Bangor Hydroelectric Company 345-Kv Transmission Line Interconnection Project

EVS staff are conducting an environmental analysis of an 84-mile-long corridor for a transmission line between Orrington, Maine, and a point on the U.S. border with New Brunswick, Canada. The analysis addresses technical topics such as rights-of-way management, the effects of electromagnetic fields on human health, and the effects of line construction and operation on cultural resources and biotic communities. The project must meet the mitigation and environmental planning and review requirements of multiple agencies with land jurisdiction responsibilities, including the U.S. Fish and Wildlife Service, Maine Department of Environmental Protection, and the U.S. Army Corps of Engineers.

PROBLEM/OPPORTUNITY

Before the U.S. Department of Energy (DOE) can grant a Presidential Permit to connect a U.S. transmission line and a Canadian line at the U.S. border, it requires environmental information. In addition, the planning and permitting requirements of multiple federal and state agencies must be considered. EVS will prepare an environmental impact statement (EIS) for the DOE for the construction and operation of the Bangor Hydroelectric Company 345-kV Transmission Line Interconnection Project. EVS staff will also produce a biological assessment for federally protected species, evaluate archaeological survey information, conduct land use analyses, prepare a mitigation plan, and prepare a wetland floodplain assessment.

APPROACH

EVS will use a combination of low-level aerial photographs, a geographic information system (GIS), and ground-truth data to identify potentially sensitive native vegetative communities and residential areas, and to quantify the extent of wetlands and other habitat areas. Early in the route selection process, the EVS team will develop environmental constraints to modify some segments of the alternative transmission line routes being considered, thereby helping the applicant select a preferred route. EVS also will use published information and agency input to define viable alternative routes, emphasizing the need for consensus among agencies and project proponents.

RESULTS

Natural resources that could be affected by line construction include wetlands, riparian areas, and threatened and endangered wildlife species, (i.e., the bald eagle and Atlantic salmon). EVS's analysis will determine the locations of known habitats for these species. Information on construction impacts and measures for avoiding sensitive habitats and breeding periods will be included in the EIS. Visual simulation models will be used to produce photographs of how the transmission line will appear in scenic view sheds. The focus will be on areas along the route that could be observed from areas of high recreational use. Land use analyses will consider both existing use patterns and the changes that are projected in land use plans. From a land use perspective, archaeological information from the Maine State Historic Preservation Office and published reports will be used to identify sensitive locations along the proposed and alternate routes. Electric and magnetic field strengths along the 84-mile transmission line right-of-way will be graphically presented, as will information on the nearest residences. Recent literature on electromagnetic fields (EMFs) will be reviewed as the basis for predicting possible impacts to humans from exposure to the line. Cumulative impact analysis will address impacts with the proposed line, existing transmission lines, a natural gas pipeline, and logging roads.

FUTURE

Since 1979, Argonne scientists have helped DOE's Office of Fossil Energy conduct environmental impact assessments for electric transmission lines. Projects have involved the states of California, Maine, New Hampshire, Minnesota, Texas, Montana, Vermont, and Washington. In addition, Argonne has prepared guidance documents for the electric utility industry that address transmission line design options and costs, environmental assessments, and state permitting and environmental review requirements for transmission lines in the 14 border states. Anticipated future work includes the review and preparation of additional National Environmental Policy Act documents, preparation of GISs and database systems for DOE use, and assistance to industries in implementing route selection methodologies by using computerized systems.

COMMUNICATION OF RESULTS

Argonne has prepared technical reports on design options, costs, and EMF levels of extra-high-voltage transmission lines; and guidance on the preparation of environmental assessment documents. Subjects planned for conference papers include Argonne's cultural resource assessment approach and the integrated environmental assessment approach, which is designed to accomplish the planning and mitigation objectives of multiple agencies for electric power line projects.

Some recent EVS publications on transmission lines include the following:

- *Final Environmental Impact Statement for Construction and Operation of the Proposed Bangor Hydro-Electric Company's Second 345-kV Transmission Tie Line to New Brunswick, DOE/EIS-0166*
- *Transmission Line Environmental Assessment Guidance Document, ANL/EVS/TM-3*
- *Electric Power High-Voltage Transmission Lines: Design Options, Cost, and Electric and Magnetic Field Levels, ANL/EVS/TM-31*

Existing 345-kV transmission line with Osprey Nest on Wooden H-Frame towers

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