

Chapter 1 Purpose of and Need for Action

Bonneville Power Administration (BPA) is considering its proposal to build a 500-kilovolt (kV) lattice-steel tower transmission line that would run about 80 miles from a new 500-kV substation near Castle Rock, Washington to a new 500-kV substation near Troutdale, Oregon. The proposed transmission line and substations would increase the long-term electrical capacity and **transfer capability** of BPA's transmission system in the Portland, Oregon-Vancouver, Washington metropolitan area (metro area). BPA is considering four action alternatives (each with three options) that include transmission line routes, three sites for the proposed substation near Castle Rock, and one site (with two options) for the proposed substation near Troutdale (see Map 1-1). This proposed action is referred to as the I-5 Corridor Reinforcement Project (I-5 project or project).

Words in **bold** and acronyms are defined in Chapter 32, Glossary and Acronyms.

This chapter provides background information about BPA, its transmission system, and causes of congestion on this system, including local **load** growth, existing contractual obligations, and new requests for use of BPA's system. This chapter describes the need for BPA to increase the long-term electrical capacity and transfer capability of its transmission system in the metro area to respond to congestion on this part of the system, growing system reliability concerns, increasing local demand for electricity, and additional requests for long-term firm transmission service. This chapter also identifies the purposes that BPA is attempting to achieve in meeting this need, potential transmission system benefits from BPA's proposal, and the agencies involved in development of this environmental impact statement (EIS). Finally, the chapter provides a summary of the public scoping process conducted for the EIS, information about public meetings for and comments received on the Draft EIS, and information about the scope and organization of this EIS.

For proposed actions with the potential to affect the environment, BPA is required by the National Environmental Policy Act (NEPA) to identify, evaluate, and consider potential environmental consequences of the proposed action and reasonable alternatives before taking action, and to inform decision-makers and the public of these alternatives and their consequences. BPA prepared this EIS in accordance with NEPA, to address the proposed action to build the I-5 project.

1.1 Background

1.1.1 About BPA

BPA is a not-for-profit federal agency based in the Pacific Northwest. Although BPA is part of the United States (U.S.) Department of Energy (DOE), it is self-funded and covers its costs by selling its products and services. BPA markets wholesale electrical power from 31 federal hydroelectric projects in the Columbia River Basin, one nonfederal nuclear plant and several other small nonfederal power plants. The dams are owned and operated by the U.S. Army Corps of Engineers (Corps) and the Bureau of Reclamation (BOR). About one-third of the electric power used in the Northwest comes from BPA. BPA also owns, operates, and maintains about

three-fourths of the high-voltage (500-, 345-, 230- and 115-kV) transmission lines in its service territory. BPA's service territory includes Idaho, Oregon, Washington, western Montana, and small parts of California, eastern Montana, Nevada, Utah, and Wyoming.

BPA has an obligation to ensure that it has sufficient capability to serve its customers through a safe and reliable transmission system. The Federal Columbia River Transmission Act directs BPA to construct improvements, additions, and replacements to its transmission system that the BPA Administrator determines are necessary to provide service to BPA's customers, maintain electrical stability and reliability, and integrate and transmit power (16 U.S.C. § 838b).

1.1.2 BPA's Transmission System

BPA owns and operates more than 15,000 circuit miles of high-voltage transmission lines in the Pacific Northwest. BPA's transmission system moves most of the Northwest's high-voltage power from facilities that generate the power to customers in the Northwest. Besides the transmission system within the Northwest, BPA has large interregional transmission lines that connect to Canada, California, the Southwest and eastern Montana. BPA's lines carry electricity from federal and nonfederal generating resources to be used within and outside the Northwest.

1.1.2.1 Load Growth, Limited System Capacity, and Congestion

In southwest Washington and northwest Oregon, BPA's system primarily includes high-voltage transmission lines connected through substations to local utilities and generating facilities (see Map 1-2). Local utility customers served by BPA's transmission system in this area include Clark Public Utilities, Cowlitz Public Utility District (PUD), PacifiCorp, and Portland General Electric (PGE).

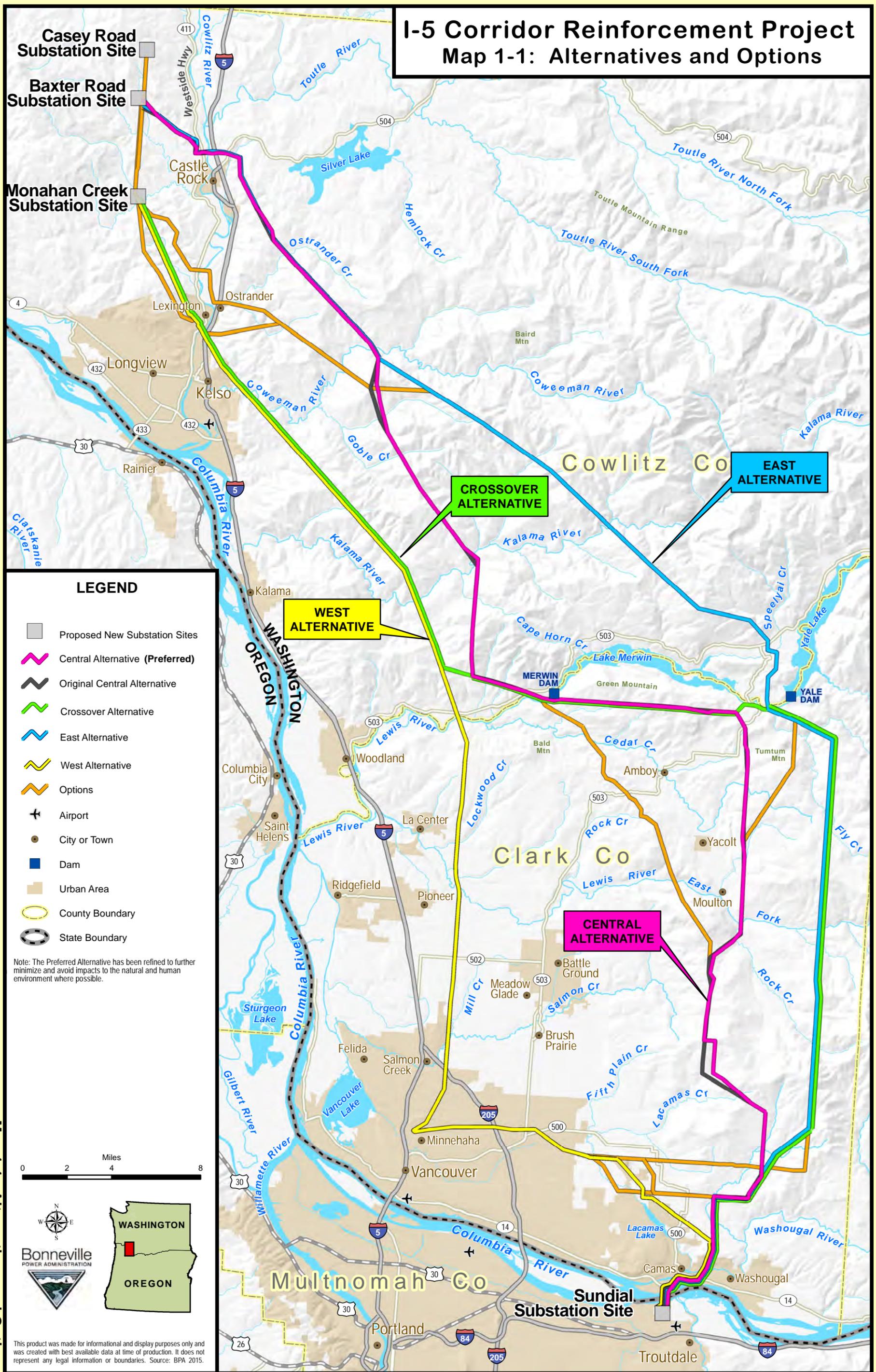
The Portland, Oregon-Vancouver, Washington metropolitan area is the major electric load center in northwest Oregon and southwest Washington. High concentrations of residential, commercial, and industrial loads are served by generating resources such as hydroelectric dams on the Columbia River and other rivers west of the Cascade Mountains along the Interstate-5 (I-5) corridor, **thermal plants** along the I-5 corridor west of the Cascades and a few others in Canada, and wind turbines east of the Cascades in Washington and Oregon.

Electricity from these generating resources flows to the metro area and beyond over BPA's and other utilities' high-voltage transmission lines. BPA built the last major high-voltage transmission line in the I-5 corridor area over 40 years ago. Over that same period (40 years), the population in the greater metro area has grown from about 1 million to more than 2.2 million (Sprague and Picha 2010).

Utilities monitor their high-voltage transmission lines (or paths) to make sure that the transmission system is functioning safely and reliably. The high voltage lines that enter the metro area from the north are together known as the South of Allston (SOA) path. Allston is a BPA substation in northern Oregon, across the Columbia River from Longview, Washington (see Map 1-2). When all lines within this path are in service, that is, functioning and available with no outages for maintenance or emergencies, the SOA path can be operated within a range (in **megawatts** [MW]) called the path's system operating limit.

