

***Resolution Supporting Protection of Utility Infrastructure  
Against Electromagnetic Pulse Effects***

**WHEREAS**, In a report issued last year, the Oak Ridge National Laboratory on behalf of the Federal Energy Regulatory Commission in joint sponsorship with the Department of Energy and the Department of Homeland Security developed a series of studies<sup>1</sup> that concluded:

- The nation’s power grid is vulnerable to the effects of an electromagnetic pulse (EMP), a sudden burst of electromagnetic radiation resulting from a natural or man-made event; *and*
- EMP events occur with little or no warning and can have catastrophic effects, including causing outages to major portions of the U.S. power grid possibly lasting for months or longer; *and*
- Naturally occurring EMPs are produced as part of the normal cyclical activity of the sun while man-made EMPs, including Intentional Electromagnetic Interference (IEMI) devices and High Altitude electromagnetic Pulse (HEMP), are produced by devices designed specifically to disrupt or destroy electronic equipment or by the detonation of a nuclear device high above the earth’s atmosphere; *and*
- EMP threats have the potential to cause wide-scale, long-term losses with economic costs to the United States that vary with the magnitude of the event but the cost of damage from the most extreme solar event has been estimated at \$1 to \$2 trillion with a recovery time of four to 10 years, while the average yearly cost of installing equipment to mitigate an EMP event is estimated at less than 20 cents per year for the average residential customer; *and*

**WHEREAS**, Numerous public agencies over the past two decades have issued similar warnings, including, but not limited to:

- NERC, which issued an Executive Brief on Electromagnetic Pulse & Geomagnetic Storm Events<sup>2</sup> on August 24, 2009, that warned of EMP and severe geomagnetic storm events; *and*
- The U.S. Congressional Commission on the Strategic Posture of the United States, which found in its report “America’s Strategic Posture,”<sup>3</sup> issued in 2009, that the United States has done little to reduce its vulnerability to attack by EMP weapons and recommends that current investment in modernizing the national power grid take account of this risk; *and*
- The Committee on the Societal and Economic Impacts of Severe Space Weather Events

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<sup>1</sup> [http://www.ornl.gov/sci/ees/etsd/pes/ferc\\_emp\\_gic.shtml](http://www.ornl.gov/sci/ees/etsd/pes/ferc_emp_gic.shtml)

<sup>2</sup> <http://www.nerc.com/fileUploads/File/CIP/EMP-Geomagnetic-Exec-Brief%281%29.pdf>

<sup>3</sup> [http://www.usip.org/files/America's\\_Strategic\\_Posture\\_Auth\\_Ed.pdf](http://www.usip.org/files/America's_Strategic_Posture_Auth_Ed.pdf)

Workshop, which published a report<sup>4</sup> by the National Research Council of the National Academies, issued in 2008, recognizing that strong auroral currents can disrupt and damage modern electric power grids; *and*

**WHEREAS**, Actions taken to mitigate the impacts of EMP may also serve to mitigate the impacts of severe space weather and vice versa; *and*

**WHEREAS**, A number of members of NARUC have the jurisdiction and responsibility to approve construction and siting of transmission and generation facilities; *and*

**WHEREAS**, A number of NARUC members regulating vertically integrated utilities have the jurisdiction and responsibility for approving cost-recovery for prudent investment in generation and transmission; *and*

**WHEREAS**, NARUC members in jurisdictions served by regional transmission organizations have an important and collaborative role in determining prudent transmission investment; *now, therefore, be it*

**RESOLVED**, That the Board of Directors of the National Association of Regulatory Utility Commissioners, convened at its 2011 Summer Committee Meetings in Los Angeles, California, recognizes the necessity for the electric grid to be highly resilient to severe space weather and EMP as defined by the twin goals of non-catastrophic failure and rapid recovery.

- Non-catastrophic failure: During a severe space weather or EMP event, grid components will not suffer damage that will lead to long-term, wide-area blackouts; *and*
- Rapid recovery: In the wake of a severe space weather or EMP event, grid operation will be restored in most areas in times comparable to those experienced in recent wide area blackouts; *and be it further*

**RESOLVED**, That NARUC will recommend that member States open dialogues with the utilities that they regulate and with regional transmission organizations that serve their jurisdictions to understand the measures currently undertaken to address this threat; *and be it further*

**RESOLVED**, That NARUC member States will pursue efforts to advance our collective knowledge and understanding of both a realistic risk assessment of threats posed by severe space weather and EMP and best practices for regulatory commission oversight of efforts to address those threats; *and be it further*

**RESOLVED**, That NARUC member States recognize and consider the need for prudent investment in generation and transmission that may include design features rendering

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<sup>4</sup> [http://books.nap.edu/catalog.php?record\\_id=12507](http://books.nap.edu/catalog.php?record_id=12507)

infrastructure less susceptible to the threat of damage from severe space weather and EMP; *and be it further*

**RESOLVED,** That NARUC will advocate for sensible federal investment in research to ascertain the extent to which infrastructure affecting bulk power and the transmission of electric power in interstate commerce should be hardened against the impacts of severe space weather and EMP, including an estimate of the costs and benefits of such investments.

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*Sponsored by the Committee on Critical Infrastructure  
Adopted by the NARUC Board of Directors July 20, 2011*