power, Inc. (CPI) communications site at West Point Spur. **These four communications sites – BPA Marys Peak, BPA Albany Substation, BPA Prospect Hill and the CPI site at West Point Spur – are referred to as "Project components" in this EA.** The proposed work that could occur at the four components under each alternative is described in Sections 2.4, 2.5, and 2.6 of this EA.

2.2.1 Development of Action Alternatives

While developing action alternatives, BPA considered more than 30 western Oregon sites for potential use as BPA communications sites for this Project. These sites were identified based on comments received during public scoping and suggestions by BPA engineers. Locations considered were sites owned and operated by various entities, sites developed for other purposes, and undeveloped sites.

BPA considered whether existing communications sites could provide reliable and adequate communications coverage for BPA field staff working on BPA transmission facilities. BPA also considered topography, landscape features, the known or potential occurrence of cultural resources, and the presence of natural resources, such as rare wildlife and plant species. BPA staff reviewed available information on resources and information received from USFS and BLM subject matter experts. Finally,

BPA also considered ways to minimize the Project footprint by identifying established infrastructure that could be used, such as existing electrical service and access roads.

Of all the alternatives considered for the Project, three action alternatives are analyzed in detail in this EA (Map 2-1). Below is a list of the alternatives presented to the public during the additional scoping period in early 2018. Each alternative includes two communication sites between which BPA communications signals would pass. Three of these action alternatives are analyzed in detail in this EA and are designated in bold font (see Section 2.10 for a discussion of why the remaining action alternatives were considered but eliminated from detailed study in this EA):

- **Alternative 2A.** Marys Peak at Existing BPA Communications Site – BPA Albany Substation
- Alternative 2B. Marys Peak at Existing BPA Site – BPA Prospect Hill Communications Site
- Alternative 3A. Marys Peak Co-locate at New USFS Site – BPA Albany Substation
- Alternative 3B. Marys Peak Co-locate at New USFS Site – BPA Prospect Hill Communications Site
- **Alternative 3C.** Marys Peak Co-locate with USFS – BPA Albany Substation
- **Alternative 4.** West Point Spur Co-locate at Existing Consumers Power, Inc. (CPI) Site – BPA Prospect Hill Communications Site
- Alternative 5. West Point Spur New BPA Site – BPA Prospect Hill Communications Site

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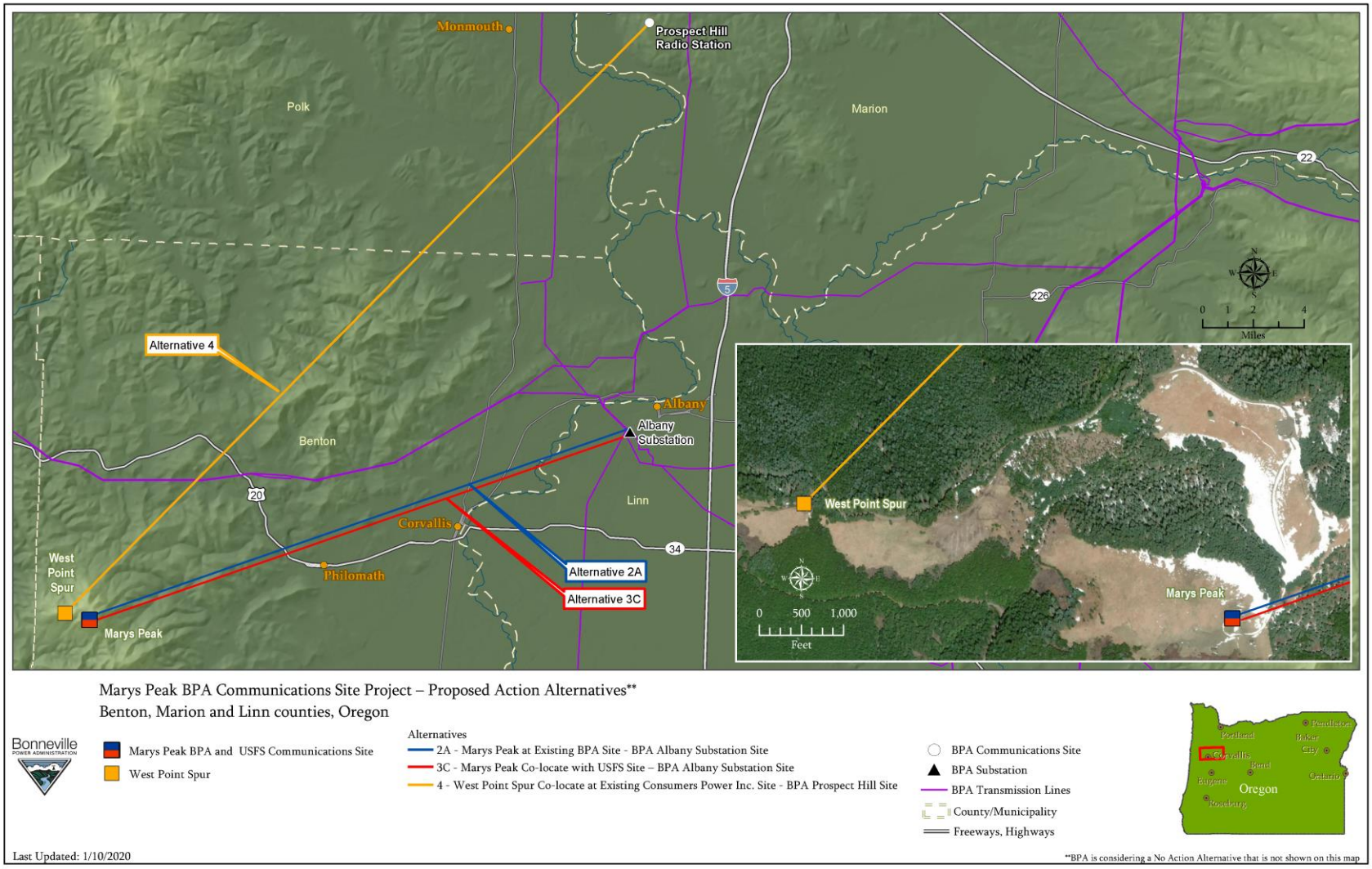

Map 2-1. *Locations of Marys Peak BPA Communications Site Project Action Alternatives.*

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2.3 Description of Project Components

2.3.1 BPA Marys Peak Communications Site

The BPA Marys Peak communications site is located about 15 miles southwest of the City of Corvallis, in Benton County, Oregon, on SNF lands. Work would be conducted at the BPA Marys Peak communications site under all action alternatives. Under Alternative 2A, the existing BPA communications site would be maintained and upgraded. Under the other two action alternatives, BPA would remove the existing BPA communications site from Marys Peak and move it to another location.

The BPA communications site is accessed by an unpaved 0.65-mile long access road that begins at the paved public parking lot located below the Marys Peak summit (Photograph 2-1). Vehicle access to the unpaved road to the summit is restricted by a locked USFS gate near the parking lot. Most of the access road is on USFS lands, but about 0.18 mile (948 feet) is on BLM lands. The road is not maintained on a regular basis. It is about 12 feet wide and rutted and scoured in some areas. The access road also serves as a public hiking trail.

Photograph 2-1. *Paved public parking area and access road leading to Marys Peak summit.*

The BPA Marys Peak communications site is used when BPA staff needs to communicate about BPA transmission facilities in the mid- and southern Willamette Valley. These communications signals currently pass between the communications sites at Marys Peak and Prospect Hill. A portion of the BPA communications site was initially leased to BLM for communications purposes, but BLM relocated their equipment to the USFS site in the fall of 2018.

The BPA communications site was constructed in 1960 and 1961, and began operating in 1961. The communications site consists of a communications building, a wood pole that supports a microwave communications dish and VHF ***whip antennas***, a small steel-lattice structure, a steel pole with weather data collection equipment and a BLM VHF whip antenna, and a propane tank; all enclosed within a chain link fence (Photographs 2-2 and 2-3).

***Photographs 2-2** (left) **and 2-3**. Views of the BPA Marys Peak communications site, looking southwest and northeast, respectively.*

The BPA and USFS communications sites are located within a common chain link fence at the summit of Marys Peak. The black fence is 8 feet tall enclosing an area 160 feet wide by 100 feet long. At the top of the fence, three barbed wire strands add an additional foot of height to the fence. To protect the site from lightning strikes, an underground grounding system is connected to the fence. In addition to a pedestrian gate, both BPA and USFS have double gates in the northern portion of the fence to provide vehicle access to the unpaved parking areas adjacent to both facilities. BPA vehicles typically park inside the fence on the graveled area near the BPA communications building (Photographs 2-4 and 2-5).

***Photograph 2-4** (left). BPA pedestrian and vehicle gates in the chain link fence.*
***Photograph 2-5**. BPA vehicle parking area within the fence.*

The BPA communications building is a concrete building with a plaster exterior coating. It is about 20 feet wide by 16 feet long and 9 feet tall. The windowless black building has a white, flat metal roof and one exterior door. The building foundation is reinforced concrete.

The BPA building houses equipment for communications, weather monitoring, data logging, lightning protection, batteries, alarm systems, and sensors. A forced-air electric heater keeps the interior of the building at stable temperatures during winter months. Because the building is only cooled with a fresh air vent, summer temperatures within the building can become quite hot. Elevated temperatures, generally above 77 degrees Fahrenheit, can reduce the useful life of the batteries and decrease optimization or cause failure of sensitive electronics equipment.

A 28-foot tall wood pole structure on the west side of the BPA communications building supports the BPA microwave communications dish. A 5-foot long VHF whip antenna is attached at the top of the wood pole structure, resulting in a total height of about 30 feet. The wood pole is about 20 inches in

diameter, directly embedded into the ground, and supported by three guy wires. An 8-foot diameter, gray antenna cover (radome) protects the sensitive microwave antenna attached to the wood pole.

Two structures are located on the south side of the BPA communications building (Photograph 2-6). A BPA anemometer is attached near the top of a 20-foot tall structure that is bolted to a concrete footing. The second structure, owned and maintained by BLM, is a 15-foot tall steel pole with a 6-foot long VHF whip antenna and a temperature and relative humidity meter.

Photograph 2-6. *Marys Peak communications site, looking west.*

Electrical service to the communications site is provided by CPI, which automatically monitors power usage. The electrical line is installed in underground conduit within the unpaved access road between the public parking lot and the electrical meter pedestal, located between the USFS and BPA buildings (Photograph 2-7). There is no running water and no bathroom facilities.

Photograph 2-7 *(left). The electrical station service pedestal with BPA and USFS meters.*
Photograph 2-8. *BPA propane tank (foreground right) and USFS propane tank (background).*

Back-up power is provided to the BPA communications building by a propane-fired engine generator, located inside the building. The generator starts up automatically during a power outage. The generator system is tested for about 90 minutes each week throughout the year, usually between 1 a.m. and 4 a.m., to ensure that it is running correctly.

A 1,000-gallon propane tank is located on two concrete footings within the fence to the southeast of the BPA building (Photograph 2-8). The fuel gauges are inspected each fall to ensure that the tank has at least 65 percent reserves prior to the start of winter. The tank usually needs to be refilled every other year. When the tank requires filling, the propane supplier usually contacts USFS to see if their tank also requires filling so they can fill both tanks during the same visit. Propane is delivered to the site in a large fuel truck that travels up the access road to the communications sites, and enters the chain link fence through the USFS double gate.

BPA performs routine maintenance at the Marys Peak communications site. Two BPA staff visit the communications site at least four times per year to maintain equipment within the communications building.

Emergency repairs at the communications site can occur at any time of year. An emergency occurs when there is a severe reduction in the communications signal strength due to the microwave communications dish misaligning from the beam path due to high winds, ice loading, and other environmental conditions. In the past five years, there have been high wind events that resulted in signal degradation or complete failure, including two emergency incidents that required immediate resolution. When the signal drops low enough, a radio alarm sounds at the control center, and field staff are alerted that they need to visit the site to realign the communications dish. Staff travel to the site, sometimes in a snowcat with a trailer in tow if large equipment is necessary, to precisely re-align the microwave communications dish with the BPA Prospect Hill communications equipment to restore the communications signals.

2.3.2 USFS Marys Peak Communications Site

The existing USFS Marys Peak communications site is located immediately west of and downslope from the BPA communications site, within the same fence (Photograph 2-9). Under Alternative 3C, an addition to the USFS Marys Peak communications building would be constructed. A new 60-foot tall steel-lattice structure would also be constructed. BPA would become a tenant in the addition and move BPA communications equipment to the new steel-lattice structure. BPA would remove the BPA existing communications building and structures from the Marys Peak summit.

***Photograph 2-9** (left). The USFS communications site (at right) and BPA communications site (left).*
***Photograph 2-10.** Double gate in north fence leading to USFS building parking area.*

The USFS and BPA communications sites are accessed by the same unpaved access road, described above. The fence that encloses both the BPA and USFS communications sites is also described above. Within the fence, a grassy, open area surrounds the USFS communications building on three sides. A double gate in the south fence opens to an unpaved parking area near the USFS building (Photograph 2-10) where the USFS and their tenants typically park vehicles.

The current USFS communications building was constructed in 1996. The site is used by USFS and about nine tenants who lease space. Each tenant maintains their own equipment. The USFS site consists of a building, two steel-lattice structures, and a propane tank; all enclosed within the fence. The taller of the two structures is a 40-foot USFS steel-lattice box structure with 11 antennas and one microwave communications dish. The shorter of the two steel-lattice structures is owned and operated by the Oregon Department of Transportation (ODOT) and Oregon State Police. It is 20 feet tall, with six antennas and three microwave communications dishes.

The USFS communications building is constructed of concrete slab walls. The roof is flat and covered by a white polyethylene membrane. Within the building, there is a USFS and tenant communications equipment room and a backup generator room, each accessed by a separate exterior door. The building has a heating, ventilation, and air conditioning (HVAC) wall unit to maintain stable temperatures for optimal equipment operation, to prevent damage to sensitive electronics equipment, and to prevent reduction of useful battery life. A security system monitors the site.

Electrical service to the USFS communications site is provided by CPI, as described above. From the USFS meter, the electrical conduit goes through a service disconnect panel to the USFS building. There is no running water and no bathroom facility within the USFS building.

In the event of a power outage, backup power is provided to the USFS building by the propane-fueled generator. The 1,000 gallon tank is located on two concrete footings, with a safety barrier to prevent damage by vehicles. The generator system is turned on for 30 minutes a week throughout the year during daylight hours to test it and ensure it is running correctly.

USFS performs routine maintenance at their communications site. The USFS facilities manager generally inspects the site monthly, between May and October. Typical maintenance tasks include coating the roof with elastomeric paint, water sealing the concrete exterior of the building, cleaning the HVAC filter, and repairing any broken fencing. The propane tank is filled annually, generally during the summer months. A USFS radio technician and communications site tenants visit the site as needed to conduct inspections and maintenance. ODOT staff visit the site to service the backup generator.

USFS occasionally needs to perform emergency maintenance at their communications site, primarily during the winter when severe weather can affect equipment. USFS and ODOT staff drive snowcats or snowmobiles to the site to conduct emergency maintenance when snow impairs access.

2.3.3 BPA Albany Substation

The BPA Albany Substation is located about 1 mile west of U.S. Highway 99 on Queens Avenue SW, in the City of Albany, Linn County, Oregon. The substation is located within a chain link fence immediately adjacent to Queens Avenue SW, the Calapooia River, and Hazelwood Park and directly across the road from Chase Orchards Subdivision (Photograph 2-11). Under Alternative 2A and Alternative 3C, some work would be conducted at the BPA Albany Substation.

***Photograph 2-11**. BPA Albany Substation viewed from Hazelwood Park.*

The substation is accessed from Queens Avenue SW. A small paved parking lot is located on the east side of the substation control house. The control house and a steel-lattice structure are located about 40 feet from the street.

BPA has fiber optic communications equipment and a VHF mobile antenna within and on the BPA Albany Substation control house. The 100-foot tall steel-lattice structure, constructed in 1997, does not support any communications equipment and has not been used for about 10 years.

The only Project work proposed at the BPA Albany Substation would be the installation of equipment on the steel-lattice structure and within the control house. Because there would be minimal work at this location, detailed descriptions of the control house and communications equipment at the BPA Albany Substation are not provided in this EA.

2.3.4 West Point Spur – CPI Site

The CPI site is located about 15 miles southwest of the City of Corvallis, in Benton County, Oregon, and about 1 mile west of the Marys Peak summit on a ridgeline known as West Point Spur (Photograph 2-12). Under Alternative 4, BPA would co-locate within the existing CPI communications site and remove the existing BPA communications site on Marys Peak.

***Photograph 2-12**. View of the CPI West Point Spur communications site in relation to the Marys Peak communications site shared by BPA and USFS. (Lines show the paths of communications signals under various alternatives.)*

Photograph 2-13. *West Point Spur access road NF-112, facing west.*

The majority of West Point Spur is owned by the City of Corvallis. The City leased the communications site to CPI in 2012. CPI subleases a portion of the site to tenants.

The CPI site is accessed from an unpaved National Forest road (NF-112; Photograph 2-13) which begins at a gate off of Marys Peak Road about 7.2 miles from Highway 34. NF-112 is about 0.37 miles long between the gate and the CPI site. About half of its length is on SNF lands; the other half is on City of Corvallis lands. NF-112 is currently not regularly maintained by either landowner. It is rutted in some areas but usable for maintenance vehicles.

The CPI communications site includes a building with equipment, an approximately 80-foot tall steel-lattice structure that supports microwave communications dishes and two VHF whip antennas, and a diesel tank protected under a steel cover (Photograph 2-14). The 0.25 acre site is surrounded by a chain link fence. Vehicles generally park in the graveled area immediately outside the fence.

Photograph 2-14*. CPI West Point Spur communications site, facing east.*

The windowless CPI building is constructed of cinder block. Because there is no HVAC equipment in the building to regulate heating or cooling, the temperature inside the building fluctuates during extreme weather temperatures. Back-up power is provided to the building by a diesel-fired generator located within the building. The 500-gallon diesel tank sits on a concrete footing within the fenced area.

CPI performs ongoing routine maintenance at the site, including filling the diesel tank annually. CPI indicated that they have not needed to conduct emergency maintenance at the site to date, but could access the site year-round if necessary by using a snowcat or snowmobile when snow impairs access.

2.3.5 BPA Prospect Hill (Alternative 4)

The BPA Prospect Hill communications site is located about 5.3 miles west of Interstate-5, and about 7 miles southwest of downtown Salem in Marion County, Oregon. There are other non-BPA communications sites at Prospect Hill, (Photograph 2-15). Under Alternative 4, some work would be conducted at the existing BPA Prospect Hill communications site.

Photograph 2-15 *(above). BPA Prospect Hill communications site and nearby communications sites owned and managed by other entities.*
Photograph 2-16*. Near view of BPA Prospect Hill site.*

The BPA communications site at Prospect Hill is mainly used by BPA for communications among staff who work on transmission facilities in the mid-Willamette Valley. BPA leases a portion of the communications site to the U.S. Army Corps of Engineers.

The BPA Prospect Hill site is accessed by a 0.7-mile long unpaved access road that begins at a locked gate at Skyline Road. Although the access road is rutted in some areas, it is currently usable by maintenance vehicles. BPA vehicles generally park in the graveled road immediately outside the site.

The BPA Prospect Hill site consists of a building that houses communications equipment, a steel-lattice structure with microwave communications dishes, a propane tank, and an outhouse located within a chain link fence (Photograph 2-16). The 140-foot tall steel-lattice structure adjacent to the BPA building supports multiple microwave communications dishes. Multiple dishes are needed on the structure because this site has seven distinct communications paths that point in several different directions. Some signals require more than one dish to ensure reliable communications.

Project work at the BPA Prospect Hill site would consist of modifications to the existing steel-lattice structure, installation of equipment on the steel-lattice structure, and installation of communications equipment within the building. Since there would be minimal work, detailed descriptions of the existing building, communications equipment, electrical service, and back-up power are not provided in this EA.

2.4 Proposed Activities by Action Alternative

The activities proposed at each Project component, under each alternative, are described in this section. Details on site preparation, construction, and post-construction activities are presented, including how materials would be staged, how steel-lattice structures are constructed, ***best management practices*** (BMPs) to be implemented, and how vegetation would be restored.

2.4.1 Alternative 2A: Marys Peak BPA Comm. Site – BPA Albany Substation

Alternative 2A includes some maintenance of the BPA communications building at the Marys Peak summit, installation of BPA communications equipment inside the building, replacement of the existing wood pole that supports a microwave radio dish with a 40-foot tall steel-lattice communications structure, and cutting up to 14 noble fir located northeast of the summit. A microwave radio dish would be installed on an existing steel-lattice structure at the BPA Albany Substation.

At the Marys Peak BPA communications site, activities would include:

- Stage equipment, materials, and vehicles within the fence at the summit and in up to 1,800 square feet (0.04 acre) of the paved public parking lot
- BMPs involving temporary structures or features would be installed and removed when no longer needed for public safety and to protect sensitive resources, including temporary fencing to restrict access and erosion and sediment controls
- Improve the unpaved access road leading from the paved parking lot to the summit for construction access
- Improve the building (install an HVAC system and paint the building)
- Install, replace, and maintain equipment inside the building, including microwave and VHF radios, a DC battery system and a generator
- Construct a 40-foot tall steel-lattice structure with a 20-foot tall VHF whip antenna at the top, in a grassy area within the fence
- Install a 6-foot diameter microwave dish on the steel-lattice structure
- Construct an ***ice bridge*** between the steel-lattice structure and the building
- Upgrade electrical service between electrical meter and the BPA building
- Repaint or replace the BPA propane tank
- Cut up to 14 noble firs (*Abies procera*) to create an unobstructed microwave beam path on about 0.53 acre of BLM land
- Revegetate areas disturbed by construction and infrastructure removal with native plant species

At the BPA Albany Substation, activities would include:

- Install a microwave radio system and other equipment inside the building
- Install a 6-foot diameter microwave dish and antenna system on the steel-lattice structure

2.4.2 Alternative 3C: Marys Peak Co-locate with USFS – BPA Albany Substation

Alternative 3C includes construction of a building addition to the existing USFS communications building at the Marys Peak summit, installation of BPA communications equipment inside the addition, construction of a new 60-foot tall steel-lattice communications structure, cutting up to 14 noble fir located northeast of the summit, and removal of the BPA communications site. A microwave radio dish would be installed on an existing steel-lattice structure at the BPA Albany Substation.

At the Marys Peak BPA communications site, would include:

- Stage equipment, materials, and vehicles within the fence at the summit and in up to 1,800 square feet (0.04 acre) of the paved public parking lot
- BMPs involving temporary structures or features would be installed and removed when no longer needed for public safety and to protect sensitive resources, including temporary fencing to restrict access due and erosion and sediment controls, if needed.

- Improve the unpaved access road leading from the paved parking lot to the summit for construction access
- Construct a building addition (13-foot wide, 25-foot long, 8-foot tall) on the east side of the USFS-owned building to replace the existing BPA building
- Install a HVAC system and other ventilation systems, as necessary
- Construct a 60-foot tall, USFS-owned, steel-lattice structure with an ice bridge connected to the USFS communications building; add or adjust the tower grounding system underground
- Construct a rock retaining wall next to the new steel-lattice structure's slab footing, if needed
- Install a 6-foot diameter BPA microwave dish and a 20-foot tall VHF whip antenna on the new USFS-owned steel-lattice structure
- Relocate none or some USFS or other user communications equipment and antennas from the existing structures onto the new steel-lattice structure; possibly remove existing structures
- Upgrade electrical service between the electrical meter and the new building
- Relocate or replace the existing BPA propane tank
- Demolish the existing BPA facilities and remove materials from site
- Remove and replace portions of the existing chain link fence closer to the USFS site; remove and replace lightning protection ground rods located underground and connected to the fence
- Cut up to 14 noble firs to create an unobstructed microwave beam path on about 0.53 acre of BLM land
- Revegetate areas disturbed by construction and infrastructure removal with native plant species

At the BPA Albany Substation, activities would include:

- Install a microwave radio system and other equipment inside the building
- Install a 6-foot diameter microwave dish and antenna system on the steel-lattice structure

2.4.3 Alternative 4: West Point Spur Co-locate at CPI Site – BPA Prospect Hill

Alternative 4 includes installation of BPA communications equipment inside the existing CPI communications building at West Point Spur and installation of equipment on the existing steel-lattice communications structure. Up to 20 conifers located northeast of the CPI facility would be cut. The existing BPA communications site at Marys Peak would be removed. At the BPA Prospect Hill communications site, a microwave radio dish would be installed on the existing steel-lattice communications structure.

At the CPI communications site, activities would include:

- Stage equipment, materials, and vehicles within the CPI fence and in a 0.01-acre area west of the CPI site
- BMPs involving temporary structures or features would be installed and removed when no longer needed for public safety and to protect sensitive resources, including temporary fencing to restrict access due and erosion and sediment controls, if needed.
- Repair CPI's existing chain link fence and gate
- Improve the unpaved access road (NF-112) leading from Marys Peak Road to CPI's communications site for construction access
- Install BPA communications equipment and other equipment inside the CPI building
- Modify external doors on existing building, if needed
- Install a 10-foot diameter microwave dish on the existing CPI steel-lattice structure

- Install two additional 20-foot tall VHF antennas, one at the top of the existing CPI steel-lattice structure, and one approximately 40 feet below the top of the structure
- Install a 2,000-gallon propane tank and propane supply line
- Install an HVAC system on the existing CPI building
- Install an ice bridge between the existing CPI building and the steel-lattice structure, if needed
- Hand-excavate one or more 18-inch deep holes near the base of the existing CPI steel-lattice structure to expose the existing grounding mat and bond ground bars to the mat
- Cut up to 20 conifers (Douglas fir, noble fir and western hemlock) to create an unobstructed microwave beam path on about 0.76 acre of City of Corvallis land
- Revegetate areas disturbed by construction and infrastructure removal with native plant species

At the BPA Prospect Hill communications site, activities would include:

- Install a microwave radio system and other equipment inside the BPA building
- Install a 10-foot diameter microwave dish and two 20-foot tall VHF whip antennas on the steel-lattice structure
- Reinforce the existing steel-lattice structure to increase structural stability; this could include adding multiple steel bars within the structure or grouting the steel structure

At the Marys Peak BPA communications site, the following activities would occur after BPA equipment has been installed at the CPI site:

- Demolish the existing BPA site and remove materials from site
- Remove and replace portions of the existing fence closer to the new USFS communications site
- Revegetate areas disturbed by construction and infrastructure removal with native plant species

2.5 Construction Activities

If one of the Project's action alternatives is selected for construction, the final design would be completed for that alternative, including the precise location of steel-lattice structures, buildings, electrical service, propane tanks, and other equipment. Land rights would be acquired, if needed. After completion of the environmental review, construction could begin.

Construction activities would occur during a three- to five-month period, depending on the alternative selected. The sequence of construction activities would begin with work on access roads (if needed), then staging of materials. BMPs would be put in place, such as temporary fencing to restrict public access and erosion and sediment controls. This section describes the type of construction activities that would occur under each action alternative.

Communications site construction is typically done in three phases:

1. **Site preparation** includes leveling the ground in areas where installation of buildings and steel-lattice structures would occur; bringing in soil and rock to the site if needed; then, below-ground work such as installing grounding mats, concrete foundations, rock retaining walls and drainage
2. **Outdoor work** includes erecting structures (buildings and steel-lattice structures), installing communications equipment on structures, installing other outdoor equipment such as propane tanks and electrical meters, trenching for electrical service, and erecting fencing
3. **Indoor work** includes the installation of the electrical station service, communications equipment, HVAC system, batteries, generator, and testing of all equipment

2.5.1 Typical Construction Crew

The size of the construction crew would depend on the amount and type of work at each Project component under the selected alternative. For the minimal amount of work at the BPA Prospect Hill communications site, the BPA Albany Substation, and the existing CPI communications site, a small crew of about six people would be needed (two climbing the steel-lattice structure, one watching during structure work and two to three installing indoor equipment). Under Alternatives 2A, a crew of about eight people could be needed during peak construction. The most construction would be done under Alternative 3C, requiring about 11 people during peak construction.

The following construction vehicles and equipment could be used during Project construction, depending on which alternative is selected and the construction contractor selected:

- Vehicles (pickups, vans, trucks)
- Cement, dump and work trucks
- Graders
- Large excavators (bulldozers, backhoes)
- Auger and rock drills
- Road construction equipment (dump trucks, graders, dozers, excavators, water trucks)

2.5.2 Access Roads

Access roads would be used to reach communications sites during construction and maintenance. BPA has existing rights to access all the Project components except West Point Spur (Alternative 4). If Alternative 4 is selected, BPA would acquire rights from both the City of Corvallis and the USFS to use the access road to the CPI site.

For all action alternatives, improvement of existing access roads would be needed because the existing road prism is inadequate for use by construction and maintenance vehicles. Existing access roads would be bladed, graded, and shaped, and crushed rock would be placed on the road surface. Work on existing road surfaces is not added to the temporary or permanent disturbance areas. No new or temporary roads are proposed under any of the alternatives.

Water drainage features such as ***water bars*** could be installed to carry seasonal runoff, resulting in temporary and permanent disturbance at the side of roads. A typical water bar consists of a dip about 4-6 feet wide and 12-18 inches deep crossing diagonally across the width of the road, and a 10-foot-by-10-foot permanent rock apron on the downhill slope.

Installation of the drainage apron at the edge of the water bar would require the clearing of existing vegetation, grading and compacting soils, and installing a 10-foot-by-10-foot permanent and more sparsely vegetated rock-lined drainage apron on the downhill slope. The apron would be constructed with enough rock to slow runoff from the road, but would leave enough space to allow vegetation to grow through the apron itself, eventually visually obscuring the rock. Each water bar installation would permanently disturb about 100 square feet (rocked area) and temporarily disturb up to 500 square feet at the sides of the rock apron.

At some Project components, including the BPA Albany Substation and the BPA Prospect Hill communications site, access road improvements would not be needed. If any damage to access roads occurs because of construction, the damaged road portions would be returned to a condition as good as their preconstruction condition. The access road improvements that could be conducted at each Project component is in Table 2-1.

The access road leading to the Marys Peak communications site would be used under all alternatives. USFS has stated this access road needs to be improved. BPA would resurface the entire access road in

order to safely access the communications site with construction equipment. BPA would also repair the road after construction, if needed, so maintenance equipment could safely access the site.

Table 2-1. Proposed Access Road Improvements for each Project Alternative

Alternative	Type of Road Improvement	Length of Road Improvement Area and Ownership
2A		**Total: Up to 3,450 feet (0.65 mile)**
Marys Peak*	Improvement of surface; installation of up to 3 new water bars, improvement to 5 existing water bars	Up to 2,500 feet (0.47 mile), USFS Up to 950 feet (0.18 mile), BLM
Albany Substation	None	0
3C		**Total: Up to 3,450 feet (0.65 mile)**
Marys Peak*	Improvement of surface; installation of up to 3 new water bars, improvement to 5 existing water bars	Up to 2,500 feet (0.47 mile), USFS Up to 950 feet (0.18 mile), BLM
Albany Substation	None	0
4		**Total: Up to 1,990 feet (0.37 mile)**
West Point Spur	Improvement of surface if needed with 5 new water bars, new spot rock in areas with pot holes	1,000 feet (0.19 mile), USFS 990 feet (0.18 mile), City of Corvallis
Marys Peak*	None, work would be restricted to dry weather	0
Prospect Hill	None	0

* BPA would conduct the minimal amount of work needed to safely access the site with construction and maintenance equipment.

The existing access road leading to West Point Spur would be improved on USFS and City of Corvallis lands under Alternative 4. This access road is currently passable, but it has deep ruts and pot holes in some places. This road would remain gated and locked. Access road improvements could result in the following temporary and permanent disturbance areas, all from the installation of water bars:

- Alternative 2A and Alternative 3C:
  - Temporary – 4,000 square feet (2,500 square feet on USFS lands, 1,500 square feet on BLM lands)
  - Permanent – 800 square feet (500 square feet on USFS lands, 300 square feet on BLM lands)
- Alternative 4:
  - Temporary – 2,500 square feet (1,500 square feet on USFS lands, 1,000 square feet on City of Corvallis lands)
  - Permanent – 500 square feet (300 square feet on USFS lands, 200 square feet on City of Corvallis lands)

2.5.3 Staging of Equipment and Vehicles

Temporary staging areas would be needed at all Project components for construction crews to store materials, construction vehicles, and equipment. The size of staging areas would vary depending on the amount of materials needed for the work at each Project component (Table 2-2).

Table 2-2. Staging Areas Needed for each Project Alternative

Alternative	Location	Land Ownership and Size
2A		
Marys Peak	Inside the site fence (meadow) Paved parking lot	**USFS:** Up to 6,100 sq. ft. inside fence Up to 1,800 sq. ft. in paved parking lot
Albany Substation	On graveled area inside substation fence	**BPA**: Up to 4,300 sq. ft.
3C		
Marys Peak	Inside the site fence (meadow) Paved parking lot	**USFS:** Up to 11,325 sq. ft. inside fence Up to 1,800 sq. ft. in paved parking lot
Albany Substation	On graveled area inside substation fence	**BPA**: Up to 4,300 sq. ft.
4		
West Point Spur	Inside the CPI site fence (gravel) and outside the CPI site fence (meadow)	**City of Corvallis**: Up to 3,920 sq. ft. inside CPI fence Up to 3,920 sq. ft. outside (west of) CPI fence
Prospect Hill	Inside fence (gravel)	**BPA**: Up to 600 sq. ft. inside fence

At components where a new steel-lattice structure would be constructed, a staging area would be needed to assemble steel-lattice structure segments. No staging would occur on BLM lands for any alternatives.

There would be no permanent disturbance area from staging areas, but they would cause the following temporary disturbance areas:

- Alternative 2A: 6,100 square feet temporary disturbance within the fence
- Alternative 3C: 11,325 square feet temporary disturbance within the fence
- Alternative 4: 3,920 square feet temporary disturbance outside the CPI fence

2.5.4 Site Preparation

Site preparation would be needed at the Marys Peak communications site under Alternative 2A and Alternative 3C to create level areas so workers could safely set up equipment and construct foundations and footings. Footings are steel and concrete placed in the ground at each of the four structure corners or one large concrete slab. The most site preparation would be needed under Alternative 3C because site development would be needed for the steel-lattice structure, the new concrete slab for the building addition, and potential construction of a retaining wall. Temporary disturbance areas resulting from site preparation activities are accounted for under disturbance areas for staging activities (see prior section), because staging areas are the largest and most expansive temporary disturbance area. The only alternative with permanent disturbance due to site preparation is Alternative 3C.

Site preparation would not be needed at the BPA Prospect Hill communications site, the BPA Albany Substation, and the CPI communications site because they are existing communications sites, and there would be no site expansion.

To begin site preparation, heavy machinery would be used to level the construction work area and excavate areas for footings and foundations. In some areas, a layer of rock or soil would be laid down prior to pouring concrete foundations for some equipment and structures. A stormwater retention system would be needed for all alternatives because the total disturbance area would be greater than 5,000 square feet.

2.5.5 Steel-lattice Structure Construction

Above-ground construction work would begin with the erection of the steel-lattice structure and installation of other equipment. Under Alternative 2A, BPA would construct a 40-foot Valmont Q-style box steel-lattice structure. Under Alternative 3C, a tapered Valmont 800 series structure would be constructed, that would be 60 feet tall (Figure 2-1). The new structure would be made of galvanized steel and could appear shiny for two to four years before the steel dulls from weathering.

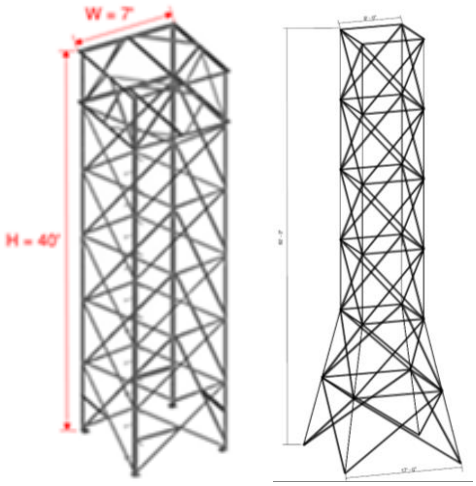


Figure 2.1. *Valmont Q-style box structure (left) and tapered Valmont 800 series structure (right). Not to scale.*

Under Alternative 2A and Alternative 3C, the new steel-lattice structure would be securely attached to the ground with footings (described above). Holes for the structure footings would be dug with a track hoe; drilling could also occur if rock is present. Footings would then be created by pouring a 3-foot thick concrete pad on a gravel base. The steel-lattice structures would be assembled onsite and lifted into place by a large crane. The base of the structure would then be bolted to steel protruding from the concrete footing(s). The relative size and shape of the steel-lattice structures are shown in Table 2-3.

The permanent disturbance area for a steel-lattice structure is estimated to extend about 5 feet from the footings or concrete pad. The area within 5 feet of the structure footings would be unavailable for most other uses and difficult to revegetate, and therefore considered a permanently disturbed area.

The size of the temporary disturbance area around the new steel-lattice structure could differ depending on terrain, slope, soil or bedrock conditions, accessibility, and other site-specific characteristics. The temporary disturbance area would include areas disturbed by construction equipment, crane pads, etc. Soils in the temporary disturbance area would be decompacted and revegetated after Project construction. The temporary disturbance area is estimated to extend up to 40 feet beyond the permanent disturbance area, but would not extend beyond the fence.

Under Alternative 3C, the existing 20-foot tall steel-lattice structure on Marys Peak could be removed if equipment is relocated to the new structure. Under all action alternatives, BPA would remove the BPA wood-pole structure on Marys Peak.

Under Alternative 4, no new structure would be built; the existing steel structure would be used with no additional height increase. However, several 18-inch holes would be excavated at the base of the existing CPI steel-lattice structure footing to expose the existing grounding mat. Additional grounding bars would be bonded to the exposed mat to ensure the structure is grounded in the event of a lightning strike, protecting nearby workers on the ground.

Steel-lattice structure construction could result in the following disturbance areas:

- Alternative 2A:
  - Temporary –Up to 6,100 square feet on USFS lands would be disturbed by equipment, but this area has already been accounted for in the staging area footprint
  - Permanent – 529 square feet on USFS lands

- Alternative 3C:
  - Temporary – Up to 11,325 square feet on USFS lands would be disturbed by equipment, but this area has already been accounted for in the staging area footprint
  - Permanent – 625 square feet on USFS lands
- Alternative 4: No disturbance because the structure is existing

Table 2-3. New or Existing Steel-lattice Structures by Alternative

Alternative	New or Existing Steel–lattice Structure*	Height; Size at Base	Concrete Footing	Steel-lattice Structure Equipment or Improvements
2A				
Marys Peak	New	40 ft.; 7 ft. by 7 ft.	13 ft. by 13 ft. by 3 ft. deep	6-ft. diameter microwave dish; 20-ft. VHF antenna; ice bridge
Albany Substation	Existing	NA	NA	6-ft. diameter microwave dish; antenna system
3C				
Marys Peak	New	60 ft.; 15 ft. by 15 ft.	23 ft. by 23 ft. (+/- 2 ft.) by 3 ft. deep	6-ft. diameter microwave dish; 20-ft. tall VHF antenna; USFS: Install equipment currently mounted on the 3rd party structure, if agreed upon by parties; ice bridge
Albany Substation	Existing	NA	NA	6-ft. diameter microwave dish; antenna system
4				
West Point Spur	Existing	NA	NA	10-ft. diameter microwave dish; two 20-ft.VHF antennas; ice bridge
Prospect Hill	Existing	NA	NA	10-ft. diameter microwave dish; two 20-ft. VHF antennas and steel structure bars or grouting to reinforce the structure

* Steel-lattice structures would be BPA-owned for Alt. 2A at Marys Peak, and are currently owned at the Albany Substation and Prospect Hill.

2.5.6 Communications Equipment Installation

Under the selected action alternative, communications equipment would be mounted on the existing or new lattice-steel structures and updated equipment installed inside the buildings at each component. Communications equipment mounted on steel-lattice structures would include microwave dishes, whip antennas, ice bridges, and stabilizing bars.

Microwave dishes are circular and mounted on the steel-lattice structure at about 35 feet above ground. Their diameter varies from 6 to 10 feet, depending on the Project component. They are generally a light gray color that can appear white.

VHF antennas, also called whip antennas, are narrow wires mounted at the top of the structures. They receive and emit the VHF communications signals. VHF antennas are generally about 20 feet long.

Installation of new or updated ice bridges are proposed under all action alternatives. An ice bridge is a metal structure constructed about 8 to 10 feet above the ground that runs between the steel-lattice structure and the communications building. The ice bridge provides protection from ice and snow loading that could potentially damage the communications and power cables.

The existing structure at the BPA Prospect Hill communications site would need some reinforcement to be strong enough to support the additional communications equipment. To stabilize the structure, some areas could be grouted or stabilizing bars could be added. Stabilizing bars would consist of steel cross arms bolted to the structure.

Depending on the alternative, equipment that could be installed inside the building includes microwave and VHF radios, a DC battery system, HVAC equipment, a generator, and other miscellaneous communications equipment.

Communications equipment installation activities under Alternative 2A and Alternative 3C would not create temporary or permanent disturbance areas beyond those already accounted for under structure construction. Because an existing structure in a gravel communications yard would be used under Alternative 4, there would be no temporary or permanent disturbance areas.

2.5.7 Building Maintenance or Construction

Depending on the alternative selected, the existing communications building at some Project components would be maintained or remodeled, or a building addition would be constructed immediately adjacent to and adjoining to an existing USFS communications building. The activities that would be conducted under each alternative are shown in Table 2-4.

Table 2-4. Communications Building Work

Alternative	Type of Work	Description of Building Work
2A		
Marys Peak	Improvement	Paint existing building and install an HVAC system
Albany Substation	None	
3C		
Marys Peak	Build addition	Construct a concrete block building addition on a concrete slab with a metal roof, single door and no windows on the east side of the USFS building; install an HVAC system; 13 feet by 25 feet and 8 feet tall
Albany Substation	None	
4		
West Point Spur	Improvement	Create a separate BPA communications area within the existing building by erecting a partition and potentially installing a separate door from the outside; install an HVAC system
Prospect Hill	None	

Depending on the action alternative, electrical service would be upgraded, removed, or installed. Under Alternative 2A, existing electrical service would be upgraded by installing a new electrical meter and digging a trench to lay new wire to the building. Under Alternative 3C and Alternative 4, the existing BPA electrical meter would be disconnected or removed.

The following are temporary and permanent disturbance areas that would be impacted by constructing or maintaining a communications building:

- Alternative 2A: No temporary or permanent disturbance because the building is existing
- Alternative 3C: Temporary disturbance areas are already accounted for in staging areas; 378 square feet of permanent disturbance
- Alternative 4: No temporary or permanent disturbance because the building is existing

2.5.8 Fencing

Under Alternative 3C and Alternative 4, USFS would remove approximately 229 feet of fencing from around the BPA communications site after the BPA site is removed and the site is restored. A new 100-foot length of fence would be installed approximately 60 feet closer to the USFS communications site than the current fence's location. Alternative 2A does not propose any changes to the fence.

The areas where temporary disturbance would occur due to fencing removal and new fencing installation activities on Marys Peak summit under Alternative 3C and Alternative 4 are included under other activities and are not accounted for in this section. The installation of new fencing would have a negligible permanent disturbance area because vegetation could grow into the chain link material and immediately adjacent to the fence posts after revegetation.

Under Alternative 4, some repair to the existing CPI communications site fence may occur.

2.5.9 Propane Tank

Under Alternative 2A, the existing propane tank at the Marys Peak BPA communications site would be replaced or repainted. Under Alternative 3C, the existing propane tank at the Marys Peak BPA communications site could be removed, relocated or replaced. Alternative 4 could require the installation of a new propane tank at the CPI communications site. Tanks are generally about 2,000 gallons and mounted on two concrete footings per tank. A supply line from the tank to the building would be installed by excavating a trench and laying the gas line.

Temporary and permanent disturbance due to propane tank removal, relocation or replacement would be negligible because these areas are primarily graveled surfaces with minimal existing vegetation. If it is decided that a propane tank should be replaced under Alternative 3C, it would be located within the fence.

2.5.10 BPA Communications Site Demolition

Under Alternative 3C and Alternative 4, the BPA Marys Peak communications site would move to a different location and the existing site would no longer be needed. Once the new communications site becomes fully operational, the existing site would be dismantled and all structures, equipment, and other materials removed. The original grade would be reestablished as much as possible. The existing fence would likely remain in place until site restoration was completed. After restoration, USFS would remove the portion of the fence around the BPA communications site and build a fence about 60 feet closer to USFS site.

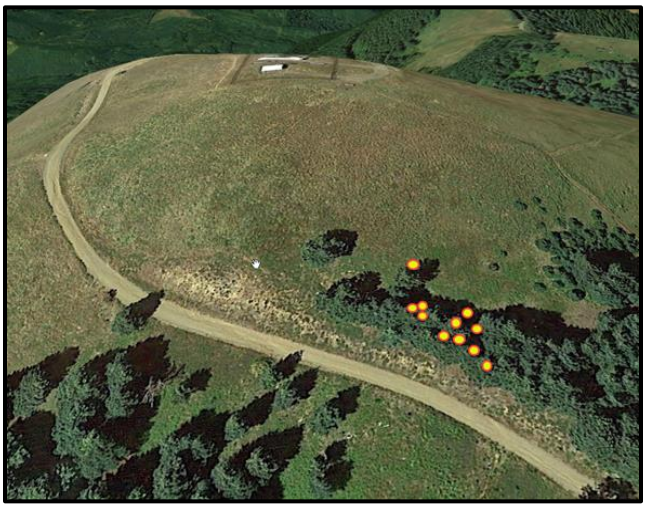
Removing BPA's existing communications building and structures would likely take place a year after relocation. Demolition would temporarily disturb about 0.14-acre (excluding the building footprint), and the entire BPA site would be revegetated under Alternative 3C and Alternative 4. This temporary disturbance area is already accounted for in the staging area associated with Alternative 3C, but not accounted for under the staging areas for Alternative 4. Therefore, under Alternative 4, the restoration area is considered a temporary disturbance area.

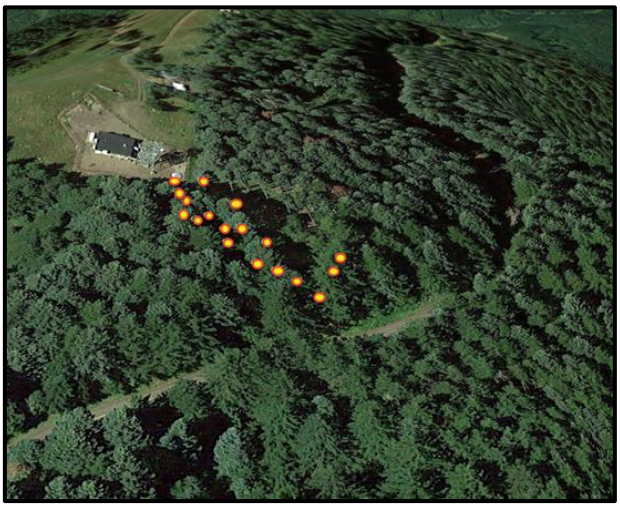
2.5.11 Tree Cutting

Under Alternative 2A and Alternative 3C, up to 14 noble firs located on 0.53 acre of BLM lands near the Marys Peak summit would be cut to create an unobstructed microwave beam path (Photograph 2-17). Trees would be cut at a shorter height with chainsaws to remove the beam path obstruction, and left as ***snags*** at least 20 feet tall or taller, if possible. Heavy equipment and log trucks would not be used under any action alternative. The cut wood and debris would be scattered on the forest floor in the immediate vicinity on BLM's land. If tree tops roll downhill onto the access road, then they would be chipped and hauled offsite for disposal. Trees would be cut between August 5 and March 1 to avoid the typical nesting period for birds.

Under Alternative 4, up to 20 conifer trees on 0.76 acre of City of Corvallis lands at West Point Spur (Photograph 2-18) would be cut at a shorter height with chainsaws to remove the beam path obstruction. The trees would be left as ***snags*** at least 20 feet tall or taller, if possible. Heavy equipment would not be needed because the cut portions of trees would not be removed from the site. The cut

wood and debris would be left on the forest floor. Cutting would occur between August 15 and March 1 to avoid the typical nesting period for birds.





Source: Map Data ©2016 Google

Photograph 2-17 (left). *Yellow dots show the location of noble firs that would be cut at Marys Peak, located about 30 feet from the unpaved access road. The BPA Marys Peak communications site is near the top of the photo.*
Photograph 2-18. *Yellow dots show the location of conifers that would be cut at West Point Spur; the closest tree is about 40 feet from Marys Peak Road. The CPI communications site is in upper left of the photo.*

2.6 Site Restoration

Under the action alternatives, after construction is completed at each Project component, the construction contractor would remove construction equipment and debris, and restore the original grade as much as possible. At Marys Peak, areas disturbed by construction activities would be revegetated according to a Revegetation Plan that would be developed by USFS botanists. The Revegetation Plan would specify the planting areas, species to be planted, source of seeds and other ***propagules***, planting methods, timing of planting, how successful outcomes would be defined (performance criteria), how and when the plantings would be monitored, and how weed control would be implemented during revegetation. Soils that are compacted in temporary disturbance areas would be decompacted, if needed, before planting.

At the summit of Marys Peak (all action alternatives), revegetation would be done with plant species that are known to occur on Marys Peak, from plant propagules obtained on Marys Peak. If Alternative 2A is selected, the revegetation area would be about 6,500 square feet (0.15 acre), but if Alternative 3C or Alternative 4 is selected, the revegetation area would be about 7,700 square feet (0.18 acre).

Plantings could involve the use of seeds gathered at Marys Peak or plants grown from seeds or propagules gathered at Marys Peak. The existing fence around the Marys Peak communications site would be left in place during restoration of the site to protect the plantings from trampling and disturbance. The new length of fencing would need to be constructed prior to revegetation so that any disturbance areas could also be revegetated. The plantings would be monitored each year until the defined performance criteria are accomplished. If some aspects of the plantings are not successful for some reason, additional planting, weeding, or other actions would be implemented to ensure success.

If Alternative 4 is selected, the construction disturbance areas at West Point Spur would be revegetated. Revegetation would be done with plant species that are known to occur on Marys Peak using plant propagules obtained on Marys Peak, according to a Revegetation Plan.

At the BPA Albany Substation and BPA Prospect Hill communications sites, revegetation would not be needed because work would only occur on existing structures, located within graveled yards. The BPA Albany Substation has no vegetation and Prospect Hill has sparse vegetation cover by non-native species, including weeds.

2.7 Construction Schedule

If an action alternative is selected, the expected duration of construction activities would be from three to six months. After completion of the environmental review process, acquisition of land rights and easements could begin, followed by construction during the summer and fall of 2021.

2.8 Operation and Maintenance

If an action alternative is constructed, BPA would perform routine, periodic maintenance and emergency repairs on the BPA communications site at Marys Peak or at West Point Spur, and at Prospect Hill or at The BPA Albany Substation. However, under all action alternatives, the need for both routine and emergency maintenance would likely decrease. Routine maintenance would be expected to decrease for a time due to new communications equipment. Each communications site would be visited several times per year for maintenance, up to once a month during the months when the site is accessible. Propane tanks would be filled each year or every other year, as needed. Under all action alternatives, there would be less need for emergency maintenance because the microwave dish would be securely mounted to a steel-lattice structure. This would help ensure the microwave dish would remain properly aligned during severe weather.

Under the No Action Alternative, routine and emergency maintenance would likely be needed more frequently as equipment fails and facilities deteriorate. Because the microwave dish at the BPA Marys Peak communications site would remain mounted on the unstable wood-pole, the need for emergency actions to realign or reattach the microwave dish would continue.

2.9 Best Management Practices and Mitigation Measures

BMPs that would be implemented are identified in Chapter 3, under each applicable resource. In addition to BMPs, mitigation measures have or will be identified through preparation of this EA. Mitigation measures are actions that are taken to avoid, minimize or compensate for impacts to the environment. Mitigation measures would be done prior to, during, or immediately after construction. These mitigation measures, if known at this time, are identified in the discussion of each resource in Chapter 3. It is expected that additional mitigation measures could be identified through public review of the draft EA.

If an action alternative is selected, a Mitigation Action Plan (MAP) would be prepared. The MAP would explain how mitigation measures identified for the Project would be planned and implemented. Monitoring during and after construction would help ensure implementation and success of the mitigation measures.

2.10 Alternatives Considered but Eliminated

For the Marys Peak BPA Communications Site Project, BPA considered whether each potential alternative would meet the identified need and facilitate achievement of the Project's purposes (see Section 1.4). BPA also considered whether the alternative would be practical and feasible, from a technical and economic standpoint. This section summarizes the alternatives that were considered but eliminated from detailed study in light of these considerations. The alternatives that were presented to the public during past scoping efforts are numbered (2B, 3A, 3B, 5), while those without numbers were

not presented during scoping. The alternatives were eliminated from further consideration for the reasons stated below.

2.10.1 Site with No Line of Sight to Existing BPA Communications Sites

Reliable communications between BPA dispatch and field staff require establishing an unobstructed line of sight between any new communications site and an existing BPA communications site. BPA used the Path-loss software program to determine the feasibility of establishing microwave communications to all potential communications sites. These seven communications sites were eliminated from further consideration because they lacked line of sight to an existing BPA communications site due to obstructions, such as mountain peaks:

- Cannibal Radio Station
- Cline Hill Radio Station
- Coastal Radio Station
- Goodwin Radio Station
- Perpetua Radio Station
- SNF Radio Station
- Yaquina Radio Station

2.10.2 Low Elevation Sites with Substantial Loss of VHF Communications Coverage

The BPA Marys Peak communications site VHF equipment provides communications coverage of BPA transmission lines, substations, access roads, and highways throughout the Oregon Coast Range and Willamette Valley. Acceptable alternatives must be capable of providing similar VHF communications coverage. BPA found that alternatives at relatively low elevation sites in the Willamette Valley are not capable of providing adequate VHF coverage of BPA's service area in the Oregon Coast Range and coastal areas.

The following seven sites were eliminated from further consideration because their use would substantially diminish VHF communications coverage below the level of coverage currently provided by the BPA Marys Peak communications site:

- Coburg Radio Station
- Fern Radio Station
- Horton Radio Station
- Laupiel Radio Station
- Monroe Radio Station
- Prairie Radio Station
- Roman Radio Station

2.10.3 Other Sites with Substantial VHF Communications Coverage Loss

These existing sites could be capable of providing some of the VHF communications coverage that is provided by BPA's existing Marys Peak VHF communications equipment. To further evaluate these alternatives, BPA engineers coordinated with BPA's VHF communications equipment vendor and BPA's Geospatial Services team to develop differential VHF communications coverage maps. BPA engineers considered whether use of these sites would result in substantial loss of VHF communications coverage. The following sites were eliminated from further consideration because their use would substantially diminish VHF communications coverage relative to the level of coverage currently provided by the BPA Marys Peak communications site:

- Alsea Falls Radio Station
- Herman Peak Radio Station
- Mapleton Radio Station
- Prairie Peak Radio Station
- Roman Nose Radio Station
- Toledo Radio Station
- Vineyard Mountain Radio Station
- Walton Radio Station

2.10.4 Locations without an Existing Power Source

All BPA communications sites require an AC power source from an electrical distribution system. While each of these sites were either suggested during scoping or identified by BPA engineers, BPA was unable to identify the presence of any communications facilities or infrastructure. These sites are either undeveloped sites or minimally developed sites. Preliminary estimates indicate that establishing AC distribution service at these locations could cost up to or exceed $2 million, depending on the length of the distribution line. This cost is in addition to the cost of the new communications facility.

The following sites were eliminated from further consideration because of the high cost of installing AC electrical distribution service:

- Cummins Radio Station
- Euchre Radio Station
- Franklin Ridge Radio Station
- Grass Mountain Radio Station
- Old Blue Mountain Radio Station
- Pioneer Butte Pioneer Radio Station
- Table Radio Station

2.10.5 Marys Peak – Federal Aviation Administration (FAA) Communications Site

The FAA communications site is located between West Point Spur and Marys Peak. The site is visible from the summit of Marys Peak. While the FAA site is readily accessible, it does not meet all of BPA's technical requirements. The FAA communications structure is about 40 feet tall, which is not tall enough to establish a microwave line of sight to an existing BPA communications site. In addition, based on the building dimensions, this site lacked sufficient space to accommodate BPA's communications equipment. The FAA communications site was eliminated from further consideration because of these deficiencies.

2.10.6 West Point Spur – Co-locate at Union Pacific Railroad Communications Site

The Union Pacific Railroad communications site is the westernmost building on West Point Spur. Although the communications structure seems to be tall enough to establish a microwave line of sight to the BPA Prospect Hill communications site, a structure loading analysis would be required to determine whether it could support the additional load from BPA's antennas. The communications building shows signs of substantial weather-related and water-related damage, which could result in damage to or failure of communications equipment. This site also has limited space, no fencing around its structures, and evidence of substandard coaxial cable management and protection, and the access road would need improvement. Because reliability is one of BPA's requirements for an alternative, the condition of Union Pacific Railroad's facilities led BPA to eliminate the Union Pacific Railroad site from further study.

2.10.7 West Point Spur – Co-locate at Silke Communications Site

Silke Communications has two communications sites at West point Spur. The site has a wood-pole structure supported with guy wires, which could be tall enough to establish a microwave line of sight to the BPA Prospect Hill communications site. However, there is not sufficient space at the appropriate antenna height to facilitate this microwave shot, it is unlikely that the wood pole could structurally support BPA's antennas, and the access road would need improvement. Because reliability is one of BPA's requirements for an alternative, the condition of the facility led BPA to eliminate the Silke communications site from further study.

2.10.8 West Point Spur – Co-locate at NW Natural Gas Communications Site

The NW Natural Gas communications site at West Point Spur is accessed by a road that would require minor improvements. There is a steel-lattice structure with three microwave antennas. Assuming the

structure is capable of passing a structure loading analysis with BPA antennas, it is feasible that the NW Natural Gas communications structure would be able to accommodate a microwave line of sight to the BPA Prospect Hill communications site. Tree cutting would likely be required for an unobstructed microwave path. Although the building seems to be in good shape, it is likely not large enough to accommodate BPA's communications equipment and was consequently eliminated from further consideration.

2.10.9 Use of Satellite Phone

During public scoping for the Project, it was suggested that BPA field crews use satellite phones to communicate with BPA dispatch, instead of maintaining and upgrading the existing communications network. Satellite phones are currently used by BPA crews to supplement BPA's mobile radio system but they are not considered a primary means of voice communications because several factors limit their reliability compared to the mobile radio system. These factors include the inability to control maintenance and outage intervals of third-party satellite systems, limited effectiveness in areas with tree cover, and loss of coverage depending on the positioning of satellites in relation to the local terrain. The use of satellite phones is not considered a reasonable replacement for the mobile radio system because of their limited reliability compared to the mobile radio system.

2.10.10 Alternative 2B

Alternative 2B (Marys Peak at Existing BPA Site – BPA Prospect Hill Site) was presented to the public during the additional scoping period. Communications under Alternative 2B would go to the BPA Prospect Hill communications site, while communications under Alternative 2A would go to the BPA Albany Substation. Alternative 2A is preferred because the communications path from the BPA Marys Peak communications site to the BPA Albany Substation is a shorter than to BPA Prospect Hill. A shorter path equates to less loss of the communications signal. Additionally, the steel-lattice communications structure at the BPA Albany Substation has no attached communications equipment, whereas the structure at the BPA Prospect Hill communications site currently has microwave dishes and other communications equipment and would require structural modifications to support any additional equipment. Alternative 2B was eliminated from further consideration because Alternative 2A accomplishes the same connection to BPA's communication system with better reliability and more capacity on the steel-lattice structure at the BPA Albany Substation than at Prospect Hill.

2.10.11 Alternative 3A

Alternative 3A (Marys Peak Co-locate at New USFS Site – BPA Albany Substation) was presented to the public during the additional scoping period. The communications under Alternative 3A would go to the BPA Albany Substation, which is a shorter communications path than if it was pointed to BPA Prospect Hill. Alternative 3A was eliminated by USFS from further study because it called for USFS to construct a new building on Marys Peak summit to replace the existing USFS and BPA buildings. Alternative 3A was also eliminated from further consideration because Alternative 3C accomplishes the same objective and is more cost effective by expanding the existing USFS building rather than constructing a new larger building.

2.10.12 Alternative 3B

Alternative 3B (Marys Peak Co-locate at New USFS Site – BPA Prospect Hill Site) was presented to the public during the additional scoping period. Communications under Alternative 3B would go to the BPA Prospect Hill communications site. Alternatives with communications going from the BPA Marys Peak communications site to the BPA Albany Substation are preferred because the path to the BPA Albany Substation is shorter than to BPA Prospect Hill. A shorter path equates to less loss of the communications signal. Additionally, the steel-lattice communications structure at the BPA Albany

Substation has no attached communications equipment, whereas the structure at the BPA Prospect Hill communications site currently has microwave dishes and other communications equipment and would require structural modifications to support any additional equipment. Alternative 3B was eliminated from further consideration because Alternative 3C accomplishes the same connection to BPA's communications system with better reliability and more capacity on the steel-lattice structure at the BPA Albany Substation than at Prospect Hill.

2.10.13 Co-location at existing USFS Site in Separate Building Addition with New 100-foot Steel-Lattice Structure

Co-location would include construction of a new BPA building addition located immediately adjacent and adjoining to the east side of the existing USFS building. The current BPA building would be demolished. The existing USFS building would be maintained. It would also include construction of a 100-foot tall steel-lattice communications structure on the southeast side of the new USFS building addition and removal of the existing ODOT and USFS steel-lattice structures and BPA wood pole.

The SNF Plan (1990) includes ***Visual Quality Objectives (VQOs)*** for the Marys Peak SBSIA. A scenic resources assessment of this option was completed by AECOM, a BPA contractor, and reviewed by Jessica Dole, an SNF landscape architect. In that assessment, visual simulations at several key viewing areas were used to determine the potential impact of a 100-foot tall steel-lattice structure on Marys Peak scenic quality. The assessment revealed that a 100-foot steel-lattice structure would be dominant in view from the primary viewing area – the meadow viewpoint and trailhead area below the summit. The scale of the steel-lattice structure above the noble fir forest would be clearly out of scale with the natural setting, and would create an obvious and substantial modification in the natural appearing view. USFS concluded that a 100-foot steel-lattice structure would not meet the Marys Peak SBSIA's natural appearing scenic quality objective of retention.

Because co-location as described above would not meet the requirements of the SNF Plan, it was eliminated from further consideration.

2.10.14 Alternative 5

BPA considered constructing a new BPA communications site at West Point Spur in an undeveloped location. This alternative was presented during public scoping as Alternative 5. This site is about 300 feet to the west of and downhill from the existing CPI communications site on City of Corvallis lands.

The undeveloped site is accessed from the same road that leads to the CPI site (NF-112). An overgrown, 130-foot long, unpaved spur road off of NF-112 leads to the undeveloped site. The site is vegetated with grasses and conifers and surrounded by forested areas with the exception of the southwest corner, where it is a clear-cut open grassy area.

BPA developed a conceptual plan to consider what would be required to develop the site. Only a portion of the undeveloped site (about 75 feet by 75 feet) is relatively flat and the northern and southern sides of the site slope down at about 30 degrees. The existing undeveloped site would require site preparation for the building foundation, footings for a 100-foot tall steel-lattice structure, propane tank installation, electrical service installation, parking, vehicle turnaround and vehicle pullout areas, and a level area to erect a chain link fence around the site.

To develop this site, the soil would need to be excavated down about 3.5 feet and about 836 cubic yards of soil and rock would be removed from the site. About 0.3 acre would be graded. This includes the area where an access road would need to be reconstructed to access the site. About 65 trees would need to be removed to develop the communications site and create an unobstructed microwave beam path. These trees are noble fir and Douglas-fir, ranging from 7 inches to 46 inches diameter at breast height (dbh).

Developing a new site would involve the most work compared to the other proposed alternatives, including extensive grading and soil movement, cutting 65 conifers, installing of new electrical service, and trenching for the erection of a new fence. The new steel-lattice communications structure would be the tallest under all proposed action alternatives. Alternative 5 would be the only alternative to require road reconstruction. This level of work would result in greater impacts to soils, vegetation, and wildlife than under other proposed alternatives and it would be about twice as expensive as other alternatives.

Because the communications capabilities of Alternative 5 would be about the same as Alternative 4, but Alternative 5 likely would result in greater impacts to resources and would cost more, BPA eliminated Alternative 5 from further consideration.

2.10.15 Marys Peak Co-locate at New USFS Facility with Public Access Observation Deck

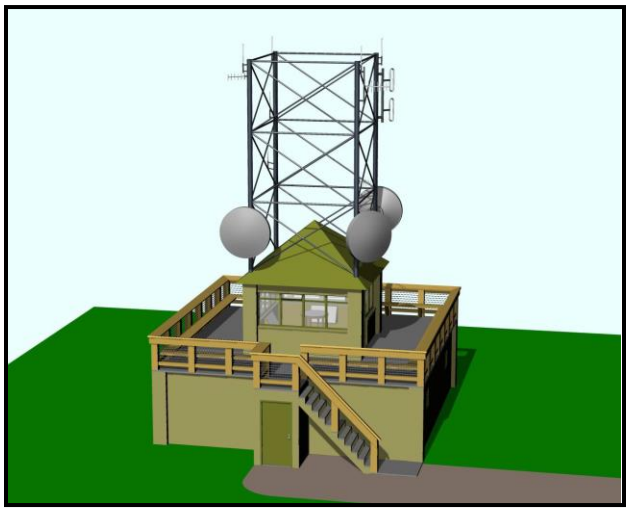


Figure 2-2. *Conceptual rendering of proposed BPA/USFS combined facility with an observation deck.*

During scoping, a member of the public proposed co-locating the BPA and USFS communications facilities with a recreational use facility on a smaller footprint atop Marys Peak (Figure 2-2). The plan for the site was well thought out conceptually. However the public proposal would not meet BPA and industry public safety and security standards for communications sites.

An antenna attached to the building can attract lightning and this risk would need to be mitigated. Under the action alternatives, the public would be protected from close proximity with the antenna and to grounding rods inside the fence. Under this proposal, the public would have open access to the building and could walk under the steel-lattice structure, which could result in injury or death by a lightning strike. Also, this alternative would allow the public access to areas near microwave dishes at the facility, which could pose a potential radiation hazard. During winter, there would be the added risk of damage to the building or injury or death to the public from ice fall from the steel-lattice structure.

Open access to such a facility also raises concerns of vandalism and camping near the facilities. Before the fence was installed, some people used to camp near the buildings and would light fires. If there was public access, propane tanks that are not part of the structure would have to be fenced or otherwise secured for safety, all connections (AC outlets, lighting, etc.) would have to be protected to prevent tampering, and all materials used would have to be noncombustible.

Also, a preliminary size estimate of a square building sufficient to accommodate infrastructure and be lightning resistant would be almost 2,000 square feet. The steel-lattice communications structure would need to be at least 100 feet tall, much taller than any of the action alternatives.

This proposal would also be much more expensive that other alternatives. It would remove all structures currently in place for a new one. It is not economically feasible for the USFS to build such a site. USFS capital funds for construction are limited and there is a large backlog of deferred maintenance for all recreation and administrative sites. A site like this would be costly to build and maintain, and would not be sustainable at such a severe weather site. For all of these reasons, this alternative was eliminated from further consideration.

2.11 Comparison of Alternatives

The following pages contain two summary tables. Table 2-5 compares how the three action alternatives and the No Action Alternative would meet the purposes of the Project as defined in Sections 1.3 and 1.4 of this EA. A summary of the analysis of potential environmental impacts under each alternative is presented in Table 2-6.

Table 2-5. Comparison of Alternatives to Project Purposes

Project Purposes	Alternatives			
	2A	3C	4	No Action Alternative
Meet standards to support the safe and reliable operation and maintenance of the FCRPS	Yes	Yes	Yes	No; risks to reliable communications due to unstable wood monopole, unreliable back-up power system, and equipment subject to temperature fluctuations
Provide VHF communications coverage equal or better to what currently exists	Yes	Yes	No; lesser or no coverage in some portions of BPA's Eugene region	Yes
Continue to meet BPA's contractual obligations	Yes	Yes	Yes	Yes
Demonstrate responsible environmental stewardship	Yes	Yes	Yes	Yes
Demonstrate cost-effectiveness	Estimated cost: $800,000	Estimated cost $1 million	Estimated cost $700,000	No immediate costs would be incurred if the Project is not implemented. However, maintenance costs due to the unstable wood monopole and outdated equipment would likely increase until replacement would once again need to be considered. Given inflation, future costs of replacement would likely be higher.
Use facilities and resources efficiently	Yes	Yes	Yes	No; maintaining old equipment and facilities requires more maintenance and repair

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2.12 Summary of Potential Resource Impacts

Chapter 3 describes potential impacts on human and natural resources from the action alternatives. Potential environmental impacts are summarized by resource in Table 2-6 to enable comparison among alternatives. Some resources (Wetlands and Water Resources, Fish, Transportation, Public Services, and Environmental Justice Populations) are not analyzed in this EA because implementation of any of the action alternatives would have no or minimal impacts compared to the No Action Alternative (see Section 3.1).

In Table 2-6, the level of impact that would be expected to result after implementation of the mitigation measures and BMPs is listed in each resource section. The table lists direct and indirect impacts that may occur from Project activities and the levels of temporary and permanent impacts.