I-5 Corridor Reinforcement Project

Map 1-1: Alternatives and Options



LEGEND

- Proposed New Substation Sites
- Central Alternative (Preferred)
- Original Central Alternative
- Crossover Alternative
- East Alternative
- West Alternative
- Options
- Airport
- City or Town
- Dam
- Urban Area
- County Boundary
- State Boundary

Note: The Preferred Alternative has been refined to further minimize and avoid impacts to the natural and human environment where possible.

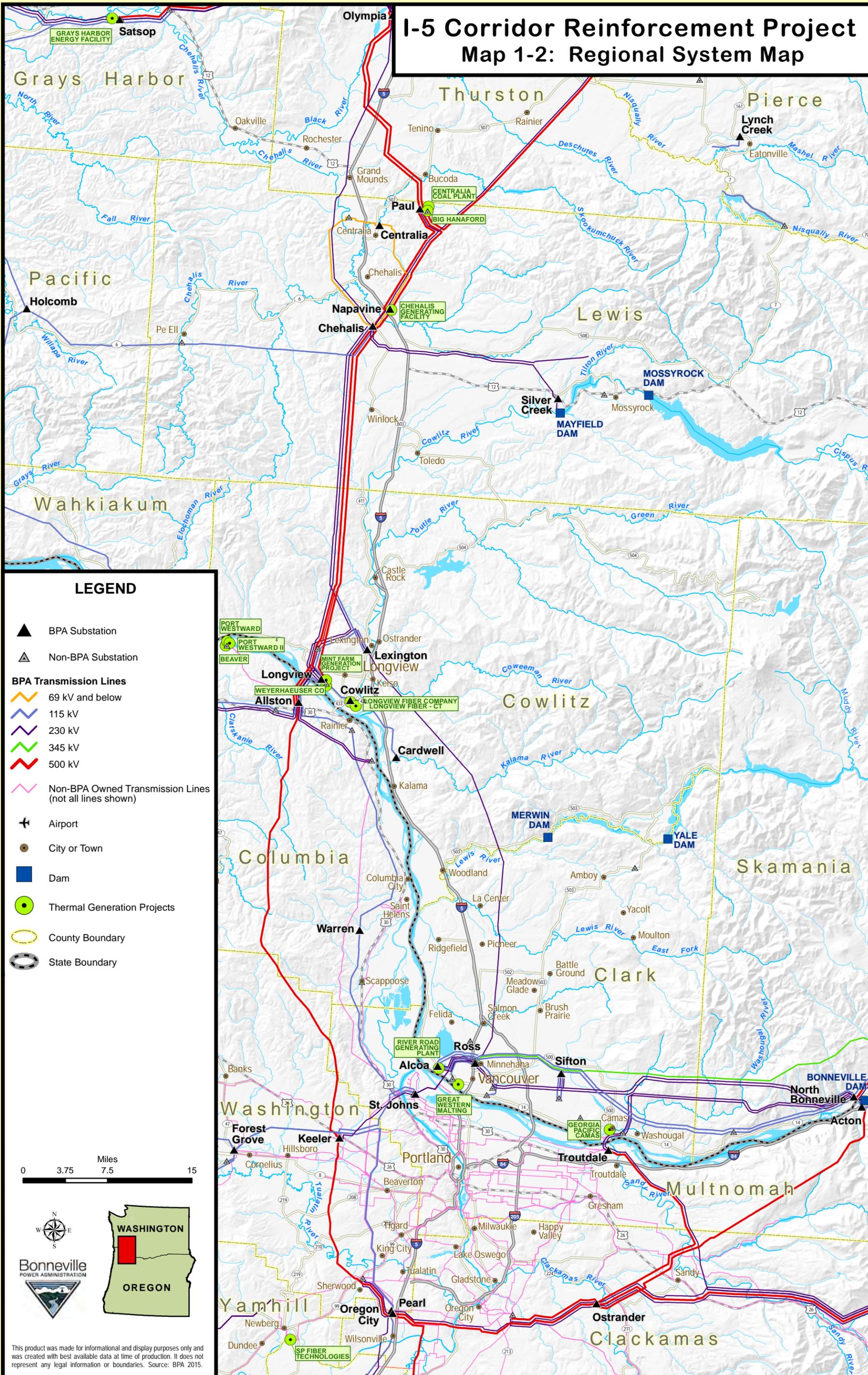


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Map 1-1: Alternatives and Options

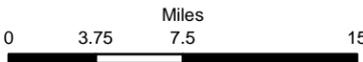
I-5 Corridor Reinforcement Project

Map 1-2: Regional System Map



LEGEND

- ▲ BPA Substation
- ▲ Non-BPA Substation
- BPA Transmission Lines**
 - 69 kV and below
 - 115 kV
 - 230 kV
 - 345 kV
 - 500 kV
- Non-BPA Owned Transmission Lines (not all lines shown)
- ✈ Airport
- City or Town
- Dam
- Thermal Generation Projects
- County Boundary
- State Boundary



Bonneville
POWER ADMINISTRATION



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Map 1-2: Regional System Map

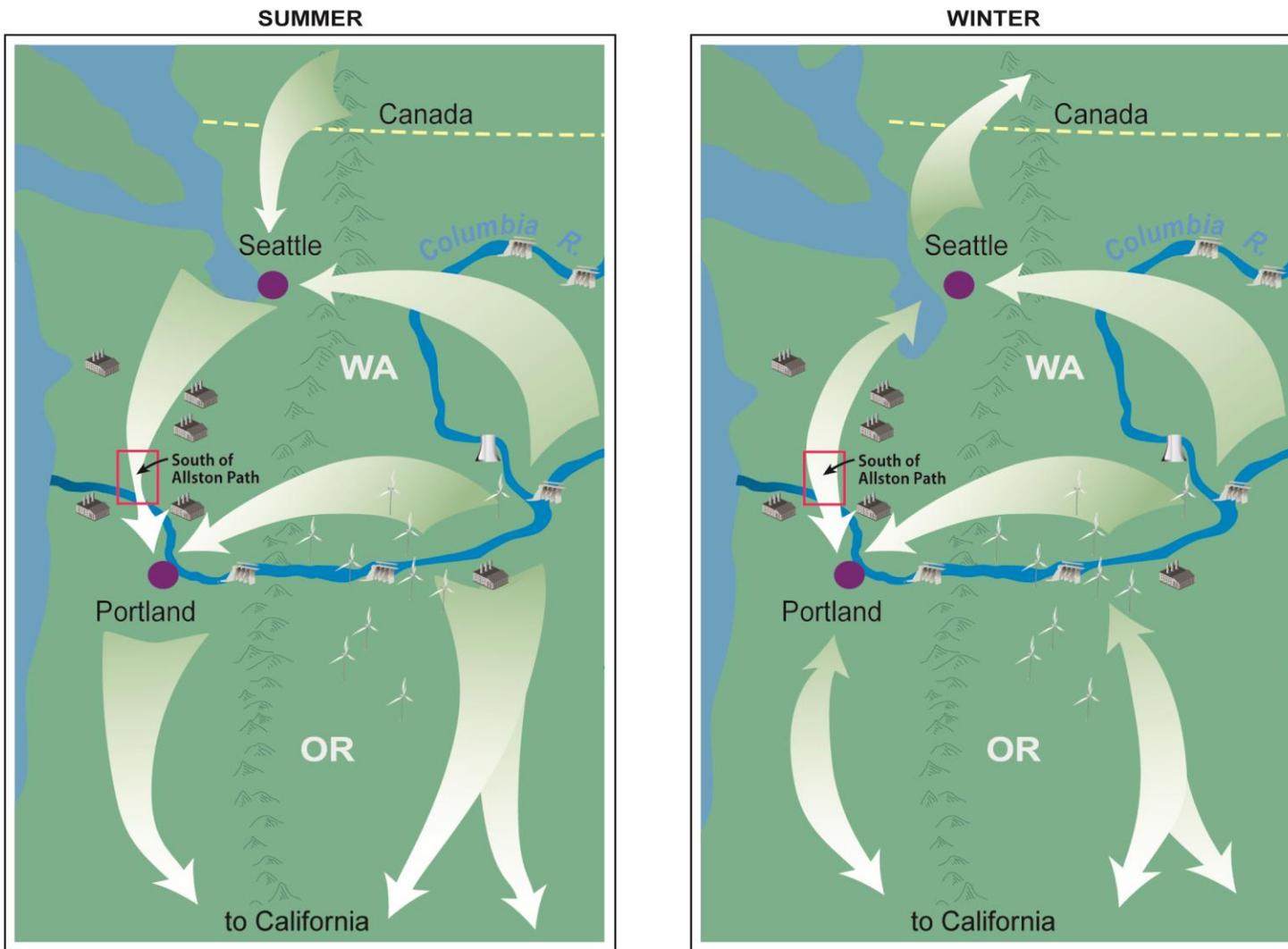
The SOA path has been identified for some time as a path with the potential to reach, or even exceed, its system operating limit under certain conditions. BPA transmission planners first identified a potential need for reinforcement of this path in the early 1980s. In addition, for more than 15 years, BPA studies have shown that this path has become more and more congested because of continually increasing loads in the metro area. Increasing loads create congestion because of the way electrons flow on a transmission line or path. The higher the loads in different areas, the more the power flows to these areas, and depending on the available line or path capacity, the line can become congested and physically unable to reliably accommodate the need for power to flow. The path is similar to an interstate highway, the higher the loads (or traffic); the more the path becomes crowded or congested. Reaching the existing transmission system's limit because of this congestion could compromise the reliability of the transmission system to serve loads and potentially reduce power deliveries to the metro area.

