

VIRGINIA STATE CORPORATION COMMISSION
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By
Stewart E. Farrar, Solicitor General

Reliability of Generation, Transmission and Distribution Systems

I. What Factors Affect Reliability in the Electric Industry?

- A. Generation impacts reliability in several ways. Generating capacity must be sufficient to meet customer loads with allowances for unexpected events such as abnormal weather or unexpected generating unit outages. The construction of new generating facilities typically takes several years. Consequently, additional units must anticipate future load growth. Failure to properly anticipate future loads could result in supply shortages. Inadequate maintenance can increase the likelihood of unexpected unit outages or de-ratings that may in turn create supply problems. The local availability of generating units may also play a role in maintaining proper voltage levels, frequencies, and following loads. Problems in these areas can lead to damaged end-use equipment, blackouts and, in extreme instances, widespread transmission failures.
- B. Transmission facilities represent a vital link between generating resources and distribution systems, since generation is typically located at some distance from load centers. Transmission facilities can become overloaded and “tripped” out of service. Once a transmission facility “trips,” other transmission facilities may become overloaded virtually instantaneously and problems may “cascade” over broad regions with little or no time for corrective action. Consequently, transmission flows across critical facilities must be constantly monitored to identify potential problems assuming a single contingency. Corrective actions must be taken before such contingencies actually occur. Large high voltage transmission facilities require even longer construction and permitting lead times and, similar to new generating facilities, must be planned well in advance of when they are actually needed.
- C. Distribution facilities represent the final link between supply resources and end users. As such, distribution problems can result in localized outages. The majority of outages have historically been due to distribution problems. Many distribution problems are related to downed lines caused by falling trees associated with poor tree trimming practices or storm damage. Extended outages have occurred in recent years as a result of major ice storms and hurricanes. Distribution lines are also subject to being overloaded. Some distribution lines are located underground. Such lines are subject to “dig-ins” or cable failures that may be difficult to locate.

- D. Other reliability problems may be related to the adequacy or availability of generating fuel supplies. In the past, reliability concerns have been associated with rail and mine worker strikes that threatened coal deliveries, frozen coal piles, natural gas shortages, etc. The recent drought also raised reliability concerns, in that production from certain generating units was reduced as a result of low stream flows. These lower stream flows reduced the availability of cooling water for certain large generating units and reduced the output from some hydroelectric facilities as well.

II. Who is Responsible for Reliability Today?

- A. Utilities have historically had the ultimate responsibility for maintaining reliability. In Virginia, utilities have an obligation to provide adequate service at just and reasonable rates. This duty entails the construction and operation of generation, transmission and distribution facilities. Adequate service also impacts ongoing day to day operations and maintenance activities to assure that facilities are available when needed.
- B. Control area operators are responsible for controlling generation to maintain a balance between loads and resources within their control area, to coordinate operations and interchanges with other control areas, and to assist in maintaining the frequency regulation of the interconnected electrical grid. Control areas typically approximate the service territories of the various utilities which own both generation and transmission facilities. In many instances, control areas may include the service territories of several utilities. For example, Virginia Power's control area includes the service territories of several cooperatives and municipals. Control area operators have historically performed the transmission monitoring function described above and the dispatch of generating units.
- C. Regional reliability councils coordinate the operation and planning of bulk power facilities in various regions in North America. This coordination is intended to assure that the planning and operation of individual electric systems does not adversely affect other systems and that opportunities for improved regional performance are identified. These councils are voluntary in nature and rely on peer pressure to discourage inappropriate behavior. Virginia is segmented such that it is part of three separate reliability councils- the Southeastern Electric Reliability Council (SERC), the East Central Area Reliability Council (ECAR), and the Mid-Atlantic Area Council (MAAC).
- D. The regional reliability councils described above comprise a larger umbrella organization, the North American Electric Reliability Council (NERC). NERC's purpose is to promote the reliability of the electricity supply for North America by working with all segments of the electric industry, as well as customers. NERC reviews the past for lessons learned, monitors the present for compliance with

policies, standards, principles, and guides, and assesses the future reliability of the bulk electric systems. NERC is also a voluntary industry organization.

- E. The Federal Energy Regulatory Commission (the FERC) has historically had a limited role in assuring electric service reliability. While the FERC has some oversight authority similar to that of state regulatory commissions, it has primarily served as an economic regulator of wholesale electric activities.
- F. State commissions typically play a more direct role with regard to electric service reliability through the certification or approval of new generating facilities and transmission lines. In Virginia, such approvals are predicated on findings of need for new facilities. This need is generally directly related to assessments of electric service reliability. Indirectly, state commissions often monitor quality of service issues with the prospect of applying sanctions or rate disallowances for inappropriate utility actions.

