U.S. Department of Energy
Office of Inspector General
Office of Audits and Inspections

Audit Report

Bonneville Power Administration's Transmission Vegetation Management Program

OAS-L-14-05 March 2014

Department of Energy

Washington, DC 20585

March 31, 2014

MEMORANDUM FOR THE ADMINISTRATOR, BONNEVILLE POWER ADMINISTRATION

FROM: Jack Rouch, Director
Central Audits Division
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "Bonneville Power Administration's Transmission Vegetation Management Program"

BACKGROUND

The Department of Energy's (Department) Bonneville Power Administration (Bonneville) markets wholesale power produced from Federal water projects. Bonneville owns and operates approximately 15,000 miles of transmission lines used to transmit power generated from Federal and non-Federal sources to predominantly Oregon, Washington, Idaho, and Montana.

Bonneville's Transmission Vegetation Management Program (Vegetation Program) is responsible for ensuring measures are in place to prevent physical contact between transmission lines and nearby vegetation. If vegetation grows near or into electrical power lines, it can interfere with electric power flow, pose safety problems to the general public, and cause power outages. For example, inadequate vegetation management by two public utilities was identified as the primary cause for the 2003 East Coast-Midwest electric power blackout, which affected over 50 million people in the United States and Canada. Additionally, in 1996, a Bonneville transmission line sagged into a tree and triggered a rolling blackout that affected approximately 10 million people on the West Coast. Bonneville's overall Vegetation Program budget for Fiscal Year 2013 was approximately $14.9 million, with approximately $12.5 million provided to contractors for performance of vegetation maintenance work.

Given the importance of vegetation management to the continuity of electrical transmission and public safety, we conducted an audit to determine whether Bonneville had effectively managed its Vegetation Program.

RESULTS OF AUDIT

Bonneville's Vegetation Program included a number of positive controls and technologies to ensure vegetation surrounding its transmission lines were properly maintained. Specifically, over the last 5 years, Bonneville utilized a Light Detection and Ranging (LiDAR) system to inspect and detect vegetation conditions that required maintenance. LiDAR is a remote sensing system used to collect topographic and geospatial data and has the capability to detect, with

nearly 100 percent accuracy, vegetation that requires maintenance. Additionally, Bonneville had developed a continual vegetation monitoring program designed to ensure that all necessary maintenance is completed. However, our review identified several opportunities to improve the management of contractors that performed vegetation maintenance for Bonneville.

Vegetation Maintenance Contractors

We found that Bonneville could improve its processes for ensuring that its vegetation maintenance contractors had performed adequately. Specifically, Bonneville inspectors and contracted inspectors had not always documented their inspections of vegetation maintenance contractors' work and/or re-work. The seven Bonneville inspectors informed us that they performed spot checks on vegetation maintenance contractors' work, but only one inspector could provide us with evidence of such review. Additionally, Bonneville inspectors informed us that in some cases, deficiencies noted by contracted inspectors were not documented, but rather verbally communicated to the vegetation maintenance contractors. Finally, we inquired of Bonneville inspectors whether on-site quality assurance reviews of maintenance re-work activities were performed and documented by the contracted inspectors and asked for examples of such reviews. Only one inspector could provide us with evidence that a re-inspection had occurred.

The Vegetation Program's Quality Assurance/Quality Control Measure policy, dated December 2008, requires both Bonneville and contracted inspectors to regularly conduct ground inspections of the vegetation maintenance contractors' performance and create inspection records. Bonneville officials manage and oversee contractors that perform vegetation maintenance activities in nine geographic districts. As part of the vegetation management process, Bonneville officials provided vegetation maintenance contractors with specific parameters detailing necessary vegetation maintenance activities, including tree removal, mowing, and herbicide spraying. Upon completion of work, contractors filled out daily activity logs, which were to be utilized by Bonneville inspectors and/or contracted inspectors during on-site quality assurance reviews. In the event contractors missed or did not complete vegetation maintenance tasks to the assigned specifications, they were to be sent back to re-work these areas. All re-work activities were then to be re-inspected by either a Bonneville inspector or a contracted inspector.