The capacity of transmission lines can also be affected by surrounding air temperatures. Transmission lines are designed to operate up to a maximum temperature that includes a safety buffer so that the lines will not sag into objects on or near the right-of-way. In summer, higher air temperatures can cause conductors to expand and stretch, which increases the sag of the conductors. During these times, lines can reach their maximum operating limit faster. This decreases the amount of power that could have been carried over the lines (reduced capacity) had the surrounding temperatures been cooler.

In addition to these capacity issues, power flows in a different pattern in winter than it does in summer using different transmission paths with different capacities (see Figure 1-1). In winter, power use is greater in the Northwest and Canada. This demand causes power to flow primarily from generation sources east of the Cascades to load centers to the west. Transmission system capacity across the SOA path is adequate to accommodate this flow. In summer, however, power use is concentrated in the Northwest and California, which causes power to primarily flow from north to south (see Figure 1-1). The north-to-south transmission capacity available in summer on the SOA path is about half of the system capacity in winter from east-to-west into the metro area. This creates a system bottleneck for the summer pattern.

In the past, electrical use in the metro area peaked in the winter, often when a winter storm boosted the need for electric heat. Now, as new homes and commercial buildings are constructed in this area, most have installed air conditioning, and that has increased the demand for energy in the summer. In general, peak electricity use in summer is now about equal to winter peak levels. As a result, the SOA path has become congested during the summer months because of a variety of factors including growing summer peak loads, new power plants that have interconnected to BPA's transmission system north of the SOA path, and, to a lesser extent, power transfers from Canada through the Northwest to load centers south of the metro area. Each year, BPA analyzes the latest information about load forecasts, transmission system configuration, summer operating conditions, and other factors that influence transmission system capacity. At the time the Draft EIS was published in November 2012, BPA's analysis, using the then-current forecasts for load growth (up to 2 percent per year), estimated that the existing transmission system's capacity would likely be reached by spring 2016. BPA's current analysis, however, indicates that the existing transmission system's capacity now will likely be reached by spring 2021. Updated load growth projections for the area, and a substation upgrade that BPA will be completing in 2016, independent of the I-5 project, are the main reasons this date has changed (see Section 1.1.2.3, Feasibility Assessment of Other Non-Wires Measures).

Figure 1-1 Typical Power Flows¹



Note:

1. Winter and summer flows vary depending on generation and load patterns.

1.1.2.2 Reliability and the South of Allston Path

Mandatory reliability standards and principles of good utility practice prohibit BPA from operating the transmission system beyond its capacity. Operating in this manner could **overload** the system and create **voltage** instability, potentially leading to **brownouts** or **blackouts**. When BPA determines that capacity on a particular path is insufficient to meet demand under certain conditions, BPA relies on **non-wires measures** to the extent possible to help maintain system reliability and maximize use of the existing system facilities before building a new transmission line.

For the SOA path, BPA and other utilities have developed a non-wires measure called a remedial action scheme (RAS) that is carried out when needed. RAS uses a high-speed automatic control system designed to protect the transmission system in the event of an unexpected outage of a critical transmission facility. If such an outage occurs, the RAS is activated and rapidly disconnects (or “drops”) selected generation in the Northwest and Canada to reduce the flow of power and avoid overloading the lines that remain in service. Although effective in these situations, it is important to recognize that RAS is strictly used as an operational procedure that preserves reliability. In other words, RAS does not generate additional capacity on the transmission system so it does not address the longer-term capacity issues on the already capacity-constrained SOW path (see Section 1.1.2.1, Load Growth, Limited System Capacity, and Congestion).

Even with this limitation, RAS has been used for many years to preserve the reliability of the SOA path without having to build significant new transmission infrastructure. During the summer, as loading increases on the SOA path, successively higher levels of RAS are engaged, and greater amounts of generation are dropped as needed. Using RAS this way, however, has some undesirable consequences. BPA has had to prepare to drop up to 2700 MW of generation in the event of a critical outage on this path (2700 MW is roughly equivalent to the amount of resources that would serve an area three times the size of Clark County).

To continue to serve the demand if generation is dropped, replacement power, if available, must be found and delivered over alternate transmission paths. Even if replacement power is available, it may be difficult to deliver due to constraints on the alternate paths. If replacement power cannot be found or delivered to serve the demand, this could lead to **load curtailments** (loss of power to many types of users of power, such as homes, businesses, factories and hospitals), particularly in the metro area. Load curtailments of a few minutes may have little impact on the people in this area, but if these curtailments and the lack of electricity were to extend for a longer period, they could significantly impact people at home and at work, and a broad cross-section of businesses and industry. For certain sectors that rely heavily on electricity, such as the health care industry, a lack of power for an extended period could interrupt health care and life-support services.

In addition to these issues, providing a high level of system reliability and avoiding load curtailments has become even more important in the Pacific Northwest in recent years as new industries that rely on steady, uninterrupted power have come to the area (e.g., Intel, Qorvo, Shin-Etsu America). In the past, Northwest industries, such as lumber mills and aluminum plants, could adjust to short power interruptions and sometimes received a special power rate for their flexibility. Today, high-quality (non-interruptible) power is critical to high-tech

manufacturing of products, such as microchips. Power disruptions can ruin products in these plants, and plant operators can only tolerate fluctuations within a narrow range.

In the future, preserving the reliability of the SOA path by using RAS will become even more difficult and less effective. This is largely caused by the continually growing economy and population in the metro area and the increasing amount of industries relying on steady, uninterrupted power in the region; both of which are expected to place greater and greater loading on the transmission system. With growing demand, there is a gap between the SOA capacity that exists and the capacity needed to serve this demand. If the SOA path capacity does not catch up to demand, the likelihood of curtailments at peak-use times will increase.

1.1.2.3 Feasibility Assessment of Other Non-Wires Measures

As discussed above, for the past several years, RAS has been the primary non-wires tool used to preserve the reliability of the SOA path without having to build significant new transmission infrastructure. Over the past several years, BPA also has been looking into the feasibility of using other possible non-wires measures to help mitigate congestion and maintain reliability of the SOA path. Examples of these other non-wires measures include **generation redispatch**, energy efficiency and demand response (see Section 4.7.1, Non-Wires Alternative).

To date, BPA has been unable to identify any combination of non-wires measures that would address the reliability and congestion issues on the SOA path in the long-term, and that are operationally, commercially, and economically feasible. As a result, these measures do not, at this time, meet the project need identified in Section 1.2, Need for Action, of this EIS (see Section 4.7.1, Non-Wires Alternative for a further explanation of why non-wires measures have been considered but eliminated from detailed study in this EIS). However, BPA recognizes that non-wires technologies are regularly evolving and BPA continues to explore potential non-wires measures to see if any feasible and cost-effective options could defer the project need, whether in the short term to help with more immediate reliability needs or in the long term or indefinitely if that proves feasible. This section describes some of the more significant past and current efforts to assess the operational, commercial, and economic feasibility of these non-wires measures.

In 2010, BPA contracted with Energy and Environmental Economics, Inc. (E3) to conduct an independent non-wires screening-level assessment of potential non-wires measures to help alleviate power flows on the SOA path. E3 completed this screening assessment (Phase I study) in January 2011 (E3's studies are available under the "Non-Wires" topic of interest in the library section of the project website: <http://www.bpa.gov/goto/1-5>). The Phase I study was a high-level analysis that broadly explored possible non-wires measures; it did not assess whether implementation of these measures would be operationally, commercially, or economically feasible.

Nonetheless, based on its analysis of possible non-wires measures for the SOA path and information available at the time about reliability needs, the Phase I study indicated that BPA theoretically could defer the project need date for the proposed new line for a short-term period beyond spring 2016. Spring 2016 was the date at the time of the Phase I study when the existing transmission system's capacity was forecasted to be reached (see Section 1.1.2.1, Load Growth, Limited System Capacity, and Congestion). The Phase I study indicated this deferral might be achieved if a geographically targeted portfolio of non-wires measures including, but

not limited to, generation redispatch, energy efficiency and demand response was developed that proved effective at reducing peak summer power flows along the SOA path. The Phase I study recommended that a feasibility study for these potential non-wires measures be done, but also acknowledged that BPA should continue to pursue its proposal for a new line since non-wires measures could ultimately prove infeasible in meeting the need for the I-5 project.

In April 2011, BPA convened the Non-Wires Round Table, an independent technical forum of industry experts capable of providing external review of non-wires measures being considered as alternatives to transmission projects. The Round Table evaluated E3's Phase I study and consistent with its recommendations, recommended that a Phase II study be prepared to further explore the implementation feasibility of the non-wires measures identified in the Phase I study.

