platts

Energy Policy Act of 2005 provisions address transmission siting

Platts T&D - 11/30/2005

By Stephen Conant

The Energy Policy Act directs the Department of Energy (DOE) to designate "National Interest Electric Transmission Corridors" (NIETC) and grants the Federal Energy Regulatory Commission (FERC) the power to issue construction permits within the corridors. It also grants the developer of transmission lines within a NIETC the ability to acquire rights-of-way by eminent domain.

During the first year of the Act (and every three years thereafter), DOE will study geographic areas "experiencing electric transmission capacity constraints or congestion that adversely affects consumers." It will then designate NIETCs based on the study. Designation criteria includes economic growth along the corridor and at the end market that is currently limited due to lack of supply or reasonably priced electricity and limitations on new sources, improved diversification of supply, and support of energy independence.

In conveying FERC the power to grant construction permits within NIETCs, the Act aims to overcome limitations to state permitting powers that prevent consideration of regional benefits. The builder of a transmission line project within a NEITC may apply to FERC for a construction permit if the project does not qualify for a permit or siting approval within a state because the project does not serve end use customers in the state. Following procedural hearings and notices, FERC may grant the construction permit for one of three reasons. First, if the state does not have authority to approve a line or consider the interstate benefits expected to be achieved. Second, if a state approval authority withholds approval from the applicant for more than one year after seeking the permit approval or one year after the designation of the NIETC. Or third, if the siting authority's approval includes conditions that make the project uneconomical or would not significantly reduce congestion.

Before exercising its permit granting authority FERC must find that the line will permit transmission of energy for interstate commerce in a manner that serves the public interest and will significantly reduce congestion, that it is consistent with sound national energy policy and will enhance energy independence, and that it will maximize the use of existing transmission towers and structures.

The holder of a NIETC permit is empowered to acquire the right-of-way by eminent domain through the appropriate state or federal court in which the property is located after the permit holder has exhausted attempts to acquire the property by contract or to agree on a price. The permit holder must pay fair market value and the right-of-way may only be used for construction, modification, operation, or maintenance of electric transmission and related facilities.

The Act also authorizes Congress to approve interstate compacts between three or more contiguous states. Once approved, an interstate compact may create a regional transmission

siting agency (RTSA) that has the authority to review, certify, and permit regional transmission facilities, including but not limited to those within a NIETC. FERC's authority to issue construction permits within an interstate compact state may only be exercised when members of the compact cannot resolve differences.

A second key provision of the Act is support of new transmission technologies that increase capacity, efficiency, or reliability of an existing or new transmission facility. The DOE is authorized to establish the "Advance Power System Incentive Program" and to make incentive payments for advanced power system technologies. Incentive payments of 1.8 cents/kwh paid will be made to the owner or operator of a qualifying advanced power system technology facility for up to the first 10 million kwh produced in any fiscal year or $180,000/year. The Act lists 18 different technologies, including high temperature superconductor ceramic cable, underground cables, advanced conductor technology, and high-voltage DC technology.

Two major regional project ideas announced in the past year, the western states' "Frontier Line" and PJM's "Project Mountaineer," may gain support from the designation of NIETCs and/or the ability to establish an interstate compact with a regional transmission siting agency. Both projects are conceptual in nature and provide agency and government support where in the past a consortium of utilities may have pooled their resources to jointly construct a large base load power plant combined with a high voltage transmission tie line. In these large regional multi-state projects, permitting and multi-state cooperation are crucial.

This past April the Governors of California, Nevada, Utah, and Wyoming signed a Memorandum of Understanding to support the construction of the new "Frontier Line", which is intended to connect wind, geothermal, and coal-fired generation from Utah, Wyoming, and northern Nevada to energy thirsty areas of California and southern Nevada. Though not a specifically designated corridor at this time, the Frontier Line envisions one or two new 500 kV lines between the rocky mountain region and California.

In the Western Interconnect nearly all transmission lines eventually lead to California, a state that imports 25% of its energy. Major bulk transmission lines were first built in the late 1960s and early 1970s to import what at the time was excess hydroelectric power from the Pacific Northwest. Other major lines were built in the 1960s and mid-1980s to import coal and nuclear energy from the desert southwest. In 1987 a connection was made to the Rocky Mountains with the construction of the Intermountain Power Project to bring coal-fired generation from Utah to southern California.

Going forward, California will remain firmly dependent on transmission lines to bring energy in from outside its borders, whether it is coal, wind or nuclear. California depends on gas fired generation for 58% of its in-state capacity and the only major new on-peak capacity being built in the state. Hence, a diverse source of out-of-state generation is essential to helping maintain California fuel diversity, especially with cash prices for natural gas at nearly $10/MMBtu.