Table 2-6. Comparison of Environmental Impacts by Alternative

Resource	Alternative 2A	Alternative 3C	Alternative 4	No Action Alternative
Land Use and Recreation (Section 3.3)	At Marys Peak, **moderate** temporary impacts from access restrictions during construction **No** permanent impacts from access restrictions At Albany Substation, **no** temporary or permanent impacts from access restrictions during or after construction	At Marys Peak, same impacts as Alternative 2A, with the additional **low** beneficial effect from removal of the BPA communications site At Albany Substation, same impacts as Alternative 2A	At West Point Spur, **low** temporary impacts from access restrictions during construction **No** permanent impacts from access restrictions At Prospect Hill, **no** temporary or permanent impacts due to small scope of work and limited recreational opportunities At Marys Peak, **moderate** temporary impacts from access restrictions **No** permanent impacts from access restrictions **Low** beneficial effect from removal of the BPA communications site	At Marys Peak, **low** impacts from periodic maintenance activities and emergency repairs At Prospect Hill, **no** impacts from periodic maintenance activities and emergency repairs

Resource	Alternative 2A	Alternative 3C	Alternative 4	No Action Alternative
Geology and Soils Section 3.4	At Marys Peak, **low** temporary impacts on 0.23 acre of geology and soils from construction and staging **Low** permanent impacts on 0.03 acre of geology and soils from excavating and covering soils with foundations or rock and access road improvement **Low** impacts from potential erosion caused by construction **Low** temporary impacts on 0.53 acre of soils from tree cutting At Albany Substation, **no** impacts because no ground disturbance	At Marys Peak, **low** temporary impacts on 0.35 acre of geology and soils from construction and staging **Low** permanent impacts on 0.05 acre of geology and soils from excavating and covering soils with foundations or rock and access road improvement **Low** impacts from potential erosion caused by construction, including demolition of BPA communications facility **Low** temporary impacts on 0.53 acre of soils from tree cutting At Albany Substation, **no** impacts because no ground disturbance	At West Point Spur, **low** temporary impacts on 0.15 acre of soils from construction and staging **Low** permanent impacts on 0.01 acre of soils from excavating and covering soils with foundations or rock **Low** impacts from potential erosion caused by construction **Low** temporary impacts on 0.76 acre of soils from tree cutting **No** impact on underlying geology At Prospect Hill, **no** impacts on geology or soils due to lack of ground disturbance At Marys Peak, **low** temporary impacts on 0.14 acre of soils from removal of existing communications site **Low** impacts from potential erosion caused by demolition **No** permanent impacts on geology or soils	At Marys Peak, **low** periodic impacts on soils from maintenance activities and emergency repairs that could disturb soils within the fence; **no** impact on geology At Prospect Hill, **no** impacts on geology or soils from maintenance activities and emergency repairs

Resource	Alternative 2A	Alternative 3C	Alternative 4	No Action Alternative
Vegetation Section 3.5	At Marys Peak, **moderate** impacts from construction: Temporary disturbance of 0.23 acre of moderate-quality grassland (would be revegetated) Permanent removal of 0.03 acre of moderate-quality grassland **Moderate** impacts from potential erosion outside fence and the introduction of weed species **Moderate** impacts from cutting 0.53 acre of high-quality forest (about 14 noble fir) that could be habitat to USFS sensitive fungi species At Albany Substation, **no** impacts (work area is not vegetated)	At Marys Peak, **moderate** impacts from construction: Temporary disturbance of 0.35 acre of moderate-quality grassland (would be revegetated) Permanent removal of 0.05 acre of moderate-quality grassland **Moderate** impacts from potential erosion outside fence and the introduction of weed species **Moderate** impacts from tree cutting (same as Alternative 2A) **Low** beneficial effect of removal of the BPA Marys Peak communications site and revegetation of the area At Albany Substation, **no** impacts (work area is not vegetated)	At West Point Spur, **moderate** impacts from construction: Temporary disturbance of 0.15 acre of moderate-quality grassland (would be revegetated) Permanent removal of 0.01 acre of moderate-quality grassland **Moderate** impacts from potential erosion outside fence and introduction of weeds **Moderate** impacts from cutting 0.76 acre of high-quality forest (about 20 conifers) At Prospect Hill, **low** impacts from the temporary disturbance of low-quality, weedy vegetation within the fence At Marys Peak, temporary **low** impact on 0.14 acre of primarily non-native vegetation; **low** beneficial effect of removal of the BPA communications site and revegetation of the area	At Marys Peak, **low** impacts from maintenance activities and emergency repairs that would disturb vegetation within the fence At Prospect Hill, **no** impacts from maintenance activities and emergency repairs

Resource	Alternative 2A	Alternative 3C	Alternative 4	No Action Alternative
Wildlife Section 3.6	At Marys Peak, **low** impacts from construction: Temporary disturbance of 0.23 acre of low-to-moderate quality grassland (would be revegetated) Permanent removal of 0.03 acre of low- to moderate-quality grassland **Moderate** potential impacts on wildlife habitat from risk of weed introduction and spread **Low** impacts from cutting 0.53 acre of high-quality forest habitat **No** impacts on 2 federally and state-listed species and **low** impacts on other species from loss of low- to moderate-quality grassland and high quality forested habitat, increased risk of collisions by non-ESA listed birds or bats with new structure, and temporary displacement or habitat degradation **Moderate** impacts from potential nest abandonment on non-ESA bird species due to noise or human activity At Albany Substation, installation of a new microwave dish on an existing structure and associated noise levels would have: **No** potential impacts on wildlife habitat; **No** impacts on federally and state-listed ESA-status species; **No** impacts on non-ESA listed	At Marys Peak, same impacts as Alternative 2A, except: Slightly larger area of disturbance of low-to moderate-quality grassland (0.35 acre temporary and 0.05 permanent), still a **low** impact **Moderate** impacts from potential nest abandonment on non-ESA bird species due to noise or human activity **Low** beneficial effect on wildlife habitat from removal of the BPA Marys Peak communications site and revegetation of the area At Albany Substation, same impacts as Alternative 2A	At West Point Spur, **low** impacts from construction: Temporary disturbance of 0.15 acre of low-to-moderate quality grassland (would be revegetated) Permanent removal of 0.012 acre of grassland **Low** impacts from cutting up to 0.76 acre of high-quality forest habitat **Moderate** potential impacts on wildlife habitat from risk of weed intro and spread **Low** beneficial effect on wildlife habitat from removal of the BPA Marys Peak communications site and revegetation of the area **No** impacts on 2 federally and state-listed species and **low** impacts on other non-ESA listed species from loss of low- to moderate-quality grassland and high-quality forested habitat, increased risk of collisions by birds or bats with new dish on existing structure, and temporary displacement **Moderate** impacts from potential nest abandonment on non-ESA bird species due to noise or human activity At Prospect Hill, installation of a new microwave dish on an existing structure would have same impacts as at Albany Substation under Alternative 2A At Marys Peak, **Low** temporary impacts on 0.14 acre of wildlife habitat within the fence during removal of the BPA communications site; **Low** beneficial effect on wildlife habitat from removal of the BPA Marys Peak communications site and revegetation of the area **No** impacts on federally and state-listed status species	At Marys Peak, **low** impacts on a small amount of localized low-to moderate-quality grassland habitat within the fenced communications site or along the access road from temporary and infrequent maintenance activities and emergency repairs **No** impacts on federal or state-listed species from temporary and infrequent maintenance activities and emergency repairs **Low** impacts on other special status species from temporary and infrequent maintenance activities and emergency repairs At Prospect Hill, **low** impacts on a small amount of localized low-quality habitat within the fenced communications site from temporary and infrequent maintenance activities and emergency repairs **No** impacts on federal or state-listed species from temporary and infrequent maintenance activities and emergency repairs **Low** impacts on other wildlife species including other special-status species from temporary

	wildlife species **Low** potential impacts from increased risk of collisions by non-ESA listed birds or bats with new structure **No** impacts to non-ESA listed species from displacement or loss of habitat or degraded habitat quality			and infrequent maintenance activities and emergency repairs

Resource	Alternative 2A	Alternative 3C	Alternative 4	No Action Alternative
Visual Quality Section 3.7	Within Marys Peak SBSIA, **moderate** temporary impacts during construction on Marys Peak summit, along access road, and during tree cutting **Moderate** permanent impacts from new 40-foot steel-lattice structure **Low** permanent impacts from tree cutting and access road improvements **No** impacts for viewers in the Willamette Valley or in the Coast Range, due to distance from the communications site At Albany Substation, **low** temporary impacts for nearby residents or park users during a few days of construction; **moderate** permanent impacts due to new microwave dish	Within Marys Peak SBSIA, **moderate** temporary impacts during construction on Marys Peak summit, along access road, and during tree cutting **Moderate** permanent impacts due to new 60-foot steel-lattice structure **Low** permanent impacts from tree cutting and access road improvements **Low beneficial** effect from removal of the existing BPA communication site and revegetation **No** impacts for viewers in the Willamette Valley or in the Coast Range At Albany Substation, same impacts as Alternative 2A.	At West Point Spur, **no** impacts during construction except for **low** temporary impacts during tree cutting **Low** permanent impacts from changes at West Point Spur At Prospect Hill, **no** impacts due to lack of sensitive viewers and because there are already numerous microwave dishes mounted on the BPA communications structure Within Marys Peak SBSIA, **low** temporary impacts during removal of BPA communications site **Moderate beneficial** effect from removal of the existing BPA communications site and revegetation **No** impacts for viewers in the Willamette Valley or in the Coast Range	Within Marys Peak SBSIA at Marys Peak, **low** impacts from temporary and infrequent maintenance activities and emergency repairs At Prospect Hill, **no** impacts from maintenance activities and emergency repairs

Resource	Alternative 2A	Alternative 3C	Alternative 4	No Action Alternative
Cultural Resources Section 3.8	At Marys Peak, where the BPA communications site is eligible for NRHP listing, replacement of the wood monopole with steel-lattice structure would have a **low to moderate** impact on an historic property Potential **low to moderate** impacts on traditional cultural properties with the implementation of applicable mitigation measures **No** impacts on prehistoric (archaeological) sites At Albany Substation, the addition of equipment would have **no** impact on historic sites, prehistoric (archaeological) sites, or traditional cultural properties	At Marys Peak, removal of the BPA communications site, which is eligible for NRHP listing, would be a **moderate** impact on an historic property If the USFS Marys Peak communications site is determined eligible for the NRHP, the addition the building could be a **low to moderate** impact depending on the effectiveness of the mitigation Same impacts as Alternative 2A on traditional cultural properties and prehistoric (archaeological) sites At Albany Substation, same impact as under Alternative 2A	At West Point Spur, if the CPI communications site is found eligible for NRHP listing, work at the site would be a **low to moderate** impact on a historic property depending on the effectiveness of mitigation Potential **low to moderate** impacts on traditional cultural properties **No** impacts on prehistoric (archaeological) sites At Prospect Hill, the addition of equipment would have **no** impacts on historic or prehistoric (archaeological) sites or traditional cultural properties At Marys Peak, removal of the BPA communications site, which is eligible for NRHP listing, **moderate** impact on an historic property Potential **low to moderate** impacts on traditional cultural properties with the implementation of applicable mitigation measures **No** impacts on prehistoric (archaeological) sites	At Marys Peak, maintenance activities and emergency repairs have the potential for **low to moderate** impacts on cultural resources, depending on the type of cultural resource affected, eligibility for the NRHP, and effectiveness of mitigation At Prospect Hill, maintenance activities and emergency repairs have the potential for **low to moderate** impacts on cultural resources, depending on the type of cultural resource affected, eligibility for the NRHP, and effectiveness of mitigation

Resource	Alternative 2A	Alternative 3C	Alternative 4	No Action Alternative
Socioeconomics Section 3.9	At Marys Peak, **low** temporary impacts on local population from influx of construction workers, no impacts on housing availability during construction, and no permanent impacts on population or overall demand for housing Temporary **low**, but **beneficial** effect on regional economy from workers spending money on goods and services at local businesses **Moderate** temporary economic impacts could result from temporary impacts on recreation use **No** impact on property values **No** permanent socioeconomic impacts At Albany Substation, temporary **low** impacts on property values of nearby residences during construction; **no** permanent impacts	At Marys Peak, same impacts as Alternative 2A At Albany Substation, same impacts as Alternative 2A	At West Point Spur, temporary **low** impacts on local population and housing from influx of construction workers Temporary beneficial effect on local economy from workers spending money on goods and services at local businesses **Low** temporary economic impact resulting from potential impacts of tree cutting on recreation use No impact on property values **No** permanent socioeconomic impacts. At Prospect Hill, **no** socioeconomic impacts due to small amount of work on site At Marys Peak, **moderate** temporary economic impacts resulting from impacts on recreation use	At Marys Peak, **no** impacts from temporary and infrequent maintenance activities and emergency repairs At Prospect Hill, **no** impacts from maintenance activities and emergency repairs

Resource	Alternative 2A	Alternative 3C	Alternative 4	No Action Alternative
Noise Section 3.10	At Marys Peak, **moderate** temporary noise impacts during construction **Moderate** permanent noise impacts from HVAC system operations At Albany Substation, **low** temporary noise impacts for a few days during construction **No** permanent noise impacts	At Marys Peak, same impacts as Alternative 2A At Albany Substation, same impacts as Alternative 2A	At West Point Spur, **low** temporary noise impacts during construction **Low** Permanent noise impacts from HVAC system operations At Prospect Hill, **low** temporary noise impacts during construction; **no** permanent noise impacts At Marys Peak, **moderate** temporary noise impacts during BPA communications site removal Slight reduction in permanent noise impacts due to removal of HVAC system currently in BPA building, a **low** beneficial effect	At Marys Peak, **low** noise impacts from continuing operations and periodic maintenance activities and emergency repairs At Prospect Hill, no impacts from maintenance activities and emergency repairs
Air Quality and Greenhouse Gas Emissions Section 3.11	At Marys Peak, during construction: **Low to moderate** temporary, localized impacts on air quality from creation of dust and particulate matter **Low** temporary impacts to air quality from an increase in criteria pollutants from vehicle and equipment operation **No** permanent impacts on air quality **Low** permanent impacts on global concentrations of GHGs from vehicle and equipment operation and tree cutting At Albany Substation, **no** impacts on air quality and GHG concentrations	At Marys Peak, same impacts as Alternative 2A At Albany Substation, same impacts as Alternative 2A	At West Point Spur, during construction, **low-to-moderate** temporary, localized impacts on air quality from creation of dust and particulate matter and operation of vehicles and equipment. **No** permanent impacts At Prospect Hill, **no** impacts on air quality and GHG concentrations At Marys Peak, during removal of the BPA communications site, low to moderate temporary localized impacts on air quality from creation of dust and particulate matter **Low** temporary impacts to air quality from an increase in criteria pollutants from vehicle and equipment operation. No permanent impacts on air quality **Low** permanent impacts on global concentrations of GHGs from vehicle and equipment operation	At Marys Peak, **low** temporary impacts on air quality and **low** permanent impacts on GHG emissions from infrequent maintenance and emergency repair activities At Prospect Hill, **low** temporary impacts on air quality and **low** permanent impacts on GHG emissions from infrequent maintenance activities and emergency repairs

Resource	Alternative 2A	Alternative 3C	Alternative 4	No Action Alternative
Public Health and Safety Section 3.12	At Marys Peak, **low** temporary impacts during construction from increased general safety risks **Low** impacts from potential risk of theft, sabotage or vandalism **Low** impacts from slight increase in EMF levels outside fence and VHF emissions from added VHF antenna **No** impacts from microwave radiation due to restricted access At Albany Substation, **low** temporary impacts during construction from increased general safety risks **Low** risk of theft, sabotage or vandalism N**o** impacts from VHF radiation exposure (no VHF antenna) because one is not present **No** impacts from EMF or microwave radiation due to restricted public access	At Marys Peak, same impacts as under Alternative 2A At Albany Substation, same impacts as Alternative 2A.	At West Point Spur, **low** temporary impacts during construction from increased general safety risks **Low** impacts from potential risk of theft, sabotage or vandalism **Low** impacts from increased VHF emissions from added VHF antenna **No** impact from EMF exposure or microwave radiation due to restricted public access At Prospect Hill, **low** impacts on general safety during construction from increased general safety risks **Low** risk of theft, sabotage or vandalism **Low** impacts from increased VHF emissions from added VHF antenna **No** impacts from EMF and microwave radiation due to restricted access At Marys Peak, **low** temporary impacts during BPA communications site removal from increased general safety risks	At Marys Peak, maintenance activities would continue. The aging wood monopole and outdated equipment could affect BPA communications particularly during storms; this could pose a risk to the safety of workers conducting emergency repairs in the field safety, a **low to moderate** impact on employee and public safety Existing EMF, microwave radiation, and VHF radiation emissions would continue, with **low** impacts. At Prospect Hill, maintenance activities would continue, a low impact on employee safety **No** impacts to public safety and from exposure to EMF and microwave radiation due to lack of public access. Continued **low** impacts from existing VHF radiation emissions

Chapter 3 Affected Environment, Environmental Consequences and Mitigation Measures

This chapter provides an analysis of the potential environmental impacts from implementation of Project action alternatives compared to the No Action Alternative. Section 3.1 discusses resources the Project would minimally or not impact.

For resources that could be impacted by the Project, the affected environment for each resource is described along with an analysis of potential impacts compared to the No Action Alternative and identified mitigation measures to avoid or reduce impacts. Each resource section has the following primary subsections:

- Affected Environment
- Environmental Consequences – No Action Alternative
- Environmental Consequences - Action Alternatives
- Mitigation Measures
- Unavoidable Impacts Remaining After Mitigation

The Project area is the area in the immediate vicinity of Project activities. For each resource, a defined area of potential impacts was identified (study area). The study area can be the same or larger than the Project area. The study areas of potentially affected resources are identified by local landmarks, trails and access roads, or relative to the fence around each communications site or substation. For some resources, the study area includes locations where direct physical impacts could occur as a result of project activities and is the same as or very similar to the Project area. Because the Project could result in impacts on resources that are geographically removed from the Project area, the study area for some resources extends well beyond the Project area.

Direct, indirect, and cumulative impacts on resources are considered.[2] Direct impacts are those that would occur as a direct result of Project construction. Indirect impacts are those that are caused by the proposed project, but would occur later in time and/or farther away in distance. Cumulative impacts are those incremental impacts of the Project that result when considering past, ongoing, or reasonably foreseeable future actions. Cumulative impact analysis is discussed in Section 3.13 of this EA.

Impact levels are characterized as high, moderate, low, or no impact. High impacts are considered to be significant impacts, whereas moderate and low impacts are not. Beneficial effects are discussed where applicable. Table 2-7 compares and summarizes the environmental impacts, by resource, of each action alternative to the No Action Alternative. This table represents the level of impacts expected to result after implementation of the mitigation measures and BMPs listed in each resource section.

[2] Shortly before this Draft EA was issued for public review, the Council on Environmental Quality (CEQ) published a final rule updating its NEPA implementing regulations, including revisions to the definition of effects (i.e., impacts) and eliminating the requirement to consider cumulative effects. The new CEQ NEPA regulations are available at https://ceq.doe.gov/laws-regulations/regulations.html. CEQ indicated that its new regulations are effective as of September 14, 2020, and apply to any NEPA process begun after that effective date (CEQ Memorandum for Heads of Federal Departments and Agencies, July 16, 2020.). Because the EA for the Marys Peak BPA Communications Site Project was begun before the effective date of the new CEQ NEPA regulations, this EA was prepared consistent with the pre-revision NEPA regulations.

3.1 Resources on which the Project would have Minimal or No Impacts

This section briefly discusses resources that are not analyzed in detail for this EA because implementation of any of the action alternatives would have no or minimal impacts on them compared to the No Action Alternative. Resources that would be affected by implementation of any of the action alternatives are discussed in more detail in Sections 3.3 through 3.12.

3.1.1 Wetlands and Water Resources

All Project components are located in uplands with no waterways or wetlands within 200 feet of work areas. The communications sites at Marys Peak, West Point Spur, and Prospect Hill are located on hills or mountain tops. There would be no direct or indirect impacts to water features or water quality from erosion and sedimentation because water features are not located near work areas. The Albany Substation is located near the Calapooia River, but all Project work would occur within the substation fence and there is no potential for erosion or sedimentation because there would be no ground disturbance.

3.1.2 Fish

There would be no direct or indirect impacts to waterways, riparian areas, and water quality; therefore, fish and fish habitat would not be affected by Project activities.

3.1.3 Transportation

A project's effects on transportation are determined by the potential impacts on residents and the public using roadways in the project area. Implementation of any one of the action alternatives would only involve work at two sites. At one component, work would occur over a few days; at the other, over a period of up to six months. Project work would minimally impact traffic operation in the Project area because, although ingress and egress of a small number of construction vehicles from public roads would occur briefly, traffic operations on study area roads is generally good due to low traffic volumes. The minimal amount of materials and equipment that would be brought to the site is not expected to result in any damage to public roads. Alternative 4 could result in temporary traffic delays along Marys Peak Road from tree cutting near the road, but there would be minimal impact on traffic operations. Therefore, the impacts on traffic operation and inconvenience to residents or the public from construction would be minimal due to the short duration of any traffic delays and the low volume of construction traffic.

3.1.4 Public Services

The Project would have minimal impacts on transportation and, therefore, would have no effect on public services such as police services, fire suppression services, and school transportation. A minimal amount of water could be used for dust suppression, if needed, but this would not affect water supplies. The normal operations of the BPA and USFS Marys Peak communications site would continue during construction and the transition to new equipment would not affect power supplies or emergency services.

3.1.5 Environmental Justice Populations

Environmental justice refers to the fair treatment of people of all races and incomes with respect to actions affecting the environment; fair treatment implies that there is equity of the distribution of

benefits and risks associated with a proposed project and that one group does not suffer disproportionate adverse effects. All projects involving a federal action must comply with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of ***minority*** and ***low-income populations*** to the greatest extent practicable and permitted by law. Because no minority or low-income populations are identified near Project components, they would not be affected by this Project, resulting in no impacts to environmental justice populations.

3.2 Construction Disturbance Areas

The total area that could be temporarily or permanently disturbed under each alternative was calculated based on the estimated disturbance areas for the various activities described in Chapter 2 of this EA. When several activities would occur in the same area, such as staging in an area and later construction work in the same area, it was only included once in the calculation. Construction disturbance is not included for Albany Substation (Alternative 2A and Alternative 3C) or Prospect Hill (Alternative 4) because all impacts occur within the existing graveled yard.

Table 3-1. Construction Disturbance Areas by Action Alternative

Action Alternative and Source of Impact	Temporary Impacts	Permanent Impacts
ALTERNATIVE 2A (Marys Peak only)		
Staging, site prep, work areas	6,100 square feet	none
Communications structure	none	529 square feet
Access road improvement: 8 water bars (5-USFS; 3-BLM)	4,000 square feet	800 square feet
Total Construction Impacts	**10,100 square feet = 0.23 acre (0.2 acre USFS; 0.03 acre BLM)**	**1,329 square feet = 0.03 acre (0.02 acre USFS; 0.01 acre BLM)**
Tree Cutting (BLM)	**none**	**0.53 acre**
ALTERNATIVE 3C (Marys Peak only)		
Staging, Site Prep, Work Areas	11,325 square feet	none
Communications structure	none	625 square feet
Retaining wall	none	262 square feet
Building Addition	none	378 square feet
Access road improvement: 8 water bars (5-USFS; 3-BLM)	4,000 square feet	800 square feet
Total Construction Impacts	**15,325 square feet = 0.35 acre (0.32 acre USFS; 0.03 acre BLM)**	**2,065 square feet = 0.05 acre (0.04 acre USFS; 0.01 acre BLM)**
Tree Cutting (BLM)	**none**	**0.53 acre**
ALTERNATIVE 4 (West Point Spur only)		
Staging, site prep, work areas	3,920 square feet	none
Access road improvement: 5 water bars (3-USFS; 2-City of Corvallis)	2,500 square feet	500 square feet
Total Construction Impacts	**6,420 square feet = 0.15 acre (0.03 acre USFS; 0.1 acre City of Corvallis)**	**500 square feet = 0.012 acre (0.01 acre USFS; 0.01 acre City of Corvallis)**
Tree Cutting (City of Corvallis)	**none**	**0.76 acre**

3.3 Land Use and Recreation

3.3.1 Study Area

The land use and recreation study area includes areas where public and private property use, recreational use, and other land uses could be impacted by construction and operation of the communications sites. The study area for land use and recreation includes the Marys Peak communications site, the West Point Spur CPI communications site, and the BPA Albany Substation and all areas within 1,000 feet of the fences around each site. (There would be no impacts at Prospect Hill; see Alternative 4 discussion under Section 3.3.4.) The study area at Marys Peak and West Point Spur also includes areas within 1,000 feet of all work areas, including staging areas that would be outside the communications site fences, areas where trees would be cut to create an unobstructed beam path, and unpaved access roads that would be improved. The Marys Peak Campground is located over 2,000 feet from the nearest construction areas and would be minimally affected by Project activities.

3.3.2 Affected Environment

Additional information on applicable plans and policies affecting land use at the Project locations can be found in Section 4.3, *Federal Land Managing Agency Requirements and Policy Consistency*, and Section 4.6, *State, Area-wide, and Local Plan and Program Consistency*, of this EA.

Marys Peak

The Marys Peak study area includes undeveloped forest and open meadow land, recreational facilities, and communications sites. Most of the study area is on USFS lands and the remaining portion is on BLM lands. USFS lands in the study area are designated as a Scenic Botanical Special Interest Area (SBSIA) "in recognition of the unique scenic, botanical and recreational values of Marys Peak" (USFS 1989). USFS manages the SBSIA with the goal of protecting the unusual and outstanding characteristics of the area while fostering public use, understanding, and enjoyment of these characteristics (USFS 1989). A Memorandum of Understanding between USFS and BLM ensures cooperation in managing BLM lands in a manner compatible with the SBSIA Management Plan (USFS 1989). (See Section 3.6, *Cultural Resources*, for information on historical development of the Marys Peak site.)

The Marys Peak study area includes paved and unpaved roads that provide vehicle and pedestrian access for recreation and other activities, as well as for routine and emergency maintenance of the existing communications facilities at the summit. Marys Peak Road is a paved road from Highway 34 to the public parking lot below the summit of Marys Peak. In April 2018, Highway 34 from Tangent to Waldport, as well as Marys Peak Road, were designated as a state ***scenic byway*** and named the Marys Peak to Pacific Scenic Byway. Marys Peak Road ends at the Marys Peak Day Use Area, which includes a paved parking lot, restroom facilities, picnic tables, and scenic viewing platforms. In the Day Use Area and along the Meadowedge Trail, interpretive signage is provided.

Marys Peak is a popular destination for recreation, research and education, and personal renewal. The network of trails provides opportunities for non-motorized recreation, including hiking, mountain biking, cross country skiing, and snowshoeing, as well as opportunities to view forests and native plant communities, wildlife, and scenery. The trails on Marys Peak, which range from "moderate easy" to "moderate difficult," have a broad appeal among both easy walkers and rigorous hikers.

There are approximately 12 miles of non-motorized trails within or just outside of the Marys Peak SBSIA that are open to hiking year-round. Trail options include the East Ridge Trail, North Ridge Trail, Tie Trail, Meadowedge Trail, and Summit Loop Trail. Visitors can reach the Marys Peak summit via the Summit

Loop Trail, but access to the communications site is restricted by a chain-link fence. Mountain biking is permitted on the East Ridge, North Ridge, and Tie Trails exclusively from May 15 through October 15. The Meadowedge and Summit Loop Trails are closed to bikes year-round.

In addition to trail users, the summit is visited by a variety of other recreational users, including picnickers, photographers, stargazers, birders, botanists, and paragliding and hang-gliding enthusiasts. Special use permits are issued for additional activities, including research projects, noble fir cone collection, and recreation events. Three such recreation events occur annually on weekend days in June: the Marys Peak Trail Run hosted by Oregon Trail Runs and two bike races. In addition, the Marys Peak Alliance hosts two annual school field trips that take place over three weekdays in May, and Muddy Creek Charter School has a similar event on a weekday in September. Hiking groups or other organizations that do not charge a participation fee are not required to obtain a special use permit. For example, the Marys Peak Group from the Oregon Chapter of the Sierra Club hosts periodic group hikes. Similarly, the Alliance for Recreation and Natural Areas organizes annual weed pulls to remove conifer saplings and non-native species from the summit prairie and surrounding meadows. The SNF also occasionally receives requests to hold one-time events, such as weddings, in the SBSIA.

The Marys Peak SBSIA is one of the few areas within the SNF where dispersed camping and recreational firearm use are expressly prohibited. Under a Special Forest Order, camping outside of the designated Marys Peak Campground and sport shooting are both prohibited. Although regulations and infrastructure have been put in place to protect sensitive scenic and botanical values and to minimize impacts on the fragile plant communities in the meadow area, activities on the summit such as hiking off designated trails, incidental unauthorized off road vehicles, and vandalism constitute major disturbances to the area.

West Point Spur

The West Point Spur study area includes undeveloped forest and open meadow land. Most of the study area is on City of Corvallis lands with some USFS lands. USFS lands in the study are within the Marys Peak SBSIA (USFS 1989). As stated in the SBSIA Management Plan, a Memorandum of Agreement between the City of Corvallis and USFS outlines procedures for managing City lands in a manner compatible with SBSIA guidelines (USFS 1989).

In addition to the CPI communications site, the West Point Spur study area includes three other communications sites that the City of Corvallis leases to other entities. Marys Peak Road and an unpaved National Forest road (NF-112) provide vehicle access for routine and emergency maintenance of the West Point Spur communications facilities.

Public recreational opportunities are limited in the West Point Spur study area. There are no formally established hiking trails or other recreational amenities or infrastructure that would encourage public use of the study area, and the access road is gated to restrict vehicle access. Public use of the area is not explicitly forbidden, except within the fenced communications sites. However, visitors must walk in past a locked gate, which likely limits the number of people who access West Point Spur. Portions of West Point Spur offer scenic vistas and other recreational opportunities, and bird watchers are known to visit the site during bird migration periods. In addition, Marys Peak Road, which is part of the larger Marys Peak to Pacific Scenic Byway, could be used by pedestrians and cyclists on their way to Marys Peak.

BPA Albany Substation

The BPA Albany Substation study area includes urban residential, commercial, and light industrial (BPA and Pacific Power substations) properties, a tree-covered neighborhood park, and a forested riparian area associated with a stretch of the Calapooia River. A well-developed and heavily-trafficked network

of paved roads traverses the study area. The majority of the study area consists of privately-owned single- and multi-family residential properties and commercial properties, which can be found in the residential areas of the Chase Orchards subdivision and along SW Queen Avenue, SW 17th Avenue, SW 16th Avenue, and SW Summerfield Court. About 18 acres of the study area is owned by BPA, including an electrical substation surrounded by low-growing shrubs and herbaceous vegetation. Pacific Power owns a smaller substation in the study area. The City of Albany owns and maintains Hazelwood Park, an approximately 3-acre neighborhood park. As noted, a stretch of the Calapooia River (about 1,200 linear feet) flows through the study area.

Public recreational opportunities in the BPA study area include the Calapooia River and Hazelwood Park. Anglers, kayakers, and swimmers could use the stretch of the Calapooia River in the study area. Hazelwood Park is characterized by a stand of mature trees with a walking path that meanders through it, a regularly-mowed grassy area, picnic tables, a short gravel access road, and small parking area. Although the park is only 3 acres and has minimal facilities, it is frequented by dog owners and others who appreciate the habitat provided by the grove of trees.

3.3.3 Environmental Consequences –No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing communications site would not be rebuilt and impacts related to Project construction would not occur. Operations and maintenance activities would continue at the BPA Marys Peak and the BPA Prospect Hill communications sites and would be similar to existing practices. Maintenance activities at the BPA Marys Peak communications site would result in **low** land use and recreation impacts because they occur infrequently. If it were necessary to perform emergency repairs, it would likely not be possible to plan or time these activities to minimize land use and recreation impacts. Because potential impacts resulting from emergency repairs would be localized and likely to occur during winter months, land use and recreation impacts at Marys Peak would be **low**. At the BPA Prospect Hill communications site, there would be **no** impacts on land use and recreation from continuing maintenance activities and emergency repairs.

3.3.4 Environmental Consequences – Action Alternatives

This section describes impacts that may occur if one of the action alternatives is selected.

Impacts Common to All Action Alternatives

Temporary impacts to land use and recreation would be caused by construction activities. Access restrictions in construction areas would prevent users from experiencing some portions of the study area during some time periods. Under each of the action alternatives, access restrictions would be temporary, but the duration and total area of restrictions would vary depending on the proposed construction activities. There would be no new permanent access restrictions under any of the action alternatives beyond the areas that are currently restricted by chain-link fences around each communications site.

BPA would need to acquire beam path easements either from Marys Peak to the BPA Albany Substation (Alternative 2A and Alternative 3C) or from West Point Spur to Prospect Hill (Alternative 4). This agreement would affect land use in that it would require cutting some trees and, in the future, could require cutting more trees if they grew into the beam path and obstructed a clear line of sight. The impact on land use by tree cutting is discussed under each alternative below.

Construction of any action alternative would create temporary noise during construction and permanent noise due to communications site operations, resulting in potential impacts on land use and recreation. Noise impacts are discussed in Section 3.10 of this EA.

Impacts Specific to Action Alternatives

Alternative 2A

Under Alternative 2A, construction activities within fenced communications sites, cutting trees, improvements to the access road, and staging materials and equipment would result in temporary and permanent impacts to land use and recreation.

Marys Peak

During construction, access to certain areas of Marys Peak would be temporarily restricted, as needed, to ensure public safety, prevent vandalism of materials and equipment, and allow revegetation of sensitive restored areas following construction. Although most construction activities would occur within the fenced communications site, some Project work would be conducted outside of the fenced area where the public would otherwise have access. Temporary access restrictions would occur from staging and during access road improvements, cutting trees, and construction of the steel-lattice communication structure.

Equipment, materials, and vehicles would be staged within the paved parking lot of the Marys Peak Day Use Area. Up to 1,800 square feet (0.04 acre) of the 36,380 square feet (0.84 acre) parking lot would be temporarily blocked for up to six months and not available for public parking. This could reduce the paved parking lot to 84 percent of its current capacity for standard-sized vehicles.

Installation of water bars, improvements to the road surface (grading and adding crushed rock), and tree cutting would temporarily block use of 3,450 feet (0.65 mile) of the access road from the Marys Peak Day Use Area to the summit. The trees that would be cut are grouped near the access road. Therefore, to protect public safety, the access road would be temporarily blocked while the trees are cut. Water bar installation, road improvements, and tree cutting would block the access road for up to one month.

There would be intermittent access restrictions at the summit during construction. Access would also be temporarily restricted for up to several hours when transporting materials and equipment from the staging area in the Day Use Area parking lot to the communications site. During construction of the steel-lattice structure, public use of the summit could be restricted. At other times, the public should be able to recreate at the summit while construction occurs. Although these access restrictions would be temporary, they would prevent users from experiencing popular areas of the SBSIA and could also temporarily prevent USFS and other entities from accessing their communications facilities for routine or emergency maintenance.

Other than the access road to the summit, no other trails or roads, including Marys Peak Road, would likely be blocked as a result of project-related activities. Alternative routes to hike to the summit (e.g., the Meadowedge Trail) would likely remain open during construction, except on occasions when access is restricted at the summit during construction of the steel-lattice structure, as described above. Cutting trees would not change land use at Marys Peak in that recreational activities would continue following completion of the project. The temporary impact of access restrictions on land use and recreation would be **moderate**, but there would be **no** permanent impacts from access restrictions to any portion of the study area.

BPA Albany Substation

Project activities would not be expected to temporarily block access to any portions of the BPA Albany Substation study area outside of the currently restricted substation yard, and there would be no permanent change in the area of the substation. Therefore, Project activities at the BPA Albany Substation would result in **no** temporary or permanent impacts on land use and recreation.

Alternative 3C

Marys Peak

Under Alternative 3C, impacts on land use and recreation at Marys Peak would be similar to impacts under Alternative 2A. Project activities would temporarily block access to the same areas of Marys Peak under Alternative 3C as under Alternative 2A. Therefore, under Alternative 3C, the temporary impact of access restrictions on land use and recreation at the Marys Peak communications site would be **moderate**, and there would be **no** permanent impacts during operations.

Under Alternative 3C, USFS would remove approximately 229 feet of fencing from around the BPA communications site after the site is removed and the vegetation is restored. A new 101-foot length of fence would be installed approximately 60 feet closer to the USFS communications site than the current fence's location. Therefore, the total area of the Marys Peak summit that would be accessible to visitors would increase, resulting in a **low** beneficial effect on land use and recreation due to the removal of the BPA Marys Peak communications site.

BPA Albany Substation

At the BPA Albany Substation, land use and recreation impacts would be the same under Alternative 3C as they would be under Alternative 2A because the same work would be done. The result would be **no** temporary or permanent impacts on land use and recreation.

Alternative 4

West Point Spur

Under Alternative 4, Project activities within the fenced CPI communications site at West Point Spur, cutting trees, improvements to the access road, and staging materials and equipment immediately outside the fence would result in temporary and permanent impacts to land use and recreation.

During construction, vehicle traffic along a portion of Marys Peak Road could be intermittently restricted for up to three days as crews use chainsaws and other equipment to cut up to 20 mixed conifers. Also, installation of water bars along the access road (NF-112) to the West Point Spur communications site would block up to 1,990 feet (0.37 mile) of the road for up to two weeks. NF-112 would also be intermittently blocked to transport materials and equipment to the site during construction.

Although public vehicle access to West Point Spur is restricted by a gate across the access road near Marys Peak Road, these activities would prevent CPI and other entities located at West Point Spur from accessing their communications facilities for routine or emergency maintenance. However, access restrictions would be temporary and there would be few recreational or other users within the study area. There would be no permanent change in the area of the communications site. Therefore, access restrictions from road improvements and tree cutting at West Point Spur would result in **low** temporary and **no** permanent impacts on land use and recreation.

Prospect Hill

The BPA Prospect Hill communications site restricts vehicle access with a locked gate, and there are no publicly-accessible recreational opportunities located within 1,000 feet of the site. Although there is potential for recreation on adjacent privately-owned forested land, construction activities would not restrict individuals from accessing these lands. The footprint of the existing communications site would not change, resulting in **no** permanent impact on land use and recreation under Alternative 4.

The potential impacts of temporary construction noise and permanent operational noise on land use and recreation at West Point Spur, Marys Peak and Prospect Hill under Alternative 4 are discussed in Section 3.10 of this EA.

Marys Peak

The unpaved access road to Marys Peak summit would be used to transport materials and equipment during construction and this could result in temporary access restrictions. The same reduction in the total area of the fenced communications site at the summit would occur under Alternative 4 as under Alternative 3C, resulting in a **low** beneficial effect on land use and recreation. Therefore, temporary impacts on land use and recreation due to access restrictions would be **moderate**, with **no** permanent impacts.

3.3.5 Mitigation Measures – Action Alternatives

If one of the action alternatives is implemented, BPA would implement construction BMPs and mitigation measures to avoid or minimize noise and access restrictions impacts from the Project. Other mitigation measures relevant to land use and recreation are in Section 3.10, Noise.

- Install the HVAC unit on the south-facing wall of the Marys Peak communications building addition (Alternative 3C) to minimize noise and visual impacts to visitors near the picnic table area located north of the communications site.
- Conduct a preconstruction public meeting and invite landowners, land managers, Benton County law enforcement, and communications site users to meet with construction contractors and BPA staff responsible for Project implementation to receive information and discuss concerns and receive contact information for construction contractor liaisons and BPA staff.
- Explain land use and recreation-related BMPs and mitigation measures to construction contractors and inspectors during a preconstruction meeting covering environmental requirements.
- Coordinate with the USFS Public Affairs Officer to develop a communication plan to notify recreational and other user groups about construction activities, including potential closures of roads, trails, and other areas via the USFS website, onsite signage, and other methods of public outreach.
- Provide information to visitors at Marys Peak on how to avoid construction activities as much as possible, including posting Project information and updates on the SNF website and posting and maintaining signs at trail heads and other obvious locations, such as existing signboards at the public parking lot and the campground, so that visitors can have a pleasant visit and experience good views.
- Coordinate the scheduling of construction traffic and access restrictions with CPI, USFS, and other communications site operators so that they can safely conduct routine and emergency maintenance.
- Require the construction contractor to employ a lands liaison, who would be available to provide information, answer questions, and address concerns during Project construction.
- Encourage use of carpooling and shuttle vans among construction workers to minimize construction-related traffic and associated emissions.
- Schedule all construction work during daylight hours (7 a.m. to 7 p.m.) and limit work to weekdays, if possible.
- Avoid conducting access road improvements on weekends or holidays to minimize impacts to visitors, if possible.
- Coordinate with USFS to accommodate special-use permit activities by rescheduling construction activities that would interfere with the permitted activities, if possible.

- Keep construction equipment clear of recreational resources, including parking and trails, to the greatest extent possible.
- Close the access road to hiking during access road improvements and tree cutting activities, and install signage at the gate, the summit, and other trail heads, providing directions and maps for alternative hiking routes.
- Instruct construction contractors to promptly close all gates after entry and to post and maintain signs around construction areas warning of construction activity, where needed.
- Employ traffic control flaggers and post and maintain signs along roads warning of construction activity along Marys Peak Road during tree cutting at West Point Spur, where needed.
- Limit vehicle speeds on unpaved roads and surfaces to 10 miles per hour or less to reduce dust and for public safety.
- Control dust during construction with water or other appropriate control methods, without the use of chemical additives, as needed.
- Remove the Marys Peak BPA communications site (Alternative 3C and Alternative 4) as late as possible in the fall of the year to minimize disturbance to visitors.
- Avoid removing the Marys Peak BPA communications site (Alternative 3C and Alternative 4) during weekends and holidays to minimize disturbance during periods of high visitation.

3.3.6 Unavoidable Impacts Remaining After Mitigation

Mitigation measures and construction BMPs would only minimize impacts to land use and recreation to the extent that they provide visitors the opportunity to avoid them. As a result, impacts to land use and recreation would still occur during construction under each of the Project alternatives, as described above in Section 3.3.4.

3.4 Geology and Soils

3.4.1 Study Area

The geology and soils study area includes areas where geology and soils could be directly impacted by Project activities and indirectly impacted by resulting erosion and sedimentation. Study areas for geology and soils were defined at the Marys Peak communications site, the West Point Spur CPI communications site and the BPA Prospect Hill communications site. Direct impacts would occur in construction work areas from activities that disturb, compact, or remove geology and soils, including areas where trees would be cut to create an unobstructed microwave beam path. Indirect impacts would occur in areas adjacent to construction areas.

The Marys Peak communications site geology and soils study area is about 7.7 acres and includes the following areas:

- Fenced summit communications site and a 50-foot area outside the fence
- Unpaved access road that leads from the paved parking lot to the summit communications site (50-foot wide area centered on the road)
- An area where a stand of noble fir trees on BLM lands would be cut

The West Point Spur CPI communications site geology and soils study area is about 4.2 acres in size and includes the following areas:

- CPI fenced communications site and a 50-foot area outside the fence
- NF-112, leading from Marys Peak Road to the CPI site (50-foot wide area centered on the road)
- An area of mixed forest located northeast of the CPI communications sites where some trees would be cut
- Two material/equipment staging and vehicle driving/parking areas

The BPA Prospect Hill communications site geology and soils study area is about 0.2 acre in size. Because no access road improvements are proposed and work would only occur within the fence, it only includes the area within the fenced communication site and a 20-foot area outside the fence.

There was no study area at the BPA Albany Substation because the substation is located on fill material; native geology and soils at the site would not be impacted by this Project.

3.4.2 Affected Environment[3]

Geology

Geology includes surface and subsurface rock features or bedrock. Marys Peak and West Point Spur are situated on the eastern flank of the Coast Range, a sub-province extending along Oregon's coast from the Columbia River in the north to the Middle Fork Coquille River in the south, within the broader Pacific Border physiographic province (Baldwin 1981). The Marys Peak and West Point Spur components are located within the Early Western Cascade Volcanics ***terrane***, an area with distinct rock formations and geologic history. In some areas of Marys Peak and West Point Spur, erosional forces have removed a

[3] Unless otherwise noted, the information presented in this section is based on the Natural Resources Conservation Service *Web Soil Survey* (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx) and a series of interactive maps produced by the Oregon Department of Geology and Mineral Industries (https://www.oregongeology.org/gis/).

large portion of the overlying sediment resulting in ***basalt*** rock outcrops and coarse gravel in the open meadows.

Marys Peak reaches the highest elevation of any mountain in the Oregon Coast Range, at approximately 4,100 feet. The ground is relatively flat on the north side, with gentle to moderate slopes on the east, south, and west sides. West Point Spur is an east-west trending ridge with an approximate elevation of 3,600 feet. The ridge is relatively flat, with gentle-to-moderate slopes along the east-west axis and steeper inclines to the north and south.

Prospect Hill Radio Station is located in the Willamette Valley, on the top of a large rounded hill. Prospect Hill is located within the Columbia River Basalt Group terrane, which is primarily composed of basalt rock formed during a period of extensive lava flows from fissures near the Oregon-Idaho-Washington border about 17 to 12 million years ago. Prospect Hill has a relatively flat summit at an elevation of approximately 1,120 feet. The landscape has moderate to steep slopes to the west and north of the site, with more gentle slopes to the south and east.

The geology in the study area has been disturbed in the past by the construction of existing communication sites, historic and current land uses, and ongoing erosional processes. Similarly, access road development on Marys Peak and West Point Spur involved cutting into slopes. These historical cutting and grading activities have exposed basalt intrusions to weathering and fracturing.

The Oregon Department of Geology and Mineral Industries indicate that the study areas around Marys Peak, West Point Spur, and Prospect Hill have the potential for landslides and earthquakes. Because the type of activities proposed by this Project would not affect the potential for a landslide or earthquake, the risk is not discussed further in this section.

Soils

Soils are composed of unconsolidated material at the earth's surface that may be dug or plowed and in which plants grow. The three primary soil types in the Marys Peak and West Point Spur study areas are the Mulkey Series, the Valsetz-Yellowstone Complex, and the Sevencedars-Newanna-Woodspoint Complex. Meadows located on the summits and slopes of Marys Peak and West Point Spur are primarily underlain by the Mulkey Series. The Mulkey Series is characterized by shallow to moderately deep and well-drained soils that formed under grasslands in ***loamy residuum*** and ***colluvium*** (rocks disintegrating in place or sliding downslope) derived from basalt and other coarse-grained intrusive igneous and volcanic rock types. As a result, the soils are relatively rich in organic matter (up to 25 percent) but also contain gravels, cobbles, and stones (up to 35 percent) and 10 to 20 percent clay.

The Valsetz-Yellowstone Complex and the Sevencedars-Newanna-Woodspoint Complex are primarily found under forested slopes surrounding the meadows. Both of these soil types formed in wooded areas in loamy residuum and colluvium weathered from basalt and other coarse-grained intrusive igneous and volcanic rock types. Undisturbed areas typically have decomposing twigs, bark, leaves, and needles on the surface of the soils. These well-drained to somewhat excessively drained soils range in depth from shallow to very deep. Gravelly loam and stony loam are the most abundant soil types and are characterized by 10 to 30 percent clay and 35 to 80 percent rock fragments. Silt loam, the least abundant soil type, is 10 to 25 percent clay and less than 35 percent rock fragments.

Prospect Hill is underlain by Nekia stony silty clay loam, which is moderately deep, well-drained soil that formed in residuum and colluvium weathered from basalt. Nekia soil is found on well-rounded foothills with slopes of 2 to 12 percent. The texture is silty clay loam or silt loam with 15 to 40 percent clay, 0 to 15 percent stones, 0 to 3 percent cobbles, and 0 to 10 percent gravel.

Many of the soils in the study area have already been disturbed by prior construction of existing communication sites, access road improvements, other historic and current land uses, and ongoing natural erosional processes. Soils within existing communication sites and access roadbeds have been graded, compacted, and overlain with gravel and fill material, making them less productive and vulnerable to erosion. In tree cutting areas at Marys Peak and West Point Spur, the soils are relatively undisturbed.

3.4.3 Environmental Consequences – No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing communications facility would not be rebuilt and impacts related to Project construction would not occur. Operations and maintenance activities would continue at the BPA Marys Peak and the BPA Prospect Hill communications sites and would be similar to existing practices. Maintenance activities at the BPA Marys Peak communications site would result in **no** impacts on geology and **low** impacts on soils from compaction or disturbance. If it were necessary to perform emergency repairs, it would likely not be possible to plan or time these activities to minimize impacts on soils. Emergency repairs at Marys Peak would result in **no** impacts on geology, but potential **low** impacts on soils. At the BPA Prospect Hill communications site, there would be **no** impacts on geology and soils from maintenance activities and emergency repairs.

3.4.4 Environmental Consequences – Action Alternatives

Impacts Common to All Action Alternatives

Construction of any of the action alternatives would cause direct and indirect impacts on geology and soils, which could be temporary or permanent. Direct impacts are those that damage, compact, or remove geology and soils. These activities include improving existing access roads, staging, use of heavy equipment and vehicles, site preparation, steel-lattice structure construction, building construction, and any other digging or trenching. Direct impacts on geology and soils would be localized to construction work areas.

Indirect impacts on geology and soils would occur where Project activities, such as the removal of vegetative cover, result in increased erosion over time. Indirect impacts could extend outside of construction work areas.

Impacts on geology and soils would be temporary or permanent. Temporary impacts would result from staging, use of heavy equipment and vehicles, removing or renovating existing structures, and cutting trees and other vegetation. Permanent impacts on geology and loss of soil productivity would occur where the ground surface would be covered with impervious surfacing or permanently compacted, such as under a new steel-lattice structure or new building footprint.

Following construction, it could take several years for soils to fully stabilize. Erosion potential for disturbed soils would be greatest during and immediately after ground disturbance; soils would stabilize as they settle and as vegetation becomes reestablished.

Although geology and soils within existing roadbeds were previously, permanently impacted during the construction and maintenance of access roads, additional temporary and permanent impacts would result from the installation of water bars in the access roads. Installation of the drainage "apron" at the edge of the water bar would require the clearing of existing vegetation, grading and compacting soils, and installing a 10-foot-by-10-foot permanent and more sparsely vegetated rock-lined drainage apron on the downhill slope. The apron would be constructed with enough rock to slow runoff from the road, but would leave enough space to allow vegetation to grow through the apron itself, eventually obscuring the rock. Each water bar installation would permanently disturb about 100 square feet

(rocked area that would be revegetated) and temporarily disturb up to 500 square feet at the sides of the rock apron. Clearing and grading in some areas would strip or crush vegetation and damage, remove, or bury the upper, most biologically active portion of the topsoil. Loss of vegetative cover would disrupt biological functions, including nutrient retention and recycling, and thus reduce soil productivity.

Excavation could remove basalt intrusions and expose the bedrock to weathering and fracturing, resulting in alteration of the underlying geology. Removing soils, adding crushed rock surfacing, or altering the underlying geology would change the substrate. Exposing underlying geology to weathering and fracturing and importing rock surfacing would in turn alter the vegetative communities that can survive in these areas, as discussed in Section 3.5, Vegetation.

The use of heavy equipment and trucks would degrade soil structure through soil compaction. Pore spaces within soils absorb and retain stormwater and contribute to gas exchange, which is important for respiration and other metabolic functions of soil organisms. The weight of heavy machinery alters soil structure by compacting and reducing open pore spaces within soils. Compacted soils have a reduced capacity to absorb and store water and to support soil organismal and vegetative communities, resulting in increased stormwater runoff and areas with patchy or no vegetation.

Indirect impacts on soils could occur as a result of vegetation removal, which could lead to increased erosion over time. Cutting trees for the microwave beam path could result in indirect impacts on soils if these activities lead to soil erosion. Indirect impacts from Project construction could include minor ***sheet erosion*** and the creation of some small channels. If soils were left bare or were slow to revegetate, minor gullying and other erosion could occur. The risk of erosion would be highest on steep slopes and during heavy rainfall.

Because the scope of proposed construction work varies for each action alternative, each alternative would have a different impact on geology and soils. Discussion of the potential impacts specific to each alternative are presented below. Estimates of disturbance areas for each action alternative are summarized in Table 3.1 earlier in this chapter.

Impacts Specific to Action Alternatives

Alternative 2A

Marys Peak

Improvements to BPA facilities within the fence at Marys Peak under Alternative 2A would result in direct impacts on geology and soils. Staging materials and equipment within the fence, construction of a new steel-lattice structure, trenching, directional boring, and use of heavy vehicles and equipment would all directly damage, compact, or remove geology and soils.

The construction of a new 40-foot tall steel-lattice structure within the fenced area would result in temporary and permanent impacts on geology and soils due to excavation for the structure's footings. After excavating soils and bedrock to the required depth and embedding the foundation in the underlying bedrock, the hole would be backfilled with suitable material that was excavated in creating the hole or with imported fill material or rock from Oregon Department of Agriculture (ODA) certified weed-free quarries. Because the steel-lattice structure would be rebuilt in approximately the same location where geology and soils have already been disturbed, temporary and permanent impacts from structure construction would be **low**.

Upgrading the underground power line would also result in temporary impacts on soils. A 40-foot trench measuring 2.5 feet wide by 4 feet deep would be dug between the communications building and

an electrical meter within the fence. Soils would be temporarily removed to install the line but would be placed back in the trench. Because the soils within the fence were previously disturbed, the resulting impacts on soils would be **low**.

The existing 3,440-foot access road would be graded and resurfaced with crushed rock and up to eight water bars would be installed. Road improvement activities would have direct temporary and permanent impacts as discussed above. Because installation of water bars would ultimately help manage and reduce erosion and sedimentation from road beds, geology and soils impacts would be **low**.

Indirect impacts on soils outside the communications site fence could occur. Any erosion that was not controlled could result in sheet erosion outside the fence. If hikers create new trails because of access limitations during construction, this would also result in the compaction of soils. BMPs to control erosion would be implemented to prevent or minimize erosion and disturbed areas would be revegetated, resulting in **low** impacts on soils.

Up to 14 noble firs located on about 0.53 acre of BLM land would need to be cut. Trees would be cut with chainsaws; no heavy equipment would be used. The tree tops and woody debris would be scattered in the immediate vicinity on the BLM's forest floor, protecting the soil from erosion, or if required, they would be chipped and hauled offsite. This would result in minimal soil disturbance and no soil compaction; impacts on soils from tree cutting would be **low**.

Overall, work within the communications site fence and the installation of water bars in the access road would result in temporary impacts on 0.23 acre and permanent impacts on 0.03 acre of geology and soils. The use of BMPs during construction activities would limit soil disturbance, exposure and potential erosion impacts, as well as the potential for stormwater runoff. Because the areas that would be temporarily impacted would be revegetated and would gradually improve in soil structure, overall permanent impacts on geology and soils from Alternative 2A would be **low**.

BPA Albany Substation

Because all work at the BPA Albany Substation would occur within the graveled yard, which consists of fill material, there would be **no** impacts on native geology or soils under Alternative 2A.

Alternative 3C

Marys Peak

Under Alternative 3C, activities within the fenced area at the Marys Peak communications site would result in direct impacts on geology and soils. Staging materials and equipment inside the fence, construction of an addition to the USFS building, removal of the existing BPA communications facility, construction of a new steel-lattice structure and a retaining wall, installation of a propane tank on a concrete pad, trenching, directional boring, and use of heavy vehicles and equipment would all damage, compact, or remove geology and soils.

The types and levels of impacts on geology and soils would be similar to those described under Alternative 2A, but the impacts would cover a larger area. Excavated soils would be stored on-site and then used for backfilling the holes when new concrete foundations are put in place. Most structures would be rebuilt in approximately the same location where geology and soils have already been disturbed, so temporary and permanent impacts from structure construction would be **low**.

Indirect impacts on soils outside the communications site fence could occur. Any erosion caused by construction activities, including demolition of the BPA communications facility, that was not controlled could result in sheet erosion outside the fence. If hikers create new trails because of access limitations during construction, this would also result in the compaction of soils. Temporary indirect impacts on soils would be **low** because the site would be revegetated and BMPs implemented to minimize erosion.

The same access road improvements would be done under Alternative 3C as under Alternative 2A, described above, resulting in **low** impacts on geology and soils. The same stand of noble fir would also be cut under Alternative 3C as under Alternative 2A, described above, resulting in **low** impacts on soils.

Overall, work within the communications site fence and the installation of water bars in the access road would result in temporary impacts on 0.35 acre and permanent impacts on 0.05 acre of geology and soils. The use of BMPs during construction activities would limit soils disturbance, exposure and potential erosion impacts, as well as the potential for stormwater runoff.

Because the areas that would be temporarily impacted would be revegetated and gradually improve in soil structure, overall permanent impacts on geology and soils from Alternative 3C would be **low**.

BPA Albany Substation

Under Alternative 3C, the same work would occur at the BPA Albany Substation as under Alternative 2A, having **no** impacts on native geology or soils.

Alternative 4

West Point Spur

At West Point Spur, the use of a staging area outside the fence of the CPI site and improvements to the CPI facilities inside the fence under Alternative 4 would result in direct impacts on soils. Soils would be disturbed, removed, or compacted by staging materials and equipment, installation of a propane tank on a concrete pad, relocation or replacement of fencing, and use of heavy vehicles and equipment. Because construction activities would occur in areas where geology and soils have already been disturbed, temporary and permanent impacts from improvements to the CPI facilities would be **low**.

Portions of the existing access road to the CPI site would be improved, including the installation of up to five water bars in the road. Road improvement activities would have temporary and permanent impacts on geology and soils as discussed above. Because installation of water bars would ultimately help manage and reduce erosion and sedimentation, temporary permanent impacts on soils would be **low**.

Alternative 4 could also result in indirect impacts on soils at West Point Spur if erosion occurs as a result of the removal of vegetation and soil disturbance. Because BMPs would be implemented to prevent or minimize erosion and disturbed areas would be revegetated, any indirect impacts that could result from erosion would be **low**.

A stand of mixed conifers would be cut on about 0.76 acre of City of Corvallis land. The trees would be cut with chainsaws, without the need for heavy equipment. This would result in minimal soil disturbance and no soil compaction. Overall, cutting this 0.76 acre high-quality tree stand would result in **low** impacts on soils because the understory plants would not be removed and shrubs and forbs are expected to thrive in areas where trees were removed.

Ground disturbance within the fence and staging areas at West Point Spur would not reach depths that would disturb underlying geology; there would be **no** impact on geology at West Point Spur.

Overall, work inside and outside the CPI communications site fence and the installation of water bars in the access road would result in temporary impacts on 0.15 acre and permanent impacts on 0.01 acre of soils. The use of BMPs during construction activities would limit soil disturbance, exposure and potential erosion impacts, as well as the potential for stormwater runoff. Because the areas that would be temporarily impacted would be revegetated and would gradually improve in soil structure, overall permanent impacts on geology and soils from Alternative 4 would be **low**.

Prospect Hill

At the BPA Prospect Hill communications site, there would be no ground excavation or soil removal and the facility is constructed on previously compacted fill material, so there would be **no** direct impact on geology and soils. Although the communications site is located on the top of a large rounded hill with moderate to steep slopes to the west and north of the site and more gentle slopes to the south and east, **no** indirect impacts from erosion are expected due to the lack of ground disturbance.

Marys Peak

Alternative 4 would require removal of the existing BPA communications facility at Marys Peak. Removal of the facility would result in direct impacts on about 0.14 acre of underlying soils and nearby vegetation. Because the site would be revegetated and BMPs implemented to minimize erosion, demolition would result in a **low** temporary impact on soils.

Indirect impacts on soils outside the communications site fence could occur. Any erosion that was not controlled could result in sheet erosion outside the fence. If hikers create new trails because of access limitations during demolition, this would also result in the compaction of soils. BMPs to control erosion would be implemented to prevent or minimize erosion and disturbed areas would be revegetated, resulting in **low** impacts on soils

Because most areas that would be temporarily impacted would be revegetated and gradually improve in soil structure, there would be **no** permanent impacts on geology and soils from Alternative 4.

3.4.5 Mitigation Measures

If one of the action alternatives is implemented, BPA would implement construction BMPs and mitigation measures to avoid or minimize impacts from the Project on geology and soils. BPA is coordinating with public land managers to ensure that geology and soils-related BMPs and mitigation measures are consistent with their policies. The following measures would be implemented:

- Design and improve access roads to manage drainage from the road surface, and size and space water bars properly to accommodate flows and direct sediment-laden waters into vegetated areas.
- Develop and implement a Revegetation Plan to revegetate areas disturbed by construction, including soil preparation as necessary; for Alternative 2A or Alternative 3C, use site-specific methods developed for use within the Marys Peak SBSIA and approved by USFS and BLM staff, and if Alternative 4 is selected, using site-specific methods approved by City of Corvallis staff.
- Use plant materials sourced only from Marys Peak and West Point Spur for revegetation.
- Prepare an erosion and sediment control plan (ESCP), site-specific safety plan, and fire prevention and suppression plan in compliance with federal, state and county requirements before starting construction; plans shall specify how to manage and respond to emergency situations involving hazardous materials to include oils and fuels, and any abandoned toxic materials found in work sites; all plans shall be kept on-site and maintained and updated as needed during construction.
- Explain geology and soils-related BMPs and mitigation measures to construction contractors and inspectors during a preconstruction meeting covering environmental requirements.
- Locate staging areas in previously disturbed or graveled areas to minimize disturbance to soil and vegetation, where possible.

- Employ an on-site monitor during construction at Marys Peak to ensure all mitigation measures and BMPs are correctly implemented during construction and to ensure construction equipment and personnel remain within designated construction areas.
- Limit vehicle speeds on unpaved roads and surfaces to 10 miles per hour or less to reduce dust.
- Obtain rock and gravel used for road surfacing, fill material, and other uses from local ODA-certified weed-free sources.
- Leave vegetative strips adjacent to any open trench areas to avoid or minimize erosion and sedimentation.
- Control dust during construction with water or other appropriate control methods, without the use of chemical additives, as needed.
- Manage erosion and sediment as specified in the ESCP, including implementation of approved BMPs to minimize or eliminate sediment discharge into waterways and wetlands, minimize the size of construction disturbance areas, and minimize removal of vegetation, to the greatest extent possible.
- Inspect erosion and sediment controls periodically during construction, maintain them as needed to ensure their continued effectiveness, and where appropriate, remove them from the site when vegetation is reestablished and the site has been stabilized.
- Avoid spreading any excavated soils outside the communications site fence and inside the fence, utilize uncontaminated native soil as backfill; excess soil beyond the needs of backfill or restoration must be removed and disposed in a USFS-approved area, or off-site, outside the Marys Peak SBSIA at an appropriate location following all applicable county, state, and federal laws and regulations.
- Maintain soil profiles by storing excavated soils on-site and backfilling holes with subsoils first followed by top soils.
- Prohibit the use of heavy equipment in tree cutting areas and cut trees with machinery located on roads or by using chainsaws and other hand equipment.
- Inspect and repair access roads and other facilities after construction to ensure proper function and nominal erosion levels.
- Monitor growth of any planted materials until site stabilization is achieved (defined by an appropriate level of cover by native species) and revegetation performance criteria are met; if vegetative cover is inadequate, implement adaptive management and reseed/replant to ensure adequate revegetation.

3.4.6 Unavoidable Impacts Remaining After Mitigation

Although mitigation measures and construction BMPs would minimize impacts on geology and soils, construction-related activities would disturb, remove, and compact geology and soils under each of the Project alternatives. Each alternative could also result in indirect impacts, including erosion and sedimentation. The erosion potential for disturbed soils would be greatest during and immediately after construction activities. Afterwards, soils would stabilize as they settle and as vegetation becomes reestablished. Long-term impacts remaining after construction would be limited to localized soil compaction, minor erosion from road surfaces and formerly vegetated ground, and permanent loss or removal of geology and soils in areas covered by foundations or rock.

At the BPA Marys Peak site, implementation of Alternative 2A would directly impact and permanently remove about 0.03 acre and temporarily impact about 0.23 acre of geology and soils. Permanent impacts would occur in areas where geology and soils are buried or covered with foundations, pads, or

crushed rock surfacing. Most impacts are anticipated to be temporary as revegetation would stabilize exposed soils and improve soil structure. The impacts on geology and soils from Alternative 2A would be **low** with the implementation of BMPs and mitigation.

At the BPA Marys Peak site, implementation of Alternative 3C would directly impact and permanently remove about 0.05 acre and temporarily impact about 0.35 acre of geology and soils. Permanent impacts would occur in areas where geology and soils are buried or covered with foundations, pads, or crushed rock surfacing. Most impacts are anticipated to be temporary as revegetation would stabilize exposed soils and improve soil structure. Removal of the existing BPA communications building at Marys Peak would initially disturb soils but the area would be revegetated. The impacts on geology and soils from Alternative 3C would be **low** with the implementation of BMPs and mitigation.

At West Point Spur, implementation of Alternative 4 would directly impact and permanently remove about 0.01 acre and temporarily impact about 0.15 acre of geology and soils. Permanent impacts would occur in areas where geology and soils are buried or covered with a concrete pad or crushed rock surfacing. Most impacts are anticipated to be temporary as revegetation would stabilize exposed soils and improve soil structure. Removal of the existing BPA communications building at Marys Peak would initially disturb soils but the area would be revegetated. There would be **no to low** impacts on geology and soils from Alternative 4 with the implementation of BMPs and mitigation. At the BPA Prospect Hill site, there would be **no** impacts on geology and soils.

3.5 Vegetation

3.5.1 Study Area

The study area for vegetation includes areas at the Marys Peak communication site, the West Point Spur CPI communications site, and the BPA Prospect Hill communications site. It includes areas where vegetation could be directly affected by Project construction and staging. Direct impacts would occur in construction work areas from activities such as removal, crushing, and cutting of vegetation, and soil removal. The vegetation study area includes areas where trees would be cut to create an unobstructed microwave beam path. It also includes areas adjacent to construction areas that could be indirectly affected by Project activities from erosion and sedimentation and from the introduction of weed species.

The Marys Peak communications site portion of the vegetation study area is about 7.7 acres and includes the following areas:

- Fenced summit communications site and a 50-foot ***buffer*** around the fence
- Unpaved access road that leads from the paved parking lot to the summit communications site (50-foot wide area centered on the road)
- An area where a stand of noble fir trees on BLM lands would be cut

The West Point Spur portion of the vegetation study area is about 4.2 acres and includes the following areas:

- CPI fenced communications site and a 50-foot buffer around the fence
- NF-112, leading from Marys Peak Road to the CPI site (50-foot wide area centered on the road)
- An area of mixed forest located northeast of the CPI communications sites where some trees would be cut
- Two material/equipment staging and vehicle driving/parking areas

The BPA Prospect Hill communications site portion of the vegetation study area is about 0.2 acre. Because work would only occur within the fence, the study area only includes the area within the fenced communications site and a 20-foot buffer around the perimeter of the fence.

There is no vegetation study area for the BPA Albany Substation because the portion of the substation where work would take place is a graveled pad of fill that has no vegetation.

3.5.2 Affected Environment

Vegetation Overview

This section covers both ***vascular*** and ***non-vascular*** plant species. Vascular plant species include trees, shrubs, and most herbaceous species, including flowering plants and ferns. Non-vascular species lack a developed system for transport of water and so are small, thin plants, including mosses, liverworts, and lichens. This section also covers fungi, although fungi are not plants.

Marys Peak is the highest point of the Coast Ranges Province, which extends from the middle fork of the Coquille River in southern Oregon into the Willapa Hills of southwest Washington (Franklin and Dyrness 1973). Marys Peak vegetation is affected by climate, soils and other factors. Elevation affects the climate of Marys Peak (elevation 4,097 feet) and West Point Spur (elevation 3,600), as does their

proximity to the Pacific Ocean. The majority of the annual precipitation at the communications site occurs in the winter months and sharply declines during the summer months.

Due to the elevation, isolation, and other factors, a unique and diverse plant community is present on Marys Peak. The flowers that bloom in profusion attract many visitors and professional botanists, who conduct studies and field visits. Some plants that occur there are only found in drier areas east of the Cascade Mountains (Frenkel et al. 2012; Snow, 1984). In recognition of the special flora and beautiful vistas at Marys Peak, USFS designated the area a Scenic Botanical Special Interest Area (SBSIA) in 1989. The 924-acre Marys Peak SBSIA is on the higher elevations, including the Marys Peak communications site. The CPI communications site at West Point Spur is not within the SBSIA.

Marys Peak features forest, grassland (meadow), rock garden, and riparian vegetation types. West Point Spur features similar habitats, but lacks rock garden features. The forests on Marys Peak are dominated by noble fir *(Abies procera)* at higher elevations, and by Douglas-fir (*Pseudostuga menziesii*) and western hemlock (*Tsuga heterophylla*) at lower elevations. An almost pure stand of noble fir occurs near the summit, representing the most extensive noble fir stand in the Coast Range. The forests at West Point Spur consist of a mixture of coniferous species, with no noble fir.

The meadow at the summit of Marys Peak is a 130-acre grassy bald. Some of the species found in the Marys Peak meadow are present in the smaller meadows of West Point Spur. Meadows are vegetated with dense grasses, ferns, and a diverse assemblage of ***forbs,*** including lilies, yarrow, violets, and other species, many of them perennials.

The vegetation at Marys Peak has been affected by historical livestock grazing, logging, fire suppression, construction and maintenance of structures including the communications sites, and recreation. Road building, trenching, and construction can create barriers between plant communities, remove/compact topsoil, increase erosion, and aid in the establishment of non-native species and ***noxious weeds*** (Frenkel *et al.* 2012). Soil removal and erosion can also deplete the native seed bank, hindering the ability of native species to reestablish themselves in disturbed areas.

The vegetation at West Point Spur has been affected by the construction of the two existing communication sites and a historic communications site that was removed. Recreational activities are not common in the West Point Spur vegetation survey area because it has restricted access and no nearby trails.

The vegetation at the Prospect Hill communication site consists of a mowed area of grassland around the perimeter of the fence and a graveled area inside the fence with weedy vegetation. Vegetation consists of non-native grasses and forbs, with some invasive shrub species, both native and non-native.

Vegetation Surveys

The U.S. Forest Service Region 6 Restoration Services Team (RST) conducted vegetation surveys for vascular species and USFS botanists conducted surveys for non-vascular species and fungi at Marys Peak (USFS, 2018a) and West Point Spur (USFS, 2018b). The RST described vegetation types and their plant communities, surveyed for plants considered noxious weeds by the Oregon Department of Agriculture (ODA), surveyed for special-status (rare) plant species, and created a list of plant species observed using regional floras. Various resources were used by Siuslaw National Forest (SNF) botanists to identify non-vascular species and fungi.

Vegetation surveys took place at Marys Peak on June 26-29, 2017, and at West Point Spur on June 19-22, 2018. SNF botanists conducted the non-vascular and fungi surveys on October 29, 2017, at Marys Peak, and October 31, 2018, at West Point Spur.

Prospect Hill vegetation was surveyed by BPA staff on September 18, 2018. The communications site is a mowed area that is dominated by non-native species, mainly grasses. It was not considered necessary to survey during June when most special-status species are in bloom and easily identified.

The list of all vascular and non-vascular plants observed during the Marys Peak and West Point Spur vegetation surveys is provided in Appendix B. Because of the lack of plant species diversity at Prospect Hill, species observed at that site are listed in the plant community description that follows.

Plant Communities

The ecological condition of each plant community in the study area was characterized as low-, moderate-, or high-quality using the following criteria:

- **High –** late ***seral*** plant composition and structure, minimal disturbance, and less than 5 percent cover by non-native species; late seral communities occur late in the succession process.
- **Moderate –** incomplete or skewed plant community structure and composition, most likely due to disturbance factors; non-native species with up to 25 percent cover
- **Low** – substantially altered plant composition and structure; with more than 25 percent cover by non-native species, sometimes early seral communities have relatively sparse vegetation, a high amount of cover by bare ground, and evidence of past disturbance

Marys Peak

At Marys Peak, the three vegetation types in the vegetation survey area are grassland (meadow), rock garden, and the noble fir stand, described below.

Grassland occurs within and outside the fence around the summit communications site and on the edges of the access road (Photographs 3-1 and 3-2). Grassland consists mainly of forbs and grasses, with scattered shrubs.

Photograph 3-1*. Grassland within and near the fence around the Marys Peak communications site (June 20, 2017).*

Photograph 3-2. *Grassland along the access road to the summit, with a nearby pedestrian trail (June 21, 2017).*

Hikers have developed trails by walking off the road. These trails have compacted soils, resulting in some bare spots in the vegetation. Grassland in the vegetation study area is considered moderate-quality due to disturbance and greater than 5 percent cover by non-native species. Non-native oxeye daisy *(Leucanthemum vulgare)* and sour dock *(Rumex acetosella)* are common and persistent in the fenced area and in the grassland along the road from the parking lot to the summit. Hairy cat's-ear *(Hypochaeris radicata)* also may occur in the project area. Two noxious weed species, common St. Johnswort *(Hypericum perforatum)* and tansy ragwort *(Senecio jacobaea)*, occur in some areas, as

described in the weed section, below. Native plants, including flowering species other than grasses, are more prevalent in less disturbed areas (Photograph 3-3).

Photograph 3-3. *Grassland at the summit around the Marys Peak communications site (June 20, 2017).*

The rock garden plant community is on the south and west facing rocky outcrop along the access road near the summit (Photograph 3-4 and 3-5). This rock garden is considered high-quality due to the predominance and variety of native species, few non-native species, and not much evidence of disturbance. This unique microhabitat consists of herbaceous flowering plant species.

Photograph 3-4 *(above). Rock garden habitat near the Marys Peak summit (June 20, 2017).* ***Photograph 3-5*** *(right). Rock garden vegetation near the summit, adjacent to the access road (June 20, 2017).*

The rock garden plant community is a late seral community that consists of large, established, and sustaining patches of vegetation including spreading phlox (*Phlox diffusa*) and Cardwell's penstemon (*Penstemon cardwellii*). This plant community evidences some signs of trampling, thinning, and erosion, but cover by non-native species is low, and noxious weeds were not observed in this community.

The noble fir ***stand*** that would be topped or cut at the base on BLM lands shows some evidence of tree thinning (removal) near the edges of the stand, and there is an established trail near the northern edge. (Photograph 3-6.) Other than the trail, recreational disturbance is very low. The understory consists of natural noble fir debris, several flowering forbs, and scattered grasses. Sour dock is the only non-native species that was observed in the noble fir stand. This tree stand is considered high-quality because it exhibits late seral characteristics, little disturbance, and has few non-native species in the understory.

Photograph 3-6*. Trail within the noble fir stand, located on BLM land at Marys Peak (June 21, 2017).*

West Point Spur

In the West Point Spur vegetation study area, the two predominant vegetation types are meadow and forest. The forest is considered high-quality because it exhibits late seral plant composition, there were no weeds observed, and disturbance is low. The dominant tree species are Douglas-fir, grand fir, and western hemlock. The age structure is well dispersed between large older trees, medium growth trees, and young and new growth trees. Forest also occurs along the access road in patches.

In the forest understory, dominant forbs include starry false lily of the valley (*Mianthemum stellatum*) and threeleaf woodsorrel (*Oxalis trillifolia*); dominant shrubs include oceanspray (*Holodiscus discolor*) and red elderberry (*Sambucus racemosa*). The two species of non-native forbs observed in the forest include one occurrence of garden vetch (*Vicia sativa*) and a few occurrences of purple foxglove (*Digitalis purpurea*).

