Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT/PRIVACY PROGRAM

July 27, 2023

In reply refer to: FOIA #BPA-2022-00324-F

SENT VIA EMAIL ONLY TO: jfrank@cablehuston.com, nabercrombie@cablehuston.com

Jason Frank
Nicole Abercrombie
Cable Huston LLP
1455 SW Broadway, Suite 1500
Portland, Oregon 97201

Dear Colleagues,

This communication is the Bonneville Power Administration's (BPA) final response to your request for agency records made under the Freedom of Information Act, 5 U.S.C. § 552 ("FOIA"). Your FOIA request was received on January 7, 2022, and formally acknowledged on January 14, 2022. A first partial response to your request was sent to you on March 21, 2023.

Original Request
"…any and all information in BPA's possession, custody, or control related to the Holiday Farm Fire, which includes, but is not limited to:

- All documents and communications concerning any faults or outages, from September 6th–8th, 2020, on BPA's transmission system or related facilities along the McKenzie River Highway (Highway 126, between Eugene and Rainbow, Oregon) or interconnected to the Cougar Dam.
- All documents and communications concerning any faults or outages, from September 6th–8th, 2020, on third party transmission systems or related facilities interconnected to BPA's transmission system along the McKenzie River Highway or interconnected to the Cougar Dam.
- All documents and communications related to any incident reports concerning BPA's transmission system or related facilities along the McKenzie River Highway or interconnected to the Cougar Dam from September 6th–8th, 2020.
- All documents and communications related to any incident reports concerning third party transmission systems or related facilities interconnected to BPA's transmission system along the McKenzie River Highway or interconnected to the Cougar Dam.

- All documents and reports concerning any inspection of BPA's transmission system or related facilities along the McKenzie River Highway or interconnected to the Cougar Dam occurring after September 7, 2020.
- All documents, communications, and any underlying data relied upon in the creation of the document entitled: "Holiday Farm Fire Outage Sequence of Events"
- All documents and communications related to investigations of the Holiday Farm Fire, including information collected or created pursuant to such investigations.
- All data, reports, alerts, warning systems, images or videos related to the Holiday Farm Fire.
- All communications between BPA and any first responder, such as a fire department(s) or police department(s) or similar agency, regarding a potential fire related to a fault on the BPA transmission system or related facilities along the McKenzie River Highway or interconnected to the Cougar Dam that occurred on September 7, 2020.
- All documents, communications, or reports communicated to BPA on September 7, 2020, that a fire had been started in the vicinity of BPA's transmission system or related facilities along the McKenzie River Highway or interconnected to the Cougar Dam."

Scope Clarifications
Between January 14 and April 4, 2022, after reviewing your request, and explaining the types of agency records available, and developing a workable path towards release of responsive records, you and the agency agreed to revise your FOIA request as follows:

- "All documents and communications concerning any faults or outages, from September 6th–8th, 2020,on BPA's transmission system or related facilities along the McKenzie River Highway (Highway 126, between Eugene and Rainbow, Oregon) or interconnected to the Cougar Dam[, and;]
- All documents and communications concerning any faults or outages, from September 6th–8th, 2020, on third party transmission systems or related facilities interconnected to BPA's transmission system along the McKenzie River Highway or interconnected to the Cougar Dam[, and;]
- All documents and communications related to any incident reports concerning BPA's transmission system or related facilities along the McKenzie River Highway or interconnected to the Cougar Dam; scope of September 6, 2020 to October 31, 2020[, and;]
- All documents and communications related to any incident reports concerning third party transmission systems or related facilities interconnected to BPA's transmission system along the McKenzie River Highway or interconnected to the Cougar Dam; scope of September 6, 2020 to October 31, 2020[, and;]
- All documents and reports concerning any inspection of BPA's transmission system or related facilities along the McKenzie River Highway or interconnected to the Cougar Dam; scope of September 6, 2020 to October 31, 2020[, and;]

- All documents, communications, and any underlying data relied upon in the creation of the document entitled: “Holiday Farm Fire Outage Sequence of Events.” All records to be collected from document author[, and;]
- All documents and communications related to investigations of the Holiday Farm Fire that were provide[d] to the United States Forest Service fire investigator.

Second Partial and Final Response
In an effort to both accommodate the review of the large volume of responsive records, and to provide the records expediently, within the limitations of available agency resources, BPA is releasing responsive records to you in installments. Partial records releases are permitted by the FOIA. The second partial and final release of responsive records accompanies this communication. The accompanying records are responsive to your request for, “All documents and communications related to investigations of the Holiday Farm Fire, which were provide[d] to the United States Forest Service (USFS) fire investigator.” BPA is here releasing 485 pages, and eight Excel files, with redactions applied to two pages, made under 5 U.S.C. § 552(b)(6) (Exemption 6). A more detailed explanation of the applied exemptions follows.

Explanation of Exemptions
The FOIA generally requires the release of all agency records upon request. However, the FOIA permits or requires withholding certain limited information that falls under one or more of nine statutory exemptions (5 U.S.C. §§ 552(b)(1-9)). Further, section (b) of the FOIA, which contains the FOIA’s nine statutory exemptions, also directs agencies to publicly release any reasonably segregable, non-exempt information that is contained in those records.

<u>Exemption 6</u>
Exemption 6 serves to protect Personally Identifiable Information (PII) contained in agency records when no overriding public interest in the information exists. BPA does not find an overriding public interest in a release of the information redacted under Exemption 6—specifically, employee mobile phone numbers. This information sheds no light on the executive functions of the agency and BPA finds no overriding pubic interest in its release. BPA cannot waive these redactions, as the protections afforded by Exemption 6 belong to individuals and not to the agency.

Lastly, as required by 5 U.S.C. § 552(a)(8)(A), information has been withheld only in instances where, (1) disclosure is prohibited by statute, or (2) BPA foresees that disclosure would harm an interest protected by the exemption cited for the record. When full disclosure of a record is not possible, the FOIA statute further requires that BPA take reasonable steps to segregate and release nonexempt information. The agency has determined that in certain instances partial disclosure is possible, and has accordingly segregated the records into exempt and non-exempt portions.

Fees
There are no fees associated with processing your FOIA request.

Certification
Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the records search and information release described above. Your FOIA request BPA-2022-00324-F is now closed with the responsive agency information provided.

Appeal
The records release certified above is final. Pursuant to 10 C.F.R. § 1004.8, you may appeal the adequacy of the records search, and the completeness of this final records release, within 90 calendar days from the date of this communication. Appeals should be addressed to:

Director, Office of Hearings and Appeals
HG-1, L'Enfant Plaza
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585-1615

The written appeal, including the envelope, must clearly indicate that a FOIA appeal is being made. You may also submit your appeal by e-mail to OHA.filings@hq.doe.gov, including the phrase "Freedom of Information Appeal" in the subject line. (The Office of Hearings and Appeals prefers to receive appeals by email.) The appeal must contain all the elements required by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either (1) in the district where you reside, (2) where you have your principal place of business, (3) where DOE's records are situated, or (4) in the District of Columbia.

Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows:

Office of Government Information Services
National Archives and Records Administration
8601 Adelphi Road-OGIS
College Park, Maryland 20740-6001
E-mail: ogis@nara.gov
Phone: 202-741-5770
Toll-free: 1-877-684-6448
Fax: 202-741-5769

Questions about this communication or the status of your FOIA request may be directed to James King, FOIA Public Liaison, at jjking@bpa.gov or 503-230-7621.

Sincerely,

Candice D. Palen
Freedom of Information/Privacy Act Officer

Responsive agency records accompany this communication.

Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT/PRIVACY PROGRAM

July 27, 2023

In reply refer to: FOIA #BPA-2022-00999-F

SENT VIA EMAIL ONLY TO: dslaughter@cosgravelaw.com

Devra Slaughter
Cosgrave Vergeer Kester LLP
900 SW 5th Avenue, 24th Floor
Portland, Oregon 97204

Dear Ms. Slaughter,

This communication is the Bonneville Power Administration's (BPA) second partial response to your request for agency records made under the Freedom of Information Act, 5 U.S.C. § 552 ("FOIA"). Your FOIA request was received on June 28, 2022, and formally acknowledged on July 14, 2022. A first partial response to your request was sent to you on March 21, 2023.

Original Request
"Any and all documents regarding the Holiday Farm Fire that began on September 7, 2020, in Lane County, Oregon - including but not limited to Investigation documents and reports, photographs, video recording, audio recordings, and correspondence regarding the fire and its causes."

Clarification
On July 1, 2022, you communicated with the agency via phone and discussed the scope of your request. Specifically discussed were the implications of requesting, "any and all documents". FOIA office staff explained that, (1) the agency's FOIA staff is small, (2) requests are processed on a first-in, first-out basis, (3) the agency's search for a wide records scope would take a significant amount of time and resources, and (4) your FOIA request could therefore take between two and three years to process. As discussed, BPA received a similar FOIA request which also seeks a voluminous amount of records related to the Holiday Farm Fire ("HFF"). The agency worked with that FOIA requester to narrow the scope of their request to focus on the HFF records of most interest to them. A summary of the results of the agency's agreement with the prior FOIA requester to re-scope their FOIA request was shared with you. You and the agency agreed that BPA would process the similarly responsive records coincidentally with the similar FOIA request response. On July 12, 2022, you replied to BPA via email and, (1) agreed

to re-scope your request to that which was suggested to you on July 1, and (2) asked for additional records to be collected for your HFF request. Your re-scoped FOIA request follows.

Re-scoped Request

Section 1

1. All documents and communications concerning any faults or outages, from September 6th–8th, 2020,on BPA's transmission system or related facilities along the McKenzie River Highway (Highway 126, between Eugene and Rainbow, Oregon) or interconnected to the Cougar Dam. "Transmission system" is defined as power lines, substations, and microwave sites which support the communications network.
2. All documents and communications concerning any faults or outages, from September 6th–8th, 2020, on third party transmission systems or related facilities interconnected to BPA's transmission system along the McKenzie River Highway or interconnected to the Cougar Dam.
3. All documents and communications related to any incident reports concerning BPA's transmission system or related facilities along the McKenzie River Highway or interconnected to the Cougar Dam. Scope/Date range = Sep 6, 2020 – October 31, 2020.
4. All documents and communications related to any incident reports concerning third party transmission systems or related facilities interconnected to BPA's transmission system along the McKenzie River Highway or interconnected to the Cougar Dam. Scope/Date range = Sep 6, 2020 – October 31, 2020.
5. All documents and reports concerning any inspection of BPA's transmission system or related facilities along the McKenzie River Highway or interconnected to the Cougar Dam occurring after September 7, 2020. Scope/Date range = Sep 6, 2002 – October 31, 2020.
6. All documents, communications, and any underlying data relied upon in the creation of the document entitled: "Holiday Farm Fire Outage Sequence of Events"
7. All documents and communications related to investigations of the Holiday Farm Fire that were provide[d] to the US Forest Service fire investigator.

Section 2

1. A map or diagram of BPA's power distribution system in Oregon.
2. A map or diagram of how and where [Lane Electric Cooperative] LEC is connected to the BPA power grid.
3. Documents evidencing or relating to ownership of the transmission lines and related equipment from Trailbridge/Carman Smith Powerhouses to the Thurston Substation.
4. All agreements in place on September 7, 2020 between the BPA and [the Eugene Water and Electric Board] EWEB relating to the transmission, distribution or purchase of electricity.
5. All agreements in place on September 7, 2020 between the BPA and LEC relating to the transmission, distribution or purchase of electricity.

6. All agreements in place on September 7, 2020 between the BPA and the Army Corp of Engineers relating to the transmission, distribution or purchase of electricity generated by the Cougar Powerhouse.
7. Documents containing the name and affiliation of any individual who provided information incorporated into the document entitled "Holiday Farm Fire Outage Sequence of Events." or are referenced in the "Comments" sections of that document.

Second Partial Response
BPA continues to process your FOIA request. In an effort to both accommodate the review of the large volume of responsive records, and to provide the records expediently, within the limitations of available agency resources, BPA is releasing responsive records to you in installments. Partial records releases are permitted by the FOIA. A second partial release of responsive records accompanies this communication. Those records are responsive to your request for, "All documents and communications related to investigations of the Holiday Farm Fire that were provide[d] to the United States Forest Service fire investigator." BPA is here releasing 485 pages, and eight Excel files, with redactions applied to two pages, made under 5 U.S.C. § 552(b)(6) (Exemption 6). A more detailed explanation of the applied exemptions follows

Explanation of Exemptions
The FOIA generally requires the release of all agency records upon request. However, the FOIA permits or requires withholding certain limited information that falls under one or more of nine statutory exemptions (5 U.S.C. §§ 552(b)(1-9)). Further, section (b) of the FOIA, which contains the FOIA's nine statutory exemptions, also directs agencies to publicly release any reasonably segregable, non-exempt information that is contained in those records.

<u>Exemption 6</u>
Exemption 6 serves to protect Personally Identifiable Information (PII) contained in agency records when no overriding public interest in the information exists. BPA does not find an overriding public interest in a release of the information redacted under Exemption 6—specifically, employee mobile phone numbers. This information sheds no light on the executive functions of the agency and BPA finds no overriding pubic interest in its release. BPA cannot waive these redactions, as the protections afforded by Exemption 6 belong to individuals and not to the agency.

Lastly, as required by 5 U.S.C. § 552(a)(8)(A), information has been withheld only in instances where, (1) disclosure is prohibited by statute, or (2) BPA foresees that disclosure would harm an interest protected by the exemption cited for the record. When full disclosure of a record is not possible, the FOIA statute further requires that BPA take reasonable steps to segregate and release nonexempt information. The agency has determined that in certain instances partial disclosure is possible, and has accordingly segregated the records into exempt and non-exempt portions.

Fees
There are no fees associated with processing your FOIA request.

Certification
Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the records search and information release described above. Your FOIA request BPA-2022-00999-F remains open, with available agency records still under process.

Appeal
Note that the records release certified above is partial. Additional records releases will be forthcoming as agency resources and records volumes permit. Pursuant to 10 C.F.R. § 1004.8, you may appeal the adequacy of the records search, and the completeness of this partial records release, within 90 calendar days from the date of this communication. Appeals should be addressed to:

Director, Office of Hearings and Appeals
HG-1, L'Enfant Plaza
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585-1615

The written appeal, including the envelope, must clearly indicate that a FOIA appeal is being made. You may also submit your appeal by e-mail to OHA.filings@hq.doe.gov, including the phrase "Freedom of Information Appeal" in the subject line. (The Office of Hearings and Appeals prefers to receive appeals by email.) The appeal must contain all the elements required by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either (1) in the district where you reside, (2) where you have your principal place of business, (3) where DOE's records are situated, or (4) in the District of Columbia.

Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows:

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8601 Adelphi Road-OGIS
College Park, Maryland 20740-6001
E-mail: ogis@nara.gov
Phone: 202-741-5770
Toll-free: 1-877-684-6448
Fax: 202-741-5769

Next Partial Release Target Date
As mentioned, BPA continues to review and process the remaining responsive records collected in response to your FOIA request. Required exemption reviews are ongoing.

Exemption 4
Some responsive records will be subject to 5 U.S.C. § 552(b)(4) (Exemption 4). Exemption 4 protects "trade secrets and commercial or financial information obtained from a person [that is] privileged or confidential." (5 U.S.C. § 552(b)(4)). Information is considered commercial or financial in nature if it relates to business or trade. This exemption is intended to protect the interests of both the agency and third party submitters of information. Prior to publicly releasing agency records, BPA is required by Exemption 4 to solicit objections to the public release of any third party's confidential commercial information contained in the responsive records set. The gathered records contain third party information belonging to several third parties, including Eugene Water & Electric Board and Lane Electric Cooperative. In compliance with the FOIA and U.S. Department of Justice (DOJ) guidance on the application of Exemption 4, BPA will be reaching out to those, and other, information submitters. BPA will provide those third parties with a records review and objection opportunity. The FOIA does not permit a discretionary release of information otherwise protected by Exemption 4.

Exemption 5
In addition, the gathered records do or may contain potentially pre-decisional and deliberative internal agency information. In compliance with the FOIA, BPA is reviewing the records for the possible application of 5 U.S.C. § 552(b)(5) (Exemption 5), which serves to protect such information from public release. The agency's Office of General Counsel will review that potentially pre-decisional and deliberative internal agency information. BPA will consider a discretionary release of information otherwise subject to Exemption 5, wherever permissible and as encouraged by the FOIA.

Target Date
In light of the above conditions and determinations BPA currently estimates a next partial response to your FOIA request by October 13, 2023. BPA again invites you to contact us to narrow the scope of your request, if desirable, or to discuss this estimated completion date, if you are interested.

Questions about this communication or the status of your FOIA request may be directed to James King, FOIA Public Liaison, at jjking@bpa.gov or 503-230-7621.

Sincerely,

Candice D. Palen, Freedom of Information/Privacy Act Officer
Responsive agency records accompany this communication.

Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT/PRIVACY PROGRAM

July 27, 2023

In reply refer to: FOIA #BPA-2022-01001-F

SENT VIA EMAIL ONLY TO: sdussault@singletonschreiber.com

Susan Dussault, Of Counsel
Singleton Schreiber
450 A Street, 5th Floor
San Diego, CA 92101

Dear Ms. Dussault,

This communication is the Bonneville Power Administration's (BPA) final response to your request for agency records made under the Freedom of Information Act, 5 U.S.C. § 552 ("FOIA"). Your FOIA request was received on June 3, 2022, and formally acknowledged on July 19, 2022. A first partial response was sent to you on March 21, 2023.

Original Request
BPA stipulates to the lengthy content of your June 3, 2022, FOIA request letter to the agency as a perfected and complete FOIA request. The agency's acknowledgement letter dated July 19, 2022 documents your discussions with the BPA FOIA Office and your re-scoped request.

Second Partial and Final Response
In an effort to both accommodate the review of the large volume of responsive records, and to provide the records expediently, within the limitations of available agency resources, BPA is releasing responsive records to you in installments. Partial records releases are permitted by the FOIA. The second partial and final release of responsive records accompanies this communication. Those records are responsive to your request for all documents and communications related to investigations of the Holiday Farm Fire that were provided to the United States Forest Service fire investigator. BPA is here releasing 485 pages, and eight Excel files, with redactions applied to two pages, made under 5 U.S.C. § 552(b)(6) (Exemption 6). A more detailed explanation of the applied exemptions follows.

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the FOIA's nine statutory exemptions, also directs agencies to publicly release any reasonably segregable, non-exempt information that is contained in those records.

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Lastly, as required by 5 U.S.C. § 552(a)(8)(A), information has been withheld only in instances where, (1) disclosure is prohibited by statute, or (2) BPA foresees that disclosure would harm an interest protected by the exemption cited for the record. When full disclosure of a record is not possible, the FOIA statute further requires that BPA take reasonable steps to segregate and release nonexempt information. The agency has determined that in certain instances partial disclosure is possible, and has accordingly segregated the records into exempt and non-exempt portions.

Fees
There are no fees associated with processing your FOIA request.

Certification
Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the records search and information release described above. Your FOIA request BPA-2022-01001-F is now closed with the responsive agency information provided.

Appeal
Note that the records release certified above is final. Pursuant to 10 C.F.R. § 1004.8, you may appeal the adequacy of the records search, and the completeness of this records release, within 90 calendar days from the date of this communication. Appeals should be addressed to:

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by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either (1) in the district where you reside, (2) where you have your principal place of business, (3) where DOE's records are situated, or (4) in the District of Columbia.

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E-mail: ogis@nara.gov
Phone: 202-741-5770
Toll-free: 1-877-684-6448
Fax: 202-741-5769

Questions about this communication or the status of your FOIA request may be directed to James King, FOIA Public Liaison, at jjking@bpa.gov or 503-230-7621.

Sincerely,

Candice D. Palen
Freedom of Information/Privacy Act Officer

Responsive agency records accompany this communication.


11/1

From: Mora Flores,Carlos (BPA) - TFBV-ALVEY
To: Sheppard,Charles A (BPA) - TFBV-DOB-1
Subject: RE: Cougar Holden Creek Fire investigation.
Date: Thursday, October 8, 2020 11:29:05 AM

I'm going by memory here...

Mile 6

Mile 4

Mile 7

Mile 3 or 4

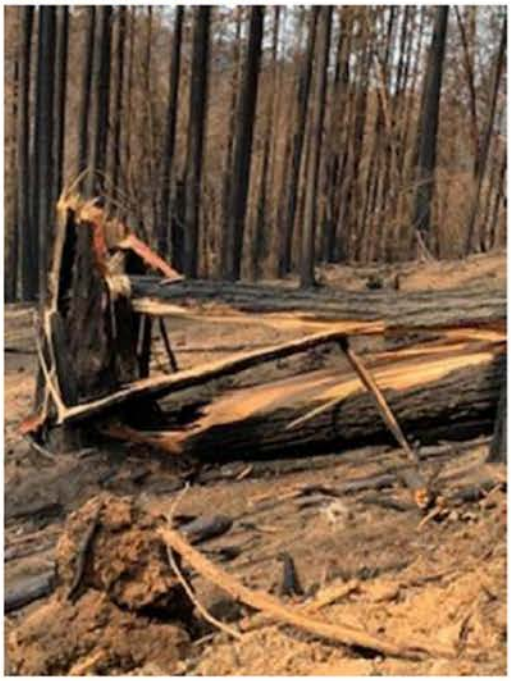
This is structure 6/1. It was replaced with a wood structure for repairs

Mile 17

Mile 7

Mile 16

Access road -16-17 mile



Looking at 19/4 and 19/5

Carlos Mora
Bonneville Power Administration
Natural Resource Specialist
541 988-7433 Office
(b) (6) [redacted] Cell
jcmoraflores@bpa.gov

From: Sheppard,Charles A (BPA) - TFBV-DOB-1 <casheppard@bpa.gov>
Sent: Wednesday, October 7, 2020 1:16 PM
To: Mora Flores,Carlos (BPA) - TFBV-ALVEY <jcmoraflores@bpa.gov>
Subject: Cougar Holden Creek Fire investigation.
Importance: High

Carlos please send me any of the photos you have related to this request.

17) Photographs BPA employees took of downed lines, switches, or protection equipment on

this circuit directly before or after the fire, including during Line 1 Mile 6 Tower 1 replacement.

Chuck Sheppard
Manager Vegetation Management & Forestry
360-418-2987
(b) (6) [redacted]

Bonneville
Power Administration

Transmission Vegetation Management Program (FY2011)

1) Objectives

A. Purpose of the Transmission Vegetation Management Program (TVMP)

1. Establish a TVMP consistent with regulatory compliance.
2. Improve the reliability of the electric transmission system.
3. Maintain clearances between transmission lines and vegetation both inside and outside the transmission right-of-way (ROW), to ensure no vegetation contacts.
4. Report vegetation-related outages of the transmission system to the respective regulatory body (i.e., WECC/NERC).

B. Compliance with NERC FAC-003-01

1. Bonneville Power Administration (BPA) TVMP complies with stated requirements of NERC Standard FAC- 003-01.

2. Elements of the TVMP

The Bonneville Power Administration TVMP consists of the following practices:

A. Inspection Patrols

1. Transmission Line Maintenance (TLM) routine working patrol is the working patrol to inspect all transmission lines rights-of-way (ROW) once per year. (TLM Section III.A.8)
2. Vegetation-Only Aerial Patrol may be performed utilizing Natural Resource Specilist (NRS) – type expertise (BPA) or contract.
3. Light Detection and Ranging (LiDAR) is a remote sensing system used to collect topographic and geospatial data. LiDAR vegetation data will be acquired and modeled for lines identified jointly by Transmission Engineering (TE) and Transmission Field (TF) Services.
4. NRS follow up mitigation patrol: may be performed in locations where existing land use agreements allow vegetation to encroach into clearance 1.

B. Vegetation Maintenance

1. Scheduled treatment

   NRS staff (TFBV division) plans and schedules treatment of approximately 10-20 % annually (amount may vary) of BPA's rights-of-way. See attached ROW Corridor Out Year Plan. The purpose of this treatment is to clear all tall growing vegetation from the ROW from a known point to a know point. The goal is to achieve BPA's Clearance 1 distances at the time of treatment. ROWs are scheduled with the purpose of assuring no grow into outages will occur before the next scheduled treatment. The period or treatment cycle for each ROW is determined by the environmental conditions and growth rates of vegetation expected on each ROW in a given geographic/ecological region. Cycles may be adjusted based on patrol findings. Planned treatment cycles can be found posted on BPA's Internal Vegetation Management web site on a spreadsheet entitled "TVMP Treatment Cycle Update". BPA began to fully integrate its Clearance 1 distance standards into its scheduled treatments in FY08.

2. Patrol response treatment

   In response to inspection patrol findings conducted annually, vegetation found to encroach on BPAs clearance 2 standards is removed per action thresholds are within 24 hours, 15 calendar days, or 30 calendar days, depending on specific conditions. (See response to hazardous vegetation during working patrols Transmission Line Maintenance Standards and Guides VII.B.1.VI).

C. Vegetation Clearance Mitigation Program (On-ROW orchards, Tree Farms, Nurseries and properties with vegetation agreements).