III. Under Competition, How Might Responsibility for Reliability Change?

- A. In the future, utilities will continue to construct and maintain distribution facilities. The transmission and generation roles of utilities is likely to change, however, with the deregulation of generation and the development of regional transmission entities. Consequently, utilities may have less overall responsibility for maintaining reliability. RTEs will probably assume much of the transmission reliability obligations. However, RTEs may rely on traditional utilities for constructing new facilities and the physical maintenance of such facilities. The adequacy of generation capacity will largely be determined by market forces and the interaction of supply and demand. In short, the responsibility for electric service reliability will be decentralized in a restructured electric industry.
- B. The role of control area operators is unlikely to change to great extent in a restructured environment. Operators may have to interface with a larger number of entities. Additionally, the development of RTEs may result in combining existing control areas, with the RTE being the control area operator. In some RTE proposals, control area operations would not change initially.
- C. The role of regional reliability councils will likely continue to be the same. However, the configuration of the existing councils could potentially be impacted by the development of RTEs. The reliability councils will also have to coordinate with a larger number of diverse entities.
- D. The NERC has recognized that the electric industry in North America is changing dramatically and has been working to develop and implement specific action plans that would transform NERC from a voluntary system of reliability management into an

organization that would be mandatory in nature, with the backing and support of governments. Such action would likely require federal legislation.

- E. As RTEs are formed, the FERC's role in assuring reliability could potentially increase since RTE's will probably assume responsibility for ongoing assessments of transmission adequacy and system security. RTEs will also have greater responsibility with respect to long-term load forecasts and assessment of the adequacy of bulk power facilities. The FERC's policies and approved tariffs will influence RTE activities.
- F. The role of state commissions in assuring reliability will diminish as reliance on market forces for generation increases. State commissions will continue to have oversight authority with respect to distribution activities and siting authority over generation and transmission facilities. State commissions may also have some oversight over the adequacy of generation to the extent that they continue to have authority over default service providers.
- G. Generation markets and the economic interaction of supply and demand will greatly influence the adequacy of generation in a restructured electric industry. Generation will be added as a result of economic conditions rather than central planning. As such, reliability will become dependent on the efficiency of competitive markets. It is unclear how potential generators will respond in fully deregulated generation markets. Long construction lead times for new generating facilities coupled with the fact that electricity cannot readily be stored makes electricity different from other commodity markets. Consequently, there is little practical experience for predicting how reliability may be impacted once generation adequacy becomes a function of market forces. Reliability could potentially suffer with the decentralization of reliability decisions to the extent that accountability is diminished.

IV. What Role Will the State Corporation Commission Play in Assuring Reliability?

- A. Prior to the Virginia Electric Utility Restructuring Act, the Commission's reliability related oversight authority was derived from its general ratemaking authority as specified in Va. Code Title 56, Chapter 10 and its certification authority in Va. Code Title 56, Chapter 10.1. The Commission's authority under these chapters will be unchanged with respect to distribution facilities. The Commission's certification authority over the siting of new transmission and generating facilities will also remain intact. The Restructuring Act does, however, alter the Commission's rate authority over the transmission and generation functions of utilities, thereby altering the Commission's relationship to reliability in these areas.
- B. Specifically, the Restructuring Act directly impacts the Commission's ongoing reliability oversight by--

1. allowing the Commission to alter the scheduling of retail access based on, among other things, reliability considerations;
 2. providing the Commission authority with regard to the provision of default service which entails the specification of default services, selection of default service providers, regulation of rates for default services, and the establishment of default service related requirements for incumbent utilities, other suppliers, and customers;
 3. providing the Commission authority to designate emergency services providers and to specify penalties for suppliers who fail to deliver electric supplies; and
 4. by directing the Commission to establish licensing rules applicable to new electric service suppliers and aggregators based on requirements which consider a number of factors, including the technical capabilities of these entities and the ability of new suppliers to access generating supplies.
- C. The Act also requires the Commission to establish rules governing the transfer of control or ownership of transmission facilities to an RTE. Such rules must promote practices concerning the reliable planning, operating, maintaining, and upgrading of transmission systems.
- D. Indirectly, the Restructuring Act may impact the certification of new generating facilities. Currently, findings of need are not required for facilities that are not to be included in the rate base of regulated utilities. Such facilities may become more prevalent in the future.
- E. The Commission will continue to monitor reliability developments in Virginia and the surrounding region. We will report unusual or significant reliability related developments to the Legislative Transition Task Force as appropriate. The Commission's monitoring efforts will include ongoing review of RTE planning and operating activities, review of reports and publications issued by NERC and the regional reliability councils, and collection of reliability related information from utilities.

V. Is Any Statutory Change Necessary With Respect to Reliability?

The Commission has not identified any need for additional reliability related legislation. We will, of course, continue to evaluate the need for any such legislation as the electric industry continues to evolve and will advise you of any recommendations in this regard.