The Phase II study was completed by E3 in December 2011 (also available under the "Non-Wires" topic of interest in the library section of the project website: <http://www.bpa.gov/goto/I-5>). This study concluded that two particular measures – upgrades at BPA's existing Pearl Substation in Wilsonville, Oregon and generation redispatch – together could defer the I-5 project need date for the proposed new line until spring 2022. That said, the study identified three important caveats to its findings:

- While non-wire measures could defer the need for the line up to spring 2022, these measures would not be a full or permanent replacement for the I-5 project since they would not meet the project need in the long term;
- BPA could face significant operational challenges that generation redispatch would create; and
- There remains a high degree of uncertainty as to whether commercial agreements with regional generators for generation redispatch would be achievable and cost effective.

Accordingly, the Phase II study did not reach any conclusive determination on the potential operational or commercial feasibility of non-wires measures. In addition, the Phase II study did not take into consideration the additional commercial demand for transmission service over the SOA path discussed in Section 1.1.2.4, Existing Obligations and New Requests for Transmission Service. Accommodating this additional transmission service would require additional use of and possible increase in SOA capacity. If the additional demand was taken into account, it would likely reduce the amount of I-5 project deferral from what was identified in the Phase II study.

Concerning the Phase II study's conclusion on potentially effective non-wires measures, installing upgraded equipment at BPA's existing Pearl Substation (identified by the study) would help with power flows on the system. BPA decided to install the equipment at Pearl Substation since these upgrades would provide benefits for the transmission system regardless of whether the I-5 project is ever built. These substation upgrades are currently under construction, and are scheduled to be completed in 2016. Based on the latest load forecasts, the upgrades defer the project need date to 2021.

Generation redispatch identified in the Phase II study would reduce output at large generators located north of the metro area, while increasing output at generators located south of the metro area to reduce power flow on the SOA path. To be effective, uncommitted generation capacity in the right locations south of the metro area would need to be accessible during

summer peak conditions when congestion on the system is greatest. In addition, for each 1 MW of SOA path flow relief, the Phase II study concluded that it may be necessary to redispatch several MWs of generation based on the generator's geographical location. This is because of the way power flows over the network of transmission lines. Each MW of load reduction or additional in-area generation only reduces the power flows across the relevant transmission paths by a fraction of a MW. The Phase II study concluded that the total number of MWs required for generation redispatch that would enable an I-5 project deferral for 5 or more years could range from 500 MW to over 1,500 MW. This depended on which combination of generators would participate in the program, load growth, and the effectiveness of energy efficiency and demand response program implementation in the deferral period.

After the Phase I and Phase II studies were completed, BPA formed a non-wires contingency planning team to develop a portfolio of cost-effective non-wires measures that potentially could be implemented to maintain system reliability along the SOA path. These non-wires measures would at a minimum bridge the gap between the need date and the energization date for a new line, if a decision is made to build the proposed transmission line and it cannot be energized in time to maintain system reliability. Through this team, BPA is exploring whether pairing generation redispatch (turning off generation north of the constrained path and turning on generation south of the constrained path) with other non-wires measures (e.g., reducing load) could provide measureable and reliable relief at the sources of congestion.

In early 2015, BPA contracted with a commercial company to develop a pilot program to aggregate up to 25 MW of load reductions from commercial and industrial loads served by BPA customers located where such load reductions would provide SOA path relief (e.g., in the metro area, Willamette Valley, parts of the Oregon coast, and the Columbia Gorge) during the peak summer period. This contract allows BPA's Transmission Planning and Operations to target specific locations, such as the SOA path. As of October 2015, an initial 3 MW of load has been recruited. A variety of factors may be hindering recruitment for the pilot program: participation rates, duration of use, time of use, relatively short notification requirements, load participation qualifications, and the financial incentive to retail utilities and end-loads. To try and increase participation, BPA is currently considering adjustments to the program to improve effectiveness and increase participating MWs.

In early 2016, BPA is planning to release a Request for Proposal (RFP) requesting responses from all qualified and experienced providers with the capability to deliver a portfolio of innovative non-wires solutions to potentially aid in the deferral or bridge the gap between the electrical need date and the projected energization date. This competitive process is intended to pick up where the E3 studies left off by allowing BPA to test non-wires measures specifically targeting the SOA path to determine their cost-effectiveness and operational and commercial feasibility. A portfolio of non-wires measures is needed because individually, non-wires measures are limited by use and time availability. Assuming reasonable proposals are submitted in response to the RFP, the most cost-effective portfolio of potentially feasible non-wires measures that provide short response time at the source of congestion during the peak summer months would be considered for potential multi-year contracts.

To summarize, the last major BPA high-voltage transmission line in the southwest Washington and northwest Oregon area was built more than 40 years ago. Since then, the population in this area has more than doubled and electrical demand has continued to increase. In addition, power flow patterns on BPA's transmission system are shifting and stressing the system in ways not originally envisioned. For years, BPA was able to avoid building a new line in the I-5 corridor

by using non-wires measures to help maintain reliability. However, the current non-wires measures being used are becoming less and less effective. In the near future, it is expected to be extremely difficult, if not impossible, to consistently and reliably manage congestion on the SOA path using the transmission system that exists today. BPA has proposed a new line to address this issue and, although it has extensively explored non-wires solutions over the past years, has not found any non-wires measures to date that would address this issue in the long term and that are operationally, commercially, and economically feasible.

Nonetheless, BPA is continuing to investigate and evaluate the feasibility of generation redispatch and other non-wires measures to help address reliability of the SOA path. These measures are being tested not only for their ability to “bridge the gap” between the project need date and the energization date for a new line, but also to explore whether they could realistically defer the project need, whether on a short-term basis or in the long term or indefinitely. If BPA is able to determine that these measures are cost effective, meet reliability criteria, and are commercially and operationally feasible, these measures could be separately and independently implemented to help maintain system reliability of the SOA path.

1.1.2.4 Existing Obligations and New Requests for Transmission Service

BPA has adopted an Open Access Transmission Tariff (OATT) that defines the terms and conditions of transmission services it offers. This OATT, which is generally consistent with the Federal Energy Regulatory Commission’s (FERC) **pro forma open access tariff**, has procedures that provide access to BPA’s transmission system for all eligible customers, consistent with all BPA requirements (including the availability or development of sufficient transmission capacity) and subject, where applicable, to an environmental review under NEPA. More information about the OATT is available on BPA’s Transmission Services website: http://www.transmission.bpa.gov/business/ts_tariff/.

For many years even before BPA adopted its OATT, BPA provided access to its transmission system to both federal and nonfederal power generators. As a result, BPA and other utilities currently have existing contracts with several power generators (including wind generators and power marketers) in Canada, the Pacific Northwest east and west of the Cascades, and surrounding states to move power across BPA’s transmission system. Much of the available capacity for firm transmission service that remains on BPA’s transmission system is already under contract.

At the present time, BPA, PacifiCorp, and PGE are the entities that have allocated capacity on the SOA path. PGE and PacifiCorp likely use their allocations to meet their customers’ needs for power. BPA’s share of that capacity has been made available to BPA’s transmission customers for reservation on a long-term basis. However, because of BPA’s obligations to serve loads with firm capacity and other existing commercial obligations on this path, BPA cannot provide additional long-term firm **transmission service** without increasing the capacity of the transmission system in this area. Accordingly, BPA has only offered **conditional firm** service to some of these other customers seeking long-term rights at this time and as available (see inset box).

Long-term firm transmission service is a mutually beneficial product as it assures BPA of long-term revenues, while providing customers with priority rights to schedule against at any time when service is needed, but subject to outages.

BPA has received additional requests from other utilities and power generators for long-term firm transmission service that requires capacity on the SOA path. Under its OATT, BPA maintains a request queue for long-term, firm transmission service. By the mid-2000s, this queue had become overloaded with requests, and BPA became aware that many requests were speculative. In March 2008, to help manage the queue and identify the new transmission infrastructure that would be needed to provide service that customers had requested, BPA began its first Network Open Season (NOS) process. During this NOS process, utilities and power generators were given the opportunity to submit requests for use of BPA's transmission system to transmit their power. More information about the NOS process is available at BPA's Transmission Services website: http://www.transmission.bpa.gov/customer_forums/open_season/default.cfm.

Long-Term Firm Transmission Service

Long-term firm reservations provide customers with the right to schedule service on a firm basis. Long-term firm transmission reservations allow customers to schedule transmission service for a specific term (usually a year or longer) that is of the same priority as BPA's use of the transmission system.

Conditional firm transmission service is long-term transmission service that BPA may be able to provide when there is not enough firm transmission service, but conditional firm service has constraints that give BPA additional curtailment rights. Conditional firm service has a lower reservation priority than firm service, but is a higher priority than non-firm service and any schedules get firmed up (re-classified as Firm) 30 days ahead of service .

During the 2008 NOS process, and the subsequent 2009, 2010, and 2013 NOS processes, BPA identified firm transmission service requests that would use the SOA path. BPA has insufficient firm capacity available on the SOA path to accommodate these new requests to transfer power (see Section 1.1.2.1, Load Growth, Limited System Capacity, and Congestion).