Photograph 3-7*. Meadow habitat south of the CPI communications site (June 27, 2018).*

The main disturbance in the forest is naturally occurring woody debris, including downed logs and snags with broken tops. Very few cut trees are present. This forest structure promotes higher forb diversity in microclimates and small openings in the canopy.

The meadow at West Point Spur is considered moderate-quality because it exhibits mid- to late seral plant composition, but noxious weeds are present, and the disturbance level is relatively high. (Photograph 3-7.) Dominant forbs in the meadow include native riverbank lupine (*Lupinus rivularis*) and Virginia strawberry (*Fragaria virginiana)*, associated with California sedge (*Carex californica*), Idaho fescue (*Festuca idahoensis),* western brackenfern (*Pteridium aquilinium)*, and Pacific blackberry (*Rubus ursinus)*. Non-native species include common sheep sorrel *(Rumex acetosella)*, oxeye daisy, hairy cat's-ear, and purple foxglove. Tansy ragwort and common St. Johnswort, both noxious weed species, occur in grassland, as described in the weed section below.

Prospect Hill

The BPA Prospect Hill communications site is a grass-dominated upland on a very dry south-facing hill (Photograph 3-8). A large agricultural field is immediately downslope; once a Christmas tree farm, this slope is now a recently planted hazelnut orchard. In the mowed grassy area outside the fence, non-native forbs include oxeye daisy, Queen Anne's lace, English plantain *(Plantago lanceolata),* nipplewort *(Lapsana communis),* tansy ragwort, bull thistle *(Circium vulgare)*, and Canada thistle *(Circium arvense)*. Shrub species attempting to invade the mowed site include native snowberry *(Symphoricarpos albus)* and Pacific blackberry, and non-native Scotch broom *(Cytisus scoparius)* and Himalayan blackberry *(Rubus armeniacus).* Some of these species are considered noxious weeds, including the thistles, tansy ragwort, Scotch broom, and Himalayan blackberry, as discussed in the weed section below. This grassland is a low-quality plant community, with more than 25 percent cover by non-native species and evidence of past disturbance.

Photograph 3-8*. Vegetation at the BPA Prospect Hill site – mowed area outside the fence and weedy area inside the fence (Sept. 18, 2019).*

Sparse, weedy vegetation grows within the fence. Non-native herbaceous species including grasses, Queen Anne's lace, and common St. Johnswort are invading the graveled site along with non-native shrubs, including Himalayan blackberry and Scotch broom. The vegetation within the fence is periodically controlled, evidenced by the lack of dense shrub cover.

Noxious Weeds

Noxious weeds are non-native plants that have been designated as undesirable plants by federal and state laws. Weeds displace native species, decrease plant species diversity, degrade habitat for rare species and wildlife, increase the potential for wildfire, decrease productivity of farms, rangelands, and forests, create unattractive areas dominated by single species, and impair full use of the landscape by wildlife and humans. As weed infestations spread, private landowners and public land managers spend increasing amounts of money, time, and resources attempting to eliminate weed species.

ODA maintains Oregon's official state list of noxious weeds that landowners may be required to control (ODA 2019). The noxious weeds on the state list are separated into the following three lists (A, B, and T-designated) based on their distribution and on their control requirements under state law:

- **A listed weeds** either occur in the state in small enough infestations to make eradication or containment possible or are not known to occur, but their future occurrence in Oregon is imminent; infestations are subject to eradication or intensive control when and where found.
- **B listed weeds** are regionally abundant, but they may have limited distribution in some counties; control is limited to intensive control at the state, county or regional level as determined on a site-specific, case-by-case basis.

- **T-designated weeds** are species selected from either the A or B list that are priority targets for control, as directed by the Oregon State Weed Board.

Nearly all of the species on the Benton County noxious weeds list, except aquatic species, have the potential to occur at, or near, the Marys Peak and West Point Spur sites, including in the vicinity of the access roads. Nearly all of the species on the Marion County noxious weeds list, except aquatic species, have the potential to occur at, or near, the Prospect Hill site. Because Albany Substation is devoid of vegetation, weed occurrence was not considered.

Marys Peak

Two species of state-listed noxious weeds were observed within grassland in the Marys Peak vegetation study area, common St. Johnswort *(Hypericum perforatum)* and tansy ragwort *(Senecio jacobaea)*.

Common St. Johnswort is a B listed weed, which is designated for management by Benton County in priority areas and targeted for management by USFS. A total of four populations of common St. Johnswort were observed. Three populations occur within and outside the fence around the communications site and a population occurs near the parking lot trailhead. Common St. Johnswort is a perennial with branching stems, opposite leaves, green to rust color vegetation with translucent glandular dots, with yellow flowers. It has rhizomes, a plant stem that grows horizontally under or along the ground and often sends our roots and shoots as a way of spreading, in addition to reproducing from the abundant seed it produces.

Tansy ragwort is an ODA B listed weed which is designated for management in priority areas in Benton County. This species is targeted for biocontrol in Oregon and is of management concern to USFS. One population of tansy ragwort occurs near the parking lot trailhead. Tansy ragwort is a biennial or short-lived perennial, with distinctive dark green and deeply lobed, ruffled leaves, and purplish-red stems. The branching flower stalks bear numerous bright yellow flowers that usually have 13 petals.

In addition to the two state-listed noxious weeds discussed above, the USFS is concerned about two other non-native species that although not state-listed weeds, are very invasive. Oxeye daisy and hairy cat's-ear both invade areas and spread quickly, out-competing native vegetation. Because the both produce prolific amounts of seed, they tend to flower and produce large numbers of seedlings in subsequent years, displacing native vegetation.

West Point Spur

The same two B listed weeds that are found at Marys Peak are present in the West Point Spur vegetation study area. Tansy ragwort occurs only by the access road in very small numbers and common St. Johnswort is more common at about 8 percent cover. The highest occurrences of common St. Johnswort are found on or near the road and communications site where the soil is compacted or vegetation is cleared. Non-native oxeye daisy and hairy cat's-ear are also present.

Prospect Hill

Five species of B listed weeds occur in scattered patches at the BPA Prospect Hill communications site: tansy ragwort, common St. Johnswort, bull thistle, Canada thistle, Scotch broom, and Himalayan blackberry. Most noxious weed occurrences are within the fenced area, but thistle species are more common outside the fence, in the grassy area surrounding the communications site.

Special-Status Plant Species

Special-status plant species have been identified for protection and/or management under federal and state laws, programs, and policies. For this Project, a list of special-status plant species was compiled using the following sources:

- Plant species identified for protection under the federal ***Endangered Species Act*** (16 U.S.C. 1531 *et seq.*), including listed endangered, listed threatened, species proposed for federal listing, and federal species of concern with the potential to occur near Project components (USFWS, 2015, 2016, 2017, 2019)
- Plant species listed by the state (ODA) as endangered, threatened, and sensitive
- SNF and BLM Northwest Oregon District Sensitive plant species
- USFS Central Coast Ranger District Survey and Manage species
- Rare plant species tracked by the Oregon Biodiversity Information Center (ORBIC 2017, 2018)
- Regional herbaria and other resources on occurrence, distribution, and habitat needs

A list of special-status plant and fungi species was compiled for the Project vegetation survey based on information from the above sources, with input from SNF and BLM botanists (see Appendix A). The list includes vascular plant species, non-vascular plant species (including mosses, liverworts, lichens), and fungi. Each species on the list was evaluated for its potential to occur in the study area based on known habitats, including any known occurrences of special-status species within 1 mile of Project areas.

Special-status species were not observed during Project vegetation surveys. Suitable habitat is present for eight Sensitive fungi species that are on both the USFS and BLM special-status species lists. Because conditions for fungal fruiting were poor at the time of the survey, it is assumed that these 8 Sensitive fungi occur within the BLM noble fir stand that would be removed at Marys Peak (Table 3-2).

Table 3-2. USFS and BLM Sensitive Fungi Species Assumed Present in BLM Noble Fir Stand

Fungi Species	Status	Suitable Habitat
Chamonixia caespitosa	*G5, S1* ORBIC List 2	*Mycorrhizal with conifers; known occurrences at Cape Perpetua and Cascade Head Experimental Forest*
Cortinarius barlowensis	*G3,S2* ORBIC List 2	*Terrestrial in coastal to montane conifer forested wetlands; one known occurrence on the SNF*
Russula idahoense	G2G3, S1 ORBIC List 1	*Mycorrhizal with true fir above 3,600 feet; known occurrence on Marys Peak*
Lactarius silviae	*G2, S2* *ORBIC List 1*	*Mycorrhizal with Douglas-fir and western hemlock; known occurrence at Cummins Creek Area*
Phaeocollybia gregaria	*G1G2, S1S2* *ORBIC List 1*	*Mycorrhizal with Douglas-fir and Sitka spruce; known occurrence in Cascade Head Experimental Forest*
Phaeocollybia oregonensis	*G2, S2* ORBIC List 1	*Terrestrial in conifer forest; endemic to the Oregon Cascades and Coast Range*
Pseudorhizina californica	ODA: SE *G4, S2* ORBIC List 2	*Well-rotted stumps or logs of coniferous trees and litter or soil rich in brown rotted wood; one known occurrence on the SNF*
Rhizopogon exiguus	*ODA: SE* G2G3, S1S2	*Mycorrhizal with Douglas-fir and western hemlock; known occurrence in the vicinity of Marys Peak*

- Oregon Department of Agriculture (ODA) state designation: SE = state endangered
- Global (G) rank and State (S) rank:1 = Critically imperiled; 2 = Imperiled; 3 = Rare and uncommon, vulnerable; 4 = Not rare and apparently secure; 5 = Demonstrably widespread, abundant and secure
- ORBIC List 1 = Threatened or endangered throughout range
- ORBIC List 2 = Threatened or endangered in Oregon but secure elsewhere
- ORBIC List 3 = Species for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range

Federally-listed and State-listed Plant Species

The federally-listed plant species identified by the U.S. Fish and Wildlife Service (USFWS) with the potential to occur at the Project components are federally-endangered Bradshaw's desert-parsley *(Lomatium bradshawii)* and Willamette daisy *(Erigeron decumbens),* and federally-threatened golden paintbrush *(Castilleja levisecta)*, Kincaid's lupine *(Lupinus sulphureus spp. kincaidii)*, Nelson's checker-mallow *(Sidalcea nelsoniana)*, water howellia *(Howellia aquatilis)*, and Willamette daisy *(Erigeron decumbens) (USFS, 2015, 2016, 2017, 2019).* ESA designated ***critical habitat*** for these plant species does not occur within 1 mile of Project work areas. There are no plant species proposed for federal ESA listing or candidate species identified as having the potential to occur at Project sites. There are no known occurrences of federally listed plant species within 1 mile of all Project sites (ORBIC 2018).

The federally-listed species identified by the USFWS are also state-listed species tracked by ODA. They occur mainly in wet or dry prairies, with the exception of water howellia, which occurs in slow-moving water that remains into the growing season. Both Bradshaw's lomatium and Nelson's checkermallow tend to occur in wetter sites. Because there are no wetlands or water features that would be affected by the Project, these species would not be affected.

The species that inhabit dryer sites, including Kincaid's lupine, golden paintbrush, and Willamette daisy, may not be able to occur at the higher elevations of Marys Peak and West Point Spur. Kincaid's lupine is known from some hilly sites but not at mountain top elevations. Because of the high level of botanical exploration at Marys Peak, it is highly unlikely that these showy species would have been overlooked all these years. West Point Spur has probably not been visited by botanists as extensively as Marys Peak.

The habitat at Prospect Hill is very low-quality and does not retain any of the characteristics of native prairie. The vegetation at the Prospect Hill communications site no longer hosts any of the native plant species known to be commonly associated with rare native prairie species.

During the vegetation field surveys conducted in 2017 and 2018, federal and state special-status plant species were not observed in the vegetation survey area at Project components.

3.5.3 Environmental Consequences – No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing communications facility would not be rebuilt and impacts related to Project construction would not occur. Operations and maintenance activities would continue at the BPA Marys Peak and the BPA Prospect Hill communications sites and would be similar to existing practices. Maintenance activities at the BPA Marys Peak communications site would result in **low** impacts on vegetation resources. If it were necessary to perform emergency repairs at Marys Peak, it would likely not be possible to plan or time these activities to minimize impacts on vegetation. Because potential impacts resulting from emergency repairs would be localized and affect a small amount of moderate-quality grassland within the fenced communications site or along the access road, impacts would be **low**. At the BPA Prospect Hill communications site, there would be **no** impacts on vegetation from continuing maintenance activities and emergency repairs.

3.5.4 Environmental Consequences –Action Alternatives

This section describes the potential impacts of implementing any of the action alternatives on vegetation, including plant communities, noxious weeds, special-status plant species, and designated critical habitat under the federal ESA. Impacts on plant species and plant communities would be direct or indirect, and temporary or permanent.

Impacts Common to All Action Alternatives

Construction of any of the action alternatives would cause direct and indirect impacts on vegetation communities, which could be temporary or permanent. Direct impacts are those that remove or harm vegetation such as grading or driving over vegetation. Indirect impacts would occur where Project construction activities result in the degradation of nearby vegetation or in construction areas after the initial disturbance.

Temporary impacts could be long-term or short-term, depending on the severity of the impact. Temporary impacts would disturb vegetation but would not prevent the reestablishment of vegetation communities similar to the preconstruction vegetation community. Although temporary impacts could be partially mitigated by replanting disturbed areas after construction, successful revegetation can be slow or difficult to achieve. Permanent impacts would result in the modification of a vegetation community to the extent that it would not return to preconstruction conditions during the life of the Project.

The following impacts on vegetation could occur from construction activities:

- Clearing and grading in some areas would remove vegetation and the upper, most biologically active portion of the soil
- The use of heavy equipment would crush vegetation and compact soils, potentially damaging plant roots
- General trampling by workers and vehicles would damage plants and result in soil compaction or topsoil removal, which could affect long term viability of vegetation
- Any areas with a permanent footprint (new steel-lattice structures, building addition, or installation of water bar aprons) would result in the permanent removal of vegetated areas
- Erosion and sedimentation in and beyond construction works areas would deplete soil nutrients, inhibiting plant reestablishment
- The movement of equipment and workers, the introduction of fill materials, and soil disturbance could result in the introduction or spread of non-native and noxious weeds into areas disturbed by construction
- Tree cutting, including the disturbance of downed wood, snags, and stumps, could reduce some non-vascular plant species and fungi habitat and destroy habitat for understory plant species that need shade.

The loss of plant cover and disturbance of soil would disrupt biological functions, including nutrient retention and recycling, and thus degrade plant habitat, at least temporarily. The loss of plant cover could also result in minor sheet erosion and the formation of some small channels, which could degrade downslope vegetation communities. The risk of erosion would be highest on steep slopes and during heavy rainfall.

The introduction and spread of noxious weed species and other invasive non-native plant species into areas disturbed by construction equipment and beyond, vehicles, workers (boots and clothing), and materials contaminated with seeds, roots, and other weed parts would be an indirect impact. Bare, disturbed, and compacted soils are vulnerable to weed invasion through natural dispersal, such as wind-blown seeds. Weeds would displace native plants and degrade vegetation communities. Weeds can alter the natural fire regime by increasing the frequency of wildfires. Many non-native species, such as oxeye daisy and hairy cat's-ear, become a long-term or permanent problem because once an invasive plant population becomes established, it can spread and become resistant to weed control efforts.

Because noxious weeds and other invasive non-native plant species occur at all Project components, including at the communications sites and along access roads, ground-disturbing activities associated with construction could open up new areas for potential weed spread or introduction. Prior to construction, BPA would conduct pretreatment of some weeds, including noxious weeds, oxeye daisy, and hairy cat's-ear in all construction work areas. This would include the pretreatment of weeds at communications sites and along existing access roads. Weed treatment methods could include mechanical treatment, such as lopping or hand-pulling, chemical (spot treatment by herbicides), or biological controls, such as release of the cinnabar moth for tansy. Where noxious weeds are present in Project work areas after construction, as determined by a post-construction weed survey, post-construction treatment of noxious weeds would be conducted. Weed treatment on federal lands would follow each agencies' weed treatment protocol and requirements.

The rock garden located near and downslope from the Marys Peak communications site is an especially sensitive plant community because the soils tend to be thin, and the area is highly erodible. The rock garden habitat could become degraded if significant erosion occurs, drainage patterns are altered, off-trail pedestrian foot traffic increases during construction, or if weeds are introduced.

Because the scope of construction work varies for each action alternative, each alternative would have a different impact on vegetation. Discussion of the potential impacts specific to each alternative are presented below. The size of the area that could be temporarily or permanently disturbed by construction under each action alternative was used to estimate impacts on vegetation (Table 3-1).

Impacts Specific to Action Alternatives

Alternative 2A

Marys Peak

Improvements to BPA facilities within the fence at Marys Peak under Alternative 2A would result in direct impacts on vegetation. Vegetation would be crushed or removed by staging materials and equipment within the fence, work on the building's exterior, propane tank maintenance, construction of a new steel-lattice structure, trenching, directional boring, and vehicle and foot traffic.

Construction could result in the introduction or spread of non-native species, including noxious weeds that are already present within the fenced area. This would be a high impact if allowed to occur given the special botanical designation of this area. To prevent or minimize the likelihood of noxious weed introduction and spread, best management practices (BMPs) will be implemented to help prevent the introduction of new weed species and the spread of existing weed species, resulting in **moderate** impacts on vegetation from construction.

Vegetation along the sides of the access roads would be both temporarily and permanently impacted from the installation of water bars in the access road. Installation of the rocky drainage "apron" at the edge of the water bar would require clearing of existing vegetation, grading and compacting soils, and adding new fill material. The construction of water bars would permanently replace eight vegetated areas with more sparsely vegetated rock-lined drainage features. The apron would be constructed with enough rock to slow the water, but would leave enough space to allow vegetation to grow through the apron itself, eventually obscuring the rock. Installation of water bars in the access road would result in the temporary disturbance and permanent removal of some moderate-quality grassland. However, because most areas along existing roads consist of moderate-quality vegetation and the rock apron and the edges of the rock apron would be revegetated with native species, impacts from water bar construction would be **moderate**.

In total, work within the communications site fence and the installation of water bars in the access road would result in the temporary disturbance of 0.23 acre of moderate-quality grassland and permanent removal of 0.03 acre of moderate-quality grassland. Because the areas that are temporarily impacted would be revegetated with native species, overall impacts on vegetation would be **moderate**.

Indirect impacts on vegetation outside the communications site fence could occur. Any erosion that was not controlled could result in sheet erosion and degradation of plant communities outside the fence. If hikers create new trails because of access limitations during construction, this would also result in the degradation of plant communities. BMPs to control erosion would be implemented to prevent or minimize erosion. However, any non-native plants introduced within the fence could spread outside the fence, resulting in **moderate** impacts on vegetation.

Up to 14 noble firs located on BLM land would be cut to create an unobstructed microwave beam path. This 0.53 acre stand of trees is considered high-quality forest that is assumed to include special-status fungi species. To minimize disturbance to vegetation and soil, trees would be cut without bringing in heavy equipment. If the trees are cut at the base, habitat for some non-vascular plant species and special-status fungi would be removed, as would understory plant species that need shade. If the trees are topped and the tops left on the forest floor and snags retained, this would minimize disturbance to plants and fungi and retain some shade. Overall, cutting of this 0.53-acre high-quality stand of noble fir would be a **moderate** impact because, although some habitat for understory plants and Sensitive fungi could be disturbed or removed, more meadow habitat would eventually be created in its place.

BPA Albany Substation

Because all work at the BPA Albany Substation would occur within the graveled yard, there would be **no** impacts on vegetation under Alternative 2A.

Alternative 3C

Marys Peak

Under Alternative 3C, activities within the fenced area at the Marys Peak communications site would result in direct impacts on vegetation. Vegetation would be crushed or removed by staging within the fence, by the construction of an addition to the USFS building, propane tank maintenance, construction of a new steel-lattice structure, construction of a retaining wall, trenching, directional boring, and vehicle and foot traffic. Alternative 3C would require removal of the existing BPA communications facility at the summit; the BPA building and associated equipment would be dismantled and removed from the site.

The level and types of impacts on vegetation would be similar to those described under Alternative 2A, but the impacts would cover a larger area. Work within the communications site fence and the installation of water bars in the access road would result in the temporary disturbance of 0.35 acre of moderate-quality grassland and permanent removal of 0.05 acre of moderate-quality grassland. Because the areas that are temporarily impacted would be revegetated with native species, including the current BPA communications site, impacts would be **moderate**.

Indirect impacts on vegetation outside the fenced area due to potential erosion or inadvertent spread of non-native plants would be **moderate**. The same 0.53 acre of noble fir would be cut under Alternative 3C as under Alternative 2A, resulting in **moderate** impacts because, although some plant and sensitive fungi habitat could be disturbed or removed, more meadow habitat would eventually be created in its place.

Alternative 3C would require removal of the existing BPA communications facility at Marys Peak. Removal of the facility and grading the site would result in direct impacts on vegetation. Demolition

would initially disturb about 0.14 acre (within the overall 0.35 acre temporary disturbance area), a temporary **low** impact on vegetation because the vegetation within the fence is predominantly non-native. Following demolition, the disturbed area within the fence would be revegetated with native species, a **low** beneficial effect.

BPA Albany Substation

Because all work at the BPA Albany Substation would occur within the graveled yard, there would be **no** impacts on vegetation under Alternative 3C.

Alternative 4

West Point Spur

Improvements to the CPI facilities within the fence at West Point Spur and staging immediately outside the fence would result in direct impacts on vegetation and soils. Vegetation would be crushed or removed by staging materials and equipment, work on the building's exterior, propane tank installation (if needed), and vehicle and foot traffic.

Construction could result in the introduction or spread of non-native species, including noxious weeds that are already present near the fenced area. To prevent or minimize the likelihood of noxious weed introduction and spread, BMPs will be implemented to help prevent the arrival of new weed species and to prevent the spread of existing weed species, resulting in **moderate** impacts on vegetation from construction.

Vegetation along the sides of the access roads would be temporarily and permanently impacted by the installation of water bars in the access road. Installation of the rocky drainage "apron" at the edge of the water bar would require clearing of existing vegetation, grading, and compacting soils; and new fill material. The construction of water bars would permanently replace five vegetated areas with more sparsely vegetated rock-lined drainage features. The apron would be constructed with enough rock to slow the water, but would leave enough space to allow vegetation to grow through the apron itself, eventually obscuring the rock. Installation of water bars in the access road would result in the temporary disturbance and permanent removal of some moderate quality grassland. Because most areas along existing roads consist of moderate-quality vegetation and the rock apron and the edges of the rock apron would be revegetated with native species, impacts from water bar construction would be **moderate**.

In total, work within and outside the communications site fence and the installation of water bars in the access road would result in the temporarily disturbance of 0.15 acre of moderate-quality grassland and permanent removal of 0.01 acre of moderate-quality grassland. Because the areas that are temporarily impacted would be revegetated with native species, overall impacts on vegetation would be **moderate**.

Indirect effects to vegetation outside the communications site fence are unlikely due to the small amount of ground disturbance. Any erosion that was not controlled could degrade plant communities outside the fence. BMPs to control erosion would be implemented to prevent or minimize erosion, resulting in **low** impacts on vegetation.

Up to 20 conifers on 0.76 acre of City of Corvallis land would be cut. The stand of trees is considered high-quality forest. To minimize vegetation and soil disturbance, trees would be cut without bringing in heavy equipment. If the trees are cut at the base, habitat for some non-vascular plant species and special-status fungi would be removed, as would understory plant species that need shade. If the trees are topped and the tops left on the forest floor and snags retained, this would minimize disturbance to plants and fungi and retain some shade. Overall, cutting this 0.76 acre high-quality tree stand would be

a **moderate** impact because, although the habitat for some understory plants and sensitive fungi could be disturbed or removed, more meadow habitat would eventually be created in its place.

Prospect Hill

At the Prospect Hill BPA communications site, vegetation would be crushed or removed by staging materials and equipment and by vehicle and foot traffic. Vegetation would not be degraded since it is already very low-quality due to the lack of native species cover. Because all work areas at Prospect Hill would be within the fence in a graveled, weedy area, impacts on vegetation would be **low**.

Marys Peak

Alternative 4 would require removal of the existing BPA communications facility at Marys Peak. Removal of the building and grading the site would result in direct impacts on vegetation. Demolition would initially disturb about 0.14 acre, a temporary **low** impact on vegetation because the vegetation within the fence is predominantly non-native. Following demolition, the disturbed area within the fence would be revegetated with native species, a **low** beneficial effect.

Potential Impacts on Vegetation on Public Lands

BPA is coordinating with USFS, BLM, and the City of Corvallis on potential impacts on vegetation from this Project because vegetation on their lands could be affected. This section summarizes the impacts on vegetation from communications site work, access road improvements, and tree cutting under each alternative, by affected public land owner. No privately-owned lands would be affected by this Project.

BLM lands would only be impacted under Alternative 2A and Alternative 3C. Under both alternatives, three of the eight water bars would be installed on BLM land in the short stretch of access road leading to the summit. This would result in temporary impacts on 0.03 acre and permanent impacts on 0.01 acre of moderate-quality grassland. About 0.53 acre of noble fir high-quality forest would be cut on BLM land that is assumed to be habitat for eight sensitive fungi species.

USFS lands that would be directly impacted under all alternatives include moderate-quality grassland. Most of the lands impacted under both Marys Peak alternatives would be USFS lands. Impacts on vegetation would be similar under Alternative 2A (0.2 acre temporary impacts and 0.02 acre permanent impacts) and Alternative 3C (0.32 acre temporary impacts and 0.04 acre permanent impacts). Under Alternative 4, the only USFS lands impacted would be a portion of the access road where three water bars would be installed, resulting in 0.3 acre temporary impacts and 0.1 acre permanent impacts on vegetation. Under all action alternatives, no trees would be cut on SNF lands.

The only BPA land where vegetation would be impacted is the BPA Prospect Hill communications site. Low-quality grassland could be impacted within the graveled area within the communications site fence. There is no vegetation at the BPA Albany Substation where Project work would take place.

City of Corvallis lands would be impacted only under Alternative 4. Most of the lands impacted under Alternative 4 would be City of Corvallis lands except for a portion of the access road leading to the site. Construction, including the installation of water bars in the access road, would result in temporary impacts on 0.1 acre and permanent impacts on 0.01 acre of moderate-quality grassland. About 0.76 acre of high-quality forest would be cut on City of Corvallis land.

Potential Impacts on Special-Status Plant Species

Federally-listed and State-listed Plant Species

There are no known occurrences of federally-listed plant species within 1 miles of all Project sites. During the vegetation field surveys conducted in 2017 and 2018, plants listed under the federal ESA

were not observed in the vegetation survey area at Project components. Also, no federal ESA-designated critical habitat for USFWS-listed plant species occurs within 1 mile of Project work areas. There would be **no** impacts on federal special-status plants or designated critical habitat by any action alternative because they do not occur within the vegetation study area for all Project components.

There are no known occurrences of state-listed plant species within 1 mile of all Project sites. During the vegetation field surveys conducted in 2017 and 2018, plants listed under the state ESA were not observed in the vegetation survey area at Project components. There would be **no** impacts on state-listed species by any action alternative because they do not occur within the vegetation study area for all Project components.

Sensitive Species

The SNF conducted a Biological Evaluation (BE) to assess potential impacts on plant species currently listed on the Regional Forester's Sensitive Species List for the Siuslaw National Forest (FSM 2672.4). A five-step process was used to summarize assessment procedures for non-vascular species; vascular species were not included in the BE because they do not occur in the Project survey areas. Potential impacts on non-vascular species include host tree removal, woody debris removal, and disturbing soil and duff layers. Many of the non-vascular species require a host tree to persist, and cutting host trees would negatively impact those species. Soil disturbance could occur from vehicle or foot traffic, access road improvements, and the use of staging areas. Physical disturbance or the removal of vegetation or soil would impact non-vascular species by removing habitat and substrate. Indirect impacts that have the potential to alter habitat composition and moisture availability include erosion and non-native species introduction.

For the eight USFS and BLM Sensitive fungi species that were not observed, but assumed to be present in the tree cutting area on BLM lands at Marys Peak based on the habitat, **USFS made the determination that the Project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species** (USFS 2018a, USFS 2019b). As part of the BE process, a biological investigation and analysis of effects were not required because the cumulative effect of these activities would likely have **no** impact on sensitive fungi species. The BLM concurred with this determination made by the USFS (pers. comm. with Heidi Christensen, Botanist, BLM, July 2, 2020). For fungi species that could have habitat removed by tree-cutting under Alternative 2A and Alternative 3C, impacts would be **moderate** given the small area affected. The BLM botanist also concurred with this USFS determination (pers. comm. with Heidi Christensen, Botanist, BLM, July 2, 2020).

3.5.5 Mitigation Measures – Action Alternatives

If one of the action alternatives is implemented, BPA would implement construction BMPs and mitigation measures to avoid or minimize impacts from the Project on vegetation resources. BPA is coordinating with public land managers to ensure that vegetation-related BMPs and mitigation measures are consistent with their policies. The following measures would be implemented:

- Develop and implement a Revegetation Plan to revegetate areas disturbed by construction, including soil preparation as necessary; for Alternative 2A or Alternative 3C, use site-specific methods developed for use within the Marys Peak SBSIA and approved by USFS and BLM staff, and if Alternative 4 is selected, using site-specific methods approved by City of Corvallis staff.
- Use plant materials sourced only from Marys Peak and West Point Spur for revegetation.
- Designate the Marys Peak summit rock garden and meadow areas as "No Work" areas on all design and construction documents and maps.

- Prepare an ESCP, site-specific safety plan, and fire prevention and suppression plan in compliance with federal, state and county requirements before starting construction; plans shall specify how to manage and respond to emergency situations involving hazardous materials to include oils and fuels, and any abandoned toxic materials found in work sites; all plans shall be kept on-site and maintained and updated as needed during construction.
- Explain vegetation-related BMPs and mitigation measures to construction contractors and inspectors during a preconstruction meeting covering environmental requirements.
- Provide training to all Project personnel, prior to the start of construction, on the importance of the botanical resources at Marys Peak and on the ecological and economic importance of controlling invasive species and how they can be spread during construction.
- Locate staging areas in previously disturbed or graveled areas to minimize disturbance to soil and vegetation, where possible.
- Avoid locating staging areas within the Marys Peak SBSIA, except in areas within the fence at the communications site and in the paved parking lot.
- Control noxious weeds and certain invasive non-native plant species, including oxeye daisy and hairy cat's-ear, in construction work areas before construction to reduce the potential for widespread establishment and the need for long-term management.
- Install protective fencing to prevent equipment and personnel from trampling rock garden areas during construction.
- Employ an on-site monitor during construction at Marys Peak to ensure all mitigation measures and BMPs are correctly implemented during construction and to ensure construction equipment and personnel remain within designated construction areas.
- Limit vehicle speeds on unpaved roads and surfaces to 10 miles per hour or less to reduce dust.
- Equip all vehicles used during construction with basic fire-fighting equipment, including extinguishers and shovels to prevent fires.
- Obtain rock and gravel used for road surfacing, fill material, and other uses from local ODA-certified weed-free sources.
- Ensure that any plant materials used for erosion and sediment control meet or exceed North American Weed Management Association Weed-Free certification standards.
- Leave vegetative strips adjacent to any open trench areas to avoid or minimize erosion and sedimentation.
- Control dust during construction with water or other appropriate control methods, without the use of chemical additives, as needed.
- Clean equipment and vehicles at air or water-wash stations at a location approved by USFS and BLM, including vacuuming vehicle interiors and floorboards, prior to entering Marys Peak Road and as soon as possible after leaving the work area, to minimize the introduction and spread of weeds during construction.
- Arrange for inspection of cleaned equipment by USFS staff prior to entering Marys Peak Road.
- Install boot scrapers at the gate near the bathrooms/paved parking area on Marys Peak, or at the gate on NF-112 at West Point Spur if Alternative 4 is selected, and ensure all construction workers clean boots on the scrapers before entering/leaving work areas to avoid introducing or spreading noxious weeds.
- Restrict construction activities (including trenching work) to the minimum work area needed to work safely and effectively, to limit disturbance of vegetation communities.
- Cut or crush vegetation in areas that would remain vegetated, rather than blading or clearing.

- Avoid spreading any excavated soils outside the communications site fence and inside the fence, utilize uncontaminated native soil as backfill; excess soil beyond the needs of backfill or restoration must be removed and disposed of in a USFS-approved area, or off-site, outside the Marys Peak SBSIA at an appropriate location following all applicable County, State and Federal laws and regulations.
- Stockpile topsoil and subsoil separately in small, low piles for a short period of time, so that it remains biological active, and avoid mixing subsoil and top soil as much as possible.
- Prohibit the use of heavy equipment in tree cutting areas and cut trees with machinery located on roads or by using chainsaws and other hand equipment.
- Cut trees within microwave beam paths as snags, if possible, and leave woody debris on the forest floor to create diverse habitat.
- Monitor growth of any planted materials until site stabilization is achieved (defined by an appropriate level of cover by native species) and revegetation performance criteria are met; if vegetative cover is inadequate, implement adaptive management and reseed/replant to ensure adequate revegetation.
- Conduct a post-construction noxious weed survey each year for two years after construction, of all areas disturbed by and adjacent to construction activities, to determine if there are new or expanded noxious weed or invasive non-native plant infestations; implement appropriate control measures of noxious weed infestations.

3.5.6 Unavoidable Impacts Remaining after Mitigation

At the BPA Marys Peak site, implementation of Alternative 2A would have temporary impacts on about 0.23 acre and permanently remove about 0.03 acre of moderate-quality grassland that is predominantly composed of native plant species. Because revegetation would occur in these areas, most impacts are anticipated to be temporary, with unavoidable impacts occurring during the lag-time between the on-site losses and achievement of successful restoration of areas disturbed by construction. Indirect impacts could occur, including the degradation of plant communities from erosion and the introduction and spread of weed species. The cutting of about 0.53 acre of high-quality forest that could be habitat to eight species of sensitive fungi species would result in the permanent conversion of forest to grassland. Any impacts on vegetation remaining from construction of Alternative 2A would be **moderate** following the implementation of BMPs and mitigation.

At the BPA Marys Peak site, implementation of Alternative 3C would have temporary impacts on about 0.35 acre and permanently remove about 0.05 acre of moderate-quality grassland that is predominantly composed of native plant species. Because revegetation would occur in these areas, most impacts are anticipated to be temporary, with unavoidable impacts occurring during the lag-time between the on-site losses and achievement of successful restoration of areas disturbed by construction. Indirect impacts could occur, including the degradation of plant communities from erosion and the introduction and spread of weed species. The cutting of about 0.53 acre of high-quality forest that could be habitat to eight sensitive fungi species would result in the permanent conversion of forest to grassland. Removal of the existing BPA communications facility at Marys Peak would initially disturb the predominantly non-native vegetation within the fence, but the area would be revegetated with native vegetation. Any impacts on vegetation remaining from construction of Alternative 3C would be **moderate** following the implementation of BMPs and mitigation.

At West Point Spur, implementation of Alternative 4 would have temporary impacts on about 0.15 acre and permanently remove about 0.01 acre of moderate-quality grassland that is predominantly

composed of native plant species. Because revegetation would occur in these areas, most impacts are anticipated to be temporary, with unavoidable adverse impacts occurring during the lag-time between the on-site losses and achievement of successful restoration of areas disturbed by construction. Indirect impacts could occur, including the degradation of plant communities from erosion and the introduction and spread of weed species. Cutting about 0.76 acre of high-quality forest would result in the permanent conversion of mature forest to an early successional stage of forest development.

At the BPA Prospect Hill communications site, temporary impacts on a small amount of low-quality vegetation within the communications site fence would be a **low** impact. Removal of the existing BPA communications building at Marys Peak would initially disturb the predominantly non-native vegetation within the fence, but the area would be revegetated with native vegetation. Any impacts on vegetation remaining from construction of Alternative 4 would be **moderate** following the implementation of BMPs and mitigation.

Under all alternatives, construction-related ground disturbance could result in noxious weeds colonizing disturbed areas. Due to the difficulty of controlling weeds in disturbed areas, the Project could result in some increases in noxious weeds or non-native plant species within areas disturbed by Project construction.

3.6 Wildlife

3.6.1 Study Area

The wildlife study area includes areas at the Marys Peak communications site, the West Point Spur CPI communications site, the BPA Albany Substation, and the BPA Prospect Hill communications site. The wildlife study area includes areas where wildlife and wildlife habitat could be directly or indirectly impacted by construction activities. The wildlife study area includes the following areas:

- Marys Peak and West Point Spur: 1 mile from communications sites, access roads, staging areas, and tree-cutting areas
- BPA Albany Substation: area within 0.25 mile of the substation's chain link fence
- Prospect Hill Communications Site: area within 0.25 mile of the site's chain link fence

3.6.2 Affected Environment

The Marys Peak study area includes native meadow habitat surrounded by noble fir forest. Snow depth and duration vary annually, but the snow pack generally accumulates in the late fall and does not recede until late spring. The topography and exposure to the elements at Marys Peak stunts the development of deep soils, creating rocky areas with shallow soils on the exposed summits, also known as rock gardens. Talus slopes occur in both forested and open areas with steep terrain. The forest and meadow habitats have steep drainages with swaths of riparian habitat radiating away from the peak. Wildlife that thrive in open, high-elevation meadow habitats and forests with long durations of snowpack use this unique high elevation habitat. Other wildlife species ascend in elevation in the spring, and return to lower elevations in the fall.

The West Point Spur study area is centered on a prominent volcanic ridgeline about 1 mile west of the Marys Peak summit. It is about 500 feet lower in elevation than the Marys Peak summit. The south-facing side of the West Point Spur ridge includes native meadow habitat surrounded by ***shrublands*** and young, mid-seral, and old-growth forests that provide habitat for a variety of species that prefer meadow, edge, shrub, and canopy habitat. The high elevation of West Point Spur and persistent westerly winds influence the site's precipitation. Similar to Marys Peak, the snow pack typically accumulates in late fall and remains until early spring. Fog layers tend to linger in the mornings, allowing growth of plants on upper canopy branches and providing nesting materials for birds. Steep talus slopes occur in both the forested and open areas. Steep drainages occur with some wetlands associated with ephemeral and perennial creeks.

The BPA Albany Substation study area is an industrial setting containing buildings and transmission equipment within the substation's chain link fence. Inside the fence, the ground's surface is graveled and unvegetated. Due to the lack of foraging areas, nesting trees, and water source within the fence, available wildlife habitat is extremely limited. Mowed non-native grassland surrounds the perimeter of the substation on three sides. To the northeast of the substation, Hazelwood Park includes a stand of Oregon white oak and a maintained lawn. To the southwest of the substation, the Calapooia River flows through a riparian corridor lined with black cottonwoods, big-leaf maple, red alder, and Oregon ash. The riparian area provides wildlife habitat for Willamette Valley species.

The BPA Prospect Hill communications site study area is a rural area with multiple communications sites on a hilltop location rising above the Willamette Valley. Weedy vegetation is scattered within the graveled and compacted area inside the site's chain link fence. Due to the lack of areas for wildlife to forage, the low-quality vegetation, lack of nesting trees, and lack of nearby water sources, available wildlife habitat inside the fenced area is extremely limited. Mowed areas of non-native grasses and shrubs surround the fence. A young orchard and several other communications sites are adjacent to the

BPA communications site. A mixed coniferous forest with vegetation at various heights is located to the north of the BPA communications site, providing some wildlife habitat for Willamette Valley species.

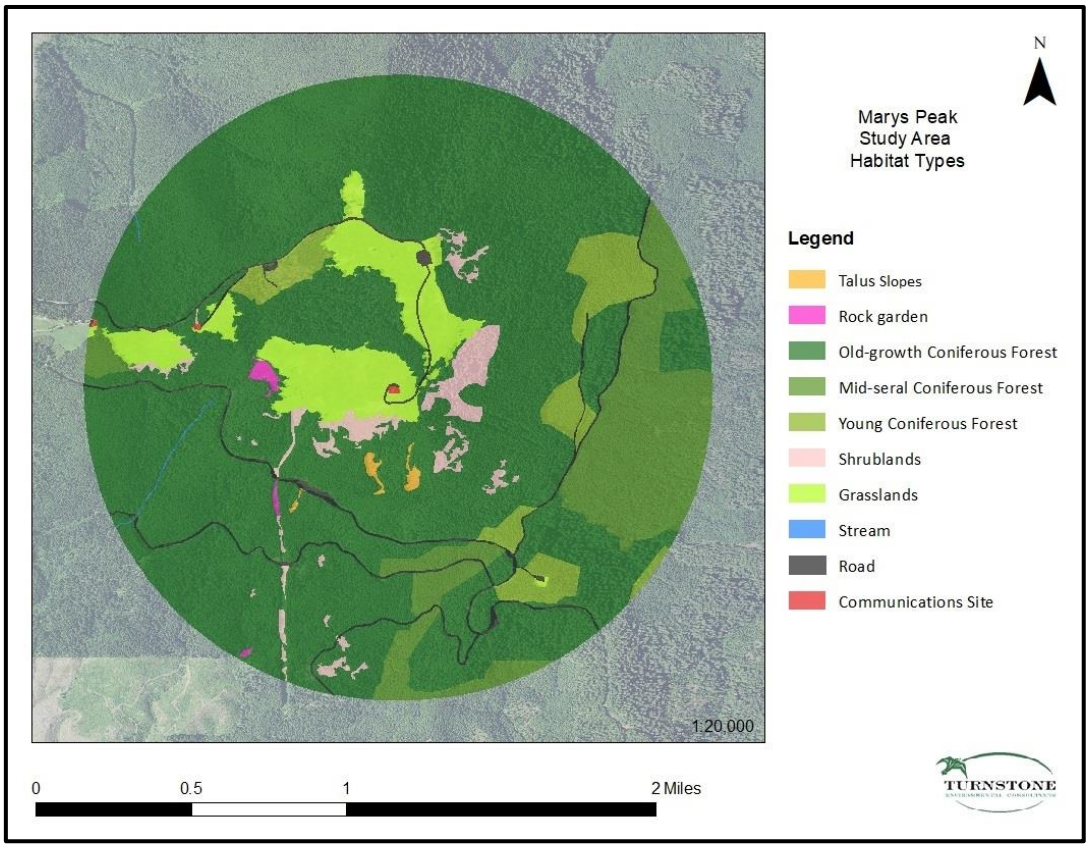
Wildlife Habitat

BPA contracted with Turnstone Environmental to assess wildlife habitat and conduct wildlife species surveys in the wildlife study area. Wildlife habitat types were categorized and ranked by habitat quality. Wildlife habitat quality was classified as:

- **High quality** – rare or limited on the landscape, or vegetated predominantly with native species, little or no disturbance, and few or no non-native, invasive plant species
- **Moderate quality** – dominated by non-native plant species but with some native plant species
- **Low quality** – areas with substantial disturbance and dominated by non-native, invasive plant species with few to no native plant species

Field surveys were conducted for special-status (rare) animal species. The list of species surveyed is in Appendix C; a list of species observed during 2018 and 2019 field surveys is in Appendix D.

Wildlife habitat at the BPA Albany Substation and the Prospect Hill communications site are described above. Because of the minimal nature of the proposed work which would only occur inside the fences at these facilities, they are not described in further detail in this section.



Map 3-1. *Marys Peak habitat types.*

Marys Peak

Marys Peak study area habitat assessments were conducted on May 28, June 8, and Aug. 9, 10, 13, and 15 in 2018. Various types of wildlife habitat occur in the Marys Peak study area, as shown in Figure 3-1).

Talus slopes are areas of unconsolidated rock material on steep slopes, usually with sparse vegetative cover (Photograph 3-9). Talus slopes under a forest canopy offer a rich habitat of rock, gravel, and downed woody debris that moderate temperature and moisture in the forest floor, providing choice

habitat for amphibians. Talus slopes are high-quality habitats with low levels of disturbance, high native plant species coverage (when coverage is present on rock substrate), low non-native plant species coverage, and are rare on the landscape. Talus slopes are important habitats for salamanders and pika, a small member of the rabbit family (Beever *et al.* 2017). Talus slopes occur on both USFS and BLM land within the Marys Peak study area.

A rock garden is composed of surface rocks or stones, along with plants and extensive moss and lichens covering most of the rock. Rock gardens occur on the southwest slope of the Marys Peak study area (Photograph 3-10). They are exposed to direct hot sunlight and steady westerly breezes in summer, resulting in arid conditions. Winter storms blow away most of the snow, leaving scant snowpack to moisten the ground in spring. Rock gardens are high-quality habitat with high native species coverage, very low non-native coverage, and uniqueness and rarity on the landscape within the Coast Range ecoregion. These sites are important reservoirs of ***biodiversity*** and provide habitat for a wide variety of plants, fungi, and animals, many of which are not found in forested areas. Rock gardens occur on both USFS and BLM land within the Marys Peak study area.

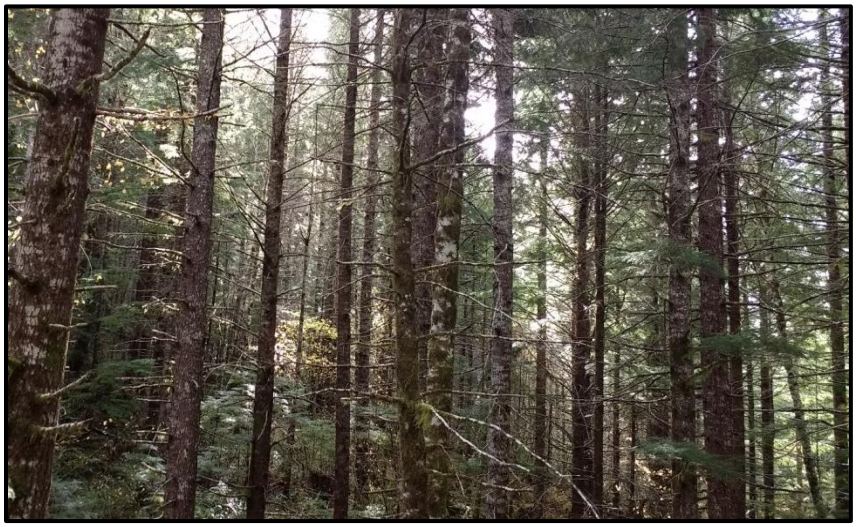
Stands of old-growth coniferous forest (conifers greater than 120 years old) are common throughout the Marys Peak study area (Photograph 3-11. This habitat type is characterized by a canopy of old-growth Douglas-fir, noble fir, and western hemlock trees, typically with a shrubby, open understory. The

Photograph 3-9. *Talus slope in the Marys Peak study area (May 3, 2018).*

Photograph 3-10. *Rock garden in the meadows on Marys Peak (August 13, 2018).*

canopy complexity tends to be high, with many mature trees featuring broken tops and wind shear related deformities, with an accompanying accumulation of large downed wood. At high elevations, unique, pure stands of noble fir occur that have low understory coverage.

Old-growth coniferous forests in the study area are high-quality with high native species diversity, very low cover by non-native vegetation, and an abundance of decadent features (down wood debris, standing snags, cavities, and broken tops). Coniferous forests are commonly inhabited by sooty grouse (*Dendragapus fuliginosus*), barred owl, pileated woodpecker, chestnut-backed chickadee (*Poecile rufescens*), varied thrush (*Ixoreus naevius*), red crossbill (*Loxia curvirostra*), Townsend's chipmunk (*Tamias townsendii*), and Douglas' squirrel (*Tamiasciurus douglasii*). Moist microclimates, such as ephemeral stream watercourses within coniferous forests and decaying trees, offer habitat to amphibians, including northwestern salamander (*Ambystoma gracile*), ensatina (*Ensatina eschscholtzii*), and western red-backed salamander (*Plethodon vehiculum*) (Corkran and Thoms 1996). Old-growth coniferous forest habitat occurs on USFS, BLM, City of Corvallis, and private lands within the Marys Peak study area.

Photograph 3-11 *(left). Old-growth coniferous forest in the Marys Peak Study Area (Aug. 9, 2018).*
Photograph 3-12 *(right). Mid-seral coniferous forest in the Marys Peak Study Area (Nov. 11, 2018).*

The Marys Peak study area includes mid-seral (or second growth) coniferous forest (60- to 120-years old) of Douglas-fir, noble fir, and western hemlock trees (Photograph 3-12), which typically has an open understory with moderate cover of wild huckleberry and sword fern. This habitat type is moderate quality with a fair amount of diversity in native plant species, low abundance of decadent features, low level of disturbance, and low understory coverage. Mid-seral coniferous forests provide feeding, breeding, and shelter areas for many wildlife species, including northern flicker, Steller's jay (*Cyanocitta stelleri*), gray jay, Roosevelt elk, and black bear (*Ursus americanus*) (Maser *et al.* 1981). Mid-seral coniferous stands occur on USFS, BLM, and City of Corvallis land within the Marys Peak study area.

A few areas in the margins of the Marys Peak study area include young coniferous forest (less than 60 years old) with Douglas-fir, noble fir, and western hemlock trees (Photograph 3-13). The open understory includes wild huckleberry and sword fern. Young coniferous forests are moderate-quality, due to the low diversity in tree species and diameter, lack of decadent features, but high native plant species coverage and low level of disturbance since trees were last harvested. Habitat alterations caused by past timber harvest benefit some species, such as the mountain beaver (*Aplodontia rufa*) that feed on ferns and other plants that rapidly colonize recently-logged stands (Maser *et al.* 1981). Animals that forage on the new growth of regenerating shrubs, such as Roosevelt elk, also benefit from habitat alternation. Young coniferous forests occur on USFS land within the Marys Peak study area.

Photograph 3-13. *Young coniferous forest in the Marys Peak Study Area (November 11, 2017).*

Shrublands include areas with 25 percent or greater cover of shrubs and no or very low tree cover. They occur as transition areas between forests and open habitats. Tree invasion into shrublands, most notably by noble fir, is common. A variety of native shrub species occur and cover by herbaceous species is high. Shrublands in the study area are high-quality habitat with a low level of disturbance, high native species coverage and diversity, and very low non-native coverage. Species that could use

shrubland habitat in the Marys Peak study area include deer and small mammals, amphibians, and various species of birds. Shrublands occur on USFS and BLM lands within the Marys Peak study area.

Photograph 3-14. *Grasslands in the Marys Peak study area (Aug 9, 2018).*

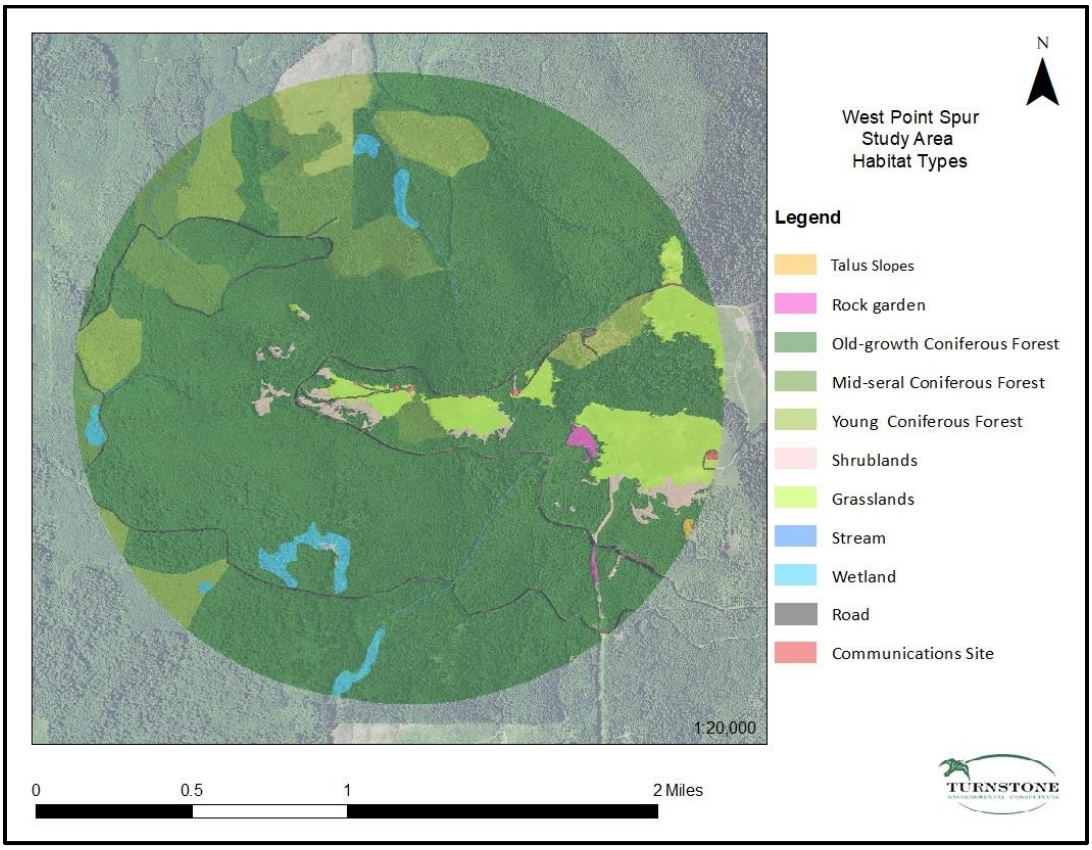
Grasslands, extensive meadows dominated by grasses and herbaceous native plants, are present in the Marys Peak study area (Photograph 3-14). Meadows are often interspersed between stands of old-growth forest and other habitat types. They are high-quality habitat with low level of disturbance and low non-native vegetation coverage; however, the quality of the habitat decreases to low- or moderate-quality along access roads, inside the communications site's fence, and near parking lots and road-side pull-offs, where the soil is compacted and disturbed, with more coverage by non-native plant species.

Grassland habitats are important for pollinators, such as native bumble bees (*Bombus* spp.) and sweat bees (*Agapostemon* spp.). They also provide habitat for small rodent species, such as the brush rabbit (*Sylvilagus bachmani*) and Townsend's vole (*Microtus townsendii*), important prey species for raptors, such as the northern harrier (*Circus hudsonius*), which was observed hunting in the grasslands in the Marys Peak study area (Hafner *et al.* 1998). Snow buntings (*Plectrophenax nivalis*) have also been observed in the open grassland habitat near the Marys Peak summit in the fall according to some bird watchers encountered at the site. Grasslands occur on USFS, BLM, and City of Corvallis lands within the Marys Peak study area.

Disturbed habitats are present within the Marys Peak study area, particularly in and along roads where there is little to no cover by vegetation to provide habitat for wildlife species. The industrial communications sites in the Marys Peak study area are highly disturbed; the vegetation is regularly maintained and the fenced area prevents access by some wildlife species. Vegetation primarily consists of non-native species, providing low-quality habitat.

West Point Spur

West Point Spur habitat assessments were conducted on May 3, 4, and 28, June 8, and Aug. 10 and 15 of 2018. Habitat types include coniferous forests of various ages, grasslands, and special habitats, including wetlands, talus slopes, and seeps and springs (Figure 3-2). Many of the West Point Spur habitat types are the same as those that occur on Marys Peak, described above.



Map 3-2. *West Point Spur habitat types.*

Forested talus slopes within the West Point Spur study area consist of accumulations of loose, coarse, angular rock debris. Talus slopes are high-quality habitats with low levels of disturbance and high native plant species coverage. Talus slopes occur on both USFS and BLM land.

Some of the rock gardens in the West Point Spur study area are the same rock gardens as described in the Marys Peak study area.

Old growth coniferous forest is common throughout the West Point Spur study area, consisting of Douglas-fir, western hemlock, and noble fir, with a shrubby, open understory of native shrubs and sword fern. The forest includes patches of standing snags and accumulations of large-diameter down wood. Old growth coniferous forests are high-quality habitats with herbaceous, shrub, tree and canopy layers, high diversity of native species, low coverage of non-native vegetation, very low levels of disturbance, and high abundance of decadent features, such as large down wood, standing snags, tree cavities, and broken tops (USFS 1993). Old growth coniferous forests occur on USFS, BLM, City of Corvallis, and private lands.

The West Point Spur study area includes mid-seral (or second-growth) coniferous forest that are young-to-mature (60- to 120-years old), dominated by Douglas-fir with noble fir, and western hemlock. These forests are generally closed-canopy forests, with an open understory of native shrubs and sword fern (Turnstone 2019). They are moderate-quality habitat with modest diversity in native plant species, low non-native species coverage, low abundance of decadent features, low level of disturbance, and low understory coverage. This habitat type occurs on USFS, BLM, City of Corvallis, and private lands.

The West Point Spur study area also includes stands of young coniferous forest, or smaller conifers in a young, regenerating forest. Young coniferous forest is moderate-quality habitat, due to the low diversity in tree species and relatively small size diameter at breast height (DBH), lack of decadent features, ubiquitous distribution, but high native plant species coverage and low level of disturbance since trees were last harvested. Young forests occur on USFS and BLM lands.

Within the West Point Spur study area, shrublands occur along the meadow and forest edges and in small gaps in the forest. They are high-quality habitat with a low level of disturbance, high native species coverage and diversity, and very low non-native coverage. Shrublands occur on USFS, BLM, and City of Corvallis lands.

Grasslands**,** large meadows dominated by native plants, occur in the West Point Spur study area. Meadows are interspersed between stands of old-growth forest and other habitat types. Grasslands are key habitat features for native pollinators, and large ungulate species, such as black-tailed deer (*Odocoileus hemionus*) and Roosevelt elk, and small rodent species, such as brush rabbit. Grasslands are high-quality habitat with low disturbance and non-native vegetation coverage. However, the quality of the habitat decreases to low- or moderate quality closer to the access roads and communication sites, where there is compacted soil and moderate human activity, which increases cover by non-native plant species. Grasslands occur on USFS and City of Corvallis lands.

Several ***wetlands*** occur on USFS and BLM lands within the West Point Spur study area. Field visits were not conducted to assess wetland habitat because they would not be affected by the Project, but it is likely this wetland habitat is high quality based on the unaltered wetland boundaries and large extent of each wetland. Large, unaltered wetlands provide important habitat to wildlife, including birds, amphibians, and invertebrates.

Photograph 3-15. *Small spring in the West Point Spur study area (May 3, 2018).*

One small spring was observed in the West Point Spur study area, covering less than 0.1 acre (Photograph 3-15). This spring is high-quality habitat with a low level of disturbance, high native plant species coverage, low non-native plant species coverage, and it is unique within the study area. Springs and seeps provide important sources of moisture and wetland plants for certain wildlife, such as amphibians.

Disturbed habitats that occur within and along the roads and parking areas on USFS, BLM, and City of Corvallis land within the West Point Spur study area provide low-quality habitat. Wildlife is sparse in these areas. The communications sites within the West Point Spur study area are low-quality habitat with moderate invasive, non-native plant coverage, and high disturbance levels, all located on City of Corvallis land.

Special-status Animal Species

The list of special-status animal species considered for this Project (see Appendix C) was compiled using the following sources:

- Animal species identified for protection under the federal Endangered Species Act (16 U.S.C. 1531 et seq.), including listed endangered, listed threatened, species proposed for listing, and ***candidate species*** (USFWS 2015, 2016, 2017, 2019, 2020)
- Federal Species of Concern and Birds of Conservation Concern (USFWS 2015, 2016, 2017, 2019, 2020)
- Animal species identified for protection under the Oregon Endangered Species Act as endangered, threatened, and sensitive (ORS 496.012)
- SNF and BLM Northwest Oregon District Sensitive animal species

- SNF Management Indicator species
- Forest Plan Survey and Manage species
- Rare animal species tracked by the Oregon Biodiversity Information Center (ORBIC 2018)
- USFWS, SNF, and BLM wildlife biologists

Information on each wildlife species was obtained from reputable biological resources, primarily NatureServe (NatureServe 2017-2019). The potential for each species to occur in the wildlife study area was based on their known habitats and known occurrences within 5 miles of Project components. Biologists conducted surveys for special-status species at Marys Peak and West Point Spur. For special-status birds and mammals, biologists looked within 0.25 mile of proposed construction and tree-cutting areas. For invertebrates, biologists looked within 100 feet of proposed construction and tree-cutting areas due to the limited mobility of most invertebrates.

Federal and State Endangered Species Act

Of the species on the federal and state ESA lists for Benton, Marion and Linn counties (USFWS 2015, 2016, 2017, 2019, 2020), only two federally threatened and state-threatened bird species have the potential to occur in the Marys Peak and West Point Spur portions of the study area: the marbled murrelet (*Brachyramphus marmoratus*) and the northern spotted owl (*Strix occidentalis caurina*). As of the fall of 2019, the red tree vole (*Arborimus longicaudus*) was an ESA candidate species with the potential to occur in the study area, but was not state listed. As of July 2020, the North Oregon Coast Population of the red tree vole species was lowered from a Candidate species to a federal Species of Concern; however, it is still not state listed.

The following federally-listed threatened or endangered species for Benton, Marion and/or Linn counties (USFWS 2015, 2016, 2017, 2019, 2020) do not have the potential to occur in the study area: The streaked horned lark (*Eremophila alpestris strigata*), the yellow-billed cuckoo (*Coccyzus americanus*), and the Fender's blue butterfly (*Icaricia icarioides fenderi*).

Marbled Murrelet – There are no known occurrences of the federally threatened and state-threatened marbled murrelet within 1 mile of the Marys Peak or West Point Spur portions of the study area (ORBIC 2018). To determine if marbled murrelet occur in the study area, field surveys were conducted using a USFWS-accepted survey protocol in potentially suitable habitat within 0.25 mile of construction activities (disturbance area) at both Marys Peak and West Point Spur. Five visits to each of nine survey block sites were made at dawn to watch for the marbled murrelet, in both 2018 and 2019, but marbled murrelets were not observed (Turnstone 2019).

Marbled murrelet designated critical habitat (DCH) under the federal ESA occurs in the Marys Peak and the West Point Spur study areas. Marbled murrelet DCH occurs on all the USFS land in the study area. Marbled murrelet DCH does not occur on lands managed by the BLM or the City of Corvallis within the study area, including tree-cutting areas. Project work areas within marbled murrelet DCH include:

- Marys Peak: Marys Peak communications site, staging areas, and the USFS portion of the unpaved access road
- West Point Spur: The USFS portion of the unpaved access road

The DCH for the marbled murrelet uses the term Primary Constituent Element. The new critical habitat regulations (USFWS and NOAA 2016: 81 FR 7214) replace this term with Physical or Biological Features (PBFs). This shift in terminology does not change the approach used in conducting the analysis on DCH, whether the original designation identified Primary Constituent Elements, Physical or Biological Features, or essential features.

There are two PBFs that apply to marbled murrelet DCH. The first PBF is defined as forested stands with trees, generally greater than 32 inches in diameter, that have potential nesting platforms at least 33 feet

above the forest floor. The second PBF is defined as the surrounding forest, within 0.5 mile of the above-mentioned stand, which must have a canopy height of at least one-half the site-potential tree height. Project work areas within marbled murrelet DCH at Marys Peak and West Point Spur do not include forested areas and therefore do not meet the description of the two PBFs. All proposed tree-cutting areas are not within marbled murrelet DCH (Turnstone 2019).

Northern Spotted Owl – There are three known occurrences of the federally threatened and state-threatened northern spotted owl within the Marys Peak and West Point Spur study areas (ORBIC 2018). Two are about 1.5 miles and 0.6 mile from the Marys Peak communications site, while the third is about 1.1 miles from the West Point Spur CPI communications site.

The USFWS defines the northern spotted owl disruption distance as the area within 65 yards of a noise source that could cause birds to be distracted to such an extent as to disrupt normal behavior and create the likelihood of harm or loss of reproduction (USFWS 2016). The known northern spotted owl sites in the study area are located well beyond the 65-yard disruption distance from construction work areas and noise sources (Turnstone 2019).

USFWS determined that field surveys to detect the northern spotted owl in the Marys Peak study area were not necessary because any northern spotted owls present would only be temporarily dispersing through the area or temporarily foraging in the habitat and would not be resident nesting birds.

At West Point Spur, the USFWS determined that field surveys were needed for the northern spotted owl because there is a possibility of suitable nesting habitat near construction areas. Northern spotted owl surveys were conducted within 0.25-mile of construction areas due to possible disturbance and disruption of nesting birds. In 2018 and 2019, northern spotted owl surveys consisted of six visits made to each survey site. Surveyors followed a USFWS-accepted survey protocol which requires them to play broadcasts of the calls made by the northern spotted owls, who then respond if present. Northern spotted owls were not observed during these surveys (Turnstone 2019). Northern spotted owl spot-check surveys were also conducted in 2020 following the methods outlined in the same USFWS-accepted survey protocol. No northern spotted owls were observed in 2020 (Turnstone 2020). Follow up surveys are planned for each year until construction activities begin.

Northern spotted owl DCH occurs in the Marys Peak and the West Point Spur portion of the study area, including some USFS lands and all BLM lands. It does not occur on the USFS portion of the access road leading from Marys Peak Road to the CPI communications site, or lands managed by the City of Corvallis in the study area, including the tree-cutting area at West Point Spur. The only Project work area within northern spotted owl DCH is the BLM tree-cutting area at Marys Peak.

The PBFs of northern spotted owl DCH are the specific characteristics that make forested habitat areas suitable for nesting, roosting, foraging and dispersal (USFWS 2012, pp 71,906-71,908). The PBFs include: 1) forest types in early-, mid-, or late-seral stages that support 2) nesting and roosting, 3) foraging, and/or 4) transience and colonization phases of dispersal (73 Fed. Reg. 47326).

Red Tree Vole – The red tree vole (*Arborimus longicaudus*) is currently a federal Species of Concern and a former ESA Candidate species. The north Oregon coast Distinct Population Segment of the red tree vole was not warranted for threatened or endangered listing [84 FR 69707]). The red tree vole is also an Oregon Conservation Strategy species. Red tree voles are restricted to conifer forests due to its exclusive diet of conifer needles. Red tree voles show a strong selection for and tend to be more abundant in older forest, principally inhabiting Douglas-fir trees. Nests are most often found in larger-diameter trees and home ranges are less than 0.9 acre in size (USFS/BLM 2000). The BLM tree-cutting area in the Marys Peak study area is not suitable red tree vole habitat because it only consists of noble fir.

At West Point Spur, the tree cutting area was considered to have the potential to support red tree vole because of the presence of Douglas-fir trees. In 2019, surveys were performed to look for potential red tree vole nests at West Point Spur, but none were observed. Based on the lack of nests, it is assumed that the red tree vole is not present.

USFS and BLM Special-status Species

USFS SNF and BLM Northwest Oregon District Sensitive Species

There are 21 species that are listed as Sensitive for the USFS SNF, and 44 BLM Northwest Oregon District species that could occur in the study area, including the western bumblebee (*Bombus occidentalis occidentalis*). Only two are likely to occur in the study area that occur on both the SNF's and BLM's lists (Appendix C). They are the purple martin (*Progne subis*) and the red tree vole. There are also two invertebrate species; however, they are only found on the BLM's State Director's Sensitive species list and not on the USFS Regional Forester's list. None of the four sensitive species were observed at Marys Peak or West Point Spur (Turnstone 2019).

The purple martin is a USFS SNF and BLM Sensitive bird species (Appendix C) that could occur in the study area. It nests in tree cavities, nesting boxes, or crevices in manmade structures; it is uncommon in Oregon, but was reported in 1977 by USFS as being a rare summer resident of Marys Peak (ORBIC 2018). This species forages over open water, fields, or forest canopy habitats, often near water; winters in South America (Turnstone 2019).

The red tree vole is the one mammal species that is listed as USFS SNF and BLM Sensitive that could occur in the study area, but was not detected during 2019 surveys and is assumed not present (Appendix C). See the *Federal and State Endangered Species Act* section above for additional details about the red tree vole and its suitable habitat.

The two invertebrate species that are listed as BLM Sensitive species that could occur in the study area, although a low likelihood, are the Suckley cuckoo bumble bee (*Bombus suckleyi*) and the Siskiyou short-horned grasshopper (*Chloealtis aspasma*). One species flies while the other flies for short distances or hops. As such, the area inhabited by the grasshopper invertebrate species could be relatively small, while for bumble bees, it could be relatively large since they could travel throughout the study area and beyond.

Forest Plan Survey and Manage Species

Three species of Northwest Forest Plan (USFS and BLM) Survey and Manage species were considered likely to occur within the Marys Peak and West Point Spur study areas (Appendix C). The great gray owl (*Strix nebulosa*) and the red tree vole are Category A species, and the keeled jumping-slug is a Category D species. A great gray owl was detected in the West Point Spur study area on City of Corvallis land. The great gray owl forages in meadows and other openings, primarily preying on rodent species, such as voles and pocket gophers. It nests in old-growth conifer forests or in younger forests with older remnant trees or snags that are located near (within 0.25 mile of) foraging habitat. This species does not regularly occur in Benton County or the Coast Range and is not known to be nesting in the study area (ORBIC 2018). Due to the high mobility of this species, it is expected that the great gray owl would only temporarily use the forested habitat in the study area for dispersal or foraging.

Surveys were conducted for the red tree vole in the West Point Spur tree-cutting area but there was no evidence of red tree voles or their nests. See the *Federal and State Endangered Species Act* section above for additional details about the red tree vole and its suitable habitat.

The keeled jumping-slug (*Hemphillia burringtoni*) is a small forest-dwelling slug that inhabits moist coniferous forests with abundant downed wood, and ground cover of low vegetation, litter, and debris (USFS/BLM 2015). The nearest documented occurrence of what is thought to be a keeled jumping-slug was about 1.4 miles from the Marys Peak communications site (ORBIC 2018). There is some discussion

about the differentiation between species that are similar to the keeled jumping-slug. There is unpublished data relating to the current understanding of their distribution, but USFS and BLM biologists state there is only a very small possibility they would occur in the study areas, which are outside of their known range in Washington and at the upper margin of their elevation range. This slug species was not observed at Marys Peak or West Point Spur (Turnstone 2019).

USFS Management Indicator Species

Ten USFS Management Indicator Species (MIS) were considered likely to occur within the Marys Peak and West Point Spur study areas (Appendix C). One of the MIS species is a mammal and nine are birds. Five USFS MIS were observed (or signs of their presence observed) during Project wildlife surveys at either Marys Peak or West Point Spur. The following MIS species were observed at both Marys Peak and West Point Spur: northern flicker, red-breasted nuthatch, and the pileated woodpecker. The hairy woodpecker was only observed in the Marys Peak study area. Additionally, signs of Roosevelt elk presence were observed at both Marys Peak and West Point Spur. The four MIS bird species observed within the study area are cavity-nesting species associated with coniferous and mixed conifer-hardwood forests that breed between March and July. Suitable habitat for these species occurs in the study area, and it is likely that they occur year-round.

During wildlife surveys, biologists observed Roosevelt elk tree rubs and scat in the forest, shrublands, and grasslands habitat throughout the Marys Peak and West Point Spur study areas. The Roosevelt elk has a high likelihood of occurring year-round in forest and meadow habitat within the Marys Peak and West Point Spur study areas on USFS, BLM and City of Corvallis lands.

Other Special-status Species

Most birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918. The MBTA implements various treaties and conventions between the U.S. and other countries, for the protection of migratory birds (16 USC 703–712, July 3, 1918, as amended in 1936, 1960, 1968, 1969, 1974, 1978, 1986, 1989). Under the act, taking, killing, or possessing migratory birds, or their eggs or nests, is unlawful. The act classifies most species of birds as migratory. More information on the MBTA is in Chapter 4 of this EA.

Birds of Conservation Concern include birds that, while not ***federally listed***, are identified by the USFWS as conservation priority species. Birds of Conservation Concern include some non-MBTA-protected species, such as the Oregon vesper sparrow (*Pooecetes gramineus affinis*). The bald eagle (*Haliaeetus leucocephalus*) is protected under the Bald and Golden Eagle Protection Act. Five Birds of Conservation Concern and the bald eagle were considered as having the potential to occur at the Marys Peak and West Point Spur study areas, but only the olive-sided flycatcher was observed. The olive-sided flycatcher is also a federal Species of Concern.

3.6.3 Environmental Consequences – No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing communications facility would not be rebuilt and impacts related to Project construction would not occur. Operations and maintenance activities would continue at the BPA Marys Peak and the BPA Prospect Hill communications sites and would be similar to existing practices. Temporary and infrequent maintenance activities at the BPA Marys Peak communications site would result in **no** impacts on federally-listed or state-listed wildlife species and **low** impacts on other wildlife species in the vicinity, including other special-status species. Because potential impacts resulting from emergency repairs at Marys Peak would be localized impacts on a small amount of low- to moderate-quality grassland habitat within the fenced communications site or along the access road, impacts on wildlife habitat would be **low**.

