

## U.S. – Canada Power System Outage Task Force

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### Technical Conference to Seek Recommendations Concerning the August 14, 2003 Blackout and Preventing Further Blackouts

Tuesday, December 16, 2003 (8:00 a.m. to 5:30 p.m.)  
Marriott Hotel – Philadelphia Downtown

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#### Background

On November 19, 2003, the U.S. - Canada Power System Outage Task Force issued its [Interim Report](#) explaining the factual causes of the August 14 blackout in the northeast United States and Ontario, Canada. A final report, to be issued early in 2004, will present the conclusions of the investigation and recommendations aimed at preventing large-scale outages in the future.

The Task Force is holding three open forums, in which the public will have an opportunity to comment on the Interim Report and present recommendations for consideration of the Task Force. Additionally, written comments may be submitted in Canada to [poweroutage@nrcan.gc.ca](mailto:poweroutage@nrcan.gc.ca) and in the United States to [blackout.report@hq.doe.gov](mailto:blackout.report@hq.doe.gov).

#### Joint U.S. – Canada Public Forums

December 4, 2003 (8:30 a.m.)  
Renaissance Cleveland  
Cleveland, OH

December 5, 2003 (8:30 a.m.)  
New York Park Central  
New York, NY

December 8, 2003 (9:00 a.m.)  
Westin Harbor Castle  
Toronto, Ontario

#### Technical Conferences

The electric system investigation team supporting the Task Force is conducting a technical conference on December 16 in Philadelphia to receive inputs from the electric industry on how to prevent and minimize the impacts of possible future cascading blackouts. A similar forum will be convened in Toronto on January 9, 2004. An agenda for the second technical conference will be issued at a later date.

The December 16 technical conference will address five sets of issues, outlined in the agenda below. The issues will be discussed in time blocks and participants are invited to address one or more issues. A maximum of five experts will be invited to speak on the panel that opens the discussion on each set of issues, after which attendees will be able to ask questions and offer comments on that set of issues. Written technical comments are also invited and may be submitted to the two addresses listed above.

#### Joint U.S. - Canada Technical Conferences

December 16, 2003 (8:00 a.m.)  
Marriott Philadelphia Downtown  
1201 Market Street  
Philadelphia, PA 19107  
215-625-2900/800-228-9290

January 9, 2004 (8:00 a.m.)  
Toronto (details to be announced)

#### Meeting Arrangements

Sleeping rooms at the Philadelphia Marriott are limited to hotel availability. No special room block has been reserved. Additional nearby hotels are listed below:

Hilton Garden Inn Hotel  
1100 Arch Street  
Philadelphia (215-923-0100)

Loews Philadelphia Hotel  
1200 Market Street  
Philadelphia (215-627-1200)

Residence Inn  
One East Penn Square  
Philadelphia (215-557-0005)

A one-way audio-video feed of the technical conference will be available on the internet via a web cast service to be announced. The meeting will be recorded by transcription.

## Technical Conference Agenda

The agenda includes an introduction and five panel sessions. A maximum of five experts will be invited prior to the conference to speak during each panel session. Please contact Gerry Cauley at NERC if you wish to speak on one of the panels: [gcauley@nerc.com](mailto:gcauley@nerc.com). Each panelist will have up to seven minutes to present his or her views in response to one or more of the questions assigned to that panel. Investigation team leaders will be allowed to ask the panel follow-up questions and participants from the audience will be able to offer comments and ask questions during each session.

8:00 – 8:45     **August 14 Blackout – Findings of Root Causes and Status of Investigation**

8:45 – 10:00   **Panel A: Reliability Coordination**

1. What lessons are learned from the August 14 outage regarding reliability coordination? What recommendations are there to improve reliability coordination?
2. What reliability coordinator functions and tools are essential for safeguarding the reliability of the interconnections and preventing wide-area blackouts? What is good performance for each essential function and tool?
3. Should these reliability functions be shared (overlapping) between reliability coordinators and their member systems to assure redundancy? Or should these responsibilities and authorities be divided between reliability coordinators and member systems? If so, how should they be divided?
4. Has the “wide-area overview” of the power system envisioned for reliability coordinators been implemented effectively in the industry? If not, why not?
5. Are the size and number of reliability coordinators and control areas factors in determining their effectiveness and, if so, in what way? Do complex, changing geographic interfaces between reliability coordinators hinder their effectiveness in safeguarding reliability and, if so, what can be done to assure effective coordination across those interfaces during a transitional period?
6. What recommendations are there to ensure the basic reliability safeguards noted in Chapter 2 of the Interim Report are effective in preventing future cascades?

