



August 29, 2003

Honorable W. J. "Billy" Tauzin
United States House of Representatives
Chairman, Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, D.C. 20515

***Subject: Reply to Energy and Commerce Committee Information Request on
August 14, 2003 Blackout***

Dear Chairman Tauzin:

This is in response to your letter dated August 19, 2003, requesting information regarding the blackout of August 14, 2003.

The East Central Area Reliability Council (ECAR) is one of the ten regional reliability councils of the North American Electric Reliability Council (NERC). ECAR serves as the forum for addressing matters related to the reliability of the bulk power systems in the east central region of the U.S.

Parts of the ECAR Region were among the widespread areas affected by the blackout events. Among the major questions to be answered are: what caused the blackout and why did it spread so far?

In support of the U.S - Canada joint investigation, led in the U.S. by Energy Secretary Spencer Abraham, NERC and its regional councils have in-depth technical investigations underway to assist in answering these questions. These investigations are being closely coordinated to assure that nothing is missed and to avoid duplication of effort. The results of the investigations will be a primary input to the joint U.S. - Canada investigation.

The data gathering and technical analysis work necessary to conduct the NERC investigation, as well as the related analyses being performed by ECAR, is a massive, complex task that will take time to complete. Thus, the immediate responses to the questions asked in your August 19th letter must necessarily be preliminary in nature.

Question 1

What were the basic causes and contributing events that led to the August 14th blackout and its severity? Describe the following in your answer:

- a) *The location, character, and proximate cause of the initial disruption in the transmission and supply of electricity; and*
- b) *The "cascading" effect of the disruption through multiple utility systems and States.*

Response

NERC is developing a "sequence of events" timeline showing the system events that led up to the cascading blackout. ECAR members have provided information to NERC for this analysis. The NERC timeline is expected to cover what occurred in the entire area affected by the blackout.

As noted earlier, the determination of the cause(s) of the blackout will come later from the investigations that are now underway by the U. S. Department of Energy (DOE), NERC, ECAR, and others. It is premature to speculate on the basic cause(s) that led to the blackout and why it spread so widely. Once the root cause(s) of the blackout are identified and understood, ECAR (along with NERC and other regional reliability councils) will utilize the lessons learned from the investigations to: (i) implement all needed actions to lessen the probability of future widespread, cascading blackouts, (ii) reduce the impact of such an occurrence should it happen again, and (iii) enable more rapid system restoration.

Question 2

What efforts have been taken to secure the supply, transmission and distribution of electricity since the blackouts of 1965 and 1977 in the Northeast, and why were these efforts apparently inadequate to prevent the blackout or otherwise minimize the area affected? What efforts have been taken in other parts of the country to prevent blackouts and how effective have these efforts been in preventing or minimizing blackouts?

Response

NERC, ECAR, and the other regional reliability councils were formed in the 1967-68 timeframe as a result of the investigation of the 1965 Northeast Blackout. In the intervening years, NERC and its regional councils have developed operating and planning standards and other protocols aimed at keeping the interconnected bulk power systems of North America reliable. The NERC reliability standards are embodied in the NERC Operating Policies and Planning Standards. The ECAR implementation of the NERC Operating Policies and Planning Standards (collectively, the "reliability rules of

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the road") are contained in fifteen "ECAR Documents" covering both operational and planning matters.

By "reliable", it is meant that the bulk power systems will be planned so as to meet the aggregate demand for electric energy (industrial, commercial and residential customer load), and that the interconnected power systems will be operated in real-time so as to prevent localized problems within the bulk power system from becoming widespread, uncontrolled, cascading blackouts. With the rare exceptions of the 1977 Northeast blackout (which was not as widespread as the one in 1965) and the 1996 events in the Western Interconnection, the industry's collective efforts to maintain the reliability of the interconnected bulk power systems have been successful until the August 14th blackout.

Clearly, something went wrong on August 14th, and the investigation now underway will, in time, result in a full understanding of what were the cause(s) of the 2003 blackout. A large, complex interconnected power system cannot be made 100% fail-safe. The goal of NERC and its regional councils is to prevent the inevitable local problems from cascading out of control to other areas.

It is too soon to determine the adequacy of the current "reliability rules of the road". However, any identified deficiencies in either the NERC Operating Policies and Planning Standards or the ECAR Documents will be corrected.

As part of its scope of responsibility, ECAR periodically assesses the reliability of the ECAR Region and revises its Documents as needed. Some of the steps that ECAR does and has done since the earlier blackout events to improve the reliability of the bulk power systems include:

1. ECAR performs assessments of the adequacy of the ECAR transmission systems to satisfy the load requirements of our region. This is normally done twice a year (for the summer and winter seasons). Periodically, an assessment is done for a future year. The purpose of these assessments is to identify potential transmission constraints and to provide a relative indication of the expected performance of the ECAR transmission systems and surrounding Regions' systems as compared to the previous year under a variety of possible operating scenarios.
2. ECAR participates on three interregional groups that assess the adequacy of the transmission systems for the upcoming summer and winter seasons in the involved regions. For the various interregional studies, ECAR works with Northeast Power Coordinating Council (NPCC), Mid-Atlantic Area Council (MAAC), Mid-America Interconnected Network (MAIN), and the Virginia-Carolina (VACAR) and Tennessee Valley Authority (TVA) subregions of Southeastern Electric Reliability Council (SERC).