At the BPA Prospect Hill communications site, temporary and infrequent maintenance activities would result in **no** impacts on federally-listed or state-listed wildlife species and **low** impacts on other wildlife

species in the vicinity, including other special-status species. Because potential impacts resulting from emergency repairs at the BPA Prospect Hill communications site would be localized impacts on a small amount of low-quality habitat within the fenced communications site, impacts on wildlife habitat would be **low**.

3.6.4 Environmental Consequences – Action Alternatives

This section describes the potential impacts of implementing any of the action alternatives on wildlife habitats, including designated critical habitat, and on wildlife species, including special-status species. Impacts on wildlife and wildlife habitat would be direct or indirect, and temporary or permanent.

Impacts Common to All Action Alternatives

Direct impacts on wildlife and wildlife habitat would be limited to the immediate Project work areas. The crushing or clearing of vegetation and soil disturbance would remove a small amount of wildlife habitat or degrade the existing quality of habitat used for foraging, nesting, roosting, or burrowing by mammals, birds, reptiles or invertebrates. The use of heavy construction equipment would remove and/or compact soils, which could have a long-term effect on the growth of native plant species. Areas where the soil would be disturbed by construction activities and equipment could function as a "seed bed" for invasive plant species, thus reducing the quality of native habitat for wildlife. Weed propagules could blow into the construction site, be transported by wildlife, or be transported to the site on construction vehicles, equipment, clothing, or boots.

Direct impacts on wildlife could include incidental mortality. Mortality could occur from collisions with vehicles or equipment, although this would be unlikely given the mobility of wildlife and the vehicle speed restrictions that would be imposed on unpaved access roads. Birds and bats are generally adept at avoiding stationary structures, and bats would not be present during the day when vehicles and equipment are operating. Incidental mortality could also occur during use of equipment to excavate soil or if wildlife falls into holes excavated during construction. Overall, the threat of incidental mortality to most species would be limited to the duration of construction and within those small areas where ground disturbance would occur or vehicles would travel.

Indirect impacts on wildlife or wildlife habitat could occur beyond the actual work areas or they could arise after construction activities are completed. Indirect impacts include erosion and the introduction of sediments to undisturbed areas near construction work areas and the temporary reduction of local prey species. Another potential indirect impact could be the degradation of habitat quality from the spread of non-native and weedy plant species from areas disturbed by construction into adjacent undisturbed areas. BMPs would be implemented to help prevent erosion and the introduction of new weed species and the spread of existing weed species.

Impacts on wildlife species and habitat could be temporary or permanent. Temporary impacts on wildlife could be short term or long term, depending on the severity of the impact. Temporary impacts that would disturb wildlife habitat but not prevent the reestablishment of habitat similar to the preconstruction conditions would be considered short-term impacts. Long-term, temporary impacts could occur when medium- or high-quality native plant communities or forested areas are disturbed because of the length of time required to successfully restore these habitats.

During access road improvements, temporary construction noise and human activity would result in disturbance of and possibly short-term displacement of wildlife. Available habitat loss would extend beyond the ground disturbance area and at varying distances, depending on the type of activity and the wildlife species that could be affected. The increase in human activity during the breeding season would be expected to have low short-term impacts on wildlife because species would only temporarily avoid the construction work areas. However, moderate short-term impacts on bird and mammal wildlife species could result from increased noise levels and human activity during their breeding season (March

through August), if these activities reduce the foraging effectiveness of adults or causes adults to abandon nest sites, thus leading to mortality in their young. Habitat quality could also be temporarily reduced in the short term when wildlife in the construction area experiences nuisance noise, to the point that it causes an increase in stress, but not to a level of fleeing or avoiding the construction area.

Permanent impacts would result in the modification of a wildlife habitat to the extent that it would not return to preconstruction conditions during the life of the Project. Permanent impacts on wildlife habitat would occur in areas where trees are cut or grassland habitat is removed to construct a building addition, steel-lattice structure, or the rocked apron at the edge of an access road.

Because the scope of construction work and the types of habitat that could be affected varies for each action alternative, each alternative would have different impacts on wildlife. Discussion of the potential impacts specific to each action alternative are presented below. Construction disturbance area estimates for each action alternative are in Table 3-1 of this EA.

Impacts Specific to Action Alternatives

Alternative 2A

Marys Peak

At Marys Peak, improvements to BPA facilities inside the fence and along the access road would result in direct impacts on a small amount of grassland habitat. Vegetation would be crushed or removed by construction activities inside the fence. Installation of the rocky drainage "apron" at the edge of eight water bars would require clearing of existing vegetation, grading, and compacting soils; and adding new fill material and installing a 10-foot-by-10-foot permanent and more sparsely vegetated rock-lined drainage apron on the downhill slope. The apron would be constructed with enough rock to slow runoff from the road, but would leave enough space to allow vegetation to grow through the apron itself, eventually obscuring the rock and providing some vegetation for wildlife species to utilize. Work inside the fence and the installation of water bars would result in the temporary disturbance of 0.23 acre of low- to moderate-quality grassland habitat and the permanent removal of 0.03 acre of low- to moderate-quality grassland habitat.

Both the temporary and permanent loss of this small amount of low- to moderate-quality habitat would have **no** impact on federally-listed and state-listed wildlife species because they do not occur in the study area. Temporary and permanent loss of this habitat would not be expected to have a detrimental effect on other special-status wildlife species or general wildlife species. The availability of large tracts of high-quality grassland in the vicinity of the existing communications site and access road make it unlikely that the loss of foraging and nesting habitat would have a detrimental effect on wildlife populations. Because the small areas impacted would be mostly revegetated with native species and permanent removal of habitat would be small, temporary and permanent impacts on special-status species (that are not federally or state-listed), and general wildlife species from habitat loss would be **low**.

Birds or bats could collide with the new 40-foot tall steel-lattice structure with a 20-foot tall whip antenna and a new 6-foot microwave dish. Eagles, herons, and vultures have been identified as bird types that may have a higher susceptibility for collision with power lines, as they have large wing spans, heavy bodies, and generally poor maneuverability (APLIC 2012). While the steel-lattice structure and microwave dish would be visible to these birds at a great distance during clear weather, the narrow-diameter, white, 20-foot tall vertical whip antenna at the top of the structure may be less visible to birds until at a closer distance, thereby increasing risk for collision. Eagles and herons are not likely to occur near the study area, but other bird species, such as the vulture, could be present. Resident birds are likely acclimated to avoiding the existing communications equipment at the summit, so would likely avoid the new structure and equipment as well. The level of impacts from bird collisions, including special-status bird species that are not federally or state-listed, is unknown but would likely be **low** given

the small size of the facility and whip antenna and the high visibility of the new structure with a large microwave dish. **No** impacts would occur on federally or state-listed bird species from collisions with the steel-lattice structure or equipment.

Indirect impacts could occur to wildlife habitat outside the fence. Temporary construction noise and human activity would result in **low** impacts due to displacement of non-federally listed or state-listed special-status and general wildlife species and **moderate** impacts if it resulted in nest abandonment. **No** impacts would occur to federally- or state-listed species. Any erosion that was not controlled could result in sheet erosion, degrading plant communities and habitat outside the fence. If hikers create new trails because of access limitations during construction, this would result in the degradation of wildlife habitat. Exclusion fencing and signage would be installed to help prevent entry into the rock garden area. Overall, there would be **low** impacts on special-status species that are not federally or state-listed and other general wildlife species from temporary displacement or degradation of habitat.

Construction could result in the introduction or spread of non-native species, including noxious weeds that are already present inside the fenced communications sites. To prevent or minimize the likelihood of noxious weed introduction and spread, BMPs would be implemented to help prevent the introduction of new weed species and the spread of existing weed species, resulting in **moderate** impacts on wildlife habitat from potential weed spread.

Up to 14 noble firs in high-quality forest habitat would be cut on BLM land. To protect soils, trees would be cut with chainsaws, without bringing in heavy equipment or log trucks. Tree cutting would result in **no** impacts on federally and state-listed wildlife species. It would not be expected to result in the injury or death of other special-status species that are not federally or state-listed and other general wildlife species because tree cutting would take place outside of the bird nesting season, if possible. Also, wildlife would likely leave the work area when workers arrive to perform the tree cutting. In the future, wildlife species would be expected to use the surrounding non-affected forested areas for foraging and nesting. Increased noise could cause wildlife to avoid the area during tree cutting, which would only take a couple of days. The permanent cutting of up to 14 noble firs within 0.53 acre of high-quality forest habitat would be a **low** impact given the amount of adjacent high-quality forested habitat.

BPA Albany Substation

At the BPA Albany Substation, a 6-foot diameter microwave dish would be installed on the existing steel-lattice structure. Project activities would have **no** impact on wildlife habitat or on federally and state-listed wildlife species because they do not occur in the study area. Other special-status species of birds and bats, or general bird and bat species could collide with the structure; however, the addition of new communications equipment would make it more visible to wildlife and resident birds that are likely used to avoiding the existing steel-lattice structure. The level of impact due to bird and bat collisions is unknown, but would likely be **low** given the small size of the facility and the visibility of the structure and its equipment.

Construction at the BPA Albany Substation would increase noise levels in an urban setting with different types of noise present during the day. On the east side of the substation, where the existing communications steel-lattice structure is located, a busy street and a residential area contribute to the noise levels. Any resident wildlife species present in the urban setting are habituated to human presence and noises from human activities. The adjacent natural habitats, including the riparian corridor along the Calapooia River and the city park, are far enough away from work areas that construction noise levels would decrease with the distance. Because of the short-term and minor extent of the proposed work and the proximity to existing urban noise levels, there would be **no** impacts on federally listed, state-listed or other special-status species, or on other general wildlife species from displacement or loss of habitat quality at the BPA Albany Substation.

Alternative 3C

Marys Peak

Activities inside the fenced area at the Marys Peak communications site and access road improvements would result in direct impacts on wildlife habitat. The level and types of impacts on wildlife species and wildlife habitat under Alternative 3C would be similar to those described under Alternative 2A, but the impacts would cover a larger area. Work inside the fence (including the removal of the BPA communications site and constructing a new building addition at the USFS facility), and the installation of eight water bars would result in the temporary disturbance of 0.35 acre of low- to moderate-quality grassland habitat and the permanent removal of 0.05 acre of low- to moderate-quality grassland habitat. Because disturbed areas would be revegetated with native species, including the current BPA communications site, temporary and permanent impacts on wildlife due to habitat loss would be **low**.

Birds or bats could collide with the new 60-foot tall steel-lattice structure with a 20-foot tall whip antenna and a 6-foot microwave dish mounted to the structure. However, because of the presence of other existing steel-lattice structures on the summit, wildlife and resident birds are likely used to avoiding the existing steel-lattice structures. The level of impacts from bird collisions is unknown, but would likely be **low** given the small size of the facility and visibility of the replacement structure and its equipment. **No** impacts would occur to federally and state-listed bird species because they do not occur in the study area, but would likely be **low** for other special-status species of birds and bat, or general bird and bat species, for collision risk.

The same indirect impacts on wildlife would occur under Alternative 3C as under Alternative 2A, from displacement of wildlife due to increased noise and human presence during construction, from potential erosion and sedimentation, from habitat degradation, and from potential weed introduction or spread. As described under Alternative 2A, these impacts would be **low** on special-status species (that are not federally or state-listed), and general wildlife species**,** depending on the efficacy of BMPs and mitigation measures. **No** impacts would occur to federally and state-listed wildlife species.

Construction could result in the introduction or spread of non-native species, including noxious weeds that are already present inside the fenced communications sites. To prevent or minimize the likelihood of noxious weed introduction and spread, BMPs would be implemented to help prevent the introduction of new weed species and the spread of existing weed species, resulting in **moderate** impacts on wildlife habitat from potential weed spread.

The same stand of noble fir trees would be cut under Alternative 3C as under Alternative 2A, resulting in **low** impacts on wildlife habitat given the amount of adjacent high-quality forested habitat.

Alternative 3C would require removal of the existing BPA communications facility at the summit. The BPA building and associated equipment would be removed from the site and it would be restored with native vegetation. Because this area receives many human visitors, this would have a **low beneficial** effect on wildlife.

BPA Albany Substation

At the BPA Albany Substation, there would be **no** impacts to wildlife habitat because it does not occur in the study area, and **low** impacts to non-ESA listed bird and bat species due to potential collisions with the new antenna. **No** impacts to federally or state-listed species due to collision or displacement or habitat loss, and **no** impact on other special-status species, or on other general wildlife species from wildlife displacement or habitat loss, as explained under Alternative 2A.

Alternative 4

West Point Spur

At West Point Spur, work within the CPI communications site fence and the installation of water bars in the access road would result in the temporary disturbance of 0.15 acre of low- to moderate-quality

grassland habitat and the permanent removal of 0.012 acre of low- to moderate-quality grassland habitat. The temporary and permanent loss of this small amount of low- to moderate-quality wildlife habitat would not be expected to have a detrimental effect on local wildlife resources. The availability of higher quality grassland in the vicinity of the communications site make it unlikely that the loss of foraging and nesting habitat would have a detrimental effect on wildlife populations. Although wildlife would be displaced, it would not be likely to result in their injury or death. Because the relatively small areas impacted would mostly be revegetated with native species and permanent removal of habitat would be small, both temporary and permanent impacts on non-ESA listed wildlife from habitat loss would be **low**.

A 10-foot diameter microwave dish would be added to the existing steel-lattice structure. Birds or bats could collide with the new equipment, although the number of dishes currently on the structure makes it quite visible and resident birds are likely used to avoiding the steel-lattice structure. The level of impacts from bird collisions is unknown, but it would likely be **low** given the small size of the facility and visibility of the structure and its equipment. **No** impacts would occur to federally and state-listed bird species because they do not occur in the study area, but would likely be **low** for other special-status species of birds and bat, or general bird and bat species, due to collision risk.

Indirect impacts on wildlife and wildlife habitat outside the CPI communications site fence could occur. Temporary construction noise and human activity would result in **low** impacts due to displacement of special-status and general wildlife species and **moderate** impacts if it resulted in nest abandonment. Because there would only be a small amount of ground disturbance and BMPs would be used to control erosion, there would be**low** impacts on special-status and general wildlife species and habitat from erosion and habitat degradation.

Construction could result in the introduction or spread of non-native species, including noxious weeds that are already present. To prevent or minimize the likelihood of noxious weed introduction and spread, BMPs would be implemented to help prevent the introduction of new weed species and the spread of existing weed species, resulting in **moderate** impacts on wildlife habitat from weed spread.

Up to 20 conifers in high-quality old-growth forest habitat would be cut. To protect soils, trees would be cut by workers walking into the forest and using a chain saw, without using heavy logging equipment. Tree cutting would result in **no** impacts on federally and state-listed wildlife species, and would not be expected to endanger wildlife or result in injury or death of other special-status species and general wildlife species because tree cutting would take place outside of the bird nesting season, if possible. Also, wildlife would likely leave the work area when workers arrive to perform the tree cutting. In the future, wildlife species would be expected to use surrounding non-affected forested areas for foraging and nesting. Permanent cutting of up to 20 conifers within 0.76 acre of high-quality old-growth forest would be a **low** impact on special-status species that are not federally or state-listed, general wildlife species and wildlife habitat given the amount of adjacent high-quality forested habitat.

Prospect Hill

At the Prospect Hill communications site, equipment would be added to an existing steel-lattice structure. The area inside the fence functions only minimally as wildlife habitat. Because all work at Prospect Hill would be inside the fence in a graveled, weedy area, there would be **no** impacts on wildlife habitat. Birds or bats could collide with the new 10-foot diameter microwave dish, although the number of dishes currently on the structure already make it quite visible and resident birds are likely used to avoiding the existing communications equipment. The level of impacts from bird and bat collisions is unknown, but would likely be **low** given the small size of the facility and visibility of the structure and its equipment. **No** impacts would occur to federally and state-listed bird species because they do not occur in the study area. The level of impacts would likely be **low** on other special-status species of birds and bats, and general bird and bat species, for collision risk.

Construction at the Prospect Hill communications site would increase noise levels for a few days. Wildlife in the adjacent forested habitat could be temporarily displaced by construction noise levels, which would decrease with distance. The availability of open and forested habitat adjacent to the communications site makes it unlikely that the temporary loss of foraging habitat and ground-nesting habitat for birds, mammals, and reptiles near the fence would have a detrimental effect on wildlife populations. Although wildlife could be temporarily displaced, it would not likely result in their injury or death. **No** impacts would occur on federally and state-listed species because they do not occur in the study area. There would be **no** impacts on non-ESA listed species from displacement or loss of habitat or degraded habitat quality because of the temporary and minor extent of work, and lack of general wildlife species potentially displaced resulting from noise and human activity or loss of habitat.

Marys Peak

Removal of the BPA communications site on Marys Peak would result in direct and potentially indirect impacts on wildlife habitat from erosion. Demolition work inside the fence would initially disturb about 0.14 acre around the BPA building, a temporary **low** impact on habitat. Grading of the site could further disturb vegetation. However, most of the site would be revegetated, converting a site with predominantly non-native vegetation to a site with native vegetation, which would have a **low** beneficial effect on wildlife habitat. **No** impacts would occur on federally and state-listed wildlife species because they do not occur in the study area.

Potential Impacts on Wildlife on Public Lands

BPA is coordinating with USFS, BLM, and the City of Corvallis on potential Project impacts on wildlife and wildlife habitat on their lands. This section summarizes the potential impacts on wildlife and wildlife habitat under each alternative, by affected public landowner. There would be no privately-owned lands affected by this Project other than some parcels at a distance from work areas that could be subject to some low levels of noise from Project activities.

BLM

Wildlife habitat on BLM lands would be impacted under Alternative 2A and Alternative 3C. The improvement of three water bars would result in permanent impacts on less than 0.01 acre and temporary impacts on 0.03 acre of low- to moderate-quality grassland habitat. The cutting of up to 14 noble firs within 0.53-acre of high-quality forest would result in temporary habitat impacts. Overall, impacts on wildlife habitat on BLM land under either Alternative 2A or Alternative 3C would be **low** due to the conversion to different habitat types and the small number of trees that would be cut within the larger stand.

USFS

Under all alternatives, low- and moderate-quality grassland habitat on USFS lands would be directly impacted. Impacts on wildlife habitat from water bar installations and communications site improvements would be similar under both Alternative 2A (0.2 acre temporary impacts and 0.02 acre permanent impacts) and Alternative 3C (0.32 acre temporary impacts and 0.04 acre permanent impacts).

The availability of higher quality meadow habitat adjacent to work areas makes it unlikely that the loss of a small amount of foraging habitat and ground-nesting habitat for birds, mammals, and reptiles would have a detrimental effect on wildlife populations. Although wildlife could be temporarily displaced, it would not likely result in their injury or death. Because of the temporary nature of the work and the small area affected, impacts on wildlife on USFS land under either Alternative 2A or Alternative 3C would likely be **low** from displacement or loss of habitat quality resulting from noise and human activity.

Under Alternative 4, removal of the existing BPA Marys Peak communications building would temporarily impact wildlife due to noise and human activity. Three water bars would be installed in the

USFS portion of the access road, resulting in 0.03 acre temporary impacts and 0.01 acre permanent impacts on wildlife habitat. Because much of the site would be revegetated with native species, the overall impact on USFS land would be **low**.

BPA

Under Alternative 2A and 3C, the only BPA land where wildlife habitat could be impacted is the BPA Albany Substation. Because there is very low-quality habitat inside the fence, any wildlife disturbance would largely come from construction noise and human activity, resulting in **no to low** impacts.

Under Alternative 4, the only BPA land where wildlife habitat could be impacted is the BPA Prospect Hill communications site. Because there is very low-quality habitat inside the fence, any wildlife disturbance would largely come from construction noise and human activity, resulting in **no to low** impacts.

City of Corvallis

Wildlife and wildlife habitat on City of Corvallis lands would be impacted under Alternative 4. Construction, including the installation of two new water bars in the access road, would result in temporary impacts on 0.1 acre and permanent impacts on 0.01 acre of moderate-quality grassland habitat. Because the relatively small areas impacted would be revegetated with native species and permanent removal of habitat would be small, both temporary and permanent impacts on wildlife habitat from habitat loss would be **low**. Permanent cutting of up to 20 conifers within 0.76 acre of high-quality old-growth forest would be a **low** impact on habitat because adjacent similar habitat would remain in the area.

Potential Impacts on Special-Status Wildlife Species

Federally-listed and State-listed Wildlife Species

Because no observations of marbled murrelet were detected during the two years of field surveys in 2018 and 2019, it is assumed that they are currently not nesting in the study area, more specifically in the Marys Peak and West Point Spur portions of the study area. Project work areas within marbled murrelet critical habitat (DCH) include the Marys Peak communications site, related staging areas, the USFS portion of the unpaved access road at Marys Peak, and the USFS portion of the unpaved access road at West Point Spur. Because trees within marbled murrelet DCH would not be affected by Project activities in any portion of study area (Marys Peak or West Point Spur), and none of the species was detected, there would be **no** impacts on marbled murrelet or their DCH from Project activities at Marys Peak and West Point Spur. At the BPA Albany Substation and Prospect Hill, no suitable marbled murrelet habitat occurs; therefore there would be **no** impacts on the marbled murrelet from Project activities at these two sites.

Because no observations of northern spotted owl were detected during the three years of field surveys between 2018 and 2020, it is assumed that they are currently not nesting, roosting or foraging in the study area, more specifically in the Marys Peak and West Point Spur portions of the study area. Project work areas within northern spotted owl DCH include the tree-cutting area on BLM lands at Marys Peak. The BLM noble fir forested habitat in the Marys Peak portion of the study area where tree cutting would occur is considered dispersal habitat, and does not meet the criteria for nesting, roosting or foraging habitat PBFs. There is no DCH for northern spotted owl at West Point Spur, BPA Albany Substation or Prospect Hill. Therefore, there would be **no** impacts on the northern spotted owl as a result of any action alternative.

One federal Species of Concern (formerly a Candidate species), the red tree vole, was surveyed for but not detected within 200 feet of the tree-cutting area at West Point Spur. Because of the current lack of red tree vole detections at West Point Spur, including no nests observed, lack of suitable habitat within 200 feet of the tree-cutting area on BLM land in the Marys Peak portion of the study area, and no

suitable habitat in the BPA Albany Substation and Prospect Hill portions of the study area, there would be **no** impacts on red tree voles from any action alternative.

USFS and BLM Special-Status Species

Of the species that are listed as either Sensitive for the USFS SNF or BLM Northwest Oregon District, four species have the potential to be impacted by project activities (Appendix C). They include one bird species, one mammal species and two invertebrate species; potential impacts are discussed below by wildlife group.

Birds

Project activities under all action alternatives would have similar impacts on the Sensitive purple martin bird species, if present in the study area. This bird species is highly mobile and, if present in the construction area, it could temporarily leave the work area or nearby areas where construction noise may disturb them. The proposed tree-cutting activities for all alternatives would not be performed during the nesting season, so nest abandonment would not occur, should a nest be in the trees. If the purple martin has a nest in a tree that is proposed to be cut, there is similar forested habitat nearby where the bird could establish a new nest.

Foraging opportunities for this bird species would only be temporarily impacted by construction activities associated with all alternatives because prey species (e.g., invertebrates) would likely return to the work area upon project completion.

Noises from construction equipment usage under all alternatives, and building or steel-lattice structure construction or building demolition, may also temporarily flush the Sensitive purple martin species from the study area, but they would likely return upon completion of Project activities.

Impacts on this bird species is expected to be **low,** because only a small number of trees (associated with any action alternative) would be cut outside the nesting season, and there is nesting and foraging habitat nearby.

Mammals

The red tree vole, was surveyed for but not detected within 200 feet of the tree-cutting area at West Point Spur. Red tree vole habitat does not occur in the Marys Peak study area. Because red tree vole are not present in construction work areas, there would be **no** impacts on this species from Project activities associated with Alternative 2A and 3C.

Invertebrates

Impacts on the two invertebrates likely to occur in the study area would be similar under all action alternatives. Direct mortality could result from Project activities that disturb soil and vegetation or from collisions with construction equipment and vehicles. Because vehicle speeds on access roads would be limited to less than 10 miles per hour, winged insects should be able to move out of the way of vehicles.

Impacts on the two BLM Sensitive invertebrate species are expected to be **low** under all action alternatives because these species will likely be able to avoid construction equipment and any incidental mortality would likely be low.

Forest Plan Survey and Manage Species

As noted above in the Affected Environment (Section 3.6.2) for USFS and BLM Survey and Manage Species, the great gray owl was detected during wildlife surveys at West Point Spur on City of Corvallis lands. Potential Project impacts on the great gray owl are unknown, but they would likely be **low** because although trees that the species could use would be cut (under all action alternatives), the habitat would be converted to different available habitat types that could still be used by the species for foraging.

The red tree vole is a Survey and Manage species. There would be **no** impacts on the red tree vole as a result of Project activities associated with Alternative 4, as discussed above in the *USFS and BLM Special-Status Species* section.

Per USFS and BLM biologists, there is only a very small possibility that the keeled jumping-slug would occur in the study area, which is outside of their known range. It is expected that there would be **no to low** impacts on the keeled jumping-slug as a result of project activities associated with all alternatives.

SNF Management Indicator Species (MIS)

The four MIS bird species observed within the study area (Appendix D) are cavity-nesting species associated with coniferous and mixed conifer-hardwood forests. Trees would not be cut on SNF lands under any of the action alternatives and tree cutting on nearby BLM or City of Corvallis lands would not occur during breeding season; resulting in **no** direct impacts on these species under any action alternative.

If present near construction work areas, these MIS bird species could be displaced due to the increase in noise and human presence. However, they would likely return to USFS forested habitat after construction. Foraging opportunities could be temporarily reduced due to the noise disturbance, but this is not likely to raise levels of stress or reduce reproduction success. Impacts on these species would likely be **low** under any action alternative**,** because the displacement would be temporary.

Project activities associated with any of the action alternatives would have similar impacts on elk. The increase in human presence and general construction noise could temporarily deter elk from using the study area. However, elk are highly mobile and migratory, and the frequent human presence at the Marys Peak site due to high visitation means it is likely that the elk herd already avoids much of the Marys Peak and West Point Spur portions of the study area. Risk of elk mortality or severe stress due to Project activities is virtually none. Impacts on elk from Project activities would be **low,** because any displacement under any action alternative in the study area would be temporary and foraging opportunities would not be reduced.

Other Special-status Species

Many bird species protected under the MBTA are present within the study area, and some undoubtedly nest in the forested habitat immediately adjacent to, and potentially within, the trees to be cut. Because trees would be cut outside the nesting season, impacts on these species would be minimized. BPA would further reduce impacts on bird species by implementing mitigation measures, such as cutting trees as snags wherever possible and leaving woody debris on the forest floor. Impacts on any MBTA species would be **low** under all alternatives because only a small amount of habitat would be removed or degraded and tree cutting would be timed to avoid nesting season.

There are two Birds of Conservation Concern that have the potential to occur in the study area, the western screech-owl (*Megascops kennicottii kennicottii*) and the rufous hummingbird (*Selasphorus rufus*). They are assumed to be present in the forest habitat within Marys Peak and West Point Spur study areas due to presence of suitable nesting and foraging habitat. Potential impacts on these species under any of the action alternatives are the same as the impacts on other birds, as described above in *USFS and BLM Special-Status Species* section. Impacts would be **low** under any action alternative, due to the small number of trees that would be cut outside the nesting season and the availability of nesting and foraging habitat nearby.

Because suitable habitat for bald and golden eagles does not occur in the Marys Peak and West Point Spur study areas, there would be **no** impacts on eagle species from any action alternative.

3.6.5 Mitigation Measures –Action Alternatives

If one of the action alternatives is implemented, BPA would implement construction BMPs and mitigation measures to avoid or minimize impacts from the Project on wildlife. BPA is coordinating with public land managers to ensure that wildlife-related BMPs and mitigation measures are consistent with their policies. Other mitigation measures relevant to avoiding or minimizing impacts on wildlife habitat are in Section 3.4.4 (Vegetation Mitigation Measures) of this EA. The following measures would be implemented:

- Explain wildlife-related BMPs and mitigation measures to construction contractors and inspectors during a preconstruction meeting covering environmental requirements.
- Identify active bird nests in construction work areas prior to conducting construction during the breeding season (March 1 to August 15) and clearly mark active nests for avoidance by construction equipment and personnel, if possible, or BPA would obtain the appropriate permits from USFWS if the nest could not be avoided.
- Limit vehicle speeds on unpaved roads and surfaces to 10 miles per hour or less to avoid collisions with wildlife.
- Prohibit the use of heavy equipment in tree-cutting areas and cut trees with machinery located on roads or by using chainsaws and other hand equipment.
- Cut trees within microwave beam paths as snags, if possible, and leave woody debris on the forest floor to create diverse habitat.
- Cut trees between August 15 and March 1 to avoid the typical nesting period for birds.
- Ensure workers do not leave food or garbage out that would attract wildlife.
- Cover construction holes outside of fenced areas that would be left open overnight.
- Keep cranes in the "down" position when left onsite overnight to reduce potential for avian or bat collisions.
- Allow areas where trees are cut within the Marys Peak SBSIA to revert to natural non-forested habitat.

3.6.6 Unavoidable Impacts Remaining After Mitigation

While mitigation measures would help avoid or minimize impacts, some potential impacts on wildlife could not be avoided. Work on access roads and inside the fences of Project components would result in the temporary loss or degradation of less than 0.35 acre of low- to moderate-quality grassland habitat, but after mitigation measures to restore vegetation, permanent habitat loss would be much smaller, ranging from 0.01 to 0.05 acre. Construction activities could also temporarily disturb and displace wildlife, but would be unlikely to result in permanent injury or mortality. However, all of the action alternatives would require cutting a small number of trees within less than 0.76 acre of high-quality forested habitat, a permanent impact. Overall, impacts on wildlife and wildlife habitat remaining from construction of any action alternative would be **low** following the implementation of BMPs and mitigation.

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3.7 Visual Quality

3.7.1 Study Area

In this section the visual environment is referred to as scenic resources. The scenic resources study area for the Marys Peak and West Point Spur components was defined as the area within 15 miles of the existing Marys Peak and West Point Spur communications sites, and within 3 miles of the BPA Albany Substation. The study area ranges from close views of Project components to the approximate distance where a viewer can no longer see Project components because they are too far away to be perceived.

The portion of the scenic resources study area for the BPA Albany Substation and BPA Prospect Hill communications site extends about 3 miles from the existing steel-lattice communications structures located at these components. This is the greatest distance from which the new microwave dishes would likely be evident to a viewer due to screening of views by existing vegetation. Beyond about 3 miles, buildings or vegetation screen most views of the communications structure at the BPA Albany Substation.

The following terms are used in this section to describe the distance from a particular viewer location:

- Immediate foreground: 0 feet to 300 feet
- Foreground: 300 feet to 0.5 miles
- Middle ground: 0.5 miles to 4 miles
- Background: 4 miles to horizon

Visual Management Framework

Lands administered by three public agencies could be affected by the Project within the scenic resources study area, including those of USFS, BLM, and the City of Corvallis. Because action alternatives would primarily affect scenic resources on lands administered by USFS, their visual management framework guided the scenic resource analysis for this Project.

USFS Visual Management System

The USFS manages scenic resources through the Visual Management System (VMS) established in *The National Forest Management Handbook, Volume 2, Agricultural Handbook 462* (USFS 1974) to inventory, classify, and manage lands for scenic resource values. Scenic resources are managed through Visual Quality Objectives (VQOs) designed to provide measurable standards or objectives that direct varying degrees of acceptable change to national forest landscapes (USFS 1974). The range of VQOs is defined as follows:

- **Preservation (P):** Allows ecological changes only, and management activities are prohibited except for very low visual impact recreation facilities.
- **Retention (R):** Provides for management activities that are not visually evident, and activities may only repeat form, line color, and texture frequently found in the characteristic landscape; changes in qualities of size, amount, intensity, direction, pattern, etc. should not be evident.
- **Partial Retention (PR):** Management activities remain visually subordinate to the characteristic landscape and activities may repeat form, line, color, or texture common to the characteristic landscapes, but changes in qualities of size, amount, intensity, direction, pattern, etc. should remain visually subordinate to the characteristic landscape. Activities may also introduce form, line, color, or textures that are found infrequently or not at all in the characteristic landscape, but they should remain subordinate to the visual strength of the characteristic landscape.

- **Modification (M):** Management activities may visually dominate the original characteristic landscape but activities of vegetative and landform alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that visual characteristics are those of natural occurrences within the surrounding area or character type.
- **Maximum Modification (MM):** Management activities of vegetative and land alterations may dominate the characteristic landscape. When viewed as background, the visual characteristics must be those of natural occurrences within the surrounding area or character type. When viewed as foreground or middle ground, they may not appear to completely borrow from naturally established form, line, color, or texture. Alterations may also be out of scale or contain detail that is incongruent with natural occurrences as seen in foreground or middle ground.

The Marys Peak SBSIA Plan specifies that, with the exception of facilities needed to provide the desired recreation use and electronics facilities, the Marys Peak SBSIA is managed to meet the VQO of "Retention" (USFS 1989). The plan indicates that through:

> *…creative design of location, materials, forms, colors, and textures, necessary recreation and electronic facilities will be kept as inconspicuous as possible, and will meet the VQO of retention where practicable, but in no case being more dominant than the VQO of modification. Partial retention-foreground and partial retention-middleground VQOs are applied along the Marys Peak Road.* (USFS 1989)

The SBSIA Plan includes additional detail on use of Marys Peak and West Ridge (also known as West Point Spur) for special uses, stating:

> *Special Use Permits may be issued when the activity is compatible with the management goals for the SBSIA. Use of Forest Service land on the summit of Marys Peak for electronic communications will be limited to government and public service agencies. The electronic equipment will be consolidated into a single structure to reduce visual impacts.*

Siuslaw National Forest LRMP

The SNF LRMP (USFS 1990) specifies management of Marys Peak road (viewshed) as Partial Retention-Foreground and Middleground-Modification.

USFS scenic resource management guidelines evolved into the Scenery Management System (SMS) (USFS 1995). This system increases the role of the public and is integrated with the concepts of ecosystem management. Instead of management objectives prescribed as VQOs, they are established as Scenic Integrity Objectives (SIOs). For example, a VQO of partial retention correlates to an SIO of moderate (M), defined as: "Valued landscape character appears slightly altered. Noticeable deviations remain visually subordinate to the landscape character" (USFS 1995).

Despite this update, the USFS land management standards pertinent to this Project remain those established in SBSIA Plan and SNF LRMP as defined by the VMS. However, to address the more contemporary themes of the SMS, the analysis evaluated potential impacts to scenic quality using the guiding principles of that management framework.

Bureau of Land Management

Visual resources on BLM-administered lands are managed using the Visual Resource Management (VRM) System, which classifies BLM lands into four VRM classes (BLM 1986) ranging from Class I-IV. BLM lands on Marys Peak (adjacent to the SBSIA) are managed using VRM Class IV, which allows major modification of the existing landscape character that minimizes visual impacts on the extent possible (BLM 2016).

City of Corvallis

Under Alternative 4, most of the Project lands at West Point Spur are managed by the City of Corvallis. Management direction for the SBSIA does not cover lands owned by the City of Corvallis. USFS and the City of Corvallis have a cooperative agreement to correlate the management of City land with national forest land near the summit of Marys Peak (USFS 1989). The City confers with USFS prior to acting on lease applications in an effort to avoid management conflicts.

3.7.2 Affected Environment

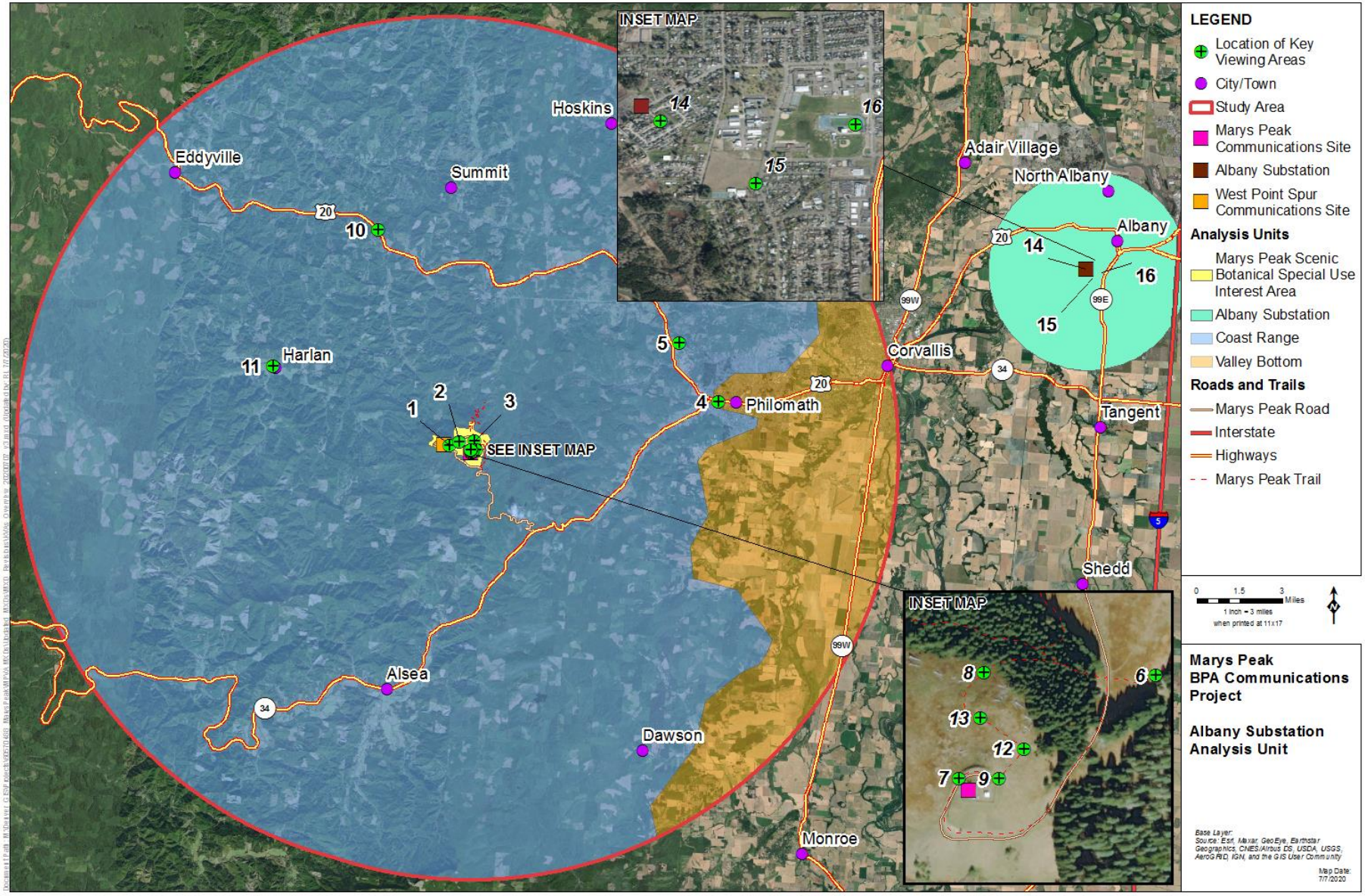
The scenic resources that currently exist in the study area were evaluated following procedures established in the USFS Scenery Management System (AECOM 2019). Key Viewing Areas (KVAs) were established to represent common or sensitive views within four land use categories: the Marys Peak SBSIA, Willamette Valley residential communities with views of Marys Peak, selected locations in the Coast Range with views of Marys Peak, and areas with views of the BPA Albany Substation (Table 3-3, Map 3-1). KVAs were not established for the BPA Prospect Hill communications site, as explained below.

Existing visual resources were described using the following terminology (USFS 1995; BLM 1986):

- **Landscape characteristics** are described in terms of existing form, line, color, and texture, with consideration of landscape factors such as contrast, sequence, axis, convergence, co-dominance, scale, and framing of landscape.
- **Viewer context** describes the predominant activity the viewer is engaged in, how that activity influences how they experience the landscape, and the viewer's spatial relationship to the Project.
- **Viewer concern level** describes the importance of scenic quality and aesthetic experience to viewer groups. Information used to assess viewer concern include Project scoping comments, relevant planning documents, and general assumptions regarding the level of expected viewer sensitivity based on viewer type. Concern levels are classified as high, medium, or low depending on the viewer's concern over change in the landscape character or scenic integrity.
- **Scenic integrity** refers to the degree to which a landscape is free from visible disturbances that detract from the natural or socially valued appearance. Scenic integrity is evaluated using a continuum scale ranging from very high to unacceptably low, by measuring the degree of alteration in line, form, color, and texture from natural or natural appearing landscape character.

Table 3-3. Key Viewing Areas

KVA Number	Location	Land Use Category
1	Marys Peak Road at Saddle Meadow Pullout	Marys Peak SBSIA
2	Marys Peak Campground Site #2	Marys Peak SBSIA
3	Public Parking Area at Marys Peak Road	Marys Peak SBSIA
4	City of Philomath	Valley bottom (Residential Community)
5	Wren Hill	Coast Range (Residential Community)
6	Summit Trail (Lower Portion)	Marys Peak SBSIA
7	Marys Peak Access Road (View Directed West)	Marys Peak SBSIA
8	Lower Meadowedge Trail	Marys Peak SBSIA
9	Picnic Table at Marys Peak Summit	Marys Peak SBSIA
10	Highway 20 near Elmaker State Park	Coast Range (Highway)
11	Community of Harlan	Coast Range (Residential Community)
12	Intersection Marys Peak Summit Trail and Meadowedge Trail	Marys Peak SBSIA
13	Upper Meadowedge Trail	Marys Peak SBSIA
14	Orchard Lane (for BPA Albany Substation)	BPA Albany Substation (Residential Community)
15	West Albany High School (for BPA Albany Substation)	BPA Albany Substation (Albany School)
16	Liberty Street (for BPA Albany Substation)	BPA Albany Substation (Roadway)



Map 3-1. *Locations of Key Viewing Areas.*

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The following sections present the affected environment in each of the four KVA land-use categories: the Marys Peak SBSIA, Willamette Valley residential communities with views of Marys Peak, selected locations in the Coast Range with views of Marys Peak, and areas with views of the BPA Albany Substation. The affected environment within the BPA Prospect Hill communications site study area is also discussed.

Marys Peak Scenic Botanical Special Interest Area

Marys Peak is a prominent landform in the central Willamette Valley. The area is natural appearing, consistent with vegetation communities found within the Coast Range. The large meadows on and near the summit appear prominent and contrast with the surrounding dense conifer forests. The open meadows provide for expansive views that extend toward the Pacific Ocean to the west and Cascade Mountains to the east.

Besides open meadows and dense forests, several notable landscape attributes exist within the Marys Peak SBSIA, including rocky slopes with wildflowers, steep slopes, broad panoramic views, and recreation and communication infrastructure. These attributes create varied landscape character types, and foster a sense of distinct "outdoor rooms" as one passes through them. Because of the dense forest vegetation and steep topography, views are generally limited to the immediate foreground or middleground, with the exception of the broad panoramic views from the summit that extend into and beyond the background distance zone.

Landscape character at Marys Peak varies from natural evolving to a built environment, depending on viewer position within the Marys Peak SBSIA and exposure to the communications facilities. This variability in character and quality of the landscape is a defining attribute of the Marys Peak SBSIA and results in varied viewer experiences that include the natural landscape in the foreground and middleground, expansive panoramic views from the summit, and site-specific industrial development.

Viewers associated with the Marys Peak SBSIA include recreational users and tourists, educational groups, residents, and roadway travelers. Viewers engage in hiking, camping, wildflower viewing, parasailing, enjoying panoramic views, and seeking spiritual renewal. Viewer experience varies depending on position within or movement through the Marys Peak SBSIA. Viewers likely have a high level of concern for potential change to scenic resources because most people visit Marys Peak to access unobstructed views and expect to traverse a natural appearing landscape. Overall, scenic integrity at the Mary Peak SBSIA is moderate to high. Although discordant elements exist, the landscape appears intact, with a level of naturalness that is unique within the surrounding area.

Marys Peak Road at Saddle Meadow Pullout – KVA 1

Because most of Marys Peak Road travels through dense forest, Saddle Meadow pullout provides the first opportunity for visitors to stop and engage in prolonged, unobstructed views of the Marys Peak summit (Photograph 3-16). The landscape is characterized by an upland meadow, sloping to the south, bordered by mixed conifer forests in the foreground. Marys Peak creates a discrete, rounded skyline. The existing USFS communications structures are silhouetted against the sky, appearing grey and silver in color and smooth in texture, with distinct vertical lines that contrast with the coarser textures and colors of the meadow. Other communications site facilities are shorter in stature, and appear broad in form and white in color. The fence around the facility is evident, but not a dominant feature.

The scenic integrity is low to moderate because, although the landscape character is naturally appearing, the existing communications facilities are co-dominant with the valued landscape character.

Photograph 3-16. *View of the Marys Peak summit from Marys Peak Road at Saddle Meadow pullout (KVA 1), looking east-southeast.*

Marys Peak Campground – KVA 2

At Marys Peak Campground, Campsite #2 has a distant view of the summit of Marys Peak (Photograph 3-17). The landscape is characterized by the dense stand of conifers which appears uniform and creates a sense of enclosure. Views are limited to the immediate foreground and the shallow slope of the campground is juxtaposed against the steeper slopes of Mary Peak. The camping facilities introduce curvilinear lines (campground road) and geometric forms (sign posts and restroom).

Photograph 3-17. *View from the Marys Peak Campground (KVA 2), looking southeast.*

The USFS communications structure on Marys Peak appears silhouetted through the trees but it is subordinate to the dense forest in the foreground and middleground. The scenic integrity of the landscape is medium because, although the campsite facilities and road are evident, they are visually subordinate to the surrounding forest and, although the USFS communications structure can be seen through the dense forest canopy from some locations within the campground, it is not focal to the view.

Public Parking Area off Marys Peak Road – KVA 3

From the public parking area there is a view toward the summit of Marys Peak (Photograph 3-18). The parking lot and associated viewpoint provide the first opportunity for visitors to experience views from Marys Peak and serves as a gateway for their recreational experience. The landscape is characterized by the juxtaposition of a broad sloping meadow enclosed by surrounding coniferous forest and, to the east, by the broad panoramic view of the Willamette Valley and Cascade Mountains. The summit of Marys Peak is screened by dense conifers. The access road and recreation facilities are evident, but do not dominate the landscape. Viewers at this location are expected to engage in prolonged views to the east and more intermittent views of Marys Peak.

Photograph 3-18. *View from the public parking area off Marys Peak Road (KVA 3), looking south-southwest.*

The parking lot is broad and rectilinear, with grey asphalt appearing rough in texture. The facilities appear geometric, but small in scale, such that the straight lines and smooth texture remain subordinate to the surrounding landscape. The top portion of the existing USFS communications structures can be seen above the forest stand and are apparent in the skyline. The scenic integrity of this KVA is high because, although recreational facilities are evident looking to the southwest, the landscape character of Marys Peak appears natural.

Lower Portion of the Summit Trail – KVA 6

The Summit Trail leads from the public parking lot to the Marys Peak summit (Photograph 3-19). The landscape is characterized by the green and brown colors of the sloping meadow hillside and the adjacent coniferous forest, which frames the landscape, creating a sense of enclosure. Viewers hiking along the trail pass through open meadows and dense forest, with views ranging from enclosed to panoramic. Views of Mary Peak are intermittent until the trail reaches the summit, although viewers may experience more prolonged views of the summit at vistas along the trails.

Photograph 3-19. *View from the lower portion of the Summit Trail (KVA 6), looking southwest.*

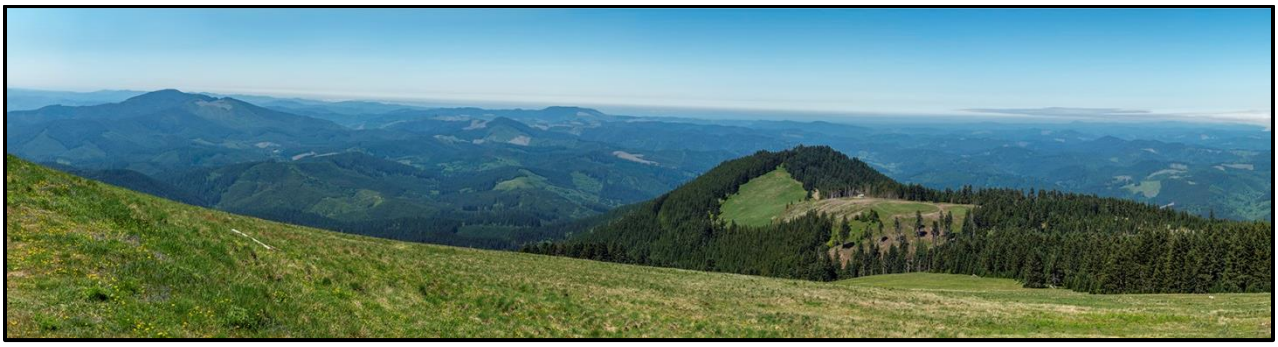
From the lower portion of the trail, existing communications structures at the Marys Peak summit are screened by existing forested vegetation and are not visible. The scenic integrity is high because although the unpaved access road and recreational trails to Marys Peak are evident, they do not detract from the natural appearance of the landscape.

Marys Peak Summit Access Road/View Directed West – KVA 7

At the summit of Marys Peak, the view to the west includes the West Point Spur communications site and beyond (Photograph 3-20). The landscape is characterized by the sloping open meadows in the foreground and middleground, with expansive Coast Range panoramic views to the Pacific Ocean.

Views from this location are assumed to be prolonged because of the unique panoramic view. The Coast Range appears as a pattern of open meadows, timber harvest, and dense forest scattered across a rugged landscape.

Though evidence of modification exists in the form of ground scarring in the middleground and timber harvest in the background, these deviations appear subordinate to the broader landscape character of the Coast Range. The existing communications structures on West Point Spur are apparent, as their tall, vertical forms extend above the tree line and their grey color and smooth texture contrast with the regular texture and green color of the conifers. The scenic integrity is low to moderate because, although the landscape character appears natural, deviations such as the ground scarring areas are co-dominant.



Photograph 3-20. *View from Marys Peak summit access road (KVA 7), looking west-northwest.*

Lower Portion of the Meadowedge Trail – KVA 8

Along the Meadowedge Trail, hikers cross the steeply sloping West Meadow below Marys Peak which dominates the landscape character (Photograph 3-21). The brown color and soft texture of the exposed dirt of the trail contrasts with the green color and regular tufted texture of the meadow, creating a distinct, irregular line leading to the summit. The forest creates a discrete edge to the meadow where the vertical structure of the coniferous trees meets the meadow vegetation. Viewer experience on the Meadowedge Trail is considered prolonged, as views would be sustained as hikers cross the meadow.

Photograph 3-21*. View from the lower portion of the Meadowedge Trail (KVA 8), looking south.*

The communications structures located at West Point Spur are visible from the Meadowedge Trail, rising above the coniferous forest, against the western horizon. The Marys Peak communications structures appear silhouetted against the rounded horizon of the Marys Peak summit. Scenic integrity is moderate because the communications structures are subordinate to the natural character of the Marys Peak landscape.

Marys Peak Summit Picnic Table – KVA 9

From the northeast corner of the communications site at the Marys Peak summit, viewers have a 360-degree panoramic view of the surrounding landscape (Photograph 3-22). The landscape is characterized by the flat, grassy top of Marys Peak in the foreground, which slopes moderately downward on all sides.

To the east, a narrow trail crosses the meadow, drawing foreground and middle ground views to the edge of the coniferous forest. On a clear day, background views extend across a mosaic of forest, timber harvest, agriculture, and built-environment settings out to the Pacific Ocean. Farther to the east, the Willamette Valley stretches to the Cascade Range. Views from this location are prolonged.

Photograph 3-22. *View from the Marys Peak summit picnic table (KVA 9), looking southwest.*

The existing Marys Peak communications facilities are a dominant feature at this location, with the communications site occupying the majority of the summit. The facility appears industrial, with tall steel-lattice structures and buildings that appear spread out and lack order, all surrounded by a chain-link fence topped with barbed wire. The facility introduces geometric forms, vertical horizontal lines, and smooth textures that contrast with the softer lines, green colors, and coarse textures of the surrounding landscape. Views to the west are partially obstructed by the communications facility, with the backdrop extending across the Coast Range to the Pacific Ocean. Although some viewers may be accustomed to the communication facility, a high sensitivity to potential change in the viewer experience is assumed. The scenic integrity is very low because the industrial appearance of the communications structures dominates the landscape character.

Intersection of Marys Peak Summit Trail and Meadowedge Trail – KVA 12

At the intersection of the Summit Trail and Meadowedge Trail, the Summit Trail emerges from the forest and continues through the meadow to the summit (Photograph 3-23). When hikers emerge out of the forest, Marys Peak is directly in front of the viewer, dominating the experience. The Meadowedge Trail leads down the open meadow to the west, into the forest. The landscape is characterized by the grassy meadow, communications structures, and broad horizon of the Coast Range and Pacific Ocean. The exposed dirt of the trail contrasts with the surrounding green meadow, creating a distinct line and directional line leading to the facility. The stippled-coarse coniferous forest of West Point Spur is visible in the middleground to the west. Beyond West Point Spur, the panoramic view extends west across a smooth patchwork of timber harvest and forest to the Pacific Ocean.

Photograph 3-23. *View from the intersection of Marys Peak Summit Trail and Meadowedge Trail (KVA 12), looking southwest.*

When approaching the summit, the Marys Peak communications structures are focal, unobstructed and silhouetted against the panoramic backdrop of the Coast Range. The existing communication structures disrupt the smooth arc of the Marys Peak Summit, appearing discordant. Scenic integrity is low because the smooth texture and rounded form of the microwave dishes attract attention and, collectively, communications structures dominate the landscape character in the foreground to middleground.

Upper Portion of Meadowedge Trail – KVA 13

The upper portion of the Meadowedge Trail is immediately below Marys Peak, to the west of the existing communications site (Photograph 3-24). While similar to the view from the summit of Marys Peak, looking west, the location is in closer proximity to West Point Spur. The landscape is characterized by open meadow and forest mosaic in of the foreground/middleground and the expansive western panoramic view in the background. The bold color and form of the meadow and contrasting forest edge creates a sense of enclosure that creates dominance in the foreground landscape. The foreground appears as a steep, grassy meadow bordered on the northern side by dense coniferous forest. The panoramic view of the Coast Range and pattern of open meadows, timber harvest, and dense forest, provides context to the landscape features in the foreground-middleground. The view extends across the ridgelines to the Pacific Ocean. Viewer experience on the Meadowedge Trail is considered prolonged, as views would be sustained while hikers cross the meadow.

Photograph 3-24. *View from the upper portion of Meadowedge Trail (KVA 13), looking west.*

Scenic integrity is predominately moderate in the foreground and middleground because ground scarring from timber harvest is visible and dominates the foreground. One small structure and its access road are visible at the clearing in the middleground. The existing communications structures associated with West Point Spur are apparent, as their tall, vertical forms extend above tree line. The light grey color and smooth texture of the structures contrast with the surrounding soft to coarse texture and green color of the vegetation. Looking to the west, the landscape character appears natural, but

deviations such as the ground scarring from existing communications structures and timber harvest are co-dominant, resulting in low to moderate scenic integrity. When views are directed upward towards Marys Peak, the built character is apparent due to the presence of the existing communications facility.

Valley Bottom Agricultural Lands and Residential Community

Only one community in the valley was considered close enough to be affected by Project activities. The City of Philomath is the closest rural residential community to Marys Peak, within the foothills of the Oregon Coast Range. The community is home to several saw mills, light industrial commercial manufacturing facilities, and high-tech companies. Surrounding the city are several small organic farms in the valley bottoms. The Marys River flows to the south of Philomath toward the Willamette Valley. Surrounding the community are blankets of dense conifer forests lining the eastern slopes of the Coast Range, while the coastal foothills are covered in oak savanna.

Viewer groups are primarily composed of residents, workers, and some visitors. Because Marys Peak contributes to the community's character, it is assumed that change in this landscape feature could be associated with a high level of concern.

City of Philomath – KVA 4

KVA 4 is located at the western edge of the City of Philomath, at the parking area of a local business (Photograph 3-25). Landscape character is shaped by the residential and commercial buildings and roadways. The Coast Range encloses the landscape, creating a horizon characterized by numerous converging ridgelines. The City of Philomath is surrounded by the shallow foothills of the Coast Range, along the Marys River, and Marys Peak figures prominently in the viewshed. Upland meadows on Marys Peak are evident, appearing lighter green and soft against the darker green and stippled texture of the surrounding conifers.

Photograph 3-25. *View from the City of Philomath (KVA 4), looking west-southwest.*

Primary viewer groups associated with KVA 4 are assumed to be residents and tourists. Viewer experience is considered variable, with potential for prolonged or intermittent views. Viewer concern is considered moderate because the surrounding landscape contributes to the setting and character of the city. The existing communications structures at Marys Peak are not visually evident due to distance from the KVA. The scenic integrity of the city of Philomath is high because the surrounding coastal mountains and valley provide a sense of place, and the valued landscape character of a small town is intact.

Coast Range

Surrounding the Marys Peak SBSIA, the landscape of the Coast Range is characterized by rugged mountains and incised river valleys. The area is remote, with access provided primarily by Highway 20 and a network of forest roads. Rivers are common in valley bottoms, and the landscape appears steep

and enclosed by both topography and dense forest vegetation. From higher elevations, landforms of the Coast Range appear as a network of peaks, with the horizon characterized as a series of converging diagonal lines. To the west, the horizon extends across the Pacific Ocean, and eastward, to the Cascade Range. Evidence of timber harvest is common in the Coast Range, with harvest units appearing as irregular blocks against intact forest.

Three KVAs were established for the Coast Range: KVA 5 (Wren Hill), KVA 10 (Highway 20), and KVA 11 (Community of Harlan). Coast Range viewer groups include residents, tourists, recreational users, foresters, and roadway travelers. Residents are associated with small communities located in river valleys or rural parcels located adjacent to Highway 20.

Overall scenic integrity within the Coast Range is moderate to very high. The valued landscape character of the Coast Range is expressed as contiguous forest, punctuated by meadows and agricultural areas. Discordant elements such as timber harvest and the Marys Peak communications site are subordinate to the rugged forest landscape of the Coast Range.

Wren Hill – KVA 5

KVA 5 is located at a cul-de-sac at the west end of Wren Hill Residential Estates, on a steep slope of the northern edge of Highway 20, within an oak savanna (Photograph 3-26). Large estates are terraced between the oaks. Views extend to background distance zones, with prominent views of Marys Peak and the forested hills and mountains of the Coast Range. The landscape character of Wren Hill is considered natural appearing, dominated by the forested mountains of the Coast Range. Areas of timber harvest are evident, creating distinct geometric shapes where harvested areas meet mature forest. The varied stand age results in a mosaic of green color and varied texture.

Photograph 3-26. *View from Wren Hill (KVA 5), looking southwest.*

Primary viewer groups from this KVA are the residents of the Wren Hill Residential Estates. Viewer experience is considered prolonged to sustained from residential areas. Viewer concern is considered high, as the viewshed is considered central to the character and quality of this residential area. The scenic integrity is considered medium because, although the valued landscape character appears slightly altered due to past timber harvest, these features are subordinate to the rugged forest landscape of the Coast Range and the existing communications structures at Marys Peak are not visually evident.

Highway 20 – KVA 10

KVA 10 demonstrates the viewer experience along Highway 20, a meandering roadway that extends across the Coast Range from east to west (Photograph 3-27). The road is bordered by dense forest, creating a narrow viewshed and enclosed landscape character for the majority of the corridor.

Periodically, views open and extend to the middle ground across adjacent meadows or agricultural fields; or upward to the ridgeline of the surrounding mountains in the distance. The landscape character

is considered naturally evolving. Existing communications structures on Marys Peak are not visually evident from this KVA, although the structures are silhouetted against the skyline.

Photograph 3-27. *View from Highway 20 (KVA 10), looking southeast.*

Primary viewer groups on Highway 20 include roadway travelers and residents. The level of viewer concern is considered medium. Although some motorists may have an expectation of an intact viewshed along Highway 20, some travelers may not be as sensitive to aesthetic attributes. The scenic integrity is considered high because the valued landscape character of the Coast Range is expressed as contiguous forest, punctuated by meadows and agricultural areas.

Community of Harlan – KVA 11

KVA 11 is located in the community of Harlan, due west of Marys Peak (Photograph 3-28). The landscape is characterized by broad open meadows, enclosed by the forested peaks of the Coast Range. The landscape is natural appearing, with agriculture and modest residential and commercial structures. Marys Peak is a prominent landform in the viewshed; the open meadows at and near the summit appear distinct on the horizon. Existing communications structures at Marys Peak and West Point Spur are visually evident and skylined.

Primary viewer groups in Harlan are residents. Viewer concern is assumed to be medium to high, as potential change to community character could be a concern. Viewer experience is prolonged to sustained from residences and community buildings. The scenic integrity is considered very high, because the surrounding landscape contributes to a sense of place within the Coast Range.

Photograph 3-28. *View from the community of Harlan (KVA 11), looking east-southeast.*

BPA Albany Substation

The BPA Albany Substation is located on Queens Avenue SW, in the City of Albany. The substation is located immediately adjacent to Queens Avenue SW, the Calapooia River, and Hazelwood Park (see

Photograph 2-11 in Section 2.3.3 of this EA). The substation is an industrial looking site with metallic equipment and other structures surrounded by a chain-link fence.

BPA Albany Substation viewer groups include residents in discrete neighborhoods formed by cul-de-sacs and street grids and include roadway travelers. The communications structure within the BPA Albany Substation can be seen from residences, driveways, yards, and local streets in the Chase Orchards Subdivision (subdivision). Three KVAs are described below, one close to the substation (residential area) and two public areas in the distance (West Albany High School and Liberty Street). A KVA was not established at Hazelwood Park because views of the communications structure within the BPA Albany Substation from designated trails are obstructed by dense vegetation.

Orchard Lane – KVA -14

KVA 14 is located in a Chase Orchards Subdivision neighborhood on Orchard Lane SW, across the street from the BPA Albany Substation (Photograph 3-29). Orchard Lane, within the subdivision, is made up of single-family houses, paved streets, sidewalks, and mature ornamental vegetation. Because the residential area is accessed by a street that is perpendicularly oriented to Queens Avenue, the existing BPA communications structure is focal to the setting.

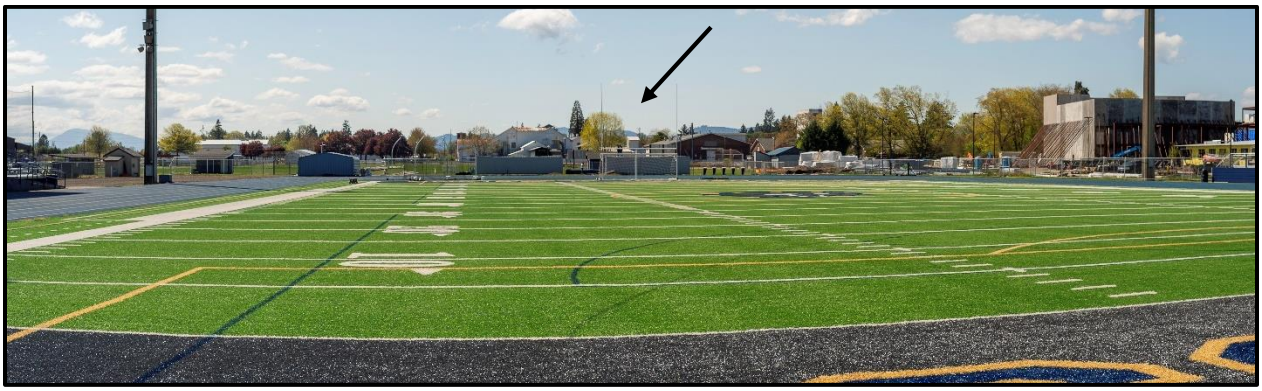
Primary viewer groups in the subdivision are residents. Viewer concern is assumed to be high, as potential change to community character could be a concern. Viewer experience is sustained from residences. Views of the communications structure are considered direct but would vary depending on location within the neighborhood. Residents have some views of the steel-lattice structure from their homes, driveways, and yards. Intervening vegetation, such as tall conifers, block some views. The scenic integrity is considered very low-moderate, because the communications structure and electrical infrastructure within the BPA Albany Substation are evident in the backdrop of neighborhood. While they detract from the intactness of the residential neighborhood character, this infrastructure was present before the subdivision was constructed.

Photograph 3-29. *View of the communications structure within the BPA Albany Substation from the residential neighborhood on Orchard Lane (KVA 14), looking west.*

West Albany High School – KVA -15

KVA 15 is located about 0.5 miles east of the BPA Albany Substation (Photograph 3-30). West Albany High School is characterized by the school buildings and surrounding residential neighborhoods and includes a football field and track. Views from this KVA are dominated by the flat surface and horizontal lines of the football field and irregular horizon formed by houses and treetops in the distance.

The primary viewer groups associated with KVA 15 are assumed to be students and spectators. Viewer concern is assumed to be low, as viewers' attention is focused on activities in the field. Viewer experience is sustained and views of the communications structure are considered direct but in the distance. The scenic integrity at West Albany High School (KVA 15) is considered medium. The communications structure is detectable in the backdrop due to the straight, narrow, and vertical line (see Photograph 3-30); however, it appears subordinate to the foreground features.



Photograph 3-30. *View of the communications structure within the BPA Albany Substation from the West Albany High School (KVA 15), looking west.*

Liberty Street – KVA 16

KVA 16 is located about 0.4 miles east of the BPA Albany Substation, where Liberty Street passes between open space and a residential area on the east side of Liberty Street (Photograph 3-31). The landscape is characterized by a broad, open meadow enclosed by surrounding residential and commercial structures. The landscape is natural appearing, with elements of the built environment primarily expressed as residential and commercial structures.

The primary viewer group associated with KVA 16 is assumed to consist of residents. Residents would have sustained views and their level of viewer concern is considered high. The viewer experience for motorists is considered transient, primarily experienced from a moving vehicle. The views of motorists of the communications structure would be primarily peripheral and from a distance. The scenic integrity is considered low to moderate, influenced by the presence of transmission lines and poles and small-scale commercial buildings. The communications structure at the BPA Albany Substation is subordinate to other existing features in the backdrop, perceptible as a straight, grey, vertical line silhouette.

Photograph 3-31. View of the communications structure within the BPA Albany Substation from Liberty Street (KVA 16), looking west.

BPA Prospect Hill Communications Site

The BPA Prospect Hill communications site is located on a large hill that includes several other communications sites. There are no residents with close views of the communications site, but it would be visible in the distance to motorists on the public road at the base of the hill and from other public roads. Motorists would briefly see the numerous communications sites built along Prospect Hill, including the BPA site. From the public road near the site, multiple steel-lattice structures appear silhouetted against the sky, extending above the tree line (see Photograph 2-15 in Section 2.3.5 of this EA). Viewers along the public road can see the 140-foot tall steel-lattice BPA communications structure that supports about a dozen microwave dishes (see Photograph 2-16 in Section 2.3.5 of this EA). Because the visual change from adding one additional microwave dish to the existing BPA communications structure would barely be perceptible, KVAs were not established for the BPA Prospect Hill communications site.

3.7.3 Environmental Consequences – No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing communications facility would not be rebuilt and impacts related to Project construction would not occur. Operations and maintenance activities would continue at the BPA Marys Peak and the BPA Prospect Hill communications sites and would be similar to existing practices. Maintenance activities at the BPA Marys Peak communications site would result in **low** impacts on visual resources because they occur infrequently and are temporary in nature. If it were necessary to perform emergency repairs at Marys Peak, it would likely not be possible to plan or time these activities to minimize impacts. Because potential visual impacts resulting from emergency repairs would be localized and likely to occur during winter months, impacts would be **low**. At the BPA Prospect Hill communications site, there would be **no** impacts on visual resources from maintenance activities and emergency repairs.

3.7.4 Environmental Consequences – Action Alternatives

Impacts Common to All Action Alternatives

Because impacts on scenic resources would vary by action alternative; common impacts are not considered here. See the next section for discussion of impacts specific to each action alternative.

Impacts Specific to Action Alternatives

This section describes the potential impacts of implementing any of the action alternatives on scenic resources. Impacts on scenic resources would be temporary or permanent.

Potential impacts on scenic resources at Marys Peak, West Point Spur, and the BPA Albany Substation were evaluated based on the expected level of visual contrast and scale dominance, as seen from KVAs (AECOM 2020). Visual contrast is the extent to which a Project appears different from the surrounding visual environment because of its predominant visual elements of form, line(s), color, or texture. Visual contrast was assessed by comparing the visual elements of the existing landscape with the elements of the proposed Project. Scale dominance describes the proportionate size relationship between the Project elements such as a building or a steel-lattice structure and the surroundings in which it is placed (BLM 1986). The assessment of visual contrast and scale dominance informed the determination of expected change in scenic integrity that could result from the Project, and was used to determine the level of potential impacts for each action alternative.

For most KVAs, visual contrast and scale dominance were assessed by using visual simulations depicting Project components for each action alternative (Appendix E). Views of the existing landscape were

compared to visual simulations that depict what each action alternative would look like if built. For KVAs for which visual simulations were not created, visual impacts were analyzed using information on visual contrast and scale dominance from simulations prepared for similar viewing conditions.

For each action alternative, potential impacts on scenic resources at Marys Peak and West Point Spur are first summarized below for those KVAs within the SBSIA and then for viewers in more distant KVAs (Willamette Valley residential communities and selected locations in the Coast Range). These areas provide an assemblage of viewer conditions that directly influence the extent to which beneficial or adverse impacts on scenic resources would be experienced. For Alternative 2A and Alternative 3C, potential impacts on scenic resources at BPA Albany Substation are then summarized for the three KVAs. For Alternative 4, the impacts on scenic resources at the BPA Prospect Hill communications site is then discussed based on the expected level of visual contrast and scale dominance as viewed within the 3-mile study area.

Alternative 2A

Marys Peak – Marys Peak SBSIA

Alternative 2A construction would temporarily impact visual resources. The clutter of machinery, equipment, staged materials, and workers would be visible in the distance and very evident from near the summit and at the summit. These activities would create temporary **moderate** visual impacts.

Project activities that would result in the greatest permanent impacts on scenic resources would be access road improvements, constructing a new 40-foot tall steel-lattice structure, removing a monopole, and tree cutting near the Marys Peak summit. The addition of gravel to the surface of the access road and the installation of eight waters bars along the access road would be visible to viewers from the parking lot (KVA 3), to hikers along portions of the Summit Trail (KVA 6), to hikers along the entire length of the access road (KVA 7), and from the picnic table at the Marys Peak Summit (KVA 9).

The fresh unweathered rock added to the access road would be evident in the foreground, and would make the access road more visible in the landscape from viewer locations in the middleground. Local rock would be used that matches the existing color of the road would be used to minimize the contrast of the resurfaced road with the surrounding landscape. Also, as rock weathers over time it would become less distinct on the landscape. The resurfacing of the access road and waterbar installation would therefore have temporary **moderate** impacts that would eventually become less obvious, resulting in **low** permanent impacts.

From the Marys Peak public parking lot (KVA 3) and some portions of the Summit Trail (KVA 6), the unweathered gravel on the access road surface would be evident, contrasting with the soft vegetated edges of the meadow (See Appendix E, pages E-3 and E-5). The water bars would be visible but not dominant. For hikers on the Marys Peak access road (KVA 7)**,** the unweathered gravel surface on Marys Peak Road would appear bold, with the new gravel surface introducing strong visual contrast against the soft texture of adjacent meadow grasses (See Appendix E, page E-6). However, because the view to the west is focal, viewer attention is expected be directed west, away from Marys Peak. Access road improvements would also be visible from the Marys Peak Summit (KVA 9) and are expected to contribute strong visual contrast (See Appendix E, pages E-7). The strong visual contrast from access road improvements that would initially be experienced by viewers from these areas, a **moderate** temporary impact to visual resources, is expected to be reduced over time as the new gravel weathers and vegetation along the road edge encroaches into the graveled areas, resulting in **low** permanent impacts.

The addition of the new 40-foot, steel-lattice structure would be a permanent impact, as the tall stature could be visible from areas located below the summit (See Appendix E, page E-7). However, the 40-foot

height of the structure would ensure that it is screened by vegetation and topography from many areas within the SBSIA because the average height of existing conifers exceeds 40 feet. The dense conifers would block views from the public parking area (See Appendix E, page E-3).