When special conditions are encountered on-ROW that require removal of vegetation from an orchard, tree farm, nursery, a property under a vegetation agreement, e.g. tree and brush agreement or land use agreement with a vegetation clause or a property with an easement right to grow vegetation, then BPA addresses these special conditions via its Vegetation Mitigation Program (See BPA Clearance Mitigation Process).

D. Danger Tree Program

Off-ROW vegetation that does not pose an immediate threat to transmission lines but has been identified during inspection as exhibiting characteristics that would indicate a potential problem in the future are cruised, marked, appraised, and purchased by BPA Danger Tree Crew, a part of Real Property Services in the TE organization. When the crew informs the NRS staff of a Notice of Rights Acquired (NORA), the NRS schedules removal of these trees as part of either the next scheduled treatment in the planned treatment cycle, or with a separate Danger Tree removal contract.

E. Personnel

1. Key Personnel

   a. Internal Operations Manager

      The Internal Operations Manager is accountable for all activities of the Vegetation Management Program, relying on the Supervisory NRS and staff NRSs to identify, plan, budget, implement, and track the vegetation management program.

   b. District Managers (DM)

      The DM is the accountable manager for non-vegetation management maintenance functions on Rights-of-Way (ROW) by prioritizing, coordinating and assuring the work within each District.

   c. Supervisory Natural Resource Specialist

      Provides overall program policy development, coordination and the oversight for consistent implementation of the vegetation program system-wide, including the final review and approval of the overall agency annual TVMP and budget.

   d. Vegetation Management and Access maintenance Program Manager

      Provides programmatic guidance for vegetation management and access maintenance system-wide, as well managing program budget, conflict escalation protocol, and WECC reporting.

   e. Natural Resource Specialists, within their assigned geographic areas are responsible for:

      1) Tracking, responding to reports appropriately, and directing contractors to remove vegetation that has been properly identified as a future threat by the Transmission Line Maintenance staff or the helicopter observers, during their respective patrols, including scheduling the removal of on-ROW danger when beyond the capacity of TLM and high brush as well as off ROW danger trees when BPA has legal rights to do so.

      2) Serve as Observers (for vegetation-only aerial patrols).

      3) Additions or changes to annual work plans, and coordinating changes with affected parties before vegetation control is put into practice.

      4) Assuring contractual obligations for vegetation removal are met.

      5) Properly completing and documenting their verification and scheduling activities of aerial patrol reports and vegetation removal activities using the accepted BPA methods and within established time frames.

      6) Meeting with responsible regional personnel to review site-specific vegetation prescriptions.

7) Coordinating ROW danger tree (DT) evaluations with Real Property Services to ensure appropriate budgets are available for removal following marking and purchase of DT rights.

8) Being the primary contact and project manager for coordinating implementation, communicating progress, and assuring completions of the approved annual vegetation management plan.

9) Supervises contract inspectors to assist with vegetation management contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Contract Inspectors

10) When contract inspection services are contracted, will assist the NRS in monitoring progress and performance of vegetation removal contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Actions proposed by an inspector that are outside, or in addition to the scope of the contract must be communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.

11) Each Inspector shall have extensive experience in the line inspection process and be certified for special services by the contracting firm according to the contract statement of work (SOW).

f. Transmission Line Maintenance (TLM) is responsible for all electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability and safety of the transmission system or safety of the general public.

1) TLM Foremen III is responsible for:

- Scheduling and providing appropriate staffing when outages/hold-orders are required.
- Tracking annual working patrol data regarding vegetation maintenance needs. The removal and communication of imminent vegetation hazard removal during the annual working patrol.

2) TLM Staff is responsible for:

- All electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability, availability and safety of the transmission system (or safety of the general public).
- Assuring the ROWs are clear of danger brush
- Identifying, communicating, and removing vegetation that is an imminent/immediate safety hazard, including

danger brush and danger trees, to the transmission system while conducting their annual working patrols.

- Proper patrolling reporting, and documenting the vegetation conditions and vegetation maintenance needs of the ROW during their annual working patrols.
- Communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.
- Responding to vegetation identified by aircraft services or working patrols as imminent hazards within 24 hours. Sites identified as imminent hazard and later determined NOT to be a hazard, may be forwarded to the NRS for routine scheduling of vegetation control activities.

g. Aerial Patrol Observer (TLM Lineman collateral duty)

Responsible for observing, locating, and recording vegetation problems as part of patrolling for irregularities associated with the transmission line facilities that could result in a fault, unusual conditions on and adjacent to the transmission line ROW (e.g. encroachments, Danger tree and brush) that could affect the safety or reliability of the transmission line. (TLM Standards and Guides Section IV.B.3).

h. Real Property Services

1) Responsible for researching and drafting easement rights, agreements, determining crop damage claims, appraising, negotiating and purchasing easement rights as part of the Vegetation Clearance Mitigation Program.

2) Responsible for cruising, marking, appraising and acquiring rights to remove off-ROW danger trees.

2) Qualifications

Qualification of these key personnel can be found in the Office of Personnel Management Classification Standards.

3) Required Training

a. TLM Staff

b. Changes in patrol work practices and inspection response types and timeframes implemented in 2010 (e.g., application of sag estimators to working patrols & response to contract inspections), are included in annual working patrol refresher training NRS Staff

F. Inspection Frequency

1. TLM Working Patrol

a. A working patrol shall include inspecting every structure in the line being patrolled, plus driving or walking the right-of-way between each structure. (TLM Standards And Guides Section III.A.8).

1) All lines shall be patrolled at a minimum of once a year.

2) All lines that are subject to NERC regulations will be prioritized based on vegetation conditions.

3) Progress on the working patrol will be monitored utilizing the FAC-003 Working Patrol report (WMGT 1063H).

G. Imminent threat procedure

1. TLM Response to hazardous vegetation during working patrols (TLM Standards and Guide Section VII.B.1 (Addendum FY2010-01)

   a. IMMINENT THREAT - Immediate removal. If immediate removal is not possible, report the hazard to the TLM Foreman III to arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps and the vegetation removed as soon as possible. Once the threat is removed, contact the NRS for follow-up with any property owner and/or environmental evaluation, if necessary. Besides vegetation located on the right-of-way, it is possible that a fall-into, bend-into, grow-into, and swing-into danger tree or logging fringe, etc, can pose an imminent threat based on the judgment of the person conducting the patrol and the conditions encountered.

2. NRS Response to hazardous vegetation

   a. IMMINENT THREAT REPORTED DURING NON-TLM PATROLS – Requires immediate notification of the Foreman III. Arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps or eGIS database and the vegetation removed as soon as possible. Once the threat is removed, update eGIS data base and follow-up with any property owner and/or environmental evaluation, if necessary. (NOTE: During the implementation of the vegetation-only pilot project, some adjustments may be made in response times for Clearance 2 encroachments to evaluate the quality of pilot program data and to accommodate initial limitations in the distribution of reported data using new and developing eGIS mapping technology. This also applies to LiDAR acquired data.)

H. Action thresholds

1. See Attached TLM Standards and Guides, Section VII.B.1 Addendum FY2009-01, III, IV, V, and XI SUMMARY CORRECTION RESPONSE TABLE

I. General interim corrective action process when the there are constraints on performing vegetation management

1. In cases where safety, public relations, legal, and environmental considerations special response, these will be documented, monitored, mitigated, and tracked. These are cases where landowners may have legal rights and agreements where agricultural or horticultural crops are concerned (orchards, tree farms, nurseries, etc.). Cases may also exist where action is restricted due to environmental laws (Endangered Species Act) or when the action would be unsafe for the public or workers due to inaccessibility or environmental conditions. See Attached TLM Standards and Guides, Section VII.B.1 Addendum FY2009-01, IX. RESPONSE TO DANGER

BRUSH AND HIGH BRUSH (SPECIAL CONDITIONS) and X. EXCEPTIONS FOR UNSAFE CONDITIONS, ACTION REQUIREING PURCHASE OF PROPERTY RIGHT, OR OTHE LEGAL REQUIREMENTS.

J. Organization structure

1. Transmission Services (TS) provides reliable open access, non-discriminatory transmission service on the BPA transmission network for utilities, generators and power marketers consistent with various regulatory requirements.

   a. ENGINEERING AND TECHNICAL SERVICES (TE), responsible for implementing the transmission capital program, providing technical support for the transmission maintenance program, and providing real property services to the agency.

   b. SYSTEM OPERATIONS (TO), responsible for the safe, reliable, and open access operation and dispatch of the high voltage transmission system and interconnected generation.

   c. TRANSMISSION FIELD SERVICES (TF), responsible for managing field operations, maintenance, and construction of BPA's high voltage electrical transmission system.

      1) INTERNAL OPERATIONS (TFB) provides support services including Technical Training, Work Planning & Evaluation, and Vegetation/Access Road Management, to the TF organization.

      2) The Supervisory Natural Resource Specialist (TFBV) is responsible for the development and implementation of the TF Services Vegetation Management and Access Road programs, which include managing rights-of-way, danger trees, rights-of-way-access. And may include substation vegetation per arrangements and the substation operator. Natural Resource Specialists (NRS), who are supervised by the Supervisory Natural Resource Specialist are co-located in the TF Districts and work collaboratively with Transmission line Maintenance (TLM) crews to implement these programs.

      3) DISTRICT Managers are responsible for implementing field operation, and maintenance and construction activities. District Manager responsibilities include coordinating work and resources between districts, operating and maintaining the BPA transmission system including buildings, grounds, mobile equipment and right-of-ways (ROW).

      4) TLM Foreman III are responsible for assuring that the working patrols are performed and assuring imminent threats are responded to timely. TLM personnel report to the TLM Foreman III.

K. Definitions

1. Clearance 1

   R1.2.1 Clearance 1-Clearance distance to be achieved at the time of transmission vegetation management based on local conditions and expected time frame in which the Transmission Owner plans to return

for future vegetation management work. Must be greater than Clearance 2. (NOTE: This applies to scheduled treatments.)

a. Established in TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13.

b. 25 feet from Max Sag and Swing of the transmission lines greater than 230kV lines, except

   1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

   2) Where the actual physical ground to conductor clearance is less than 25 feet.

c. 20 feet from Max Sag and Swing of the transmission lines less than or equal to 230kV lines, except

   1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

All exceptions must be documented in appropriate data bases and the maximum allowable clearance distance shall be determined in each case by subject matter experts, led by the NRS per the Vegetation Clearance Mitigation Program.

Agreements will be monitored and strictly enforced.

2. Clearance 2

R1.2.2 Clearance 2 – Clearance to be maintained between vegetation and conductors under all rated electrical operating conditions to prevent flashover. These shall be no less than those set forth in IEEE standard 516-2003, Section 4.2.2.3.

Clearance 2 is considered to be the distances set forth in IEEE standard 516-2003, section 4.2.2.3.

To assure these distances are not encroached upon, BPA maintains the minimum distances of 10 feet for 230 KV lines and less and 15 feet on lines greater than 230 KV. See attached (s Standards and Guide Section VII.B.1 (Addendum FY2010-01)).

3. Communications Procedures to and from system operators

A. Imminently hazardous conditions shall be reported immediately to the District Manager and District Foreman. (TLM Standards And Guides Section IV.A.10)

1. During aerial patrols, all Danger brush must be reported to the District Foreman and the Natural Resource Specialist by phone, radio, or in person the day it is discovered. Any burnt tops must be reported to the District Foreman, Natural Resource Specialist and the System Dispatcher immediately. (TLM Standards And Guides Section IV.B.3)

2. Crews on working patrol shall correct all hazards that they are capable of correcting. All hazards will be reported immediately to the District Foreman, Natural Resource Specialist, or Realty Specialist, depending on the nature of the line hazard. If the hazard could cause an outage, the System Dispatcher will be notified. (TLM Standards And Guides Section IV.A.8)

   a. Bonneville Power Administration adheres to WECC criteria for Significant Outages. If an Emergency Outage is required to safely remove a potential hazard affecting an unstudied transmission path, Operating Transfer Capability is set to conservative default

values per operating conditions and regulations. Affected parties are notified of curtailments as soon as possible prior to removing the line from service.

3. Monthly TLM/NRS coordination meetings, for exchanging information regarding landowner information and vegetation removal contractor performance.
4. In the case of unexplained line trips Aircraft Services will conduct Transmission Line Aircraft Patrols.
    a. Each line is patrolled when practical following an unexplained interruption or when requested by the System Dispatcher or TLM District Foreman. (TLM Standards And Guides Section IV.B.3)

4. Documentation

A. Reporting

1. To regulators (of tree contacts).
2. Bonneville Power Administration uses an email system for WECC/NERC notifications.
3. ROW or portions of ROW that have been completely treated per the Annual Work Plan will be documented via a tracking form spreadsheet on TFBV SharePoint web site for Vegetation Management.
4. All TLM and vegetation-only patrol findings are documented and tracked in TLM Apps.
5. All LiDAR findings will be documented and tracked using BPA's eGIS mapping application.

B. References to regulations

1. Local, state, provincial, federal
    a. *BPA TVMP complies with NERC Standard FAC-003-1.*

5. Work specifications

A. See TLM Standards and Guides

6. Annual Plan

A. Transmission Line Maintenance Working Patrol inspects all lines a minimum of once per year.

B. LiDAR – vegetation data will be acquired and modeled for all lines considered high-risk (WECC sanctionable or OB 19) on that part of the BPA transmission system located on the west side of the Cascade Range in Oregon and Washington, including the Snohomish, Covington, Olympia, Longview, Salem and Alvey Districts on a regular cycle. LiDAR flights will occur in the fall while no vegetation scheduled maintenance is underway. Data acquired will be provided to the Vegetation Program Manager and on eGIS map products available to NRS and TLM staff.

C. All ROW or portions of ROW planned for scheduled cycle vegetation removal treatment will be treated. These are identified in BPA's FY Out -Year Plan. Modifications to the schedule are allowed. Justification for variances in the schedule must be documented in the Work Plan.

D. **All Danger Brush identified by TLM will be removed as soon as possible, but no later than May 31st if reported before May 15.** The vegetation program manager has the authority to modify the removal dates of Danger Brush identified.

7. **TVMP implementation**

   A. **How available in the organization**

   The FY10 TVMP, upon approval will be posted on the TFBV Vegetation Management SharePoint site.

REFERENCES

Contract Statement of Work (SOW)

Danger Tree Removal Contract

Draft of BPA Vegetation Mitigation Process

eGIS Database - http://iweb.bpa.gov/eGIS/Portal/Query.aspx

FY10 Out Year Plan (scheduled vegetation removals)

FY10 Project Tracking Form Spreadsheet
http://bpaweb/orgs/orgs%20main/transmission/field/rightofway/Vegetation/PlanningWorking%20Documents/Forms/AllItems.aspx

IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site
http://bpaweb.bpa.gov/orgs/orgs%20main/transmission/field/rightofway/vegetation/default.aspx

LiDAR – FY10 Work Plan

LiDAR TVMP Addendum

NERC Standard FAC-003-01

Outage Analysis and Reporting System (OARS)

TLM Apps

TLM Standards and Guides Section IV.A.10

TLM Standards and Guides Section IV.A.8

TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13

TLM Standards and Guides, Section VII.B.1 Danger Tree and Brush Selection Criteria

TLM Standards and Guides Section IV.B.1

TVMP Cycle Treatment Update

WMGT 1063H – FAC-003 Working Patrol Report

Bonneville Power Administration

Transmission Vegetation Management Program (FY2014)

1) Objectives

A. Purpose of the Transmission Vegetation Management Program (TVMP)

1. Establish a TVMP consistent with regulatory compliance.
2. Improve the reliability of the electric transmission system.
3. Maintain clearances between transmission lines and vegetation both inside and outside the transmission right-of-way (ROW), to ensure no vegetation contacts.
4. Report vegetation-related outages of the transmission system to the respective regulatory body (i.e., WECC/NERC).

B. Compliance with NERC FAC-003-01 (FAC-003-3 after 07/01/2014)

1. Bonneville Power Administration (BPA) TVMP complies with stated requirements of NERC Standard FAC- 003-01 (FAC-003-3 after 07/01/2014).

2. Elements of the TVMP

The Bonneville Power Administration TVMP consists of the following practices:

A. Inspection Patrols

1. Transmission Line Maintenance (TLM) routine working patrol is the working patrol to inspect all transmission lines rights-of-way (ROW) once per year. (TLM Section III.A.8)
2. Vegetation-Only Aerial Patrol may be performed utilizing Natural Resource Specilist (NRS) – type expertise (BPA) or contract. Spans not flown will be supplemented with a ground patrol performed by the NRS's or contractor.
3. Light Detection and Ranging (LiDAR) is a remote sensing system used to collect topographic and geospatial data. LiDAR vegetation data will be acquired and modeled for lines identified jointly by Transmission Engineering (TE) and Transmission Field (TF) Services.
4. NRS follow up mitigation patrol: may be performed in locations where existing land use agreements allow vegetation to encroach into cycle clearance distances.

B. Vegetation Maintenance

1. Scheduled treatment

   NRS staff (TFBV division) plans and schedules treatment of approximately 10-20 % annually (amount may vary) of BPA's rights-of-way. See attached ROW Corridor Out Year Plan. The purpose of this treatment is to clear all tall growing vegetation from the ROW from a known point to a know point. The goal is to achieve BPA's cycle maintenance distances at the time of treatment. ROWs are scheduled with the purpose of assuring no grow-into outages will occur before the next scheduled treatment nor violate minimum vegetation clearance distance (MVCD). The period or treatment cycle for each ROW is determined by the environmental conditions and growth rates of vegetation expected on each ROW in a given geographic/ecological region. Cycles may be adjusted based on patrol findings. Planned treatment cycles can be found posted on BPA's Internal Vegetation Management web site on a spreadsheet entitled "TVMP Treatment Cycle Update". BPA began to fully integrate its cycle maintenance (Clearance 1) distance standards into its scheduled treatments in FY08.

2. Patrol response treatment

   In response to inspection patrol findings conducted annually, vegetation found to encroach on BPAs Danger Brush standards is removed per action thresholds are within 24 hours or 15 calendar days, depending on specific conditions. (See response to hazardous vegetation during working patrols Transmission Line Maintenance Standards and Guides VII.B.1.VI).

C. Vegetation Clearance Mitigation Program (On-ROW orchards, Tree Farms, Nurseries and properties with vegetation agreements).

When special conditions are encountered on-ROW that require removal of vegetation from an orchard, tree farm, nursery, a property under a vegetation agreement, e.g. tree and brush agreement or land use agreement with a vegetation clause or a property with an easement right to grow vegetation, then BPA addresses these special conditions via its Vegetation Mitigation Program (See BPA Clearance Mitigation Process).

D. Danger Tree Program

Off-ROW vegetation that does not pose an immediate threat to transmission lines but has been identified during inspection as exhibiting characteristics that would indicate a potential problem in the future are cruised, marked, appraised, and purchased by BPA Danger Tree Crew, a part of Real Property Services in the TE organization. When the crew informs the NRS staff of a Notice of Rights Acquired (NORA), the NRS schedules removal of these trees as part of either the next scheduled treatment in the planned treatment cycle, or with a separate Danger Tree removal contract.

E. Personnel

1. Key Personnel

   a. Internal Operations Manager

      The Internal Operations Manager is accountable for all activities of the Vegetation Management Program, relying on the Supervisory NRS and staff NRSs to identify, plan, budget, implement, and track the vegetation management program.

   b. District Managers (DM)

      The DM is the accountable manager for non-vegetation management maintenance functions on Rights-of-Way (ROW) by prioritizing, coordinating and assuring the work within each District.

   c. Supervisory Natural Resource Specialist

      Provides overall program policy development, coordination and the oversight for consistent implementation of the vegetation program system-wide, including the final review and approval of the overall agency annual TVMP and budget. Also has the authority to modify vegetation clearance correction timeframes based on specific or unique circumstances.

   d. Vegetation Management and Access maintenance Program Manager

      Provides programmatic guidance for vegetation management and access maintenance system-wide, as well as managing program budget, conflict escalation protocol, and FERC/NERC/WECC reporting.

   e. Natural Resource Specialists, within their assigned geographic areas are responsible for:

      1) Tracking, responding to reports appropriately, and directing contractors to remove vegetation that has been properly identified as a future threat by the Transmission Line Maintenance staff or the helicopter observers, during their respective patrols, including scheduling the removal of on-ROW danger when beyond the capacity of TLM and high brush as well as off ROW danger trees when BPA has legal rights to do so.

      2) Serve as Observers (for vegetation-only aerial patrols).

      3) Additions or changes to annual work plans, and coordinating changes with affected parties before vegetation control is put into practice.

      4) Assuring contractual obligations for vegetation removal are met.

      5) Properly completing and documenting their verification and scheduling activities of aerial patrol reports and vegetation removal activities using the accepted BPA methods and within established time frames.

      6) Meeting with responsible regional personnel to review site-specific vegetation prescriptions.

7) Coordinating ROW danger tree (DT) evaluations with Real Property Services to ensure appropriate budgets are available for removal following marking and purchase of DT rights.

8) Being the primary contact and project manager for coordinating implementation, communicating progress, and assuring completions of the approved annual vegetation management plan.

9) Supervises contract inspectors to assist with vegetation management contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Contract Inspectors

10) When contract inspection services are contracted, will assist the NRS in monitoring progress and performance of vegetation removal contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Actions proposed by an inspector that are outside, or in addition to the scope of the contract must be communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.

11) Each Inspector shall have extensive experience in the line inspection process and be certified for special services by the contracting firm according to the contract statement of work (SOW).

f. Transmission Line Maintenance (TLM) is responsible for all electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability and safety of the transmission system or safety of the general public.

1) TLM Foremen III is responsible for:

- Scheduling and providing appropriate staffing when outages/hold-orders are required.
- Tracking annual working patrol data regarding vegetation maintenance needs. The removal and communication of imminent vegetation hazard removal during the annual working patrol.

2) TLM Staff is responsible for:

- All electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability, availability and safety of the transmission system (or safety of the general public).
- Assuring the ROWs are clear of danger brush

- Identifying, communicating, and removing vegetation that is an imminent/immediate safety hazard, including danger brush and danger trees, to the transmission system while conducting their annual working patrols.
- Proper patrolling reporting, and documenting the vegetation conditions and vegetation maintenance needs of the ROW during their annual working patrols.
- Responding to vegetation identified by aircraft services or working patrols as imminent hazards within 24 hours. Sites identified as imminent hazard and later determined NOT to be a hazard, may be forwarded to the NRS for routine scheduling of vegetation control activities.

g. Aerial Patrol Observer (TLM Lineman collateral duty)

Responsible for observing, locating, and recording vegetation problems as part of patrolling for irregularities associated with the transmission line facilities that could result in a fault, unusual conditions on and adjacent to the transmission line ROW (e.g. encroachments, Danger tree and brush) that could affect the safety or reliability of the transmission line. (TLM Standards and Guides Section IV.B.3).

h. Real Property Services

1) Responsible for researching and drafting easement rights, agreements, determining crop damage claims, appraising, negotiating and purchasing easement rights as part of the Vegetation Clearance Mitigation Program.

2) Responsible for cruising, marking, appraising and acquiring rights to remove off-ROW danger trees.

2) Qualifications

Qualification of these key personnel can be found in the Office of Personnel Management Classification Standards.

3) Required Training

a. TLM Staff

b. Changes in patrol work practices and inspection response types and timeframes implemented in 2010 (e.g., application of sag estimators to working patrols & response to contract inspections), are included in annual working patrol refresher training from NRS Staff.

F. Inspection Frequency

1. TLM Working Patrol

a. A working patrol shall include inspecting every structure in the line being patrolled, plus driving or walking the right-of-way between each structure. (TLM Standards And Guides Section III.A.8).

1) All lines shall be patrolled at a minimum of once a year.

2) All lines that are subject to NERC regulations will be prioritized based on vegetation conditions.

3) Progress on the working patrol will be monitored utilizing the FAC-003 Working Patrol report (WMGT 1063H).

4) Starting 10/01/2014, the TLM working patrol will only report imminent risk issues. Until then, the TLM working patrol will continue to report all appropriate vegetation clearance issues noted.

G. Imminent threat procedure

1. TLM Response to hazardous vegetation during working patrols (TLM Standards and Guide Section VII.B.1

   a. IMMINENT THREAT - Immediate removal. If immediate removal is not possible, report the hazard to the TLM Foreman III to arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps and the vegetation removed as soon as possible. Once the threat is removed, contact the NRS for follow-up with any property owner and/or environmental evaluation, if necessary. Besides vegetation located on the right-of-way, it is possible that a fall-into, bend-into, grow-into, and swing-into danger tree or logging fringe, etc, can pose an imminent threat based on the judgment of the person conducting the patrol and the conditions encountered.

2. NRS Response to hazardous vegetation

H. IMMINENT THREAT REPORTED DURING NON-TLM PATROLS – Requires immediate notification of the Foreman III. Arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps or eGIS database and the vegetation removed no later than 15 days after initial report. Once the threat is removed, update eGIS data base and follow-up with any property owner and/or environmental evaluation, if necessary. Response time for LiDAR identified encroachments will be based on the date the LiDAR data was posted to eGIS , consistent with our clearance guidelines. High Brush locations identified from LiDAR flown to facilitate next fiscal year's scheduled maintenance will be incorporated in scope of work for the associated project.