In the east, PJM's Project Mountaineer seeks to move coal-fired generation from the western part of its control area to the east. Not an easy prospect. It took American Electric Power (AEP) 14 years and $50 million to get a permit for its 89-mile 765 kV transmission project from the Wyoming substation in West Virginia to the Jackson Ferry substation in Virginia. Originally announced in March of 1990 as a 115-mile project between the Wyoming substation and the Cloverdale substation in Virginia, the Virginia leg of the project was

shortened by 26 miles in order to avoid portions of the Jefferson National Forest. The shorter route was approved in 2001 and construction began in April 2004. Construction will be completed by June 2006, sixteen years after it was announced.

Currently, the majority of the new interconnection requests in PJM are in the west, including more than 3,600 MW of coal-fired generation, but west to east transmission constraints limit its flow. Gross congestion is estimated to cost $750 million/year. PJM envisions up to 900 miles of 500 or 765 kV lines that will improve west-east power flow by 5,000 MW. The estimated project cost is $3.5 to $3.9 billion. Regional coordination has begun to emerge with the Midwest Governors Association signing a "transmission protocol" this past July to facilitate the coordination of interstate siting of transmission lines. In the future, the agreement may take the form of an interstate compact and the creation of a regional transmission siting agency.

Provisions of the Advanced Power System Initiative Program will support more local or in-state projects, where maximizing the use of new or existing rights-of-way is a primary objective. In congested local areas where new overhead wires are increasingly unacceptable and become the rallying point for local opposition, underground AC cables and high-voltage DC cables are becoming a viable alternative. Several of these projects are currently under construction nationwide that demonstrate some of the first applications of these advanced technologies.

At 5 to 10 times the cost of overhead wires, underground cables are an expensive option and its use for AC installations is technically limited to about 25 miles. Two projects that are currently installing underground AC cable are NSTAR's 345 kV Reliability Project in the northeast and PG&E's Jefferson-Martin Line in California. Both these projects demonstrate how this new technology is being used in areas where siting overhead lines would be difficult.

South of Boston, NSTAR's Stoughton to Boston new 345 kV line will improve reliability and increase import capability to the city by 1,200 to 1,800 MW. Thirty alternative routes, including underwater, overhead, and combinations of above and below ground lines, were studied before it was decided to place the entire 18-mile length under existing roadways. Pipe-type cable, which allows three 345 kV lines to be placed in one trench, is being installed for most of the route. Working in public streets slows construction progress to 100 feet per day and, at a cost of $210 million or $11.7 million/mile, the method is not inexpensive. But the pricey installation must also be weighed against the cost of acquiring new rights-of-way through some of the most expensive suburban areas in greater Boston and the risk of a protracted permitting struggle associated with new overhead lines.

PG&E's Jefferson-Martin line is a 27-mile 230 kV project with 12 miles of underground cable. The new line will increase the flow of electricity to the San Francisco Peninsula. Local opposition along the route, particularly concerns regarding EMF, caused permitting delays. Many of these were met when the California Public Utilities Commission approved the project in August 2004 with specific provisions to bury the line 11 feet deep through residential areas and near sensitive receptors, such as schools and day care centers. The total project cost is $207 million or $7.7 million/mile. Construction began in January 2005 and is projected to be complete by March 2006.

A second advanced power system technology in use is high-voltage DC technology. It is currently being installed at the Neptune Project, a 65-mile 500 kV HVDC line linking

Sayreville, New Jersey to Levittown, Long Island, New York, and is the proposed technology for two submarine cable projects in the west, the TransBay Project and the SeaBreeze Project. All three are independent transmission projects. The Neptune line will enable the Long Island Power Authority, which has contracted for the line's construction, to move 660 MW of power from PJM to Long Island. Fifty-miles of the line will run beneath New York Harbor and the Atlantic Ocean. The remaining 15-miles will be installed beneath existing roadways. The project is estimated to cost $600 million or $9.2 million/mile. With HVDC cables placed underwater and/or underground the absence of overhead lines helps to avoid public opposition. The most visible components of the system are the AC-DC converter stations that must be located at each end of the line. The stations cover 5 to 10 acres of property and have accompanying buildings to the height of 6 to 7 stories. Such structures are typically more acceptable than 30 to 50 miles of new overhead wires.

The siting of new transmission lines will never be easy, but new provisions in the Energy Policy Act of 2005 that support regional cooperation in the siting of large interstate lines and support of technological advances that allow the higher use of existing and new rights-of-way provide tools to facilitate needed improvements to the electric grid in the United States.

Stephen Conant is a Senior Project Analyst with Anbaric, LLC, an independent transmission development company associated with Energy Security Analysis, Inc. (ESAI). ESAI (Wakefield, Mass.) provides power and energy market research for clients throughout the U.S. and the world.