The interregional studies and the ECAR-specific assessments are very comprehensive and cover many possible scenarios. However, the

interconnected bulk power system is very complex and it is not practical to study every possible scenario of system operating conditions.

3. ECAR has implemented an Automatic Reserve Sharing System (ARS). The purpose of this system is to enable a company to recover from a sudden loss of generation as quickly as possible. In essence, whenever a generator trips, all the Control Areas in ECAR participate in replacing the power from the generator that tripped instead of just the Control Area where the tripped generator resides. This results in many systems increasing generation to replace the power lost when the unit tripped, and speeds the recovery from the lost generation. The ARS system is most useful when the system is heavily loaded and generation reserves are tight.
4. ECAR has implemented a FERC-approved Inadvertent Settlement Tariff. The purpose of this tariff is to discourage companies, through financial penalties, from taking power from the Interconnection during periods when power is costly and the interconnection is operating below normal frequency.
5. ECAR performs assessments of the adequacy of generation resources to satisfy the load requirements of our region. Three assessments are done every year. One is done for the upcoming summer period, one is done for the upcoming winter period, and one is done for the next ten years (with primary emphasis on the next five years).

For all of the items listed above, it is premature to determine their effectiveness or ineffectiveness concerning the August 14th blackout. We need to understand the cause(s) of the August 14th events before we can fully evaluate. Any deficiencies that are identified from the blackout investigations will be corrected.

Question 3

What equipment, measures or procedures worked as intended on August 14th to prevent even greater disruption to the supply of electricity, to prevent greater damage to the generation and transmission system, and to bring generation back on line after the disruption?

Response

The blackout affected a significant portion of the east central and northeastern parts of the country. Fortunately, the cascading did not spread through the Eastern Interconnection. The basic reason it did not spread further is that the automated control systems for those utility transmission systems that did not shut down operated as designed by detecting abnormal operating conditions and disconnected their transmission lines from those of affected systems. Such

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automated system control operations are designed to prevent possible damage to major equipment and injury to utility personnel and the public.

Following the blackout came the major task of restoring service to all affected customers. The ECAR systems that were impacted by the blackout immediately focused their resources on the restoration effort. Many impacted customers had their service restored within several hours of the blackout, although for some customers, it took one to two days for service to be restored.

Question 4

How can the nation's electrical system, including both transmission capacity and reliability, be improved to prevent a recurrence of the events of August 14th? Please identify what measures may need to be taken by all involved in the governmental and nongovernmental sectors.

Response

To fully address this question, it must be determined what caused the August 14th blackout. A number of lessons learned will no doubt be identified from the investigation of the blackout and appropriate action will be taken.

Certainly, one issue that must be addressed, apart from any specific lessons learned from the blackout, is how to move forward with necessary modernization, upgrades, and expansion of the interconnected high voltage transmission systems in this country.

By and large, these systems have served the nation well. However, there have been relatively few new transmission lines built in the U.S. in the last 15 years, even as the demand for electricity has continued to grow and new generation has been installed to meet the growing demand.

The reasons for this situation have been well documented by many parties and key factors include:

(i) lack of economic incentives to invest in new transmission infrastructure; (ii) inability and uncertainty regarding rate recovery for transmission investments; and (iii) public and governmental opposition to construction of new transmission lines which makes it very difficult to obtain the necessary permits to construct needed new lines.

Another important issue is that the existing transmission infrastructure is now being used in ways for which it was not designed. This is primarily a result of the deregulation of the generation segment of the electric power industry. The Energy Policy Act of 1992 paved the way for competition in the generation segment and the subsequent FERC Order 888 provided for open access to the interconnected transmission systems to enable the establishment of large regional markets for electric energy.

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This has resulted in a situation where some transmission lines are now being operated closer to their design limits far more of the time than before the deregulation of wholesale generation opened use of the transmission systems to foster wholesale competition. Many transmission lines are now often heavily loaded as large amounts of power are transferred across multi-state regions.

In those areas where the transmission system is frequently constrained (heavily loaded and unable to take any more power flow), and where it is also politically or otherwise not feasible to build needed new transmission, the installation of local generation facilities (as opposed to remotely located facilities) would help to ease the burden now placed on such constrained transmission lines. Federal and state governmental agencies can play a key role by taking actions to improve the ability of utilities and merchant generators to site new generation facilities in locations that would help ease transmission constraints. The benefits to the country of such actions would be a more secure transmission system that would operate more reliably while achieving the aspirations of deregulation.

I hope this information is useful in assisting your Committee in preparing for next week's hearings.

Very truly yours,

A handwritten signature in black ink that reads "BH Eldridge". The letters are cursive and somewhat stylized.

Brant H. Eldridge
Executive Manager – ECAR

BHE:cjc