I. Action thresholds

1. See Attached TLM Standards and Guides, Section VII.B.1 III, IV, V, and XI SUMMARY CORRECTION RESPONSE TABLE

J. General interim corrective action process when the there are constraints on performing vegetation management

1. In cases where safety, public relations, legal, and environmental considerations special response, these will be documented, monitored, mitigated, and tracked. These are cases where landowners may have legal rights and agreements where agricultural or horticultural crops are concerned (orchards, tree farms, nurseries, etc.). Cases may also exist where action is restricted due to environmental laws (Endangered Species Act) or when the action would be unsafe for the public or workers due to inaccessibility or environmental conditions. See Attached TLM Standards and Guides, Section VII.B.1, IX. RESPONSE TO DANGER BRUSH AND HIGH BRUSH (SPECIAL CONDITIONS) and X. EXCEPTIONS FOR UNSAFE CONDITIONS, ACTION REQUIREING PURCHASE OF PROPERTY RIGHT, OR OTHE LEGAL REQUIREMENTS.

K. Organization structure

1. Transmission Services (TS) provides reliable open access, non-discriminatory transmission service on the BPA transmission network for utilities, generators and power marketers consistent with various regulatory requirements.

    a. ENGINEERING AND TECHNICAL SERVICES (TE), responsible for implementing the transmission capital program, providing technical support for the transmission maintenance program, and providing real property services to the agency.

    b. SYSTEM OPERATIONS (TO), responsible for the safe, reliable, and open access operation and dispatch of the high voltage transmission system and interconnected generation.

    c. TRANSMISSION FIELD SERVICES (TF), responsible for managing field operations, maintenance, and construction of BPA's high voltage electrical transmission system.

        1) INTERNAL OPERATIONS (TFB) provides support services including Technical Training, Work Planning & Evaluation, and Vegetation/Access Road Management, to the TF organization.

        2) The Supervisory Natural Resource Specialist (TFBV) is responsible for the development and implementation of the TF Services Vegetation Management and Access Road programs, which include managing rights-of-way, danger trees, rights-of-way-access. And may include substation vegetation per arrangements and the substation operator. Natural Resource Specialists (NRS), who are supervised by the Supervisory Natural Resource Specialist are co-located in the TF Districts and work collaboratively with Transmission line Maintenance (TLM) crews to implement these programs.

        3) DISTRICT Managers are responsible for implementing field operation, and maintenance and construction activities. District Manager responsibilities include coordinating work and resources between districts, operating and maintaining the BPA transmission system including buildings, grounds, mobile equipment and right-of-ways (ROW).

        4) TLM Foreman III are responsible for assuring that the working patrols are performed and assuring imminent

threats are responded to timely. TLM personnel report to the TLM Foreman III.

L. Definitions

1. Cycle Clearance - Cycle Clearance (Clearance 1) distance to be achieved at the time of transmission vegetation management based on local conditions and expected time frame in which the Transmission Owner plans to return for future vegetation management work. Must be greater than both MVCD and danger brush clearance. (NOTE: This applies to scheduled treatments.)

   a. Established in TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13.

   b. 25 feet from Max Sag and Swing of the transmission lines greater than 200kV lines, except

      1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

      2) Where the actual physical ground to conductor clearance is less than 25 feet.

   c. 20 feet from Max Sag and Swing of the transmission lines less than or equal to 200kV lines, except

      1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

   All exceptions must be documented in appropriate data bases and the maximum allowable clearance distance shall be determined in each case by subject matter experts, led by the NRS per the Vegetation Clearance Mitigation Program.

   Agreements will be monitored and strictly enforced.

   2. Danger Brush – Danger Brush Clearance to be maintained between vegetation and conductors under all rated electrical operating conditions to prevent violating MVCD and causing flashover. These shall be no less than those set forth in IEEE standard 516-2003, Section 4.2.2.3.

   Danger Brush clearance is meant to exceed MVCD to ensure MVCD is never violated and exceed the distances set forth in IEEE standard 516-2003, section 4.2.2.3.

   To assure these distances are not encroached upon, BPA designates the minimum distances of 10 feet for less than 200kV lines and less and 15 feet on lines greater than 200kV as Danger Brush. See attached (Standards and Guide Section VII.B.1).

3. Communications Procedures to and from system operators

A. Imminently hazardous conditions shall be reported immediately to the District Manager and District Foreman. (TLM Standards And Guides Section IV.A.10)

1. During aerial patrols, all Danger Brush must be reported to the District Foreman and the Natural Resource Specialist by phone, radio, or in person the day it is discovered. Any burnt tops must be reported to the District Foreman, Natural Resource Specialist and the System Dispatcher immediately. (TLM Standards And Guides Section IV.B.3)

2. Crews on working patrol shall correct all hazards that they are capable of correcting. All hazards will be reported immediately to the District Foreman, Natural Resource Specialist, or Realty Specialist,

depending on the nature of the line hazard. If the hazard could cause an outage, the System Dispatcher will be notified. (TLM Standards And Guides Section IV.A.8)

a. Bonneville Power Administration adheres to WECC criteria for Significant Outages. If an Emergency Outage is required to safely remove a potential hazard affecting an unstudied transmission path, Operating Transfer Capability is set to conservative default values per operating conditions and regulations. Affected parties are notified of curtailments as soon as possible prior to removing the line from service.

3. Monthly TLM/NRS coordination meetings, for exchanging information regarding landowner information and vegetation removal contractor performance.

4. In the case of unexplained line trips Aircraft Services will conduct Transmission Line Aircraft Patrols.

a. Each line is patrolled when practical following an unexplained interruption or when requested by the System Dispatcher or TLM District Foreman. (TLM Standards And Guides Section IV.B.3)

4. Documentation

A. Reporting

1. To regulators (of tree contacts).

2. Bonneville Power Administration uses an email system for WECC/NERC notifications.

3. ROW or portions of ROW that have been completely treated per the Annual Work Plan will be documented via a tracking form spreadsheet on TFBV SharePoint web site for Vegetation Management.

4. All TLM and vegetation-only patrol findings are documented and tracked in TLM Apps.

5. All LiDAR findings will be documented and tracked using BPA's eGIS mapping application.

B. References to regulations

1. Local, state, provincial, federal

a. *BPA TVMP complies with NERC Standard FAC-003-1 (FAC-003-3 after 07/01/2014).*

5. Work specifications

A. See TLM Standards and Guides

6. Annual Plan

A. Transmission Line Maintenance Working Patrol inspects all lines a minimum of once per year.

B. **LiDAR** – vegetation data will be acquired and modeled for all lines considered high-risk (WECC sanctionable or Interconnection Reliabilty Operating Limit circuits, hence known as IROL) on that part of the BPA transmission system located on the west side of the Cascade Range in Oregon and Washington, including the Snohomish, Covington, Olympia, Longview, Salem and Alvey Districts on a regular cycle. LiDAR flights will occur as planned or needed. Data acquired will be provided to the Vegetation Program Manager and on eGIS map products available to NRS and TLM staff.

C. **All ROW or portions of ROW planned for scheduled cycle vegetation maintenance will be treated.** These are identified in BPA's FY Out - Year Plan. Modifications to the schedule are allowed. Justification for variances in the schedule must be documented in the Work Plan.

D. **All Danger Brush identified by TLM will be removed within 24 hours or no later than 15 days after the report depending upon the specific situation (ie. Agricultural).** The vegetation program manager has the authority to modify the removal dates of Danger Brush identified.

All High Brush reported will be corrected no later than May 31st if reported before December 31st of the previous year. The vegetation program manager has the authority to modify the removal dates of High Brush identified.

7. **TVMP implementation**

A. **How available in the organization**

The FY14 TVMP, upon approval will be posted on the TFBV Vegetation Management SharePoint site.

REFERENCES

Contract Statement of Work (SOW)

Danger Tree Removal Contract

Draft of BPA Vegetation Mitigation Process

eGIS Database - http://iweb.bpa.gov/eGIS/Portal/Query.aspx

- FY14 Out Year Plan (scheduled vegetation maintenance)

IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site http://txinternal.bpa.gov/tf/veg-mgmnt/default.aspx

LiDAR – FY14 Work Plan

NERC Standard FAC-003-01

Outage Analysis and Reporting System (OARS)

TLM Apps

TLM Standards and Guides Section IV.A.10

TLM Standards and Guides Section IV.A.8

TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13

TLM Standards and Guides, Section VII.B.1 Danger Tree and Brush Selection Criteria

TLM Standards and Guides Section IV.B.1

TVMP Cycle Treatment Update

WMGT 1063H – FAC-003 Working Patrol Report

Bonneville Power Administration

Transmission Vegetation Management Program (FY2010)

1) Objectives

A. Purpose of the Transmission Vegetation Management Program (TVMP)

1. Establish a TVMP consistent with regulatory compliance.
2. Improve the reliability of the electric transmission system.
3. Maintain clearances between transmission lines and vegetation both inside and outside the transmission right-of-way (ROW), to ensure no vegetation contacts.
4. Report vegetation-related outages of the transmission system to the respective regulatory body (i.e., WECC/NERC).

B. Compliance with NERC FAC-003-01

1. Bonneville Power Administration (BPA) TVMP complies with stated requirements of NERC Standard FAC- 003-01.

2) Elements of the TVMP

The Bonneville Power Administration TVMP consists of the following practices:

A. Inspection Patrols

1. Transmission Line Maintenance (TLM) routine working patrol
   a. It is the responsibility of the TLM working patrol to inspect all transmission lines rights-of-way (ROW) once per year. (TLM Section III.A.8)
2. Vegetation-Only Aerial Patrol
   a. Vegetation-only Aerial patrols may be performed utilizing Natural Resource Specilist (NRS) – type expertise (BPA) or contract.
3. LiDAR
   a. Light Detection and Ranging (LiDAR) is a remote sensing system used to collect topographic and geospatial data. LiDAR vegetation data will be acquired and modeled for lines identified jointly by Transmission Engineering (TE) and Transmission Field (TF) Services. This data will be reviewed and a decision on the appropriate future budget, schedule and application of the data for the vegetation program will be developed by the summer of 2010.

B. Vegetation Maintenance

1. Scheduled treatment

   NRS staff (TFBV division) plans and schedules treatment of approximately 10-20 % annually (amount may vary) of BPA's rights-of-way. See attached ROW Corridor Out Year Plan. The purpose of this treatment is to clear all tall growing vegetation from the ROW from a known point to a know point. The goal is to achieve BPA's Clearance 1 distances at the time of treatment. ROWs are scheduled with the purpose of assuring no grow into outages will occur before the next scheduled treatment. The period or treatment cycle for each ROW is determined by the environmental conditions and growth rates of vegetation expected on each ROW in a given geographic/ecological region. Cycles may be adjusted based on patrol findings. Planned treatment cycles can be found posted on BPA's Internal Vegetation Management web site on a spreadsheet entitled "TVMP Treatment Cycle Update". BPA began to fully integrate its Clearance 1 distance standards into its scheduled treatments in FY08.

2. Patrol response treatment

   In response to inspection patrol findings conducted annually, vegetation found to encroach on BPAs clearance 2 standards is removed prior to the start of peak operating season, (May 31st). Action thresholds are within 24 hours, 15 calendar days, or 30 calendar days, depending on specific conditions. (See response to hazardous vegetation during working patrols Transmission Line Maintenance Standards and Guides VII.B.1.VI).

C. Vegetation Clearance Mitigation Program (On-ROW orchards, Tree Farms, Nurseries and properties with vegetation agreements).

When special conditions are encountered on-ROW that require removal of vegetation from an orchard, tree farm, nursery, a property under a vegetation agreement, e.g. tree and brush agreement or land use agreement with a vegetation clause or a property with an easement right to grow vegetation, then BPA addresses these special conditions via its Vegetation Mitigation Program (See BPA Clearance Mitigation Process).

D. Danger Tree Program

Off-ROW vegetation that does not pose an immediate threat to transmission lines but has been identified during inspection as exhibiting characteristics that would indicate a potential problem in the future are cruised, marked, appraised, and purchased by BPA Danger Tree Crew, a part of Real Property Services in the TE organization. When the crew informs the NRS staff of a Notice of Rights Acquired (NORA), the NRS schedules removal of these trees as part of either the next scheduled treatment in the planned treatment cycle, or with a separate Danger Tree removal contract.

E. Personnel

1. Key Personnel

   a. Internal Operations Manager

      1) The Internal Operations Manager is accountable for all activities of the Vegetation Management Program, relying on the Supervisory NRS and staff NRSs to identify, plan,

budget, implement, and track the vegetation management program.

b. District Managers (DM)

1) The DM is the accountable manager for non-vegetation management maintenance functions on Rights-of-Way (ROW) by prioritizing, coordinating and assuring the work within each District.

c. Supervisory Natural Resource Specialist

1) Provides overall program policy development, coordination and the oversight for consistent implementation of the vegetation program system-wide, including the final review and approval of the overall agency annual TVMP and budget.

d. Vegetation Management and Access maintenance Program Manager

1) Provides programmatic guidance for vegetation management and access maintenance system-wide, as well managing program budget, conflict escalation protocol, and WECC reporting.

e. Natural Resource Specialists, within their assigned geographic areas are responsible for:

1) Tracking, responding to reports appropriately, and directing contractors to remove vegetation that has been properly identified as a future threat by the Transmission Line Maintenance staff or the helicopter observers, during their respective patrols, including scheduling the removal of on-ROW danger when beyond the capacity of TLM and high brush as well as off ROW danger trees when BPA has legal rights to do so.

2) Serve as Observers (for vegetation-only aerial patrols).

3) Additions or changes to annual work plans, and coordinating changes with affected parties before vegetation control is put into practice.

4) Assuring contractual obligations for vegetation removal are met.

5) Properly completing and documenting their verification and scheduling activities of aerial patrol reports and vegetation removal activities using the accepted BPA methods and within established time frames.

6) Meeting with responsible regional personnel to review site-specific vegetation prescriptions.

7) Coordinating ROW danger tree (DT) evaluations with Real Property Services to ensure appropriate budgets are available for removal following marking and purchase of DT rights.

8) Being the primary contact and project manager for coordinating implementation, communicating progress, and

assuring completions of the approved annual vegetation management plan.

9) Supervises contract inspectors to assist with vegetation management contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Contract Inspectors

10) When contract inspection services are contracted, will assist the NRS in monitoring progress and performance of vegetation removal contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Actions proposed by an inspector that are outside, or in addition to the scope of the contract must be communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.

11) Each Inspector shall have extensive experience in the line inspection process and be certified for special services by the contracting firm according to the contract statement of work (SOW).

f. Transmission Line Maintenance (TLM) is responsible for all electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability and safety of the transmission system or safety of the general public.

1) TLM Foremen III is responsible for:

- Scheduling and providing appropriate staffing when outages/hold-orders are required.
- Tracking annual working patrol data regarding vegetation maintenance needs. The removal and communication of imminent vegetation hazard removal during the annual working patrol.

2) TLM Staff is responsible for:

- All electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability, availability and safety of the transmission system (or safety of the general public).
- Assuring the ROWs are clear of danger brush
- Identifying, communicating, and removing vegetation that is an imminent/immediate safety hazard, including danger brush and danger trees, to the transmission system while conducting their annual working patrols.
- Proper patrolling reporting, and documenting the vegetation conditions and vegetation maintenance needs of the ROW during their annual working patrols.

- Communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.
- Responding to vegetation identified by aircraft services or working patrols as imminent hazards within 24 hours. Sites identified as imminent hazard and later determined NOT to be a hazard, may be forwarded to the NRS for routine scheduling of vegetation control activities.

g. Aerial Patrol Observer (TLM Lineman collateral duty)

1) Responsible for observing, locating, and recording vegetation problems as part of patrolling for irregularities associated with the transmission line facilities that could result in a fault, unusual conditions on and adjacent to the transmission line ROW (e.g. encroachments, Danger tree and brush) that could affect the safety or reliability of the transmission line. (TLM Standards and Guides Section IV.B.3).

h. Real Property Services

1) Responsible for researching and drafting easement rights, agreements, determining crop damage claims, appraising, negotiating and purchasing easement rights as part of the Vegetation Clearance Mitigation Program.

2) Responsible for cruising, marking, appraising and acquiring rights to remove off-ROW danger trees.

2) Qualifications

a. Qualification of these key personnel can be found in the Office of Personnel Management Classification Standards.

3) Required Training

a. TLM Staff

Changes in patrol work practices and inspection response types and timeframes implemented in 2010 (e.g., application of sag estimators to working patrols & response to contract inspections), were included in annual working patrol refresher training, as well as mandatory vegetation awareness training provided from November 2008 through February of 2010. Laser range finder training and vegetation identification was provided both concurrently during the Vegetation Awareness Training and in the field on an “as requested” basis. NRS staff provided TLM staff with field plant identification training in this case. The Real Property Services Danger Tree Crew provided Laser Range Finder training in the latter case.

b. NRS Staff

1) In 2009 additional training was provided to the NRS staff including application of sag estimators, vegetation awareness training, and Laser range finder training.

2) A training program designed for the NRS staff was developed in 2009 designed to provide newer and seasoned NRS’s the skills needed for utility vegetation

management, public relations, and other disciplines related to the performance and completion of their assigned tasks and responsibilities.

F. Inspection Frequency

1. TLM Working Patrol

   a. A working patrol shall include inspecting every structure in the line being patrolled, plus driving or walking the right-of-way between each structure. (TLM Standards And Guides Section III.A.8).

      1) All lines shall be patrolled at a minimum of once a year.

      2) During 2010 all lines that are subject to NERC regulations will be patrolled by May 15th, unless inaccessible due to snow. Those inaccessible will be patrolled by helicopter.

G. Imminent threat procedure

1. TLM Response to hazardous vegetation during working patrols (TLM Standards and Guide Section VII.B.1 (Addendum FY2010-01)

   a. IMMINENT THREAT - Immediate removal. If immediate removal is not possible, report the hazard to the TLM Foreman III to arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps and the vegetation removed as soon as possible. Once the threat is removed, contact the NRS for follow-up with any property owner and/or environmental evaluation, if necessary. Besides vegetation located on the right-of-way, it is possible that a fall-into, bend-into, grow-into, and swing-into danger tree or logging fringe, etc, can pose an imminent threat based on the judgment of the person conducting the patrol and the conditions encountered.

2. NRS Response to hazardous vegetation

   a. IMMINENT THREAT REPORTED DURING NON-TLM PATROLS – Requires immediate notification of the Foreman III. Arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps or eGIS database and the vegetation removed as soon as possible. Once the threat is removed, update eGIS data base and follow-up with any property owner and/or environmental evaluation, if necessary. (NOTE: During the implementation of the vegetation-only pilot project, some adjustments may be made in response times for Clearance 2 encroachments to evaluate the quality of pilot program data and to accommodate initial limitations in the distribution of reported data using new and developing eGIS mapping technology. This also applies to LiDAR acquired data.)

H. Action thresholds

1. See Attached TLM Standards and Guides, Section VII.B.1 Addendum FY2009-01, III, IV, V, and XI SUMMARY CORRECTION RESPONSE TABLE

I. General interim corrective action process when the there are constraints on performing vegetation management

1. In cases where safety, public relations, legal, and environmental considerations special response, these will be documented, monitored, mitigated, and tracked. These are cases where landowners may have legal rights and agreements where agricultural or horticultural crops are concerned (orchards, tree farms, nurseries, etc.). Cases may also exist where action is restricted due to environmental laws (Endangered Species Act) or when the action would be unsafe for the public or workers due to inaccessibility or environmental conditions. See Attached TLM Standards and Guides, Section VII.B.1 Addendum FY2009-01, IX. RESPONSE TO DANGER BRUSH AND HIGH BRUSH (SPECIAL CONDITIONS) and X. EXCEPTIONS FOR UNSAFE CONDITIONS, ACTION REQUIREING PURCHASE OF PROPERTY RIGHT, OR OTHE LEGAL REQUIREMENTS.

J. Organization structure

1. Transmission Services (TS) provides reliable open access, non-discriminatory transmission service on the BPA transmission network for utilities, generators and power marketers consistent with various regulatory requirements.

    a. ENGINEERING AND TECHNICAL SERVICES (TE), responsible for implementing the transmission capital program, providing technical support for the transmission maintenance program, and providing real property services to the agency.

    b. SYSTEM OPERATIONS (TO), responsible for the safe, reliable, and open access operation and dispatch of the high voltage transmission system and interconnected generation.

    c. TRANSMISSION FIELD SERVICES (TF), responsible for managing field operations, maintenance, and construction of BPA's high voltage electrical transmission system.

        1) INTERNAL OPERATIONS (TFB) provides support services including Technical Training, Work Planning & Evaluation, and Vegetation/Access Road Management, to the TF organization.

        2) The Supervisory Natural Resource Specialist (TFBV) is responsible for the development and implementation of the TF Services Vegetation Management and Access Road programs, which include managing rights-of-way, danger trees, rights-of-way-access. And may include substation vegetation per arrangements and the substation operator. Natural Resource Specialists (NRS), who are supervised by the Supervisory Natural Resource Specialist are co-located in the TF Districts and work collaboratively with Transmission line Maintenance (TLM) crews to implement these programs.

        3) DISTRICT Managers are responsible for implementing field operation, and maintenance and construction activities. District Manager responsibilities include coordinating work and resources between districts, operating and maintaining the BPA transmission system including buildings, grounds, mobile equipment and right-of-ways (ROW).

4) TLM Foreman III are responsible for assuring that the working patrols are performed and assuring imminent threats are responded to timely. TLM personnel report to the TLM Foreman III.

K. Definitions

1. Clearance 1

R1.2.1 Clearance 1-Clearance distance to be achieved at the time of transmission vegetation management based on local conditions and expected time frame in which the Transmission Owner plans to return for future vegetation management work. Must be greater than Clearance 2. (NOTE: This applies to scheduled treatments.)

a. Established in TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13.

b. 25 feet from Max Sag and Swing of the transmission lines greater than 230kV lines, except

1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

2) Where the actual physical ground to conductor clearance is less than 25 feet.

c. 20 feet from Max Sag and Swing of the transmission lines less than 230kV lines, except

1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

All exceptions must be documented in appropriate data bases and the maximum allowable clearance distance shall be determined in each case by subject matter experts, led by the NRS per the Vegetation Clearance Mitigation Program.

Agreements will be monitored and strictly enforced.

2. Clearance 2

R1.2.2 Clearance 2 – Clearance to be maintained between vegetation and conductors under all rated electrical operating conditions to prevent flashover. These shall be no less than those set forth in IEEE standard 516-2003, Section 4.2.2.3.

Clearance 2 is considered to be the distances set forth in IEEE standard 516-2003, section 4.2.2.3.

To assure these distances are not encroached upon, BPA maintains the minimum distances of 10 feet for 230 KV lines and less and 15 feet on lines greater than 230 KV. See attached (s Standards and Guide Section VII.B.1 (Addendum FY2010-01)).

3. Communications Procedures to and from system operators

A. Imminently hazardous conditions shall be reported immediately to the District Manager and District Foreman. (TLM Standards And Guides Section IV.A.10)

1. During aerial patrols, all Danger brush must be reported to the District Foreman and the Natural Resource Specialist by phone, radio, or in person the day it is discovered. Any burnt tops must be reported to the District Foreman, Natural Resource Specialist and the System Dispatcher immediately. (TLM Standards And Guides Section IV.B.3)

2. Crews on working patrol shall correct all hazards that they are capable of correcting. All hazards will be reported immediately to the District Foreman, Natural Resource Specialist, or Realty Specialist, depending on the nature of the line hazard. If the hazard could cause an outage, the System Dispatcher will be notified. (TLM Standards And Guides Section IV.A.8)

    a. Bonneville Power Administration adheres to WECC criteria for Significant Outages. If an Emergency Outage is required to safely remove a potential hazard affecting an unstudied transmission path, Operating Transfer Capability is set to conservative default values per operating conditions and regulations. Affected parties are notified of curtailments as soon as possible prior to removing the line from service.

3. Best Management Practices (BMP) were reviewed and recommended by an NRS/TLM Communications Culture Team convened the summer of 2009. The team's recommendations were implemented beginning in FY2010. Some best management practices in communication to be implemented are: hold monthly TLM/NRS coordination meetings, documentation standards for exchanging information regarding landowner information and vegetation removal contractor performance, etc.

4. In the case of unexplained line trips Aircraft Services will conduct Transmission Line Aircraft Patrols.

    a. Each line is patrolled when practical following an unexplained interruption or when requested by the System Dispatcher or TLM District Foreman. (TLM Standards And Guides Section IV.B.3)

4. Documentation

A. Reporting

1. To regulators (of tree contacts).

2. Bonneville Power Administration uses an email system for WECC/NERC notifications.

3. There are two types of email; "**Near Real Time**" and a "**Daily - No Outages Found**" email.

    a. The **Near Real Time** email will be sent within 15 minutes of a potentially reportable tree outage being entered in the Outage Analysis and Reporting System (OARS) by dispatch or the field. (Dispatch entries are made once a day at approximately 06:00). Once an email has been sent for a specific outage, no other emails will be sent for that same outage.

    b. The **Daily – No Outages Found** email will be sent at approximately 04:00 if, in fact, no potentially reportable tree outages have occurred in the previous day (24 hours).

    c. In summary, at least one WECC/NERC Potentially Reportable Vegetation Outages email will be sent each day.