From the Saddle Meadow pullout (KVA 1), the primary source of visual contrast would result from the vertical line of the structure against the predominantly horizontal line of the top of Marys Peak. Visual contrast would be moderate because the addition of the new structure would alter the existing structural form by creating a broader, more cubic form in combination with the existing USFS structure. The structure would appear focal due to viewer position and skylining (See Appendix E, page E-1).

From the upper portion of the Meadowedge Trail (KVA 13), visual contrast of the proposed structure would be strong due to the proximity, scale, and linear, geometric form and industrial character of the structure relative to the surrounding landscape. The proposed structure would be a dominant element in the landscape, particularly due to the inferior viewer position and skylining of the structure. Scenic integrity would remain low. Views to the west across the Coast Range would remain naturally appearing.

Actions associated with Alternative 2A would be most evident at the summit (See Appendix E, page E-7 and E-10). From this close vantage point, the removal of BPA's existing wooden and lattice monopoles would be evident, as would the increased massing of steel-lattice structures that could result from the addition of a third steel-lattice structure on Marys Peak. From the picnic table, visual contrast of the proposed structure would be strong due to the proximity, scale, and linear, geometric form and industrial character of the structures relative to the surrounding landscape. The proposed structure would be a dominant element in the landscape and the visual contrast of the microwave dish is considered strong due to the smooth texture against the sky, resulting in a **moderate** permanent impact on scenic resources. Because the new BPA steel-lattice structure would not deviate in form from the existing USFS lattice structures, scenic integrity would not be reduced because there already is very low scenic integrity.

Tree cutting on BLM-administered lands would be visible to hikers from portions of the access road and from the summit. The tree-cutting area would likely not blend with either the adjacent meadow or adjacent forest for years as it gradually transitions to meadow habitat. However, because only one small area of trees would be cut and it would gradually transition to meadow, permanent impacts on scenic resources from tree cutting would be **low**.

Overall scenic integrity of the Mary Peak SBSIA would remain the same as existing conditions under Alternative 2A but visual changes would be evident, resulting in a **moderate** permanent impact on scenic resources.

Marys Peak – Valley Bottom and Coast Range

Installation of the new 40-foot steel-lattice structure, removal of two monopoles, and tree cutting near the Marys Peak summit would be nearly undiscernible from existing conditions when viewed from residential areas and communities, and from along Highway 20, due to distance and screening by topography and vegetation. It is possible that the silhouette of the new BPA communications infrastructure under Alternative 2A could be detected under front-lit or back-lit conditions (i.e., during sunrise or sunset); however, the cubic form of the new steel-lattice structure would not be discernible from that of the existing USFS lattice structure. Changes in the buildings would not be visible because their low height and small stature mean they would not be silhouetted against the horizon of Marys Peak. As a result, Alternative 2A would have **no** impacts on scenic resources for viewers in these areas.

BPA Albany Substation

Implementation of Alternative 2A would impact residents of a subdivision located across the street from the BPA Albany Substation, who would have views of the new 6-foot diameter microwave dish to be installed on the existing steel-lattice structure (See Appendix E, pages E-14). The view would be most obvious from the primary road used to access the subdivision, but the front of the microwave dish would point in the direction away from the subdivision. Residents would have some views from their driveways, yards, and inside their homes. Intervening vegetation, such as tall conifers, would block some views. The new microwave dish would also be visible to motorists driving by the substation and by people visiting the adjacent public park.

Construction staging would occur within the substation's existing fence line and would only occur for a week or less. Activities would be limited to placement of the new microwave dish on the existing steel-lattice communications structure. Vegetation clearing or grading would not be required, and construction-related actions would be short term and take a week or less. Temporary impacts to visual resources from construction would be **low**.

As viewed from the residential subdivision along Orchard Lane, the new 6-foot-diameter microwave dish would introduce visual contrast of the smooth texture, solid form, and grey color of against the more transparent and angular existing steel-lattice BPA communications structure (See Appendix E, page E-14). Residential viewers would have an unobstructed view of the side of the new microwave dish from the roadway, sidewalks, and some homes. Deciduous and coniferous vegetation would block some views from some locations in the vicinity of the BPA Albany Substation, including the recreational trails neighboring public park.

The new microwave dish would also be visible to motorists driving by the substation and by people entering the parking lot of the neighboring public park. Motorists approaching Orchard Lane from SW Queen Avenue would have a more direct view of the communications structure, particularly if accessing from the southwest.

Under Alternative 2A, from the nearby residential subdivision, the degree of deviation from the existing landscape character would be evident; however, there would be a low overall change. Because scenic integrity would remain low to moderate, with communications infrastructure a dominant element of landscape character, impacts to scenic resources would be **moderate**.

From distant locations, such as from West Albany High School (KVA 15) and Liberty Street (KVA 16), visual contrast of the new microwave dish mounted on the existing BPA communications structure is expected to be none to weak. Due to the combined factors of the distance from the communications structure and small scale of the proposed microwave dish, it would not be evident to viewers. The degree of deviation from the existing landscape character would not be evident, and there would be no overall change. Because scenic integrity would not change, with the school facilities and surrounding residential areas being the dominant element of landscape character, impacts to scenic resources would be **low**.

Alternative 3C

Mary Peak – Marys Peak SBSIA

Like Alternative 2A, Alternative 3C would have temporary **moderate** impacts on visual resources during construction and permanent **low** impacts from access road improvements and tree cutting.

The actions associated with Alternative 3C that that would result in the greatest permanent impacts on scenic resources include access road improvements, the addition of a new 60-foot steel-lattice structure

and the consolidation of new and existing BPA and USFS communications infrastructure within a smaller site footprint (e.g., reduced by 6,464 square feet). The same access road improvements are proposed under both Alternative 2A and Alternative 3C (See Appendix E, page E-6). As described under Alternative 2A, the strong visual contrast from access road improvements that would initially be experienced by viewers from these areas would result in a **moderate** temporary impact to visual resources (See Appendix E, pages E-3, E-6, and E-8). The level of impact to visual resources is expected to be reduced over time as the new gravel weathers and vegetation along the road edge encroaches into the graveled areas, resulting in **low** permanent impacts.

The new steel-lattice structure would contribute the most to potential impacts, as the vertical stature would appear taller than the surrounding conifers, and therefore would be visible from some areas below the summit. From the public parking area, visual contrast of the new angular lattice structure against the irregular horizon of the conifers is considered moderate (See Appendix E, page E-9 and E-12). Collectively, the existing and proposed structure would attract attention. Deviation from the existing landscape character would be evident, and scenic integrity would be reduced from high to moderate-high.

From the Saddle Meadow pullout, the addition of the new steel-lattice structure would alter existing structural form by creating a broader, more cubic form in combination with the existing USFS structure (See Appendix E, page E-2). Because of the location of the structure, it would appear to overlap the existing structure, thereby reducing the transparency of both structures, and creating a more emboldened dark vertical line. Collectively, the structures would appear focal as a result of inferior viewer position and skylining.

From the intersection of Summit Trail and Meadowedge Trail and the upper portion of the Meadowedge Trail (KVA 12), the effect of the new structure would be similar to Alternative 2A. Visual contrast of the proposed structure would be strong due to the proximity, scale, linear, geometric form, and industrial character of the structure relative to the surrounding landscape. The proposed structure would be a dominant element in the landscape, again, due to the inferior viewer position and skylining of the structure. The structure would be taller than that seen in Alternative 2A; however the scale dominance would not substantially increase impacts as compared to Alternative 2A (Appendix E, page E-11). From this viewer position, the benefits of the more condensed site footprint, and consolidation of structures would not be fully realized. The degree of deviation from the existing conditions would be evident and there would be a moderate overall change. Scenic integrity would remain low but views to the east across the Willamette Valley and to the west across the Coast Range would remain naturally appearing.

Actions associated with Alternative 3C would be most evident at the summit, where visual contrast of the proposed structure would be strong due to the proximity, scale, and linear, geometric form and industrial character of the structures relative to the surrounding landscape. Like existing conditions, the proposed structures would be a dominant element in the landscape.

The height of the BPA steel-lattice structure under Alternative 3C would impact scenic resources within Mary Peak SBSIA to a greater extent than under Alternative 2A. Site-specific improvements are not expected to improve overall scenic integrity of the Marys Peak summit, as the proposed BPA and existing USFS infrastructure would continue to be a dominant element of the landscape. However, improvements to scenic quality on Marys Peak summit would be evident, as the consolidation of communications infrastructure would limit the extent to which existing and proposed communications infrastructure blocked views to the west, a **low** beneficial effect. Still, site-specific improvements are not expected to improve overall scenic integrity of the Marys Peak summit as the proposed BPA and existing USFS infrastructure would continue to be a dominant element of the landscape.

The scenic integrity within the Marys Peak SBSIA is not expected to change, except from the parking lot at Marys Peak, where the increased visibility due to the 60-foot steel-lattice structure would reduce the scenic integrity from high to moderate-high. Although the valued landscape character would be slightly altered, the noticeable change would remain visually subordinate to the landscape character, and result in **moderate** impact to visual resources overall.

Marys Peak – Valley Bottom and Coast Range

Alternative 3C would have **no** impacts on scenic resources for viewers in these areas, the same as Alternative 2A. Consolidation of new and existing BPA and USFS communications infrastructure, tree-cutting and installation of a new 60-foot steel-lattice structure, while taller than surrounding conifers, would be nearly undiscernible from existing conditions when viewed from residential areas and communities, and from along Highway 20, due to distance and screening by topography and vegetation. It is possible that the silhouette of the new steel-lattice structure under Alternative 3C could be detected under front-lit or back-lit conditions (i.e., during sunrise or sunset); however, the cubic form of the new steel-lattice structure is similar to that of the existing USFS lattice structure it would replace. The new, consolidated building would not be visible because its low height and small stature mean it would not be silhouetted against the horizon of Marys Peak.

BPA Albany Substation

Implementation of Alternative 3C would have the same impacts on subdivision residents located across the street from the BPA Albany Substation, and users of a nearby city park, as under Alternative 2A (KVA 14). Temporary impacts on visual resources during installation of the microwave dish would be **low.** Because some sensitive viewers, in particular local residents and park users, would notice the new microwave dish, permanent impacts to visual resources would be **moderate.**

Alternative 4

West Point Spur – Marys Peak SBSIA

Construction activities at West Point Spur are not expected to be seen from any viewing areas within the Marys Peak SBSIA due to the distance from Marys Peak Road, trails, and the summit and because of screening provided by existing vegetation. The improvements along the access road would also not be visible except to authorized personnel entering the locked gate to maintain one of the West Point Spur communications sites and to a limited number of recreational users, primarily bird watchers. Tree-cutting activities would be temporarily visible to motorists and bicyclists traveling Marys Peak Road. There would be **no to low** temporary impacts on visual resources during construction of Alternative 4 at West Point Spur.

Work to remove the BPA communication site at Marys Peak would be evident, although disturbance would be temporary as the site would be revegetated. There would be **low** temporary impacts on visual resources during removal of the BPA communications site.

Alternative 4 would result in the least change of all the action alternatives from existing conditions (KVA 13; See Appendix E, page E-13). Equipment added to the existing CPI structure at West Point Spur would not be visible from most of the viewing areas in the Marys Peak SBSIA. Tree cutting at West Point Spur could result in increased visibility of the existing CPI steel-lattice structure from Marys Peak Road, with visibility greatest when the structure is back-lit (e.g., at sunset). Motorists and bicyclists traveling Marys Peak Road would briefly view the tree-cutting area from an inferior viewer position, a **low** impact. Vegetation clearing could also be evident from Marys Peak Road, and from the viewing areas to the west along the lower and upper Meadowridge trail and from the summit. However, overall scenic integrity would not change as a result of Alternative 4 and would remain low to moderate due to the existing ground scarring east of the CPI site. Permanent impacts from Alternative 4 would be **low**.

Compared to other action alternatives, Alternative 4 would result in the greatest improvements to scenic resources at Marys Peak because a new BPA steel-lattice structure would not be added to the Marys Peak summit, and the BPA communications building. The existing monopole and propane tank, and other BPA infrastructure would be removed. These actions, combined with a reduction in the size of the fenced area (reduced by 6,464 square feet) would improve scenic quality of the Mary Peak Summit by reducing scale dominance and creating a more organized appearance of the communications infrastructure (See Appendix E, pages E-9 and E-12). This would eventually result in a **moderate** beneficial effect.

West Point Spur – Valley Bottom and Coast Range

Alternative 4 would have **no** impacts on scenic resources for viewers in these areas, the same as Alternative 2A and Alternative 3C. Under Alternative 4, removal of BPA communications infrastructure on Marys Peak would not be discernible from existing conditions when viewed from residential areas and communities, and from along Highway 20, due to distance, screening by topography and vegetation, and because of the low stature of these structures. Installation of additional equipment on the steel-lattice structure at the BPA Prospect Hill communications site would not change the character of the site, which is visible to motorists only briefly and from a distance. Because the BPA communications structure already has about a dozen attached microwave dishes, the addition of one more microwave dish would not be discernible from the nearby road.

BPA Prospect Hill Communications Site

Under Alternative 4, proposed work at the BPA Prospect Hill communications site would include installation of a microwave dish, VHF antenna, and some cross bracing on the existing communications structure. There are no residents located in close proximity of the Prospect Hill communications site, but weak visual contrast of the new microwave dish could be detectable in intermittent views experienced by motorists. Motorists briefly see the numerous communications sites built along Prospect Hill, including the BPA site, silhouetted against the sky. Since the existing BPA communications structure contains multiple microwave dishes, the addition of one more microwave dish is not expected to result in **no** temporary or permanent impacts to visual resources.

USFS and BLM Plan Conformance Determination

This impact assessment informs the USFS plan conformance determination, which addresses the consistency of each action alternative with applicable VQOs. The VQOs establish minimum acceptable thresholds for landscape alterations, as described in Section 3.5.1 of this EA. The threshold of effects was considered exceeded if alterations would not meet the scenic integrity and dominance criteria of the VQO. Marys Peak SBSIA is managed to meet the VQO of retention; however, electronic facilities may achieve a modification VQO standard where retention is not practical (USFS 1989). Marys Peak Road is managed as partial retention-foreground and middleground-modification (USFS 1990).

Based on the impacts assessment, if the mitigation measures listed below would be implemented, the following determination was made:

- Alternative 2A and Alternative 3C would meet the VQO of modification because operation of the Project on Marys Peak would visually dominate the original characteristic landscape, particularly when viewed from locations at close proximity (e.g., KVA 7, KVA 9, and KVA 12).
- Under Alternative 4, the Project would meet the VQO of modification because it would result in removal of existing monopoles and the radio building at Marys Peak and would not introduce a new lattice structure to the landscape.

- All action alternatives would meet established VQOs of partial retention-foreground and partial retention-middleground for locations along Marys Peak Road. Tree cutting under Alternative 4 could be visually evident, but would be subordinate to the characteristic landscape.
- Impacts from tree cutting would be in conformance with the management standards provided in the SNF LRMP (USFS 1990) and VRM Class IV objectives provided in the Northwestern and Coastal Oregon RMP (BLM 2016)

3.7.5 Mitigation Measures – Action Alternatives

If one of the action alternatives is implemented, BPA would implement the following construction BMPs and mitigation measures to avoid or minimize visual resources impacts from the Project.

- Consult with a USFS landscape architect and botanist on the final siting of all site facilities.
- Maintain open views in the site layout to the extent possible.
- Review site, building, propane tank, microwave dish, and steel-lattice structure designs with USFS, including the colors and materials to be used, to choose those most visually appropriate with the setting (i.e., naturally appearing palate with low light reflectivity while maintaining low heat absorption colors; matte finish).
- Implement access road improvements in a manner that maintains the scale and character of the existing road, minimizes impacts on shoulders, and maintains the rural setting.
- Maintain the existing color of gravel during any necessary road resurfacing as much as possible.
- Install the HVAC unit on the south-facing wall of the Marys Peak communications building addition (Alternative 3C) to minimize noise and visual impacts to visitors near the picnic table area located north of the communications site.
- Explain visual quality-related BMPs and mitigation measures to construction contractors and inspectors during a preconstruction meeting covering environmental requirements.
- Site all construction staging and storage areas away from locations that would be clearly visible from sensitive viewer groups as much as practicable.
- Provide information to visitors at Marys Peak on how to avoid construction activities as much as possible, including posting Project information and updates on the SNF website and posting and maintaining signs at trail heads and other obvious locations, such as existing signboards at the public parking lot and the campground, so that visitors can have a pleasant visit and experience good views.
- Limit vehicle speeds on unpaved roads and surfaces to 10 miles per hour or less to reduce dust.
- Control dust during construction with water or other appropriate control methods, without the use of chemical additives, as needed.
- Retain shorter stature trees along the Marys Peak roadway edge (Alternative 4) to minimize views of the CPI communications structure from the Marys Peak SBSIA.
- Maintain and clean construction sites as much as practicable and keep construction areas free of debris.
- Allow areas where trees are cleared within the Marys Peak SBSIA to revert to natural non-forested habitat.

3.7.6 Unavoidable Impacts Remaining After Mitigation

At the BPA Marys Peak site, if Alternative 2A or Alternative 3C is implemented, there would be some unavoidable, adverse, temporary impacts to scenic resources from disturbance in the form of construction equipment and activity that could be seen by sensitive viewer groups, including people engaged in recreational activities. Both alternatives would result in permanent visual changes that would result from access road improvements, constructing a steel-lattice structure, and from cutting trees in an area visible to hikers, which could make the access roads slightly more visible in the landscape. For Alternative 2A and Alternative 3C, there would be **moderate** temporary impacts during construction, **moderate** permanent impacts from the installation of the communications steel-lattice structures, and **low** permanent impacts from tree cutting and access road improvements. Under Alternative 3C, there would be **moderate** beneficial effects from the removal of the BPA Marys Peak communications site.

At the BPA Albany Substation, if Alternative 2A or Alternative 3C is implemented, there would be some unavoidable adverse impacts to scenic resources from the installation of a 6-foot diameter microwave dish on the existing steel-lattice structure. The proposed microwave would be a permanent visual change that would be visible to a variety of viewers, including residents, motorists, and park visitors. For Alternative 2A and Alternative 3C, there would be **low** temporary impacts during construction, and **moderate** permanent impacts due to the installation of the new microwave dish on the steel-lattice structure.

If Alternative 4 is implemented, at the BPA Marys Peak site there would be **low** temporary impacts during the removal of the BPA communications site due to vegetation clearing that could be evident from Marys Peak Road, from the lower and upper Meadowridge Trail, and from the summit. N**o** unavoidable permanent impacts to scenic resources would occur with Alternative 4 at Marys Peak.

At West Point Spur, motorists and bicyclists on Marys Peak Road would briefly view the tree cutting area from an inferior viewer position that could result in increased visibility of the existing CPI steel-lattice structure. **No** scenic resources impacts at West Point Spur would occur during construction, but **low** temporary impacts would occur due to the tree cutting. **Low** permanent impacts would occur from the changes at West Point Spur.

Under Alternative 4, there would be **no** impacts to visual resources from the installation of an additional microwave dish at the BPA Prospect Hill communications site because of the number of microwave dishes already on the communications structure and the lack of sensitive viewers.

3.8 Cultural Resources

3.8.1 Study Area

Cultural resources are physical remains, objects, places, historic records, and traditional cultural practices or beliefs that connect people to their past. The study area for cultural resources includes areas at the Marys Peak communications site, CPI West Point Spur communications site, BPA Prospect Hill communications site, and the BPA Albany Substation where cultural resources could be affected by the Project.

The Marys Peak communications site portion of the study area includes the:

- Fenced summit communications site and a 100-foot buffer outside the fence
- Unpaved access road that leads from the paved parking lot to the summit communications site (50-foot wide area centered on the road)
- Stand of noble fir trees on BLM lands that would be cut

The West Point Spur portion of the study area includes the:

- CPI fenced communications site and a 30-foot buffer outside the fence
- FS Road 3010-112, leading from Marys Peak Road to the CPI site (50-foot wide area centered on the road)
- Area of mixed forest located northeast of the CPI communications sites where some trees would be cut
- Material/equipment staging and vehicle driving/parking area

The BPA Prospect Hill communications site and BPA Albany Substation portions of the study area only includes the area within the fences around each facility because Project work would only occur within the fence.

3.8.2 Affected Environment

Project Area Historical Background

Numerous archaeological investigations provide a cultural timeline for the Project area. In western Oregon, archaeological work provides evidence that humans occupied the region as early as 13,000 years ago, suggested by the discovery of fluted Clovis points in the Willamette Valley (Aikens 1975).

Archaeological material dating from 11,000 to 8,000 years ago have been uncovered on the floor of the Long Tom River west of Veneta, Oregon, and in rock shelters in the Cascades at the Cascadia Caves (Newman 1966, Baxter 2012). A wide variety of stone implements are associated with this time period.

Archaeological sites dating from 7,000 to 3,400 years ago are most common in the Willamette Valley. Typical projectile points during the early part of this period include heavy broad-necked varieties. Milling stones occur in early deposits and later are replaced by stone bowl mortars and pestles. There was an intensification of camas processing, evidenced by large number of camas processing sites in the Willamette Valley (O'Neil 2004). Changes in climate may be a likely factor in this transition; warmer conditions reduced the extent of coniferous forest and expanded prairie and oak woodland (Connolly 1990).

There appears to have been a dramatic increase in the human population after 3,400 years ago. Sites of this period typically contain small, narrow-necked projectile points used to tip arrows, and antler and

bone tools. The appearance of whale bone and shell artifacts in sites suggests the establishment of trade networks between the coast and interior (Aikens 1975). This period may also involve a shift toward settlement and subsistence centered on low elevation pithouse villages with seasonal movement to upland task-specific camp sites (Beckham and Minor 1992).

Various tribes and bands could have accessed portions of the Project area. The Coast Range served as a natural geographic and linguistic boundary between the Alsea and Yaquina peoples, who occupied the estuaries and river mouths of the Pacific Coast, and the Kalapuya, who inhabited the grasslands of the Willamette Valley (Connolly 1986). The Alsea and Yaquina occupied the coastal areas of Lincoln County from present-day Yaquina Bay south to the Yachats River. During the spring and summer months, most of the populations of the Alsea and Yaquina moved away from their primary villages to make more productive use of marine resources like shellfish and to possibly travel upland to utilize other plant and animal resources (Beckham et al. 1981: 182).

The term precontact is used to describe the time before the early 1800s, when Euro-American explorers, fur traders, and missionaries had not yet entered the region. The term contact is used to describe the time after the early 1800s, when Euro-Americans arrived in the Willamette Valley. The population of the Kalapuya at that time is estimated around 15,000 individuals, occupying an area extending south from Willamette Falls in Clackamas County to the Row River in Lane County and from the Cascade Range westward toward the crest of the Coast Range (Cole 1968, Juntunen et al. 2005). A tragic consequence of contact with Euro-American settlers was the introduction of diseases to native populations, resulting in high death rates. A decrease in native populations also occurred due to sporadic warfare with settlers in the 1840s and 1850s.

Although the lifeways of each individual band varied, the Kalapuya people shared a common dialect of the Kalapuya language and social structure. A year-round village, typically located in wooded areas around streams and river, was maintained by each band for the winter months. During the spring and into the fall, members split into small groups to travel and gather seasonal foods, basketry material, medicines, hunt game, and fish (Juntunen et al. 2005).

Other Tribes could have occupied the Project area, for at least part of the year. For example, during the spring and summer months, the Molalla Band traveled west to gather berries and to fish for lamprey (Rosenson 1980). The traditional seasonal movement of Tribes to access materials where and when they became available suggests that Marys Peak and other Project components were used by Tribes as a place to gather food, materials, medicines, and other items, as well as serving as a destination for religious or spiritual practices. The Marys Peak SBSIA Plan states that the Indian name for Marys Peak was Chintimini, but this is unverified (USFS 1989). The traditional use of the Marys Peak portion of the Project area by Tribes was confirmed through Section 106 consultation with consulting parties and through ethnographic studies conducted by BPA and consulting parties.

Euro-American settlement proceeded at a rapid pace. Farms appeared across the Willamette Valley. The Homestead Act of 1862 fueled the desire for land, resulting in the settlement of the river valleys and less desirable areas, including the Coast Range. Early homesteaders used the meadow on Marys Peak as summer range for their sheep, goats, and cattle (USFS 1989). The timber industry expanded throughout the nineteenth and twentieth centuries, establishing large mills throughout the area and employing hundreds of people. Landowners began harvesting timber near Marys Peak just after World War I (USFS 1989).

The road to Marys Peak was constructed by the Civilian Conservation Corps and the Works Project Administration in 1938 and completed in 1941 (USFS 1989). In June 1941, the City of Corvallis leased 400 acres of land to USFS for a 40-year period to be developed for public use (AECOM 2019). In June

1941, the City of Corvallis donated 40 acres of land at Marys Peak to the U. S. government (BPA 2016). The Marys Peak fire lookout and observatory was constructed on the summit in 1942, replaced by a new lookout in 1959, and then subsequently removed (Gazette Times 1959a). In 1958, the U.S. Air Force extended the road to the top of the Peak and constructed a radar station that was never used, and the building was subsequently transferred to USFS (AECOM 2019).

In September 1958, BPA proposed construction of a combination VHF radio station and USFS lookout on Marys Peak. The proposed building would have three stories, 20-by-20-foot concrete block, aluminum, and glass construction, and an ultra-high frequency (UHF) radio antenna mounted on the roof. The first floor would be designated for BPA radio equipment, the second floor for the public, and the third floor for USFS (AECOM 2019).

The multi-use building was never built due to insufficient funds. USFS decided to construct its own building at a former USFS lookout site (Gazette Times 1959b). Meanwhile, BPA decided to relocate its proposed site to public property on the northeast side of Marys Peak. The site was surrounded by land owned by the City of Corvallis and USFS and it drained into the city's watershed. Both the city and USFS protested BPA's plans, arguing it would jeopardize the watershed and interfere with lookout operations (Gazette Times 1959c). The Corvallis city manager opposed any development on Marys Peak and stated that the BPA radio station would be detrimental to recreational activities, contribute to the contamination of the city's water supply, and set a precedent for additional development (Gazette Times 1959b).

To reach a compromise, the Corvallis city manager called for USFS and BPA to agree on an option that would not limit the public's use of the peak and would not appear too prominently on the skyline (Gazette Times 1959c). BPA and USFS signed a Memorandum of Understanding (MOU), stipulating to the construction of a BPA microwave radio station next to the USFS's building on Marys Peak (BPA-USFS MOU 1959). The MOU also stipulated that the BPA building would provide space for radio equipment for the Federal Bureau of Investigation and the Bureau of Land Management (Id.).

The BPA communications site was constructed in 1960 and 1961, and began operating in 1961. The communications site consists of a communications building, a wood pole that supports a microwave communications dish and VHF whip antennas, a small steel-lattice structure, a steel pole with weather data collection equipment and a BLM VHF whip antenna, and a propane tank, all enclosed within a chain link fence, as described in Section 2.2.1 of this EA.

The current USFS communications site was constructed and became operational in 1996. The site consists of a building, two steel-lattice structures, and a propane tank; all enclosed within the fence, as described in Section 2.2 of this EA.

Cultural Resource Consultation Process

The National Historic Preservation Act (NHPA; 16 USC 470 et seq.) outlines the consultation process in which federal agencies must engage when their actions could affect cultural resources, including historic sites, archaeological resources and traditional cultural properties. BPA initiated consultation for this Project under the NHPA on May 5, 2015, with the Oregon State Historic Preservation Office (SHPO), USFS, the BLM, the Confederated Tribes of Siletz, and the Confederated Tribes of Grand Ronde. BPA has continued to engage with these consulting parties during Project planning and environmental review.

The cultural resources study area is referred to as the ***area of potential effects*** (APE) in this EA, a term defined in the implementing regulations for the NHPA (36 CFR 800.16[d]). The APE is the area where cultural resources must be identified for a Project according to the NHPA. Consulting parties were asked

for any information they may have, given an opportunity to comment on the APE and survey methodology, and provided the results of the cultural resource surveys.

Historic properties are a subset of cultural resources that includes any prehistoric or historic district, site, building, structure, or object (such as archaeological relics) included in or eligible for inclusion in the National Register of Historic Places (NRHP). The NRHP is the U.S. government's official list of districts, sites, buildings, structures and objects deemed worthy of preservation for their historical significance. Of the more than 1 million properties on the NRHP, 80,000 are listed individually. The remainder or the properties on the NRHP are contributing resources within historic districts.

Besides a building or structure (standing, ruined or vanished), historic properties can be the location of a significant event, a prehistoric or historic occupation or activity, or any location that itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure. Historic properties also include properties of traditional religious and cultural importance to an Indian Tribe or Native Hawaiian organization that meet the National Register Criteria. This type of historic property is referred to as a traditional cultural property (TCP) in this EA.

Cultural Resource Identification

Cultural resource surveys were conducted to identify and inventory cultural resources that could be in the Project APE. Archaeological surveys were conducted to identify prehistoric sites and historic sites at the Marys Peak communications site and the CPI West Point Spur communications site. No artifacts or evidence of archaeological sites were observed during the archaeological field surveys (Teoh 2015, Perkins 2019).

The two consulting Tribes conducted a traditional cultural property study of the Marys Peak and West Point Spur Project areas. BPA has been asked by the consulting parties that the results of the study remain confidential. BPA will continue to consult with the Tribes and the SHPO regarding the potential effects of action alternatives.

Transmission and communications facilities, including substations and radio stations, can themselves be historic properties under the NRHP. The following facilities are being considered for this Project: BPA Marys Peak communications site, USFS Marys Peak communications site, the BPA Albany Substation, the BPA Prospect Hill communications site, and the CPI West Point Spur communications site.

Cultural Resource Evaluation

Once cultural resources are identified, the NHPA requires those cultural resources – including districts, sites, buildings, structures, and objects – to be evaluated for eligibility for NRHP listing using four criteria commonly known as Criterion A, B, C, or D (36CFR Part 60.4(a-d)). A cultural resource must meet at least one criterion to be eligible for NRHP listing.

Significance is considered present in properties that "possess integrity of location, design, setting, materials, workmanship, feeling, and association and

a. are associated with events that have made a significant contribution to the broad patterns of our history; or
b. are associated with the lives of persons significant in our past; or
c. embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
d. have yielded, or may be likely to yield, information important in prehistory or history (36CFR60.4).

Properties that meet one or more of the NRHP criteria and retain necessary integrity are considered historic properties. The effects of the Project must be evaluated to determine if they will affect the ability for historic properties to be eligible for the NRHP. Such effects are considered adverse and the damage to the properties would need to be mitigated through agreements between the lead federal agency and the consulting parties.

BPA bases determinations of eligibility of BPA facilities on whether they retain sufficient historical integrity of location and setting, design, materials, workmanship, feeling, and association. To determine the eligibility of the BPA transmission facilities for listing in the NRHP, a Multiple Property Document (MPD) was prepared for BPA's transmission system (Kramer 2012). This MPD identified the group of related, significant properties that comprise BPA's transmission system, presented its historical context, and defined two types of properties that represent the context (Id.).

The BPA Albany Substation was determined eligible for listing in the NRHP as a historic district under Criterion A in the area of Government. This was based on its association with events that have made a significant contribution to the broad patterns of our history. The BPA Albany Substation helped provide reliable power to growing populations in the Willamette Valley and on the Oregon Coast and reflects the expansion of BPA's transmission system in the Pacific Northwest. The district retains integrity of location, setting, design, materials, workmanship, feeling, and association. The BPA Albany Substation control house and switchyard are contributing elements to the historic district.

To determine the eligibility of the BPA's microwave radio stations for listing in the NRHP, a BPA Microwave Radio Stations Historic Resources Technical Report was prepared that details the development and purpose of the radio system, and describes and evaluates each site (AECOM 2019). Based on the analysis in this report, the BPA Marys Peak communications site is recommended as eligible for the NRHP under Criterion A for its significance in the areas of Communications and Industry. The radio station became a key component of BPA's early microwave communications network, facilitated grid operations, and supported business and industrial development throughout the region, particularly the Corvallis, Oregon, area. Alterations to the site have been minimal and did not diminish overall integrity (AECOM 2019). The radio station retains integrity of location, design, setting, materials, workmanship, feeling, and association and meets the minimum eligibility requirements in the BPA MPD. The original antenna tower is no longer present, but it was replaced with the same type of structure. The building continues its original function and the antenna tower maintains line-of-sight with associated microwave communication sites.

The Prospect Hill Microwave Radio Station is not recommended as eligible for the NRHP based on the requirements of the BPA MPD and additional integrity considerations provided by the technical report (Kramer 2012, AECOM 2019). Although the radio station is part of the historic microwave communication network and it retains integrity of location, design, setting, materials, workmanship, and feeling, the replacement of the original antenna tower diminished the integrity of the site, such that it does not meet eligibility requirements.

Two communications sites that are not owned by BPA, the USFS Marys Peak communications site and the CPI West Point Spur communication site, could be affected by the Project. These sites have not been evaluated for inclusion in the NRHP. The USFS communications site would need to be evaluated if Alternative 3C is selected and the CPI West Point Spur communications site would need to be evaluated if Alternative 4 is selected.

TCPs were identified at Marys Peak and West Point Spur, including the area where the BPA communications site and CPI communications site are located. As noted, all such resources that could be affected by the Project will be evaluated for NRHP eligibility, depending on the alternative selected.

3.8.3 Environmental Consequences – No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing communications facility would not be rebuilt and impacts related to Project construction would not occur. Operations and maintenance activities would continue at the BPA Marys Peak and the BPA Prospect Hill communications sites and would be similar to existing practices. At the BPA Marys Peak communications site, the frequency and scope of maintenance activities would likely increase as existing structures deteriorate, and more structural repairs and replacements are required. This could, in turn, result in additional ground disturbance that would have the potential to affect cultural resources.

Impacts associated with continued routine maintenance of both the BPA Marys Peak and BPA Prospect Hill communications sites, as well as emergency repairs, could have **low-to-moderate** impacts on cultural resources, depending on the type of cultural resource, the amount of damage to that resource, the eligibility of resources for listing on the NRHP, and the effectiveness of mitigation.

3.8.4 Environmental Consequences –Action Alternatives

Impacts Common to All Action Alternatives

BPA is required under the NHPA to consider the effects of implementing one of the action alternatives on historic properties, if one is selected. Depending on the action alternative, various ground-disturbing construction activities and improvements to buildings have the potential to affect historic properties. BPA is consulting with the SHPO and affected Tribes under the NHPA for the Project to determine if there would be an "adverse effect" on historic properties, as defined in Section 106 regulations. If there would be an adverse effect, BPA would work with consulting parties under NHPA to determine what type of actions would mitigate for adverse effects.

Cultural resource surveys of the APE at the BPA Marys Peak and CPI West Point Spur communication sites revealed no archaeological materials on the ground or during subsurface testing. Based on this result, **no** impacts on archaeological resources are anticipated from the Project under all action alternatives.

Some archaeological resources could be present in the APE that were not discovered during Project cultural surveys. Implementation of the mitigation measures described in Section 3.6.4 would ensure that any cultural resources discovered during construction would be managed properly as required by NHPA.

The BPA Marys Peak communications site is eligible for listing on the NRHP. It would be adversely affected under all action alternatives, as described below.

TCPs within the APE at the BPA Marys Peak and the CPI West Point Spur communication sites could be affected by implementation of any of the action alternatives. If impacts could not be avoided, impacts would be **low to moderate** with the implementation of applicable mitigation measures.

Impacts Specific to Action Alternatives

Alternative 2A

Marys Peak

The BPA Marys Peak communications site is eligible for the NRHP. Under Alternative 2A, the wooden pole supporting the microwave dish would be replaced with a steel-lattice structure. Improvements would be made to the communications building, including repainting the building and installing equipment within the building. Because the replacement of the wood monopole with a steel-lattice

structure would be a change of material, it would not be considered an in-kind replacement. This would result in a loss of integrity and design, resulting in an adverse effect. If Alternative 2A is selected, BPA would work with consulting parties to determine appropriate mitigation for this adverse effect, a **low to moderate** impact depending on the effectiveness of the mitigation.

BPA Albany Substation

The BPA Albany Substation is eligible for the NRHP. Under Alternative 2A, a microwave dish would be added to the existing steel-lattice structure and equipment would be added to the control house. The addition of equipment would be a relatively minor change, is consistent with changes permitted under BPA's MPD, and would not affect the characteristics that make the BPA Albany Substation eligible for listing in the NRHP or the function of the substation. Because the work under Alternative 2A would have **no** adverse effect on the eligibility of the BPA Albany Substation for the NRHP, there would be **no** impact. There would also be **no** impacts to archaeological resources and TCPs at the BPA Albany Substation.

Alternative 3C

Marys Peak

Under Alternative 3C, the BPA Marys Peak communications site would be dismantled and removed. The site would be restored to natural vegetation and there would be no evidence of the existing site. Because the BPA Marys Peak communications site is eligible for the NRHP, removal of the site would be an adverse effect. If Alternative 3C is selected, BPA would work with consulting parties to determine appropriate mitigation for this adverse effect, a **moderate** impact with mitigation.

Under Alternative 3C, an addition would be added to the USFS Marys Peak communications building and a steel-lattice structure would be constructed near the USFS communications building. BPA would become a tenant within the addition that would be constructed. Because the USFS communications site has not been evaluated for NRHP eligibility, effects to the resource cannot be determined until this evaluation has been completed and the SHPO has concurred with the determination. If Alternative 3C is selected and the USFS Marys Peak communications site is determined eligible for the NRHP, BPA would work with consulting parties to determine appropriate mitigation for any adverse effects, a **low to moderate** impact depending on the effectiveness of the mitigation.

BPA Albany Substation

The same work is proposed at BPA Albany Substation under Alternative 3C as is proposed under Alternative 2A. As discussed above, the addition of equipment to the control house and to the existing steel-lattice structure would not affect the characteristics that make BPA Albany Substation eligible for listing in the NRHP or the function of the substation and, therefore, would have no adverse effect on its eligibility for the NRHP, resulting in **no** impacts. There would also be **no** impacts to archaeological resources and TCPs at the BPA Albany Substation.

Alternative 4

Marys Peak

Under Alternative 4, the BPA Marys Peak communications site would be dismantled and removed. The site would be restored to natural vegetation and there would be no evidence of the existing site. Because the BPA Marys Peak communications site is eligible for the NRHP, removal of the site would be an adverse effect. If Alternative 4 is selected, BPA would work with consulting parties to determine appropriate mitigation for this adverse effect, a **moderate** impact on a historic property with mitigation.

West Point Spur

Under Alternative 4, improvements would be made to the CPI West Point Spur communications site to enable BPA to occupy a portion of the existing building as a tenant. BPA would also install equipment and an ice bridge on the existing steel-lattice structure. Because the CPI communications site has not been evaluated for NRHP eligibility, effects to the resource cannot be determined until this evaluation has been completed and SHPO has concurred with the determination. If Alternative 4 is selected and the CPI West Point Spur communications site is determined eligible for the NRHP, BPA would work with consulting parties to determine appropriate mitigation for any adverse effects, a **low to moderate** impact depending on the effectiveness of the mitigation.

Prospect Hill

Under Alternative 4 the work at the Prospect Hill communications site would not affect cultural resources. There would be **no** impact on historic resources because the site is not considered eligible for the NRHP. There would be **no** impact on archaeological resources because work would take place in the graveled yard within the fence and there would be no ground disturbance that could affect subsurface resources. There would also be **no** impacts to TCPs at the BPA Albany Substation.

3.8.5 Mitigation – Proposed Action

The following mitigation measures will be pursued if one of the action alternatives is selected:

- Work with consulting parties to determine appropriate actions that will address unavoidable adverse effects under the NHPA.
- Explain cultural resources-related BMPs and mitigation measures to construction contractors and inspectors during a preconstruction meeting covering environmental requirements.
- Implement BPA's Inadvertent Discovery Protocol. This procedure specifies that if ground-disturbing activities reveal any cultural materials (e.g., structural remains, Euro-American artifacts, or Native American artifacts), all activities in the vicinity of the find must cease. The BPA archaeologist, Oregon SHPO, and affected Tribes would be notified immediately and consultation under Section 106 of the NHPA would begin.

3.8.6 Unavoidable Impacts after Mitigation

The potential **low to moderate** impacts to cultural resources described in Section 3.8.4 would be unavoidable under each action alternative. Implementation of the mitigation measures described in Section 3.8.5 would minimize construction-related impacts.

3.9 Socioeconomics

3.9.1 Study Area

The study area for socioeconomics includes Benton County, the county in which the BPA Marys Peak communications site and CPI West Point Spur communications site are located. The study area for the BPA Prospect Hill communications site and the BPA Albany Substation only includes the area within 1,000 feet of the fence around the facilities because the work would be minimal and would only take place over a few days.

3.9.2 Affected Environment

Population and Housing

Marys Peak and West Point Spur are located in Benton County in and near the Siuslaw National Forest (SNF), which also straddles Lincoln County in the northwest area of the forest. In 2018, the population in the surrounding area was estimated to be 92,101 in Benton County, which experienced a 7-8 percent population growth rate since 2010 (U.S. Census Bureau 2018). The closest incorporated town to Marys Peak is Philomath in Benton County. Its population was estimated at 4,715 (City of Philomath 2019). At a similar distance from the peak is the unincorporated community of Alsea, with an estimated population of 164 (U.S. Census Bureau 2010). The Marys Peak to Pacific Scenic Byway passes through Philomath and Alsea.

Most people living in Philomath and Alsea reside in single-family homes or apartments. There is a motel in Philomath and a bed-and-breakfast in Alsea. There are numerous options for overnight stays in the City of Corvallis, within 10 miles of Philomath. They include large motels and inns, and other smaller types of accommodation.

Employment and Contribution of Tourism to the Local Economy

The median household income in 2017 was $54,682 in Benton County. Tourism, which accounted for $118.5 million in direct travel spending in 2018 and raised 2 million dollars in local tax revenue, was responsible for 1,790 jobs. (Dean Runyan Associates 2019).

In Philomath, efforts being made to attract tourists include the current development of a recreational vehicle (RV) park (pers. comm. with Patrick Depa, Associate Planner, City of Philomath, August 13, 2019). An estimated 13,300 cars pass through Philomath daily and 5,000-7,000 cars a day travel between Philomath and Waldport on Highway 34 (Hall 2018). In April 2018, Highway 34 from Tangent to Waldport was officially recognized as a state scenic byway and named the Marys Peak to Pacific Scenic Byway. The byway stretches for 72 miles and passes through Corvallis, Philomath, Alsea, Tidewater, and Waldport. Much of the route runs alongside or through the Siuslaw National Forest. It also includes spurs, one of which takes visitors up to Marys Peak.

According to the SNF Visitor Use Report, the SNF receives an estimated 946,000 visitors a year with about 58 percent of those people coming from Lane and Lincoln Counties, 20.9 percent coming from a foreign country, and only about 4 percent coming from Benton County (USFS 2018b). About 25 percent of those come from over 200 miles away, including 14 percent of visitors who come from over 500 miles away. For visitors who spend one or more nights near or in the forest, nearly half (48.6 percent) stay at a National Forest Service campground and a quarter (25.4 percent) stay in a private rented home . When asked what they would do if, for some reason, they couldn't visit SNF, 20.6 percent said they

would come back another time and 43.3 percent said they would go somewhere else for the same or a different intended activity.

3.9.3 Environmental Consequences – No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing communications facility would not be rebuilt and impacts related to Project construction would not occur. Operations and maintenance activities would continue at the BPA Marys Peak and the BPA Prospect Hill communications site and would be similar to existing practices. Any required repair of facilities as a part of ongoing maintenance or due to winter storm damage would be unlikely to have any effects on visitation, and therefore would have **no** impacts on socioeconomics.

3.9.4 Environmental Consequences –Action Alternatives

Impacts Common to All Action Alternatives

Population and Housing

The number of Project workers would vary depending on the action alternative selected, but relatively few workers would be employed during the construction phase and most would likely permanently reside outside of Benton County. The origin of the work force is not known at this time and would depend on where the construction contractor is based. Because construction would be completed within a short time frame of up to six months, non-local workers are not expected to relocate their households to the study area.

If workers (and possibly some dependents) are from out of the area, they would require temporary lodging in the local area during construction. Construction workers might rent parking spaces for RVs or other live-in vehicles. A variety of motels and other types of lodging are located within reasonable commuting distance of the Project area. Because only a few workers, if any, would reside in the area during construction and their stay would be temporary, there would be **no** impacts on housing availability during construction. Because increased demand for housing would be temporary under any of the action alternatives, there would be **low** temporary impacts and **no** permanent impacts on regional population and overall demand for housing.

Local Economy

Implementation of one of the action alternatives would temporarily stimulate the local economy through some material purchases in the area, payroll to construction workers, and related indirect or multiplier effects. Multiplier effects occur when money that is spent continues to filter through the local economy, resulting in secondary benefits. For example, money paid to a temporary construction worker is spent at a local grocery store. In turn, sales at the store increase, resulting in increased profits, which in turn are spent elsewhere in the community.

Based on BPA experience with many similar projects, most of the workers are likely to reside outside of Benton County. Such workers typically reside temporarily near the construction site with or without their families, staying at RV parks, motels, or other lodging. They would purchase meals, groceries, gasoline, and other necessities from local restaurants and stores. The temporary income resulting from the presence of workers in the community would constitute a **low**, beneficial impact on the regional economy.

Some disturbance of and temporary interference with recreational activities at Marys Peak would occur under all action alternatives. Impacts on recreation itself are discussed in Section 3.3 of this EA. Because of these impacts, fewer people might come to Marys Peak and might not stay as long, affecting

the amount of money spent in nearby communities. If visitors to Marys Peak came during work on the access road, it might discourage visitors who come to see the summit from staying or from coming at all, if they are aware of the construction. Consequently, Project construction activities could have temporary economic impacts as described below.

Impacts Specific to Action Alternatives

Alternative 2A

Marys Peak

Alternative 2A would disrupt recreation, mainly during the construction of the steel-lattice structure and during access road improvement work at Marys Peak, a temporary **moderate** economic impact. There would be **no** impact on property values because activities would only occur on public lands.

BPA Albany Substation

Because construction at Albany Substation under Alternative 2A would only take a few days, any temporary impact on the salability of nearby residential properties would be low. The property values of residences near the Albany Substation are not expected to be permanently affected because the activities that would occur are those expected during routine maintenance.

Alternative 3C

Marys Peak

The greatest disruption to recreation would occur under Alternative 3C because the greatest amount of work would occur at Marys Peak (constructing an addition to the USFS building and a new steel-lattice structure, and removing the existing BPA communications site) and it would take the longest amount of time, a temporary **moderate** economic impact.

BPA Albany Substation

The same work is proposed at Albany Substation under Alternative 3C as under Alternative 2A.

Alternative 4

Marys Peak

Alternative 4 would disrupt recreation at Marys Peak during the removal of the existing BPA communications site, a temporary **moderate** economic impact. There would be **no** impact on property values because activities would only occur on public lands.

West Point Spur

Implementation of Alternative 4 could cause some disruptions to recreation during tree cutting along Marys Peak Road and during the removal of the BPA Marys Peak communications site. Because the disruption would be temporary and could be timed to occur at a time of lower visitation, there could be **low** temporary economic impacts. There would be **no** impact on property values because activities would only occur on public lands.

Work to improve an access road off Marys Peak Road and install equipment inside/outside the CPI building is anticipated to have **no** impact on recreation because the site has restricted access.

Prospect Hill

The minimal, short-term work that would occur at the BPA Prospect Hill communications site would have **no** temporary or permanent impacts on local population, housing availability, the local economy, or property values.

3.9.5 Mitigation Measures –Action Alternatives

The following mitigation measures are identified to minimize Project impacts on socioeconomics.

- Conduct a preconstruction public meeting and invite landowners, land managers, Benton County law enforcement, and communications site users to meet with construction contractors and BPA staff responsible for Project implementation to receive information and discuss concerns and receive contact information for construction contractor liaisons and BPA staff.
- Explain socioeconomics-related BMPs and mitigation measures to construction contractors and inspectors during a preconstruction meeting covering environmental requirements.
- Coordinate with the USFS public affairs officer to develop a communication plan to notify recreational and other user groups about construction activities, including potential closures of roads, trails, and other areas via the USFS website, onsite signage, and other methods of public outreach.
- Require the construction contractor to employ a lands liaison, who would be available to provide information, answer questions, and address concerns during Project construction.
- Keep construction equipment clear of recreational resources, including parking and trails, to the greatest extent possible.
- Avoid removing the Marys Peak BPA communications site (Alternative 3C and Alternative 4) during weekends and holidays to minimize disturbance during periods of high visitation.

3.9.6 Unavoidable Impacts Remaining After Mitigation – Action Alternatives

Implementation of the mitigation measures described above would reduce, but not eliminate, economic disruptions associated with the proposed construction activities, mainly a temporary disruption of recreation or decrease in the quality of the experience of visitors at or near the Marys Peak summit.

3.10 Noise

3.10.1 Study Area

The study area for noise is defined as the Marys Peak communications site, the CPI West Point Spur communications site, the BPA Albany Substation, and the BPA Prospect Hill communications site. The noise study area includes the sites and all areas within 1,000 feet of the fences around each site. The study area for noise at Marys Peak and West Point Spur also includes areas within 1,000 feet of all work areas, including staging areas that would be outside the communications site fences, areas where trees would be cut to create an unobstructed beam path, and unpaved access roads that would be improved.

Potential noise impacts from implementation of the Project were evaluated within the study area. Construction activities would temporarily cause noise impacts that would not continue beyond the construction period. During operation of some communications facilities, noise would be generated intermittently by equipment within the buildings. Potential noise impacts on land use and recreation are covered in Section 3.1, Land Use and Recreation, and potential noise impacts on wildlife are covered in Section 3.4, Wildlife, of this EA.

3.10.2 Affected Environment

Overview

Noise is sound that is loud, disruptive, unexpected, or otherwise undesirable because it disrupts normal human activities and diminishes the quality of the human environment. Ambient noise at a location includes all noise generated by typical sources such as traffic, neighboring homes, businesses or industries, people talking, and natural noises such as the wind in the trees, the movement of waterways, falling drops of water, and animal noises, such as birdsong. The ambient noise level is typically a mix of noise from natural and human-made sources that may be near or distant.

Audible noise corresponds to how humans hear sound. Audible noise is commonly quantified in terms of ***A-weighted decibels*** (dBA), an instantaneous measurement of sound pressure. Figure 3-1 contains examples of common activities and their associated noise levels in dBA.

A person's perception of sound can be affected by the spatial distribution of

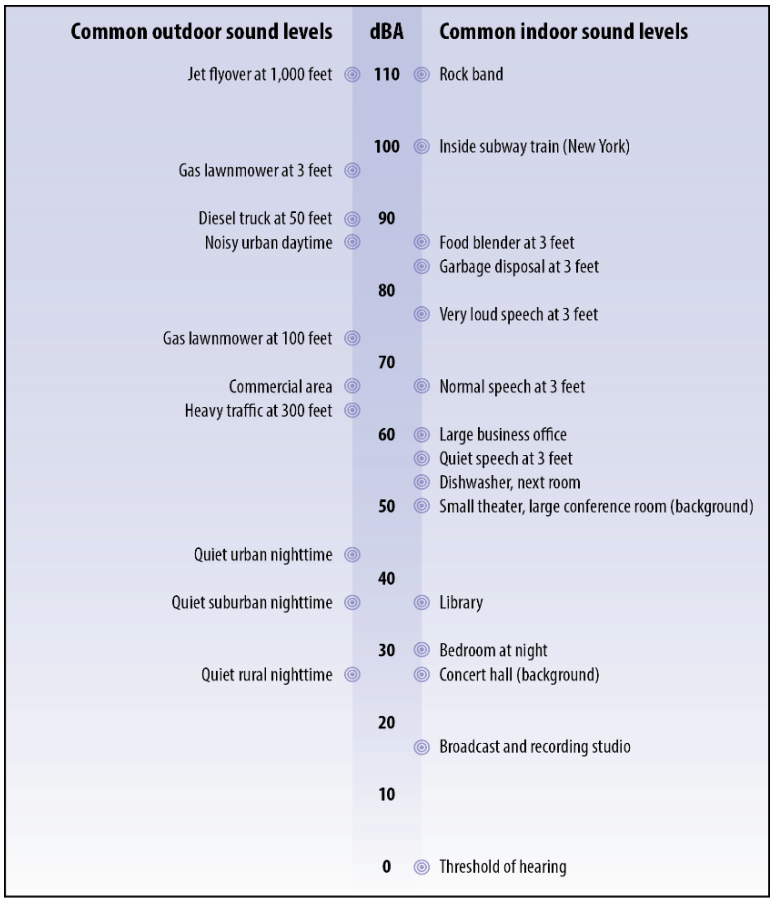


Figure 3-1. *Common indoor and outdoor sound levels (U.S. Department of Energy 2011a).*

the sound source, the duration of the sound, the time pattern of the sound, the time of day of the sound, and other factors (Caltrans 2009).

The day-night noise level (L_{DN}) is a measure of the average dBA over a 24-hour period and imposes an additional 10-dBA weighting for sounds occurring at night. Table 3-4 shows examples of outdoor L_{DN}. For the purpose of describing the Project's affected environment, the appropriate dBA values in this table are used to estimate baseline ambient noise levels. Measurements of noise levels were not conducted within the study areas.

Table 3-4. Outdoor Noise Levels

Outdoor Location	Noise Levels (L_{DN} in dBA)
Apartment next to freeway	87.5
Core commercial and heavy industry	75.0
Urban row housing on major avenue	68.0
Lighter industry	60.0
Old urban residential area	59.0
Wooded residential	51.0
Agricultural cropland	44.0
Rural residential	39.0
Open space (wetland, forest, open land)	35.0

Source: U.S. Environmental Protection Agency 1978; Caswell and Jakus 1977

The ability to perceive a new noise source intruding onto background conditions depends on the nature of the intruding sound and the background sound. For situations where the nature of the new sound is similar to the background sound (e.g., new traffic noise added to background traffic noise) a change of 3 dBA is just noticeable, a change of 5 dBA is clearly noticeable, and a change of 10 dBA is perceived as doubling or halving sound level. For situations where the nature of the new intruding sound is different from background sound (e.g., construction noise in an otherwise quiet setting), the new sound (including sporadic "clanks" from construction equipment) can be perceived even if it only raises the overall noise level by less than 1 dBA.

Noise Guidelines and Regulations

Noise regulations are established by the federal government as well as by the state of Oregon and some local governments. At the federal level, the U.S. Environmental Protection Agency (EPA) has established a guideline of 55 dBA for an average L_{DN} and 45 dBA for night-time noise levels (between 10 p.m. and 7 a.m.) in outdoor areas (EPA 1978). Table 3-5 (following page) shows average outdoor and indoor noise levels identified by EPA to protect public health and welfare, expressed as $L_{EQ(24)}$ (based on the dBA averaged over a 24-hour period) or L_{DN} (also based on the dBA over a 24-hour period, but imposing an additional 10-dBA weighting for sounds occurring during the night). The acceptable noise levels listed in the table are 24-hour averages over several years.

Construction noise and noise created by the installation or maintenance of "capital equipment" are exempted from state of Oregon noise regulations. (OAR 340-35). Benton, Linn, and Marion counties as well as the City of Albany either do not have established noise regulations or have regulations that are equivalent to or less stringent than the state and federal guidelines (Marion County 2008; City of Albany 2016).

Table 3-5. Average Noise Values to Protect Public Health and Welfare

Effect	Safety Level	Area
Hearing Loss	$L_{EQ}(24) \leq 70$ dBA	All areas
Outdoor Activity Interference and Annoyance	$L_{DN}(24) \leq 55$ dBA	Outdoors in residential areas and farms, and other outdoor areas where people spend widely varying amounts of time, and other places in which quiet is a basis for use.
	$L_{EQ}(24) \leq 55$ dBA	Outdoor areas where people spend limited amounts of time, such as schoolyards, playgrounds, etc.
Indoor Activity Interference and Annoyance	$L_{DN} \leq 45$ dBA	Indoor residential areas
	$L_{EQ}(24) \leq 45$ dBA	Other indoor areas with human activities, such as schools, etc.

Source: EPA 1978

Noise-Sensitive Land Uses

Land uses most sensitive to noise typically include areas where people reside, work (e.g., businesses, hospitals, and schools), and locations where the presence of unwanted noise could adversely affect the use of the land. Noise-sensitive land uses in the study area include recreation and residential.

Sensitive receptors are those populations that are more susceptible to the effects of noise than the population at large and those located in close proximity to localized sources of noise. Table 3-6 shows the nearest sensitive receptors within 1,000 feet of the sources of Project noise, as well as corresponding land uses and the estimated ambient noise levels (based on the data in Table 3-4).

Table 3-6. Estimated Noise Levels for Noise-Sensitive Receptors within Project Area.

Project Component	Noise-Sensitive Receptor(s)	Distance of each Noise Receptor from Noise Source	Land Uses within 1,000 Feet	Estimated Ambient Noise Level (dBA)
Mary's Peak Communications Site	Recreational users and other visitors	0 feet	Undeveloped forest and open land; recreation in the immediate vicinity	35.0
CPI West Point Spur Communications Site	Recreational users on Marys Peak Road	200 feet (distance of road from fence) and 15 feet from tree cutting area along Marys Peak Road	Undeveloped forest and open land	35.0
BPA Prospect Hill Communications Site	Residents	1000 feet	Agriculture; undeveloped forest land; rural residential	35.0 – 44.0
BPA Albany Substation	Hazelwood Park users; residents; recreational users on the Calapooia River	200 feet; 700 feet; 150 feet to nearest residence	Urban residential and commercial; light industrial; recreation; undeveloped forest; river recreational area	59.0 – 68.0

The Marys Peak study area includes portions of the Meadowedge Trail, North Ridge Trail, Summit Loop Trail, and Tie Trail as well as the Marys Peak Day Use Area. In these areas, recreational users could hear Project-related noise. In addition, bicyclists and pedestrians could experience increased noise levels along a short stretch of Marys Peak Road (about 0.2 mile). The Marys Peak Campground is located over 2,000 feet from the nearest proposed construction area and is buffered by forest. As such, noise-sensitive receptors in the campground would not be expected to experience any increased noise levels from Project activities.

The West Point Spur study area includes about 1.1 miles of Marys Peak Road, where bicyclists and pedestrians could hear Project-related noise. The recreational trails and campsite associated with Marys Peak are outside of the West Point Spur study area.

The Prospect Hill study area includes a single rural residence, where residents could hear Project construction noise. The residence is located approximately 1,000 feet from the fenced communications site and is buffered from the communications site by forest.

The BPA Albany Substation study area includes noise-sensitive receptors who reside in the residential areas of the Chase Orchards subdivision and along SW Queen Avenue, SW 17th Avenue, SW 16th Avenue, and SW Summerfield Court. In addition, recreational users of Hazelwood Park and the Calapooia River could hear noise from Project activities.

Existing Ambient Noise Environment

The estimated existing ambient noise levels, as shown in Table 3-6, are based on the land use in the vicinity of each Project component. The study area around Marys Peak consists of undeveloped forest and open land used for recreation. Road infrastructure with low traffic volume provides access to the Marys Peak summit for recreation and for maintenance of the existing communications sites. Background noise levels found in rural environments without significant transportation or industrial noise are generally around 35.0 dBA, depending on weather conditions.

The predominant sources of noise in the Project area around Marys Peak include occasional use of maintenance vehicles and equipment, local traffic from visitors arriving and departing, and human activity, mainly associated with recreational activities. Sources of noise in the existing Marys Peak communications site are two engine generators (one owned by USFS and one owned by BPA), which are regularly tested and only used during power outages. In addition, the operation of a HVAC system in the USFS communications building creates noise during hot and cold weather. Operational noise from communications equipment and other sources within the USFS and BPA buildings is also occasionally audible.

The study area around the West Point Spur site consists of undeveloped forest and open land with low traffic volume roads. Unlike Mary's Peak, there is limited outdoor recreation around West Point Spur, primarily bird watchers. A source of noise in the CPI communications site is an engine generator, which is only occasionally used in the event of a power outage. There is no HVAC system installed in the CPI communications building. Background noise levels in this rural setting are estimated to be around 35.0 dBA.

Most of the study area around the Prospect Hill communications site consists of agricultural lands, undeveloped forest land, and scattered rural residences, which are accessed by road infrastructure with low traffic volume. Areas near public roads and residences likely experience background noise levels from farming and human activity as well as the operation and maintenance of existing communications sites. Background noise levels likely vary from 35.0 dBA to 44.0 dBA.

The study area around the Albany Substation consists of roads, urban mixed residential and commercial properties, and open and forested recreational land. Sources of noise in the study area include the substation itself, heavy vehicle traffic on Queen Avenue SW, and the sounds generated by park users. Ambient noise levels in the study area likely vary from 59.0 dBA to 68.0 dBA. BPA transmission lines entering the substation may create audible ***corona*** noise during wet weather. However, BPA's design criterion for substation noise is 50 dBA at the substation property line, which is below the estimated ambient noise level in the study area.

3.10.3 Environmental Consequences – No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing communications facility would not be rebuilt and impacts related to Project construction would not occur. Operations and maintenance activities would continue at the BPA Marys Peak and the BPA Prospect Hill communications sites and would be similar to existing practices. Maintenance activities at the BPA Marys Peak communications site would result in **low** noise impacts because they occur infrequently. If it were necessary to perform emergency repairs at Marys Peak, it would likely not be possible to plan or time these activities to minimize noise impacts. Because potential noise impacts resulting from emergency repairs would be localized and likely to occur during winter months, noise impacts would be **low**. At the BPA Prospect Hill communications site, there would be **no** noise impacts from maintenance activities and emergency repairs.

3.10.4 Environmental Consequences –Action Alternatives

Potential noise impacts were assessed according to general methodology developed by the John A. Volpe National Transportation Systems Center for the Department of Transportation Federal Highway Administration (FHWA 2006). Potential noise impacts from Project construction and operation were compared to applicable noise thresholds and guidelines. EPA noise guidance for public health and welfare, shown in Table 3-5, was used to assess the noise impacts from Project construction.

Impacts Common to All Action Alternatives

Construction Noise

Construction activities would create temporary and intermittent noise starting beginning around 7 a.m. and continuing to about 7 p.m. Noise would result from the operation of vehicles and equipment, manual construction noise (e.g., hammering and clanking), and noise from increased human activity. Construction noise would be intermittent, with the duration depending on the activity. Table 3-7 summarizes noise levels generated by typical construction equipment that would likely be used.

Table 3-7. Typical Construction Noise Levels

Type of Equipment	Maximum Noise Levels, L_{MAX} (dBA) at 50 feet[1]
Access Road Improvement	
Crane and road grader	85.0
Dump trucks and other large trucks	84.0
Roller compacter and backhoe	80.0
Work trucks	55.0
Combined equipment noise level[3]	87.5
Communications Site Construction	
Crane, concrete trucks, tractor trailer, road grader, excavator[2], bulldozer, manlift[2]	85.0
Water trucks, flatbed trailer[2], fuel trucks[2], dump truck[2], line trucks[2]	84.0
Backhoe and air compressor[2]	80.0
Pickup truck[2]	55.0
Combined equipment noise level[3]	87.5

Sources: FTA 2006; FHWA 2006

Notes:

1. Noise levels are default values (or equivalent) from Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) Version 1.1. The RCNM is the FHWA's national model for the prediction of construction noise (FHWA RCNM 2006).
2. Equipment used during nonpeak construction period.
3. Combined equipment noise levels based on two loudest pieces of equipment assumed to operate simultaneously, in accordance with the Federal Transit Administration (FTA) guidance on general assessment for noise impacts (FTA 2006).

As shown, noise levels at 50 feet from a construction site would range from about 55.0 to 87.5 dBA. Noise produced by construction equipment would decrease with distance at a rate of about 6 dBA per doubling of distance from the site (Caltrans 2009).

Construction noise impacts on noise-sensitive receptors for each Project component are estimated based on their distance to the noise source and noise attenuation. Noise-sensitive receptors beyond each Project study area (greater than 1,000 feet from work areas) are not likely to experience construction noise levels above 60 dBA.

Operational Noise

Noise impacts that would persist for as long as a communications site is in operation are considered permanent sources of noise. Primary sources of permanent noise include operation of backup engine generators and HVAC units. Only HVAC units would create continuous noise, at varying levels.

During operation, the impact of a communications site's audible noise would depend on the level of ambient noise, proximity of the source to noise sensitive receptors, and air temperature (which determines whether the HVAC system's compressor operates). Sound level data was obtained from manufacturers specifications for a similar model to the one that would be installed. Under each action alternative, an HVAC system would be installed with an internal fan in continuous operation. Although the USFS communications building currently has a HVAC system, an additional HVAC system would be installed in the new addition. At a distance of 10 feet indoors, the fan would generate a noise level of about 49 dBA, the equivalent of a typical conversation at home. From the building's exterior, audible

noise from the operation of the fan would be lower than 49 dBA because the sound level would decrease with distance.

The HVAC thermostat would be set for cooling above 75 degrees Fahrenheit (°F) and for heating below 70 °F. At a distance of about 10 feet, a typical HVAC system's compressor produces noise levels up to 67 dBA. The outdoor compressor, which is the loudest component of the HVAC system, would only run when the unit is in cooling mode (indoor temperature above 75 °F and outdoor temperature above 65 °F. If the HVAC system is not in cooling mode, it would operate in economizer mode without running the compressor. For example, when indoor temperatures are above 75 °F but outdoor temperatures are below 65 °F, a damper opens to allow cooler exterior air to enter the building without using the compressor. As a result, the sound level at 10 feet from the communications building would be lower than 67 dBA during the cooler times of year and the cooler times of day.

The engine generator is tested once per week for about 90 minutes to ensure that it is in proper working condition. This testing is conducted outside of peak recreational hours (e.g., at night on a weekday). BPA typically tests engine generators between 1 and 4 a.m. In addition to routine testing, the engine generator would operate during any loss of electrical service. Typically, loss of electrical service occurs as a result of severe weather, such as winter storms, when people are unlikely to be outdoors near a communications site. At a distance of 23 feet, a typical unhoused engine generator produces noise levels up to 75 dBA. However, because BPA installs engine generators inside of its communications building with an external exhaust system, noise levels outside of the fenced communications sites would be much lower.

Noise levels from operation of the communication sites would meet EPA noise guidance for public health and welfare (Table 3-5).

Impacts Specific to Action Alternatives

Alternative 2A

Marys Peak

Under Alternative 2A, improvements to the BPA facilities within the fenced area, cutting trees to create an unobstructed microwave beam path, and improvements to the access road would result in temporary and permanent noise impacts. Temporary construction noise would persist for the length of the construction period (up to 6 months) and would intermittently exceed current ambient conditions. Maximum noise levels from equipment operation could reach up to 87.5 dBA Lmax at 50 feet from the construction work area, which would likely decrease to less than 60 dBA at a distance of 1,000 feet or more from the source.

Noise-sensitive receptors located within the study area include recreational users and other visitors. Noise from construction activities would be audible from all or some portions of the North Ridge Trail, Tie Trail, Summit Loop Trail, and Meadowedge Trail as well as from Marys Peak Road, the Marys Peak Day Use Area, and the Marys Peak summit. Although construction noise would be temporary and intermittent, it would detract from the user experience in the study area, and some recreationists could choose to go elsewhere during the construction period. Therefore, temporary noise impacts from construction at the BPA Marys Peak communications site would be **moderate**.

Operation of the BPA communications site at Marys Peak would sometimes exceed current ambient conditions, resulting in a permanent noise impacts. Currently, the communications building does not have an HVAC system. Under Alternative 2A, a new HVAC system would be installed to maintain stable temperatures within the communications building. This new equipment, which would both cool and heat, would create noise up to 67 dBA when the compressor operates (see *Operational Noise* section

above). Otherwise, the HVAC system would operate in economizer mode, which produces less noise. Since the USFS communications building currently has a wall-mounted HVAC unit, the BPA HVAC system would have an additive effect to the noise level, during the same time periods (hot and cold days).

During HVAC system operation, the noise would become audible to recreationists from portions of the Summit Loop Trail and the Meadowedge Trail as they approach the summit of Marys Peak. Because the noise would detract from the user experience, permanent noise impacts from the operation of the BPA Marys Peak communications site would also be **moderate**.

BPA Albany Substation

At the BPA Albany Substation, equipment installation inside the existing communications building and on the steel-lattice structure would temporarily create intermittent noise. The noise would be audible from Hazelwood Park, the Calapooia River, and private residences and businesses within 1,000 feet of the fenced area. However, construction activities would be completed within a few days. Operation of the communications site would not result in an increase in noise levels above the current ambient conditions, and operational noise would not be audible to the nearest noise-sensitive receptors. Therefore, temporary noise impacts from the installation of equipment at Albany Substation would be **low**, and there would be **no** permanent noise impacts.

Alternative 3C

Marys Peak

Under Alternative 3C, construction activities within the fenced area, at the parking lot staging area, along the access road, and from removal of the BPA communications site, along with tree cutting, would result in temporary noise impacts similar to those that would occur under Alternative 2A. Temporary construction noise would persist for the length of the construction period (up to 6 months) and would intermittently exceed current ambient conditions. Maximum noise levels from operation of equipment at the construction site could reach up to 88 dBA Lmax at 50 feet from the construction site, which would decrease to less than 60 dBA at a distance of 1,000 feet or more from the noise source. Therefore, temporary noise impacts on recreational users from construction at the Marys Peak communications site would be **moderate**.

Under Alternative 3C, noise from the operation of the communications site would be the same as the level of operational noise that would occur under Alternative 2A because an HVAC system would be installed within the BPA addition to the USFS building. Therefore, permanent noise impacts from operation of the Marys Peak communications site would also be **moderate** under Alternative 3C.

BPA Albany Substation

At BPA Albany Substation, noise impacts would be the same under Alternative 3C as they would be under Alternative 2A because the same work would be done. Therefore, temporary noise impacts from the installation of equipment at the BPA Albany Substation would be **low**, with **no** permanent noise impacts.

Alternative 4

Marys Peak

Implementation of Alternative 4 would create temporary noise impacts from the use of vehicles and equipment to demolish and remove the existing BPA communications facilities. Although these construction noise impacts would be short-term and intermittent, it would detract from the user experience of the trails in the study area, and some recreationists could choose to recreate elsewhere during the construction period. Therefore, temporary noise impacts from the removal of the BPA Marys Peak communications site would be **moderate**.

The BPA-owned engine generator at the Marys Peak site would be removed under Alternative 4, eliminating noise currently produced during routine testing. BPA would also no longer be conducting maintenance at the site. There would be a slight reduction in noise due to the removal of the BPA Marys Peak communications site, a **low** beneficial effect.

West Point Spur

At West Point Spur, Project activities within the fenced CPI communications site and at the staging area immediately outside the fence, improvements of the access road, and tree cutting would result in noise impacts. Temporary construction noise would be audible from Marys Peak Road, persisting for the length of the construction period (up to 3 months) and intermittently exceeding current ambient conditions. Maximum noise levels from the operation of equipment at the construction site could reach up to 87.5 dBA Lmax at 50 feet from the construction site, which would decrease to less than 60 dBA at a distance of 1,000 feet or more from the noise source. The only noise receptors would be people using a short stretch of Marys Peak Road and a limited number of recreational users who may be on West Point Spur. Therefore, temporary noise from construction at the CPI communications site would be **low**.

Operation of the communications site at West Point Spur would exceed current ambient conditions, resulting in a permanent noise impact. Currently, the CPI communications building does not have an HVAC system. Under Alternative 4, a new HVAC system would be installed to maintain stable temperatures within the communications building. This new equipment would intermittently create noise up to 67 dBA when the compressor turns on to heat or cool the building. Otherwise, the HVAC system would operate in economizer mode, which produces less noise. Because there are likely to be few recreational users within the study area at the CPI communications site under Alternative 4, permanent noise impacts during operation of the West Point Spur communications site would be **low**.

Prospect Hill

Under Alternative 4, Project activities would also create temporary noise impacts at the BPA Prospect Hill communications site. Noise-generating activities would include installing equipment inside the existing building, and reinforcing and installing new equipment on the existing steel-lattice structure. These activities would create intermittent noise impacts that would only persist for a few days. Operation of the communications site at Prospect Hill would not increase noise levels above the current ambient conditions and would not be audible at the nearest noise-sensitive receptor. Therefore, temporary noise impacts from the installation of equipment at the Prospect Hill communications site would be **low**, and there would be **no** permanent noise impacts.