1.1.3 Planning for Transmission Additions in the I-5 Corridor

BPA has taken several steps to reduce congestion on the transmission system in the I-5 corridor without building new lines (see Section 1.1.2.2, Reliability and the South of Allston Path, and Section 1.1.2.3, Feasibility Assessment of Other Non-Wires Measures). BPA has upgraded facilities that affect the available capacity of the SOA path to maximize the use of existing transmission lines in the I-5 corridor. BPA also has initiated operational procedures such as RAS to maximize use of the transmission system in this area. However, as discussed above, increasing RAS and other operational procedures does not create additional capacity on the system and cannot effectively mitigate the stresses on the system without causing other problems.

Because of this, BPA conducted studies of the transmission system in the I-5 corridor area in the early 2000s that identified the SOA path as an area where the system needed reinforcements to meet forecasted load growth. Conducting these studies was consistent with BPA's OATT, which requires BPA to investigate actions it could take, including adding infrastructure, to provide access to the transmission system in response to requests for service. These BPA studies found that if an additional transmission line is not built in this area, continued congestion would jeopardize transmission system reliability and, eventually, could lead to power interruptions or

blackouts in the metro area. Based on these results, combined with planning studies that began in late 2006 and continued through 2007, BPA developed a plan that identified a major infrastructure addition in this area. This plan led to the I-5 Corridor Reinforcement Project proposal that is the subject of this EIS.

In conducting its studies and undertaking transmission planning for the proposed I-5 project, BPA followed the reliability standards established by the North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) (see inset boxes). NERC, the national electric reliability organization, and WECC, the regional reliability organization, help coordinate the operation and planning of the bulk transmission system throughout the region. Electric utilities are required to meet the standards of both organizations when planning new facilities.

BPA also sought review of the I-5 project through WECC's Project Coordination process (formerly known as the Regional Planning Project Review, or "Regional Review," process). The Project Coordination process is part of the initial development phase of a project. BPA coordinated the review through ColumbiaGrid (see inset box) and worked with other utilities and interested parties throughout the Northwest in developing the project.

During the Project Coordination process, BPA shared study results and alternate plans of service with other Northwest utilities. This provided other utilities with an opportunity to review and comment on BPA's plans with the goal of developing the best plan of service with respect to regional benefits and impacts. The Project Coordination process concluded in March 2008 with regional approval for the project.

About ColumbiaGrid

ColumbiaGrid is a non-profit membership corporation formed in 2006 to improve the operational efficiency, reliability, and planned expansion of the Pacific Northwest transmission grid. The corporation itself does not own transmission, but its members and the parties to its agreements own and operate an extensive network of transmission facilities. Northwest members include BPA, Avista Corporation, Puget Sound Energy, Snohomish PUD, Tacoma Power, Chelan PUD, Grant PUD, and Seattle City Light.

ColumbiaGrid has substantive responsibilities for transmission planning, reliability, the Open-Access Same-Time Information System (OASIS), and other development services. These tasks are defined and funded through agreements with members and other participants. Development of these agreements is carried out in a public process with broad participation. More information about ColumbiaGrid is available on its website: <http://www.columbiagrid.org/> (ColumbiaGrid 2009).

About the North American Electric Reliability Corporation

NERC is an organization that has been delegated the responsibility to regulate bulk power system users, owners, and operators through the adoption and enforcement of standards for fair, ethical, and efficient practices.

NERC develops and enforces reliability standards; assesses adequacy annually via a 10-year forecast and winter and summer forecasts; monitors the bulk power system; and educates, trains, and certifies industry personnel. NERC is subject to oversight by FERC and governmental authorities in Canada.

As of June 18, 2007, FERC granted NERC the legal authority to enforce reliability standards with all U.S. users, owners, and operators of the bulk power system, and made compliance with those standards mandatory and enforceable. More information is available on NERC's website: <http://www.nerc.com> (NERC 2010). BPA is required by law to comply with these reliability standards.

About the Western Electricity Coordinating Council

WECC is the regional entity responsible for coordinating and promoting bulk electric system reliability in the West. WECC's service territory extends from Canada to Mexico. It includes the provinces of Alberta and British Columbia, the northern portion of Baja California, Mexico, and all or portions of the 14 western states.

In addition to coordinating system reliability, WECC ensures open and non-discriminatory transmission access among members, provides a forum for resolving transmission access disputes, and provides an environment for coordinating the operating and planning activities of its members as set forth in its bylaws.

Membership in WECC is open to all entities with an interest in the operation of the bulk electric system in the West. All meetings are open and anyone may participate in WECC's standards development process. More information is available on WECC's website: <http://www.wecc.biz/> (WECC 2009).

1.2 Need for Action

BPA needs to increase the long-term electrical capacity and transfer capability of its 500-kV transmission system between the Castle Rock, Washington area and the Troutdale, Oregon area, in response to congestion on this part of the system, growing system reliability concerns, increasing local demand for electricity, and additional requests for long-term firm transmission service to move power across this portion of its system.

A new 500-kV transmission line would increase the 500-kV transmission capacity for the long term in the southwest Washington/northwest Oregon area and allow BPA to provide for local load growth, maintain reliable power supply to customers, and accommodate requests for long-term, firm transmission service. These new facilities would eliminate a transmission capacity constraint for this area, provide an additional electrical pathway, and increase system capacity (see Section 1.4, Transmission System Benefits, for other transmission system benefits related to a new line). Continuing to use BPA's existing transmission system in this area as it exists today would eventually cause BPA's transmission system to become overloaded at certain times of the year.

1.3 Purposes

In meeting the need for action, BPA will attempt to achieve the following purposes:

- Use ratepayer funds responsibly and efficiently.
- Minimize impacts to the natural and human environment.
- Maintain BPA transmission system reliability and performance.
- Meet BPA's statutory and contractual obligations.

1.4 Transmission System Benefits

In addition to meeting the need for the project (see Section 1.2, Need for Action), the project would have several benefits for operation of BPA's transmission system. The proposed new line and substations would help redistribute the flow of power, which would generally increase the capacity of the region's transmission system. Reinforcing the transmission system would also provide the transmission flexibility required to bring more renewable wind power from the east to population centers along the I-5 corridor.

In addition, the project would allow BPA to schedule outages on existing lines, which is necessary to perform critical maintenance. Because the existing system is so heavily used, it is difficult for BPA to schedule these outages to work on equipment. If critical maintenance is deferred, the reliability of the equipment is jeopardized. Reinforcing the transmission system with another line in this area would considerably improve BPA's ability to perform needed maintenance safely and keep the system functioning reliably.

This project would also reduce overall transmission system **line losses** and reduce BPA's reliance on RAS. Although RAS has provided a means to maximize the use of existing transmission facilities, as demands on the system grow, RAS is becoming more complex yet less effective at mitigating system problems. Reducing reliance on RAS by reinforcing the transmission system would help promote greater reliability for this area. All of these additional benefits would make the transmission system more efficient, flexible and reliable.

1.5 Agency Roles

1.5.1 Lead and Cooperating Agencies

BPA is the lead agency responsible for preparing this EIS under NEPA. BPA will use the EIS, along with comments from the public, other stakeholders and interested and affected agencies, to inform the following BPA decisions:

- Whether to build a new 500-kV transmission line to meet the project need.
- If the decision is to build a transmission line, which route would be constructed to a new substation near Troutdale, Oregon and Castle Rock, Washington.
- Which site near Castle Rock, Washington would be used for substation construction at the north end of the line and which lot (11 or 12) near Troutdale would be used for substation construction at the south end of the line.

The Council on Environmental Quality (CEQ) regulations implementing NEPA allow for the designation of other federal, state, and local agencies and Indian Tribes as cooperating agencies for an EIS where appropriate.

The Corps is a cooperating agency in this process. The Corps' role is primarily to implement the requirements of the federal Clean Water Act (33 CFR) and Section 10 of the Rivers and Harbor Act of 1899 (33 U.S. C. 403). This role includes reviewing and making permit decisions on proposals, such as this project, that may require discharge of dredged or fill material into waters of the U.S., and work within navigable waters of the U.S. The Corps assists with identification of appropriate mitigation under these statutes. The Corps will use the EIS to help meet the requirements for the ongoing Clean Water Act Section 404(b)(1) alternatives analysis process. Under the Section 404(b)(1) Guidelines developed by the Environmental Protection Agency, the Corps may only permit discharges of dredged or fill material into waters of the U.S. that represent the least environmentally damaging practicable alternative, so long as the alternative does not have other significant adverse environmental consequences as compared with other alternatives (see Section 27.10, Clean Water Act).

In furtherance of existing cooperative agreements between BPA and the states of Washington and Oregon, the Washington Energy Facility Site Evaluation Council (EFSEC) and the Oregon Department of Energy (ODOE) are participating in preparation of this EIS as cooperating agencies under NEPA. Among other things, these state agencies are assisting BPA in the environmental evaluation of transmission line routes, developing possible mitigation measures, and identifying state interests that should be addressed in the EIS.

Clark and Cowlitz counties are also cooperating agencies in this process. They are providing knowledge, information, and expertise to BPA about their respective jurisdictions.