4. ROW or portions of ROW that have been completely treated per the Annual Work Plan will be documented via a tracking form spreadsheet on TFBV SharePoint web site for Vegetation Management.

5. All TLM and vegetation-only patrol findings are documented and tracked in TLM Apps.
6. All LiDAR findings will be documented and tracked using BPA's eGIS mapping application.

B. References to regulations

1. Local, state, provincial, federal
   a. *BPA TVMP complies with NERC Standard FAC-003-1.*

5. Work specifications

A. See TLM Standards and Guides, Section VII.V.1 Addendum FY 2010-01

6. Annual Plan

A. Transmission Line Maintenance Working Patrol inspects all lines a minimum of once per year.

B. Low Level Video (LLV) see TLM Standards and Guides Section IV.B.1 for specifics.

C. LiDAR – vegetation data will be acquired and modeled for all lines considered high-risk (WECC sanctionable or OB 19) on that part of the BPA transmission system located on the west side of the Cascade Range in Oregon and Washington, including the Snohomish, Covington, Olympia, Longview, Salem and Alvey Districts on a 3-year cycle. LiDAR flights will occur in the fall while no vegetation scheduled maintenance is underway. Data acquired will be provided to the Vegetation Program Manager and on eGIS map products available to NRS and TLM staff.

D. All ROW or portions of ROW planned for scheduled cycle vegetation removal treatment will be treated. These are identified in BPA's FY Out -Year Plan. Modifications to the schedule are allowed. Justification for variances in the schedule must be documented in the Work Plan.

E. All pre-October 2008 TLM identified High Brush and Danger Tree grow into entries will be removed by May 31st 2010.

F. All Danger Brush identified by TLM will be removed as soon as possible, but no later than May 31if reported before May 15. The vegetation program manager has the authority to modify the removal dates of Danger Brush identified through the pilot vegetation-only ground patrol and/or LiDAR to accommodate the time that it will take to deliver the information to the field staff via use of pilot eGIS databases.

G. All High Brush and Danger Tree grow-into reports from TLM and vegetation-only aerial pilot patrols will be verified and scheduled for removal by the NRS within 30 days of the report.

7. TVMP implementation

A. How available in the organization

The FY10 TVMP, upon approval will be posted on the TFBV Vegetation Management SharePoint site.

REFERENCES

Contract Statement of Work (SOW)

Danger Tree Removal Contract

Draft of BPA Vegetation Mitigation Process

eGIS Database - http://iweb.bpa.gov/eGIS/Portal/Query.aspx

FY10 Out Year Plan (scheduled vegetation removals)

FY10 Project Tracking Form Spreadsheet
http://bpaweb/orgs/orgs%20main/transmission/field/rightofway/Vegetation/PlanningWorking%20Documents/Forms/AllItems.aspx

IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site
http://bpaweb.bpa.gov/orgs/orgs%20main/transmission/field/rightofway/vegetation/default.aspx

LiDAR – FY10 Work Plan

LiDAR TVMP Addendum

NERC Standard FAC-003-01

Outage Analysis and Reporting System (OARS)

TLM Apps

TLM Standards and Guides Section IV.A.10

TLM Standards and Guides Section IV.A.8

TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13

TLM Standards and Guides, Section VII.B.1 (Addendum FY2010-01), Dange Tree and Brush Selection Criteria

TLM Standards and Guides Section IV.B.1

TLM Standards and Guides, Section VII.V.1 Addendum FY 2010-01

TVMP Cycle Treatment Update

Bonneville
Power Administration

Transmission Vegetation Management Program (FY2011)

1) Objectives

A. Purpose of the Transmission Vegetation Management Program (TVMP)

1. Establish a TVMP consistent with regulatory compliance.
2. Improve the reliability of the electric transmission system.
3. Maintain clearances between transmission lines and vegetation both inside and outside the transmission right-of-way (ROW), to ensure no vegetation contacts.
4. Report vegetation-related outages of the transmission system to the respective regulatory body (i.e., WECC/NERC).

B. Compliance with NERC FAC-003-01

1. Bonneville Power Administration (BPA) TVMP complies with stated requirements of NERC Standard FAC- 003-01.

2. Elements of the TVMP

The Bonneville Power Administration TVMP consists of the following practices:

A. Inspection Patrols

1. Transmission Line Maintenance (TLM) routine working patrol is the working patrol to inspect all transmission lines rights-of-way (ROW) once per year. (TLM Section III.A.8)
2. Vegetation-Only Aerial Patrol may be performed utilizing Natural Resource Specilist (NRS) – type expertise (BPA) or contract.
3. Light Detection and Ranging (LiDAR) is a remote sensing system used to collect topographic and geospatial data. LiDAR vegetation data will be acquired and modeled for lines identified jointly by Transmission Engineering (TE) and Transmission Field (TF) Services.
4. NRS follow up mitigation patrol: may be performed in locations where existing land use agreements allow vegetation to encroach into clearance 1.

B. Vegetation Maintenance

1. Scheduled treatment

   NRS staff (TFBV division) plans and schedules treatment of approximately 10-20 % annually (amount may vary) of BPA's rights-of-way. See attached ROW Corridor Out Year Plan. The purpose of this treatment is to clear all tall growing vegetation from the ROW from a known point to a know point. The goal is to achieve BPA's Clearance 1 distances at the time of treatment. ROWs are scheduled with the purpose of assuring no grow into outages will occur before the next scheduled treatment. The period or treatment cycle for each ROW is determined by the environmental conditions and growth rates of vegetation expected on each ROW in a given geographic/ecological region. Cycles may be adjusted based on patrol findings. Planned treatment cycles can be found posted on BPA's Internal Vegetation Management web site on a spreadsheet entitled "TVMP Treatment Cycle Update". BPA began to fully integrate its Clearance 1 distance standards into its scheduled treatments in FY08.

2. Patrol response treatment

   In response to inspection patrol findings conducted annually, vegetation found to encroach on BPAs clearance 2 standards is removed per action thresholds are within 24 hours, 15 calendar days, or 30 calendar days, depending on specific conditions. (See response to hazardous vegetation during working patrols Transmission Line Maintenance Standards and Guides VII.B.1.VI).

C. Vegetation Clearance Mitigation Program (On-ROW orchards, Tree Farms, Nurseries and properties with vegetation agreements).

When special conditions are encountered on-ROW that require removal of vegetation from an orchard, tree farm, nursery, a property under a vegetation agreement, e.g. tree and brush agreement or land use agreement with a vegetation clause or a property with an easement right to grow vegetation, then BPA addresses these special conditions via its Vegetation Mitigation Program (See BPA Clearance Mitigation Process).

D. Danger Tree Program

Off-ROW vegetation that does not pose an immediate threat to transmission lines but has been identified during inspection as exhibiting characteristics that would indicate a potential problem in the future are cruised, marked, appraised, and purchased by BPA Danger Tree Crew, a part of Real Property Services in the TE organization. When the crew informs the NRS staff of a Notice of Rights Acquired (NORA), the NRS schedules removal of these trees as part of either the next scheduled treatment in the planned treatment cycle, or with a separate Danger Tree removal contract.

E. Personnel

1. Key Personnel

   a. Internal Operations Manager

      The Internal Operations Manager is accountable for all activities of the Vegetation Management Program, relying on the Supervisory NRS and staff NRSs to identify, plan, budget, implement, and track the vegetation management program.

   b. District Managers (DM)

      The DM is the accountable manager for non-vegetation management maintenance functions on Rights-of-Way (ROW) by prioritizing, coordinating and assuring the work within each District.

   c. Supervisory Natural Resource Specialist

      Provides overall program policy development, coordination and the oversight for consistent implementation of the vegetation program system-wide, including the final review and approval of the overall agency annual TVMP and budget.

   d. Vegetation Management and Access maintenance Program Manager

      Provides programmatic guidance for vegetation management and access maintenance system-wide, as well managing program budget, conflict escalation protocol, and WECC reporting.

   e. Natural Resource Specialists, within their assigned geographic areas are responsible for:

      1) Tracking, responding to reports appropriately, and directing contractors to remove vegetation that has been properly identified as a future threat by the Transmission Line Maintenance staff or the helicopter observers, during their respective patrols, including scheduling the removal of on-ROW danger when beyond the capacity of TLM and high brush as well as off ROW danger trees when BPA has legal rights to do so.

      2) Serve as Observers (for vegetation-only aerial patrols).

      3) Additions or changes to annual work plans, and coordinating changes with affected parties before vegetation control is put into practice.

      4) Assuring contractual obligations for vegetation removal are met.

      5) Properly completing and documenting their verification and scheduling activities of aerial patrol reports and vegetation removal activities using the accepted BPA methods and within established time frames.

      6) Meeting with responsible regional personnel to review site-specific vegetation prescriptions.

7) Coordinating ROW danger tree (DT) evaluations with Real Property Services to ensure appropriate budgets are available for removal following marking and purchase of DT rights.

8) Being the primary contact and project manager for coordinating implementation, communicating progress, and assuring completions of the approved annual vegetation management plan.

9) Supervises contract inspectors to assist with vegetation management contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Contract Inspectors

10) When contract inspection services are contracted, will assist the NRS in monitoring progress and performance of vegetation removal contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Actions proposed by an inspector that are outside, or in addition to the scope of the contract must be communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.

11) Each Inspector shall have extensive experience in the line inspection process and be certified for special services by the contracting firm according to the contract statement of work (SOW).

f. Transmission Line Maintenance (TLM) is responsible for all electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability and safety of the transmission system or safety of the general public.

1) TLM Foremen III is responsible for:

- Scheduling and providing appropriate staffing when outages/hold-orders are required.
- Tracking annual working patrol data regarding vegetation maintenance needs. The removal and communication of imminent vegetation hazard removal during the annual working patrol.

2) TLM Staff is responsible for:

- All electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability, availability and safety of the transmission system (or safety of the general public).
- Assuring the ROWs are clear of danger brush
- Identifying, communicating, and removing vegetation that is an imminent/immediate safety hazard, including danger brush and danger trees, to the transmission system while conducting their annual working patrols.

- Proper patrolling reporting, and documenting the vegetation conditions and vegetation maintenance needs of the ROW during their annual working patrols.
- Communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.
- Responding to vegetation identified by aircraft services or working patrols as imminent hazards within 24 hours. Sites identified as imminent hazard and later determined NOT to be a hazard, may be forwarded to the NRS for routine scheduling of vegetation control activities.

g. Aerial Patrol Observer (TLM Lineman collateral duty)

Responsible for observing, locating, and recording vegetation problems as part of patrolling for irregularities associated with the transmission line facilities that could result in a fault, unusual conditions on and adjacent to the transmission line ROW (e.g. encroachments, Danger tree and brush) that could affect the safety or reliability of the transmission line. (TLM Standards and Guides Section IV.B.3).

h. Real Property Services

1) Responsible for researching and drafting easement rights, agreements, determining crop damage claims, appraising, negotiating and purchasing easement rights as part of the Vegetation Clearance Mitigation Program.

2) Responsible for cruising, marking, appraising and acquiring rights to remove off-ROW danger trees.

2) Qualifications

Qualification of these key personnel can be found in the Office of Personnel Management Classification Standards.

3) Required Training

a. TLM Staff

b. Changes in patrol work practices and inspection response types and timeframes implemented in 2010 (e.g., application of sag estimators to working patrols & response to contract inspections), are included in annual working patrol refresher training NRS Staff

F. Inspection Frequency

1. TLM Working Patrol

a. A working patrol shall include inspecting every structure in the line being patrolled, plus driving or walking the right-of-way between each structure. (TLM Standards And Guides Section III.A.8).

1) All lines shall be patrolled at a minimum of once a year.

2) All lines that are subject to NERC regulations will be prioritized based on vegetation conditions.

3) Progress on the working patrol will be monitored utilizing the FAC-003 Working Patrol report (WMGT 1063H).

G. Imminent threat procedure

1. TLM Response to hazardous vegetation during working patrols (TLM Standards and Guide Section VII.B.1 (Addendum FY2010-01)

   a. IMMINENT THREAT - Immediate removal. If immediate removal is not possible, report the hazard to the TLM Foreman III to arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps and the vegetation removed as soon as possible. Once the threat is removed, contact the NRS for follow-up with any property owner and/or environmental evaluation, if necessary. Besides vegetation located on the right-of-way, it is possible that a fall-into, bend-into, grow-into, and swing-into danger tree or logging fringe, etc, can pose an imminent threat based on the judgment of the person conducting the patrol and the conditions encountered.

2. NRS Response to hazardous vegetation

   a. IMMINENT THREAT REPORTED DURING NON-TLM PATROLS – Requires immediate notification of the Foreman III. Arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps or eGIS database and the vegetation removed as soon as possible. Once the threat is removed, update eGIS data base and follow-up with any property owner and/or environmental evaluation, if necessary. (NOTE: During the implementation of the vegetation-only pilot project, some adjustments may be made in response times for Clearance 2 encroachments to evaluate the quality of pilot program data and to accommodate initial limitations in the distribution of reported data using new and developing eGIS mapping technology. This also applies to LiDAR acquired data.)

H. Action thresholds

1. See Attached TLM Standards and Guides, Section VII.B.1 Addendum FY2009-01, III, IV, V, and XI SUMMARY CORRECTION RESPONSE TABLE

I. General interim corrective action process when the there are constraints on performing vegetation management

1. In cases where safety, public relations, legal, and environmental considerations special response, these will be documented, monitored, mitigated, and tracked. These are cases where landowners may have legal rights and agreements where agricultural or horticultural crops are concerned (orchards, tree farms, nurseries, etc.). Cases may also exist where action is restricted due to environmental laws (Endangered Species Act) or when the action would be unsafe for the public or workers due to inaccessibility or environmental conditions. See Attached TLM Standards and Guides, Section VII.B.1 Addendum FY2009-01, IX. RESPONSE TO DANGER BRUSH AND HIGH BRUSH (SPECIAL CONDITIONS) and X. EXCEPTIONS FOR UNSAFE CONDITIONS, ACTION REQUIREING

PURCHASE OF PROPERTY RIGHT, OR OTHE LEGAL REQUIREMENTS.

J. Organization structure

1. Transmission Services (TS) provides reliable open access, non-discriminatory transmission service on the BPA transmission network for utilities, generators and power marketers consistent with various regulatory requirements.

   a. ENGINEERING AND TECHNICAL SERVICES (TE), responsible for implementing the transmission capital program, providing technical support for the transmission maintenance program, and providing real property services to the agency.

   b. SYSTEM OPERATIONS (TO), responsible for the safe, reliable, and open access operation and dispatch of the high voltage transmission system and interconnected generation.

   c. TRANSMISSION FIELD SERVICES (TF), responsible for managing field operations, maintenance, and construction of BPA's high voltage electrical transmission system.

      1) INTERNAL OPERATIONS (TFB) provides support services including Technical Training, Work Planning & Evaluation, and Vegetation/Access Road Management, to the TF organization.

      2) The Supervisory Natural Resource Specialist (TFBV) is responsible for the development and implementation of the TF Services Vegetation Management and Access Road programs, which include managing rights-of-way, danger trees, rights-of-way-access. And may include substation vegetation per arrangements and the substation operator. Natural Resource Specialists (NRS), who are supervised by the Supervisory Natural Resource Specialist are co-located in the TF Districts and work collaboratively with Transmission line Maintenance (TLM) crews to implement these programs.

      3) DISTRICT Managers are responsible for implementing field operation, and maintenance and construction activities. District Manager responsibilities include coordinating work and resources between districts, operating and maintaining the BPA transmission system including buildings, grounds, mobile equipment and right-of-ways (ROW).

      4) TLM Foreman III are responsible for assuring that the working patrols are performed and assuring imminent threats are responded to timely. TLM personnel report to the TLM Foreman III.

K. Definitions

1. Clearance 1

   R1.2.1 Clearance 1-Clearance distance to be achieved at the time of transmission vegetation management based on local conditions and expected time frame in which the Transmission Owner plans to return for future vegetation management work. Must be greater than Clearance 2. (NOTE: This applies to scheduled treatments.)

a. Established in TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13.

b. 25 feet from Max Sag and Swing of the transmission lines greater than 230kV lines, except

1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

2) Where the actual physical ground to conductor clearance is less than 25 feet.

c. 20 feet from Max Sag and Swing of the transmission lines less than or equal to 230kV lines, except

1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

All exceptions must be documented in appropriate data bases and the maximum allowable clearance distance shall be determined in each case by subject matter experts, led by the NRS per the Vegetation Clearance Mitigation Program.

Agreements will be monitored and strictly enforced.

2. Clearance 2

R1.2.2 Clearance 2 – Clearance to be maintained between vegetation and conductors under all rated electrical operating conditions to prevent flashover. These shall be no less than those set forth in IEEE standard 516-2003, Section 4.2.2.3.

Clearance 2 is considered to be the distances set forth in IEEE standard 516-2003, section 4.2.2.3.

To assure these distances are not encroached upon, BPA maintains the minimum distances of 10 feet for 230 KV lines and less and 15 feet on lines greater than 230 KV. See attached (s Standards and Guide Section VII.B.1 (Addendum FY2010-01)).

3. Communications Procedures to and from system operators

A. Imminently hazardous conditions shall be reported immediately to the District Manager and District Foreman. (TLM Standards And Guides Section IV.A.10)

1. During aerial patrols, all Danger brush must be reported to the District Foreman and the Natural Resource Specialist by phone, radio, or in person the day it is discovered. Any burnt tops must be reported to the District Foreman, Natural Resource Specialist and the System Dispatcher immediately. (TLM Standards And Guides Section IV.B.3)

2. Crews on working patrol shall correct all hazards that they are capable of correcting. All hazards will be reported immediately to the District Foreman, Natural Resource Specialist, or Realty Specialist, depending on the nature of the line hazard. If the hazard could cause an outage, the System Dispatcher will be notified. (TLM Standards And Guides Section IV.A.8)

a. Bonneville Power Administration adheres to WECC criteria for Significant Outages. If an Emergency Outage is required to safely remove a potential hazard affecting an unstudied transmission path, Operating Transfer Capability is set to conservative default values per operating conditions and regulations. Affected parties are notified of curtailments as soon as possible prior to removing the line from service.

3. Monthly TLM/NRS coordination meetings, for exchanging information regarding landowner information and vegetation removal contractor performance.
4. In the case of unexplained line trips Aircraft Services will conduct Transmission Line Aircraft Patrols.
    a. Each line is patrolled when practical following an unexplained interruption or when requested by the System Dispatcher or TLM District Foreman. (TLM Standards And Guides Section IV.B.3)

4. Documentation

A. Reporting

1. To regulators (of tree contacts).
2. Bonneville Power Administration uses an email system for WECC/NERC notifications.
3. ROW or portions of ROW that have been completely treated per the Annual Work Plan will be documented via a tracking form spreadsheet on TFBV SharePoint web site for Vegetation Management.
4. All TLM and vegetation-only patrol findings are documented and tracked in TLM Apps.
5. All LiDAR findings will be documented and tracked using BPA's eGIS mapping application.

B. References to regulations

1. Local, state, provincial, federal
    a. *BPA TVMP complies with NERC Standard FAC-003-1.*

5. Work specifications

A. See TLM Standards and Guides

6. Annual Plan

A. Transmission Line Maintenance Working Patrol inspects all lines a minimum of once per year.

B. LiDAR – vegetation data will be acquired and modeled for all lines considered high-risk (WECC sanctionable or OB 19) on that part of the BPA transmission system located on the west side of the Cascade Range in Oregon and Washington, including the Snohomish, Covington, Olympia, Longview, Salem and Alvey Districts on a regular cycle. LiDAR flights will occur in the fall while no vegetation scheduled maintenance is underway. Data acquired will be provided to the Vegetation Program Manager and on eGIS map products available to NRS and TLM staff.

C. All ROW or portions of ROW planned for scheduled cycle vegetation removal treatment will be treated. These are identified in BPA's FY Out -Year Plan. Modifications to the schedule are allowed. Justification for variances in the schedule must be documented in the Work Plan.

D. All Danger Brush identified by TLM will be removed as soon as possible, but no later than May 31st if reported before May 15. The vegetation program manager has the authority to modify the removal dates of Danger Brush identified.

7. TVMP implementation

A. How available in the organization

The FY10 TVMP, upon approval will be posted on the TFBV Vegetation Management SharePoint site.

REFERENCES

Contract Statement of Work (SOW)

Danger Tree Removal Contract

Draft of BPA Vegetation Mitigation Process

eGIS Database - http://iweb.bpa.gov/eGIS/Portal/Query.aspx

FY10 Out Year Plan (scheduled vegetation removals)

FY10 Project Tracking Form Spreadsheet
http://bpaweb/orgs/orgs%20main/transmission/field/rightofway/Vegetation/PlanningWorking%20Documents/Forms/AllItems.aspx

IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site
http://bpaweb.bpa.gov/orgs/orgs%20main/transmission/field/rightofway/vegetation/default.aspx

LiDAR – FY10 Work Plan

LiDAR TVMP Addendum

NERC Standard FAC-003-01

Outage Analysis and Reporting System (OARS)

TLM Apps

TLM Standards and Guides Section IV.A.10

TLM Standards and Guides Section IV.A.8

TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13

TLM Standards and Guides, Section VII.B.1 Danger Tree and Brush Selection Criteria

TLM Standards and Guides Section IV.B.1

TVMP Cycle Treatment Update

WMGT 1063H – FAC-003 Working Patrol Report

Bonneville
Power Administration

Transmission Vegetation Management Program (FY2013)

1) Objectives

A. Purpose of the Transmission Vegetation Management Program (TVMP)

1. Establish a TVMP consistent with regulatory compliance.
2. Improve the reliability of the electric transmission system.
3. Maintain clearances between transmission lines and vegetation both inside and outside the transmission right-of-way (ROW), to ensure no vegetation contacts.
4. Report vegetation-related outages of the transmission system to the respective regulatory body (i.e., WECC/NERC).

B. Compliance with NERC FAC-003-01

1. Bonneville Power Administration (BPA) TVMP complies with stated requirements of NERC Standard FAC- 003-01.

2. Elements of the TVMP

The Bonneville Power Administration TVMP consists of the following practices:

A. Inspection Patrols

1. Transmission Line Maintenance (TLM) routine working patrol is the working patrol to inspect all transmission lines rights-of-way (ROW) once per year. (TLM Section III.A.8)
2. Vegetation-Only Aerial Patrol may be performed utilizing Natural Resource Specilist (NRS) – type expertise (BPA) or contract.
3. Light Detection and Ranging (LiDAR) is a remote sensing system used to collect topographic and geospatial data. LiDAR vegetation data will be acquired and modeled for lines identified jointly by Transmission Engineering (TE) and Transmission Field (TF) Services.
4. NRS follow up mitigation patrol: may be performed in locations where existing land use agreements allow vegetation to encroach into clearance 1.

B. Vegetation Maintenance

1. Scheduled treatment

   NRS staff (TFBV division) plans and schedules treatment of approximately 10-20 % annually (amount may vary) of BPA's rights-of-way. See attached ROW Corridor Out Year Plan. The purpose of this treatment is to clear all tall growing vegetation from the ROW from a known point to a know point. The goal is to achieve BPA's Clearance 1 distances at the time of treatment. ROWs are scheduled with the purpose of assuring no grow into outages will occur before the next scheduled treatment. The period or treatment cycle for each ROW is determined by the environmental conditions and growth rates of vegetation expected on each ROW in a given geographic/ecological region. Cycles may be adjusted based on patrol findings. Planned treatment cycles can be found posted on BPA's Internal Vegetation Management web site on a spreadsheet entitled "TVMP Treatment Cycle Update". BPA began to fully integrate its Clearance 1 distance standards into its scheduled treatments in FY08.

2. Patrol response treatment

   In response to inspection patrol findings conducted annually, vegetation found to encroach on BPAs Danger Brush standards is removed per action thresholds are within 24 hours or 15 calendar days, depending on specific conditions. (See response to hazardous vegetation during working patrols Transmission Line Maintenance Standards and Guides VII.B.1.VI).

C. Vegetation Clearance Mitigation Program (On-ROW orchards, Tree Farms, Nurseries and properties with vegetation agreements).

When special conditions are encountered on-ROW that require removal of vegetation from an orchard, tree farm, nursery, a property under a vegetation agreement, e.g. tree and brush agreement or land use agreement with a vegetation clause or a property with an easement right to grow vegetation, then BPA addresses these special conditions via its Vegetation Mitigation Program (See BPA Clearance Mitigation Process).

D. Danger Tree Program

Off-ROW vegetation that does not pose an immediate threat to transmission lines but has been identified during inspection as exhibiting characteristics that would indicate a potential problem in the future are cruised, marked, appraised, and purchased by BPA Danger Tree Crew, a part of Real Property Services in the TE organization. When the crew informs the NRS staff of a Notice of Rights Acquired (NORA), the NRS schedules removal of these trees as part of either the next scheduled treatment in the planned treatment cycle, or with a separate Danger Tree removal contract.