3.10.5 Mitigation Measures

If one of the action alternatives is implemented, BPA would implement construction BMPs and mitigation measures to avoid or minimize noise impacts from the Project. The following measures would be implemented:

- Install the HVAC unit on the south-facing wall of the Marys Peak communications building addition (Alternative 3C) to minimize noise and visual impacts to visitors near the picnic table area located north of the communications site.
- Explain noise-related BMPs and mitigation measures to construction contractors and inspectors during a preconstruction meeting covering environmental requirements.
- Coordinate with the USFS public affairs officer to develop a communication plan to notify recreational and other user groups about construction activities, including potential closures of roads, trails, and other areas via the USFS website, onsite signage, and other methods of public outreach.

- Require the construction contractor to employ a lands liaison, who would be available to provide information, answer questions, and address concerns during Project construction.
- Schedule all construction work during daylight hours (7 a.m. to 7 p.m.) and limit work to weekdays, if possible.
- Avoid conducting access road improvements on weekends or holidays to minimize impacts to visitors, if possible.
- Require sound control devices on all construction equipment powered by gasoline or diesel engines that are at least as effective as those originally provided by the manufacturer.
- Request that the construction contractor turn off construction equipment during prolonged periods of nonuse.

3.10.6 Unavoidable Impacts Remaining After Mitigation

Mitigation measures and construction BMPs would have very little effect on noise impacts because the operation of equipment is unavoidable. Some increased noise above the ambient noise level would be expected during construction under each of the Project alternatives and during operation of some facilities under some alternatives. The impact of construction and operational noise within the study areas would vary depending on the duration of construction, proximity to noise sensitive receptors, and intensity of noise relative to ambient conditions. Temporary and permanent impacts would be the same as discussed above in Section 3.10.4.

3.11 Air Quality and Greenhouse Gases

3.11.1 Study Area

The study area for the air quality analysis is defined as Benton County. The counties that include the BPA Albany Substation and the BPA Prospect Hill communications site are not considered in this section because the minimal amount of work proposed at both sites (no ground disturbance and no tree removal) would result in **no** impacts on air quality and greenhouse gas concentrations.

3.11.2 Affected Environment

Air Quality

The Oregon Department of Environmental Quality (ODEQ) and the U.S. Environmental Protection Agency (EPA) regulate air quality in Oregon. EPA has established the national ambient air quality standards (NAAQS) for six criteria air pollutants: ***particulate matter***, sulfur dioxide, carbon monoxide, nitrogen dioxide ozone, and lead. ODEQ has adopted the standards set by EPA. For the six ***criteria pollutants***, NAAQS are defined as a maximum concentration above which adverse effects on human health may occur. The six criteria pollutants, described below, may be natural or human-made and may take the form of solid particles, liquid droplets, or gases.

Particulate matter **(PM)** is the term for small particles in the air, including dust, dirt, soot, smoke, and liquid droplets. Particles can be directly emitted into the air or formed in the air through chemical reactions. PM comes in a wide range of sizes. Some particles are large or dark enough to be seen as soot or smoke; others are so small that individually they can only be detected with an electron microscope. Particles less than 2.5 micrometers in diameter (PM 2.5) are referred to as "fine" particles. Sources of fine particles include combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Particles between 2.5 and 10 micrometers in diameter are "coarse" particles (PM10). Sources of coarse particles include crushing or grinding operations and dust from paved or unpaved roads.

Sulfur dioxide **(SO_2)** is a colorless, reactive gas produced during burning of sulfur-containing fuels, such as coal and oil. SO_2 emissions result mostly from stationary sources, such as coal and oil combustion, steel mills, refineries, pulp and paper mills, and nonferrous smelters.

Carbon monoxide **(CO)** is a colorless, odorless, and poisonous gas. CO forms when the carbon in fuels does not completely burn. Vehicle exhaust contributes about 60 percent of all CO emissions nationwide and up to 95 percent in cities. Other sources of CO include fuel combustion in industrial processes and natural sources, such as wildfires. CO concentrations are typically highest during cold weather when less complete combustion causes inversions that trap pollutants low to the ground.

Nitrogen dioxide **(NO_2)** is a brownish, highly reactive gas present in all urban atmospheres. NO_2 contributes to the formation of both ozone and acid rain and may affect both terrestrial and aquatic ecosystems. The major mechanism for the formation of NO_2 in the atmosphere is oxidation of the primary air pollutant, nitric oxide.

Nitrogen oxide **(NO_x)** refers to various nitrogen oxides most relevant to air pollution, including nitric oxide (NO) and others. Because nitrogen oxides form when fuel is burned at high temperatures, the two major NOx emission sources are automobiles and stationary fuel combustion sources.

Ozone **(O_3)** is a gas that forms in the atmosphere when three atoms of oxygen are combined. It is not emitted directly into the air, but is created at ground level by a chemical reaction between oxides of

nitrogen and volatile organic compounds in the presence of sunlight. O_3 has the same chemical structure whether it occurs high above the earth or at ground level and can be "good" or "bad," depending on its location in the atmosphere. Ground-level or "bad" O_3 harms human health, and damages vegetation and many common materials. It is a key ingredient of urban smog.

***Lead* (Pb)** is found naturally in the environment as well as in manufactured products. Due to the phase-out of leaded gasoline, airborne Pb is no longer a problem in most of the U.S. The major source of Pb emissions today is metals processing and the highest levels of Pb in air are generally found near lead smelters, waste incinerators, utilities, and lead-acid battery manufacturers.

When air quality in an area exceeds the NAAQS, it is designated a ***nonattainment area***. Marys Peak and West Point Spur are not within nonattainment areas (ODEQ 2019).

Greenhouse Gases

Greenhouse gases (GHGs) are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. Through photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. When plants decay or are burned, the stored carbon is released back into the atmosphere, available to be taken up again by new plants (Ecological Society of America, 2008).

In forests, carbon can be stored for long periods of time, and because they are so productive and long-lived, forests have an important role in carbon capture and storage, serving as temporary carbon reservoirs. Large amounts of GHGs are also stored underground in the form of ***fossil fuels***, and soils store carbon in the form of decomposing plant material, serving as the largest carbon reservoir on land.

Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. When forests are permanently converted to cropland, for instance, or when new buildings or roads displace vegetation, the GHG storage capacity of the disturbed area is diminished. Carbon dioxide (CO_2,) nitrous oxide (N_2O), and methane (CH_4) emissions increase when soils are disturbed (Kessavalou et al 1998). Burning fossil fuels releases GHGs that have been stored underground for thousands of years and cannot be readily replaced. The resulting buildup of heat in the atmosphere due to increased GHG levels increases temperatures, which causes warming of the planet through a greenhouse-like effect (EIA 2019).

The principal GHGs emitted into the atmosphere through human activities are CO_2, CH_4, N_2O, and fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) (EPA 2013). These are described below.

***Carbon dioxide* (CO_2)** is the major GHG emitted (EPA 2013a). CO_2 enters the atmosphere as a result of such activities as land use changes, the burning of fossil fuels (e.g., coal, natural gas, oil, and wood products), and the manufacturing of cement. CO_2 emissions resulting from the combustion of coal, oil, and gas constitute 82 percent of all U.S. GHG emissions (EPA 2016). Before the industrial revolution, CO_2 concentrations in the atmosphere were roughly stable at 280 ppm. By 2015, CO_2 levels had increased to 401 ppm, a 43 percent increase, as a result of human activities (EPA 2016).

***Methane* (CH_4)** is emitted during the processing and transport of fossil fuels, through intensive animal farming, and by the degradation of organic waste. CH_4 concentrations in the atmosphere have more than doubled since preindustrial times (EPA 2016).

Nitrous oxide **(N_2O)** is emitted during agricultural and industrial activities and during the combustion of fossil fuels and solid waste. N_2O atmospheric levels have increased 17 percent since the 1920s (EPA 2016).

Fluorinated gases, including HFCs, PFCs, and SF_6, are synthetic compounds emitted through industrial processes. They sometimes replace ozone-depleting compounds, such as chlorofluorocarbons (CFCs) in insulating foams, refrigeration, and air-conditioning. Fluorinated gases, particularly SF_6, are often used in substation equipment. SF_6 is used as an electrical insulator in high-voltage substation equipment such as circuit breakers, transformers, and ground switches. Although fluorinated gases are emitted in small quantities, fluorinated gases have the ability to trap more heat than CO_2 and are considered gases with a high global warming potential (EPA 2016).

3.11.3 Environmental Consequences – No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing communications facility would not be rebuilt and impacts on air quality and GHG levels from construction activities and tree cutting would not occur. Operations and maintenance activities and emergency repairs would continue at the BPA Marys Peak and the BPA Prospect Hill communications sites and would be similar to existing practices, affecting air quality temporarily and intermittently and contributing small amounts of GHG emissions to global concentrations – a **low** temporary impact to air quality and **low** permanent greenhouse gas concentrations.

3.11.4 Environmental Consequences – Action Alternatives

Impacts Common to All Action Alternatives

Because impacts on air quality would vary by action alternative; common impacts are not considered here. See the next section for discussion of impacts specific to each action alternative.

Impacts Specific to Action Alternatives

Alternative 2A

Marys Peak

Under Alternative 2A, Project construction could affect air quality, mostly during peak activity periods. An increase in dust would be the main impact to air quality. ***Fugitive dust*** could be created when soils are disturbed during communications site work, access road improvements, and by travel on unpaved surfaces. PM levels will be partially reduced by implementing the mitigation measures described in Section 3.9.3 to control dust during construction, as needed. Although construction activities could increase dust and particulate levels, impacts would be **low to moderate** because the increase would be temporary, would occur in localized areas, and would not be expected to exceed air quality standards.

The operation of vehicles and heavy equipment during construction would result in temporary increases of criteria pollutants including CO, SO_2, NO_x, and PM, as well as other combustion byproducts, such as CO_2 and volatile organic compounds. The increase in vehicle and heavy equipment emissions would be temporary and localized to specific work areas and would change on a daily or weekly basis, comparable to the operation of agricultural and logging equipment in rural areas and to small-scale land development activities in more urban and suburban areas. For these reasons, impacts on air quality from vehicle and heavy equipment operation during construction would be **low**. There would be **no** permanent impacts on air quality.

Project construction would result in GHG emissions, primarily in the form of CO_2, N_2O, and CH_4 from the use of vehicles and heavy equipment. Trees would be cut under all action alternatives to create an unobstructed microwave beam path. Although tree cutting does not immediately emit GHGs and is not considered a direct emission, it would result in a permanent loss of a carbon storage reservoir. Removal of other vegetation and soil disturbance could also result in an increase in GHG concentrations. However, research has shown that emissions as a result of soil disturbance are short-lived and return to background levels within several hours (Kessavalou et al. 1998; IPCC 2014). Carbon that would be stored in removed vegetation would be offset in time by the growth and accumulation of carbon in soils and new vegetation.

Under Alternative 2A, less than an acre of trees would be cut and Project construction would disturb less than 0.5 acre of other vegetation and soil, most of which would be revegetated. For these reasons, the permanent impacts on global GHG concentrations would be **low**.

BPA Albany Substation

Under Alternative 2A, the minimal amount of work proposed at the Albany Substation would result in no ground disturbance and no tree removal. Due to the minimal amount of work, there would result in **no** impacts on air quality and greenhouse gas concentrations.

Alternative 3C

Marys Peak

Under Alternative 3C, construction activities within the fenced area, at the parking lot staging area, along the access road, and from removal of the BPA communications site, would result in temporary impacts to air quality similar to those that would occur under Alternative 2A. Although construction activities could increase dust and particulate levels, impacts would be **low to moderate** because the increase would be temporary, would occur in localized areas, and would not be expected to exceed air quality standards. Impacts on air quality from vehicle and heavy equipment operation during construction would be **low**. There would be **no** permanent impacts on air quality.

Under Alternative 3C, less than an acre of trees would be cut and Project construction would disturb less than 0.5 acre of other vegetation and soil, most of which would be revegetated. For these reasons, the permanent impacts on global GHG concentrations would be **low**.

BPA Albany Substation

Under Alternative 3C as under Alternative 2A, the minimal amount of work proposed at the Albany Substation would result in no ground disturbance and no tree removal. Due to the minimal amount of work, there would result in **no** impacts on air quality and greenhouse gas concentrations.

Alternative 4

Marys Peak

Under Alternative 4, construction activities associated with the removal of the BPA communications site would result in temporary impacts to air quality. Although construction activities could increase dust and particulate levels, impacts would be **low to moderate** because the increase would be temporary, would occur in localized areas, and would not be expected to exceed air quality standards. Impacts on air quality from vehicle and heavy equipment operation during construction would be **low**. There would be **no** permanent impacts on air quality.

West Point Spur

Under Alternative 4, construction activities within the fenced area, in the staging area outside the fence, and along the access road, would result in temporary impacts to air quality similar to those that would occur under other action alternatives. Although construction activities could increase dust and

particulate levels, impacts would be **low to moderate** because the increase would be temporary, would occur in localized areas, and would not be expected to exceed air quality standards. Impacts on air quality from vehicle and heavy equipment operation during construction would be **low**. There would be **no** permanent impacts on air quality.

Under Alternative 4, less than an acre of trees would be cut and Project construction would disturb less than 0.5 acre of other vegetation and soil, most of which would be revegetated. For these reasons, the permanent impacts on global GHG concentrations would be **low**.

Prospect Hill

Under Alternative 4, the minimal amount of work proposed at the Prospect Hill communications site would result in no ground disturbance and no tree removal. Due to the minimal amount of work, there would be **no** impacts on air quality and greenhouse gas concentrations.

3.11.5 Mitigation Measures – Action Alternatives

If one of the Project action alternatives is implemented, BPA will implement the following mitigation measures to minimize impacts on air quality and GHG emissions:

- Explain air quality and greenhouse gas-related BMPs and mitigation measures to construction contractors and inspectors during a preconstruction meeting covering environmental requirements.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Encourage use of carpooling and shuttle vans among construction workers to minimize construction-related traffic and associated emissions.
- Limit vehicle speeds on unpaved roads and surfaces to 10 miles per hour or less to reduce dust.
- Obtain rock and gravel used for road surfacing, fill material, and other uses from local ODA-certified weed-free sources.
- Control dust during construction with water or other appropriate control methods, without the use of chemical additives, as needed.
- Request that the construction contractor turn off construction equipment during prolonged periods of nonuse.
- Require that all engines in vehicles used for construction, operation, and maintenance are maintained in good operating condition to minimize exhaust emissions.
- Use alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.
- Recycle or salvage nonhazardous construction and demolition debris where practicable.
- Encourage use of the proper size of equipment for the job to maximize energy efficiency.

3.11.6 Unavoidable Impacts Remaining after Mitigation

Implementation of the mitigation measures described above would reduce impacts on air quality and reduce GHG emissions, but would not completely eliminate impacts. Temporary increases in criteria pollutants could occur in the vicinity of construction sites, but would not be expected to violate current air quality standards. GHG emissions would also increase temporarily as a result of construction due to ground disturbance and equipment operation.

3.12 Public Health and Safety

3.12.1 Study Area

The study area for public health and safety includes the area within 500 feet of each Project component (communications site and the associated access roads that would be improved). Sensitive land uses within or near the study area include residences, agricultural areas, recreation areas including trails, and other areas where people might be present.

3.12.2 Affected Environment

Communications sites could pose risks to humans if they are not constructed, operated, or maintained properly. Potential risks include electrocution, fire, exposure to toxic and hazardous substances, and electromagnetic radiation exposure. BPA designs its communications facilities to meet safety requirements in order to prevent or reduce these risks. Safety measures include installing gates, providing fencing, and locking communications buildings to prevent unauthorized use of communications sites, and ensuring construction contractors implement a safety plan. To ensure safe conditions, BPA periodically inspects communications sites.

General Health and Safety

Most of the Project components are located in rural, sparsely populated areas except for the BPA Albany Substation. The Albany Substation is within the City of Albany. It is located near other industrial facilities, adjacent to a public park, and across the street from a residential area.

Wildland fire hazards in the study area, including both natural and human-caused fires, pose a safety hazard to the public. Construction equipment and vehicles can start fires if they are not operated properly. Fire danger in western Oregon is generally the highest in the dry summer months. Because much of the study area is forested or covered by grasslands, forest fires and grassland fires would be the most common type of fires near Project components.

Communication sites can become a target for vandalism, sabotage, and terrorism, known as intentional destructive acts. Most of the Project components are in unpopulated areas, which make them vulnerable to vandalism; vandals have caused some damage at BPA communications sites.

Hazardous waste sites that could be encountered in the study area include illegal dump sites, illicit drug labs, buried chemical drums, unreported chemical spills, and old mines. In more developed areas, contaminated sites are generally identified and listed with regulatory agencies. Because the Marys Peak portion of the study area receives many visitors and the access road is gated, the risk of encountering unreported hazardous waste sites or unreported contamination during Project construction is unlikely. Because the West Point Spur and Prospect Hill sites are gated, and work would mainly occur within the fenced communications sites, it is also unlikely that waste or contamination would be encountered.

Managing vegetation around communications sites is needed to prevent trees from falling into the fenced area, to ensure access to communications sites, to control noxious weeds, and to ensure that an unobstructed beam path is maintained. Vegetation management can potentially harm humans, wildlife, and crops unless appropriate practices are followed. Handling herbicides, felling or topping trees, using sharp tools, machinery, and heavy equipment can create health and safety risks.

Electromagnetic Fields (EMF)

Electromagnetic fields (EMFs) refer to the areas where electromagnetic energy is present, and they exist everywhere electricity is used. EMF levels vary widely throughout the study area, depending on

the proximity to electronic devices or electrical lines and whether intervening landscape or walls exist. In general, existing EMF levels are higher in developed areas with electrical lines and buildings with electrical wiring, electrical equipment, and appliances. BPA communications sites receive their power from local distribution lines and are not involved in generating or transmitting electricity. An EMF consists of two components: an electric field and a magnetic field.

Electric Fields

Electric fields are measured in volts per meter (V/m) or kilovolts per meter (kV/m). Throughout a home, the average electric field strength from wiring and appliances can range from 5 to 20 V/m, but is often less than 10 V/m (Bracken 1990). Localized electric fields near a small household appliance can range from 30 to 60 V/m, but field strengths drop off sharply with distance from the source. If an appliance or electrical device is connected to the power source, electric fields are present even when it is turned off. Electric-field levels in public buildings, such as shops, offices, and malls are comparable with residential levels. There are no national standards for electric fields from communications sites. BPA does not have magnetic field guidelines for communications sites.

Magnetic Fields

Magnetic fields result from the flow of electric currents through wires and electrical devices. Magnetic fields are measured in units of gauss (G) or milligauss (mG), with 1 G equal to 1,000 mG. Average magnetic field strength in most homes (away from electrical appliances and home wiring, etc.) is typically less than 2 mG. However, appliances carrying high current or those with high-torque motors, such as microwave ovens, vacuum cleaners, or hair dryers, may generate fields of tens or hundreds of milligauss. Office workers operating electric equipment and industrial workers can be exposed to similar or higher magnetic fields. Outdoor magnetic fields in publicly accessible places can range from less than 1 to about 1,000 mG, with the highest levels near devices powered by large electric motors.

Like electric fields, magnetic fields decrease with distance from the source. Magnetic fields differ from electric fields in that their levels vary depending on the amount of current flowing through a conductor, rather than the voltage. As such, if an appliance or electrical device is turned off, but still connected to the power source, magnetic fields are not present. In general, the strength of a magnetic field increases as the current increases, but at any point also depends on characteristics of the source. There are no applicable regulations for the regulation of magnetic fields in Oregon. BPA does not have magnetic field guidelines for communications sites.

Health Effects of EMF

After decades of research, the issue of whether any long-term health effects are associated with EMF remains inconclusive. Magnetic fields are most in question as possible sources of long-term effects, although studies sometimes lump the electric and magnetic fields together. Scientific reviews of the research on EMF health effects have found that evidence is insufficient to conclude that EMF exposures lead to long-term health effects (Exponent 2015). BPA looks to the determinations of the National Institute of Environmental Health Science (NIEHS), which largely came to the same conclusion. However, some uncertainties remain for childhood exposures to magnetic fields at levels above 4 mG (NIEHS 1998, 1999, 2002).

Electromagnetic Radiation (EMR)

Radiation is the propagation of energy through space that can take the form of either waves or particles. The propagation of electromagnetic energy is one type of radiation, referred to as ***electromagnetic radiation*** (EMR). EMR can be thought of as waves of electric and magnetic energy moving together (e.g., radiating) through space. These waves are generated by the movement of electrical charges such

as in a conductive metal object or antenna. For example, the alternating movement of charge in an antenna used by a radio or television broadcast station generates electromagnetic waves that radiate away from the transmitting antenna and are then intercepted by the receiving antenna such as a rooftop TV antenna, car radio antenna, or an antenna integrated into a cell phone.

EMR exists across an electromagnetic spectrum from very high-frequency (high-energy) waves to very low-frequency (low-energy) waves. The frequency of EMR is measured in waves per second using the measures kilohertz (one thousand hertz or KHz), megahertz (one million hertz or MHz), and gigahertz (one billion hertz or GHz). Radio Frequency (RF) waves, which include both radio waves and microwaves, exist at the low-frequency end of the electromagnetic spectrum with frequencies ranging from about 3 kilohertz to 300 gigahertz. As an example, the signal from a FM radio is described by the frequency; a radio station known at 101.5 FM emits radio waves at a frequency of 101.5 million cycles (waves) per second or 101.5 MHz). Just like an EMF, an RF field refers to anywhere that RF waves are present, and it can be described in terms of the electric and/or magnetic field strength at that location.

RF waves occur naturally and are produced artificially for a variety of human uses, including full body scanners for security and medical screening, and microwave ovens. An important use for RF energy is providing telecommunications services, including radio and television broadcasting, cellular telephones, cordless telephones, radio communications for federal and state agencies, police and fire departments, amateur radio, microwave point-to-point links, and satellite communications. The Federal use of the spectrum is managed by the National Telecommunications and Information Administration (NTIA), located within the U.S. Department of Commerce; the Federal Communications Commission (FCC) manages non-federal use of the spectrum.

High-frequency radiation – including X-rays, gamma rays, and some higher energy ultraviolet (UV) radiation – is known as ionizing radiation. Ionizing radiation has enough energy to remove an electron from an atom or molecule. Ionization can damage biological tissue, including the DNA inside of cells, which can lead to cancer (American Cancer Society 2018). RF radiation is non-ionizing radiation, which means it does not have enough energy to ionize an atom or molecule. RF has even lower energy than some other types of non-ionizing radiation, such as visible light and infrared.

Microwave Radiation

Microwave radiation is a type of non-ionizing radio waves that has frequencies ranging from around 300 MHz to 300 GHz. Microwaves are widely used for telecommunications purposes such as for cellular, radio, microwave point-to-point communication, satellite communications, and in certain broadcasting operations.

Point-to-point microwave antennas transmit and receive microwave signals across relatively short distances. For this Project, a circular microwave dish antenna would be mounted on a supporting steel-lattice structure. Because it would transmit microwave signals in a directed beam to the receiving antenna, dispersion of microwave energy outside of this narrow beam would be minimal.

Microwave antennas transmit using very low power levels, usually on the order of a few watts or less. Measurements have shown that ground-level power densities due to microwave directional antennas are normally thousands of times or more below recommended safety limits.

Very High Frequency (VHF) Radiation

Very high frequency (VHF) radiation consists of non-ionizing radio waves that have frequencies ranging from around 30 MHz to 300Mz (FDA 2017). VHF RF is widely used for telecommunications purposes. BPA uses VHF to transmit audio signals to and from field workers and communications sites. VHF is omnidirectional, meaning that the signal radiates out in a wedge-shaped area, as shown in Figure 2-1.

This enables field workers to pick up audio signals in a large geographic area. As with all forms of electromagnetic energy, the strength of VHF radiation decreases rapidly with distance from the antenna.

Health Effects of EMR

In the United States, the FCC has adopted and used recognized safety guidelines for evaluating RF environmental exposure since 1985. The FCC's established guidelines incorporate limits for Maximum Permissible Exposure (MPE) for transmitters operating at frequencies between 300 kHz and 100 GHz (FCC 2019).

These guidelines for human exposure to RF electromagnetic fields were derived from the recommendations of two expert organizations, the National Council on Radiation Protection and Measurements (NCRP) and the Institute of Electrical and Electronics Engineers (IEEE). Both the NCRP exposure criteria and the IEEE standard were developed by expert scientists and engineers after extensive reviews of the scientific literature related to RF biological effects. The exposure guidelines are based on thresholds for known adverse effects, with margins of safety. In adopting the current RF exposure guidelines, the FCC consulted with the EPA, FDA, Occupational Safety and Health Administration (OSHA), and NIESH.

The NCRP, IEEE and ICNIRP guidelines for maximum permissible exposure are different for different transmitting frequencies. This is due to the finding that whole-body human absorption of RF energy varies with the frequency of the RF signal. The most restrictive limits on whole-body exposure are in the frequency range of 30-300 MHz where the human body absorbs RF energy most efficiently when the whole body is exposed. The exposure limits used by the FCC are expressed in terms of Specific Absorption Rate (SAR), EMF strength and power density for transmitters operating at frequencies from 100 kHz to 100 GHz. The applicable limits depend upon the type of source, such as a cellphone or VHF antenna.

There are many published reports in the scientific literature concerning possible biological effects resulting from animal or human exposure to RF energy and if those biological effects pose a biological hazard. Although RF radiation is non-ionizing, it does have enough energy to vibrate atoms in a molecule, which can cause them to heat up.

Most people are nearly constantly exposed to low levels of RF radiation. Although non-ionizing RF radiation does not cause cancer by damaging cell DNA the way ionizing radiation does, there has been concern about a potential link between RF radiation exposure and health problems, including cancer in some circumstances. Some experimental data, such as a study from the U.S. National Toxicology Program, have suggested a possible link between exposure to RF radiation and health problems under certain specific conditions (U.S. National Toxicology Program 2018). Based on one study, the International Agency for Research on Cancer (IARC), which is part of the World Health Organization, evaluated cancer risk from RF radiation among heavy cell phone users and concluded that RF radiation as "possibly carcinogenic to humans" (American Cancer Society, 2018).

However, many other studies have failed to find conclusive evidence for a link to cancer or any related condition. Studies of people who may have been exposed to RF radiation at their jobs (such as people who work around or with radar equipment, those who service communications antenna, and radio operators) have found no clear increase in cancer risk. Overall, results have been inconclusive, and it's not clear if RF radiation might be able to cause cancer.

3.12.3 Environmental Consequences – No Action Alternative (Alternative 1)

Under the No Action Alternative, the existing BPA Marys Peak communications site would not be upgraded. Therefore, the impacts related to construction of any of the action alternatives would not occur. Operation and maintenance activities at the Marys Peak site would continue. However, because of the aging wood monopole structure, outdated equipment and inadequate back-up power at Marys Peak, BPA's communications system would continue to have impaired communications at times, particularly during storms, which would challenge BPA's ability to maintain critical communications with employees in the field during emergency repairs of BPA transmission lines. Any required repair of facilities at Marys Peak due to winter storm damage could also pose some risks to worker safety due to the harsh working conditions and difficulty accessing the site. This could have **low to moderate** potential impacts on employee and public safety. Existing EMF, microwave radiation and VHF radiation from the BPA Marys Peak communications site would continue without change, having **low** impacts.

Under the No Action Alternative, work would not be conducted on the existing steel-lattice structure at the BPA Prospect Hill communications site but operation and maintenance activities would continue, with **low** impacts to employee safety. Ongoing operations would result in ongoing VHF radiation emissions, a **low** impact. There would be **no** impacts from exposure to EMF, microwave radiation or to public safety due to the site's restricted access.

3.12.4 Environmental Consequences –Action Alternatives

Impacts Common to All Action Alternatives

General Health and Safety

BPA designs its facilities to prevent or reduce safety risks to the public, such as installing gates to prevent unauthorized access and providing fencing to prevent inappropriate use of communications sites. In addition, BPA conducts periodic inspections by visiting the site.

Construction of any of the action alternatives could result in a temporary increased risk of fires and injury from the use of heavy equipment and hazardous materials, such as fuels, cranes, and other activities associated with constructing steel-lattice structures. In addition, there are potential safety issues with construction traffic in the study area during construction. Vehicle speeds would be restricted to less than 10 miles per hour on unpaved access roads to reduce the potential for accidents with hikers.

The general public would not be allowed in construction areas while work is ongoing that has the potential to harm people, and therefore the public would not be at risk of injury from construction. By following all safety requirements and implementing the mitigation measures described below in Section 3.12.4, Mitigation, construction activities would create temporary, **low** impacts on the health and safety of workers and the public.

Intentional Destructive Acts

It is difficult to predict the likelihood that vandalism, or acts of terrorism or sabotage, could occur at Project components. At BPA communications sites, security monitoring and a fence around the facility help prevent unauthorized access. Given the large numbers of public visitors at Marys Peak, it is unlikely that a significant terrorist or sabotage act would occur during the daylight hours.

If an intentional destructive act occurred, it would likely have no immediate effect on electrical service to BPA's customers. In the event of a power outage and the communications site is not functional, it could affect customers' electrical service only if necessary repairs could not be accomplished safely or

quickly using other types of communication. It is expected that federal, state, and local agencies would respond quickly if any such an act were to occur and the facility would be visited promptly to access any damage. Damage would be repaired and communication capabilities would be restored, as quickly as possible.

Because the communications sites already exist and any changes in appearance to the existing sites from Project implementation would not be very noticeable over time, it is unlikely the Project would result in an incremental increase in risk from intentional destructive acts. The risk of public health and safety impacts from theft, vandalism, or acts of sabotage and terrorism is considered **low.**

Electric and Magnetic Field (EMF)

BPA did not calculate the existing or proposed EMF levels for Project alternatives due to the small amount of EMF that would be generated under each alternative. The use of electrical equipment at the communications sites is comparable to most public facilities that use electricity for lighting, heating, and cooling. When the HVAC unit and electric generator within the buildings are turned off, but still connected to the power source, magnetic fields are not present. BPA periodically tests electric generators at night, when people are not expected to be present. The generators would only be used during emergency power outages, which are rare and usually occur during the winter months, when people are not generally present. The main source of EMF at the communications sites would be the HVAC unit, which would operate during hot or cold weather. People are likely to be present during the summer when the HVAC unit could be operating.

Under all action alternatives, electrical equipment would be added to a communications building within a fenced area with no public access. The visiting public would not be in close proximity to any electrical equipment. Given that EMF levels decrease with distance, EMF exposure levels would be very low and comparable to those experienced in everyday life, such as by walking by a restaurant or dry cleaning facility.

Very High Frequency (VHF) Radiation

Under each of the action alternatives, the VHF antenna that BPA is proposing to install would transmit information using RF waves, and therefore would produce non-ionizing radiation. VHF antenna produce an omnidirectional signal, which means the VHF signal radiates out in all directions.

Microwave Radiation

Microwaves are a type of non-ionizing radio waves and therefore are not capable of causing the same kind of cellular damage as ionizing radiation. The only Project component that people live in close proximity to is the BPA Albany Substation. Under Alternative 2A and Alternative 3C, the energy level of the microwave radiation produced by the telecommunications equipment at Albany Substation would be quite small (about 1.1 watt). For context, the proposed RF radiation generated by telecommunications equipment at Albany Substation is slightly less energetic than what one would experience with a smartphone (1.5 to 2 watts) and around 1,100 times less energetic than what one would experience from a typical microwave oven.

Under all action alternatives, the microwave signals would travel in a directed beam along a direct path between transmitting and receiving antennas. The dispersion of microwave energy outside of this narrow beam is minimal. As with all forms of electromagnetic energy, the strength of the radiation decreases rapidly with distance from the antenna. As a result, radiation exposure is much less at the ground-level than what one would experience directly in front of the antennas. Measurements made near typical telecommunications installations, especially those with tower-mounted antennas as is

proposed under each alternative, have shown that ground-level radiation levels are hundreds to thousands of times less than the FCC's limits for safe exposure (FCC 2015).

Significant exposures from microwave antennas could only occur if an individual were to stand directly in front of and very close to an antenna for a period of time. Since the antenna would be mounted above the ground within a fenced site with restricted access, the public would not be exposed to microwave field levels in excess of FCC guidelines. Because the public is not expected to be exposed to microwave radiation from any of the action alternatives, there would be **no** health and safety impacts.

Impacts Specific to Action Alternatives

Alternative 2A

Marys Peak

At the BPA Marys Peak communications site, an HVAC unit and some additional electronic equipment would be installed in the existing communications building. This electrical equipment could result in a slight increase in EMF levels beyond the fenceline, but this change in EMF would be very low and remain comparable to levels experienced by visiting commercial facilities. Public health and safety impacts from EMF exposure would be **low**.

A VHF antenna would be added to the proposed new steel-lattice structure at the BPA Marys Peak communications facility, replacing the BPA VHF antenna that currently exists. The new VHF antenna would emit VHF radiation, like the other VHF equipment at Marys Peak. Since any incremental change in VHF emissions would be low, public health and safety impacts from VHF exposure would be **low**.

Because the public is not expected to be exposed to microwave radiation due to restricted access, there would be **no** health and safety impacts from the additional microwave antenna.

BPA Albay Substation

At the BPA Albany Substation, there would be **no** impacts from VHF radiation emissions under Alternative 2A because BPA does not currently operate and would not add a VHF antenna to the existing steel-lattice structure. Because the public is not expected to be exposed to microwave radiation from the additional microwave antenna or increased EMF, there would be **no** health and safety impacts.

Alternative 3C

Marys Peak

At the USFS Marys Peak communications site, an HVAC unit and some electronic equipment would be installed in the addition to the communications building. This electrical equipment could result in a slight increase in EMF levels beyond the fenceline, but this change in EMF would be very low and remain comparable to levels experienced by visiting commercial facilities. Public health and safety impacts from EMF exposure would be **low**.

Because the public is not expected to be exposed to microwave radiation, there would be **no** health and safety impacts from the additional microwave antenna.

A VHF antenna would be added to the proposed new steel-lattice structure at the Marys Peak communications facility, replacing the BPA VHF antenna that currently exists. The new VHF antenna would emit VHF radiation, like the other VHF equipment at Marys Peak. Since any incremental change in VHF emissions would be low, public health and safety impacts from VHF exposure would be **low**.

BPA Albany Substation

At the BPA Albany Substation, there would be **no** impacts from VHF radiation emissions under Alternative 3C, because BPA does not currently operate and would not add a VHF antenna to the existing steel-lattice structure. Because the public is not expected to be exposed to microwave radiation, there would be **no** health and safety impacts from the additional microwave antenna.

Alternative 4

Marys Peak

At the BPA Marys Peak site, there would be **low** temporary impacts on general worker and public safety during the removal of the BPA communications site.

West Point Spur

At the West Point Spur CPI communication site, the existing CPI site allow for public access within the chain link fence. An HVAC unit would be added to the CPI building, but because there is no public access inside the fence, there would be **no** impacts on public health and safety from EMF exposure.
A VHF antenna would be added to the existing steel-lattice structure at West Point Spur. This VHF antenna would result in VHF radiation emissions, like the other VHF equipment at CPI and Prospect Hill. Since the change in VHF radiation would be low, public health and safety impacts from VHF exposure would be **low**. Because the public is not expected to be exposed to microwave radiation, there would be **no** health and safety impacts from the additional microwave antenna.

BPA Prospect Hill

At the BPA Prospect Hill communications site, a VHF antenna would be added to the existing steel-lattice structure. This VHF antenna would result in VHF radiation emissions, like the other VHF equipment Prospect Hill. Since the change in VHF radiation would be low, public health and safety impacts from VHF exposure would be **low**.

Because of restricted access, the public is not expected to be exposed to EMF or microwave radiation, resulting in **no** health and safety impacts.

3.12.5 Mitigation

The following mitigation measures are identified to avoid or minimize Project impacts on public health and safety.

- Prepare an ESCP, site-specific safety plan, and fire prevention and suppression plan in compliance with federal, state and county requirements before starting construction; plans shall specify how to manage and respond to emergency situations involving hazardous materials to include oils and fuels, and any abandoned toxic materials found in work sites; all plans shall be kept on-site and maintained and updated as needed during construction.
- Design, construct, and operate the proposed electrical facilities to meet BPA safety requirements.
- Require the construction contractor to employ a lands liaison, who would be available to provide information, answer questions, and address concerns during Project construction.
- Secure the work area at the end of each workday, as much as possible, to protect the general public and to safeguard equipment.
- Limit vehicle speeds on unpaved roads and surfaces to 10 miles per hour or less to reduce dust and for public safety.

- Equip all vehicles used during construction with basic fire-fighting equipment, including extinguishers and shovels to prevent fires.
- Require the construction contractor to hold safety meetings with workers at the start of each day to review potential safety issues and concerns.
- Restrict access to the summit during any construction activities that could harm the general public in the vicinity, such as when erecting a steel-lattice structure.

3.12.6 Unavoidable Impacts Remaining After Mitigation

Implementation of the mitigation measures described above will reduce impacts to public health and safety, but would not completely eliminate impacts. Constructing and operating communications sites include some activities that increase the risk of injury to workers. Workers would follow all required safety requirements and precautions; however, accidents could still occur. Although infrequent, acts of vandalism and sabotage could occur with varying impacts to the perpetrator, BPA personnel who respond to these emergencies, and the general public.

EMF and EMR emissions would result from the operation of communications equipment under all alternatives.

3.13 Cumulative Impacts[4]

Cumulative impacts result from the incremental impact of the Project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal), entity, or person undertakes these actions. Cumulative impacts can result from the additive effect of individually minor actions that become collectively significant over time.

This section of the EA describes existing conditions at Marys Peak and West Point Spur that resulted from the historical development and past activities in the vicinity of the Project, as well as reasonably foreseeable future development in the area. The following subsections describe the cumulative effects that each action alternative, in combination with past, present, and reasonably foreseeable future actions, would have on the various environmental resources discussed in this EA. Because there would be no impacts on wetlands and water resources, fish, transportation, public services, and environmental justice populations, there would be **no** cumulative effect on these resources from the Project.

The proposed activities at the BPA Albany Substation under Alternative 2A and Alternative 3C and at the BPA Prospect Hill communications site under Alternative 4 are similar to routine maintenance actions. There would be no new facilities, the footprint of existing facilities would not be expanded, and work would take place over a short time period. Impacts on resources from this work would be none to low, depending on the resource. As a result, there would be **no or minimal** cumulative effects on resources from work at these two Project components.

3.13.1 Past Actions

The nature and extent of past development and activities in the vicinity of Marys Peak and West Point Spur resulted in present day conditions in the Project area. In general, the type of development that caused impacts on resources in the vicinity of the Marys Peak and West Point Spur began during the mid-nineteenth century. The initial waves of pioneers heading west to the Willamette Valley along the Oregon Trail began to pass through the region in the 1840s, heralding the end of the fur trade era and the beginning of Euro-American colonization. This migration of settlers was stimulated by the Oregon Donation Land Act of 1850; by 1852, nearly 12,000 settlers were passing down the Columbia River, with most heading to the Willamette Valley (Hunn and French 1998).

Farms appeared across the Willamette Valley as a result of the Homestead Act of 1862, which further fueled the desire for land and resulted in the settlement of river valleys and less desirable areas, including the Coast Range. Euro-American settlement proceeded at a rapid pace. Early homesteaders used the meadow on Marys Peak as summer range for their sheep, goats, and cattle (USFS, 1989). The timber industry expanded throughout the nineteenth and twentieth centuries, establishing large mills throughout the area and employing hundreds of people. Landowners began harvesting timber near Marys Peak just after World War I (USFS, 1989).

The road to Marys Peak was constructed by the Civilian Conservation Corps and the Works Project Administration in 1938 and completed in 1941, enabling the development of the summit (USFS, 1989). In June 1941, the City of Corvallis donated 40 acres of land at Marys Peak to the United States government (BPA 2016). The Marys Peak fire lookout and observatory was constructed on the summit

[4] As discussed in the introduction to Chapter 3 of this EA, shortly before this Draft EA was issued for public review, CEQ eliminated the requirement to consider cumulative effects in its final rule updating CEQ's NEPA implementing regulations. Nonetheless, because the EA for the Marys Peak BPA Communications Site Project was begun before the effective date of the new CEQ NEPA regulations, this EA was prepared consistent with the pre-revision NEPA regulations.

in 1942, replaced by a new lookout in 1959, and then subsequently removed (Gazette Times 1959a). In 1958, the U.S. Air Force extended the road to the top of the peak and constructed a radar station which was never used; the building was subsequently transferred to USFS (AECOM, 2019). The BPA communications site was constructed in 1960 and 1961, and began operating in 1961. The date when the USFS communications site was constructed and became operational is not known, but it was likely in the late 1950s or early 1960s. The Marys Peak communications site continues to operate and USFS has a number of tenants, while BPA currently has no tenants.

The West Point Spur communications sites were developed over time. There are currently three communications sites, including the CPI communications site. A former communications site was dismantled at some time in the past and the site is currently reverting back to forest.

Much of the land in the vicinity of Marys Peak is publicly owned. The SNF is the largest public landowner in the immediate vicinity while the BLM has some land, most of which is to the south of the SNF. Public lands are managed for multiple uses and in this area, recreation, timber harvest, and the amenities provided by natural resources are the main uses. The private lands in the vicinity of Marys Peak and West Point Spur are mainly owned by timber management companies and managed for timber production.

Within the Marys Peak SBSIA, the SNF has developed recreational sites, including the development of trails and campgrounds that have brought visitors into the Project area. Recently the SNF completed a meadow restoration project at Marys Peak that involved removing noble firs at the edge of the high-elevation meadows.

A network of local roads and state and county highways were developed in Benton County, which has facilitated further development. The state recently designated Highway 34, the road that leads to Marys Peak Road, as the Marys Peak to Pacific Scenic Byway, in the hopes of diverting some traffic to this road to encourage tourism. The SNF has a network of forest roads on and near Marys Peak, and BLM has a network of forest roads on their parcels.

Residential areas with some commercial uses include the town of Alsea, about 8 miles to the south along Highway 24; the town of Blodgett, about 6.7 miles to the northeast along Highway 20; and the town of Philomath, about 9 miles to the northeast along Highway 34. Corvallis is the main city in Benton County, located about 25 miles from Marys Peak. Because these residential areas are in close proximity to Marys Peak, the peak's recreational facilities draw visitors from these areas for day use and possibly for camping.

Due to the steep topography and remote location of the BPA communications site, high voltage transmission lines and gas pipelines are not located in the vicinity of Marys Peak or West Point Spur communications sites. The nearest BPA lines are about 5.4 miles to the north in the vicinity of Highway 20. Local electrical distribution lines are located throughout the Project area.

3.13.2 Current and Reasonably Foreseeable Future Actions

Current actions are those projects, developments, and other actions that are currently underway, either because they are currently in permitting, under construction, or are occurring on an ongoing basis. Reasonably foreseeable future actions generally include those actions formally proposed or planned, or highly likely to occur based on available information. Various sources, including local, state, and federal agency websites, SNF and BLM staff, and Benton County and Philomath planners, were consulted to obtain information about any current and reasonably foreseeable future development in the vicinity of Marys Peak. The following describes these future actions.

The main source of future impacts near Marys Peak will likely be timber harvest since most of the areas surrounding the summit, both public and private, are managed for timber production. The SNF has some stewardship timber harvests planned for the purposes of meadow habitat restoration and late successional forest structure promotion in Benton County. Proposed SNF projects also include landscape management activities (USFS 2018a).

While BLM does not have any projects planned near Marys Peak, it is in the early planning stages for a timber harvest (thinning) project on about 600 acres elsewhere in Benton County, which will go through environmental review in 2020. The proposed thinning project will be on late-successional reserve lands a few miles north of Alsea. The BLM is also planning small restoration projects throughout the county.

The Oregon Department of Transportation website does not identify any planned projects in Benton County (ODOT 2019). Ongoing routine and emergency road maintenance will occur in the Project area.

In the towns and city near the Project, some residential and commercial development is planned. In Philomath, the development of a 175-space RV park, with a community center and storage facility, is currently being reviewed for a land use permit (pers. comm. with Patrick Depa, Associate Planner, City of Philomath, August 13, 2019). Philomath hopes to attract travelers who will stay for extended stays (Id.). Planning for future residential development is also occurring or completed in Philomath, including a new apartment complex and some partitioning of existing residential lots. In the City of Corvallis, an 8-lot subdivision was approved in 2019 and a 10-lot subdivision is currently in the permitting process. Residential development is expected to continue in urban areas, including single-family homes and apartments, but there is very little potential for residential development in the immediate vicinity of Marys Peak and West Point Spur.

BPA has no transmission projects planned in the Project area. The ongoing maintenance of BPA transmission lines located about 5 miles to the north would affect some resources, but impacts would likely be minimal because most transmission line structures are on high points in the landscape and existing access roads are generally forest roads.

There are no pipeline projects proposed in the Project area, except ongoing maintenance to the NW Natural Gas pipeline in the City of Corvallis. The most current issue of Gas Outlook published by the Northwest Gas Association (NWGA) does not indicate that construction of any new natural gas pipelines and storage facilities are reasonably foreseeable in the Project area (NWGA 2018).

3.13.3 Cumulative Impacts Analysis

The following subsections describe the cumulative effects that the implementation of any of the action alternatives, in combination with the past, present, and reasonably foreseeable future actions identified above, would have on the various environmental resources discussed in this EA.

Land Use and Recreation

Land use in the Project vicinity has incrementally changed due to past and present disturbance from the construction and maintenance of transportation and communications infrastructure, the development of communities, agricultural activities, timber harvest, and other activities. This trend will likely continue, although current land use is not expected to change in the near future.

Implementation of any of the action alternatives would result in temporary impacts on recreation at Marys Peak from construction noise and access restrictions. Alternative 2A and Alternative 4 would result in permanent impacts on land use and recreation due to an increase in operational noise above current ambient conditions from the installation of a new HVAC system. The cutting of trees to create an unobstructed microwave beam path under all action alternatives would only affect land use and

recreation during the short time the work would be conducted. The addition of the low-to-moderate impacts from the implementation of an action alternative on land use and recreation, when added to the impacts from other activities and past projects in the area, would result in a **low** cumulative impact on land use and recreation.

Geology and Soils

The primary past and present activities that have affected soils in the Project vicinity include the construction and maintenance of transportation and communications infrastructure, residential and commercial development, agricultural activities, timber harvest, and other activities. These actions have led to soil erosion, compaction, loss of soil productivity, and loss of soil by overlying roads and structures. Reasonably foreseeable future activities include infrastructure maintenance, ongoing agricultural activities, timber harvest, and development projects in urban areas. These activities are expected to continue at similar intensities as in recent years, with similar levels of soil impacts. This trend will likely continue, although current land use is not expected to change very much in the near future and no reasonably foreseeable future road projects have been identified.

Implementation of any of the Project alternatives would result in low temporary and permanent impacts on geology and soils. Construction-related activities, including excavation and the use of heavy equipment, would disturb, remove, and compact less than 0.5 acre of geology and soils, a relatively limited area compared to the overall Project area. Low temporary and permanent impacts on soils would result from topsoil removal, increased erosion, compaction of soils, and decreased soil productivity. Each alternative could also result in indirect impacts, including erosion and sedimentation, which would decrease as soils are revegetated over time. Limited permanent disturbance of soils would occur from construction disturbance resulting in topsoil removal and in areas covered by foundations, footings, or rock. The addition of the low impacts from the implementation of an action alternative on geology and soils, when added to the impacts from other past, present, and reasonably foreseeable future activities, would result in **low** cumulative impacts on soils.

Vegetation

The primary past and present activities that have affected vegetation in the Project vicinity include agricultural development, timber harvest, residential and commercial development, road construction, utility infrastructure construction, vegetation control along roads and other utility corridors, recreational use, and the gradual replacement of native flora with non-native species. These actions have contributed to the conversion of historic forest and grasslands into managed timberlands, grasslands and shrublands with predominantly non-native species. Past and present activities have resulted in the introduction and spread of noxious weeds into the area.

Some of the reasonably foreseeable future actions identified above that remove or disturb vegetation could cause permanent or temporary impacts on plant communities and destroy rare plant species. It would take some time to re-establish the functions and values (e.g., wildlife habitat, soil stabilization) provided by those communities if they are affected and they are not revegetated. The spread of noxious weeds will likely continue as a result of reasonably foreseeable future actions.

The amount of vegetation that would be affected by the implementation of any of the action alternatives is small compared to the area affected by past and ongoing activities. Construction-related activities, including excavation and the use of heavy equipment, would disturb or remove less than 0.5 acre of moderate-quality grassland that is predominantly composed of native plant species. Because revegetation would occur, most impacts on vegetation are anticipated to be temporary, with unavoidable impacts occurring during the lag-time between the on-site losses during construction and

achievement of successful restoration. Indirect impacts could occur, including the degradation of plant communities from erosion and the introduction of non-native weedy species in disturbed areas. Due to the difficulty of controlling weeds in disturbed areas, the Project could result in some increases in noxious weeds or non-native plant species within areas disturbed by Project construction.

All action alternatives would require cutting less than 1 acre of high-quality forest. Under Alternative 2A and Alternative 3C, the forest that would be disturbed is habitat for eight sensitive fungi that are assumed to be present. Any impacts on vegetation from any of the action alternatives would be low to moderate following the implementation of BMPs and mitigation measures. The incremental impacts on vegetation from implementation of any of the action alternatives, along with other past, present, and reasonably foreseeable future actions would result in **moderate** cumulative impacts on vegetation.

Wildlife

The primary past and present activities that have affected wildlife and wildlife habitat in the Project vicinity include agricultural development, timber harvest, residential and commercial development, road construction, utility infrastructure construction, and the gradual replacement of native flora with non-native species. Existing roads in the Project vicinity have led to increased disturbance from human activity, increased landscape fragmentation and the presence of wildlife travel barriers, lost habitat, and the introduction and spread of noxious weeds. This habitat loss and modification has resulted in the displacement of wildlife species. Wildlife species also have been directly affected by hunting as well as incidental harm and mortality from other human activities in the area.

The reasonably foreseeable future actions identified above that remove or disturb wildlife habitat could cause temporary or permanent impacts on wildlife and their habitat. The implementation of any of the action alternatives would contribute to impacts on wildlife and wildlife habitat through temporary disturbance and displacement of wildlife during construction and the temporary and permanent removal of small areas of wildlife habitat. The amount of wildlife habitat that would be affected by the implementation of any of the action alternatives is small compared to the area affected by past and ongoing activities. Construction-related activities, including excavation and the use of heavy equipment, would disturb or remove less than 0.5 acre of low- to moderate-quality grassland habitat that is predominantly composed of native plant species. All action alternatives would require cutting of less than 1 acre of high-quality forest.

Because revegetation would occur, most impacts on wildlife are anticipated to be temporary, and displaced wildlife are expected to return after construction. Indirect impacts could occur, including the degradation of wildlife habitat from erosion and the introduction of non-native weedy species in disturbed areas. Due to the difficulty of controlling weeds in disturbed areas, the Project could result in some increases in noxious weeds or non-native plant species within areas disturbed by Project construction. Any impacts on wildlife and wildlife habitat from any of the action alternatives would be low to moderate following the implementation of BMPs and mitigation measures. The incremental impacts from implementation of any of the action alternatives, along with other past, present, and reasonably foreseeable future actions would result in **moderate** cumulative impacts on wildlife and wildlife habitat.

Visual Quality

Visual resources in the Project vicinity have incrementally changed as a result of past and present development and changes in natural landscapes resulting from human activities. Past actions within the study area that have altered the natural landscape character include agriculture, community development, transportation infrastructure, and the development and operation of recreational and

communications facilities within the Marys Peak SBSIA. Collectively, communications infrastructure has altered the landscape character such that it appears industrial from some locations; however, due to the existing topography, portions of the SBSIA are still characterized by high scenic integrity where the existing communications structures cannot be seen. Although these past actions have resulted in changes to landscape character in some portions of Marys Peak, there has not been a continued trend of development in the SBSIA that has further altered the landscape character.

Reasonably foreseeable future actions could contribute to changes in the visual environment, primarily through views of temporary construction disturbance. Reasonably foreseeable future actions in Benton County include roadway and intersection improvements, bikeway and trail development and improvements, and remodeling and construction of residences and commercial facilities. However, reasonably foreseeable future actions would not, in combination with past actions, contribute to a trend that would further alter the landscape character within the Project area.

Some visual impacts from implementation of action alternatives would be temporary and localized during construction, while some alternatives would result in permanent changes to some views. The main change to the visual environment would result from the construction of an additional steel-lattice structure at Marys Peak under either Alternative 2A or Alternative 3C. In combination with the existing communications structure, these action alternatives would result in increased density and massing of communications equipment at the summit that would also be visible from various locations within the SBSIA, a moderate impact on visual resources. At other locations within Marys Peak where the existing and proposed communications structures are not visible, there would be no visual impacts as changes in landscape character would not be expected.

Because of the limited nature of these visual changes, the incremental contribution of either Alternative 2A or Alternative 3C, when combined with the impacts of other past, present, and reasonably foreseeable future actions, would result in **moderate** cumulative impacts on visual resources within a localized area that is designated as a scenic area and visited by sensitive viewers. The contribution of Alternative 4 to overall cumulative impacts would be less that that observed in Alternative 2A or Alternative 3C because a new communications structure would not be introduced to the landscape, but some vegetation clearing could make the CPI communications site more visible from the SBSIA.

Cultural Resources

Past and present development and other activities have impacted cultural resources in the Project vicinity, including archaeological resources, historic resources, and traditional cultural properties. Some impacts on cultural resources are likely to have occurred as a result of inadvertent disturbance or destruction during ground-disturbing activities including construction and maintenance of utility and transportation infrastructure, residential and commercial remodeling, demolition and development, agricultural activities, and timber harvest. These impacts include disturbance of cultural sites, reduction of the cultural integrity of certain sites, removal of cultural artifacts, and destruction of sites. Indian inhabitants in this area were displaced and have not had access to traditional cultural resources on privately-owned lands for resource gathering, fishing, and hunting. Although some efforts are being made to allow tribal use of public lands, lack of access to traditional use areas is likely to affect Indian populations into the future, limiting their ability to carry out traditional activities.

Field surveys of Project components did not reveal any archaeological resources. Therefore the Project would not contribute to impacts on archaeological resources, unless some are disturbed during construction. BPA is currently consulting with Tribes on potential impacts on traditional cultural properties from the Project.

All of the action alternatives would impact historic resources. The Marys Peak communications site, which is eligible for the NRHP, would be adversely affected under all action alternatives. The replacement of the wood monopole with a steel-lattice structure under Alternative 2A would be an adverse effect because the change in materials and design would result in a loss of historic integrity. The removal of the site under Alternative 3C or Alternative 4 would also be an adverse effect. Because it is not known if the USFS communications site at Mary Peak and the CPI communications site at West Point Spur are eligible for the NRHP, evaluation of these sites would be done if an alternative was selected that could result in adverse effects. If an action alternative is selected rather than the No Action Alternative, BPA would work with consulting parties to determine appropriate mitigation for adverse effects to historic resources.

Implementation of the cultural resource mitigation measures included in Section 3.6.4 of this EA would minimize impacts and would reduce the potential of any of the action alternatives to impact cultural resources. If previously undiscovered cultural resources are encountered during construction, potential impacts would depend on the level and amount of disturbance and whether the affected resource is eligible for listing in the NRHP. With implementation of the mitigation measures identified in this EA, the incremental contribution of any of the action alternatives, when combined with the impacts of other past, present, and reasonably foreseeable future actions, would result in **low to moderate** cumulative impacts on cultural resources.

Socioeconomics

Past and present population growth, residential and commercial development, utility and transportation infrastructure development, agricultural activities, and timber harvest have affected socioeconomics in the vicinity of the Project. Growth and development trends are expected to continue, but would not change much in the near future. Some reasonably foreseeable future actions, such as residential and RV park construction, would contribute to the socioeconomic well-being of Benton County, but are not expected to induce substantial regional growth or place unusual demands on suppliers of goods and services. The vicinity of Marys Peak and West Point Spur is rural in nature and likely to remain the same.

Implementation of any of the action alternatives could result in a temporary demand for increased housing but there would be no permanent impacts on regional population and overall demand for housing. The temporary increase in business income resulting from the presence of workers in the community would constitute a minor, beneficial impact on the regional economy. Some temporary interference with recreational activities at Marys Peak would occur under all action alternatives, resulting in low-to-moderate temporary impacts on the regional economy if fewer people visit the area or do not stay as long, affecting the amount of money spent in local communities.

Because of the temporary and localized nature of activities resulting from implementation of any of the action alternatives, and their low impact on existing socioeconomics within the study area, the incremental contribution from the Project combined with the reasonably foreseeable future actions would result in a **low** cumulative impact on socioeconomics.

Noise

Noise levels in the project vicinity are cumulatively affected by existing traffic, existing residential and commercial uses, agricultural activities, timber harvest, and infrastructure maintenance projects. Because there are noise sensitive receptors at Marys Peak and because the current ambient noise level is low, there would be moderate temporary noise impacts from construction under all alternatives. However, because construction noise impacts would be temporary and localized, they would not contribute to long-term cumulative noise impacts in the project vicinity.

Alternative 2A and Alternative 4 would result in permanent noise impacts due to operational noise above current ambient conditions from the installation of a new HVAC system. Due to the presence of sensitive noise receptors at Marys Peak, this would contribute to long-term cumulative noise impacts near the Marys Peak communications site, a **moderate** cumulative impact. Because there are few or no sensitive noise receptors near West Point Spur, the installation of the HVAC system would have a **low** cumulative impact on noise.

Air Quality and Greenhouse Gases

Sources of air pollutants that have and would continue to emit pollutants in the area include vehicles and equipment used during construction, transportation, utility infrastructure maintenance, agricultural activities and timber harvest, and particulate matter from burning of agricultural areas and forest fires occurring outside the study area.

The minor increases in emissions from the implementation of any of the action alternatives are not anticipated to cause a violation of the EPA's established national ambient air quality standards (NAAQS). Project dust generation would be in addition to other sources of dust throughout the study area. However, with appropriate mitigation measures to control dust during Project implementation, the increase in dust levels would result in overall low cumulative contributions to particulate levels in the study area. Because of the overall low impact on air quality, the incremental contribution of the selected action alternative, when combined with the impacts of other past, present, and reasonably foreseeable future actions, would result in **low** cumulative impacts on air quality.

Project construction under all action alternatives would result in GHG emissions, primarily in the form of CO_2, N_2O, and CH_4 from the use of vehicles and heavy equipment. Under all action alternatives, less than 1 acre of trees would be topped or removed and Project construction would disturb less than 0.5 acre of other vegetation and soil, most of which would be revegetated. For these reasons, the permanent impacts on global GHG concentrations by all Project alternatives would be low. All levels of GHG emissions are significant in that they contribute to global GHG concentrations and ***climate change***. However, because of the low amount of emissions of GHGs, the incremental contribution of any of the action alternatives to cumulative impacts on global GHG concentrations would be **low**.

Chapter 4 Environmental Consultation, Review, and Permit Requirements

This chapter addresses statutes, implementing regulations, and executive orders potentially applicable to the Project. BPA is providing this environmental assessment (EA) to federal and state agencies, consulting Tribes, and local governments as part of the consultation and coordination processes for the Project. Persons, Tribes, agencies, and governmental entities consulted or notified are listed in Chapter 5 of this EA.

4.1 National Environmental Policy Act

This EA was prepared pursuant to regulations implementing the National Environmental Policy Act (NEPA; 42 USC 4321 et seq.), which requires federal agencies to assess the impacts that their actions may have on the environment.[5] NEPA requires preparation of an environmental impact statement (EIS) for major federal actions significantly affecting the quality of the human environment. BPA prepared this EA to determine if the Project would create any significant environmental impacts that would warrant preparing an EIS, or if a Finding of No Significant Impact (FONSI) is justified. BPA made this EA available for public comment and will consider the potential impacts and public comments when making decisions regarding the Project.

BPA is the lead agency responsible for preparing this EA under NEPA. As explained in Section 1.5.1, BLM and USFS are cooperating agencies for this EA. Both agencies have special expertise and jurisdiction by law on the lands they manage that could be affected by the Project.

As cooperating agencies, the roles of BLM and USFS are to provide information, comments, and technical expertise to BPA regarding the lands they manage in the Project area and to provide data and analyses for use in the EA. Both agencies may also need to make realty decisions that would require permits. Although BPA is the lead agency with responsibility for the completion of the EA, BPA, BLM, and USFS will each complete their own FONSI statements, if warranted.

USFS will have an administrative review process (a "45 day objection period") after the combined release of the final EA and USFS draft Decision Notice. The objection period is available to those who submitted comments during the scoping periods or during the draft EA comment period. The Forest Service reviewing official can respond to objectors on their objection points as they relate to the Project, particularly regarding Siuslaw Forest Plan concerns.

4.2 Wildlife and Vegetation

4.2.1 Federal Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 USC 1536), as amended in 1988, establishes a national program for the conservation of threatened and endangered fish, wildlife, and plant species, and the ecosystems on which they depend. The ESA is administered by the U.S. Fish and Wildlife Service (USFWS) for terrestrial wildlife, plants, and freshwater species and by the National Oceanic and

[5] As discussed in the introduction to Chapter 3 of this EA, shortly before this Draft EA was issued for public review, CEQ published a final rule updating its NEPA implementing regulations. Because the EA for the Marys Peak BPA Communications Site Project was begun before the effective date of the new CEQ NEPA regulations, this EA was prepared consistent with the pre-revision NEPA regulations.

Atmospheric Administration National Marine Fisheries Service (NMFS) for anadromous fish and marine species.

Section 7(a) of the ESA requires federal agencies to ensure that the actions they authorize, fund, and carry out do not jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. Section 7(c) of the ESA and other federal regulations require that federal agencies prepare a biological assessment (BA) addressing the potential effects of their actions on listed and proposed endangered species and designated critical habitat (DCH).

BPA used the following resources to determine which ESA-listed and proposed species could occur in the Project area and if ESA-DCH occurs in the Project area:

- USFWS lists of ESA-listed, proposed and candidate animal and plant species that could occur in Benton, Linn, and Marion counties and DCH that occurs in those counties (USFWS 2015, 2016, 2017, 2019)
- Oregon Biodiversity Information Center (ORBIC) database records of known occurrences of ESA-listed, proposed, and candidate species within 1 mile of Project components

Both the BPA Marys Peak communications site and the West Point Spur CPI communications site are located in Benton County. Federally-listed animal species on the USFWS list for Benton County include the federally endangered Fender's blue butterfly and Taylor's checkerspot butterfly, and the federally threatened northern spotted owl, marbled murrelet, streaked horned lark, and yellow-billed cuckoo. The North Oregon Coast DPS of the red tree vole is currently a Federal Species of Concern; however, it was a candidate species in Benton County, prior to December 2019. The only known occurrences of any of these species within a 1-mile radius of the Marys Peak communications site at Marys Peak and 1 mile of West Point Spur, are for the northern spotted owl (ORBIC 2018). During Marys Peak and West Point Spur wildlife field surveys between 2018 and 2020, none of these species were observed, as discussed in Section 3.6, Wildlife, of this EA.

DCH for the northern spotted owl and the marbled murrelet is located in Benton County (USFWS 2015, 2016, 2017, 2019). The only Project work area within northern spotted owl DCH under any of the action alternatives is the BLM tree-cutting area at Marys Peak. Project work areas within marbled murrelet DCH include the Marys Peak communications site, staging areas, and USFS portions of the unpaved access roads at Marys Peak and West Point Spur.

The BPA Albany Substation is located in Linn County and the BPA Prospect Hill communications site is in Marion County. USFWS lists for these two counties include the same federally-listed animal species: the federally endangered Fender's blue butterfly and Taylor's checkerspot butterfly; the federally threatened northern spotted owl, marbled murrelet, streaked horned lark, and yellow-billed cuckoo. DCH under the ESA for these animal species does not occur within 1 mile of the BPA Albany Substation or the Prospect Hill communications site. There are no known occurrences of these species within 1 mile of both sites (ORBIC 2018). During field surveys of these Project components in 2018, these species were not observed.

Federally-listed plant species identified by the USFWS with the potential to occur at Project components are federally-endangered Bradshaw's desert-parsley and Willamette daisy, and federally-threatened golden paintbrush, Kincaid's lupine, Nelson's checker-mallow, water howellia, and Willamette daisy (USFWS 2015, 2016, 2017, 2019). DCH under the ESA for these plant species does not occur within 1 mile of Project work areas. There are no known occurrences of federally-listed plant species within 1 mile of all Project components (ORBIC 2018). During field surveys of Project areas in 2017 and 2018, ESA-listed plant species were not observed, as discussed in Section 3.5, Vegetation, of this EA.

USFWS Consultation

BPA entered into pre-consultation with USFWS concerning potential impacts from the Project on federally-listed species. BPA, USFS, and BLM participated in the following pre-consultation activities:

- USFWS provided BPA an example Biological Opinion and a marbled murrelet disruption table as guidance for this Project (Tuerler pers. comm. 2016).
- BPA and USFWS participated in a conference call to discuss the Project and the species that would need to be included in consultation (pers. comm., March 25, 2016).
- USFWS, USFS, and BLM staff members were provided draft wildlife and plant survey plans for review and comment on November 21, 2017, and USFWS staff concurred with the methods in the draft survey plans (Tuerler pers. comm. 2017).
- USFWS, USFS, and BLM staff members were provided an updated draft wildlife survey plan on January 16, 2018; USFWS staff provided feedback on methods outlined in the survey plan (Livingston pers. comm. 2018; Tuerler pers. comm. 2018a).
- A revised survey plan that included the West Point Spur portion of the study area was submitted to USFWS on June 8, 2018; USFWS staff indicated that they had no additional comments on the draft survey plan (Tuerler pers. comm. 2018b).
- BPA provided the USFWS information on the survey buffer areas for the red tree vole on September 11, 2018.
- BPA provided the USFWS, USFS, and BLM the 2018 draft BPA Marys Peak Communications Project Wildlife Resources Report on February 14, 2019; USFWS responded that the agency had no additional comments at that time (Tuerler pers. comm. 2019a).
- BPA sent emails to USFWS staff members on August 21, 2019, to inform them that no marbled murrelets, northern spotted owls, or red tree voles were detected during the 2018 and 2019 surveys in the study area and, after discussions with BPA, USFWS responded that a Not Likely to Adversely Affect (NLAA) determination seemed appropriate for the northern spotted owl DCH habitat (Tuerler pers. comm. 2019b).
- The final Wildlife Report (2018 and 2019 survey data) was sent to USFWS, USFS, BLM, ODFW and the City of Corvallis on December 17, 2019.
- The final 2020 Wildlife Report summarizing the results of that year's northern spotted owl surveys was sent to was sent to USFWS, USFS, BLM, ODFW, and the City of Corvallis on August 11, 2020.

Based on existing information and discussions with USFWS, BPA determined there would be no effect from the Project on the following listed species because no suitable habitat for these species occurs in the study area: fisher, streaked horned lark, yellow-billed cuckoo, Fender's blue butterfly, and Taylor's checkerspot butterfly. BPA also determined there would be no effect on listed plant species because they are not present in Project work areas. Because marbled murrelet were not observed at Marys Peak and West Point Spur during the first two years of field surveys following species-specific standard protocols (Turnstone 2019), it is assumed they are not present and there would be no effect on this species. Because northern spotted owl were not observed at West Point Spur during standard 2018 and 2019 surveys, nor were they observed during the 2020 "spot-check surveys", it is assumed that they are not present and there would be no effect on this species. Spot check surveys are currently planned for spring 2021 to justify the "not present" determination. Additional marbled murrelet surveys and red tree vole surveys are not needed because the two year survey data is valid for five years and construction is expected to occur within this five-year period (Turnstone, pers. comm. Dec. 18, 2019).

Should construction not begin prior to five years after the initial surveys for marbled murrlet or northern spotted owl, protocol surveys may need to resume.

BPA would likely need to consult on northern spotted owl DCH habitat if Alternative 2A or Alternative 3C is selected due to the proposed tree cutting within the DCH. Under Alternative 4, BPA would not need to consult on northern spotted owl DCH because the tree-cutting area is not within the DCH and the Marys Peak communications site at the summit could be reduced in size due to co-location with CPI, rather than expansion into existing DCH areas.

BPA would not need to consult on potential impacts to marbled murrelet DCH under any of the action alternatives. Because tree cutting would not occur within marbled murrelet DCH under any of the action alternatives, marbled murrelet DCH would not be adversely affected by the Project.

The USFWS list for Benton County includes the Federal species of concern (formerly a candidate species) the North Oregon Coast DPS of the red tree vole. Potential habitat for the red tree vole occurs in the West Point Spur portion of the study area. Surveys were conducted for red tree vole nests during the spring of 2019, but it was determined that the red tree vole was not using the habitat. Therefore, red tree vole is assumed to not be using this habitat.

NMFS Consultation

Because there are no waterways that would be affected directly or indirectly by the Project, there would be no impacts on fish species and fish habitat. Therefore, BPA did not consult with NMFS on ESA-listed anadromous fish species.

4.2.2 State Endangered Species Act

In 1987, the Oregon Legislature enacted the Oregon Endangered Species Act (Oregon ESA), implemented by Oregon administrative rules for threatened and endangered species (OAR 635-100-0100 to 0130). In accordance with these rules, species can be classified as "threatened" (any native species likely to become endangered within the foreseeable future throughout any significant part of its range within the state) or "endangered" (any native species determined to be in danger of extinction). The Oregon Department of Fish and Wildlife (ODFW) oversees the conservation and management of Oregon's endangered and threatened animal species. The Oregon Department of Agriculture's (ODA) Native Plant Conservation Program oversees the conservation and management of Oregon's endangered and threatened plant species.

Field surveys were conducted for state-listed animals and plants that could be directly or indirectly affected by implementation of Project action alternatives. The USFS Restoration Services Team conducted field surveys for state-listed plants at Marys Peak and West Point Spur, but none were found in the study area. Rare plant field surveys were not required at BPA Albany Substation and Prospect Hill due to lack of rare plant habitat in construction work areas. Turnstone Environmental conducted wildlife surveys for the two state-listed wildlife species with the potential to occur in the study area, the marbled murrelet and the northern spotted owl, but none were detected.

4.2.3 Fish and Wildlife Conservation and Coordination Acts

The Fish and Wildlife Conservation Act of 1980 (16 USC 2901 et seq.) encourages federal agencies to conserve and promote conservation of non-game fish and wildlife and their habitats. The Fish and Wildlife Coordination Act (16 USC 661 et seq.) requires federal agencies with projects affecting water resources to consult with USFWS and the state agency responsible for fish and wildlife resources. The analysis in Section 3.6, Wildlife, indicates that all of the action alternatives would have impacts on

wildlife, which would be minimized but not completely avoided with implementation of appropriate mitigation.

BPA coordinated with the ODFW wildlife biologist concerning Project activities with the potential to affect wildlife. BPA contacted ODFW District Wildlife Biologist Nancy Taylor on December 5, 2018, and sent project information on the same day. On January 23, 2019, ODFW expressed interest in the Project and requested a copy of the draft wildlife resources report when it becomes available (Taylor, N. pers. comm. January 23, 2019). ODFW contacted BPA (Taylor, N., pers. comm. February 21, 2019) regarding wildlife species and habitat in the study area, and to discuss the types of field surveys in the study area. During that call, ODFW concurred with the special-status species list for the Project (Taylor, N., pers. comm. February 21, 2019). BPA sent a draft wildlife survey report summarizing the 2018 survey efforts to ODFW on February 14, 2019, and USFS and BLM on February 15, 2019, for review.

ODFW, USFWS, USFS, and BLM wildlife biologists provided valuable input concerning the presence of wildlife species and potential effects of the Project throughout the environmental review process. Mitigation measures designed to conserve wildlife and their habitats are listed in Sections 3.5, Vegetation, and 3.6, Wildlife. BPA is consulting with agency wildlife staff regarding the potential effects on wildlife species, including special-status species and migratory birds.

4.2.4 Essential Fish Habitat

Public Law 104–297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act. Under Section 305(b)(4) of the act, BPA is required to consult with NMFS for actions that adversely affect essential fish habitat (EFH). BPA determined that the Project does not have the potential to adversely affect EFH because there is no in-stream work proposed in fish-bearing waters and Project work areas are far enough from waterways that there would be no impacts on fish or fish habitat.

4.2.5 Migratory Bird Treaty Act

The Migratory Bird Treaty Act implements various treaties and conventions between the U.S. and other countries, including Canada, Japan, Mexico, and the former Soviet Union, for the protection of migratory birds (16 USC 703–712, July 3, 1918, as amended in 1936, 1960, 1968, 1969, 1974, 1978, 1986, 1989). Under the act, taking, killing, or possessing migratory birds, or their eggs or nests, is unlawful. The act classifies most species of birds as migratory, except for upland and non-native birds such as ring-necked pheasant, chukar, gray partridge, house sparrow, European starling, and rock dove. In addition, Executive Order 13186 directs federal agencies whose actions may negatively affect migratory bird populations to work with USFWS to develop an agreement to conserve migratory birds.

