

Electric Transmission: Building the Next Interstate System

We must efficiently deliver wholesale power within competitive regional markets.

BY MICHAEL G. MORRIS



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When President Eisenhower was growing up in Kansas, he saw America's byways and back roads develop to meet point-to-point needs, eventually forming a loosely connected national interstate highway network.

The U.S. electric transmission system has similar roots, and it needs a

similar vision to meet the needs of the 21st century.

Eisenhower realized the value of good highways in 1919 when he participated in the U.S. Army's first transcontinental motor convoy from Washington, D.C., to San Francisco—a 62-day trip. During World War II, he crystallized his vision of an interstate highway system based on Germany's autobahn. In 1956, Eisenhower signed the Federal-Aid Highway

Act, creating the highway system we enjoy today.

Eisenhower envisioned vast societal benefits for national defense, economic development, and personal safety. He did not get bogged down in structural or control issues. He saw a solution and moved to implement his vision.

Evolution of Transmission

The nation's transmission system has evolved from a series of source-to-load needs, but there were exceptions. In 1966, for instance, American Electric Power (AEP) announced plans to build an interstate 765-kV system to enable diverse siting of a new era of 1,300-MW generating units.

AEP's 765-kV system was developed to meet the expanding electricity needs of our states and customers via an interstate system covering seven states. That system, which also provides states with the economic opportunities that accompany the siting of new generation, continues to expand with customer demand. The new 765-kV line AEP is building from Wyoming, W.V., to Jacksons Ferry, Va., is a case in point. Other examples of interstate network development include the 500-kV networks in the East, Southeast, and West.

But the transmission infrastructure boom of the 1960s and 1970s has dwindled. Recent development largely has been limited to addressing local reliability needs and connecting new generation to the existing grid.

The federal government has defined and refined the regulation of interstate electric transmission over the last 70 years, yet we continue to experience transmission bottlenecks, paying billions of dollars annually because of congestion, reliability must-run contracts for inefficient generating plants, and lost opportunities for technologically advanced generating plants and new industrial plant development.



Transmission remains trapped between federal and state regulatory regimes, slowing development of a truly, and much-needed, national interstate grid.

The Vision

As we move into the 21st century, our national vision must be an advanced interstate transmission system that efficiently delivers wholesale power regionally within a competitive market while enhancing regional reliability. This system also should enable, at the state, regional, and national levels:

- Economic development opportunities, including the benefits of diverse siting of new generating plants in resource-rich areas and of new industrial plants. An interstate transmission system also can relieve congestion for better market efficiencies;

- Environmental optimization opportunities, including unlocking renewable potential (*e.g.*, wind and hydro) and creating siting opportunities for new environmentally friendly generating plants, such as integrated gasification combined-cycle (IGCC) clean-coal technology plants; and

- National security, by providing a more robust transmission grid system with greater redundancy.

An interstate transmission grid can produce interstate solutions within many existing organizational structures—vertically integrated utilities as well as independent utilities, both public and privately held.

When President Bush signed the Energy Policy Act, he said, “We have a modern interstate grid for our phone lines and our highways. With this bill, America can start building a modern 21st-century electricity grid, as well.”

Several provisions of the act will lay the foundation for a modern interstate transmission grid:

- Incentives for transmission devel-

opment, including deployment of new technology, to reduce congestion and meet mandatory reliability standards;

- Federal Energy Regulatory Commission (FERC) approval of “participant funding” for requested or required interconnection and system upgrades, typically for new generation;

- FERC “backstop” siting authority, giving the commission the ability to ensure against potential siting logjams;

- A directive that the Department of Energy (DOE) study and identify “national-interest electric transmission corridors”; and

- FERC authority to select an electric reliability organization (ERO), presumably the North American Electric Reliability Council, to establish and enforce mandatory reliability standards, including penalty provisions.

Action Plan

Now, we need an action plan, empowered by the Energy Policy Act of 2005, to transform a system of connected but locally planned transmission facilities into a modern interstate bulk-power delivery system under FERC’s authority. We must complete this plan while respecting the states’ jurisdiction over distribution and generation resource adequacy.

The federal government should:

- Broadly define, with the participation of stakeholders, “national interest electric transmission corridors” to promote transmission development for market economies, wider-area reliability and control, environmental optimization, and national security;

- Develop the national corridors with interstate connectivity, including existing bulk power interstate transmission facilities and corridors for development expediency;

- Facilitate timely interstate transmission planning and siting, and provide aggressive leadership in coordinat-

ing the siting approval process among various responsible federal agencies;

- Look beyond today’s congestion issues to address opportunities for tomorrow—for example, siting new advanced technology generating plants and renewables;

- Develop efficient pricing mechanisms to avoid unfair subsidies and provide incentives to facilitate aggressive construction, including enhanced returns on equity, construction work in progress in rate base, annual rate base true-ups, accelerated depreciation, and sharing mechanisms for market benefits;

- Provide a two-tiered “highway/byway” transmission rate structure for new and existing facilities, with “highway” rates regionalized for the interstate extra-high voltage transmission system and “byway” rates localized for local transmission within a zone;

- Provide clear provisions for incentives and recovery for research and development at regional transmission organization (RTO)/independent system operator (ISO) and transmission-owner levels for interconnected transmission system controls and corridor development. This is crucial for the development and deployment of new technologies to mitigate congestion and to prevent or limit wide-area blackouts and brownouts; and

- Develop legislation to provide FERC full authority over the facilities constructed or upgraded in the national corridors.

The states should:

- Participate in development of national corridors that help the states achieve wholesale and, where appropriate, retail market efficiencies and environmental optimization, and achieve economic benefits from the siting of advanced technology generating plants and newer industrial plants;

- Develop and implement pass-

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through mechanisms for transmission rates to ensure timely cost recovery to foster adequate development of interstate transmission in support of state and national needs; and

- Facilitate interstate transmission siting through participation at the federal level or through regional compact participation in the federal process.

The RTOs/ISOs or other transmission service providers should:

- Provide leadership in regional planning efforts to enable lower-cost interstate transmission solutions, including R&D for better-interconnected system controls and corridor development; and

- Provide independent oversight to determine benefits for transmission solutions to enable equitable sharing of those benefits by transmission develop-

ers and consumers.

The transmission owners should:

- Participate fully in development of an interstate transmission grid;

- Facilitate interstate transmission development by providing corridors, capital, and connectivity to existing infrastructure; and

- Maintain reliability at the regional and local level pursuant to NERC standards, and state and federal regulations.

AEP, a longtime leader in transmission technology development, has more than 2,000 miles of 765-kV transmission lines that can be the launching point for a regional or national transmission grid overlay. The 765-kV system uses a fraction of the rights-of-way needed for lower-voltage transmission and maximizes the economies of scale

for the required capacity. It proved reliable during the August 2003 blackout.

A true interstate transmission system is critical to meet the needs of our nation and our states by enhancing efficiency, reliability and security, as well as enabling a fully developed electricity marketplace. When Eisenhower became frustrated by the debate over a critical interstate need, he said, "Adequate financing there must be, but contention over the method should not be permitted to deny our people these critically needed roads."

An interstate electric transmission system can be developed if we pursue a vision as strong and as clear as Ike's. ■

Michael G. Morris is chairman, president, and CEO of American Electric Power. He can be reached at 614-716-1000.