E. Personnel

1. Key Personnel

   a. Internal Operations Manager

      The Internal Operations Manager is accountable for all activities of the Vegetation Management Program, relying on the Supervisory NRS and staff NRSs to identify, plan, budget, implement, and track the vegetation management program.

   b. District Managers (DM)

      The DM is the accountable manager for non-vegetation management maintenance functions on Rights-of-Way (ROW) by prioritizing, coordinating and assuring the work within each District.

   c. Supervisory Natural Resource Specialist

      Provides overall program policy development, coordination and the oversight for consistent implementation of the vegetation program system-wide, including the final review and approval of the overall agency annual TVMP and budget. Also has the authority to modify vegetation clearance correction timeframes based on specific or unique circumstances.

   d. Vegetation Management and Access maintenance Program Manager

      Provides programmatic guidance for vegetation management and access maintenance system-wide, as well as managing program budget, conflict escalation protocol, and FERC/NERC/WECC reporting.

   e. Natural Resource Specialists, within their assigned geographic areas are responsible for:

      1) Tracking, responding to reports appropriately, and directing contractors to remove vegetation that has been properly identified as a future threat by the Transmission Line Maintenance staff or the helicopter observers, during their respective patrols, including scheduling the removal of on-ROW danger when beyond the capacity of TLM and high brush as well as off ROW danger trees when BPA has legal rights to do so.

      2) Serve as Observers (for vegetation-only aerial patrols).

      3) Additions or changes to annual work plans, and coordinating changes with affected parties before vegetation control is put into practice.

      4) Assuring contractual obligations for vegetation removal are met.

      5) Properly completing and documenting their verification and scheduling activities of aerial patrol reports and vegetation removal activities using the accepted BPA methods and within established time frames.

      6) Meeting with responsible regional personnel to review site-specific vegetation prescriptions.

7) Coordinating ROW danger tree (DT) evaluations with Real Property Services to ensure appropriate budgets are available for removal following marking and purchase of DT rights.

8) Being the primary contact and project manager for coordinating implementation, communicating progress, and assuring completions of the approved annual vegetation management plan.

9) Supervises contract inspectors to assist with vegetation management contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Contract Inspectors

10) When contract inspection services are contracted, will assist the NRS in monitoring progress and performance of vegetation removal contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Actions proposed by an inspector that are outside, or in addition to the scope of the contract must be communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.

11) Each Inspector shall have extensive experience in the line inspection process and be certified for special services by the contracting firm according to the contract statement of work (SOW).

f. Transmission Line Maintenance (TLM) is responsible for all electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability and safety of the transmission system or safety of the general public.

1) TLM Foremen III is responsible for:

- Scheduling and providing appropriate staffing when outages/hold-orders are required.
- Tracking annual working patrol data regarding vegetation maintenance needs. The removal and communication of imminent vegetation hazard removal during the annual working patrol.

2) TLM Staff is responsible for:

- All electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability, availability and safety of the transmission system (or safety of the general public).
- Assuring the ROWs are clear of danger brush

- Identifying, communicating, and removing vegetation that is an imminent/immediate safety hazard, including danger brush and danger trees, to the transmission system while conducting their annual working patrols.
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- Responding to vegetation identified by aircraft services or working patrols as imminent hazards within 24 hours. Sites identified as imminent hazard and later determined NOT to be a hazard, may be forwarded to the NRS for routine scheduling of vegetation control activities.

g. Aerial Patrol Observer (TLM Lineman collateral duty)

Responsible for observing, locating, and recording vegetation problems as part of patrolling for irregularities associated with the transmission line facilities that could result in a fault, unusual conditions on and adjacent to the transmission line ROW (e.g. encroachments, Danger tree and brush) that could affect the safety or reliability of the transmission line. (TLM Standards and Guides Section IV.B.3).

h. Real Property Services

1) Responsible for researching and drafting easement rights, agreements, determining crop damage claims, appraising, negotiating and purchasing easement rights as part of the Vegetation Clearance Mitigation Program.

2) Responsible for cruising, marking, appraising and acquiring rights to remove off-ROW danger trees.

2) Qualifications

Qualification of these key personnel can be found in the Office of Personnel Management Classification Standards.

3) Required Training

a. TLM Staff

b. Changes in patrol work practices and inspection response types and timeframes implemented in 2010 (e.g., application of sag estimators to working patrols & response to contract inspections), are included in annual working patrol refresher training NRS Staff

F. Inspection Frequency

1. TLM Working Patrol

a. A working patrol shall include inspecting every structure in the line being patrolled, plus driving or walking the right-of-way between each structure. (TLM Standards And Guides Section III.A.8).

1) All lines shall be patrolled at a minimum of once a year.

2) All lines that are subject to NERC regulations will be prioritized based on vegetation conditions.

3) Progress on the working patrol will be monitored utilizing the FAC-003 Working Patrol report (WMGT 1063H).

G. Imminent threat procedure

1. TLM Response to hazardous vegetation during working patrols (TLM Standards and Guide Section VII.B.1

   a. IMMINENT THREAT - Immediate removal. If immediate removal is not possible, report the hazard to the TLM Foreman III to arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps and the vegetation removed as soon as possible. Once the threat is removed, contact the NRS for follow-up with any property owner and/or environmental evaluation, if necessary. Besides vegetation located on the right-of-way, it is possible that a fall-into, bend-into, grow-into, and swing-into danger tree or logging fringe, etc, can pose an imminent threat based on the judgment of the person conducting the patrol and the conditions encountered.

2. NRS Response to hazardous vegetation

H. IMMINENT THREAT REPORTED DURING NON-TLM PATROLS – Requires immediate notification of the Foreman III. Arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps or eGIS database and the vegetation removed no later than 15 days after initial report. Once the threat is removed, update eGIS data base and follow-up with any property owner and/or environmental evaluation, if necessary. Response time for LiDAR identified encroachments will be based on the date the LiDAR data was posted to eGIS , consistent with our clearance guidelines. High Brush locations identified from LiDAR flown to facilitate next fiscal year's scheduled maintenance will be incorporated in scope of work for the associated project.

I. Action thresholds

1. See Attached TLM Standards and Guides, Section VII.B.1 III, IV, V, and XI SUMMARY CORRECTION RESPONSE TABLE

J. General interim corrective action process when the there are constraints on performing vegetation management

1. In cases where safety, public relations, legal, and environmental considerations special response, these will be documented, monitored, mitigated, and tracked. These are cases where landowners may have legal rights and agreements where agricultural or horticultural crops are concerned (orchards, tree farms, nurseries, etc.). Cases may also exist where action is restricted due to environmental laws (Endangered Species Act) or when the action would be unsafe for the public or workers due to inaccessibility or environmental conditions. See Attached TLM Standards and Guides, Section VII.B.1, IX. RESPONSE TO DANGER BRUSH AND HIGH BRUSH (SPECIAL CONDITIONS) and X. EXCEPTIONS FOR UNSAFE CONDITIONS, ACTION REQUIREING PURCHASE OF PROPERTY RIGHT, OR OTHE LEGAL REQUIREMENTS.

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threats are responded to timely. TLM personnel report to the TLM Foreman III.

L. Definitions

1. Clearance 1

R1.2.1 Clearance 1-Clearance distance to be achieved at the time of transmission vegetation management based on local conditions and expected time frame in which the Transmission Owner plans to return for future vegetation management work. Must be greater than Clearance 2. (NOTE: This applies to scheduled treatments.)

a. Established in TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13.

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Agreements will be monitored and strictly enforced.

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Clearance 2 is considered to be the distances set forth in IEEE standard 516-2003, section 4.2.2.3.

To assure these distances are not encroached upon, BPA designates the minimum distances of 10 feet for 230 KV lines and less and 15 feet on lines greater than 230 KV as Danger Brush. See attached (Standards and Guide Section VII.B.1).

3. Communications Procedures to and from system operators

A. Imminently hazardous conditions shall be reported immediately to the District Manager and District Foreman. (TLM Standards And Guides Section IV.A.10)

1. During aerial patrols, all Danger brush must be reported to the District Foreman and the Natural Resource Specialist by phone, radio, or in person the day it is discovered. Any burnt tops must be reported to the District Foreman, Natural Resource Specialist and the System Dispatcher immediately. (TLM Standards And Guides Section IV.B.3)

2. Crews on working patrol shall correct all hazards that they are capable of correcting. All hazards will be reported immediately to the District Foreman, Natural Resource Specialist, or Realty Specialist,

depending on the nature of the line hazard. If the hazard could cause an outage, the System Dispatcher will be notified. (TLM Standards And Guides Section IV.A.8)

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3. Monthly TLM/NRS coordination meetings, for exchanging information regarding landowner information and vegetation removal contractor performance.

4. In the case of unexplained line trips Aircraft Services will conduct Transmission Line Aircraft Patrols.

   a. Each line is patrolled when practical following an unexplained interruption or when requested by the System Dispatcher or TLM District Foreman. (TLM Standards And Guides Section IV.B.3)

4. Documentation

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3. ROW or portions of ROW that have been completely treated per the Annual Work Plan will be documented via a tracking form spreadsheet on TFBV SharePoint web site for Vegetation Management.

4. All TLM and vegetation-only patrol findings are documented and tracked in TLM Apps.

5. All LiDAR findings will be documented and tracked using BPA's eGIS mapping application.

B. References to regulations

1. Local, state, provincial, federal

   a. *BPA TVMP complies with NERC Standard FAC-003-1.*

5. Work specifications

A. See TLM Standards and Guides

6. Annual Plan

A. Transmission Line Maintenance Working Patrol inspects all lines a minimum of once per year.

B. **LiDAR** – vegetation data will be acquired and modeled for all lines considered high-risk (WECC sanctionable or OB 19) on that part of the BPA transmission system located on the west side of the Cascade Range in Oregon and Washington, including the Snohomish, Covington, Olympia, Longview, Salem and Alvey Districts on a regular cycle. LiDAR flights will occur in the fall while no vegetation scheduled maintenance is underway. Data acquired will be provided to the Vegetation Program Manager and on eGIS map products available to NRS and TLM staff.

C. **All ROW or portions of ROW planned for scheduled cycle vegetation maintenance will be treated.** These are identified in BPA's FY Out - Year Plan. Modifications to the schedule are allowed. Justification for variances in the schedule must be documented in the Work Plan.

D. **All Danger Brush identified by TLM will be removed within 24 hours or no later than 15 days after the report depending upon the specific situation (ie. Agricultural).** The vegetation program manager has the authority to modify the removal dates of Danger Brush identified.

All High Brush reported will be corrected no later than May 31st if reported before December 31st of the previous year. The vegetation program manager has the authority to modify the removal dates of High Brush identified.

7. **TVMP implementation**

A. **How available in the organization**

The FY13 TVMP, upon approval will be posted on the TFBV Vegetation Management SharePoint site.

REFERENCES

Contract Statement of Work (SOW)

Danger Tree Removal Contract

Draft of BPA Vegetation Mitigation Process

eGIS Database - http://iweb.bpa.gov/eGIS/Portal/Query.aspx

- FY13 Out Year Plan (scheduled vegetation maintenance) - Link to FY13 TVMP Outyear Plan

- FY13 Project Tracking Tab within Budget Summary Spreadsheet Link to FY13 Work in Progress Information

IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site http://txinternal.bpa.gov/tf/veg-mgmnt/default.aspx

LiDAR – FY13 Work Plan

NERC Standard FAC-003-01

Outage Analysis and Reporting System (OARS)

TLM Apps

TLM Standards and Guides Section IV.A.10

TLM Standards and Guides Section IV.A.8

TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13

TLM Standards and Guides, Section VII.B.1 Danger Tree and Brush Selection Criteria

TLM Standards and Guides Section IV.B.1

TVMP Cycle Treatment Update

WMGT 1063H – FAC-003 Working Patrol Report

Bonneville Power Administration

Transmission Vegetation Management Program (FY2014)

1) Objectives

A. Purpose of the Transmission Vegetation Management Program (TVMP)

1. Establish a TVMP consistent with and enables regulatory compliance while adhering to BPA's Vegetation EIS (2000) for environmental compliance in rights-of-way (ROW).
2. Improve the reliability of the electric transmission system by maintaining clearances between transmission lines and vegetation both inside and outside the transmission right-of-way (ROW), to ensure no vegetation violates minimum vegetation clearance distance (MVCD).
3. To incorporate ANSI A300(Part 7) in ROW integrated vegetation management
4. Report vegetation-related outages of the transmission system to the respective regulatory body (i.e., WECC/NERC).
5. To promote low-growing plant communities within ROW's.

B. Compliance with NERC FAC-003-3

1. Bonneville Power Administration (BPA) TVMP complies with stated requirements of NERC Standard FAC- 003-3.

2) Elements of the TVMP

The Bonneville Power Administration TVMP consists of the following practices:

A. Inspection Patrols

1. Transmission Line Maintenance (TLM) routine working patrol is the working patrol to inspect all transmission lines rights-of-way (ROW) once per year. (TLM Section III.A.8)
2. Vegetation-Only Aerial Patrol may be performed utilizing Natural Resource Specilist (NRS) – type expertise (BPA) or contract.
3. Light Detection and Ranging (LiDAR) is a remote sensing system used to collect topographic and geospatial data. LiDAR vegetation data will be acquired and modeled for lines identified jointly by Transmission Engineering (TE) and Transmission Field (TF) Services.
4. NRS 2nd patrol: may be performed in locations where existing land use agreements allow vegetation to encroach into high brush. LiDAR may be used in lieu of NRS 2nd patrol due to its hyper-accuracy and ability to see the closest braches to power lines.

B. Vegetation Maintenance

1. Scheduled treatment

   NRS staff (TFBV division) plans and schedules treatment of approximately 10-20 % annually (amount may vary) of BPA's rights-of-way. See attached ROW Corridor Out-Year Plan. The purpose of this treatment is to clear all tall growing vegetation from the ROW from a known point to a known point. The goal is to achieve greater than BPA's high brush distances at the time of treatment. ROWs are scheduled with the purpose of assuring no grow-into outages will occur before the next scheduled treatment. The period of IVM treatment cycle for each ROW is determined by the environmental conditions and growth rates of vegetation expected on each ROW in a given geographic/ecological region. Cycles may be adjusted based on patrol findings. Planned IVM treatment cycles can be found posted on BPA's Internal Vegetation Management web site on a spreadsheet entitled "TVMP Treatment Cycle Update". Closed chain of custody for herbicide per utility vegetation management industry will be adhered to, per federal and state requirements.

2. Patrol response (corrective) treatment

   In response to inspection patrol findings conducted annually, vegetation found to encroach on BPAs Danger Brush standards is removed per action thresholds are within 24 hours or 15 calendar days, depending on specific conditions. (See response to hazardous vegetation during working patrols Transmission Line Maintenance Standards and Guides VII.B.1.VI).

C. Vegetation Clearance Mitigation Program (On-ROW orchards, Tree Farms, Nurseries and properties with vegetation agreements).

When special conditions are encountered on-ROW that require removal of vegetation from an orchard, tree farm, nursery, a property under a vegetation agreement, e.g. tree and brush agreement or land use agreement with a vegetation clause or a property with an easement right to grow vegetation, then BPA addresses these special conditions via its Vegetation Mitigation Program (See BPA Clearance Mitigation Process) and per utility pruning of trees protocol.

D. Danger Tree Program

Tree risk assessment will be performed to assess off-ROW vegetation to determine immediate threat to transmission lines as identified during inspection as exhibiting characteristics that would indicate a potential problem in the future are cruised, marked, appraised, and purchased by BPA Danger Tree Crew, a part of Real Property Services in the TE organization. When the crew informs the NRS staff of a Notice of Rights Acquired (NORA), the NRS schedules removal of these trees as part of either the next scheduled treatment in the planned treatment cycle, or with a separate Danger Tree removal contract.

E. Personnel

1. Key Personnel

   a. Internal Operations Manager

      The Internal Operations Manager is accountable for all activities of the Vegetation Management Program, relying on the Supervisory NRS and staff NRSs to identify, plan, budget, implement, and track the vegetation management program.

   b. District Managers (DM)

      The DM is the accountable manager for non-vegetation management maintenance functions on Rights-of-Way (ROW) by prioritizing, coordinating and assuring the work within each District.

   c. Supervisory Natural Resource Specialist

      Provides overall program policy development, coordination and the oversight for consistent implementation of the vegetation program system-wide, including the final review and approval of the overall agency annual TVMP and budget. Also has the authority to modify vegetation clearance correction timeframes based on specific or unique circumstances.

   d. Vegetation Management and Access maintenance Program Manager

      Provides programmatic guidance for vegetation management and access maintenance system-wide, as well as managing program budget, conflict escalation protocol, and FERC/NERC/WECC reporting.

   e. Natural Resource Specialists, within their assigned geographic areas are responsible for:

      1) Tracking, responding to reports appropriately, and directing contractors to remove vegetation that has been properly identified as a future threat by the Transmission Line Maintenance staff or the helicopter observers, during their respective patrols, including scheduling the removal of on-ROW danger when beyond the capacity of TLM and high brush as well as off ROW danger trees when BPA has legal rights to do so.

      2) Serve as Observers (for vegetation-only aerial patrols).

      3) Additions or changes to annual work plans, and coordinating changes with affected parties before vegetation control is put into practice.

      4) Assuring contractual obligations for vegetation removal are met.

      5) Properly completing and documenting their verification and scheduling activities of aerial patrol reports and vegetation removal activities using the accepted BPA methods and within established time frames.

      6) Meeting with responsible regional personnel to review site-specific vegetation prescriptions.

7) Coordinating ROW danger tree (DT) evaluations with Real Property Services to ensure appropriate budgets are available for removal following marking and purchase of DT rights.

8) Being the primary contact and project manager for coordinating implementation, communicating progress, and assuring completions of the approved annual vegetation management plan.

9) Supervises contract inspectors to assist with vegetation management contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Contract Inspectors

10) When contract inspection services are contracted, will assist the NRS in monitoring progress and performance of vegetation removal contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Actions proposed by an inspector that are outside, or in addition to the scope of the contract must be communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.

11) Each Inspector shall have extensive experience in the line inspection process and be certified for special services by the contracting firm according to the contract statement of work (SOW).

f. Transmission Line Maintenance (TLM) is responsible for all electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability and safety of the transmission system or safety of the general public.

1) TLM Foremen III is responsible for:

- Scheduling and providing appropriate staffing when outages/hold-orders are required.
- Tracking annual working patrol data regarding vegetation maintenance needs. The removal and communication of imminent vegetation hazard removal during the annual working patrol.

2) TLM Staff is responsible for:

- All electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability, availability and safety of the transmission system (or safety of the general public).
- Assuring the ROWs are clear of danger brush

- Identifying, communicating, and removing vegetation that is an imminent/immediate safety hazard, including danger brush and danger trees, to the transmission system while conducting their annual working patrols.
- Proper patrolling reporting, and documenting the vegetation conditions and vegetation maintenance needs of the ROW during their annual working patrols.
- Responding to vegetation identified by aircraft services or working patrols as imminent hazards within 24 hours. Sites identified as imminent hazard and later determined NOT to be a hazard, may be forwarded to the NRS for routine scheduling of vegetation control activities.

g. Aerial Patrol Observer (TLM Lineman collateral duty)

Responsible for observing, locating, and recording vegetation problems as part of patrolling for irregularities associated with the transmission line facilities that could result in a fault, unusual conditions on and adjacent to the transmission line ROW (e.g. encroachments, Danger tree and brush) that could affect the safety or reliability of the transmission line. (TLM Standards and Guides Section IV.B.3).

h. Real Property Services

1) Responsible for researching and drafting easement rights, agreements, determining crop damage claims, appraising, negotiating and purchasing easement rights as part of the Vegetation Clearance Mitigation Program.

2) Responsible for cruising, marking, appraising and acquiring rights to remove off-ROW danger trees.

2) Qualifications

Qualification of these key personnel can be found in the Office of Personnel Management Classification Standards.

3) Required Training

a. TLM Staff

b. Changes in patrol work practices and inspection response types and timeframes implemented in 2010 (e.g., application of sag estimators to working patrols & response to contract inspections), are included in annual working patrol refresher training NRS Staff

F. Inspection Frequency

1. TLM Working Patrol

a. A working patrol shall include inspecting every structure in the line being patrolled, plus driving or walking the right-of-way between each structure. (TLM Standards And Guides Section III.A.8).

1) All lines shall be patrolled at a minimum of once a year.

2) All lines that are subject to NERC regulations will be prioritized based on vegetation conditions.

3) Progress on the working patrol will be monitored utilizing the FAC-003 Working Patrol report (WMGT 1063H).

G. Imminent threat procedure

1. TLM Response to hazardous vegetation during working patrols (TLM Standards and Guide Section VII.B.1

   a. IMMINENT THREAT - Immediate removal. If immediate removal is not possible, report the hazard to the TLM Foreman III to arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps and the vegetation removed as soon as possible. Once the threat is removed, contact the NRS for follow-up with any property owner and/or environmental evaluation, if necessary. Besides vegetation located on the right-of-way, it is possible that a fall-into, bend-into, grow-into, and swing-into danger tree or logging fringe, etc, can pose an imminent threat based on the judgment of the person conducting the patrol and the conditions encountered.

2. NRS Response to hazardous vegetation

H. IMMINENT THREAT REPORTED DURING NON-TLM PATROLS – Requires immediate notification of the Foreman III. Arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps or eGIS database and the vegetation removed no later than 15 days after initial report. Once the threat is removed, update eGIS data base and follow-up with any property owner and/or environmental evaluation, if necessary. Response time for LiDAR identified encroachments will be based on the date the LiDAR data was posted to eGIS , consistent with our clearance guidelines. High Brush locations identified from LiDAR flown to facilitate next fiscal year's scheduled maintenance will be incorporated in scope of work for the associated project.

I. Action thresholds

1. See Attached TLM Standards and Guides, Section VII.B.1 III, IV, V, and XI SUMMARY CORRECTION RESPONSE TABLE

J. General interim corrective action process when there are constraints on performing vegetation management

1. In cases where safety, public relations, legal, and environmental considerations special response, these will be documented, monitored, mitigated, and tracked. These are cases where landowners may have legal rights and agreements where agricultural or horticultural crops are concerned (orchards, tree farms, nurseries, etc.). Cases may also exist where action is restricted due to environmental laws (Endangered Species Act) or when the action would be unsafe for the public or workers due to inaccessibility or environmental conditions. See Attached TLM Standards and Guides, Section VII.B.1, IX. RESPONSE TO DANGER BRUSH AND HIGH BRUSH (SPECIAL CONDITIONS) and X. EXCEPTIONS FOR UNSAFE CONDITIONS, ACTION REQUIREING PURCHASE OF PROPERTY RIGHT, OR OTHE LEGAL REQUIREMENTS.

K. Organization structure

1. Transmission Services (TS) provides reliable open access, non-discriminatory transmission service on the BPA transmission network for utilities, generators and power marketers consistent with various regulatory requirements.

    a. ENGINEERING AND TECHNICAL SERVICES (TE), responsible for implementing the transmission capital program, providing technical support for the transmission maintenance program, and providing real property services to the agency.

    b. SYSTEM OPERATIONS (TO), responsible for the safe, reliable, and open access operation and dispatch of the high voltage transmission system and interconnected generation.

    c. TRANSMISSION FIELD SERVICES (TF), responsible for managing field operations, maintenance, and construction of BPA's high voltage electrical transmission system.

        1) INTERNAL OPERATIONS (TFB) provides support services including Technical Training, Work Planning & Evaluation, and Vegetation/Access Road Management, to the TF organization.

        2) The Supervisory Natural Resource Specialist (TFBV) is responsible for the development and implementation of the TF Services Vegetation Management and Access Road programs, which include managing rights-of-way, danger trees, rights-of-way-access. And may include substation vegetation per arrangements and the substation operator. Natural Resource Specialists (NRS), who are supervised by the Supervisory Natural Resource Specialist are co-located in the TF Districts and work collaboratively with Transmission line Maintenance (TLM) crews to implement these programs.

        3) DISTRICT Managers are responsible for implementing field operation, and maintenance and construction activities. District Manager responsibilities include coordinating work and resources between districts, operating and maintaining the BPA transmission system including buildings, grounds, mobile equipment and right-of-ways (ROW).

        4) TLM Foreman III are responsible for assuring that the working patrols are performed and assuring imminent

threats are responded to timely. TLM personnel report to the TLM Foreman III.

L. Definitions

1. High brush

R1.2.1 High brush-Clearance distance to be achieved at the time of transmission vegetation management based on local conditions and expected time frame in which the Transmission Owner plans to return for future vegetation management work. Must be greater than Danger brush. (NOTE: This applies to scheduled treatments.)

a. Established in TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13.

b. 25 feet from Max Sag and Swing of the transmission lines greater than 230kV lines, except

1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

2) Where the actual physical ground to conductor clearance is less than 25 feet.

c. 20 feet from Max Sag and Swing of the transmission lines less than or equal to 230kV lines, except

1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

All exceptions must be documented in appropriate data bases and the maximum allowable clearance distance shall be determined in each case by subject matter experts, led by the NRS per the Vegetation Clearance Mitigation Program.