The U.S. Department of Energy (DOE) and USFWS signed a Memorandum of Understanding (MOU), now in the process of being renewed, that addresses migratory bird conservation in accordance with Executive Order 13186 (USDOE and USFWS 2013). The MOU addresses how both agencies can work cooperatively to address migratory bird conservation and includes specific measures to consider applying during project planning and implementation. BPA continues to follow this MOU to minimize potential impacts on migratory birds and would follow this MOU for this Project.

Field studies were conducted to determine the bird habitats present in the study area. Based on this information, all of the action alternatives could affect migratory birds through the loss or degradation of a small amount of habitat and the potential for collisions with the communications structure and construction equipment. Potential effects to avian species and their habitats are discussed in Section 3.6, Wildlife.

Mitigation would be implemented to avoid or minimize impacts to birds, as discussed in Section 3.6, Wildlife. Trees would only be cut between August 15 and March 1 to minimize displacement of nesting birds. Active bird nests in construction work areas would be identified and avoided during construction, if possible, or BPA would obtain the appropriate permits from USFWS if the nest could not be avoided. Trees that would be cut would be left as snags, if possible, to continue providing habitat.

4.2.6 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668–668d, June 8, 1940, as amended in 1959, 1962, 1972, and 1978) addresses take of eagles, which includes both the disturbance of eagles or killing eagles. There are no known golden eagle nests within 5 miles of any of the Project components (Isaacs 2019).

Although there are documented occurrences of bald eagles within the Siuslaw National Forest and the Salem BLM District, there are no documented occurrences of bald eagles within 5 miles of the Marys Peak or West Point Spur Project components (ORBIC 2018). Because there are no large water bodies within 1 mile of these communications sites, the bald eagle is not likely to occur within the Marys Peak or West Point Spur portions of the study area.

Several bald eagle nest trees are documented along the Willamette River within 5 miles of the BPA Albany Substation, with the closest located approximately 2.5 miles away (ORBIC 2018, ODFW 2011). The Calapooia River, which is about 200 feet southwest of the substation's fence, is known to support only two bald eagle nesting sites along its entire length of 80 miles. Both of these bald eagle nests are greater than 5 miles from the BPA Albany Substation. The bald eagle has a low likelihood of using the cottonwood trees along the Calapooia River near the BPA Albany Substation as nesting, roosting, and foraging habitat.

Seven bald eagle nest trees are documented along the Willamette River within 5 miles of the BPA Prospect Hill communications site (ORBIC 2018). Because there are no documented nest trees or large water bodies within 1 mile of Prospect Hill, the bald eagle is not likely to occur within the disturbance distance (0.25 mile) of the Prospect Hill component.

Under the Bald and Golden Eagle Protection Act, "whoever . . . shall knowingly, or with wanton disregard for the consequences of his act take, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import" bald or golden eagles or their parts, nest, or eggs without a permit will be subject to criminal and/or civil sanctions (16 USC 668a). There are no known occurrences of eagle collisions with the communications facilities at the various Project components. Because the Project would not involve knowing take or other acts in wanton disregard of bald or golden eagles, implementation of the Project would not violate the provisions of the Bald Eagle and Golden Eagle Protection Act.

4.3 Federal Land Managing Agency Requirements and Policy Consistency

This section describes the regulatory and management framework applicable to federal lands within the Project area by summarizing land management standards that apply to the Project. BPA is required to follow federal land managing agency requirements when building and maintaining facilities on their lands. As cooperating agencies, BLM and USFS have worked closely and regularly with BPA, providing information, comments, and technical expertise regarding the lands they manage in the Project area and to provide data and analyses for use in this EA. Impacts that could be expected from Project alternatives on public lands at Marys Peak and West Point Spur were evaluated to determine consistency of the Project with these federal land management standards.

4.3.1 Federal Land Policy Management Act

The Federal Land Policy and Management Act of 1976 (FLPMA) governs the way in which public lands are administered by federal agencies, including BLM and USFS (BLM 2001). The act directs these agencies to manage public lands on the basis of multiple use and sustained yield to "best meet the present and future needs of the American people." Under the act, USFS and BLM must balance a variety of uses on public lands, while preserving resources found on the lands they manage.

To ensure that actions are compliant with FLPMA, USFS and BLM require a Special Use Authorization permit for requests to conduct activities on the lands they manage. The application process for this permit begins by submitting a SF-299 form, with information on the proposed use. The permit application is reviewed by agency subject matter experts and the agency works with the permit applicant to ensure the Project is compliant with its requirements and avoids or minimizes impacts on resources. Special Use Authorization permits are valid for 50 years.

To implement any of the action alternatives, BPA would acquire a Special Use Authorization permit from USFS. BPA currently has a Land Use Grant Instrument with USFS for the existing communications site that would be converted to a Special Use Authorization permit. BPA began the conversion process by submitting a SF-299 in January 2016 expressing interest in exploring alternatives for this Project. In response to a request from USFS, BPA submitted a revised SF-299 to USFS on July 29, 2016, that included a more detailed preliminary Project description. BPA will need to revise the SF-299 if an action alternative is selected and once design is complete. This revised SF-299 will include more detailed information on resources based on the information acquired, studies conducted, and public input received during the environmental review process for the Project. The potential effect of each action alternative on federal resources, including vegetation, wildlife, recreation, visual, and cultural resources are discussed in the relevant sections in Chapter 3.

If either Alternative 2A or Alternative 3C is selected, BPA would acquire a Special Use Authorization permit from BLM for BPA use of BLM's portion of the existing access road to the summit of Marys Peak. Because Alternative 4 does not include any BLM lands, no BLM permit would be required for this alternative. The BLM permit process would be the same as that described above for USFS except that BPA has not yet submitted a preliminary SF-299 to BLM.

4.4 U.S. Forest Service

4.4.1 Siuslaw National Forest Land and Resource Management Plan

Marys Peak and West Point Spur Project components that would be affected under all action alternatives are located on lands managed by USFS as part of the Siuslaw National Forest (SNF). The Project must be consistent with the SNF Forest Land and Resource Management Plan (LRMP), as amended by the Northwest Forest Plan (1994), or an amendment would be required to the plan.

The LRMP serves as the single land management plan for all of the SNF. All other land management plans, including the Management Direction for the Marys Peak Scenic Botanical Special Interest Area (SBSIA Management Plan 1989), are incorporated into the LRMP. The LRMP establishes multiple-use goals, resource objectives, standards and guidelines for natural resource management activities, and monitoring and evaluation guidelines. In addition, it provides both forest-wide standards and guidelines and additional standards and guidelines for specific management areas. The management direction provided by the plan comprises the framework within which site-specific project planning and activities take place. Consistency of the Project with the plan will be considered during USFS review of the SF-299, which discloses potential impacts on resources.

4.4.2 USFS Scenic Botanical Special Interest Area

USFS designated 924 acres of the SNF around Marys Peak and West Point Spur as a SBSIA "in recognition of the unique scenic, botanical and recreational values of Marys Peak" (36 CFR § 294.1(a)). In 1989, USFS approved the SBSIA Management Plan to establish management actions necessary to protect the unusual and outstanding characteristics of the area while fostering public use, understanding, and enjoyment of these characteristics. The SBSIA management guidelines are relied upon where there is no discrepancies between SNF LRMP (USFS 1990). The 1990 Forest Plan is the outcome of the Siuslaw LRMP Final Environmental Impact Statement and Record of Decision, and was developed in accordance with Secretary of Agriculture regulations (36 CFR 219) and implementation regulations for NEPA (40 CFR 1500). The SNF LRMP overrides previous plans, unless specifically specified, and guides all natural resource management activities and established management standards and guidelines.

The SNF LRMP sets one of the goals of the SBSIA as "Utilize the high quality electronic capabilities of Marys Peak" (IV-76) and also states that "Electronic facilities on Marys Peak to minimize adverse effects on scenery and other resources of the SIA (IV-79)." The SBSIA Management Plan includes direction on the use of Marys Peak and West Point Spur for special uses, stating that special-use permits may be issued when the activity is compatible with the management goals for the SBSIA. Use of USFS land on the summit of Marys Peak for electronic communications is limited to government and public service agencies.

The SBSIA Management Plan indicates that all facilities and permittee use will be managed so as to not adversely impact vegetation, with particular emphasis on unique or sensitive areas (e.g., the rock garden below the summit). Disturbance to vegetation will be minimized except where it has been determined that vegetative manipulation (e.g., weed management, planting of native species, or rehabilitation of compacted soils) will enhance or perpetuate the areas unique botanical, biological, or scenic characteristics. The SBSIA Management Plan also mandates monitoring and assessment of vegetative conditions prior to Project implementation to prevent unacceptable levels of disturbance and/or change. Mitigation is required to minimize or eliminate the effects of Project activities that are found to be incompatible with SBSIA guidelines. The SBSIA Management Plan allows removal of noble fir trees within the SBSIA only to protect or enhance botanical and scenic values, protect established facilities, or provide for public safety.

Alternative 2A and Alternative 3C would require construction at the Marys Peak communications site within the SBSIA. Under Alternative 2A, the communications facilities at the summit would not be consolidated, as directed by the SBSIA Management Plan, while Alternative 3C would enable consolidation of the communications buildings, but not the consolidation of the steel-lattice communications structures. To consolidate structures, the steel-lattice structure would need to be 20 to 40 feet taller than the proposed structure height to support all the microwave dishes and associated equipment that would be mounted on the structure.

Because the CPI communications site is located on a 60-acre parcel owned by the City of Corvallis, Alternative 4 would not involve construction within the SBSIA, except for the removal of the existing BPA communications site on Marys Peak. Although the SBSIA Management Plan does not cover lands owned by the City of Corvallis, USFS and the City have a memorandum of agreement to manage the city's lands in a manner compatible with USFS guidelines (USFS 1989). The City retains the responsibility for lease issuance and fee collection for their electronics lessees, but confers with USFS prior to acting on lease applications in an effort to avoid management conflicts.

The impacts assessments in Chapter 3 of this EA were used to determine conformance of each of the action alternatives with the resource requirements of the SNF LRMP 1990 and the supporting SBSIA

Management Plan. Each of the action alternatives would conform to the SNF LRMP and the SBSIA Management Plan's vegetation requirements contingent on implementation of the mitigation measures listed in Section 3.5, Vegetation.

4.4.3 USFS Scenic Resources Compliance

USFS manages scenic resources through the Visual Management System established in *The National Forest Management Handbook, Volume 2, Agricultural Handbook 462* (USFS 1974) to inventory, classify, and manage lands for scenic resource values. Scenic resources are managed through Visual Quality Objectives (VQOs) designed to provide measurable standards or objectives that direct varying degrees of acceptable change to national forest landscapes (USFS 1974). The VQOs establish minimum acceptable thresholds for landscape alterations and are defined in Section 3.7.1. of this EA.

In 1995, USFS scenic resource management guidelines and monitoring techniques evolved into the Scenery Management System (SMS) (USFS 1995). Conceptually, the SMS differs from the Visual Management System in that it emphasizes and increases the role of the public throughout the inventory and planning process, and it borrows from and is integrated with the concepts of ecosystem management. Instead of management objectives prescribed as VQOs, they are established as Scenic Integrity Objectives (SIOs). A VQO of Partial Retention correlates to an SIO of Moderate (M), with the associated management standard defined as: "*Valued landscape character appears slightly altered. Noticeable deviations remain visually subordinate to the landscape character"* (USFS 1995).

The Marys Peak SBSIA Management Plan specifies that, with the exception of facilities needed for recreation and electronics facilities, the Marys Peak SBSIA is managed to meet the VQO of "Retention" (USFS 1989). The plan indicates that through, ". . . creative design of location, materials, forms, colors, and textures, necessary recreation and electronic facilities will be kept as inconspicuous as possible, and will meet the VQO of retention where practicable, but in no case being more dominant than the VQO of modification. Partial retention-foreground and partial retention-middleground VQOs are applied along the Marys Peak Road" (USFS 1989). Based on these requirements, the Marys Peak SBSIA is managed to meet the VQO of Retention; however, electronic facilities may achieve a Modification VQO standard where retention is not practical (USFS 1989). The SNF LRMP specifies management of Marys Peak Road (viewshed) as partial retention-foreground and middle ground-modification (USFS 1990).

The impacts assessment in Section 3.7, Visual Quality, of this EA was used to determine conformance with the visual requirements in the LRMP and the supporting SBSIA Management Plan. Each applicable VQO was considered to be met if the change in scenic integrity and visual dominance that would result from implementation of an alternative would not exceed the requirements of that VQO. The plan conformance determination would require implementation of the mitigation measures listed in Section 3.7.4.

Implementation of Alternative 2A would meet the VQO of modification because operation of the Project on Marys Peak would visually dominate the original characteristic landscape, particularly when viewed from locations at close proximity. This meets the VQO requirement of the SBSIA Management Plan. Alternative 2A would meet the required VQOs of partial retention-foreground and partial retention-middleground for locations along Marys Peak Road. Tree cutting would be in conformance with the visual standards provided in the LRMP (USFS 1990).

While the implementation of Alternative 2A would not meet the SBSIA Management Plan requirement that "The electronic equipment will be consolidated into a single structure to reduce visual impacts" (USFS 1989), the overriding 1990 SNF LRMP standards and guidelines for the concentration of electronic facilities on Marys Peak to minimize adverse effects on scenery and other resources of the SBSIA would

be met. As this project is consistent with the Forest Plan, no Forest Plan amendment is necessary (pers. comm., K. Isacksen, Forest Environmental Coordinator, SNF, August 2020).

Implementation of Alternative 3C would meet the VQOs required in the SBSIA Management Plan and the SNF LRMP because of the removal of the existing BPA communications site and the consolidation of equipment within the USFS building. Although an additional steel-lattice structure would be constructed that would be 20 feet taller than the structure proposed under Alternative 2A, it would still meet the VQO of modification (See Section 3.7).

Implementation of Alternative 4 would meet the VQOs required in the SBSIA Management Plan and the LRMP of modification because it would remove the existing monopole and communications building at Marys Peak and would not introduce a new steel-lattice structure to the landscape. It would also meet the required VQOs of partial retention-foreground and partial retention-middleground for locations along Marys Peak Road. Tree cutting under Alternative 4 could be visually evident from Marys Peak Road, but it would be subordinate to the characteristic landscape.

4.4.4 Siuslaw National Forest Special-status Species

Regional Forester's Special Status Species List

Animal and plant species that were either "suspected" or "documented" to occur in the SNF, per the most recent Regional Forester's Special Status Species List (USFS 2019a) were considered when developing the Project's species lists.

The two animal species on the USFS Sensitive Species List considered to have the potential to occur in the Project study area are the purple martin and the red tree vole. Neither of these species was detected during 2018 or 2019 wildlife field surveys, as discussed in Section 3.6.2 of this EA.

The plant and fungi species on the USFS Sensitive Species List considered to have the potential to occur in the Project study area are listed in Appendix A of this EA. None of the USFS Sensitive plant species were observed during 2018 or 2019 vegetation field surveys. Eight sensitive fungi species were assumed to be present in suitable habitat in the BLM parcel where trees would be cut, as discussed in Section 3.5.4 of this EA. Although these eight fungi species are assumed to be present, they were not observed during the survey and are not previously documented in the area.

Management Indicator Species

Ten Management Indicator Species (MIS) were considered likely to occur within the Marys Peak and West Point Spur study areas (Appendix C). One of the MIS species is a mammal and nine are birds. Five MIS species were observed (or signs of their presence observed) during Project wildlife surveys at either Marys Peak or West Point Spur. The following species were observed at both Marys Peak and West Point Spur: northern flicker, red-breasted nuthatch, and the pileated woodpecker. The hairy woodpecker was only observed in the Marys Peak study area. The four MIS bird species observed within the study arear are cavity-nesting species associated with coniferous and mixed conifer-hardwood forest that breed between March and July. Suitable habitat occurs in the study area and it is likely that they occur year round. Elk scat was also observed throughout the Marys Peak and West Point Spur study areas.

Forest Plan Survey and Manage Species

Three Survey and Manage species were considered likely to occur within the Marys Peak and West Point Spur study areas: the red tree vole and the great gray owl (*Strix nebulosi*) (Category A species) and the

keeled jumping-slug (*Hemphillia burringtoni*)(Category D). The red tree vole and the keeled jumping-slug were not observed during surveys. However, a great gray owl was detected in the West Point Spur study area on City of Corvallis land. This species does not regularly occur in Benton County or the Coast Range and is not known to be nesting in the study area (ORBIC 2018). Due to the high mobility of this species, it is expected that the great gray owl would only temporarily use the forested habitat in the study area for dispersal or foraging. Additional information can be found in Section 3.6.2 of this EA.

4.5 Bureau of Land Management

4.5.1 BLM Northwestern and Coastal Oregon Resource Management Plan

A small portion of the Project is located on lands administered by the BLM's Northwest Oregon District. BLM lands, which would only be affected under Alternative 2A and Alternative 3C, include about 0.18 miles (948 feet) of the access road leading from the public parking lot to the Marys Peak communications site and about 0.53 acres where up to 14 noble fir trees would be cut to create an unobstructed beam path.

BLM designated its parcel near the summit of Marys Peak as an Area of Critical Environmental Concern (ACEC). An ACEC is an area where special management attention is required to protect or prevent irreparable damage to important historic, cultural, scenic, and/or natural resources. In recognition of the unique scenic, botanical, and recreational values of the area and its proximity to the SBSIA, BLM designated its Marys Peak parcel an Outstanding Natural Area (ONA), a specific type of ACEC (BLM 1997).

The Northwestern and Coastal Oregon Resource Management Plan (RMP) guides management of the Marys Peak ACEC/ONA (BLM 2016). The RMP includes a management objective to "maintain or restore relevant and important values in Areas of Critical Environmental Concern, including Outstanding Natural Areas" (BLM 2016). Management of the ONA is similar to USFS management actions in the SBSIA, as documented in a MOU between BLM and USFS. Specifically, BLM management direction for Marys Peak ACEC stipulates that vegetation be managed to enhance scenic, botanical, and wildlife habitat values, while allowing for removal of hazard trees to maintain access to roads and facilities (BLM 2016). Given that the BLM parcel is managed in a manner similar to and consistent with SBSIA guidelines (as discussed above), Alternatives 2A and Alternative 3C would conform with guidelines in the RMP.

Visual resources on BLM-administered lands are managed according to the Visual Resource Management (VRM) System (BLM 1986). The VRM system provides the framework for managing visual values by classifying all BLM-administered lands as belonging to one of four VRM classes:

- **Class I:** Preserve the existing landscape character. This objective is assigned to areas with special designations such as national wilderness areas and the wild sections of national wild and scenic rivers.
- **Class II:** Retain the existing landscape character. The level of change to the existing landscape should be low.
- **Class III:** Partially retain the existing landscape character. The level of change to the characteristic landscape should be moderate.
- **Class IV:** Allow major modification of the existing landscape character that minimizes visual impacts to the extent possible.

The RMP specifies BLM-administered lands on Marys Peak (adjacent to the SBSIA) be managed per VRM Class IV. Class IV allows the most modification to scenic resources. Based on the analysis in Section 3.7,

Visuals, of this EA, tree cutting under Alternative 2A and Alternative 3C would have a low impact on scenic resources and be in conformance with the VRM Class IV class. There would be no impacts on scenic resources on BLM lands from Alternative 4.

4.5.2 BLM Special-status Species

Oregon/Washington State Director's Special-status Species List

Animal and plant species that were either "suspected" or "documented" to occur in the Northwest Oregon District of the BLM, per the most recent State Director's Special Status Species List (BLM 2019) were considered when developing the Project's species lists.

Forty-four animal species were on the BLM Sensitive list, but only two species, the purple martin and the red tree vole, had the potential to occur in the study area. Neither of these species was detected during 2018 or 2019 surveys, as discussed in Section 3.6.2 of this EA.

The two invertebrate species listed as BLM Sensitive species that could occur in the study area, although a low likelihood, are the Suckley cuckoo bumble bee and the Siskiyou short-horned grasshopper. One species flies while the other flies for short distances or hops. As such, the area inhabited by the grasshopper invertebrate species could be relatively small, while for bumble bee, it could be relatively large since they could travel throughout the study area and beyond.

The plant and fungi species on the BLM Sensitive species list considered to have the potential to occur in the Project study area are listed in Appendix A of this EA. None of the BLM Sensitive plant species was observed during 2018 or 2019 vegetation field surveys. Eight BLM Sensitive fungi species were assumed to be present in suitable habitat in the BLM parcel where trees would be cut under Alternatives 2A and Alternative 3C. These eight fungi species were not observed during the survey and are not previously documented in the area, as discussed in Section 3.5.4 of this EA.

SNF botanists conducted a Biological Evaluation (BE) to assess potential impacts on the eight sensitive fungi species that are assumed to occur in the BLM parcel where trees would be cut under Alternative 2A and Alternative 3C. Vascular plant species were not included in the BE because they do not occur in the Project survey areas. Potential impacts on sensitive fungi include host tree removal, woody debris removal, and disturbing soil and duff layers. The SNF botanists made the determination that if the identified trees were cut on the BLM parcel, it could impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. The BLM concurred with the determination (pers. comm. with Heidi Christensen, Botanist, BLM, July 2, 2020).

Forest Plan Survey and Manage Species

The Survey and Manage species for the BLM are the same as for the USFS because they both come from the Northwest Forest Plan. See Section 3.6.2 (Wildlife Affected Environment) and Section 4.4.6. for a description of baseline conditions for Survey and Manage species for the BLM Northwest Oregon District.

4.6 State, Area-wide, and Local Plan and Program Consistency

BPA is a federal agency subject to state regulation only if there has been a waiver of federal sovereign immunity through federal law, consistent with the supremacy clause of the U.S. Constitution. The Federal Land Policy Management Act (FLPMA), 43 USC §1701 et seq., provides a limited waiver of federal sovereign immunity, such that federal agencies including BPA are required to comply with

specific substantive provisions for environmental protection that may be identified by states for portions of the federal agency's activities that would be located on federal lands.

BPA is committed to planning its projects to be consistent or compatible, to the extent practicable, with state plans and programs, as well as any substantive standards that these plans and programs may contain, even when not required by federal law. To work towards this goal, BPA typically provides Project information relevant to state permitting processes to state entities with a potential interest in the project. In designing and carrying out its proposed projects, BPA strives to meet or exceed the substantive standards and policies of state regulations. In Oregon, land use planning is carried out at the local level, where cities and counties adopt and implement a comprehensive plan and zoning code consistent with statewide planning goals. The following local land use plans and classifications guide development in the area affected by the proposed Project.

4.6.1 Benton County Comprehensive Plan

The Marys Peak and West Point Spur Project components are located in Benton County, Oregon. The Marys Peak component is located on lands owned by USFS and BLM, and the West Point Spur component is located on land owned by USFS and City of Corvallis. The Benton County Comprehensive Plan was adopted in 1985 and updated in 2007.

The Marys Peak and West Point Spur Project components have a "Forest Conservation" zoning designation under Chapter 60 of the Benton County Code (BCC). Such a designation is intended to "conserve forest lands, promote the management and growing of trees, support the harvesting of trees and primary processing of wood products, and protect the air, water, and wildlife resources in the zone." Microwave communications facilities are allowable in a "Forest Conservation" zone provided that a conditional use permit is approved by the Benton County Planning Commission based on compliance with the following criteria (BCC 60.215).

The project:

- Will not force a significant change in, or significantly increase the cost of, accepted farming or forest practices on agriculture or forest lands (BCC 60.220)
- Will not significantly increase fire hazards, fire suppression costs, or risks to fire suppression personnel (BCC 60.220)
- Does not seriously interfere with uses on adjacent property, with the character of the area, or with the purpose of the zone (BCC 53.215)
- Does not impose an undue burden on any public improvements, facilities, utilities, or services available to the area (BCC 53.215)

None of the Project action alternatives would affect agriculture or forestry, increase fire hazards or the burden of fire suppression, or seriously interfere with adjacent land uses. In addition, the Project would not be expected to impose any additional burden on public improvements, facilities, utilities, or services available to the area. As such, the Project action alternatives would be consistent with the land use plans of Benton County.

4.6.2 City of Albany Comprehensive Plan

The BPA Albany Substation is on BPA-owned property located in the City of Albany, Linn County, Oregon. The City of Albany Comprehensive Plan, which was adopted in December 1980 and was last amended in October 2017, outlines a policy to facilitate the continued provision of high-quality utility services and to encourage coordination from federal agencies in all land use activities.

The BPA Albany Substation is in an area zoned as a "Residential Single Family District (RS-6.5)," which Article 3 of the Albany Development Code (ADC) indicates is primarily intended for low-density single-family residential development. The ADC states, "Public and Commercial Communication Facilities are not allowed in residential zoning districts, except when the applicant can provide supportive documentation or evidence, to the satisfaction of the Community Development Director, that, if such a facility is not allowed, there will be a gap in service that denies service to an area within the community."

Although BPA has not been using the BPA Albany Substation as a communications facility for the last decade, an existing communications building and steel-lattice communications structure remain on-site from previous BPA communications operations. The Project entails installing communications equipment, which constitutes only minor changes to the steel-lattice structure. Because the Project does not constitute a change in land use, Alternative 2A and Alternative 3C would both be consistent with the land use plans of the City of Albany.

4.6.3 Marion County Comprehensive Plan

The BPA Prospect Hill Communications Site is a BPA-owned property located in Marion County, Oregon. The Marion County Comprehensive Plan was most recently updated in December 2018. Marion County desires coordination from federal agencies and compliance with its comprehensive plan in the development and administration of federally owned lands.

The BPA Prospect Hill Communications Site is zoned as "Public," meaning it is subject to regulations governing the development of individual parcels shown to be appropriate for specific public and semi-public uses, to ensure their compatibility with adjacent uses. Wireless communications facilities are a permitted use in public zones, although these facilities may be subject to development standards. BPA has already developed and currently operates a communications facility at the site, and proposed Project activities are minimal and associated with routine maintenance and upgrades. As such, Alternative 4 would be consistent with the land use plans of Marion County.

4.7 Cultural and Historical Resources

Preserving cultural resources allows Americans to have an understanding and appreciation of their origins and history. A cultural resource is an object, structure, building, site, or district that provides irreplaceable evidence of natural or human history of national, state, or local significance. Historic properties include national landmarks, prehistoric sites, historic sites, properties of traditional religious and cultural importance to a Native American tribe (also known as Traditional Cultural Properties), and other properties listed (or eligible for listing) on the National Register of Historic Places (NRHP). American Indian tribes have rights under specific laws, as well as the opportunity to voice concerns about issues under these laws, when their aboriginal territory falls within a proposed project area.

Cultural resource laws, regulations, and other directives include:

- Antiquities Act of 1906 (16 USC 431–433)
- Historic Sites Act of 1935 (16 USC 461–467)
- Section 106 of National Historic Preservation Act (16 USC 470 et seq.), as amended
- Archaeological Data Preservation Act of 1974 (16 USC 469 a-c)
- Archaeological Resources Protection Act of 1979 (16 USC 470 et seq.), as amended
- Native American Graves Protection and Repatriation Act (25 USC 3001 et seq.)

- Executive Order 13007 Indian Sacred Sites
- Oregon state law (ORS 97.740–97.760, 358.905–358.955, and 390.235) defines state regulation of archaeological and historic sites
- ORS 390.235 contains information on permits and conditions for excavation or removal of archaeological or historic materials
- ORS 97.740–97.760 prohibits disturbance of Indian burials

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of their actions on historic properties. The NHPA provides a process, known as the Section 106 process, that requires agencies to consult with states, interested and affected Tribes, and other parties on various aspects of the process. It also requires agencies to identify and evaluate historic properties, and assess impacts to historic properties. Agencies then consult on ways to avoid, minimize, and mitigate for these impacts.

Through the Section 106 process and consultation, BPA is providing information about the Project to consulting parties, including the Oregon State Historic Preservation Office (SHPO), Oregon state archaeologist, USFS archaeologist, BLM archaeologist, and the following consulting tribes:

- Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians
- Confederated Tribes of the Grande Ronde Community of Oregon

BPA requested input on the level and type of proposed identification and evaluation efforts from the consulting parties. BPA also asked for information on cultural resources in the study area.

Background research within the project area identified the presence of historic resources and ethnographic resources that are or may be eligible for the NRHP. Field surveys were conducted in 2015 and in 2019 to identify cultural sites that could be impacted if they could not be avoided. Survey results were submitted to the consulting Tribes, SHPO, USFS, and BLM for review and comment.

The potential effects of each action alternative on cultural resources are discussed in Section 3.8, Cultural Resources, and summarized below.

All action alternatives would unavoidably affect the BPA Marys Peak communications site, which is eligible for the NRHP. Work conducted at the existing site under Alternative 2A would result in a loss of integrity and design, resulting in an adverse effect. Under Alternative 3C and Alternative 4, the BPA Marys Peak communications site building would be dismantled and removed. The site would be restored to natural vegetation and there would be no evidence of the existing site. Because the BPA Marys Peak communications site is eligible for the NRHP, removal of the building and monopole would be an adverse effect. If an action alternative is selected, BPA would work with consulting parties to determine appropriate mitigation for this adverse effect.

Alternative 2A and Alternative 3C would also affect The BPA Albany Substation, which is also eligible for the NRHP. However, the addition of equipment to the control house and to the existing steel-lattice structure would not affect the characteristics that make The BPA Albany Substation eligible for listing in the NRHP or the function of the substation and, therefore, would not affect eligibility for the NRHP.

Under Alternative 3C, an addition would be added to the USFS communications building on Marys Peak and a steel-lattice structure would be constructed near the USFS building. BPA would become a tenant in the new addition. Because the USFS communications site has not been evaluated for NRHP eligibility, effects to the resource have not yet been determined. If Alternative 3C is selected, an evaluation will be conducted and determination made, in concurrence with the SHPO.

Under Alternative 4, at the West Point Spur CPI communications site, improvements would be made to the site to enable BPA to occupy a portion of the existing building as a tenant. BPA would also install equipment and an ice bridge on the existing steel-lattice communications structure. Because the CPI communications site has not been evaluated for NRHP eligibility, effects to the resource from this work have not yet been determined. If Alternative 4 is selected, an evaluation will be conducted and determination made, in concurrence with the SHPO.

Under Alternative 4, the work at the Prospect Hill communications site would not affect cultural resources. There would be no effect to historic resources because the site is not considered eligible for the NRHP. There would be no effect to archaeological resources because work would take place in the graveled yard within the fence and there would be no ground disturbance that could affect subsurface resources.

Under all action alternatives, there is potential to adversely affect TCPs at Marys Peak and West Point Spur. Effects will be assessed by BPA and consulting parties, depending on the selected alternative.

If any cultural sites cannot be avoided, BPA will consult with the SHPO, consulting Tribes, and affected federal land managing agencies to determine if those cultural sites are eligible for listing on the NRHP. If they are, effects will be evaluated in consultation and appropriate mitigation agreed upon with consulting parties. If, during construction, previously unidentified cultural resources are found that would be adversely affected by the project, BPA would follow all required procedures and reinitiate consultation.

4.8 Air Quality

The federal ***Clean Air Act*** (CAA), as revised in 1990 (Public Law [PL] 101–542 (42 USC 7401)), requires EPA and individual states to carry out a wide range of regulatory programs intended to assure attainment of National Ambient Air Quality Standards (NAAQS). In Oregon, EPA has delegated authority to the Oregon Department of Environmental Quality (ODEQ). Because Project activities would occur in areas that are currently in attainment for meeting the NAAQS and because no stationary sources of air emissions would occur, construction activities associated with the Project are exempted from state regulation. The potential effects of the Project on air quality are discussed in Section 3.11, Air Quality.

4.9 Greenhouse Gas Emissions

Gases that absorb radiation and prevent heat loss to space are called greenhouse gases (GHGs). Models predict that atmospheric concentrations of all GHGs will increase over the next century, but the extent and rate of change is difficult to predict, especially on a global scale. As a response to concerns over the predicted increase of global GHG levels, various federal and state mandates address the need to reduce GHG emissions, including the following:

- The Clean Air Act establishes regulations to control emissions from large generation sources such as power plants. Limited regulation of GHG emissions occurs through New Source Review requirements.
- In Oregon, House Bill 3543, from 2007 (ORS 468A.205), directs state and local governments, businesses, nonprofit organizations and individual residents to reduce GHG emissions by 2010. By 2020, the state is directed to achieve GHG levels that are 10 percent below 1990 levels. By 2050, the state is directed to achieve GHG levels that are at least 75 percent below 1990 levels.

GHG emissions for all action alternatives would be produced mainly from direct emissions resulting from the operation of vehicles and equipment during construction. GHG emissions for all action alternatives

would be below EPA's mandatory reporting threshold. The impact of any of the action alternatives on GHG concentrations would be low, as discussed in Section 3.11 of this EA.

4.10 Hazardous Materials

The application of several regulations that could pertain to the management and use of hazardous materials during the Project are summarized below.

4.10.1 The Spill Prevention Control and Counter-measures Act

The federal Spill Prevention Control and Counter-measures Act is intended to prevent discharges of oil and oil-related materials from reaching navigable waters and adjoining shorelines. It applies to facilities with total aboveground oil storage capacity (not actual gallons on site) of greater than 1,320 gallons and facilities with underground storage capacity of 42,000 gallons. However, no on-site storage of oil or oil-related materials is proposed as part of the Project.

4.10.2 Title III of the Superfund Amendments Act

Title III of the Superfund Amendments and Reauthorization Act provides funding for hazardous materials training in emergency planning, preparedness, mitigation implementation, response, and recovery. Eligible individuals include public officials, emergency service providers, medical personnel, and other tribal response and planning personnel. If the Project is implemented, BPA would notify the appropriate agencies if any hazardous materials are found during construction.

4.10.3 Uniform Fire Code

Development of a hazardous materials management plan may be required by local fire districts in accordance with the Uniform Fire Code. BPA would develop and implement such a plan, if required.

4.10.4 Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act registers and regulates pesticides and herbicides used during building maintenance and vegetation management. Herbicides are used within the fence at communications sites to control vegetation, including noxious weeds, when needed. Rodenticides could be used in the communications buildings if rodents are problematic. When BPA uses herbicides, the date, volume, concentration, and chemicals used are recorded and reported to state government officials. Herbicide containers are disposed of according to Resource Conservation and Recovery Act (RCRA) standards.

4.10.5 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), as amended, is designed to provide a program for managing and controlling hazardous waste by imposing requirements on generators and transporters of this waste and on owners and operators of treatment, storage, and disposal facilities. Each facility owner or operator is required to have a permit issued by EPA or the state. Typical communications site projects, in BPA's experience, have generated small amounts of these hazardous wastes: solvents, pesticides, paint products, motor and lubricating oils, and cleaners. Small amounts of hazardous wastes may be generated by the Project. These materials would be disposed according to state law and RCRA.

If hazardous material, toxic substance, or petroleum products are discovered that could pose an immediate threat to human health or the environment, BPA requires that the contractor notify the appropriate BPA staff immediately. Other conditions such as large dump sites, drums of unknown

substances, suspicious odors, and stained soil must also be reported immediately to BPA. In addition, the contractor would not be allowed to disturb such conditions until the BPA and the appropriate authorities have given the notice to proceed.

4.11 Executive Order on Environmental Justice

In February 1994, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, was released to federal agencies. The order states that federal agencies shall identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

Guidelines provided by the Council on Environmental Quality (CEQ 1997) and EPA (1998) state that a minority community may be defined where either the minority population comprises more than 50 percent of the total population, or the minority population of the affected area is meaningfully greater than the minority population in the general population of an appropriate benchmark region used for comparison. Minority communities may consist of a group of individuals living in geographic proximity to one another or a geographically dispersed set of individuals who experience common conditions of an environmental effect. Further, a minority population exists if there is "more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ 1997). There would be no potential impacts on environmental justice populations from the Project because minority and low-income populations would not be affected by the Project.

4.12 Noise

The Federal Noise Control Act of 1972 (42 USC 4901 et seq.) requires that federal entities, such as BPA, comply with state and local noise requirements. Environmental noise is regulated by the state of Oregon, which establishes limits on levels and duration of noise. Temporary construction is exempted from state and local regulation. Allowable noise levels under state law, potential noise impacts from the project, and proposed mitigation are described in Section 3.10, Noise. The environmental analysis in that section indicates that the action alternatives would have low to moderate noise impacts with implementation of appropriate mitigation.

4.13 Transportation

According to the Oregon Revised Statutes Chapter 818 (Vehicle Limits), oversize or overweight vehicles need transportation permits to travel on highways and local public roads in the state. The construction contractor for the Project would consult with the Oregon Department of Transportation, Benton County Public Works Department, and Benton County Public Works Department County to secure necessary transportation permits for oversize or overweight vehicles used for Project construction.

4.14 Notice to the Federal Aviation Administration

The Federal Aviation Administration (FAA) requires BPA to submit its structure designs for FAA approval if a proposed structure is taller than 200 feet from the ground or water surface where the line crosses a body of water or if any part of the proposed structure is within a prescribed distance of an airport (FAR 49 CFR Part 77.13). The final communications structure design under Alternative 2A and Alternative 3C would not be submitted to the FAA for the Project because the communications structures would not be taller than 200 feet above ground, and would be located outside the prescribed distances of airports listed in the FAA airport directory. Under Alternative 4, no new structures are proposed.

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Chapter 5 Persons, Tribes, and Agencies Receiving this EA

5.1 Introduction

BPA provided Project information to Tribes; local, state, and Federal agencies; public officials; public interest groups; businesses; libraries; media; and others who expressed an interest in the Project. BPA also provided information to landowners within 1 mile of Project components (BPA Marys Peak communications site, West Point Spur CPI communications site, BPA Albany Substation, and the BPA Prospect Hill communications site). These groups of stakeholders were provided opportunities to provide scoping comments and to comment on the draft Environmental Assessment (EA). They will be provided a copy of the final EA and agency decisions.

Specific individuals were contacted to gather information and data about the Project vicinity and applicable requirements, as part of consultation, or for permit applications. Specific entities who received Project information are listed below. Landowners and other private citizens are not listed due to privacy concerns.

5.2 Federal Agencies

The following federal agencies and representatives were contacted:

- U.S. Department of Agriculture
  - Animal and Plant Health Inspection Service
  - Forest Service, Central Coast Ranger District, Siuslaw National Forest
- U.S. Department of the Interior, Bureau of Indian Affairs
- U.S. Department of the Interior, Bureau of Land Management, Northwest Oregon District
- U.S. Department of the Interior, Fish and Wildlife Service
  - Portland and Newport Field Offices
  - Finley National Wildlife Refuge
- U.S. Department of Transportation, Federal Aviation Administration
- U.S. representatives and senators for districts encompassing the Project area
  - U.S. House of Representatives, House District 4 Eugene Office, Honorable Peter Defazio
  - U.S. House of Representatives, Oregon City District Office, Honorable Kurt Schrader
  - U.S. Senate, Honorable Jeff Merkley
  - U.S. Senate, Eugene Office, Honorable Ron Wyden

5.3 Tribes

The following Indian tribes were contacted:

- Confederated Tribes of Grand Ronde
- Confederated Tribes of Siletz
- Confederated Tribes of Coos Lower Umpqua and Siuslaw Indians
- Coquille Indian Tribe

5.4 State Agencies and Officials

The following state agencies and state officials were contacted:

- State of Oregon
  - Department of Agriculture, Native Plant Conservation Program
  - Department of Land Conservation and Development
  - Department of Forestry
  - Department of Environmental Quality
  - Oregon Military Department
  - Department of Fish and Wildlife, Salem Headquarters and South Willamette Watershed District Offices
  - Department of Transportation
  - Police, Fish and Wildlife Division
  - Watershed Enhancement Board
- Oregon State University
  - Department of Botany and Plant Pathology
  - Department of Forestry
  - Department of Fish and Wildlife
  - Oregon Flora Project
- Office of Governor
- Office of the Governor, Natural Resource Office
- State Senate District 12, Honorable Brian Boquist
- House of Representatives District 23, Honorable Mike Nearman

5.5 Local Government

The following local governments and their officials were contacted:

- City of Corvallis – City Manager, Communications Engineer, Department of Public Works, Corvallis Municipal Airport, and Corvallis Fire Department
- City of Philomath – Councilors, Public Works, City Planner, Manager, and Mayor
- County of Benton -- Soil and Water Conservation District, Environmental Issues Committee/Weed Board, Sheriff's Office, Board of Commissioners, and Natural Areas and Parks

5.6 Businesses and Public Interest Groups

The following businesses and public interest groups were contacted:

- Alsea River Cable
- Alsea Watershed Council
- American Forest Resource Council
- American Lands Alliance
- Association of O & C Counties
- Association of NW Steelheaders

- Associated Oregon Loggers, Inc.
- Audubon Society: Corvallis Chapter
- Audubon Society: Lincoln City Chapter
- Audubon Society: Salem Chapter
- Bateman Forest Management
- Benton County Amateur Radio Emergency Service
- Bio-Surveys, LLC. Corvallis Area Chamber of Commerce
- Cascade Pacific Resource Conversation and Development
- Cascadia Wildlands Project
- Center for Biological Diversity
- Chemeketans
- Coast Range Association
- Consumers Power Inc.
- Corvallis Environmental Center
- Corvallis to Sea Trail Partnership
- Eugene Museum of Natural History and Cultural History
- Eugene Natural History Society
- Ferris Nursery
- Forest Service Employees for Environmental Ethics
- Friends of Camp Cone
- Friends of Marys Peak
- Gates Tree Farm Company
- Green Diamond Resources
- Hampton Tree Farms Inc.
- Hancock Forest Management
- Institute for Applied Ecology
- Integrated Resource Management
- Klamath Fast Trekkers
- League of Women Voters of Oregon
- Marys Peak Alliance
- Marys Peak Sierra Club
- Marys Peak Stewardship Group
- Marys River Watershed Council
- Mid Coast Watershed Council
- Native Plant Society of Oregon, Corvallis Chapter and Willamette Valley Chapter
- Nature Conservancy Oregon Willamette Valley Conservation Program and Main Office
- NW Environmental Defense Center
- NW Forestry Association
- Obsidians
- Oregon Chapter Sierra Club, Marys Peak Group

- Oregon Environmental Council
- Oregon Natural Resources Council
- Oregon Society of American Foresters
- Oregon Wild
- Pacific Rivers
- Rocky Mountain Elk Foundation
- Silke Communications
- Siuslaw Collaborative Watershed Restoration Program
- Starker Forests Inc.
- Thompson Timber Company
- Thompson Tree Farm Inc.
- Union Pacific Corporation
- U.S. Hang Gliding and Paragliding Association
- Wilderness Society
- Xerces Society

5.7 Libraries

The following libraries were contacted:

- Oregon State Library, Regional Federal Depository
- Alsea Library
- Corvallis-Benton County Public Library
- Philomath Community Library

5.8 Media

The following media outlets were contacted:

- Albany Democrat Herald
- Corvallis Gazette Times

Chapter 6 Glossary

Access road – A road or road spur that provides access to BPA facilities, including communications sites, during construction and operation and maintenance.

Ambient noise – Background noise generated by existing noise sources typically present in the surrounding area.

Area of potential effect (APE) – Area where cultural resources must be studied and identified according to the National Historic Preservation Act.

A-weighted decibel (dBA) – A logarithmic unit of sound measurement based on an A-weighted scale commonly used for measuring environmental and industrial noise levels.

Basalt – Lava with a composition that is relatively high in iron and manganese.

Beam path – A line-of-sight path between two relay stations, using a directional antenna that transmits microwaves, forming a fixed radio connection between the two points.

Bedrock – Solid rock at the surface, or underlying other surface materials, of relatively great thickness and extent in its native location, as distinguished from boulders.

Best management practices (BMPs) – Measures that are taken to ensure any activity is conducted in an environmentally responsible manner that protects sensitive resources, such as water, air, and vegetation.

Biodiversity – The variety of life and its processes, including the variety in genes, species, ecosystems, and the ecological processes that connect everything in ecosystems; as used in this EA, this definition specifically excludes diversity contributed by non-native species; also see non-native species.

Buffer (vegetative) – A strip of permanent vegetation between waterways and human land uses.

Candidate species – Species identified by the U.S. Fish and Wildlife Service or NOAA Fisheries (federal) or the Oregon Department of Fish and Wildlife (state), which have sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (federal) or Oregon Endangered Species Act (state), but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

Clean Air Act (CAA) – A 1963 Federal law, amended several times since, giving the Federal government powers to limit air pollution; also a term loosely applied to the Air Quality Act of 1967, which gave the Federal government a stronger regulatory role; an especially important effect was the development of standards based on concentrations of pollutants in air.

Climate change – Term used to refer to all forms of climatic inconsistency, but especially to significant change from one prevailing climatic condition to another; in some cases, “climate change” has been used synonymously with the term "global warming"; scientists, however, tend to use the term climate change in a wider sense inclusive of natural changes in climate, including climatic cooling.

Colluvium – Loose rock or sediment usually found at the bottom of a hillslope due natural downslope slide or from water.

Criteria pollutants – Air pollutants having National Ambient Air Quality Standards.

Critical habitat – As defined in the federal Endangered Species Act, designated areas within the geographic area occupied by a listed species at the time of listing, on which are found physical or

biological features essential to the conservation of the species and which may require special management considerations for protection.

Cultural resources – Physical remains, objects, places, historic records, and traditional cultural practices or beliefs that connect people to their past.

dBA – The first two letters (dB) are an abbreviation for decibel, the unit in which sound is most commonly measured (see decibel); the last letter (A) is an abbreviation for the scale (A scale) on which the sound measurements are made.

Diameter at breast height (dbh) – A standard method of expressing the diameter of a trunk of a standing tree

Distinct population segment (DPS) – A subgroup of a vertebrate species that is treated as a separate species for the purposes of listing under the federal Endangered Species Act (ESA); it is required that the subgroup be separable from the remainder of and significant to the species to which it belongs; used for some fish species in the Pacific Northwest.

Easement – A grant of the right to use land in a manner granted under a formal agreement between two parties; utilities generally acquire easements for transmission lines and other facilities, beam paths, and access roads to obtain the right to use the land for access, construction and improvements, and operation and maintenance.

Ecosystem – Interacting system of elements in a biological community, together with interactions with the surrounding environment.

Electromagnetic field (EMF) – Fields of force caused by electric voltage and current around the electric wire or conductor when an electric transmission line or any electrical wiring is in operation; magnetic fields exist only when current is flowing; electric fields are present in electrical appliances and cords whenever they are plugged in.

Electromagnetic radiation (EMR) – Radiation is the propagation of energy through space that can take the form of either waves or particles. The propagation of electromagnetic energy is one type of radiation.

Endangered species (federal) – Those plant and animal species officially designated (listed endangered) by the U.S. Fish and Wildlife Service or NOAA Fisheries under the federal Endangered Species Act as being in danger of extinction throughout all or a significant portion of their range because its habitat is threatened with destruction, drastic modification, or severe curtailment, or because of overexploitation, disease, predation, or other factors.

Endangered Species Act (ESA) – The ESA of 1973 (16 USC 1536), as amended in 1988, is a federal act that establishes a national program for the conservation of threatened and endangered species of fish, wildlife and plants, and the preservation of the ecosystems on which they depend; administered by the U.S. Fish and Wildlife Service for wildlife and freshwater species and by the National Marine Fisheries Service, also known as NOAA Fisheries, for marine and anadromous species; these agencies decide whether to list species as threatened or endangered; federal agencies must avoid jeopardy to and aid the recovery of listed species; similar responsibilities apply to non-federal entities.

Environmental assessment (EA) – A document that provides one means of complying with the National Environmental Policy Act and defined at 40 CFR 1508.9; an EA evaluates the possible environmental effects of a Federal agency's proposed action and provides sufficient evidence to determine whether an environmental impact statement or a finding of no significant impact is warranted.

Erosion – The wearing away of the land surface by wind or water that occurs naturally from weather or runoff but can be intensified by land-clearing practices related to such activities as farming, residential or industrial development, road building, or timber-cutting; a material wear mechanism resulting from suspended particles in a flow stream of water or other fluid.

Extirpated – A species that was once present in an area but is now locally extinct.

Federal Columbia River Transmission System (FCRTS) – The electric transmission system in the Pacific Northwest built and operated by BPA; often referred to as the Federal transmission grid, or the BPA grid.

Federally listed – Species listed as threatened or endangered under the federal Endangered Species Act by the U.S. Fish and Wildlife Service or NOAA Fisheries.

Finding of no significant impact – A document by a federal agency to comply with the National Environmental Policy Act that presents the reasons why an action will not have a significant effect on the human environment and for which an environmental impact statement therefore will not be prepared, as defined at 40 CFR 1508.13.

Forb – An herbaceous flowering plant species that is not a graminoid (grass or grass-like species such as sedges or rushes).

Fugitive dust – Any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly, as a result of human activities.

Grasslands – Extensive meadows dominated by grasses and herbaceous native plants.

Greenhouse gases (GHGs) – Chemical compounds in the form of gases found in the earth's atmosphere that absorb and trap infrared radiation, or heat, that is reradiated from the surface of the earth; includes carbon dioxide (CO_2), methane (CH_4), nitrogen oxides (NO_x), nitrous oxide (NO_2), and water vapor (H_2O) that contribute to the greenhouse effect.

Habitat – The combination of biotic (living) and abiotic (non-living) components that provides the ecological support system for plant or animal populations.

Heating, ventilation and air conditioning (HVAC) – The system used to provide heating and cooling services to a building.

Herbaceous – Plants that possess little or no woody tissue; does not include shrubs and trees.

Herbicide – A chemical substance used to kill, slow, or suppress the growth of plants.

High-voltage – An electrical potential large enough to cause injury or damage. In electric power transmission engineering, high voltage is usually considered any voltage over approximately 35,000 volts. However, OSHA classifies any use of electrical service over 600 volts as high voltage.

Ice bridge – A metal structure constructed about 8 to 10 feet above the ground that runs between a steel-lattice structure and building. The ice bridge provides protection from ice and snow loading that could potentially damage communications and power cables.

Loamy residuum – Residuum is soil that results from the long weathering and disintegration of rocks. Loamy residuum is residual soil composed mostly of loam, defined as soil with roughly equal proportions of sand, silt, and clay.

Low-income population – A portion of the population that is below the current poverty line that could be disproportionately disadvantaged because of their limited financial resources.

Microwave – Meaning "small wave," a microwave is a radio signal in the frequency range from 300 MHz to 300 GHz or from 1 to 300 GHz, depending on the rating system. Except for AM and FM radio, shortwave radio and over-the-air TV, almost all other communications systems transmit microwaves, including satellites, cellular systems, wireless LANs and line-of-sight between buildings and across vast distances.

Minority population – Any readily identifiable group of minority persons who will be similarly affected by a proposed program, policy, or activity; a minority population is considered to be present if the minority population percentage of the affected area is greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

Mitigation – Steps or measures taken to lessen the potential impacts or effects on a specific resource as the result of an action; mitigation could result in avoiding the impact completely, reducing or minimizing the impact, or compensating for the impact.

National Environmental Policy Act (NEPA) – 1970 law which requires Federal agencies to assess the environmental impacts of their actions before making decisions (42 UC **§ 4321 et seq.**).

Native – A species, plant community type, or habitat whose presence in an area is due to natural processes and not as a result of direct human manipulation; native species originated in a given ecological area; native biotic elements and natural processes contribute to biological diversity.

Nonattainment area – The status of an air basin when it is not in compliance with applicable air quality standards for a specific pollutant.

Non-native – A species, plant community type, or habitat that has been introduced or modified as a result of human actions; non-native species may compete for space and nutrients with more desirable native species; non-native species are also referred to as introduced or exotic species.

Non-vascular – Species of plants that lack a developed system for transport of water and are small, thin plants, including mosses, liverworts, and lichens.

North American Electric Reliability Corporation (NERC) – A council consisting of nine Regional Reliability Councils/Corporations, encompassing virtually all of the power systems in the U.S. and Canada; formed by the electric utility industry in 1968 and incorporated in 1975 to promote reliable and adequate supplies of bulk electric power.

Noxious weeds – Invasive, nonnative plants that have been introduced into an environment outside their native range; identified by state law, they cause environmental and economic harm to some degree by negatively affecting public health, recreation, silviculture, crops, livestock, wildlife habitat, native plant communities, and other resources.

Particulate matter (PM) – Airborne particles including dust, smoke, fumes, mist, spray, and aerosols.

Perennial – When this term refers to plants, it means species that live for several years.

Power outage – A short- or long-term interruption in the delivery of electrical power to an area when the electrical provider removes a piece of equipment or a portion or all of a line from service; may be planned, such as during maintenance, or inadvertent, resulting from system or equipment damage or failure.

Prehistoric – Refers to cultural resources that predate European settlement in North America.

Project – In this EA, a specific BPA undertaking including BPA-assisted activities, which may include design, construction, and operation of an individual facility; research, development, demonstration, and

testing for a process or product; funding for a facility, process, or product; or similar activities, as discussed at 40 CFR 1508.18(b)(4).

Propagules – Parts of plants that serve as means of vegetation reproduction, such as seeds, corms, tubers, offsets and runners.

Raptor – A bird of prey that hunts and kills other animals for food, including small birds, fish, mammals, lizards and insects; raptors are powerful flyers that hunt with their large, strong talons and sharply hooked bills; there are many species of raptors, including bird families such as eagles, hawks, falcons and owls.

Reliability – The measure of the ability of a power system to provide uninterrupted service, even while that system is under stress.

Revegetate – Reestablishing vegetation on a disturbed site.

Restoration – Renewing or repairing of a natural system so that its functions and qualities are comparable to its original, unaltered state.

Riparian – Habitat or areas, usually adjacent to rivers, streams, or lakes, where the vegetation and microclimate are heavily influenced by water.

Scenic byway – A road that is distinctive and recognized for its scenic, recreational, natural, historic, cultural, and archeological qualities.

Scoping – The process described at 40 CFR 1501.7; "public scoping process" refers to that portion of the scoping process where the public is invited to participate and where significant issues are identified for detailed analysis, as described at 40 CFR 1501.7 (a)(1) and (b)(4).

Sedimentation – Any finely divided organic and/or mineral matter deposited by air or water in nonturbulent areas

Seral – A seral community is the name given to each group of plants within a succession. A primary succession or pioneer community describes those plant communities occupying a site that has not previously been vegetated. Plants communities change as succession continues until reaching a relatively stable state, often called a late seral or climax community

Sheet erosion – The removal of a uniform, thin layer of soil by raindrops and overland flow on bare soil, particularly on sloping land.

Shrublands – Areas with 25 percent or greater cover of shrubs and no or very little tree cover.

Silt – Fine-grained portion of soil that is nonplastic, or only very slightly plastic, and that exhibits little or no strength when air-dry

Snag – A standing dead or dying tree that is created naturally when the tree top breaks or purposefully created by cutting off the top of the tree; snags provide unique wildlife habitat (for species that nest in tree cavities) and a food source (insects) for wildlife. For this Project, snags would be created by cutting the tree at about 20 feet above ground.

Species – A group of interbreeding individuals that does not interbreed with another such group. Similar and related species are grouped into a genus. Section 3 of the Endangered Species Act (ESA) defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which breeds when mature.

Species of concern – Species considered by the US Fish and Wildlife Service to potentially be in jeopardy, but for which sufficient information does not exist to support listing on the federal threatened or endangered species lists

Stability – The attribute that enables a dynamic system to develop restoring forces equal to or greater than disturbing forces so as to maintain a state of equilibrium. In the context of BPA's communications system, this means maintaining operations of BPA's communications sites and equipment with minimal disruptions.

Stand – A contiguous community of **trees** relatively similar in characteristics like age, structure, distribution and spatial arrangement, condition, or structure that distinguish it from adjacent communities.

Structure (Communications) – As used in this EA, lattice-steel structures on which communications equipment, such as microwave dishes, are installed.

Substation – A non-generating electrical power station that serves to transform voltages to higher or lower levels, and serves as a delivery point to individual customers such as utilities or large industries; the BPA grid has more than 400 substations.

Talus – Sloping accumulation of rock debris.

Terrane – A distinctive geologic formation or group of rocks or the area in which such features occur.

Threatened species (federal) – A species officially designated by the U.S. Fish and Wildlife Service or NOAA Fisheries that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, as defined in Section 3 of the Endangered Species Act (ESA).

Traditional Cultural Property (TCP) – Site that is eligible for inclusion in the National Register of Historic Places because of its association with cultural practices or beliefs of a living community that are rooted in that community's history, and are important in maintaining the continuing cultural identity of the community.

Transmission lines – The structures, insulators, conductors, and other equipment used to transmit electrical power at high voltage to electrical distribution facilities (substations).

Ultra High Frequency (UHF) - the band of electromagnetic radiation with a radio frequency range between 300 MHz and 3 GHz (3000 MHz). This band is also known as the decimeter band, with a wavelength ranging from 1 m to 1 dm. The UHF radiations are least affected by environmental factors, that is why they are most commonly used for TV and radio transmission and channel broadcasting. They have strong directivity, but, at the same time, the receiving error increases.

Vascular – Plant species which includes trees, shrubs, and most herbaceous species, as well as flowering plants and ferns.

Very High Frequency (VHF) – The radio frequency electromagnetic waves ranging from 30 to 300 MHz with corresponding wavelengths ranging from 1 m to tens of meters. VHF is widely used for FM broadcasting, television broadcasting, military and local mobile radio transmissions, traffic control long communications, radars, radio modems, as well as in marine and air navigation systems.

Visual quality objectives (VSOs) – Established goals that guide forest management activities on a landscape.

Water bar – A road construction feature that consists of a diagonal channel across the road that prevents erosion by diverting surface water (that would otherwise flow down the whole length of the

road) off the road and into a stable drain way; without water bars, road wash-outs and accelerated road degradation can occur.

Western Electricity Coordinating Council (WECC) – The organization responsible for coordinating and promoting bulk electric system reliability of transmission operators within the western interconnection; WECC provides a forum for resolving transmission access disputes, and facilitates coordination of operating and planning activities among its members.

Whip antenna – An antenna that is a single, straight rod or wire that is flexible to prevent damage or breaking when disturbed. An example is the type of antenna found on many car models, although whip antennas can be larger.

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Appendices

Appendix A – Special-status Plant and Fungi Species Survey List

Appendix B – Plant and Fungi Species Observed during Vegetation Surveys

Appendix C – Special-status Wildlife Species Survey List

Appendix D – Wildlife Species Observed during Wildlife Surveys

Appendix E – Scenic Resources Analysis Photographs and Simulations

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Appendix A. Special-status Plant and Fungi Species Survey List

The following vascular and non-vascular special-status plant species and fungi species were considered as having the potential to occur at the Marys Peak (MP) and West Point Spur (WPS) study areas and were the focus of vegetation surveys. The following special-status rankings are used in the following table:

- **Federal ESA (USFWS) designations:**
  - F-E = Federally-listed Endangered Species
  - F-T = Federally-listed Threatened Species
  - F-SOC = Federally-listed Species of Concern

- **State: Oregon ESA and ODA:**
  - SC = state candidate
  - ST = state threatened
  - SE = state endangered
  - S1 = critically imperiled
  - S2 = imperiled
  - S3 = rare and uncommon, vulnerable
  - S4 = not rare and apparently secure
  - Note: Two "S" rankings (e.g., "S2S3") are used when the ranking is likely in that range.

- **Oregon Biodiversity Information Center (ORBIC)**
  - List 1 = threatened or endangered throughout range
  - List 1-ex = extirpated in Oregon; threatened or endangered throughout the rest of its range
  - List 1-X = presumed extinct
  - List 2 = threatened, endangered or extirpated in Oregon, but secure or abundant elsewhere
  - List 2-ex = extirpated in Oregon; threatened or endangered throughout the rest of its range
  - List 3 = review, taxa for which more information is needed
  - List 4 = watch, taxa of conservation concern but are not currently threatened or endangered

- **Federal Special-Status (USFS and BLM) designations:**
  - S&M-A = Survey and Manage Species; rare, pre-disturbance surveys are practical
  - S&M-C = Survey and Manage Species; recommended to be protected from grazing
  - FS-S = U.S. Forest Service Sensitive Species
  - BLM-S = Bureau of Land Management Sensitive Species

Table A-1. Special-status Plant and Fungi Species Survey List

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
VASCULAR PLANT SPECIES					
Club-moss	*Lycopodiella inundata* bog club-moss	--	--	**List 2**	**S**
Club-moss	*Lycopodium complanatum* = *Diphasiastrum complanatum* ground cedar	--	--	**List 2**	**S**
Forb	*Abronia umbellata* ssp. *breviflora* pink sand-verbena	**SOC**	**SE**	**List 1**	**S**
Forb	*Anemone oregana* var. *felix* bog anemone	--	--	**List 2**	**S**
Forb	*Artemisia pycnocephala* coastal sagewort	--	--	**List 2**	**S**
Forb	*Atriplex gmelinii* Gmelin's saltbush	--	--	**List 2**	**S**
Forb	*Brodiaea terrestris* dwarf brodiaea	--	--	**List 2**	**S**
Forb	*Cardamine pattersonii* Saddle Mountain bittercress	--	**SC**	**List 1**	**S**
Forb	*Castilleja chambersii* Chamber's paintbrush	**SOC**	--	**List 1**	**S**
Forb	*Castilleja levisecta* golden paintbrush	**FT**	**SE**	**List 1-ex**	**S**
Forb	*Cicendia quadrangularis* timwort	--	--	**List 2**	**S**
Forb	*Coptis trifolia* three-leaf goldthread	--	--	**List 2**	**S**
Forb	*Corydalis aquae-gelidae* cold-water corydalis	--	**SC**	**List 1**	**S**
Forb	*Cypropedium montanum* = *Cypripedium montanum* mountain lady's slipper	--	**S3S4**	**List 4**	**S**
Forb	*Delphinium leucophaeum* white rock larkspur	**SOC**	**SE**	**List 1**	**S**
Forb	*Delphinium nuttallii* Nutall's larkspur	--	--	**List 2**	**S**
Forb	*Delphinium oreganum* Willamette Valley larkspur	**SOC**	**SC**	**List 1**	**S**
Forb	*Delphinium pavonaceum* peacock larkspur	**SOC**	**SE**	**List 1**	**S**
Forb	*Diplacus tricolor (Mimulus tricolor)* three-colored monkeyflower	--	--	**List 2**	**S**
Forb	*Dodecatheon austrofrigidum* frigid shootingstar	**SOC**	--	**List 1**	**S**

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Forb	*Douglasia laevigata* smooth-leaved douglasia	--	--	**List 3**	**S**
Forb	*Elatine brachysperma* short seeded waterwort	--	--	**List 2**	**S**
Forb	*Enemion stipitatum* Siskiyou false rue (dwarf isopyrum)	--	**S3**	**List 4**	**S**
Forb	*Erigeron decumbens* var. *decumbens* Willamette Valley daisy	**FE**	**SE**	**List 1**	**S**
Forb	*Erigeron howellii* Howell's daisy	--	**SC**	**List 1**	**S**
Forb	*Erigeron peregrinus* var. *peregrinus* wandering daisy	--	--	**List 2**	**S**
Forb	*Erythronium elegans* Coast Range fawn-lily	**SOC**	**ST**	**List 1**	**S**
Forb	*Eucephalus gormanii* Gorman's aster	--	--	**List 1**	**S**
Forb	*Filipendula occidentalis* queen-of-the-forest	--	**SC**	**List 1**	**S**
Forb	*Fritillaria camschatcensis* black lily (Indian rice)	--	--	**List 2**	**S**
Forb	*Geum triflorum* var. *campanulatum* old man's whiskers	--	--	--	**S**
Forb	*Gilia millefoliata* seaside gilia	**SOC**	--	**List 1**	**S**
Forb	*Horkelia congesta* ssp. *congesta* shaggy horkelia	**SOC**	**SC**	**List 1**	**S**
Forb	*Howellia aquatilis* water howellia (howellia)	**FT**	**ST**	**List 1**	**S**
Forb	*Huperzia miyoshiana* Pacific fir-moss	--	--	**List 2**	**S**
Forb	*Hydrocotyle verticillata* whorled marsh-pennywort	--	--	**List 2**	**S**
Forb	*Impatiens ecornuta* spurless jewelweed (spurless touch-me-not)	--	--	**List 2**	**S**
Forb	*Iris tenax* var. *gormanii* Gorman's iris	--	--	**List 1**	**S**
Forb	*Lathyrus holochlorus* thin-leaved peavine	**SOC**	--	**List 1**	**S**
Forb	*Lewisia columbiana* var. *columbiana* Columbia lewisia	--	--	**List 2**	**S**
Forb	*Lewisia columbiana* var. *rupicola* *rosy lewisia*	--	--	**List 2**	**S**
Forb	*Lilium occidentale* western lily	**FE**	**SE**	**List 1**	**S**

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Forb	*Limonium californicum* western marsh-rosemary	--	--	**List 2**	**S**
Forb	*Lipocarpha micrantha* small-flowered lipocarpha	--	--	**List 2**	**S**
Forb	*Lomatium bradshawii* Bradshaw's desert parsley (Bradshaw's lomatium)	**FE**	**SE**	**-List 1**	**S**
Forb	*Lupinus oreganus* Kincaid's lupine	**FT**	**ST/S2**	**List 1**	**S**
Forb	*Micranthes hitchcockiana* Saddle Mt. saxifrage	**SOC**	**SC**	**List 1**	**S**
Forb	*Microseris bigelovii* coast microseris	--	--	**List 2**	**S**
Forb	*Navarretia williamettensis* Willamette navarretia	**SOC**	--	**List 1**	**S**
Forb	*Ophioglossum pusillum* Adder's-tongue	--	--	**List 2**	**S**
Forb	*Packera flettii* Flett's groundsel	--	--	**List 2**	**S**
Forb	*Phacelia argentea* silvery phacelia	**SOC**	**ST**	**List 1**	**S**
Forb	*Plantago macrocarpa* North Pacific plantain (Alaska plantain)	--	--	**List 2**	**S**
Forb	*Pyrrocoma racemosa var. racemosa* racemose pyrrocoma	--	--	**List 2**	**S**
Forb	*Romanzoffia thompsonii* Thompson's mistmaiden	--	--	**List 1**	**S**
Forb	*Rotala ramosior* lowland toothcup	--	--	**List 2**	**S**
Forb	*Scheuchzeria palustris ssp. americana* Scheuchzeria	--	--	**List 2**	**S**
Forb	*Sclerolinen digynum* Northwestern yellow flax	--	--	**List 2**	**S**
Forb	*Sericocarpus rigidus* white-topped aster	**SOC**	**ST**	**List 1**	**S**
Forb	*Sidalcea hendersonii* Henderson's sidalcea (checkermallow)	--	--	**List 1**	**S**
Forb	*Sidalcea hirtipes* bristly-stemmed sidalcea	--	**SC**	**List 1**	**S**
Forb	*Sidalcea nelsoniana* Nelson's checker-mallow (Nelson's sidalcea)	**FT**	**ST**	**List 1**	**S**
Forb	*Silene douglasii* var. *oraria* Cascade Head catchfly	**SOC**	**ST**	**List 1**	**S**

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Forb	*Sisyrinchium hitchcockii* Hitchcock's blue eyed grass	**SOC**	**S1**	**List 1**	**S**
Forb	*Sisyrinchium sarmentosum* pale blue-eyed grass	**SOC**	**SC**	**List 1**	**S**
Forb	*Stellaria humifusa* creeping chickweed (starwort)	--	--	**List 2**	**S**
Forb	*Streptopus streptopoides* kruhsea	--	--	**List 2**	**S**
Forb	*Sullivantia oregana* Oregon sullivantia	**SOC**	**SC**	**List 1**	**S**
Forb	*Taraxia ovata* golden eggs (suncup)	--	--	**List 2**	**S**
Forb	*Utricularia gibba* humped bladderwort	--	--	**List 2**	**S**
Forb	*Utricularia minor* lesser bladderwort	--	--	**List 2**	**S**
Forb	*Utricularia ochroleuca* northern bladderwort	--	--	**List 2**	**S**
Forb	*Viola praemorsa ssp. praemorsa* canary violet (upland canary violet)	--	--	**List 3**	**S**
Forb	*Wolffia borealis* dotted water-meal	--	--	**List 2**	**S**
Forb	*Wolffia columbiana* Columbia water-meal	--	--	**List 2**	**S**
Gram	*Agrostis howellii* Howell's bentgrass	--	**SC**	**List 1**	**S**
Gram	*Calamagrostis breweri* Brewer's reedgrass	--	--	**List 2**	**S**
Gram	*Carex brevicaulis = Carex zikae* short stemmed sedge	--	--	**List 2**	**S**
Gram	*Carex comosa* bristly sedge (bottlebrush sedge)	--	--	**List 2**	**S**
Gram	*Carex livida* pale sedge	--	--	**List 2**	**S**
Gram	*Carex macrocephala* bighead sedge	--	--	**List 2**	**S**
Gram	*Carex macrochaeta* large-awn sedge (Alaska long-awned sedge)	--	--	**List 2**	**S**
Gram	*Carex pluriflora* many-flowered sedge	--	--	**List 2**	**S**
Gram	*Chloropyron maritimum ssp. palustre* Pt. Reyes bird's-beak	**SOC**	**SE**	**List 1**	**S**
Gram	*Cyperus acuminatus* short-pointed cyperus	--	--	**List 2**	**S**

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Gram	*Eriophorum chamissonis* russet cotton-grass	--	--	**List 2**	**S**
Gram	*Juncus kelloggii* Kellogg's rush (Kellogg's dwarf rush)	--	--	**List 2**	**S**
Gram	*Myrica gale* sweet bayberry (sweet gale)	--	--	**List 3**	**S**
Gram	*Poa laxiflora* loose-flowered bluegrass	--	**S3**	**List 4**	**S**
Gram	*Poa unilateralis ssp. pachypholis* ocean bluff bluegrass (ocean bluff grass)	--	--	**List 1**	**S**
Gram	*Polystichum californicum* California sword-fern	--	--	**List 2**	**S**
Gram	*Rhynchospora alba* white beakrush	--	--	**List 2**	**S**
Gram	*Schoenoplectus subterminalis* water clubrush	--	--	**List 2**	**S**
Gram	*Scirpus pendulus* drooping bulrush	--	--	**List 2**	**S**
NON-VASCULAR PLANT SPECIES					
Bryophyte	*Andreaea nivalis* Schofield's andreaea moss (snow rock moss)	--	--	**List 3**	**S**
Bryophyte	*Andreaea schofieldiana* moss	--	--	**List 2**	**S**
Bryophyte	*Anomobryum julaceum* anomobryum moss (slender silver moss)	--	--	**List 3**	**S**
Bryophyte	*Anthelia julacea* alpine silverwort (liverwort)	--	--	--	**S**
Bryophyte	*Barbilophozia barbata* liverwort (bearded pawwort)	--	--	**List 2**	**S**
Bryophyte	*Blepharostoma arachnoideum* liverwort	--	**S2**	**List 2**	**S**
Bryophyte	*Bruchia bolanderi* Bolander's pygmy moss (Bolander's candle moss)	--	--	**List 3**	**S**
Bryophyte	*Bryum calobryoides* moss (beautiful bryum)	--	**SC**	**List 2**	**S**
Bryophyte	*Calypogeia sphagnicola* liverwort (bog pouchwort)	--	--	**List 2**	**S**
Bryophyte	*Campylopus schmidii* moss	--	--	**List 4**	**S**
Bryophyte	*Campylopus subulatus* awl-leaved swan-neck moss	--	--	**List 3**	**S**
Bryophyte	*Cephaloziella spinigera* liverwort (spiny threadwort)	--	--	**List 2**	**S**