1.5.2 Other Agencies That May Use this EIS

Chapter 27 of this EIS identifies other federal agencies that may have permitting, review, or other approval responsibilities related to certain aspects of the project. Certain state, regional, and local agencies also may use all or part of this EIS to fulfill their applicable environmental review requirements for any actions they may need to take for the proposed project (see Chapter 27, Consultation, Review, and Permit Requirements; Chapter 28, Consistency with State Substantive Standards; and Appendix A, Washington Department of Natural Resources Lands Analysis).

Before Washington state agencies can take action to authorize use of state-managed lands or issue permits, they must comply with the requirements of the Washington State Environmental Policy Act (SEPA), Chapter 43.21C Revised Code of Washington (RCW). BPA is coordinating with the state of Washington so that environmental issues relevant to the Washington state agencies and their SEPA needs are addressed to the fullest extent practicable in BPA's NEPA process. These agencies will use relevant information from this EIS to help fulfill their SEPA requirements for their actions related to the project.

Oregon does not have a similar SEPA process, but ODOE and other agencies will review the EIS to ensure that their relevant environmental issues are addressed in the EIS.

1.6 Public Involvement and Major Issues

Early in the development of this EIS, BPA solicited comments from the public; Tribes; federal, state, regional, and local agencies; interest groups; and others to help determine what issues should be studied in this EIS. Because these issues help define the scope of the EIS, this process is called “scoping.” As the I-5 project has developed, there have been many opportunities for public involvement and participation to continue.

1.6.1 EIS Scoping Outreach

During the scoping period for the EIS, BPA used several ways to request comments.

BPA published a Notice of Intent to prepare an EIS for the project in the Federal Register in October 2009 (74 Federal Register 52482, October 13, 2009). The scoping period was originally scheduled to close November 23, 2009. On November 18, 2009, in response to requests for more time to submit comments, BPA extended the comment period to December 14, 2009.

BPA notified more than 9,500 landowners within a 500-foot (either side of existing BPA rights-of-way) to 1-mile buffer or study area (greater in some areas) under consideration by BPA engineers for siting a new transmission line, substations, and access roads. BPA also notified other interested individuals, Tribes, elected officials, organizations, and agencies. The notification packet included a letter announcing the project and scoping period, a project fact sheet, project map, comment form, and return envelope. A separate letter and Permission to Enter Property (PEP) form was sent to landowners with property within the notification buffers described above. BPA also posted information, including interactive maps, on the project website: <http://www.bpa.gov/goto/i5>. The website also had an electronic comment form allowing the public to submit comments online.

BPA sent a press release to local media, and placed paid ads in the following newspapers about the scoping period and public scoping meetings:

- Battle Ground Reflector – October 13 and October 18, 2009
- Camas-Washougal Post-Record – October 13 and October 21, 2009
- The Columbian – October 14, October 18 and October 26, 2009
- Gresham Outlook – October 14 and October 28, 2009
- Longview Daily News – October 13 and October 18, 2009
- The Oregonian – October 14 and October 28, 2009

BPA invited comments through a variety of methods, including online, through a dedicated voice messaging system, comment forms mailed or faxed, and written and verbal comments collected at the public scoping meetings. BPA posted all comments it received on the project website.

1.6.2 Public Scoping Meetings

BPA held a series of six open house-style public scoping meetings at six different locations (see Table 1-1).

Table 1-1 Public Scoping Meetings

Meeting Date	Meeting Location	Meeting Attendance¹
October 27, 2009	Amboy, WA	547
October 28, 2009	Vancouver, WA – Clark College	465
October 29, 2009	Longview, WA	614
November 3, 2009	Camas, WA	480
November 5, 2009	Gresham, OR	47
November 7, 2009	Vancouver, WA – Hazel Dell	344
Note: 1. This column reflects the number of people who signed the meeting sign-in form. Some members of the public declined to sign the form.		

Each meeting featured eight stations with topic-specific project information and BPA staff available to answer questions. Maps were available to help landowners locate their property in relation to the notification buffers and multiple transmission line route segments that BPA had identified as part of the buffers. BPA staff recorded verbal public comments in their notes and also on flip charts positioned at each station. A comment station also provided members of the public an opportunity to complete a comment form.

1.6.3 EIS Scoping Comment Summary

More than 2,500 people attended the public scoping meetings. Each meeting was summarized, and meeting summaries were posted to the project website the next work day after each meeting. People expressed opinions about a wide range of issues for BPA to consider, including the following:

- Project purpose and need
- Project decision-making process
- Public involvement
- Regulatory obligations, coordination, and documentation
- Draft EIS approach and content
- Transmission tower, substation, and line design and transmission rights-of-way
- Undergrounding lines
- Transmission technology
- Transmission line and access road construction
- Access road siting and rights-of-way
- Nuisance, safety, and maintenance issues
- Project monitoring and mitigation
- Route segments and alternatives
- Threatened, endangered, and sensitive plant and animal species, and wildlife and wildlife habitat

- Socioeconomics, including cost to landowners, eminent domain and compensation, and environmental justice
- Quality of life issues
- Health and safety including noise and **electric and magnetic field (EMF)** effects
- Aesthetics
- Cumulative impacts
- Existing and planned land uses
- Transportation
- Recreation
- Mining
- Surface and ground water resources, wetlands, and floodplains
- Native and non-native vegetation
- Air quality and climate
- Cultural and historic resources
- Geology and soils

This is a partial list of issues identified from the comments received. All comments received were logged in and forwarded to resource specialists to consider when preparing their environmental impact analyses for the EIS, and to engineers to consider as they continued working on the preliminary project design.

More than 3,000 communications and over 7,000 individual comments were received during the scoping period. A summary of the comments received during the scoping period is available on the project website: http://www.bpa.gov/corporate/i-5-eis/documents/I-5_ScopingSummary.pdf.

BPA continued to take comments on the project after the scoping period ended and will take comments throughout the environmental process. Additional summaries of comments received after the scoping period ended are available on the project website.

1.6.4 Post-Scoping BPA Public Meetings

In August and September, 2010, BPA hosted additional public meetings to present updated project information (see Table 1-2).

BPA sent a press release to local media, and placed paid ads in the following newspapers about the meetings:

- Battle Ground Reflector – August 25, September 1, and September 8, 2010
- Camas-Washougal Post-Record – August 24, August 31, and September 7, 2010
- The Columbian – August 22, August 29, and September 5, 2010
- Longview Daily News – August 22, August 29, and September 5, 2010
- The Oregonian – August 22 and September 5, 2010

Table 1-2 Post-Scoping Public Meetings

Meeting Date	Meeting Location	Meeting Attendance¹
August 30, 2010	Castle Rock, WA	225
August 31, 2010	Vancouver, WA – Skyview High School	110
September 8, 2010	Amboy, WA	275
September 12, 2010	Camas, WA	130
Note: 1. This column reflects the number of people who signed the meeting sign-in form. Some members of the public declined to sign the form.		

BPA also provided project updates and additional opportunities for public input at the following listening sessions:

- On November 3, 2010, BPA hosted a meeting for property owners along a small portion of Segment F where additional field work and modifications to the proposed design caused the notification buffer to be expanded in this area. Expansion of the notification buffer involved 29 new land parcels. Twenty-three people attended this meeting.
- On December 8, 2011, BPA presented a brief project update and took public comment at the Battle Ground Community Center. About 300 people attended this meeting. Thirty-seven people provided verbal comment.

1.6.5 Post Scoping Outreach and Public Comments

In addition to BPA’s public meetings, BPA staff attended meetings organized by elected officials, neighborhood groups, community organizations, and others. BPA staff also held meetings with federal, state and local agencies; representatives of Tribes with interests in the area; and other interested parties and individuals. From the scoping period until the release of the Draft EIS, BPA continued to update the project website with new information and interactive maps; mailed out frequent project updates and posted them on the website; attended local service club, civic group and neighborhood meetings as requested (or as resources allowed); provided information at local farmers’ markets, fairs, community events, and local libraries; and continued to collect comments (see inset box). All BPA’s post-scoping public outreach materials for the proposed project are available on the project website: <http://www.bpa.gov/goto/i5>.

Comments received from the close of the scoping period to the release of the Draft EIS are contained in supplemental comment reports posted on the project website. The issues included in these comments are similar to those received during scoping (see Section 1.6.3, EIS Scoping Comment Summary). These comments were also used by BPA staff in their engineering and environmental work.

Public Participation Opportunities

Direct mail, email and phone contacts

The I-5 project is one of the largest public involvement efforts BPA has undertaken. Since announcing the project in 2009, BPA has mailed, emailed, met, and spoken with thousands of interested stakeholders. Our mailing list includes more than 13,000 addresses and more than 2,400 email addresses. Prior to publication of the Draft EIS, the project team sent 11 mailings (available on the project website: www.bpa.gov/goto/i5), and hosted 12 public meetings attended by more than 4,000 people to inform and collect feedback from the public (see Sections 1.6.2, Public Scoping Meetings, and 1.6.4, Post-Scoping BPA Public Meetings). After release of the Draft EIS, BPA provided other opportunities for stakeholders to gain information and make comments on the Draft EIS (see Sections 1.6.6 through 1.6.9). Throughout the entire process, the project team has spent hours talking to and visiting with landowners along the Preferred Alternative.