Agreements will be monitored and strictly enforced.

2. Danger Brush

R1.2.2 Danger brush – Clearance to be maintained between vegetation and conductors under all rated electrical operating conditions to prevent flashover. These shall be no less than those set forth in IEEE standard 516-2003, Section 4.2.2.3.

Danger brush exceeds the distances set forth in IEEE standard 516-2003, section 4.2.2.3.

To assure these distances are not encroached upon, BPA designates the minimum distances of 10 feet for 230 KV lines and less and 15 feet on lines greater than 230 KV as Danger Brush. See attached (Standards and Guide Section VII.B.1).

3. Communications Procedures to and from system operators

A. Imminently hazardous conditions shall be reported immediately to the District Manager and District Foreman. (TLM Standards And Guides Section IV.A.10)

1. During aerial patrols, all Danger brush must be reported to the District Foreman and the Natural Resource Specialist by phone, radio, or in person the day it is discovered. Any burnt tops must be reported to the District Foreman, Natural Resource Specialist and the System Dispatcher immediately. (TLM Standards And Guides Section IV.B.3)

2. Crews on working patrol shall correct all hazards that they are capable of correcting. All hazards will be reported immediately to the District Foreman, Natural Resource Specialist, or Realty Specialist,

depending on the nature of the line hazard. If the hazard could cause an outage, the System Dispatcher will be notified. (TLM Standards And Guides Section IV.A.8)

a. Bonneville Power Administration adheres to WECC criteria for Significant Outages. If an Emergency Outage is required to safely remove a potential hazard affecting an unstudied transmission path, Operating Transfer Capability is set to conservative default values per operating conditions and regulations. Affected parties are notified of curtailments as soon as possible prior to removing the line from service.

3. Monthly TLM/NRS coordination meetings, for exchanging information regarding landowner information and vegetation removal contractor performance.

4. In the case of unexplained line trips Aircraft Services will conduct Transmission Line Aircraft Patrols.

a. Each line is patrolled when practical following an unexplained interruption or when requested by the System Dispatcher or TLM District Foreman. (TLM Standards And Guides Section IV.B.3)

4. Documentation

A. Reporting

1. To regulators (of tree contacts).

2. Bonneville Power Administration uses an email system for WECC/NERC notifications.

3. ROW or portions of ROW that have been completely treated per the Annual Work Plan will be documented via a tracking form spreadsheet on TFBV SharePoint web site for Vegetation Management.

4. All TLM and vegetation-only patrol findings are documented and tracked in TLM Apps.

5. All LiDAR findings will be documented and tracked using BPA's eGIS mapping application.

B. References to regulations

1. Local, state, provincial, federal

a. *BPA TVMP complies with NERC Standard FAC-003-3.*

5. Work specifications

A. See TLM Standards and Guides

6. Annual Plan

A. Transmission Line Maintenance Working Patrol inspects all lines a minimum of once per year.

B. **LiDAR** – vegetation data will be acquired and modeled for all lines considered high-risk (WECC sanctionable or OB 19) on that part of the BPA transmission system located on the west side of the Cascade Range in Oregon and Washington, including the Snohomish, Covington, Olympia, Longview, Salem and Alvey Districts on a regular cycle. LiDAR flights will occur in the fall while no vegetation scheduled maintenance is underway. Data acquired will be provided to the Vegetation Program Manager and on eGIS map products available to NRS and TLM staff.

C. **All ROW or portions of ROW planned for scheduled cycle vegetation maintenance will be treated.** These are identified in BPA's FY Out - Year Plan. Modifications to the schedule are allowed. Justification for variances in the schedule must be documented in the Work Plan.

D. **All Danger Brush identified by TLM will be removed within 24 hours or no later than 15 days after the report depending upon the specific situation (ie. Agricultural).** The vegetation program manager has the authority to modify the removal dates of Danger Brush identified.

All High Brush reported will be corrected no later than May 31st if reported before December 31st of the previous year. The vegetation program manager has the authority to modify the removal dates of High Brush identified.

7. **TVMP implementation**

A. **How available in the organization**

The FY13 TVMP, upon approval will be posted on the TFBV Vegetation Management SharePoint site.

REFERENCES

Contract Statement of Work (SOW)

Danger Tree Removal Contract

Draft of BPA Vegetation Mitigation Process

eGIS Database - http://iweb.bpa.gov/eGIS/Portal/Query.aspx

- FY14 Out Year Plan (scheduled vegetation maintenance)

IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site http://txinternal.bpa.gov/tf/veg-mgmnt/default.aspx

LiDAR – FY14 Work Plan

NERC Standard FAC-003-3

Outage Analysis and Reporting System (OARS)

TLM Apps

TLM Standards and Guides Section IV.A.10

TLM Standards and Guides Section IV.A.8

TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13

TLM Standards and Guides, Section VII.B.1 Danger Tree and Brush Selection Criteria

TLM Standards and Guides Section IV.B.1

TVMP Cycle Treatment Update

WMGT 1063H – FAC-003 Working Patrol Report

Bonneville
Power Administration

Transmission Vegetation Management Program (FY2012)

1) Objectives

A. Purpose of the Transmission Vegetation Management Program (TVMP)

1. Establish a TVMP consistent with regulatory compliance.
2. Improve the reliability of the electric transmission system.
3. Maintain clearances between transmission lines and vegetation both inside and outside the transmission right-of-way (ROW), to ensure no vegetation contacts.
4. Report vegetation-related outages of the transmission system to the respective regulatory body (i.e., WECC/NERC).

B. Compliance with NERC FAC-003-01

1. Bonneville Power Administration (BPA) TVMP complies with stated requirements of NERC Standard FAC- 003-01.

2. Elements of the TVMP

The Bonneville Power Administration TVMP consists of the following practices:

A. Inspection Patrols

1. Transmission Line Maintenance (TLM) routine working patrol is the working patrol to inspect all transmission lines rights-of-way (ROW) once per year. (TLM Section III.A.8)
2. Vegetation-Only Aerial Patrol may be performed utilizing Natural Resource Specilist (NRS) – type expertise (BPA) or contract.
3. Light Detection and Ranging (LiDAR) is a remote sensing system used to collect topographic and geospatial data. LiDAR vegetation data will be acquired and modeled for lines identified jointly by Transmission Engineering (TE) and Transmission Field (TF) Services.
4. NRS follow up mitigation patrol: may be performed in locations where existing land use agreements allow vegetation to encroach into clearance 1.

B. Vegetation Maintenance

1. Scheduled treatment

   NRS staff (TFBV division) plans and schedules treatment of approximately 10-20 % annually (amount may vary) of BPA's rights-of-way. See attached ROW Corridor Out Year Plan. The purpose of this treatment is to clear all tall growing vegetation from the ROW from a known point to a know point. The goal is to achieve BPA's Clearance 1 distances at the time of treatment. ROWs are scheduled with the purpose of assuring no grow into outages will occur before the next scheduled treatment. The period or treatment cycle for each ROW is determined by the environmental conditions and growth rates of vegetation expected on each ROW in a given geographic/ecological region. Cycles may be adjusted based on patrol findings. Planned treatment cycles can be found posted on BPA's Internal Vegetation Management web site on a spreadsheet entitled "TVMP Treatment Cycle Update". BPA began to fully integrate its Clearance 1 distance standards into its scheduled treatments in FY08.

2. Patrol response treatment

   In response to inspection patrol findings conducted annually, vegetation found to encroach on BPAs clearance 2 standards is removed per action thresholds are within 24 hours, 15 calendar days, or 30 calendar days, depending on specific conditions. (See response to hazardous vegetation during working patrols Transmission Line Maintenance Standards and Guides VII.B.1.VI).

C. Vegetation Clearance Mitigation Program (On-ROW orchards, Tree Farms, Nurseries and properties with vegetation agreements).

When special conditions are encountered on-ROW that require removal of vegetation from an orchard, tree farm, nursery, a property under a vegetation agreement, e.g. tree and brush agreement or land use agreement with a vegetation clause or a property with an easement right to grow vegetation, then BPA addresses these special conditions via its Vegetation Mitigation Program (See BPA Clearance Mitigation Process).

D. Danger Tree Program

Off-ROW vegetation that does not pose an immediate threat to transmission lines but has been identified during inspection as exhibiting characteristics that would indicate a potential problem in the future are cruised, marked, appraised, and purchased by BPA Danger Tree Crew, a part of Real Property Services in the TE organization. When the crew informs the NRS staff of a Notice of Rights Acquired (NORA), the NRS schedules removal of these trees as part of either the next scheduled treatment in the planned treatment cycle, or with a separate Danger Tree removal contract.

E. Personnel

1. Key Personnel

   a. Internal Operations Manager

      The Internal Operations Manager is accountable for all activities of the Vegetation Management Program, relying on the Supervisory NRS and staff NRSs to identify, plan, budget, implement, and track the vegetation management program.

   b. District Managers (DM)

      The DM is the accountable manager for non-vegetation management maintenance functions on Rights-of-Way (ROW) by prioritizing, coordinating and assuring the work within each District.

   c. Supervisory Natural Resource Specialist

      Provides overall program policy development, coordination and the oversight for consistent implementation of the vegetation program system-wide, including the final review and approval of the overall agency annual TVMP and budget.

   d. Vegetation Management and Access maintenance Program Manager

      Provides programmatic guidance for vegetation management and access maintenance system-wide, as well managing program budget, conflict escalation protocol, and WECC reporting.

   e. Natural Resource Specialists, within their assigned geographic areas are responsible for:

      1) Tracking, responding to reports appropriately, and directing contractors to remove vegetation that has been properly identified as a future threat by the Transmission Line Maintenance staff or the helicopter observers, during their respective patrols, including scheduling the removal of on-ROW danger when beyond the capacity of TLM and high brush as well as off ROW danger trees when BPA has legal rights to do so.

      2) Serve as Observers (for vegetation-only aerial patrols).

      3) Additions or changes to annual work plans, and coordinating changes with affected parties before vegetation control is put into practice.

      4) Assuring contractual obligations for vegetation removal are met.

      5) Properly completing and documenting their verification and scheduling activities of aerial patrol reports and vegetation removal activities using the accepted BPA methods and within established time frames.

      6) Meeting with responsible regional personnel to review site-specific vegetation prescriptions.

7) Coordinating ROW danger tree (DT) evaluations with Real Property Services to ensure appropriate budgets are available for removal following marking and purchase of DT rights.

8) Being the primary contact and project manager for coordinating implementation, communicating progress, and assuring completions of the approved annual vegetation management plan.

9) Supervises contract inspectors to assist with vegetation management contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Contract Inspectors

10) When contract inspection services are contracted, will assist the NRS in monitoring progress and performance of vegetation removal contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Actions proposed by an inspector that are outside, or in addition to the scope of the contract must be communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.

11) Each Inspector shall have extensive experience in the line inspection process and be certified for special services by the contracting firm according to the contract statement of work (SOW).

f. Transmission Line Maintenance (TLM) is responsible for all electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability and safety of the transmission system or safety of the general public.

1) TLM Foremen III is responsible for:

- Scheduling and providing appropriate staffing when outages/hold-orders are required.
- Tracking annual working patrol data regarding vegetation maintenance needs. The removal and communication of imminent vegetation hazard removal during the annual working patrol.

2) TLM Staff is responsible for:

- All electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability, availability and safety of the transmission system (or safety of the general public).
- Assuring the ROWs are clear of danger brush
- Identifying, communicating, and removing vegetation that is an imminent/immediate safety hazard, including danger brush and danger trees, to the transmission system while conducting their annual working patrols.

- Proper patrolling reporting, and documenting the vegetation conditions and vegetation maintenance needs of the ROW during their annual working patrols.
- Communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.
- Responding to vegetation identified by aircraft services or working patrols as imminent hazards within 24 hours. Sites identified as imminent hazard and later determined NOT to be a hazard, may be forwarded to the NRS for routine scheduling of vegetation control activities.

g. Aerial Patrol Observer (TLM Lineman collateral duty)

Responsible for observing, locating, and recording vegetation problems as part of patrolling for irregularities associated with the transmission line facilities that could result in a fault, unusual conditions on and adjacent to the transmission line ROW (e.g. encroachments, Danger tree and brush) that could affect the safety or reliability of the transmission line. (TLM Standards and Guides Section IV.B.3).

h. Real Property Services

1) Responsible for researching and drafting easement rights, agreements, determining crop damage claims, appraising, negotiating and purchasing easement rights as part of the Vegetation Clearance Mitigation Program.

2) Responsible for cruising, marking, appraising and acquiring rights to remove off-ROW danger trees.

2) Qualifications

Qualification of these key personnel can be found in the Office of Personnel Management Classification Standards.

3) Required Training

a. TLM Staff

b. Changes in patrol work practices and inspection response types and timeframes implemented in 2010 (e.g., application of sag estimators to working patrols & response to contract inspections), are included in annual working patrol refresher training NRS Staff

F. Inspection Frequency

1. TLM Working Patrol

a. A working patrol shall include inspecting every structure in the line being patrolled, plus driving or walking the right-of-way between each structure. (TLM Standards And Guides Section III.A.8).

1) All lines shall be patrolled at a minimum of once a year.

2) All lines that are subject to NERC regulations will be prioritized based on vegetation conditions.

3) Progress on the working patrol will be monitored utilizing the FAC-003 Working Patrol report (WMGT 1063H).

G. Imminent threat procedure

1. TLM Response to hazardous vegetation during working patrols (TLM Standards and Guide Section VII.B.1 (Addendum FY2010-01)

   a. IMMINENT THREAT - Immediate removal. If immediate removal is not possible, report the hazard to the TLM Foreman III to arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps and the vegetation removed as soon as possible. Once the threat is removed, contact the NRS for follow-up with any property owner and/or environmental evaluation, if necessary. Besides vegetation located on the right-of-way, it is possible that a fall-into, bend-into, grow-into, and swing-into danger tree or logging fringe, etc, can pose an imminent threat based on the judgment of the person conducting the patrol and the conditions encountered.

2. NRS Response to hazardous vegetation

   a. IMMINENT THREAT REPORTED DURING NON-TLM PATROLS – Requires immediate notification of the Foreman III. Arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps or eGIS database and the vegetation removed as soon as possible. Once the threat is removed, update eGIS data base and follow-up with any property owner and/or environmental evaluation, if necessary. (NOTE: During the implementation of the vegetation-only pilot project, some adjustments may be made in response times for Clearance 2 encroachments to evaluate the quality of pilot program data and to accommodate initial limitations in the distribution of reported data using new and developing eGIS mapping technology. This also applies to LiDAR acquired data.) The Supervisory Natural Resource Specialist will adjust the period for danger brush and imminent threat corrective actions surrounding newly posted LiDAR reports on a case-by-case basis, based upon seasonality or volume of work posted. In all cases, the situation(s) will be documented in either TLM Apps, eGIS, or VCMS, and tracked by the TFBV Program Manager until these situations are corrected.

H. Action thresholds

1. See Attached TLM Standards and Guides, Section VII.B.1 Addendum FY2009-01, III, IV, V, and XI SUMMARY CORRECTION RESPONSE TABLE

I. General interim corrective action process when the there are constraints on performing vegetation management

1. In cases where safety, public relations, legal, and environmental considerations special response, these will be documented, monitored, mitigated, and tracked. These are cases where landowners may have legal rights and agreements where agricultural or horticultural crops are concerned (orchards, tree farms, nurseries, etc.). Cases may also exist where action is restricted due to environmental laws (Endangered Species Act) or when the action would be unsafe for the public or workers due to inaccessibility or

environmental conditions. See Attached TLM Standards and Guides, Section VII.B.1 Addendum FY2009-01, IX. RESPONSE TO DANGER BRUSH AND HIGH BRUSH (SPECIAL CONDITIONS) and X. EXCEPTIONS FOR UNSAFE CONDITIONS, ACTION REQUIREING PURCHASE OF PROPERTY RIGHT, OR OTHE LEGAL REQUIREMENTS.

J. Organization structure

1. Transmission Services (TS) provides reliable open access, non-discriminatory transmission service on the BPA transmission network for utilities, generators and power marketers consistent with various regulatory requirements.

   a. ENGINEERING AND TECHNICAL SERVICES (TE), responsible for implementing the transmission capital program, providing technical support for the transmission maintenance program, and providing real property services to the agency.

   b. SYSTEM OPERATIONS (TO), responsible for the safe, reliable, and open access operation and dispatch of the high voltage transmission system and interconnected generation.

   c. TRANSMISSION FIELD SERVICES (TF), responsible for managing field operations, maintenance, and construction of BPA's high voltage electrical transmission system.

      1) INTERNAL OPERATIONS (TFB) provides support services including Technical Training, Work Planning & Evaluation, and Vegetation/Access Road Management, to the TF organization.

      2) The Supervisory Natural Resource Specialist (TFBV) is responsible for the development and implementation of the TF Services Vegetation Management and Access Road programs, which include managing rights-of-way, danger trees, rights-of-way-access. And may include substation vegetation per arrangements and the substation operator. Natural Resource Specialists (NRS), who are supervised by the Supervisory Natural Resource Specialist are co-located in the TF Districts and work collaboratively with Transmission line Maintenance (TLM) crews to implement these programs.

      3) DISTRICT Managers are responsible for implementing field operation, and maintenance and construction activities. District Manager responsibilities include coordinating work and resources between districts, operating and maintaining the BPA transmission system including buildings, grounds, mobile equipment and right-of-ways (ROW).

      4) TLM Foreman III are responsible for assuring that the working patrols are performed and assuring imminent threats are responded to timely. TLM personnel report to the TLM Foreman III.

K. Definitions

1. Clearance 1

   R1.2.1 Clearance 1-Clearance distance to be achieved at the time of transmission vegetation management based on local conditions and

expected time frame in which the Transmission Owner plans to return for future vegetation management work. Must be greater than Clearance 2. (NOTE: This applies to scheduled treatments.)

a. Established in TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13.

b. 25 feet from Max Sag and Swing of the transmission lines greater than 230kV lines, except

   1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

   2) Where the actual physical ground to conductor clearance is less than 25 feet.

c. 20 feet from Max Sag and Swing of the transmission lines less than or equal to 230kV lines, except

   1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

All exceptions must be documented in appropriate data bases and the maximum allowable clearance distance shall be determined in each case by subject matter experts, led by the NRS per the Vegetation Clearance Mitigation Program.

Agreements will be monitored and strictly enforced.

2. Clearance 2

R1.2.2 Clearance 2 – Clearance to be maintained between vegetation and conductors under all rated electrical operating conditions to prevent flashover. These shall be no less than those set forth in IEEE standard 516-2003, Section 4.2.2.3.

Clearance 2 is considered to be the distances set forth in IEEE standard 516-2003, section 4.2.2.3.

To assure these distances are not encroached upon, BPA maintains the minimum distances of 10 feet for 230 KV lines and less and 15 feet on lines greater than 230 KV. See attached (s Standards and Guide Section VII.B.1 (Addendum FY2010-01)).

3. Communications Procedures to and from system operators

A. Imminently hazardous conditions shall be reported immediately to the District Manager and District Foreman. (TLM Standards And Guides Section IV.A.10)

1. During aerial patrols, all Danger brush must be reported to the District Foreman and the Natural Resource Specialist by phone, radio, or in person the day it is discovered. Any burnt tops must be reported to the District Foreman, Natural Resource Specialist and the System Dispatcher immediately. (TLM Standards And Guides Section IV.B.3)

2. Crews on working patrol shall correct all hazards that they are capable of correcting. All hazards will be reported immediately to the District Foreman, Natural Resource Specialist, or Realty Specialist, depending on the nature of the line hazard. If the hazard could cause an outage, the System Dispatcher will be notified. (TLM Standards And Guides Section IV.A.8)

   a. Bonneville Power Administration adheres to WECC criteria for Significant Outages. If an Emergency Outage is required to safely remove a potential hazard affecting an unstudied transmission path, Operating Transfer Capability is set to conservative default

values per operating conditions and regulations. Affected parties are notified of curtailments as soon as possible prior to removing the line from service.

3. Monthly TLM/NRS coordination meetings, for exchanging information regarding landowner information and vegetation removal contractor performance.
4. In the case of unexplained line trips Aircraft Services will conduct Transmission Line Aircraft Patrols.
    a. Each line is patrolled when practical following an unexplained interruption or when requested by the System Dispatcher or TLM District Foreman. (TLM Standards And Guides Section IV.B.3)

4. Documentation

A. Reporting

1. To regulators (of tree contacts).
2. Bonneville Power Administration uses an email system for WECC/NERC notifications.
3. ROW or portions of ROW that have been completely treated per the Annual Work Plan will be documented via a tracking form spreadsheet on TFBV SharePoint web site for Vegetation Management.
4. All TLM and vegetation-only patrol findings are documented and tracked in TLM Apps.
5. All LiDAR findings will be documented and tracked using BPA's eGIS mapping application.

B. References to regulations

1. Local, state, provincial, federal
    a. *BPA TVMP complies with NERC Standard FAC-003-1.*

5. Work specifications

A. See TLM Standards and Guides

6. Annual Plan

A. Transmission Line Maintenance Working Patrol inspects all lines a minimum of once per year.

B. LiDAR – vegetation data will be acquired and modeled for all lines considered high-risk (WECC sanctionable or OB 19) on that part of the BPA transmission system located on the west side of the Cascade Range in Oregon and Washington, including the Snohomish, Covington, Olympia, Longview, Salem and Alvey Districts on a regular cycle. LiDAR flights will occur in the fall while no vegetation scheduled maintenance is underway. Data acquired will be provided to the Vegetation Program Manager and on eGIS map products available to NRS and TLM staff.

C. All ROW or portions of ROW planned for scheduled cycle vegetation removal treatment will be treated. These are identified in BPA's FY Out -Year Plan. Modifications to the schedule are allowed. Justification for variances in the schedule must be documented in the Work Plan.

D. **All Danger Brush identified by TLM will be removed as soon as possible, but no later than May 31st if reported before May 15.** The vegetation program manager has the authority to modify the removal dates of Danger Brush identified.

7. **TVMP implementation**

   A. **How available in the organization**

   The FY10 TVMP, upon approval will be posted on the TFBV Vegetation Management SharePoint site.

REFERENCES

Contract Statement of Work (SOW)

Danger Tree Removal Contract

Draft of BPA Vegetation Mitigation Process

eGIS Database - http://iweb.bpa.gov/eGIS/Portal/Query.aspx

FY10 Out Year Plan (scheduled vegetation removals)

FY10 Project Tracking Form Spreadsheet
http://bpaweb/orgs/orgs%20main/transmission/field/rightofway/Vegetation/PlanningWorking%20Documents/Forms/AllItems.aspx

IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site
http://bpaweb.bpa.gov/orgs/orgs%20main/transmission/field/rightofway/vegetation/default.aspx

LiDAR – FY10 Work Plan

LiDAR TVMP Addendum

NERC Standard FAC-003-01

Outage Analysis and Reporting System (OARS)

TLM Apps

TLM Standards and Guides Section IV.A.10

TLM Standards and Guides Section IV.A.8

TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13

TLM Standards and Guides, Section VII.B.1 Danger Tree and Brush Selection Criteria

TLM Standards and Guides Section IV.B.1

TVMP Cycle Treatment Update

WMGT 1063H – FAC-003 Working Patrol Report

Bonneville Power Administration

Transmission Vegetation Management Program (FY2011)

1) Objectives

A. Purpose of the Transmission Vegetation Management Program (TVMP)

1. Establish a TVMP consistent with regulatory compliance.
2. Improve the reliability of the electric transmission system.
3. Maintain clearances between transmission lines and vegetation both inside and outside the transmission right-of-way (ROW), to ensure no vegetation contacts.
4. Report vegetation-related outages of the transmission system to the respective regulatory body (i.e., WECC/NERC).

B. Compliance with NERC FAC-003-01

1. Bonneville Power Administration (BPA) TVMP complies with stated requirements of NERC Standard FAC- 003-01.

2) Elements of the TVMP

The Bonneville Power Administration TVMP consists of the following practices:

A. Inspection Patrols

1. Transmission Line Maintenance (TLM) routine working patrol
   a. It is the responsibility of the TLM working patrol to inspect all transmission lines rights-of-way (ROW) once per year. (TLM Section III.A.8)
2. Vegetation-Only Aerial Patrol
   a. Vegetation-only Aerial patrols may be performed utilizing Natural Resource Specilist (NRS) – type expertise (BPA) or contract.
3. LiDAR
   a. Light Detection and Ranging (LiDAR) is a remote sensing system used to collect topographic and geospatial data. LiDAR vegetation data will be acquired and modeled for lines identified jointly by Transmission Engineering (TE) and Transmission Field (TF) Services. This data will be reviewed and a decision on the appropriate future budget, schedule and application of the data for the vegetation program will be developed by the summer of 2010.