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Bryophyte	*Cynodontium jenneri* Jenner's dog-tooth moss	--	--	**List 3**	**S**
Bryophyte	*Encalypta brevicollis* extinguisher moss	--	--	**List 2**	**S**
Bryophyte	*Encalypta brevipes* moss (candle snuffer moss)	--	--	**List 2**	**S**
Bryophyte	*Entosthodon fascicularis* moss (banded cord-moss)	--	--	**List 2**	**S**
Bryophyte	*Ephemerum serratum* serrated earth-moss	--	--	**List 2**	**S**
Bryophyte	*Fissidens fontanus* moss (water pocket moss)	--	--	**List 4**	**S**
Bryophyte	*Grimmia anomala* Grimmia dry rock moss	--	--	--	**S**
Bryophyte	*Grimmia lisae* Flett's dry rock moss	--	--	**List 3**	**S**
Bryophyte	*Gymnomitrion concinnatum* liverwort (braided frostwort)	--	--	**List 2**	**S**
Bryophyte	*Haplomitrium hookeri* liverwort	--	--	**List 2**	**S**
Bryophyte	*Herbertus aduncus* ssp. *aduncus* = *Herbertus aduncus* liverwort (bent scissor-leaved liverwort)	--	--	**List 2**	**S**
Bryophyte	*Herbertus dicranus* Pacific scissorleaf liverwort	--	--	**List 2**	**S**
Bryophyte	*Hygrobiella laxifolia* liverwort (lax notchwort)	--	--	**List 3**	**S**
Bryophyte	*Iwatsukiella leucotricha* moss	--	--	**List 2**	**S**
Bryophyte	*Kurzia makinoana* liverwort	--	--	**List 2**	**S**
Bryophyte	*Limbella fryei* moss (Frye's limbella moss)	**SOC**	**SC**	**List 1**	**S**
Bryophyte	*Lophozia gillmanii* Gillman's pawwort (liverwort)	--	--	--	**S**
Bryophyte	*Lophozia laxa* stream ladderwort	--	--	--	**S**
Bryophyte	*Marsupella emarginata var. aquatica* (robust rustwort; liverwort)	--	--	**List 2**	**S**
Bryophyte	*Metzgeria violacea* liverwort	--	--	**List 4**	**S**
Bryophyte	*Micromitrium synoicum* micromitrium moss	--	--	**List 2**	**S**

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Bryophyte	*Physcomitrella patens* physcomitrella moss (spreading-leaved earth moss)	--	--	**List 2**	**S**
Bryophyte	*Physcomitrium immersum* immersed bladder-moss	--	--	**List 3**	**S**
Bryophyte	*Plagiochila semidecurrens* var. *alaskana* liverwort	--	--	--	**S**
Bryophyte	*Plagiotheciumcavifolium* moss (round silk moss)	--	--	**List 3**	**S**
Bryophyte	*Plagiotheciumpiliferum* moss (hair silk moss)	--	**S3**	**List 3**	--
Bryophyte	*Pohlia bolanderi* Bolander's thread-moss (Bolander's pohlia moss)	--	--	**List 3**	**S**
Bryophyte	*Pohlia ludwigii* Ludwig's thread-moss (Ludwig's nodding moss)	--	--	**List 3**	**S**
Bryophyte	*Polytrichastrum sexangulare* var. *sexangulare* northern haircap moss	--	--	**List 3**	**S**
Bryophyte	*Polytrichum strictum* moss (hummock haircap moss)	--	--	**List 2**	**S**
Bryophyte	*Porella vernicosa* ssp. *fauriei* Pacific scalemoss (liverwort)	--	--	--	**S**
Bryophyte	*Preissia quadrata* blister ribbon (narrow mushroom-headed liverwort)	--	--	**List 2**	**S**
Bryophyte	*Racomitrium brevipes* moss	--	--	**List 3**	--
Bryophyte	*Racomitrium ryszardii* moss	--	--	**List 3**	**S**
Bryophyte	*Radula brunnea* brown flatwort (liverwort)	--	--	**List 2**	**S**
Bryophyte	*Rhytidiadelphus subpinnatus* moss (subpinnate gooseneck moss)	--	--	**List 3**	**S**
Bryophyte	*Rhytidium rugosum* crumpled-leaf moss (golden glade-moss)	--	--	**List 2**	**S**
Bryophyte	*Rosulabryumgemmascens* moss	--	--	**List 3**	**S**
Bryophyte	*Scapania gymnostomophila* liverwort (narrow-leaved earwort)	--	**SC**	**List 2**	**S**
Bryophyte	*Schistostega pennata* schistostega moss	--	--	--	**S, S&M-A**
Bryophyte	*Scouleria marginata* moss (margined streamside moss)	--	--	**List 3**	**S**

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Bryophyte	*Sphaerocarpos hians* liverwort	--	**ST**	**List 1**	**S**
Bryophyte	*Sphagnum oregonense* moss	--	--	**List 3**	**S**
Bryophyte	*Tetraphis geniculata* moss (geniculate four-tooth moss)	--	--	**List 2**	**S, S&M-A**
Bryophyte	*Tetraplodon mnioides* moss (entire-leaved nitrogen moss)	--	**S3**	**List 3**	--
Bryophyte	*Thamnobryum neckeroides* moss	--	--	**List 3**	**S**
Bryophyte	*Tortella fragilis* moss (fragile twisted moss)	--	--	**List 3**	**S**
Bryophyte	*Trichostomum tenuirostre* var. *tenuirostre* moss	--	--	**List 3**	**S**
Bryophyte	*Triquetrella californica* three-ranked knob moss (California triquetrella moss)	--	**ST**	**List 1**	**S**
Bryophyte	*Tritomaria quinquedentata* liverwort (large notchwort)	--	--	**List 2**	**S**
Fungus	*Acanthophysium farlowii = Aleurodiscus farlowii*	--	--	**List 3**	**S**
Fungus	*Albatrellus avellaneus*	--	--	**List 1**	**S**
Fungus	*Albatrellus caeruleoporus = Neoalbatrellus caeruleoporus*	--	--	**List 3**	**S**
Fungus	*Albatrellus dispansus*	--	--	**List 3**	**S**
Fungus	*Albatrellus skamanius*	--	--	**List 3**	**S**
Fungus	*Amanita novinupta*	--	--	**List 2**	**S**
Fungus	*Balsamia nigrans*	--	**S2**	**List 3**	**S**
Fungus	*Boletus regius*	--	**S2**	**List 3**	**S**
Fungus	*Brauniellula albipes*	--	--	**List 3**	**S**
Fungus	*Bridgeoporus nobilissimus* noble polypore	--	--	**List 3**	**S&M-A**
Fungus	*Chamonixia caespitosa*	--	--	**List 2**	**S**
Fungus	*Choiromyces alveolatus*	--	--	**List 3**	**S**
Fungus	*Chrysomphalina grossula*	--	--	**List 3**	**S**
Fungus	*Clavariadelphus subfastigiatus*	--	**S2**	**List 3**	**S**
Fungus	*Clavulina castaneopes var. lignicola*	--	--	**List 3**	**S**
Fungus	*Clitocybe senilis*	--	**S3**	**List 3**	--
Fungus	*Clitocybe subditopoda*	--	--	**List 3**	**S**
Fungus	*Conocybe subnuda*	--	--	**List 3**	**S**
Fungus	*Cortinarius barlowensis*	--	--	**List 2**	**S**
Fungus	*Cortinarius cyanites*	--	**S2**	**List 2**	**S**
Fungus	*Cortinarius depauperatus*	--	--	**List 3**	**S**

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Fungus	*Cortinarius pavelekii*	--	--	List 1	S
Fungus	*Russula idahoense (Cystangium idahoensis or Martellia idahoensis)*	--	S1	List 1	S
Fungus	*Dendrocollybia racemosa*	--	--	--	S
Fungus	*Elaphomyces asperulus*	--	--	List 3	S
Fungus	*Elaphomyces decipiens*	--	S1	List 3	S
Fungus	*Elaphomyces reticulatus*	--	--	List 3	S
Fungus	*Elaphomyces subviscidus*	--	S1S2	List 3	S
Fungus	*Endogone oregonensis*	--	S2	List 3	S
Fungus	*Fevansia aurantiaca*	--	--	List 3	S
Fungus	*Gastroboletus imbellus*	--	--	List 1-X	S
Fungus	*Gastroboletus ruber*	--	S3	List 4	S
Fungus	*Lactariu s silviae (Gastrolactarius camphoratus)*	--	--	--	S
Fungus	*Gastrolactarius crassus*	--	--	--	S
Fungus	*Genea compacta*	--	--	List 3	S
Fungus	*Glomus pubescens*	--	--	List 3	S
Fungus	*Gymnomyces monosporus*	--	S1	List 3	--
Fungus	*Gymnomyces nondistincta*	--	--	List 1	S
Fungus	*Hebeloma occidentale*	--	--	List 1-X	S
Fungus	*Hydnotrya inordinata*	--	--	List 3	S
Fungus	*Hydropus marginellus*	--	--	List 2	S
Fungus	*Hygrophorus albicarneus*	--	--	List 3	S
Fungus	*Hygrophorus albiflavus*	--	--	List 2-ex	S
Fungus	*Leptonia caesiocincta*	--	--	List 3	S
Fungus	*Leptonia occidentalis var. occidentalis*	--	S1	List 1	--
Fungus	*Leptonia subeuchroa*	--	--	List 2-ex	S
Fungus	*Leptonia violaceonigra*	--	--	List 3	S
Fungus	*Leucogaster microsporus*	--	S3	List 4	--
Fungus	*Leucogaster odoratus*	--	--	List 3	S
Fungus	*Lyophyllum acutipes*	--	--	List 1-X	S
Fungus	*Lyophyllum furfurellum*	--	--	List 2-ex	S
Fungus	*Lyophyllum lubricum*	--	--	List 1-X	S
Fungus	*Lyophyllum pallidum*	--	--	List 1-X	S
Fungus	*Lyophyllum solidipes*	--	--	List 1-X	S
Fungus	*Macowanites chlorinosmus*	--	--	List 3	S
Fungus	*Martellia medlockii*	--	--	List 3	S
Fungus	*Melanogaster natsii*	--	--	List 3	S
Fungus	*Mycena gaultheri*	--	--	List 3	S
Fungus	*Mycena quinaultensis*	--	--	List 3	S
Fungus	*Mycena tenax*	--	S2S3	List 3	S

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Fungus	*Mythicomyces corneipes*	--	--	List 2	S
Fungus	*Octaviania macrospora*	--	--	List 1-X	S
Fungus	*Omphalina isabellina*	--	--	List 3	S
Fungus	*Otidea smithii*	--	S2	List 2	S
Fungus	*Phaeocollybia dissiliens*	--	S3	List 1	
Fungus	*Phaeocollybia gregaria*	--	S1S2	List 1	S
Fungus	*Phaeocollybia lilacifolia*	--	--	List 3	S
Fungus	*Phaeocollybia oregonensis*	--	--	List 1	S
Fungus	*Phaeocollybia pseudofestiva*	--	S3	List 3	S
Fungus	*Phaeocollybia radicata*	--	S3	List 3	S
Fungus	*Phaeocollybia sipei*	--	--	--	S
Fungus	*Phaeocollybia spadicea*	--	--	--	S
Fungus	*Podostroma alutaceum = Trichoderma alutaceum*	--	S2	List 3	S
Fungus	*Pseudaleuria quinaultiana*	--	SE	List 3	S
Fungus	*Pseudorhizina californica = Gyromitra californica*	--	SC	List 4	S
Fungus	*Radiigera bushnellii*	--	--	List 3	S
Fungus	*Ramaria abietina = Phaeoclavulina abietina* green-straining coral mushroom	--	S2	List 2	S
Fungus	*Ramaria amyloidea*	--	--	List 3	S
Fungus	*Ramaria aurantiisiccescens*		S3	List 4	--
Fungus	*Ramaria conjunctipes* var. *sparsiramosa*	--	--	List 4	S
Fungus	*Ramaria gelatiniaurantia*	--	S2	List 3	S
Fungus	*Ramaria gracilis*	--	S2	List 2	S
Fungus	*Ramaria largentii*	--	S2	List 3	S
Fungus	*Ramaria maculatipes*	--	S2	List 3	S
Fungus	*Ramaria rainierensis*	--	--	List 1	S
Fungus	*Ramaria rubella forma blanda*	--	SE	List 2	S
Fungus	*Ramaria rubribrunnescens*	--	SE/S2	List 3	S
Fungus	*Ramaria suecica*	--	S1S3	List 3	S
Fungus	*Rhizopogon abietis*	--	--	--	S
Fungus	*Rhizopogon alexsmithii*	--	SC	List 1	S
Fungus	*Rhizopogon atroviolaceus*	--	--	--	S
Fungus	*Rhizopogon brunneiniger*	--	SE/S2	List 3	S
Fungus	*Rhizopogon clavitisporus*	--	--	List 2	S
Fungus	*Rhizopogon ellipsosporus*	--	SC	List 1	S
Fungus	*Rhizopogon exiguus*	--	SE/S1S2	List 2	S
Fungus	*Rhizopogon inquinatus*	--	--	List 1	S
Fungus	*Rhizopogon masoniae*	--	--	List 1	S

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Fungus	*Rhizopogon rogersii*	--	--	List 3	S
Fungus	*Rhizopogon semireticulatus*	--	--	List 3	S
Fungus	*Rhizopogon subcinnamomeus*	--	SE/S1	List 3	S
Fungus	*Rhizopogon subradicatus*	--	SC	List 2-ex	S
Fungus	*Rickenella swartzii*	--	--	List 3	S
Fungus	*Sarcodon fuscoindicus* violet hedgehog	--	--	List 2	S
Fungus	*Squamanita paradoxa*	--	--	List 2-ex	S
Fungus	*Stagnicola perplexa*	--	SC	List 2	S
Fungus	*Stephensia bynumii*	--	--	List 3	S
Fungus	*Stropharia albivelata*	--	S3	List 3	S
Fungus	*Tricholomopsis fulvescens*	--	--	List 1-x	S
Fungus	*Tuber asa*	--	SC/S1	List 1	S
Fungus	*Tuber pacificum*	--	ST	List 1	S
Fungus	*Urnula craterium*	--	SC	List 2-ex	S
Fungus	*Vibrissea truncorum*	--	--	List 3	S
Lichen	*Anaptychia crinalis* hanging fringe lichen	--	--	List 3	S
Lichen	*Bryoria bicolor* electrified horsehair lichen	--	--	List 3	S
Lichen	*Bryoria pseudocapillaris (formerly B. spiralifera)* horse hair lichen	--	--	--	S
Lichen	*Bryoria subcana*	--	--	--	S
Lichen	*Buellia oidalea* disc lichen	--	--	List 3	S
Lichen	*Calicium abietinum*	--	S3	List 4	--
Lichen	*Calicium adspersum*	--	S1	List 2	S
Lichen	*Calicium quercinum*	--	--	List 3	S
Lichen	*Caloplaca stantonii* = Gyalolechia stantonii Stanton's orange lichen	--	--	List 3	S
Lichen	*Cladidium bolanderi*	--	--	List 2	S
Lichen	*Ephebe solida* Rockshag lichen	--	--	List 3	S
Lichen	*Heterodermia japonica* Japanese centipede lichen	--	--	List 2	S
Lichen	*Heterodermia leucomelos* chin strap lichen	--	--	--	S
Lichen	*Heterodermia sitchensis* seaside centipede lichen	--	--	List 2	S
Lichen	*Hypogymnia duplicata*	--	--	--	S, S&M-C

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Lichen	*Hypogymnia pulverata* tube lichen	--	--	**List 2**	**S**
Lichen	*Hypogymnia subphysodes* Austral bone lichen	--	--	**List 2**	**S**
Lichen	*Hypotrachyna riparia* riparian loop lichen	--	--	**List 1**	**S**
Lichen	*Lecanora caesiorubella* ssp. *merrillii* Merrill's rim lichen	--	--	**List 3**	**S**
Lichen	*Leioderma sorediatum* Treepelt lichen	--	--	**List 2**	**S**
Lichen	*Leptogium burnetiae* Burnet's skin lichen	--	--	--	**S**
Lichen	*Leptogium cyanescens* blue jellyskin	--	--	**List 2**	**S**
Lichen	*Leptogium platynum* skin lichen (batwing vinyl lichen)	--	--	**List 3**	**S**
Lichen	*Lobaria linita* cabbage lung lichen	--	--	**List 2**	**S**
Lichen	*Lobaria linita var. tenuoir*	--	--	--	**S, S&M-A**
Lichen	*Melanelia commixta* intermingled camouflage lichen	--	--	**List 3**	**S**
Lichen	*Microcalicium arenarium* rock broom (sandwort microcalicium lichen)	--	--	**List 2**	**S**
Lichen	*Niebla cephalota* powdery fog lichen	--	--	**List 2**	**S**
Lichen	*Ochrolechia subplicans ssp. subplicans* crabseye lichen	--	--	**List 3**	**S**
Lichen	*Pannaria rubiginella* shingle lichen	--	--	**List 2**	**S**
Lichen	*Pannaria rubiginosa* brown-eyed shingle lichen	--	--	**List 2**	**S**
Lichen	*Pilophorus nigricaulis* charred matchstick lichen	--	--	**List 2**	**S**
Lichen	*Pseudocyphellaria hawaiiensis* gilded specklebelly lichen	--	**S3**	**List 3**	--
Lichen	*Pseudocyphellaria mallota*	--	**S3**	**List 2**	**S**
Lichen	*Pseudocyphellaria rainierensis* oldgrowth specklebelly lichen	--	--	**List 4**	**S, S&M-A**
Lichen	*Ramalina pollinaria = Ramalina labiosorediata* powdery twig lichen	--	--	**List 2**	**S**
Lichen	*Schaereria dolodes* tricky lecidea lichen	--	**S2**	**List 3**	**S**
Lichen	*Sclerophora peronella*	--	--	--	**S**

Life Form	*Scientific* and Common Name	Status			
		Federal	State	ORBIC	SNF/BLM
Lichen	*Sigridea californica* California dirina lichen	--	--	**List 3**	**S**
Lichen	*Stereocaulon spathuliferum* chalkfoam lichen (snow lichen)	--	--	**List 2**	**S**
Lichen	*Sticta arctica* Arctic moon lichen	--	--	**List 2**	**S**
Lichen	*Sticta weigelii*	--	**ST**	**List 4**	**S**
Lichen	*Teloschistes flavicans* golden-hair lichen	--	--	**List 2**	**S**
Lichen	*Thelomma mammosum* rock nipple lichen (doll's eye)	--	--	**List 3**	**S**
Lichen	*Tholurna dissimilis* arboreal urn lichen	--	--	**List 2**	**S**
Lichen	*Umbilicaria rigida* rigid navel lichen (roughened rocktripe lichen)	--	**ST**	**List 3**	**S**
Lichen	*Usnea lambii* zebra beard (banded beard lichen)	--	--	**List 3**	**S**
Lichen	*Usnea nidulans* nested beard lichen	--	--	**List 2**	**S**

Appendix B. Plant and Fungi Species Observed during Vegetation Surveys

The following vascular and non-vascular plant species were found at Marys Peak (MP) and West Point Spur (WPS) during field surveys in 2017 and 2018, respectively. Species were observed on land owned by the U.S. Forest Service (USFS), the Bureau of Land Management (BLM), and/or the City of Corvallis (City).

Legend:

- Species found at both MP and WPS
- Species found at MP site only
- Species found at WPS site only

Table B-1. Plant and Fungi Species Observed during Surveys

Life form	Family	Scientific and Common name (N-native; NN-non-native)	MP Fenced Area	MP Access Road	MP Tree Removal	CPI Site	WPS Access Road	Marys Peak Land Owner-ship	WPS Land Owner-ship
VASCULAR PLANT SPECIES									
Forb	Apiaceae	*Lomatium martindalei-N* Cascade desert parsley	X	X		X	X	USFS	USFS/City
Forb	Apiaceae	*Lomatium utriculatum-N* common lomatium	X	X				USFS	
Forb	Apiaceae	*Osmorhiza purpurea-N* purple sweetroot		X		X	X	USFS	USFS/City
Forb	Apocynaceae	*Apocynum androsaemifolium-N* spreading dogbane	X	X				USFS	
Forb	Aristolochiaceae	*Asarum caudatum-N* British Columbia wildginger					X		USFS
Forb	Asteraceae	*Achillea millefolium-N* common yarrow	X	X		X	X	USFS	USFS/City
Forb	Asteraceae	*Adenocaulon bicolor-N* American trailplant				X	X		City
Forb	Asteraceae	*Agoseris grandiflora-N* bigflower agoseris				X	X		USFS/City
Forb	Asteraceae	*Anaphalis margaritacea-N* western pearly everlasting	X	X		X	X	USFS	USFS/City
Forb	Asteraceae	*Bellis perennis-NN* English lawndaisy	X	X				USFS	
Forb	Asteraceae	*Cirsium edule-N* edible thistle				X			City
Forb	Asteraceae	*Hieracium albiflorum-N* white hawkweed	X	X				USFS	
Forb	Asteraceae	*Leucanthemum vulgare-NN* oxeye daisy	X	X		X	X	USFS	USFS/City
Forb	Asteraceae	*Matricaria discoidea-NN* disc mayweed	X	X			X	USFS	City

Life form	Family	Scientific and Common name (N-native; NN-non-native)	MP Fenced Area	MP Access Road	MP Tree Removal	CPI Site	WPS Access Road	Marys Peak Land Owner-ship	WPS Land Owner-ship
Forb	Asteraceae	*Mycelis muralis-NN* wall-lettuce					X		USFS/City
Forb	Asteraceae	*Senecio jacobaea-NN* stinking willie		X			X	USFS	USFS/City
Forb	Asteraceae	*Senecio triangularis-N* arrowleaf ragwort	X	X		X	X	USFS	USFS/City
Forb	Asteraceae	*Taraxacum officinale-NN* common dandelion	X	X				USFS	
Forb	Berberidaceae	*Achlys triphylla-N* vanilla leaf		X	X	X	X	USFS/BLM	USFS/City
Forb	Berberidaceae	*Berberis nervosa-N* Cascade barberry		X		X	X	USFS	City
Forb	Berberidaceae	*Vancouveria hexandra-N* white insideout flower				X	X		City
Forb	Blechnaceae	*Blechnum spicant-N* deer fern		X	X			USFS/BLM	
Forb	Boraginaceae	*Myosotis arvensis-NN* field forget-me-not	X					USFS	
Forb	Brassicaceae	*Draba verna-NN* spring draba	X	X				USFS	
Forb	Brassicaceae	*Erysimum capitatum* var. *capitatum-N* sanddune wallflower		X				USFS	
Forb	Brassicaceae	*Turritis glabra-N* tower rockcress	X	X				USFS	
Forb	Caryophyllaceae	*Cerastium arvense* ssp. *strictum-NN* field chickweed	X	X				USFS	
Forb	Caryophyllaceae	*Dianthus armeria* ssp. *armeria-NN* Deptford pink	X					USFS	
Forb	Caryophyllaceae	*Silene douglasii-N* Douglas's catchfly	X	X				USFS	
Forb	Caryophyllaceae	*Stellaria crispa-N* curled starwort		X				USFS	
Forb	Clusiaceae	*Hypericum perforatum-NN* common St. Johnswort	X	X		X	X	USFS	USFS/City
Forb	Cucurbitaceae	*Marah oreganus-N* wild cucumber					X		USFS
Forb	Dennstaedtiaceae	*Pteridium aquilinum-N* western brackenfern		X	X	X	X	USFS/BLM	USFS/City
Forb	Dryopteridaceae	*Polystichum munitum-N* western swordfern		X		X	X	USFS	USFS/City
Forb	Fabaceae	*Lotus parviflorus-N* smallflower bird's-foot trefoil					X		City

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Forb	Fabaceae	*Lupinus polyphyllus-N* bigleaf lupine					X		USFS
Forb	Fabaceae	*Lupinus rivularis-N* riverbank lupine		X	X	X	X	USFS/BLM	USFS/City
Forb	Fabaceae	*Lupinus sellulus* ssp. *lobbii* var. *sellulus-N* Donner Lake lupine	X	X				USFS	
Forb	Fabaceae	*Trifolium repens-NN* white clover	X	X		X	X	USFS	USFS/City
Forb	Fabaceae	*Vicia americana* var. *americana-N* American vetch		X				USFS	
Forb	Fabaceae	*Vicia sativa-NN* garden vetch				X	X		City
Forb	Fumariaceae	*Dicentra formosa-N* Pacific bleeding heart				X	X		USFS/City
Forb	Hydrophyllaceae	*Phacelia heterophylla-N* varileaf phacelia					X		USFS
Forb	Iridaceae	*Iris tenax-N* toughleaf iris				X	X		USFS/City
Forb	Liliaceae	*Allium crenulatum-N* Olympic onion		X				USFS	
Forb	Liliaceae	*Calochortus tolmiei-N* Tolmi star-tulip				X	X		City
Forb	Liliaceae	*Clintonia uniflora-N* bride's bonnet			X	X		BLM	City
Forb	Liliaceae	*Lilium columbianum-N* Columbia lily	X	X		X	X	USFS	City
Forb	Liliaceae	*Maianthemum racemosum-N* feathery false lily of the valley				X	X		USFS/City
Forb	Liliaceae	*Maianthemum stellatum-N* starry false lily of the valley			X	X	X	BLM	USFS/City
Forb	Liliaceae	*Prosartes smithii-N* largeflower fairybells				X			City
Forb	Liliaceae	*Streptopus amplexifolius-N* claspleaf twistedstalk				X			City
Forb	Liliaceae	*Trillium ovatum-N* Pacific trillium				X	X		USFS/City
Forb	Onagraceae	*Chamerion angustifolium* ssp. *angustifolium–N;* fireweed		X		X	X	USFS	USFS/City
Forb	Orchidaceae	*Listera caurina-N* northwestern twayblade		X			X	USFS	USFS/City

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Forb	Oxalidaceae	*Oxalis trilliifolia-N* threeleaf woodsorrel				X			City
Forb	Plantaginaceae	*Plantago lanceolata-NN* narrowleaf plantain	X	X		X	X	USFS	USFS/City
Forb	Plantaginaceae	*Plantago major-NN* common plantain		X			X	USFS	City
Forb	Polemoniaceae	*Microsteris gracilis-N* slender phlox				X	X		USFS/City
Forb	Polemoniaceae	*Phlox diffusa-N* spreading phlox	X	X				USFS	
Forb	Polygonaceae	*Rumex acetosella-NN* common sheep sorrel	X	X	X	X	X	USFS/BLM	USFS/City
Forb	Portulacaceae	*Claytonia sibirica-N* Siberian springbeauty		X		X	X	USFS	USFS/City
Forb	Primulaceae	*Trientalis latifolia-N* broadleaf starflower				X			City
Forb	Ranunculaceae	*Anemone deltoidea-N* Columbian windflower				X			City
Forb	Ranunculaceae	*Anemone lyallii-N* Little Mountain thimbleweed		X	X			USFS/BLM	
Forb	Ranunculaceae	*Anemone oregana* var. *oregana-N* blue windflower			X			BLM	
Forb	Ranunculaceae	*Aquilegia formosa-N* western columbine					X		USFS
Forb	Ranunculaceae	*Coptis laciniata-N* Oregon goldenthread					X		USFS
Forb	Ranunculaceae	*Delphinium menziesii-N* Menzies' larkspur	X	X				USFS	
Forb	Ranunculaceae	*Delphinium nuttallii-N* upland larkspur				X	X		City
Forb	Ranunculaceae	*Ranunculus uncinatus-N* woodland buttercup	X	X				USFS	
Forb	Rosaceae	*Fragaria vesca* ssp. *bracteata-N* woodland strawberry	X					USFS	
Forb	Rosaceae	*Fragaria virginiana-N* Virginia strawberry		X		X	X	USFS	USFS/City
Forb	Rosaceae	*Rubus parviflorus-N* thimbleberry					X		USFS/City
Forb	Rubiaceae	*Galium trifidum-N* threepetal bedstraw					X		City
Forb	Rubiaceae	*Galium triflorum-N* fragrant bedstraw				X	X		USFS/City

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Forb	Saxifragaceae	*Heuchera chlorantha-N* tall alumroot					X		USFS
Forb	Scrophulariaceae	*Castilleja hispida-N* harsh Indian paintbrush	X	X			X	USFS	USFS
Forb	Scrophulariaceae	*Collinsia parviflora-N* blue eyed Mary	X	X			X	USFS	USFS
Forb	Scrophulariaceae	*Digitalis purpurea-NN* purple foxglove				X	X		USFS/City
Forb	Scrophulariaceae	*Scrophularia oregana-N* Oregon figwort					X		USFS/City
Forb	Scrophulariaceae	*Penstemon cardwellii-N* Cardwell's beardtongue	X	X	X	X	X	USFS/BLM	USFS/City
Forb	Violaceae	*Viola adunca-N* dog violet		X	X	X	X	USFS/BLM	City
Forb	Violaceae	*Viola glabella-N* pioneer violet	X	X	X	X	X	USFS/BLM	USFS/City
Gram	Cyperaceae	*Carex aquatilis* var. *dives-N* water sedge		X				USFS	
Gram	Cyperaceae	*Carex californica-N* California sedge		X		X	X	USFS	USFS/City
Gram	Cyperaceae	*Carex fracta-N* fragile sheath sedge	X	X	X			USFS/BLM	
Gram	Cyperaceae	*Carex hoodia-N* Hood's sedge				X			City
Gram	Cyperaceae	*Carex rossii-N* Ross' sedge	X	X	X			USFS/BLM	
Gram	Juncaceae	*Luzula comosa ssp comosa-N* Pacific woodrush				X	X		USFS/City
Gram	Juncaceae	*Luzula parviflor-N* smallflowered woodrush				X			City
Gram	Poaceae	*Agrostis exarata-N* spike bentgrass				X	X		USFS/City
Gram	Poaceae	*Agrostis pallens-N* seashore bentgrass	X	X				USFS	
Gram	Poaceae	*Aira caryophyllea-NN* silver hairgrass	X	X			X	USFS	USFS/City
Gram	Poaceae	*Bromus sitchensis-N* Alaska brome	X	X		X	X	USFS	USFS/City
Gram	Poaceae	*Bromus inermis-NN* smooth brome	X					USFS	
Gram	Poaceae	*Bromus* spp. bromus species				X			City

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Gram	Poaceae	*Cynosurus echinatus-NN* bristly dogstail grass	X	X			X	USFS	City
Gram	Poaceae	*Dactylis glomerata-N* orchardgrass				X			City
Gram	Poaceae	*Danthonia californica-N* California oatgrass		X			X	USFS	City
Gram	Poaceae	*Elymus glaucus* ssp. *glaucus-N* blue wildrye		X			X	USFS	City
Gram	Poaceae	*Festuca idahoensis-N* Idaho fescue				X	X		USFS/City
Gram	Poaceae	*Festuca idahoensis* ssp. *Roemeri-N* Roemer's fescue	X	X				USFS	
Gram	Poaceae	*Festuca rubra* ssp. *commutata-N,NN* red fescue	X			X	X	USFS	City
Gram	Poaceae	*Lolium perenne ssp perenne-NN* perennial ryegrass					X		City
Gram	Poaceae	*Poa annua-NN* annual bluegrass	X					USFS	
Gram	Poaceae	*Poa pratensis-NN* Kentucky bluegrass	X	X		X	X	USFS	USFS/City
Gram	Poaceae	*Poa secunda-N* Sandberg bluegrass					X		City
Shrub	Aceraceae	*Acer circinatum-N* vine maple		X			X	USFS	USFS/City
Shrub	Berberidaceae	*Mahonia aquifolium-N* hollyleaved barberry					X		USFS
Shrub	Betulaceae	*Corylus cornuta-N* beaked hazelnut					X		USFS
Shrub	Celastraceae	*Paxistima myrsinites-N* Oregon boxwood				X			City
Shrub	Ericaceae	*Vaccinium parvifolium-N* red huckleberry				X	X		USFS/City
Shrub	Fagaceae	*Chrysolepis chrysophylla-N* giant chinquapin				X			City
Shrub	Grossulariaceae	*Ribes lacustre-N* prickly currant				X			City
Shrub	Grossulariaceae	*Ribes sanguineum-N* redflower current					X		City
Shrub	Rosaceae	*Holodiscus discolor-N* oceanspray	X	X		X	X	USFS	USFS/City
Shrub	Rosaceae	*Prunus emarginata-N* bitter cherry					X		City

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Shrub	Rosaceae	*Rosa gymnocarpa-N* dwarf rose				X	X		USFS/City
Shrub	Rosaceae	*Rubus ursinus-N* California blackberry		X		X	X	USFS	USFS/City
Tree	Aceraceae	Acer macrophyllum-N bigleaf maple					X		USFS
Tree	Betulaceae	*Alnus rubra-N* red alder					X		USFS
Tree	Pinaceae	*Abies amabilis-N* Pacific silver fir				X			City
Tree	Pinaceae	*Abies grandis*-N grand fir		X	X	X	X	USFS/	USFS/City
Tree	Pinaceae	*Abies procera*-N noble fir		X	X	X	X	USFS/BLM	USFS/City
Tree	Pinaceae	*Pseudotsuga menziesii*-N Douglas-fir				X	X		USFS/City
Tree	Pinaceae	*Tsuga heterophylla*-N western hemlock				X	X		USFS/City
Tree	Rosaceae	*Malus* spp.-NN commercial apple species					X		USFS
NON-VASCULAR PLANT SPECIES									
Bryophyte	Andreaeaceae	*Andreaea rothii-N* andreaea moss	X	X				USFS	
Bryophyte	Aneuraceae	*Riccardia latifrons-N*				X			City
Bryophyte	Brachytheciaceae	*Brachythecium frigidum*-N cold brachythecium moss				X			City
Bryophyte	Brachytheciaceae	*Eurhynchium oreganum-N* Oregon eurhynchium moss				X	X		USFS/City
Bryophyte	Brachytheciaceae	*Isothecium myosuroides-N* isothecium moss			X	X	X	BLM	USFS/City
Bryophyte	Cephaloziellaceae	*Cephalozia bicuspidate*-N cephalozia liverwort				X			City
Bryophyte	Cephaloziellaceae	*Cephaloziella divaricate*-N cephalozia liverwort	X	X			X	USFS	USFS/City
Bryophyte	Cephaloziellaceae	*Cephalozia lacinulata*-N cephalozia liverwort				X			City
Bryophyte	Dicranaceae	*Dicranum fuscescens*-N dicranum moss			X		X	BLM	USFS
Bryophyte	Dicranaceae	*Dicranum howellii*-N Howell's dicranum moss				X	X		USFS/City
Bryophyte	Ditrichaceae	*Ceratodon purpureus*-N ceratodon moss	X	X	X	X	X	USFS/BLM	USFS/City

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Bryophyte	Grimmiaceae	*Grimmia anodon*-N grimmia dry rock moss		X				USFS	
Bryophyte	Grimmiaceae	*Grimmia longirostris*-N grimmia dry rock moss		X				USFS	
Bryophyte	Grimmiaceae	*Grimmia leibergii*-N grimmia dry rock moss		X				USFS	
Bryophyte	Grimmiaceae	*Grimmia* sp-N grimmia dry rock moss		X		X	X	USFS	USFS/City
Bryophyte	Grimmiaceae	*Grimmia trichophylla-N* grimmia dry rock moss				X			City
Bryophyte	Grimmiaceae	*Racomitrium affine*-N racomitrium moss	X	X	X			USFS/BLM	
Bryophyte	Grimmiaceae	*Racomitrium elongatum*-N elongate racomitrium moss					X		USFS/City
Bryophyte	Grimmiaceae	*Racomitrium heterostichum*-N racomitrium moss	X	X				USFS	
Bryophyte	Grimmiaceae	*Racomitrium varium*-N racomitrium moss	X	X	X	X	X	USFS/BLM	USFS/City
Bryophyte	Hylocomiaceae	*Rhytidiadelphus triquetrus*-N rough goose neck moss				X	X		USFS/City
Bryophyte	Hypnaceae	*Hypnum circinale*-N hypnum moss			X	X	X	BLM	USFS/City
Bryophyte	Hypnaceae	*Pseudotaxiphyllum elegans*-N elegant pseudotaxiphyllum moss				X	X		USFS/City
Bryophyte	Jubulaceae	*Frullania sp-N*					X		USFS
Bryophyte	Leskeaceae	*Claopodium bolanderi*-N Bolander's claopodium moss			X	X	X	BLM	USFS/City
Bryophyte	Leucodontaceae	*Antitrichia curtipendula*-N antitrichia moss				X	X		USFS/City
Bryophyte	Mniaceae	*Mnium spinulosum*-N largetooth calcareous moss				X			City
Bryophyte	Mniaceae	*Plagiomnium insigne*-N plagiomnium moss				X			City
Bryophyte	Mniaceae	*Rhizomnium nudum*-N naked rhizomnium moss				X			City
Bryophyte	Neckeraceae	*Metaneckera menziesii*-N Menzies' metaneckera moss				X	X		USFS/City
Bryophyte	Neckeraceae	*Neckera douglasii*-N Douglas' neckera moss				X	X		USFS/City
Bryophyte	Orthotrichaceae	*Orthotrichum speciosum*-N lanceolateleaf rock moss				X			City

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Bryophyte	Orthotrichaceae	*Ulota megalospora*-N largespore ulota moss			X		X	BLM	USFS
Bryophyte	Polytrichaceae	*Polytrichastrum alpinum-N* alpine polytrichastrum moss				X			City
Bryophyte	Polytrichaceae	*Polytrichum juniperinum*-N juniper polytrichum moss				X	X		USFS/City
Bryophyte	Polytrichaceae	*Polytrichum piliferum-N* polytrichum moss		X				USFS	
Bryophyte	Porellaceae	*Porella navicularis*-N porella liverwort			X	X	X	BLM	USFS/City
Bryophyte	Pottiaceae	*Tortula* sp-N tortula moss	X	X				USFS	
Bryophyte	Pottiaceae	*Tortula papillosissima*-N tortula moss	X	X				USFS	
Bryophyte	Ptilidiaceae	*Ptilidium californicum*-N ptilidium liverwort			X			BLM	
Bryophyte	Radulaceae	*Radula bolanderi*-N radula liverwort			X		X	BLM	USFS
Bryophyte	Scapaniaceae	*Douinia ovata-N*				X	X		USFS/City
Bryophyte	Scapaniaceae	*Scapania bolanderi*-N scapania liverwort			X	X	X	BLM	USFS/City
Fungus	Agaricaceae	*Cyathus stercoreus-N*					X		USFS/City
Fungus	Amanitaceae	*Amanita constricta-N*				X			City
Fungus	Amanitaceae	*Amanita gemmate-N*				X			City
Fungus	Amanitaceae	*Amanita silvicola-N*					X		USFS/City
Fungus	Boletaceae	*Boletus chrysenteron-N*					X		USFS/City
Fungus	Exidiaceae	*Phlogiotis helvelloides-N*					X		City
Fungus	Fomitopsidaceae	*Fomitopsis ochracea-N*				X			City
Fungus	Fomitopsidaceae	*Fomitopsis pinicola-N*				X			City
Fungus	Fomitopsidaceae	*Ischnoderma benzoinum-N*				X			City
Fungus	Hygrophoraceae	*Hygrocybe acutoconica-N*				X			City
Fungus	Hygrophoraceae	*Hygrocybe punicea-N*					X		USFS
Fungus	Inocybaceae	*Crepidotus applanatus-N*				X			City
Fungus	Inocybaceae	*Inocybe pyriodora-N*					X		USFS
Fungus	Mycenaceae	*Mycena flavoalba-N*				X			City
Fungus	Pluteaceae	*Pluteus cervinus-N*				X			City
Fungus	Polyporaceae	*Cryptoporus volvatus-N*				X			City

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Fungus	Polyporaceae	*Poria incrassate-N*					X		City
Fungus	Russulaceae	*Lactarius rubrilacteus-N*					X		USFS
Fungus	Russulaceae	*Russula cremoricolor-N*					X		USFS
Fungus	Russulaceae	*Russula placita-N*					X		USFS
Fungus	Russulaceae	*Russula rosea-N*					X		USFS
Fungus	Russulaceae	*Russula xerampelina-N*					X		USFS
Fungus	Strophariaceae	*Hebeloma crustuliniforme-N*				X	X		USFS/City
Fungus	Strophariaceae	*Naematoloma capnoides-N*				X			City
Fungus	Tremellaceae	*Tremella mesenterica-N*					X		City
Fungus	Tricholomataceae	*Pleurotus porrigens-N*					X		USFS
Lichen	Alectoriaceae	*Alectoria sarmentos*-N witch's hair lichen			X	X		BLM	City
Lichen	Bacidiaceae	*Japewia tornoensis-N* japewia lichen			X			BLM	
Lichen	Bacidiaceae	*Tephromela* sp-N tephromela lichen				X			City
Lichen	Baeomycetaceae	*Baeomyces rufus-N* cap lichen					X		USFS/City
Lichen	Cladoniaceae	*Cladonia coniocraea-N* cup lichen	X		X			USFS/BLM	
Lichen	Cladoniaceae	*Cladonia fimbriata-N* cup lichen	X	X				USFS	
Lichen	Cladoniaceae	*Cladonia macilenta* var. *bacillaris-N* cup lichen	X	X				USFS	
Lichen	Cladoniaceae	*Cladonia pyxidata-N* cup lichen	X	X		X	X	USFS	USFS/City
Lichen	Cladoniaceae	*Cladonia* sp-N cup lichen	X	X	X	X	X	USFS/BLM	USFS/City
Lichen	Cladoniaceae	*Cladonia transcendens-N* transcend cup lichen			X	X		BLM	City
Lichen	Lecanoraceae	*Lecanora symmicta*-N rim lichen			X	X		BLM	City
Lichen	Lecanoraceae	*Pyrrhospora cinnabarina*-N crust lichen			X			BLM	
Lichen	Lecideaceae	*Bryobilimbia sp*-N				X			City
Lichen	Lecideaceae	*Lecidea* sp-*N* crust lichen		X		X	X	USFS	City
Lichen	Lobariaceae	*Lobaria oregana-N* Oregon lung lichen					X		USFS

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Lichen	Lobariaceae	*Lobaria pulmonaria-N* lung lichen					X		USFS
Lichen	Lobariaceae	*Pseudocyphellaria crocata-N*					X		USFS
Lichen	Lobariaceae	*Pseudocyphellaria anomala-N*					X		USFS
Lichen	Lobariaceae	*Sticta fuliginosa-N* spotted felt lichen					X		USFS
Lichen	Mycoblastaceae	*Mycoblastus sanguinarius*-N Blood lichen				X			City
Lichen	Nephromataceae	*Nephroma parile-N* kidney lichen					X		USFS
Lichen	Pannariaceae	*Fuscopannaria pacifica-N*				X	X		USFS/City
Lichen	Parmeliaceae	*Bryoria capillaris-N* horsehair lichen				X			City
Lichen	Parmeliaceae	*Bryoria pseudofuscescens*-N horsehair lichen			X	X		BLM	City
Lichen	Parmeliaceae	*Hypogymnia enteromorpha*-N tube lichen			X	X	X	BLM	USFS/City
Lichen	Parmeliaceae	*Hypogymnia inactive*-N inactive tube lichen			X	X	X	BLM	USFS/City
Lichen	Parmeliaceae	*Hypogymnia tubulosa-N* tube lichen			X			BLM	
Lichen	Bacidiaceae	*Japewia tornoensis-N* japewia lichen				X			City
Lichen	Parmeliaceae	*Menegazzia terebrata-N* honeycombed lichen					X		USFS/City
Lichen	Parmeliaceae	*Parmeliopsis hyperopta*-N bran lichen			X			BLM	
Lichen	Parmeliaceae	*Platismatia glauca*-N ragged lichen			X		X	BLM	USFS
Lichen	Parmeliaceae	*Platismatia herrei-N* Herre's ragged lichen			X	X	X	BLM	USFS/City
Lichen	Parmeliaceae	*Platismatia lacunose-N* ragged lichen				X	X		USFS/City
Lichen	Parmeliaceae	*Platismatia stenophylla-N* ragged lichen			X			BLM	
Lichen	Parmeliaceae	*Tuckermannopsis chlorophylla-N* greenleaf tuckermannopsis			X			BLM	
Lichen	Parmeliaceae	*Tuckermannopsis orbata-N* Tuckermannopsis lichen			X	X	X	BLM	USFS/City
Lichen	Parmeliaceae	*Usnea filipendula-N* beard lichen			X	X	X	BLM	USFS/City

Life form	Family	Scientific and Common name (N-native; NN-non-native)	MP Fenced Area	MP Access Road	MP Tree Removal	CPI Site	WPS Access Road	Marys Peak Land Owner-ship	WPS Land Owner-ship
Lichen	Parmeliaceae	*Usnea* sp-N beard lichen				X	X		USFS/City
Lichen	Pertusariaceae	*Loxosporopsis corallifera-N*				X	X		USFS/City
Lichen	Pertusariaceae	*Ochrolechia laevigata-N* crabseye lichen			X	X	X	BLM	USFS/City
Lichen	Pertusariaceae	*Ochrolechia oregonensis-N* Oregon crabseye lichen			X	X	X	BLM	USFS/City
Lichen	Parmeliaceae	*Parmelia hygrophila-N* shield lichen				X	X		USFS/City
Lichen	Parmeliaceae	*Parmelia sulcate-N* shield lichen				X	X		USFS/City
Lichen	Peltigeraceae	*Peltigera degenii-N* Degen's felt lichen					X		USFS
Lichen	Peltigeraceae	*Peltigera praetextata-N* felt lichen					X		USFS
Lichen	Pertusariaceae	*Pertusaria ophthalmiza-N* pore lichen				X	X		City
Lichen	Pertusariaceae	*Pertusaria* sp-N. crust lichen			X	X	X	BLM	USFS/City
Lichen	Pertusariaceae	*Pertusaria subambigens-N* pore lichen			X	X	X	BLM	City
Lichen	Pertusariaceae	*Placopsis gelida-N* bullseye lichen		X		X	X	USFS	USFS/City
Lichen	Physciaceae	*Diplotomma penichrum-N* diplotomma lichen			X			BLM	
Lichen	Porpidiaceae	*Porpidia* sp-N porpidia lichen				X			City
Lichen	Sphaerophora-ceae	*Sphaerophorus globosus* var. *gracilis-N* globe ball lichen			X	X	X	BLM	USFS/City
Lichen	Stereocaulaceae	*Pilophorus acicularis-N* nail lichen				X	X		City
Lichen	Stereocaulaceae	*Pilophorus clavatus-N* nail lichen				X			City
Lichen	Stereocaulaceae	*Stereocaulon condensatum-N* condensed snow lichen	X	X				USFS	
Lichen	Teloschistaceae	*Caloplaca holocarpa*-N orange lichen				X			City
Lichen	Teloschistaceae	*Caloplaca* sp-N orange lichen		X				USFS	
Lichen	Umbilicariaceae	*Umbilicaria hyperborean-N* navel lichen		X				USFS	

Appendix C. Special-status Wildlife Species Survey List

The following wildlife special-status species were considered as having the potential to occur at the Marys Peak and West Point Spur study areas and were the focus of wildlife surveys.

The following special-status rankings are used in the following table:

- **Federal ESA (USFWS) designations:**
  - F-E = Federally-listed Endangered Species
  - F-T = Federally-listed Threatened Species
  - F-C = Federal Candidate
  - F-SOC = U.S. Fish and Wildlife Service Species of Concern
  - F-BCC = U.S. Fish and Wildlife Service Bird of Conservation Concern
- **Federal Special-status (USFS[SNF] and/or BLM) designations:**
  - S&M = Survey and Manage Species
  - FS-MIS = U.S. Forest Service Management Indicator Species
  - FS-SEN = U.S. Forest Service Sensitive Species
  - FS-STR = U.S. Forest Service Strategic Species
  - BLM-SEN = Bureau of Land Management Sensitive Species
  - BLM-STR = Bureau of Land Management Strategic Species
- **State: Oregon ESA:**
  - OR-T = Oregon State-listed Threatened Species
  - OR-SC = Oregon State Sensitive-Critical Species
  - OR-SV = Oregon State Sensitive-Vulnerable Species
- **Oregon Biodiversity Information Center (ORBIC)**
  - List 1 = threatened or endangered throughout range
  - List 2 = threatened or endangered in Oregon but secure elsewhere
  - List 3 = review species, taxa for which more information is needed
  - List 4 = watch, taxa of conservation concern but are not currently threatened or endangered
- **Survey and Manage (S&M) Categories**
  - Category A = Rare, Pre-disturbance surveys are practical
  - Category D = Uncommon, Pre-disturbance surveys are not practical

Table C-1. Special-status Wildlife Species Survey List

Common Name *Scientific Name*	Status				
	Federal			State	
	USFWS	USFS (SNF)	BLM	Oregon	ORBIC
MAMMALS					
Red tree vole (North Oregon Coast DPS) *Arborimus longicaudus*	F-C	FS-SEN, S&M (Cat. A)	BLM-SEN	OR-SV	List 4
Roosevelt elk *Cervus elaphus roosevelti*		FS-MIS			
BIRDS					
Great blue heron *Ardea herodias*	F-BCC	FS-MIS			
Marbled murrelet *Brachyramphus marmoratus*	F-T			OR-T	List 2
Aleutian cackling goose *Banta Canadensis leucopenia*		FS-MIS			List 2
Northern flicker *Colaptes auratus*		FS-MIS			
Olive-sided flycatcher *Contopus cooperi*	F-SOC, F-BCC			OR-SV	List 4
Pileated woodpecker *Dryocopus pileatus*		FS-MIS			List 4
Western screech-owl *Megascops kennicottii kennicottii*	F-BCC				
Downy woodpecker *Picoides pubescens*		FS-MIS			
Hairy woodpecker *Picoides villosus*		FS-MIS			
Purple martin *Progne subis*	F-SOC	FS-SEN	BLM-SEN	OR-SC	List 2
Rufous hummingbird *Selasphorus rufus*	F-BCC				
Red-breasted nuthatch *Sitta canadensis*		FS-MIS			
Red-breasted sapsucker *Sphyrapicus ruber*		FS-MIS			
Great gray owl *Strix nebulosa*		S&M (Cat. A)			List 3
Northern spotted owl *Strix occidentalis caurina*	F-T	FS-MIS		OR-T	List 1
INVERTEBRATES					
Suckley cuckoo bumble bee *Bombus suckleyi*			BLM-SEN		1
Siskiyou short-horned grasshopper *Chloealtis aspasma*	SOC		BLM-SEN		1
Keeled jumping-slug *Hemphillia burringtoni*		S&M (Cat. D)			List 3

Appendix D. Wildlife Species Observed during Wildlife Surveys

The following wildlife species were found in the Marys Peak and/or West Point Spur study areas during field surveys in 2018 and 2019, and observed by BPA staff and identified by an experienced ornithologist during a site visit in November 2019. Species were observed on land owned by the U.S. Forest Service, the Bureau of Land Management, the City of Corvallis, and/or private lands.

No wildlife observations were made while surveying the Albany Substation study area. A dark-eyed junco (bird) and a black-tailed deer were observed outside of the Prospect Hill study area, neither of which have a special status designation.

Table D-1. General and Special-status Wildlife Species Observed during Surveys

Common Name ***Scientific Name***	**Status**	**Observed at Marys Peak**	**Observed at West Point Spur**
Birds			
Ruffed grouse *Bonasa umbellus*		X	X
Wilson's warbler *Cardellina pusilla*		X	X
Turkey vulture *Cathartes aura*		X	X
Song sparrow *Catharus ustulatus*		X	X
Swainson's thrush *Catharus ustulatus*		X	X
Brown creeper *Certhia americana*		X	X
Northern harrier *Circus hudsonius*		X	X
Evening grosbeak *Coccothraustes vespertinus*		X	
Northern Flicker ***Colaptes auratus***	FS-MIS	**X**	**X**
Olive-sided flycatcher *Contopus cooperi*			X
American crow *Corvus brachyrhynchos*		X	X
Steller's jay *Cyanocitta stelleri*		X	X
Pileated woodpecker ***Dryocopus pileatus***	FS-MIS, ORBIC List 4	**X**	**X**
Pacific-slope flycatcher *Empidonax difficilis*		X	X
Dark-eyed junco *Junco hyemalis*		X	X
Song sparrow *Melospiza melodia*		X	X
Band-tailed pigeon *Patagioenas fasciata*		X	X
Gray jay *Perisoreus canadensis*		X	X

Common Name *Scientific Name*	Status	Observed at Marys Peak	Observed at West Point Spur
Black-headed grosbeak *Pheucticus melanocephalus*		X	X
Hairy woodpecker ***Picoides villosus***	FS-MIS	**X**	
Snow bunting *Plectrophenax nivalis*		X	
Black-capped chickadee *Poecile atricapillus*		X	X
Chestnut-backed chickadee *Poecile rufescens*		X	X
Hermit warbler *Setophaga occidentalis*		X	X
Red-breasted nuthatch ***Sitta canadensis***	FS-MIS	**X**	**X**
Great gray owl ***Strix nebulosa***	S&M (Cat. A), ORBIC List 3		**X**
Barred owl *Strix varia*			X
Pacific wren *Troglodytes pacificus*		X	X
American robin *Turdus migratorius*		X	X
Mourning dove *Zenaida macroura*		X	X
Mammals			
Black-tailed deer *Odocoileus hemionus*		X	X
Townsend's chipmunk *Tamias townsendii*		X	X
Douglas squirrel *Tamiasciurus douglasii*		X	X
Roosevelt elk (sign observed) ***Cervus canadensis roosevelti***	FS-MIS	**X**	**X**

Appendix E:
Scenic Resources Analysis Photographs and Simulations

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Key Viewing Area 1 – Existing vs. Alternative 2A

Marys Peak Road at Saddle Meadow Pullout — Existing Conditions

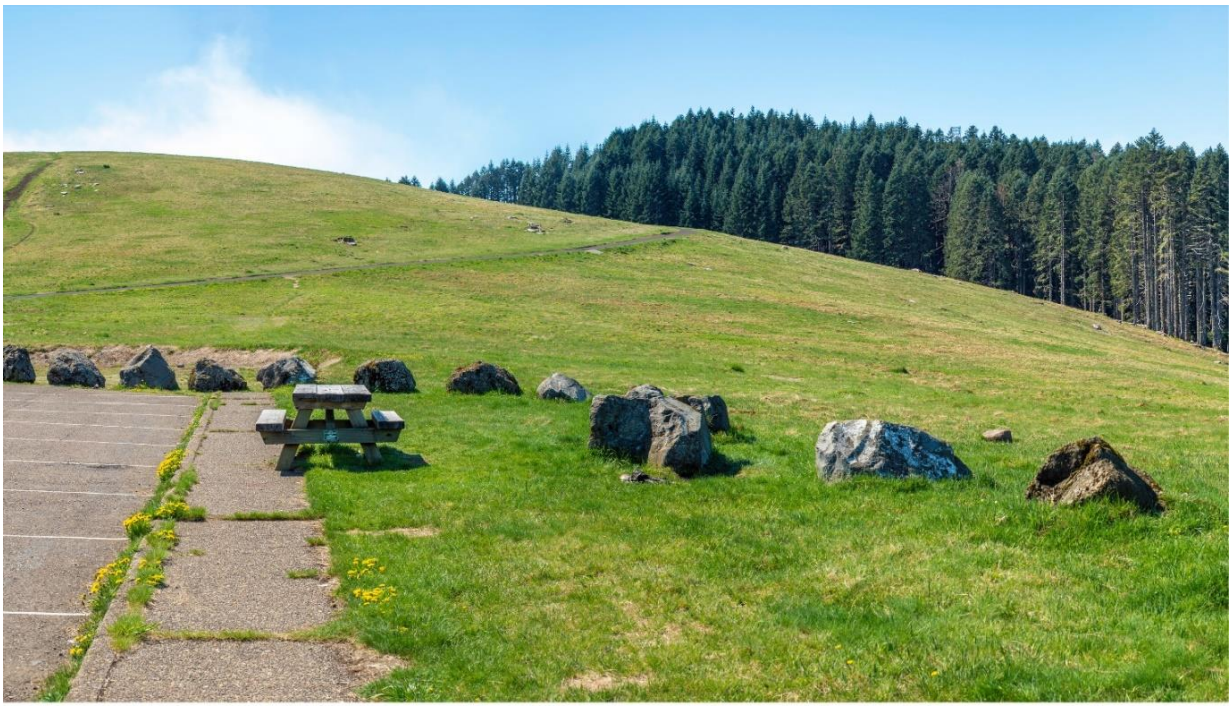
Marys Peak Road at Saddle Meadow Pullout — Alternative 2A Simulation

Key Viewing Area 1 – Existing vs. Alternative 3C

Marys Peak Road at Saddle Meadow Pullout — Existing Conditions

Marys Peak Road at Saddle Meadow Pullout — Alternative 3C Simulation

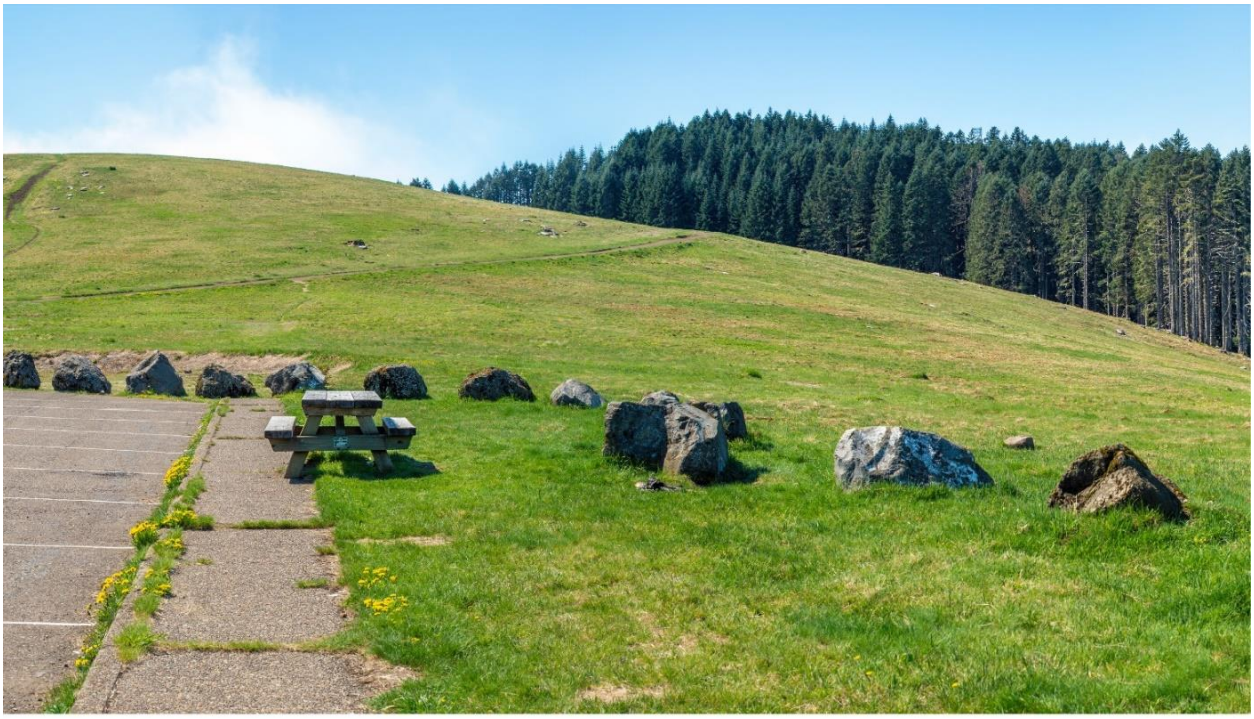
Key Viewing Area 3 – Existing vs. Alternative 2A and 3C



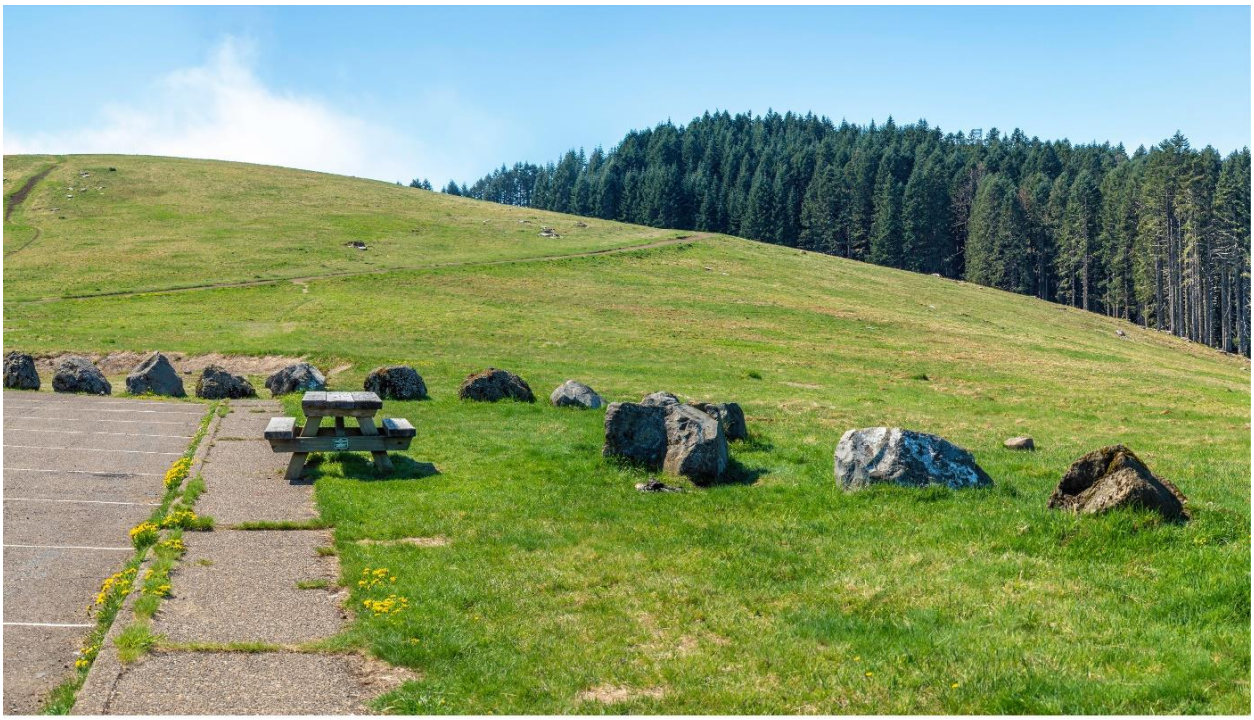
Parking Area at Marys Peak Road — Existing Conditions

Parking Area at Marys Peak Road — Alternative 2A and 3C Simulation

Key Viewing Area 3 – Existing vs. Alternative 4



Parking Area at Marys Peak Road — Existing Conditions



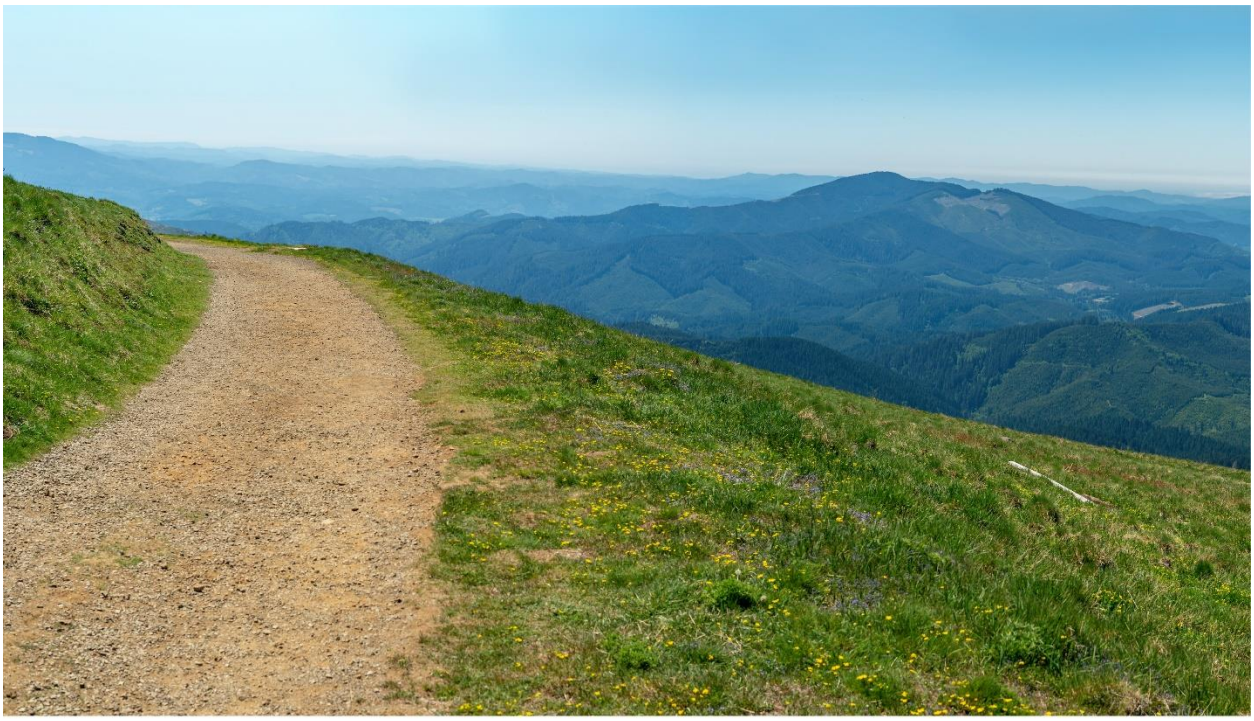
Parking Area at Marys Peak Road — Alternative 4 Simulation

Key Viewing Area 6 – Existing vs. Alternative 2A and 3C

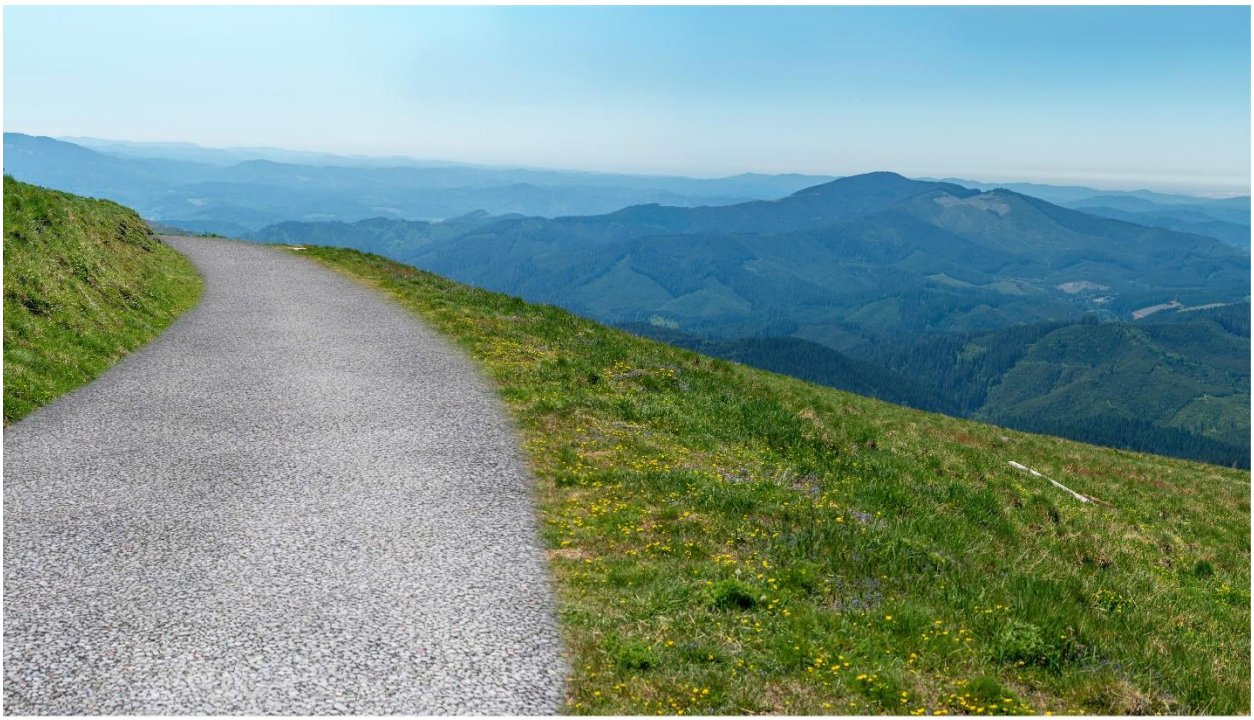
Summit Trail (Lower Portion) Existing Conditions

Summit Trail (Lower Portion) Alternative 2A and 3C Simulation

Key Viewing Area 7 – Existing vs. Alternative 2A and 3C



Marys Peak Access Road (view directed West) Existing Conditions



Marys Peak Access Road (view directed West) Alternative 2A and 3C Simulation

Key Viewing Area 9 – Existing vs. Alternative 2A

Marys Peak Summit (View from Picnic Table) Existing Conditions

Marys Peak Summit (View from Picnic Table) Alternative 2A Simulation

Key Viewing Area 9 – Existing vs. Alternative 3C

Marys Peak Summit (View from Picnic Table) Existing Conditions

Marys Peak Summit (View from Picnic Table) Alternative 3C Simulation

Key Viewing Area 9 – Existing vs. Alternative 4

Marys Peak Summit (View from Picnic Table) Existing Conditions

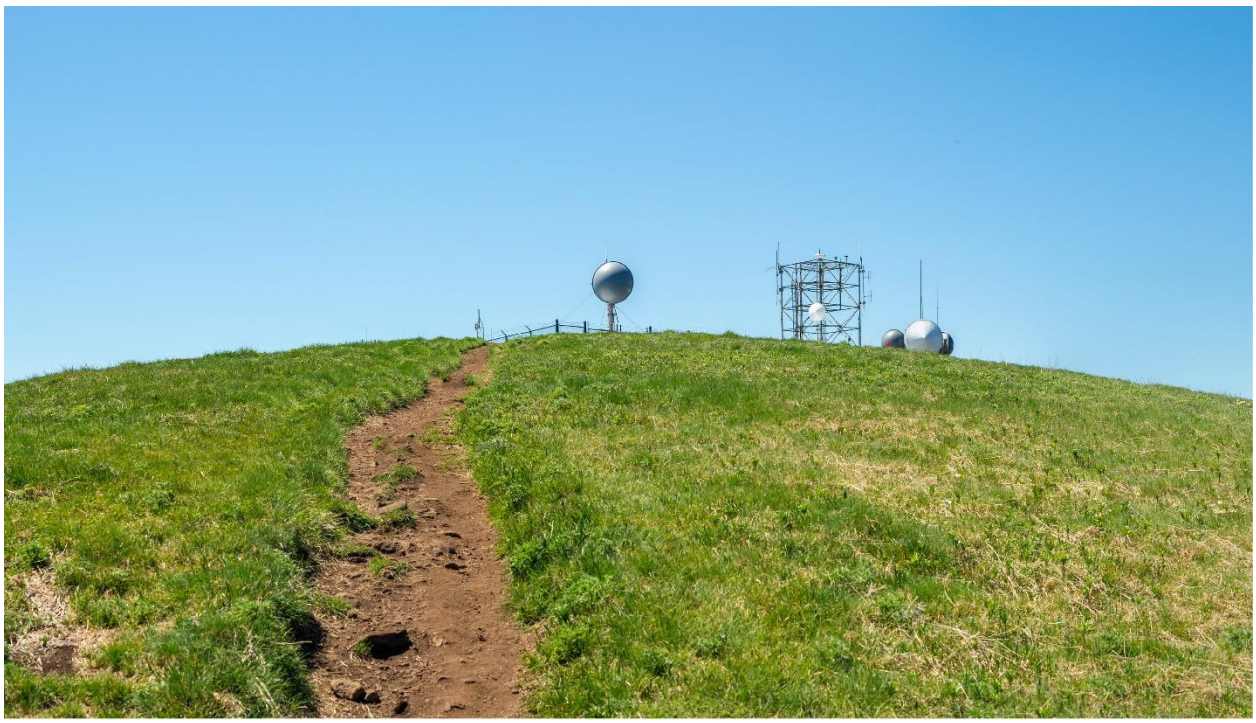
Marys Peak Summit (View from Picnic Table) Alternative 4 Simulation

Key Viewing Area 12 – Existing vs. Alternative 2A

Marys Peak Summit Trail and Meadowedge Trail Intersection — Existing Conditions

Marys Peak Summit Trail and Meadowedge Trail Intersection — Alternative 2A Simulation

Key Viewing Area 12 – Existing vs. Alternative 3C



Marys Peak Summit Trail and Meadowedge Trail Intersection — Existing Conditions

Marys Peak Summit Trail and Meadowedge Trail Intersection — Alternative 3C Simulation

Key Viewing Area 12 – Existing vs. Alternative 4

Marys Peak Summit Trail and Meadowedge Trail Intersection Existing Conditions

Marys Peak Summit Trail and Meadowedge Trail Intersection Alternative 4 Simulation

Key Viewing Area 13 – Existing vs. Alternative 4

Meadowedge Trail (Upper Portion) Existing Conditions

Meadowedge Trail (Upper Portion) Alternative 4 Simulation

Key Viewing Area 14 – Existing vs. Alternative 2A

Orchard Lane — Existing Conditions

Orchard Lane — Alternative 2A Simulation

Key Viewing Area 14 – Existing vs. Alternative 3C

Orchard Lane — Existing Conditions

Orchard Lane — Alternative 3C Simulation

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Bonneville Power Administration
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