

North America Blackout Task Force Calls for Strong Enforcement

The joint task force of the US and Canadian governments investigating the massive 14 August power blackout in north-east America -- the largest electricity outage in North American history -- has said in its final report that authorities must act to institute mandatory electricity grid operating rules and to enforce penalties for violations. The report says there were four causes of the blackout, which is estimated to have caused \$US13 billion in business losses:

- • inadequate system understanding;
- • inadequate situational awareness;
- • inadequate tree trimming; and
- • inadequate reliability co-ordinator diagnostic support.

Line failures south of Cleveland, Ohio, triggered a voltage imbalance that sent the interconnected system out of control, the report confirms, cascading in to a blackout that shut down 62,000 MW of generation capacity and affected 50 million people in eight American States and the largest Canadian province, Ontario.

Investigators say the problems originated in Ohio utility FirstEnergy's service territory over more than an hour as a series of the company's high voltage lines tripped out of service. The initial problem, they add, was created by lines sagging on to untrimmed trees and was then exacerbated by the failure of the utility's monitoring equipment. After almost an hour of problems in FirstEnergy's territory, the disturbance then spread to the east as electricity-starved northern Ohio drained huge amounts of power in a counter-clockwise path around Lake Erie.

Their 228-page report -- prepared over eight months -- adds that the electricity supply industry's ability to supply reactive power in the northern Ohio area where the power problems originated "had been inadequate for several years without the regional reliability council being able to identify this vulnerability." It was also well known that the Ohio region was highly vulnerable to grid instability before the blackout, the task force says.

Investigators claim that "an hour before the blackout FirstEnergy could still have saved the day if it had known what was going on" by cutting as little as 1,500 MW of supply to local consumers.

The task force -- co-chaired by US Secretary of Energy Spencer Abraham and Canadian Energy Minister John Efford -- has found that failures by Ohio utility FirstEnergy and the US Midwest Independent System Operator to detect and to react to power system problems allowed the outage to spread as far as New York, north-east States and Ontario, Canada. Abraham and Efford say, in releasing the report, that another major outage could happen unless reliability regulations, with clear penalties for violaters, are put in to place.

When this step may be taken is open to doubt because attempts to impose reliability standards in the US have become tangled up in broader disagreements in the Congress in Washington DC over proposed energy legislation.

Representative John Dingell of Detroit, a former Democrat chairman of the powerful House Commerce Committee, has been seeking to salvage a stand-alone electricity bill from the energy proposals for months. Reacting to the task force report, he has warned Congress that "each day this legislation is not considered is another day consumers remain unnecessarily at risk of another blackout."

Investigators say in the joint US/Canada report that, despite a reliability co-ordination agreement, monitors failed to detect weaknesses in FirstEnergy's operating procedures, and they criticise the North American Electric Reliability Council -- formed after the major 1965 American blackout -- for having operating rules that are vague and of lacking in independence from the utilities it oversees. They say a new arrangement should be made where NERC, or a body to replace it, develops reliability standards independently and has the power to punish suppliers for violations.

The report also highlights "deficiencies in corporate policies, lack of adherence to industry policies and inadequate management of reactive power and voltage" as contributions to the 14 August blackout. If reliability requirements had been followed, it adds, the disturbance in FirstEnergy's northern Ohio service area would not have occurred or would have been contained by cutting power to the area's customers.

Investigators have found that FirstEnergy's system control operators were not trained to recognise or deal with emergency situations. They also cite poor tree management around power line easements in FirstEnergy's service area as a contributor to the initial system failure and assert that the utility "had little understanding of its own power transmission system" because it had failed to undertake long-term planning. The study has called on regulators to ensure that FirstEnergy reviews vulnerabilities in its entire service territory by 30 June and reports them to NERC, the Federal Energy Regulatory Commission and state regulators.

FirstEnergy has argued in response to the task force's draft report that there were other power problems in the Ohio region in addition to its own difficulties on 14 August, but the investigators' final report largely rejects these claims. The utility has responded to the final report by describing it as "not factually correct" and announcing that it will issue the results of its own investigation in to the incident at the end of April.

A FirstEnergy spokesman says the task force's final report continues to "gloss over" the problems created by a rise in long-distance power transmission in North America in recent years. He claims that movement of power from southern Ohio across FirstEnergy's territory to Ontario contributed to the utility's problems on 14 August.

He rejects the report's contention that the collapse could have been prevented by FirstEnergy switching off power in its territory. "We take exception to the idea that you should interrupt local customers in favour of long-distance transactions," he says, adding that there is no evidence that blacking out the city of Cleveland would have prevented the wide-ranging incident.

The *New York Times* has criticised the report for not fully explaining why the blackout spread from Ohio to Michigan to Ontario to New York State while other areas were spared, notably the Pennsylvania and New Jersey system adjacent to New York.

The report, it adds, does not explain why transmission relay switches, which cut off power automatically when serious trouble is detected, did not operate in upstate New York on 14 August to prevent the system collapse spreading to the rest of the State and New York City.

The major change in the final version of the task force report from its draft published last November is the focus on reactive power problems. Reactive power helps maintain magnetic fields around electrical equipment -- without it, voltage drops and equipment stops working.

FirstEnergy and a number of academic analysts have contended that lack of reactive power was the central cause of the blackout and have argued that the problem arises from the market conditions created by energy deregulation and the rise of independent power

producers. The merchant generators, they say, are not sufficiently responsive to regional control agencies and have little incentive to produce reactive power when it is needed.

FERC chairman Pat Wood says his organisation cannot undertake overseeing mandatory grid reliability standards until the US Congress passes energy legislation, which has been stalled in Congressional committees for more than 12 months. The blackout in August could have been avoided, he adds, if "clear, commonsense reliability standards" had been implemented.

[Source: ESAA]