Local media

Regular local media outlets, such as newspapers and TV stations, have helped us share news and inform the region about project developments and key issues. On several occasions, BPA contacted the media to share elements of the environmental review and other project developments. A BPA representative also was interviewed by staff of the website Couv.com and answered questions about the project and its environmental review. Couv.com is a local website that focuses on issues affecting Vancouver and Clark County, Washington.

Project newsletters and website

Between October 2010 and June 2012, BPA mailed seven newsletters that provided new project information and schedule updates; results of exploring suggested changes to the project; and contact information for questions, comments or summaries of public meetings and comments. Between June 2012 and December 2015, BPA continued to mail periodic updates about the project schedule and study results as we received them. Along with mailings were updates to the website, electronic notification, and occasional outreach to local news media. The project website provided a centralized location for project information and materials, including an interactive map, which allowed property owners and interested citizens to obtain details about how the project would affect their communities.

Citizen group formation and engagement

Several citizen groups formed since BPA announced the project. Project team members began attending meetings organized by groups as early as November 2009. These groups created and maintained their own websites and outreach lists, held meetings and rallies, and purchased or posted hundreds of signs throughout Clark and Cowlitz counties (including billboard space) to share their views. Members or their boards had opportunities to speak with BPA transmission executives and the BPA Administrator about their concerns and ideas. BPA staff attended and spoke at more than 14 meetings, rallies or community events hosted or organized by citizens. The largest was held at Prairie High School in Battle Ground (between 800 and 1,000 participants). BPA also attended meetings at other schools, libraries and fire stations.

1.6.6 Draft EIS Release, Outreach and Public Comments

BPA released the Draft EIS for public comment in November 2012. BPA announced the availability of the Draft EIS through various means.

BPA notified more than 13,000 landowners, other interested individuals, Tribes, elected officials, organizations, businesses, and agencies. BPA mailed or emailed a Project Update newsletter to the project mailing list and also posted information on the project website:

<http://www.bpa.gov/goto/i5>.

BPA also sent a press release to local media, and placed paid ads in the following newspapers about the Draft EIS comment period and public meetings:

- Battle Ground Reflector – January 9, 16, and 30, 2013
- Camas-Washougal Post-Record – January 2, 6, and 27, 2013
- The Columbian – January 2, 6, 16, and 27, 2013
- Longview Daily News – January 6, 9, and 27, 2013
- The Oregonian – January 2, 16, and 27, 2013

During the comment period for the Draft EIS, commenters had several ways to submit comments:

- Send a letter to the project P.O. Box
- Send a letter to the project fax system
- Submit a written comment at a Draft EIS drop-in session or public meeting
- Provide verbal comments during the verbal comment session of a Draft EIS public meeting or by calling the project voicemail system
- Submit comments electronically to the project email address or on the project website

The Draft EIS comment period was originally scheduled to close March 1, 2013. In response to requests for more time to submit comments, BPA extended the comment period to March 25, 2013.

1.6.7 Draft EIS Drop-in Sessions and Public Meetings

Given the size of the Draft EIS and volume of information it contains, BPA recognized that it likely would be helpful to interested parties to hold public drop-in sessions after the Draft EIS was released but before the scheduled Draft EIS public meetings. For these drop-in sessions, project staff members were available at various times and places throughout the project area (see Table 1-3) to offer help accessing information in the Draft EIS and the project interactive map. These sessions were informal. Attendees were encouraged to drop in anytime during the sessions to get help navigating the Draft EIS, find their property in relation to the project using the interactive map, or ask questions about the EIS process, EIS documents and how to submit comments on the document. There were no formal presentations. Laptops were available to review the document, view the interactive map and submit comments through the project website.

Table 1-3 Draft EIS Drop-in Sessions

Date	Location	Attendance
December 4, 2012	Castle Rock, WA	46
December 6, 2012	Amboy, WA	31
December 8, 2012	Camas, WA	11
December 11, 2012	Vancouver, WA	16
December 12, 2012	Camas, WA	7
December 15, 2012	Amboy, WA	20

BPA also hosted six public meetings for the Draft EIS (see Table 1-4), each including two parts. At each meeting, staff and information were available in an open house format. For the first part, people could gather project information from handouts and display boards, as well as ask questions of BPA staff. For the second part, BPA hosted a session where people could verbally provide comments to the project team to be included as Draft EIS comments. The project team also accepted any written comments that were submitted.

Table 1-4 Draft EIS Public Meetings

Date	Location	Attendance
January 10, 2013	Camas, WA	102
January 12, 2013	Amboy, WA	55
January 23, 2013	Battle Ground, WA	41
February 2, 2013	Longview, WA	38
February 4, 2013	Castle Rock, WA	68
February 6, 2013	Vancouver, WA	33

When requested, BPA provided space at each Draft EIS public meeting for community groups to display and distribute information.

1.6.8 Draft EIS Comment Summary

After the Draft EIS extended comment period closed, BPA read and documented all 2,859 comments (in 662 communications) received, then posted the Draft EIS comment summary in June 2013. (This was updated in September 2013 to reflect comments that had inadvertently been left out.) BPA then began the process of responding to the Draft EIS comments.

More than 500 people signed in at either a Draft EIS drop-in session or public meeting. Summaries of the sessions/meetings were posted on the project website earlier, in March 2013, with meeting materials for people who were unable to attend one of the events. The summaries included a list of comments and questions expressed by meeting attendees about issues for BPA to consider, including the following:

- **Visual:** Several commenters raised concerns about potential effects the project may have on visual amenities. Some commenters requested more detail in the Final EIS on the project's visual impacts and questioned the quality of the study in Chapter 7 of the Draft EIS. One commenter requested more visual simulations of the Preferred Alternative.
- **Recreation:** Some commenters raised concerns about impacts to recreational areas and stated the Draft EIS did not include the location of a recreational fishing spot and picnic area near Segment F on the Cowlitz River.
- **Wildlife:** Some commenters raised concerns about the impact to wildlife and wildlife buffers established in the project area by the Washington State Forest Practices Act. One commenter stated there were additional species that were not included in Chapter 18 of the Draft EIS that exist near Segment F. This commenter also noted that

- the list of special-status species included in Chapter 18 of the Draft EIS was mistakenly referenced to as Appendix N.
- **Wetlands and water:** Several commenters raised concerns about impacts to fish-bearing streams, waterways and riparian zones in the project area. Commenters expressed concern about clearcutting along riverbeds in the project area. Some commenters stated that wetlands are already impacted on the existing right-of-way, in preference for choosing the West Alternative. One commenter questioned how BPA mitigates impacts to wetlands. One commenter stated that impacts to the river banks along the Cowlitz River are not addressed in the Draft EIS.
 - **Geology and soils:** Commenters raised concern about potential landslides and soil erosion along the Preferred Alternative.
 - **Land use and timber production:** Several property and business owners who own timber production land that could be directly affected by the Preferred Alternative expressed concern about the negative effects to their timber production and forestry practices in Clark and Cowlitz counties. One commenter stated that private tree farmers would be more willing to work with BPA if they shared the burden of the project by placing lines along state-owned land or along property boundaries instead of through parcels.
 - **Electric and magnetic field effects and public health:** A few commenters had concerns about electric and magnetic fields (EMF) and the potential effects of living or working near high-voltage transmission lines. This included perceived health effects to children associated with EMF and increased exposure to EMF levels in urban and populated areas. Commenters questioned what the long-term impact on human health would be. One comment raised concern about potential effects the project may have on pre-existing health conditions (asthma and pacemakers) during construction and maintenance activities.
 - **Noise:** Commenters shared concerns about the noise, hissing and buzzing associated with high-voltage transmission lines. One comment questioned the effect noise may have on a local rehabilitation and recovery center in Kelso. Some commenters requested that the EIS address potential effects noise may have on high-performance horse training activities.
 - **Cumulative impacts:** One commenter questioned the cumulative impact associated with placing a high-voltage transmission line near the existing Williams gas pipeline in Cowlitz County.
 - **Quality of life:** Several commenters expressed concern for the project's long-term cost to the quality of life for landowners, the community and future generations. A few commented on how the project may affect their lifestyle by negatively affecting property values, visual amenity and potential exposure to EMF. One commenter stated they moved away from the city for the scenic value and to be closer to the natural environment. Some commenters questioned what value BPA places on the potential harm done to affected property owners.
 - **Mitigation:** Commenters requested that BPA study further mitigation measures and options for Segment 52 in the Camas/Washougal area. One commenter questioned the effectiveness of mitigation when the project is negatively affecting the environment.