10:00 – 10:15   **Break**

10:15 – 11:30   **Panel B: Emergency Response**

1. What recommendations are there to improve the ability of operators to identify, declare, and effectively respond to emergencies? What training and certification of qualifications should be required?
2. What minimum tools do operators (and reliability coordinators) need to recognize and manage system emergencies effectively?
3. Between system operators and reliability coordinators, who has the authority and responsibility to declare emergencies and how should that relationship work?
4. Do operating personnel (and reliability coordinators) have the necessary authority to act in a timely manner during an emergency? Are they empowered to act in an emergency to prevent conditions that could lead to a cascading outage? What can be done to reinforce that authority?
5. Do operating personnel (and reliability coordinators) have adequate system resources (redispatch, reconfiguration, load-shedding, etc.) to take timely corrective action during a system emergency? Is a full range of credible emergencies being assessed during operations planning? Are there adequate resources available to respond to rapidly escalating system emergencies?
6. What recommendations are there to improve communications among operating personnel (and reliability coordinators) during emergencies?
7. What recommendations are there to ensure operators (and reliability coordinators) focus on reliability and are not distracted by other activities?

11:30 – 1:00 **Lunch (Participants Have Lunch on Own)**

1:00 – 2:15 **Panel C: Operating Tools**

1. What criteria for “observability” of the power system must be met to ensure reliable operation and avoid cascading outages?
2. Are dynamic map boards essential for maintaining a broad overview of system conditions? What other primary or backup tools/displays can be provided to allow the operator to effectively maintain an overview of system conditions?
3. What minimum set of operating tools should system operators and reliability coordinators have to be able to do their jobs effectively in normal and emergency situations?
4. What SCADA/EMS functions (e.g. state estimation, real-time contingency analysis, voltage/reactive monitoring, controls; alarms, backup systems/centers, etc.) are necessary to assure reliable power system operation and what should be the performance criteria for each?
5. What actions are appropriate (for IT and operating personnel) when mission-critical monitoring and control systems fail? What backup tools, provisions, or procedures are needed for mission-critical monitoring and control systems?
6. Are SCADA/EMS systems being properly maintained? Are identified problems being proactively resolved and shared among users of SCADA/EMS systems?

2:15 – 3:30 **Panel D: Planning, Design and Maintenance Issues**

1. Are planning and seasonal studies effective in assessing future system conditions, particularly with regard to avoiding cascading outages? What additional studies or improvements are appropriate?
2. Are system models used for study and analysis sufficiently accurate, particularly with regard to generator and load power factor assumptions and dynamic characteristics, etc.? What improvements are appropriate?
3. What recommendations are there to ensure transmission lines and facilities ratings accurately reflect actual conditions? How should ratings be effectively coordinated? Are dynamic ratings for lines appropriate?
4. What should be done to ensure adequate voltage support on all parts of the system, including static and dynamic reactive reserves? What can be done to improve the coordination of voltage schedules and reactive power across system boundaries?
5. What recommendations are there to address vegetation management and right of way maintenance issues to ensure non-random line failures similar to those experienced on August 14 do not occur in the future?
6. Are simultaneous transfer capabilities being consistently evaluated on a wide-area basis in the Eastern Interconnection? What improvements are recommended?
7. Is a complete and robust set of contingencies being evaluated with regard to avoiding and minimizing the impacts cascading outages? What improvements are recommended? What changes are needed to system design criteria to reduce the risk of uncontrolled cascading?

3:30 – 3:45 **Break**

3:45 – 5:00 **Panel E: Protection and Controls Issues**

1. What practical technologies or methods could have reduced the amount of load and generation lost on August 14 and/or contained the blackout to a smaller geographic area? What could have been done to minimize the amount and duration of electricity customer service interruption?
2. Are the line protection schemes commonly used today sufficient to arrest and

minimize the effects of system cascades? What improvements are recommended to transmission system protection approaches?

3. Are the generator protection and control schemes commonly used today sufficient to arrest and minimize the effects of system cascades? What improvements are recommended to generation protection and controls based on the performance of generators on August 14 during the cascade and subsequent restoration?
4. Is the under-frequency load shedding philosophy commonly used today sufficient to arrest and minimize the effects of system cascades? Was automatic under-frequency load-shedding effective and can it be improved based on performance on August 14? Should under-voltage load shedding be given more consideration for certain applications?
5. What existing or new technologies could be cost-effectively adopted, such as digital tools for automated monitoring (e.g. phasor measurements); special protection schemes; and controls? What is the feasibility of islanding schemes or other special protection schemes to reduce the risk of uncontrolled cascade?
6. What improvements can be made to system measurements and diagnostics for event analysis? What were the lessons learned regarding measurements and diagnostic data from the analysis of the August 14 blackout? Can more robust measurements be used to validate system analysis models? What is the value of adding time synchronized equipment?

5:00 – 5:30      **Wrap Up**