B. Vegetation Maintenance

1. Scheduled treatment

   NRS staff (TFBV division) plans and schedules treatment of approximately 10-20 % annually (amount may vary) of BPA's rights-of-way. See attached ROW Corridor Out Year Plan. The purpose of this treatment is to clear all tall growing vegetation from the ROW from a known point to a know point. The goal is to achieve BPA's Clearance 1 distances at the time of treatment. ROWs are scheduled with the purpose of assuring no grow into outages will occur before the next scheduled treatment. The period or treatment cycle for each ROW is determined by the environmental conditions and growth rates of vegetation expected on each ROW in a given geographic/ecological region. Cycles may be adjusted based on patrol findings. Planned treatment cycles can be found posted on BPA's Internal Vegetation Management web site on a spreadsheet entitled "TVMP Treatment Cycle Update". BPA began to fully integrate its Clearance 1 distance standards into its scheduled treatments in FY08.

2. Patrol response treatment

   In response to inspection patrol findings conducted annually, vegetation found to encroach on BPAs clearance 2 standards is removed prior to the start of peak operating season, (May 31st). Action thresholds are within 24 hours, 15 calendar days, or 30 calendar days, depending on specific conditions. (See response to hazardous vegetation during working patrols Transmission Line Maintenance Standards and Guides VII.B.1.VI).

C. Vegetation Clearance Mitigation Program (On-ROW orchards, Tree Farms, Nurseries and properties with vegetation agreements).

When special conditions are encountered on-ROW that require removal of vegetation from an orchard, tree farm, nursery, a property under a vegetation agreement, e.g. tree and brush agreement or land use agreement with a vegetation clause or a property with an easement right to grow vegetation, then BPA addresses these special conditions via its Vegetation Mitigation Program (See BPA Clearance Mitigation Process).

D. Danger Tree Program

Off-ROW vegetation that does not pose an immediate threat to transmission lines but has been identified during inspection as exhibiting characteristics that would indicate a potential problem in the future are cruised, marked, appraised, and purchased by BPA Danger Tree Crew, a part of Real Property Services in the TE organization. When the crew informs the NRS staff of a Notice of Rights Acquired (NORA), the NRS schedules removal of these trees as part of either the next scheduled treatment in the planned treatment cycle, or with a separate Danger Tree removal contract.

E. Personnel

1. Key Personnel

   a. Internal Operations Manager

      1) The Internal Operations Manager is accountable for all activities of the Vegetation Management Program, relying on the Supervisory NRS and staff NRSs to identify, plan,

budget, implement, and track the vegetation management program.

b. District Managers (DM)

1) The DM is the accountable manager for non-vegetation management maintenance functions on Rights-of-Way (ROW) by prioritizing, coordinating and assuring the work within each District.

c. Supervisory Natural Resource Specialist

1) Provides overall program policy development, coordination and the oversight for consistent implementation of the vegetation program system-wide, including the final review and approval of the overall agency annual TVMP and budget.

d. Vegetation Management and Access maintenance Program Manager

1) Provides programmatic guidance for vegetation management and access maintenance system-wide, as well managing program budget, conflict escalation protocol, and WECC reporting.

e. Natural Resource Specialists, within their assigned geographic areas are responsible for:

1) Tracking, responding to reports appropriately, and directing contractors to remove vegetation that has been properly identified as a future threat by the Transmission Line Maintenance staff or the helicopter observers, during their respective patrols, including scheduling the removal of on-ROW danger when beyond the capacity of TLM and high brush as well as off ROW danger trees when BPA has legal rights to do so.

2) Serve as Observers (for vegetation-only aerial patrols).

3) Additions or changes to annual work plans, and coordinating changes with affected parties before vegetation control is put into practice.

4) Assuring contractual obligations for vegetation removal are met.

5) Properly completing and documenting their verification and scheduling activities of aerial patrol reports and vegetation removal activities using the accepted BPA methods and within established time frames.

6) Meeting with responsible regional personnel to review site-specific vegetation prescriptions.

7) Coordinating ROW danger tree (DT) evaluations with Real Property Services to ensure appropriate budgets are available for removal following marking and purchase of DT rights.

8) Being the primary contact and project manager for coordinating implementation, communicating progress, and

assuring completions of the approved annual vegetation management plan.

9) Supervises contract inspectors to assist with vegetation management contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Contract Inspectors

10) When contract inspection services are contracted, will assist the NRS in monitoring progress and performance of vegetation removal contracts. In the performance of inspecting vegetation contracts, inspectors will coordinate directly with the NRS designated as the contract representative (COTR). Actions proposed by an inspector that are outside, or in addition to the scope of the contract must be communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.

11) Each Inspector shall have extensive experience in the line inspection process and be certified for special services by the contracting firm according to the contract statement of work (SOW).

f. Transmission Line Maintenance (TLM) is responsible for all electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability and safety of the transmission system or safety of the general public.

1) TLM Foremen III is responsible for:

- Scheduling and providing appropriate staffing when outages/hold-orders are required.
- Tracking annual working patrol data regarding vegetation maintenance needs. The removal and communication of imminent vegetation hazard removal during the annual working patrol.

2) TLM Staff is responsible for:

- All electrical maintenance of the transmission system, and all situations, including vegetation emergencies that may affect the reliability, availability and safety of the transmission system (or safety of the general public).
- Assuring the ROWs are clear of danger brush
- Identifying, communicating, and removing vegetation that is an imminent/immediate safety hazard, including danger brush and danger trees, to the transmission system while conducting their annual working patrols.
- Proper patrolling reporting, and documenting the vegetation conditions and vegetation maintenance needs of the ROW during their annual working patrols.

- Communicated to and approved by the COTR and when necessary approved by the CO prior to the work being started.
- Responding to vegetation identified by aircraft services or working patrols as imminent hazards within 24 hours. Sites identified as imminent hazard and later determined NOT to be a hazard, may be forwarded to the NRS for routine scheduling of vegetation control activities.

g. Aerial Patrol Observer (TLM Lineman collateral duty)

1) Responsible for observing, locating, and recording vegetation problems as part of patrolling for irregularities associated with the transmission line facilities that could result in a fault, unusual conditions on and adjacent to the transmission line ROW (e.g. encroachments, Danger tree and brush) that could affect the safety or reliability of the transmission line. (TLM Standards and Guides Section IV.B.3).

h. Real Property Services

1) Responsible for researching and drafting easement rights, agreements, determining crop damage claims, appraising, negotiating and purchasing easement rights as part of the Vegetation Clearance Mitigation Program.

2) Responsible for cruising, marking, appraising and acquiring rights to remove off-ROW danger trees.

2) Qualifications

a. Qualification of these key personnel can be found in the Office of Personnel Management Classification Standards.

3) Required Training

a. TLM Staff

Changes in patrol work practices and inspection response types and timeframes implemented in 2010 (e.g., application of sag estimators to working patrols & response to contract inspections), were included in annual working patrol refresher training, as well as mandatory vegetation awareness training provided from November 2008 through February of 2010. Laser range finder training and vegetation identification was provided both concurrently during the Vegetation Awareness Training and in the field on an “as requested” basis. NRS staff provided TLM staff with field plant identification training in this case. The Real Property Services Danger Tree Crew provided Laser Range Finder training in the latter case.

b. NRS Staff

1) In 2009 additional training was provided to the NRS staff including application of sag estimators, vegetation awareness training, and Laser range finder training.

2) A training program designed for the NRS staff was developed in 2009 designed to provide newer and seasoned NRS’s the skills needed for utility vegetation

management, public relations, and other disciplines related to the performance and completion of their assigned tasks and responsibilities.

F. Inspection Frequency

1. TLM Working Patrol

   a. A working patrol shall include inspecting every structure in the line being patrolled, plus driving or walking the right-of-way between each structure. (TLM Standards And Guides Section III.A.8).

      1) All lines shall be patrolled at a minimum of once a year.

      2) During 2010 all lines that are subject to NERC regulations will be patrolled by May 15th, unless inaccessible due to snow. Those inaccessible will be patrolled by helicopter.

G. Imminent threat procedure

1. TLM Response to hazardous vegetation during working patrols (TLM Standards and Guide Section VII.B.1 (Addendum FY2010-01)

   a. IMMINENT THREAT - Immediate removal. If immediate removal is not possible, report the hazard to the TLM Foreman III to arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps and the vegetation removed as soon as possible. Once the threat is removed, contact the NRS for follow-up with any property owner and/or environmental evaluation, if necessary. Besides vegetation located on the right-of-way, it is possible that a fall-into, bend-into, grow-into, and swing-into danger tree or logging fringe, etc, can pose an imminent threat based on the judgment of the person conducting the patrol and the conditions encountered.

2. NRS Response to hazardous vegetation

   a. IMMINENT THREAT REPORTED DURING NON-TLM PATROLS – Requires immediate notification of the Foreman III. Arrange removal within 24 hours. If it is not possible to remove the threat within 24 hours (e.g., scheduling issues to obtain a required line clearance, time to obtain traffic restriction permits for removal of vegetation over state and county highways, or awaiting third party approval, etc.), the situation will be documented in TLM Apps or eGIS database and the vegetation removed as soon as possible. Once the threat is removed, update eGIS data base and follow-up with any property owner and/or environmental evaluation, if necessary. (NOTE: During the implementation of the vegetation-only pilot project, some adjustments may be made in response times for Clearance 2 encroachments to evaluate the quality of pilot program data and to accommodate initial limitations in the distribution of reported data using new and developing eGIS mapping technology. This also applies to LiDAR acquired data.)

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1. See Attached TLM Standards and Guides, Section VII.B.1 Addendum FY2009-01, III, IV, V, and XI SUMMARY CORRECTION RESPONSE TABLE

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        2) The Supervisory Natural Resource Specialist (TFBV) is responsible for the development and implementation of the TF Services Vegetation Management and Access Road programs, which include managing rights-of-way, danger trees, rights-of-way-access. And may include substation vegetation per arrangements and the substation operator. Natural Resource Specialists (NRS), who are supervised by the Supervisory Natural Resource Specialist are co-located in the TF Districts and work collaboratively with Transmission line Maintenance (TLM) crews to implement these programs.

        3) DISTRICT Managers are responsible for implementing field operation, and maintenance and construction activities. District Manager responsibilities include coordinating work and resources between districts, operating and maintaining the BPA transmission system including buildings, grounds, mobile equipment and right-of-ways (ROW).

4) TLM Foreman III are responsible for assuring that the working patrols are performed and assuring imminent threats are responded to timely. TLM personnel report to the TLM Foreman III.

K. Definitions

1. Clearance 1

R1.2.1 Clearance 1-Clearance distance to be achieved at the time of transmission vegetation management based on local conditions and expected time frame in which the Transmission Owner plans to return for future vegetation management work. Must be greater than Clearance 2. (NOTE: This applies to scheduled treatments.)

a. Established in TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13.

b. 25 feet from Max Sag and Swing of the transmission lines greater than 230kV lines, except

1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

2) Where the actual physical ground to conductor clearance is less than 25 feet.

c. 20 feet from Max Sag and Swing of the transmission lines less than or equal to 230kV lines, except

1) Where this cannot be achieved due to legal restrictions, such as easement rights or other agreement,

All exceptions must be documented in appropriate data bases and the maximum allowable clearance distance shall be determined in each case by subject matter experts, led by the NRS per the Vegetation Clearance Mitigation Program.

Agreements will be monitored and strictly enforced.

2. Clearance 2

R1.2.2 Clearance 2 – Clearance to be maintained between vegetation and conductors under all rated electrical operating conditions to prevent flashover. These shall be no less than those set forth in IEEE standard 516-2003, Section 4.2.2.3.

Clearance 2 is considered to be the distances set forth in IEEE standard 516-2003, section 4.2.2.3.

To assure these distances are not encroached upon, BPA maintains the minimum distances of 10 feet for 230 KV lines and less and 15 feet on lines greater than 230 KV. See attached (s Standards and Guide Section VII.B.1 (Addendum FY2010-01)).

3. Communications Procedures to and from system operators

A. Imminently hazardous conditions shall be reported immediately to the District Manager and District Foreman. (TLM Standards And Guides Section IV.A.10)

1. During aerial patrols, all Danger brush must be reported to the District Foreman and the Natural Resource Specialist by phone, radio, or in person the day it is discovered. Any burnt tops must be reported to the District Foreman, Natural Resource Specialist and the System Dispatcher immediately. (TLM Standards And Guides Section IV.B.3)

2. Crews on working patrol shall correct all hazards that they are capable of correcting. All hazards will be reported immediately to the District Foreman, Natural Resource Specialist, or Realty Specialist, depending on the nature of the line hazard. If the hazard could cause an outage, the System Dispatcher will be notified. (TLM Standards And Guides Section IV.A.8)

    a. Bonneville Power Administration adheres to WECC criteria for Significant Outages. If an Emergency Outage is required to safely remove a potential hazard affecting an unstudied transmission path, Operating Transfer Capability is set to conservative default values per operating conditions and regulations. Affected parties are notified of curtailments as soon as possible prior to removing the line from service.

3. Best Management Practices (BMP) were reviewed and recommended by an NRS/TLM Communications Culture Team convened the summer of 2009. The team's recommendations were implemented beginning in FY2010. Some best management practices in communication to be implemented are: hold monthly TLM/NRS coordination meetings, documentation standards for exchanging information regarding landowner information and vegetation removal contractor performance, etc.

4. In the case of unexplained line trips Aircraft Services will conduct Transmission Line Aircraft Patrols.

    a. Each line is patrolled when practical following an unexplained interruption or when requested by the System Dispatcher or TLM District Foreman. (TLM Standards And Guides Section IV.B.3)

4. Documentation

A. Reporting

1. To regulators (of tree contacts).

2. Bonneville Power Administration uses an email system for WECC/NERC notifications.

3. There are two types of email; "**Near Real Time**" and a "**Daily - No Outages Found**" email.

    a. The **Near Real Time** email will be sent within 15 minutes of a potentially reportable tree outage being entered in the Outage Analysis and Reporting System (OARS) by dispatch or the field. (Dispatch entries are made once a day at approximately 06:00). Once an email has been sent for a specific outage, no other emails will be sent for that same outage.

    b. The **Daily – No Outages Found** email will be sent at approximately 04:00 if, in fact, no potentially reportable tree outages have occurred in the previous day (24 hours).

    c. In summary, at least one WECC/NERC Potentially Reportable Vegetation Outages email will be sent each day.

4. ROW or portions of ROW that have been completely treated per the Annual Work Plan will be documented via a tracking form spreadsheet on TFBV SharePoint web site for Vegetation Management.

5. All TLM and vegetation-only patrol findings are documented and tracked in TLM Apps.
6. All LiDAR findings will be documented and tracked using BPA's eGIS mapping application.

B. References to regulations

1. Local, state, provincial, federal
   a. *BPA TVMP complies with NERC Standard FAC-003-1.*

5. Work specifications

A. See TLM Standards and Guides, Section VII.V.1 Addendum FY 2010-01

6. Annual Plan

A. Transmission Line Maintenance Working Patrol inspects all lines a minimum of once per year.

B. Low Level Video (LLV) see TLM Standards and Guides Section IV.B.1 for specifics.

C. LiDAR – vegetation data will be acquired and modeled for all lines considered high-risk (WECC sanctionable or OB 19) on that part of the BPA transmission system located on the west side of the Cascade Range in Oregon and Washington, including the Snohomish, Covington, Olympia, Longview, Salem and Alvey Districts on a 3-year cycle. LiDAR flights will occur in the fall while no vegetation scheduled maintenance is underway. Data acquired will be provided to the Vegetation Program Manager and on eGIS map products available to NRS and TLM staff.

D. All ROW or portions of ROW planned for scheduled cycle vegetation removal treatment will be treated. These are identified in BPA's FY Out -Year Plan. Modifications to the schedule are allowed. Justification for variances in the schedule must be documented in the Work Plan.

E. All pre-October 2008 TLM identified High Brush and Danger Tree grow into entries will be removed by May 31st 2010.

F. All Danger Brush identified by TLM will be removed as soon as possible, but no later than May 31if reported before May 15. The vegetation program manager has the authority to modify the removal dates of Danger Brush identified through the pilot vegetation-only ground patrol and/or LiDAR to accommodate the time that it will take to deliver the information to the field staff via use of pilot eGIS databases.

G. All High Brush and Danger Tree grow-into reports from TLM and vegetation-only aerial pilot patrols will be verified and scheduled for removal by the NRS within 30 days of the report.

7. TVMP implementation

A. How available in the organization

The FY10 TVMP, upon approval will be posted on the TFBV Vegetation Management SharePoint site.

REFERENCES

Contract Statement of Work (SOW)

Danger Tree Removal Contract

Draft of BPA Vegetation Mitigation Process

eGIS Database - http://iweb.bpa.gov/eGIS/Portal/Query.aspx

FY10 Out Year Plan (scheduled vegetation removals)

FY10 Project Tracking Form Spreadsheet
http://bpaweb/orgs/orgs%20main/transmission/field/rightofway/Vegetation/PlanningWorking%20Documents/Forms/AllItems.aspx

IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site
http://bpaweb.bpa.gov/orgs/orgs%20main/transmission/field/rightofway/vegetation/default.aspx

LiDAR – FY10 Work Plan

LiDAR TVMP Addendum

NERC Standard FAC-003-01

Outage Analysis and Reporting System (OARS)

TLM Apps

TLM Standards and Guides Section IV.A.10

TLM Standards and Guides Section IV.A.8

TLM Standards and Guides, Right-of Way – Vegetation, Section VIIB.13

TLM Standards and Guides, Section VII.B.1 (Addendum FY2010-01), Dange Tree and Brush Selection Criteria

TLM Standards and Guides Section IV.B.1

TLM Standards and Guides, Section VII.V.1 Addendum FY 2010-01

TVMP Cycle Treatment Update

BONNEVILLE POWER ADMINISTRATION

Vegetation Program Document

FY 2018

Section 1 – Introduction

1.1 Scope

This vegetation management document (VMD) applies to all transmission lines operated at 200kV and above and to any lower voltage lines designated by a WECC as critical to the reliability of the electric system in the region.

This document provides a roadmap describing how Bonneville Power Administration (BPA) meets the Current NERC Vegetation Standard FAC-003-3. The Vegetation Program Manager will maintain the processes, standards and documentation to ensure that the vegetation in the transmission system is properly maintained. This VMD shall be reviewed and updated as necessary based on adopted revisions to FAC-003-3 requirements or as changing field conditions and circumstances warrant.

This document replaces BPA's prior Transmission Vegetation Management Plans (TVMP).

BPA's O&M vegetation maintenance program (TFBV) is responsible for system-wide compliance with FAC-003-3.

1.2 Objectives

The objective of the vegetation management program is to establish an integrated vegetation management program (IVM) under the auspices of ANSI A300 (Part 7) on transmission rights-of-ways (ROW) in the BPA System to ensure the reliability of the electric transmission systems by preventing outages from vegetation located on transmission ROW and minimizing outages from vegetation located adjacent to ROW, maintaining clearances between transmission lines and vegetation on and along transmission ROW.

The intent of the program is to manage BPA's ROWs consistent with rights acquired and treat only that vegetation that is incompatible with BPA's use of the land with the following objectives:

- Transmission Reliability – the reliability of electrical service through vegetation control regardless of accessibility or workability.
- Elevate safety as a system wide core value in all aspects of operations.
- Compliance - ensuring that BPA is compliant with all governmental vegetation related regulations and restrictions. Adherence to NERC Standard FAC-003-3 Vegetation Management and related state statutes is paramount.
- Manage system wide with commitment to environmental stewardship.
- Resource Management - the ability to manage resources by identifying work load. Treatments will be applied only on an as needed basis, thus allowing allocated resources to be utilized efficiently. As a result, work load and resources will be balanced.
- Improving/Maintaining Accessibility - promoting accessibility to structures and right-of-way by controlling vegetation on and around structure pads and patrol roads where practical.
- Response to vegetation clearance issues identified can be found in BPA's Transmission Line Maintenance Standards & Guide (TLMSG) STD 7-2-1.
- Minimizing Fire Hazards - through first identifying potential problems and then by reducing fuel levels to acceptable limits.

1.3 Terms, Definitions and Acronyms:

The majority of related terms, definitions, and acronyms commonly used by BPA in the management of vegetation along their ROW's can be found within the BPA Transmission Line Maintenance Standards and Guides (TLMSG) STD 7-2-1 (2015 version).

- **Right-of-Way (ROW):** The corridor of land under a transmission line(s) needed to operate the line(s). The width of the corridor is established by engineering or construction standards as documented in either construction documents, pre-2007 vegetation maintenance records, or by the blowout standard in effect when the line was built. The ROW width in no case exceeds the Transmission Owner's legal rights but may be less based on the aforementioned criteria. Inspector: Individual assigned with the responsibility of evaluating clearances in the Transmission ROW.
- **System-of-record:** That database and software used by TFBV to store ROW vegetation management related information.
- **Vegetation Inspection / Patrol:** The systematic examination of vegetation conditions on a Right-of-Way and those vegetation conditions under the applicable Transmission Owner's or applicable Generator Owner's control that are likely to pose a hazard to the line(s) prior to the next planned maintenance or inspection. This may be combined with a general line inspection.

2 Section 2 –FAC-003-3 Requirements

2.1 Requirement 1 (Applicable lines that are an element of an IROL or Major WECC Transfer Path)

BPA maintains records of sustained outages from all causes, reporting for FAC-003-3 in BPA's transmission availability data system-of-record. BPA attests that this is an accurate classification of all outages.

BPA conducts an annual vegetation patrol of all applicable lines. In this patrol, BPA inspects for and identifies vegetation on and off the ROW that could pose a reliability risk to the line. Encroachments into the minimum vegetation clearance distance (MVCD) as shown in FAC-003-Table 2, observed in real-time during the patrol are reported to the TFBV supervisory natural resources specialist (hereafter Manager). Appropriate data and photographs are submitted to the Vegetation Program Manager. BPA attests that these events are reported to the Western Electricity Coordinating Council (WECC) in accordance with NERC policy.

Documentation of these patrols and the findings can be found in BPA's Reliability RESOLVER Compliance site.

2.2 Requirement 2 (Applicable lines that are not an element of an IROL or Major WECC Transfer Path)

BPA maintains records of sustained outages from all causes. Reporting for FAC-003-3 and TADS originates there. BPA attests that this is an accurate classification of all outages.

BPA conducts an annual vegetation patrol of all applicable lines. In this patrol, BPA inspects the tree conductor clearances, identifies vegetation on and off the ROW that could pose a reliability risk to the line. An encroachment into the MVCD as shown in FAC-003-Table 2, observed in real-time during the patrol is reported to the Manager. Appropriate data and photographs are taken and transmitted to the Manager. BPA attests that these events are reported to the WECC in accordance with NERC policy.

Documentation of these patrols and the findings can be found in BPA's Reliability RESOLVER Compliance site.

2.3 Requirement 3 (Maintenance Strategy)

In applying a Maintenance Strategy, BPA provides guidance for employees making decisions as to which vegetation should be in the annual work plan through the use of available LiDAR data and annual aerial or ground patrols. LiDAR data is typically acquired on a portion of BPA's circuits annually. Using this data, BPA has established clearances in Table 1 of BPA's TLMSG STD 7-2-1 to be used in annual patrols. The annual aerial patrol described in R-6 is the first line of defense. The annual ground patrols and analyzed LiDAR data are the secondary barrier to ensure tree wire conflicts do not occur.

2.4 Requirement 4 (vegetation condition that is likely to cause a Fault at any moment)

When BPA employees or its contractors encounter an vegetation-related imminent threat situation, the appropriate staff shall be notified to communicate vegetation conditions that are likely to cause a Fault at any moment per TLM-STD-7-2-1, TLM-STD-4-1-8, and STD-4-1-10.

Imminent Threat Communication Requirements for BPA Employees and Contractors:

BPA's dispatch will be contacted for any imminent threat clearance issues involving the following scenarios:

1) As identified by Aerial TLM patrols (per TLM-STD-4-1-8), if an encroachment is identified that is likely to cause an outage, it shall be reported to BPA's dispatch and the respective District foreman. From the aerial observer's report, BPA's dispatcher or the District Foreman shall include the observer's assessment of the gravity and risk of the hazard to BPA's assets.
2) When TLM working patrol staff encounter an imminent risk vegetation clearance (per TLM-STD-4-1-8), they will mitigate the hazard that they are capable of, and contact BPA's dispatch if the hazard is likely to cause an outage or if a clearance is required per TLM-STD-4-1-8.
3) When BPA employees or its contractors encounter an imminent threat situation, the appropriate staff shall be notified to communicate vegetation conditions that are likely to cause a Fault at any moment per TLM-STD-7-2-1. In this scenario, it will be at the determination of the TLM district foreman or designate if a clearance is required to mitigate the risk.

Documentation:

BPA form 4300-22 will be completed by TLM identifying imminent risk encroachments. The NRS and BPA vegetation contractor will maintain their records on the system-of-record.

2.5 Requirement 5 (vegetation constraint may lead to an encroachment into the MVCD)

Maintenance strategy in Section 2.3 defines the expected extent of clearing. If the clearance specifications cannot be achieved at the time of scheduled maintenance, BPA shall implement corrective action. This corrective action shall be documented. This corrective action may include more frequent maintenance or more frequent patrols to monitor the risk to the system.