- Project schedule: Some commenters were frustrated with the length of time the process is taking to get to a decision.
- Design – transmission line and towers: Many commenters suggested centerline and tower location adjustments that would reduce impacts to their properties. A few commenters requested that BPA locate the new transmission line outside of the City of Castle Rock’s service area. Commenters provided information specific to their affected properties including locations of wells, houses, gates and private driveways.
- Design – access roads: Some commenters expressed concern about the proposed locations of access roads in the Draft EIS, particularly the proposed use of private roads that would be needed for access during construction and maintenance of the project. Commenters suggested adjustments to access road design or using alternative roads they thought would be more appropriate.
- Undergrounding the line: Several commenters requested further study of undergrounding Segment 52 for 1.1 miles in the Camas-Washougal urban areas be included in the Final EIS. Many commenters stated BPA should adhere to the City of Camas ordinance for undergrounding power lines in urban areas. Some commenters questioned the decision process for undergrounding, stating it was solely based on cost.
- Project cost: One commenter stated that project cost would be more than what is estimated in the Draft EIS as there will be increased maintenance associated with the Preferred Alternative.
- Routes considered but eliminated: Several commenters questioned why routes previously considered by BPA had been eliminated for further study in the Draft EIS. Some commenters questioned the quality of the data used to make the decisions not to pursue the northeastern route proposed by citizen groups (known as the “grey line”) and routes through Oregon to the Pearl substation (“the Pearl route”). One commenter requested further study on the number of homes that would need to be removed on the Pearl route. One commenter suggested relocating the Columbia River crossing to Bonneville Dam. One commenter requested that BPA study in more detail a route across northern Cowlitz County and away from the populated area of Castle Rock.
- Purpose and need for the project: Some commenters questioned why the project was needed, where the power it would transmit is being generated, and if it will primarily serve Oregon and California. A few commenters suggested that the money that would be spent on the project should be spent on energy efficiency, conservation, solar panels or local co-generation facilities to prevent the need for building a new transmission line. One commenter agreed with the need to build the transmission line and encouraged BPA to pursue construction.
- Identifying the preferred alternative: Commenters expressed support for the alternative that affects the least number of homes and people. Some comments were in favor of the Preferred Alternative. Others were in favor of selecting the West Alternative. One comment was in favor of not selecting Segment 50 as part of the preferred alternative. A few commenters suggested routing the line behind Tum Tum Mountain to avoid visual impacts. Some comments stated that government projects should be conducted on government land or that the route should stay along property lines instead of being sited through private parcels. Another commenter suggested exploring the option to double-circuit the line on the existing right-of-way along the

West Alternative, and at river/stream crossings, and questioned why this was not included in the Draft EIS.

- NEPA process: Commenters requested that BPA extend the NEPA public comment period beyond March 1, 2013. One comment requested that the Corps send notification of its comment period to BPA's full distribution list of landowners instead of limiting it to landowners on the Preferred Alternative. A few commenters requested that if the Preferred Alternative is altered, the people affected should have the same opportunity and time to comment on the decision, and that the comments be given the same weight as before. One comment questioned the amount of time people in Rose Valley have had to respond to the project.
- Public involvement process: Several commenters thanked BPA for communicating with the public, providing an opportunity to accept verbal comments and for holding public meetings. Some commenters submitted informational requests for GIS maps, data or property maps. Others requested site visits from BPA staff to discuss potential tower locations and impacts to their specific properties. One commenter raised concern about the number of BPA and contracted staff available at each informational meeting relative to attendees.
- Property values: Many commenters expressed concern about the project negatively affecting property values on and near the preferred alternative. A few commenters requested further detail and consideration in the Final EIS on costs to property owners and effects to property values. Some commenters raised concern about the potential for the project to negatively affect property values, thereby decreasing property tax revenue used to fund services in the Castle Rock and Camas-Washougal areas. One commenter asked questions about potential effects to an historic ranch house.
- Easement and acquisition process: Some commenters asked about the easement acquisition process, landowner compensation and contract negotiation. One commenter said that access to maintenance roads should be limited to keep recreationalists off of private property. A few commenters questioned whether homeowners will be compensated when selling a home that may be impacted by views of the transmission line. One comment discussed cost to landowners and the environment, particularly requesting BPA provide the same resources to landowners on this project as they have on previous projects. A commenter requested more information in the Final EIS on how property owners may be affected from a liability standpoint associated with unauthorized access and potential accidents.

These comments from the public sessions generally reflect concerns and observations of the larger pool of comments received. (See comments and responses in Volume 3 [3A through 3H].)

1.6.9 Additional Outreach

In June 2013, BPA sent notice to the project distribution lists that the Draft EIS comment summary was available and that BPA would attend multiple local fairs to provide project information and answer questions. For most of 2013 and 2014, project team members met with landowners along the Preferred Alternative. This helped BPA refine its understanding of the project's impact to people and further explore ideas to avoid or minimize potential impacts from the project. During this time, BPA and its contractors also did environmental and engineering surveys in areas where BPA has its own land rights, public access or permission to enter private property. This survey work allowed BPA to develop more detailed project design and to gather

more detailed information about resources, which helped BPA to further refine the EIS's analysis of project impacts on the natural environment. BPA published Project Update newsletters in December 2013 and June 2014 to keep landowners and all other groups and interested parties informed.

In June 2014, after studying the Draft EIS comments, listening to many the concerns from landowners and other interested parties, collecting more information, and doing more analysis, BPA issued an updated map showing adjusted tower and access road locations that reduced impacts along the Preferred Alternative. As the Final EIS was getting closer to public release, BPA released a Project Update in April 2015 reminding the public of the project schedule and release of the Final EIS at the end of the year.

1.7 Issues Outside the Scope of the I-5 Project or this EIS

Most issues raised during the scoping process are considered to be within the scope of the project and are addressed in this EIS. However, a few issues are considered to be either beyond the scope of this EIS or are outside the scope of the project. Issues outside the scope of this EIS are not addressed further in this EIS. Issues outside the scope of the project are not considered in the evaluation of the project itself, but may be further addressed in other EIS chapters (e.g., Chapter 26, Cumulative Impacts).

1.7.1 Regional Generation Development

Some comments received during scoping asked that BPA undertake a programmatic review of all energy generation projects, including new and proposed wind development that may occur throughout the region related to any increased capacity on BPA's transmission system. Generation projects are not proposed, constructed, or operated by BPA. Instead they are proposed and undertaken by private entities and their siting and development is controlled by state or local jurisdictions and other regulating entities. BPA's role is typically limited to deciding whether to interconnect these proposed projects, in compliance with its OATT, after an evaluation of the environmental effects of the proposed interconnection is done under NEPA. As a result, BPA does not have a region-wide program or plan related to wind or other generation projects, and does not dictate or direct where these projects are proposed.

Furthermore, decisions by BPA on whether to interconnect a particular proposed generation project to its transmission system are made independently of a decision on whether to construct the project. More specifically, a decision to interconnect any generation project is not dependent on construction of this transmission line. This transmission line is being proposed to increase the long-term electrical capacity and transfer capability of BPA's transmission system in response to congestion on this part of the system, system reliability concerns, increasing local demand for electricity, and additional requests for long-term, firm transmission service. These requests are already in BPA's queue for transmission service. A decision to proceed with the I-5 project would not be dependent on decisions related to interconnection of any new or proposed generation development projects in the region.

Therefore, new and proposed generation development projects are not considered to be within the scope of the project analyzed in this EIS. However, to the extent that the potential environmental impacts of any reasonably foreseeable new or proposed generation projects in

the vicinity of the I-5 project are cumulatively added to the potential environmental impacts of the project, these impacts are discussed and considered in the cumulative analysis in this EIS (see Chapter 26, Cumulative Impacts).

1.7.2 Regional Transmission Development

Some comments received during scoping asked that BPA undertake a programmatic review of all of its proposed transmission infrastructure projects in the region. Transmission infrastructure projects are proposed by BPA on a project-specific basis when needed to address various transmission reliability and service issues on portions of BPA's transmission system. Increases in capacity that may occur on BPA's existing transmission system from proposed BPA improvements would be in response to existing requests for transmission service, rather than designed to provide significant additional, unsubscribed capacity. While there may be synergies among the various proposed BPA transmission infrastructure projects in the region, no project is wholly dependent on any other project for its viability or success. Other proposed BPA transmission infrastructure projects in the region are therefore outside of the scope of the I-5 project. Nonetheless, any reasonably foreseeable transmission infrastructure projects with cumulatively additive environmental impacts to the I-5 project are discussed and considered in the cumulative analysis in this EIS (see Chapter 26, Cumulative Impacts).

1.8 Organization of this EIS

The remainder of this EIS is organized as follows:

- Chapter 2 describes how BPA system planners, engineers and other specialists developed potential routes for the transmission line and sites for the new substations. It includes a summary of the route segments that make up the action alternatives.
- Chapter 3 describes the transmission components that make up the project, and construction and maintenance requirements. It also includes mitigation measures that are included as part of the project.
- Chapter 4 describes the action alternatives, the No Action Alternative, and alternatives eliminated from detailed consideration.
- Chapters 5 through 25 describe, for each resource, the existing environment that could be affected by the project, environmental consequences of the action alternatives and the No Action Alternative, and mitigation measures that could be used to minimize impacts to resources.
- Chapter 26 discusses cumulative impacts.
- Chapter 27 discusses the permits and other approvals that must be obtained to implement the project.
- Chapter 28 discusses the project's consistency with state substantive standards.
- Chapters 29 through 32 lists the references used, individuals who helped prepare the EIS, the individuals, agencies, and organizations notified of the availability of this EIS, and a glossary.
- Chapter 33 contains the document index.

- Comments received on the Draft EIS and BPA's responses are in Volume 3 (3A through 3H).
- Supporting technical information is provided in appendices or referenced on the project website: <http://www.bpa.gov/goto/i5>.

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