Bonneville Vegetation Program officials informed us that inspections of contractors' work were not always documented because their staff interpreted the policy to be satisfied by their inspection and approval of submitted invoices. Additionally, although the Quality Assurance/Quality Control Measure policy required inspection records, there was no guidance on how the inspections were to be documented. As a result of our audit, Vegetation Program officials recognized the inconsistency in the recordkeeping and stated they had implemented a standardized process for documenting inspections of contractors' work. Officials told us that both Bonneville and contracted inspectors were now required to utilize a standardized form for initial inspections and re-work inspections. Officials asserted that the documentation would enable them to more effectively evaluate contractor quality of work by quantifying the number of times each contractor had to redo work and ensure the completeness and quality of work performed.

Officials also informed us that they plan to incentivize high quality work by incorporating a contract clause into future vegetation management contracts that would require vegetation contractors to pay for re-inspection costs.

IMPACT AND PATH FORWARD

Without recording the results of inspections and re-inspections, program managers were unable to ensure the quality and completeness of vegetation removal near transmission lines. Additionally, unrecorded deficiencies may impact Vegetation Program managers' ability to identify and take corrective actions against poor performing contractors. Bonneville recently implemented a draft vendor scorecard policy that rated contactors' performance on each project based on a number of factors including the percentage of re-work activities. Vegetation Program officials can use inspection reports on the results of contractors' work to accurately quantify the number of times contractors had to redo work and improve the results provided in the vendor scorecard related to the percentage of re-work activities.

Because Bonneville initiated actions to ensure the inspectors' reviews were documented, we are not making formal recommendations. However, to further improve Bonneville's Vegetation Program, we suggest that the Administrator ensure Bonneville inspectors and/or contracted inspectors document their quality assurance reviews of contractors' work and re-work activities.

This report is one of two audit reports on the Department's power marketing administrations' vegetation management programs. Our other report, *Western Area Power Administration's Rocky Mountain Regional Office's Transmission Vegetation Management Program* (OAS-L-14-06, March 2014), also disclosed issues regarding management of vegetation maintenance contractors.

Attachment

cc: Deputy Secretary
Acting Under Secretary for Science and Energy
Chief of Staff

OBJECTIVE, SCOPE AND METHODOLOGY

OBJECTIVE

The objective of the audit was to determine whether Bonneville Power Administration (Bonneville) had effectively managed its Transmission Vegetation Management Program (Vegetation Program).

SCOPE

The audit was performed between May 2013 and March 2014, at Bonneville in Vancouver, Washington. The audit was conducted under Office of Inspector General Project Number A13DN034.

METHODOLOGY

To accomplish our objective, we:

- Obtained and reviewed policies, procedures, laws, and regulations related to Bonneville's Vegetation Program;
- Interviewed key officials to obtain an understanding of Bonneville's Vegetation Program;
- Sent a questionnaire to all seven Bonneville inspectors to understand the vegetation management processes;
- Evaluated whether Bonneville had effective practices in place to inspect vegetation surrounding its transmission lines to determine the necessity of maintenance;
- Determined whether Bonneville had conducted necessary vegetation maintenance surrounding its transmission lines; and
- Evaluated the internal controls in place over Bonneville's vegetation maintenance contractors.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, we assessed significant internal controls and compliance with laws and regulations necessary to satisfy the audit objective. In particular, we assessed Bonneville's implementation of the *GPRA Modernization Act of 2010* and found Bonneville had established performance measures. Because our review

was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We conducted an assessment of computer-processed data relevant to our audit objective and found that it could be relied on. An exit conference was waived by Bonneville management on March 19, 2014.

IG Report No. OAS-L-14-05

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