Restrictions on scheduled work may include restrictions by federal and state agencies due to threatened and endangered species, legal hurdles, hostile landowners or access due to seasonal conditions. These restrictions will be brought to management for action. While negotiations or legal action with governmental entities or landowners is under way, the respective natural resources

specialist will manage the restriction to prevent encroachment into the imminent risk clearance standard. These actions will be documented as evidence that appropriate action was taken to prevent encroachment to the imminent risk clearance and MVCD. This documentation will be maintained in the database-of-record.

2.6 Requirement 6 (Annual Patrols)

All transmission circuits (100%) subject to FAC-003-3 shall be completely patrolled at least once a year. The patrol interval should not exceed eighteen months from the last patrol.

The timing and number of patrols is flexible. BPA may increase the number of patrols or adjusted schedules based on changing conditions that could include storms, locally heavy rainfall or high winds, landowner intervention and tree mortality caused by disease outbreaks or insect infestations.

BPA tracks patrols by line miles and spans inspected. The Manager will maintain a log in the database-of-record to ensure patrols are on schedule and as evidence that BPA completed 100% of its line miles and spans.

2.7 Requirement 7 (Annual Work Plan)

During the budget process, the Manager will review planned work schedule for the following year and the most current patrol data from the annual patrols. The Manager will prioritize the work based on prevention of encroachment into the MVCD.

Before the year begins, the Manager will set and document the Annual Work Plan based upon TFBV's OutYear Plan. This plan is flexible and may be modified as the year progresses for the following reasons:

- Change in expected growth rate/environmental factors
- Circumstances that are beyond the control of an applicable Transmission Owner or applicable Generator Owner
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- Crew or contractor availability/mutual assistance agreements
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- Weather conditions/accessibility
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- Land ownership changes/change in land use by the landowner
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Changes made to the annual Work Plan will be documented on the OutYear plan in the Database of record.

BPA tracks the Annual Work Plan by line miles completed. The Manager will maintain an annual work plan to ensure work is on schedule and as evidence that BPA completed 100% of its circuit miles listed in the Annual Work Plan.

3 Compliance

When an outage is identified as caused by vegetation, the Program Manager will ensure that appropriate qualified personnel collect the necessary evidence from the scene. The Program Manager will submit any applicable report to the Vegetation Manager for review with upper

management and BPA compliance personnel. If they deem a violation of Requirement 1 or 2 has occurred, the appropriate individual will report the violation to the WECC.

Quarterly the Manager or program manager will review the outage records for vegetation outages and submit a report to BPA's Compliance staff. Outages that meet the requirement for reporting in Section 1.4 of the compliance section of FAC-003-3 will be reported to appropriate personnel for reporting to the WECC.

4 Reference

Contract Statement of Work (SOW)

Danger Tree Removal Contract

Draft of BPA Vegetation Mitigation Process

eGIS Database - http://iweb.bpa.gov/eGIS/Portal/Query.aspx

TFBV OutYear Plan (scheduled cycle vegetation maintenance)

IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site http://txportal.bpa.gov/orgs/tf/veg-mgmnt/default.aspx

LiDAR – Fiscal Year Work Plan

LiDAR TVMP Addendum

NERC Standard FAC-003-4 (including current MVCD Table)

Outage Analysis and Reporting System (OARS)

TLM Apps (or TAS Lines)

TLM-STD-7-2-1, (04/19/2017)
Danger Tree and Vegetation Clearance Selection Criteria

TLM-STD-4-1-10, (08/20/2015)
Working Patrol

TLM-STD-4-2-3 (04/14/2016)

TFBV Cycle Treatment Update

WMGT1135S Helicopter Patrol
WMGT1155S TLM Line Patrol
WMGT1186S TLM Line Information

2000 Vegetation Management EIS

BONNEVILLE POWER ADMINISTRATION

Vegetation Program Document

FY 2016

Section 1 – Introduction

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IEEE standard 516-2003, section 4.2.2.3

Internal Vegetation Management Web Site http://txportal.bpa.gov/orgs/tf/veg-mgmnt/default.aspx

LiDAR – Fiscal Year Work Plan

LiDAR TVMP Addendum

NERC Standard FAC-003-3 (including current MCVD Table)

Outage Analysis and Reporting System (OARS)

TLM Apps (or TAS Lines)

TLM-STD-7-2-1, Danger Tree and Vegetation Clearance Selection Criteria (9/22/2015)

TLM-STD-4-1-8, Reportinng of Encroachments and Hazardous Conditions (11/4/2015)

TLM-STD-4-1-10, Working Patrol (8/20/2015)

TLM Standards and Guides Section IV.B.3

TFBV Cycle Treatment Update

WMGT 1063H – FAC-003-3 Working Patrol Report

2000 Vegetation Management EIS

U.S. Department of the Interior - Bonneville Power Administration

BPA 771 REV. OCT. 1963

STEEL TOWER LIST

REV.
10/84 Oper Name Chdg
11/2017 Oper Name Change due to Holden Creek Substation
**** Tower Design MWT 7000#
***Tower Design MWT 16,700#
*Tower Design MWT 12,000#
@ Steel' in Special Structures

Type construction: Single Circuit
Design voltage: 115 kV Ice load: 1/2"
Conductor: ACSR Flamingo
M. W. T.: 10000# Except as noted
Ground Wire: 3/8" EHS
M. W. T.: 5000#
Insulators: 15k # Susp D.E.

Operating Name: Cougar - Holden Creek No.1
Design Name: Cougar - Station "S" No.1
Section:
Work Order: 453865

By: WHH Ck by: JBT Date: 3/28/61

TOWER OPRNG. NO.	TOWER SERIAL NO.	STATION	SPAN	ANGLE	TOWER TYPE	TOWER HT	LEG EXTENSIONS				FOOTING TYPE	SOIL TYPE	REMARKS
	SS DE Twr A	789+31.5	161.0		**** SSDE	72	See Dwg No. 117220				Concrete		Begin Ground Wire GW MWT 1500# Cond MWT 3000#
	OCB Tap		CL				See Dwg No. 118317						
	SS DE Twr B	790+92.5	276.6	25°35'Lt	**** SSDE	72	See Dwg No. 117221				Concrete		GW MWT 2000# Cond MWT 4000#
													2 Type 2D GW Brkts
1/1	AL 2	793+69.1	446	72°13'Lt	2D*	62	22.5	22.5	22.5	22.5	Grillage	Broken Rock	GW MWT 3700# Cond MWT 7000#
1/2	AL 3	798+15.1	1147.9	42°51'Lt	10D	62	35 @	35 @	35 @	35 @	Plate	Broken Rock	2 Type 10D GW Brkts
1/3	AL 4	809+63	1247		Spec B2***	131.25	37.5 @	32.5	30	35 @	Grillage	Earth	2 Special Type B2 GW Brkts
1/4	AL 5	822+10	301.6		OA1*	50	12.5	7.5	5	12.5	Plate	Earth & Rock	2 Type OA GW Brkts
1/5	AL 6	825+11.6	1323.4	28°52'Rt	10D	42	35 @	27.5	25	32.5	Plate	Earth & Rock	2 Type 10D GW Brkts End Ground Wire
1/6	AL 7	838+35	1437.9		OA1*	65	27.5	22.5	22.5	25	Plate	Earth & Rock	

2/1/2018

U.S. Department of the Interior - Bonneville Power Administration

BPA 771 REV. OCT. 1963

STEEL TOWER LIST

REV.
10/84 Oper Name Chdg
11/2017 Oper Name Change due to Holden Creek Substation
*Tower Design MWT 12,000#

Type construction: Single Circuit
Design voltage: 115 kV Ice load: 1/2"
Conductor: ACSR Flamingo
M. W. T.: 10000# Except as noted
Ground Wire:
M. W. T.:
Insulators: 15k # Susp D.E.

Operating Name: Cougar - Holden Creek No.1
Design Name: Cougar - Station "S" No.1
Section:
Work Order: 453865

By: WHH Ck by: JBT Date: 3/28/61

TOWER OPRNG. NO.	TOWER SERIAL NO.	STATION	SPAN	ANGLE	TOWER TYPE	TOWER HT	LEG EXTENSIONS				FOOTING TYPE	SOIL TYPE	REMARKS
2/1	AL 8	852+72.9	1471.4	13°43'Lt	30C2		See Supplemental Tower List					Earth & Rock	
2/2	AL 9	867+44.3	1455.7		OA1*	65	25	20	17.5	22.5	Plate	Earth	100# Wt Each Phase
2/3	AL 10	882+00	734.2		10L	50	10	5	5	10	Plate	Earth & Rock	
2/4	AL 11	889+34.2	1115.8	61°00'Lt	30F2		See Supplemental Tower List					Earth & Rock	
2/5	AL 12	900+50	991.9		30F1		See Supplemental Tower List					Earth	Wave Trap Phase C See dwgs 119241 & 121473

2/1/2018

U.S. Department of the Interior - Bonneville Power Administration

BPA 771 REV. OCT. 1963

STEEL TOWER LIST

REV.
7-10-61 Cond MWT note removed
1-17-62 Dwg 121473 Added
10/84 Oper Name Changed
11/2017 Oper Name Change due to Holden Creek Substation
*Tower Design MWT 12,000#

Type construction: Single Circuit
Design voltage: 115 kV Ice load: 1/2"
Conductor: ACSR Flamingo
M. W. T.: 10000# Except as noted
Ground Wire:
M. W. T.:
Insulators: 15k # Susp D.E.

Operating Name: Cougar - Holden Creek No.1
Design Name: Cougar - Station "S" No.1
Section:
Work Order: 453865

By: WHH Ck by: JBT Date: 3/28/61

TOWER OPRNG. NO.	TOWER SERIAL NO.	STATION	SPAN	ANGLE	TOWER TYPE	TOWER HT	LEG EXTENSIONS				FOOTING TYPE	SOIL TYPE	REMARKS
		901+00	CL	Carmen Smith Tap									See Drawing 121473
3/1	AL 13	910+41.9	1010.4		10L	50	15	15	15	15	Plate	Earth	
3/2	AL 14	920+52.3	772.7	52°38'Lt	30F2		See Supplemental Tower List					Earth	
3/3	AL 15	928+25	1735.2		OA1*	65	30	32.5	30	30	Plate	Earth & Gravel	
3/4	AL 16	945+60.2 Bk 945+53.9 Ah	1297.2	41°58'Rt	10D	62	30	32.5	35@	30	Plate	Earth	
3/5	AL 17	958+51.1	1063.9	26°20'Lt	30F1		See Supplemental Tower List					Earth	

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BPA 771 REV. OCT. 1963

STEEL TOWER LIST

REV.
7-10-61 Cond MWT note removed
1-17-62 Dwg 121473 Added
10/84 Oper Name Changed
11/2017 Oper Name Change due to Holden Creek Substation
*Tower Design MWT 12,000#

Type construction: Single Circuit
Design voltage: 115 kV Ice load: 1/2"
Conductor: ACSR Flamingo
M. W. T.: 10000# Except as noted
Ground Wire:
M. W. T.:
Insulators: 15k # Susp D.E.

Operating Name: Cougar - Holden Creek No.1
Design Name: Cougar - Station "S" No.1
Section:
Work Order: 453865

By: WHH Ck by: JBT Date: 3/28/61

TOWER OPRNG. NO.	TOWER SERIAL NO.	STATION	SPAN	ANGLE	TOWER TYPE	TOWER HT	LEG EXTENSIONS				FOOTING TYPE	SOIL TYPE	REMARKS
4/1	AL 18	969+15	885		10L	65	15	17.5	17.5	15	Plate	Earth	
4/2	AL 19	978+00	915		10L	50	27.5	27.5	27.5	27.5	Plate	Earth	
4/3	AL 20	987+15	1285		10L	50	27.5	27.5	27.5	27.5	Plate	Earth	
4/4	AL 21	1000+00 Bk 129+86.5 Ah	1038.5	15°30'Rt	30C1		See Supplemental Tower List					Earth	
4/5	AL 22	140+25	1026		10L	50	27.5	27.5	27.5	27.5	Plate	Earth	
4/6	AL 23	150+51	1109		10L	50	15	15	15	15	Plate	Earth	

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BPA 771 REV. OCT. 1963

STEEL TOWER LIST

REV.
6/61 Disconnect Switch added
6/73 Add Disconnect Switch
6-25 BK
WO 880-239
10/84 Oper Name Chdg
11/2017 Oper Name Change due to Holden Creek Substation

Type construction: Single Circuit
Design voltage: 115 kV Ice load: 1/2"
Conductor: ACSR Flamingo
M. W. T.: 10000# Except as noted
Ground Wire:
M. W. T.:
Insulators: 15k # Susp D.E.

Operating Name: Cougar - Holden Creek No.1
Design Name: Cougar - Station "S" No.1
Section:
Work Order: 453865

By: WHH Ck by: JBT Date: 3/28/61

TOWER OPRNG. NO.	TOWER SERIAL NO.	STATION	SPAN	ANGLE	TOWER TYPE	TOWER HT	LEG EXTENSIONS				FOOTING TYPE	SOIL TYPE	REMARKS
5/1	AL 24	161+60	1000.7		10L	50	10	12.5	12.5	10	Plate	Earth & Boulders	
5/2	AL 25	171+60.7	1069.3		10L	50	10	10	10	10	Plate	Earth & Boulders	
5/3	AL 26	182+30	855.3		10L	50	12.5	12.5	12.5	12.5	Plate	Earth & Gravel	
5/4	AL 27	190+85.3	877.3	41°29'Lt	30F2		See Supplemental Tower List					Earth & Gravel	
5/5	AL 28	199+62.6	1107.4		10L	50	25	25	25	25	Plate	Earth & Gravel	

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BPA 771 REV. OCT. 1963

STEEL TOWER LIST

REV.
6/61 Disconnect Switch added
6/73 Add Disconnect Switch
6-25 BK
WO 880-239
10/84 Oper Name Chdg
11/2017 Oper Name Change due to Holden Creek Substation

Type construction: Single Circuit
Design voltage: 115 kV Ice load: 1/2"
Conductor: ACSR Flamingo
M. W. T.: 10000# Except as noted
Ground Wire:
M. W. T.:
Insulators: 15k # Susp D.E.

Operating Name: Cougar - Holden Creek No.1
Design Name: Cougar - Station "S" No.1
Section:
Work Order: 453865

By: WHH Ck by: JBT Date: 3/28/61

TOWER OPRNG. NO.	TOWER SERIAL NO.	STATION	SPAN	ANGLE	TOWER TYPE	TOWER HT	LEG EXTENSIONS				FOOTING TYPE	SOIL TYPE	REMARKS
6/1	AL 29	210+70	1230.4		10L	50	17.5	17.5	17.5	17.5	Plate	Earth & Gravel	
6/2 SBk		222+23.4 222+50	Disconnect Switch - See drawings 154276 A-H DTW-D Blue River Tap - See drawing No. 108632										
6/2	AL 30	223+00.4	711.2		10SW	See Supplemental Tower List					Earth	Earth & Gravel	
6/2 SAh		223+12.4	Disconnect Switch - See drawings 154276 A-H DTW-D										
6/3	AL 31	230+11.6	1063.4	33°47'Rt	30F2	See Supplemental Tower List						Earth & Gravel	
6/4	AL 32	240+75	1193		10L	50	27.5	25	25	27.5	Plate	Earth & Gravel	
6/5	AL 33	252+68	1157		10L	50	27.5	27.5	27.5	27.5	Plate	Earth & Rock	

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BPA 771 REV. OCT. 1963

STEEL TOWER LIST

REV.
10-84 Oper Name Changed
11/2017 Oper Name Change due to Holden Creek Substation

Type construction: Single Circuit
Design voltage: 115 kV Ice load: 1/2"
Conductor: ACSR Flamingo
M. W. T.: 10000# Except as noted
Ground Wire:
M. W. T.:
Insulators: 15k # Susp D.E.

Operating Name: Cougar - Holden Creek No.1
Design Name: Cougar - Station "S" No.1
Section:
Work Order: 453865

By: WHH Ck by: JBT Date: 3/28/61

TOWER OPRNG. NO.	TOWER SERIAL NO.	STATION	SPAN	ANGLE	TOWER TYPE	TOWER HT	LEG EXTENSIONS				FOOTING TYPE	SOIL TYPE	REMARKS
7/1	AL 34	264+25	1225		10L	50	27.5	27.5	27.5	27.5	Plate	Earth & Gravel	
7/2	AL 35	276+50	1175.7		10L	50	27.5	27.5	27.5	27.5	Plate	Earth & Gravel	
7/3	AL 36	288+25.7	1144.3	32°53'Rt	30F2	See Supplemental Tower List						Earth & Gravel	
7/4	AL 37	299+70	880.4		10L	50	25	25	25	25	Plate	Earth & Gravel	
7/5	AL 38	308+50.4 Bk 324+68.4 Ah	786.6	53°38'Lt	30F2	See Supplemental Tower List						Earth & Gravel	

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STEEL TOWER LIST

REV.
04/61 Twr AL 40 changed and MWT notes removed
11/61 @ changes tower AL 40
05/62 Tower AL 43 Moved 10' Ahead, station corrected
08/62 Tower AL 43 changed
@ steel in special structures
10-84 Oper Name Changed
11/2017 Oper Name Change due to Holden Creek Substation

Type construction: Single Circuit
Design voltage: 115 kV Ice load: 1/2"
Conductor: ACSR Flamingo
M. W. T.: 10000# Except as noted
Ground Wire:
M. W. T.:
Insulators: 15k # Susp D.E.

Operating Name: Cougar - Holden Creek No.1
Design Name: Cougar - Station "S" No.1
Section:
Work Order: 453865

By: WHH Ck by: JBT Date: 3/28/61

TOWER OPRNG. NO.	TOWER SERIAL NO.	STATION	SPAN	ANGLE	TOWER TYPE	TOWER HT	LEG EXTENSIONS				FOOTING TYPE	SOIL TYPE	REMARKS
8/1	AL 39	332+55	1325.2		10L	50	15	15	15	15	Plate	Earth & Gravel	
8/2	AL 40	345+80.2	590.4	(const.) 20°04'Lt	S10D	102	25	@ 37.5	27.5	20	Grillage	Earth & Rock	
8/3	AL 41	351+70.6Bk 351+66.4Ah	1117.6	(const.) 2°21'Lt	10D	42	20	25	22.5	17.5	Plate	Earth & Broken Rock	
8/4	AL 42	362+84.0	751	6°23'Rt	30C1	See Supplemental Tower List						Earth & Broken Rock	
8/5	AL 43	370+35	966.6		10L	65	5	20	25	7.5	Plate	Earth & Broken Rock	Hand Dig

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BPA 771 REV. OCT. 1963

STEEL TOWER LIST

REV.
04/61 Twr AL 44 and 45 Angles marked (const.)
10-84 Oper Name Changed
11/2017 Oper Name Change due to Holden Creek Substation

* Tower Design MWT 12,000#

Type construction: Single Circuit
Design voltage: 115 kV Ice load: 1/2"
Conductor: ACSR Flamingo
M. W. T.: 10000# Except as noted
Ground Wire:
M. W. T.:
Insulators: 15k # Susp D.E.

Operating Name: Cougar - Holden Creek No.1
Design Name: Cougar - Station "S" No.1
Section:
Work Order: 453865

By: WHH Ck by: JBT Date: 3/28/61

TOWER OPRNG. NO.	TOWER SERIAL NO.	STATION	SPAN	ANGLE	TOWER TYPE	TOWER HT	LEG EXTENSIONS				FOOTING TYPE	SOIL TYPE	REMARKS
9/1	AL 44	380+01.6	1277.0	(const.) 0°33'Lt	10L	50	5	5	5	5	Plate	Earth & Broken Rock	
9/2	AL 45	392+78.6 Bk 392+79.7 Ah	859.3	(const.) 8°56'Lt	30F1	See Supplemental Tower List						Earth & Gravel	
9/3	AL 46	401+39	1031.7		10L	65	17.5	20	20	17.5	Plate	Earth & Gravel	
9/4	AL 47	411+70.7	1249.3	2°46'Rt	OA1*	50	27.5	30	30	27.5	Plate	Earth & Gravel	100# Wt. Each Phase
9/5	AL 48	424+20	878.2		10D	62	15	15	15	15	Plate	Earth & Gravel	Cond MWT 8000#

2/1/2018

STRUCTURE LIST

COND.: ACSR Flamingo M.W.T.: #8000
M.W.T.:
GW.: M.W.T.:
M.W.T.:

ICE: 1/2" OPER. NAME: Cougar - Holden Creek No. 1
ICE: DESIGN NAME: Cougar - Station S No. 1
ICE: 115 -kV, ST TYPE: H-Frame MARKING
ICE: MILE 10 STATION: PL-6: 453865
BY: WHH CK: FRN,JBT DATE: 2/12/58 SHEET: 1 of 1

REV.: 10/26/60 Retyped serial numbers added
10/84 Oper name chdg
12/12 Rebuilt AL 54
11/2017 Oper name ch due to Holden Creek Sub

NOTES:

OPER STR NO.	SERIAL NO.	STATION	SPAN AHEAD	ANGLE	CL ELEV.	COND ELEV.	STR. TYPE	STR. HT	POLE LENGTH A	B	C	DESCRIPTION & REMARKS
10/1	AL 49	432+98.2 Bk 433+00.0 Ah	1233.6	56°00'Rt	998.4		KFH	65	65	65	65	Rake 15" 6-1/2" HS DPAD Line Guys 6-28" Plate Anchors, 1"x10' Rods
10/2	AL 50	445+33.6	704.2	22°29'Lt	1300.3		KFH	60	65	60	60	Rake 12" 2-HX, 1W Guy/Strand 2-1/2" HS DPA Side Guys 2-28" Plate Anchors, 1"x10' Rods 6-1/2" HS DPAD 6-28" Plate Anchors, 1"x10' Rods
10/3	AL 51	452+15	177.2		1270.4		WA1	60	65	60		
10/4	AL 52	454+15	1085.0		1266.2		WA1	55	60	55		X-Brace
10/5	AL 53	465+00	222.1		1269.0		WA1	65	70	65		X-Brace
10/6	AL 54	467+22.1	877.9		1273.8		22WA-WSH	70	75	70		X-Brace

STRUCTURE LIST

COND.: ACSR Flamingo — M.W.T.: #8000
M.W.T.:
GW.: M.W.T.:
M.W.T.:

ICE: 1/2" OPER. NAME: Cougar - Holden Creek No. 1
ICE: DESIGN NAME: Cougar - Station S No. 1
ICE: 115 -kV, ST TYPE: Steel & Spar Arms MARKING
ICE: MILE 11 STATION: 528+04 PL-6: 453865
BY: WHH CK: FRN,JBT DATE: 2/12/58 SHEET: 1 of 1

REV.: 5/14/58 Resagged for Flamingo
6/9/58 Rev Mile Changed
11/17/58 Change Anchor Rods Str 11/7
12/16/58 Add HX & Side Guys Str 11/7
9/10/59 Rev 11/6 Anchor Rods
10/84 Oper name chgd
12/12 Rebuilt AL 61
11/2017 Oper Name ch due to HC Sub

NOTES:

OPER STR NO.	SERIAL NO.	STATION	SPAN AHEAD	ANGLE	CL ELEV.	COND ELEV.	STR. TYPE	STR. HT	POLE LENGTH A	B	C	DESCRIPTION & REMARKS
11/1	AL 55	476+00	662.1		1351.8		WA2	70	75	70		1-HX Guy, 1W Guy Insul/Strand 2-DPA Side Guy 2-28" Anchor Plates, 3/4"x10' Rods
11/2	AL 56	482+62.1	437.9	11°56'Rt	1366.0		KB1	55	60	55	50	Rake 9" 3-PA Side Guys 3-28" Plate Anchors, 3/4"x10' Rods
11/3	AL 57	487+00	700.0		1335.9		WA1	65	70	60		X-Brace
11/4	AL 58	494+00	476.9		1276.9		WA1	65	70	65		X-Brace
11/5	AL 59	498+76.9	912.3		1219.6		WA1	70	75	65		1-HX Guy, 1W Guy Insul/Strand 2-DPA Side Guy 2-28" Plate Anchors, 3/4"x10' Rods
11/6	AL60	507+89.2	1231.8		1196.6		KFH	60	65	50		2-HX Guy, 1W Guy Insul/Strand 2-DPA Side Guys 1-28" Plate Anchor, 3/4"x7' Rods, Pole C 1-28" Plate Anchor, 3/4"x10' Rods, Pole A 3-DP2AD Line Guys 6-28" Plate Anchor, 3/4"x10' Rods
11/7	AL 61	520+21.0	179.0	18°01'Lt	1394.2		23WG-WSH	65	75	65	60	Rake 9" 2-HX Guys, 1W Guy Insul/Strand 2-1/2" HS DPA Side Guys 2-28" Plate Anchors. 1"x10' Rods 6-1/2" HS DPAD Line Guys 6-28" Plate Anchors, 1"x10' Rods
11/8	AL 62	522+00	800.0		1411		WA1	55	60	50		

2/1/2018