



State of New Hampshire

HOUSE OF REPRESENTATIVES

CONCORD

March 26, 2026

FERC,

Following a unanimous, bi-partisan vote, of the National Council of State Legislators Resolution in August 2025, (attached) which New Hampshire Legislators submitted, a bill has been filed and passed in the New Hampshire House of Representatives, to survey their vulnerable High Voltage Transformers.

Other States have taken on this issue as well.

Respectfully,

Representative Rita Mattson

New Hampshire House of Representatives

March 26th, 2026

We write to you greatly concerned having just learned in a legislative hearing that the electric grid is unprotected from Ground Induced Currents (GIC) from either space weather or manmade Electromagnetic Pulse Attack.

We are bipartisan state legislators who are so concerned about the inadequacy of NERC standard TPL-007 in protecting the grid from space weather or E3 HEMP, we sponsored state level legislation to begin to address the lack of protection of the components of New Hampshire's electric grid. (New Hampshire HB1723.)

We request that the Commission give careful consideration to the merits of this complaint and protect the electric grid from GIC.

*Rita Mattson, NH State Representative
*Doug Thomas, NH State Representative
*Kat McGhee, NH State Representative
*Jeanine Notter, NH State Representative
*Michael Harrington, NH State Representative
*Michael Vose, NH State Representative
*John Schneller, NH State Representative
Jonah Wheeler, NH State Representative
*JD Bernardy, NH State Representative
*Tom Ploszaj, NH State Representative
*Matt Sabourin dit Choiniere, NH State Representative
Joseph J Barton, NH State Representative
Rick Devoid, NH State Representative
James Qualey, NH State Representative
Jose' Eduardo Cambrils, NH State Representative
Keith Ammon, NH Representative
Melissa Litchfield, NH State Representative
Lori Korzen, NH State Representative
Judy Aron, NH State Representative
Tonya Donnelly, NH State Representative
Brian Labrie, NH State Representative
Rich Nalevanko, NH State Representative
Barbra Comtios, NH State Representative
Sly Karazinski, NH State Representative
Michael Moffett, NH State Representative
Brian Cole, NH State Representative
Mike Drago, NH State Representative
Henry R.Giasson III, NH State Representative

George Grant, NH State Representative
James Spillane, NH State Representative
Kristine Perez, NH State Representative
Lisa Post, NH State Representative
Joe Janigian, NH State Representative
Jim Kofalt, NH State Representative
Kevin Scully, NH State Representative
Marie Louise Bjelobrk, NH State Representative
Mary Murphy, NH State Representative
Adam Presa, NH State Representative
James Tierney, NH State Representative
Michael Aron, NH State Representative
Cyril Aures, NH State Representative
Jim Creighton, NH State Representative
Richi' Colcombe, NH State Representative
Tom Ploszaj, NH State Representative
Margaret Drye, NH State Representative
Skip Rollins, NH State Representative
Wayne Hemingway, NH State Representative
Scott Breyer, NH State Representative
Daniel McQuire, NH State Representative
John Stephen, NH Executive Councilor
Dave Wheeler, NH Executive Councilor
Scott Brown, Former U.S.Senator
John E. Sununu, Former U.S.Senator

HB 1723 - AS AMENDED BY THE HOUSE

12Mar2026... 0935h

2026 SESSION

26-2705

06/08

HOUSE BILL

1723

AN ACT requiring utilities and electric grid operators to assess and report the vulnerability of high-voltage transformers to geomagnetic and electromagnetic disturbances, and to recommend mitigation measures to protect the state electric infrastructure.

SPONSORS: Rep. Mattson, Ches. 18; Rep. Cole, Hills. 26; Rep. Qualey, Ches. 18; Rep. Sabourin dit Choiniere, Rock. 30; Rep. Schneller, Hills. 2; Rep. D. Thomas, Rock. 16; Rep. Vose, Rock. 5; Rep. Ammon, Hills. 42; Rep. McGhee, Hills. 35; Rep. Mary Murphy, Hills. 27; Sen. Innis, Dist 7; Sen. Ricciardi, Dist 9

COMMITTEE: Science, Technology and Energy

AMENDED ANALYSIS

This bill directs the Department of Energy to investigate vulnerabilities of electric transmission transformers to geomagnetic and electromagnetic disturbances and report findings with recommendations.

Explanation: Matter added to current law appears in ***bold italics***.
Matter removed from current law appears ~~[in brackets and struckthrough.]~~
Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

STATE OF NEW HAMPSHIRE

In the Year of Our Lord Two Thousand Twenty-Six

AN ACT requiring utilities and electric grid operators to assess and report the vulnerability of high-voltage transformers to geomagnetic and electromagnetic disturbances, and to recommend mitigation measures to protect the state electric infrastructure.

Be it Enacted by the Senate and House of Representatives in General Court convened:

1 1 Short title. This act shall be known as "Survey All Vulnerable Electric Transformers Act."

2 2 Findings.

3 I. America’s electric grid is critical to modern life and faces existential threats from solar
4 weather events (coronal mass ejections—CME), geomagnetic disturbances—GMDs, and high-
5 altitude nuclear electromagnetic pulse—HEMP, all capable of disabling electric power systems.

6 II. High voltage transformers are especially vulnerable to geomagnetically induced
7 currents—GICs—whether induced by GMDs or HEMP E3 component, entering the grid through
8 ground-connected neutral wires.

9 III. Extra High Voltage (EHV) transformers (345 kV–765 kV) are most vulnerable and
10 difficult to replace, with production lead times of up to 4–6 years.

11 IV. GIC vulnerability is influenced by transformer characteristics, ground conductivity, and
12 the magnetic field intensity from GMD or E3 HEMP.

13 V. Aging transformers are more susceptible to GIC due to degraded insulating oil and coil
14 condition.

15 VI. Federal and international standards highlight the importance of transformer
16 assessment and protection against these threats.

17 VII. On July 23, 2012, a powerful CME erupted off the back side of the sun racing through
18 Earth’s orbit missing Earth by 9 days. It was measured by STEREO-A satellite and determined by
19 the National Oceanic and Atmospheric Administration to be in all respects at least the size of the
20 Carrington event of 1859.

21 VIII. In 2012, the United States Department of Energy’s Idaho National Laboratory working
22 with the United States Department of Defense’s Defense Threat Reduction Agency conducted live
23 grid E3 HEMP tests to analyze GIC harmonic threats to the electric power grid. The results showed
24 transformer half-cycle saturation and generation of harmonics that exceeded the IEEE 519 Standard
25 with GIC of 15 Amps in the neutral of the power transformer.

26 IX. In February 2013, the North American Electric Reliability Corporation (NERC) GMD
27 committee of 8 respected space weather scientists estimated a reference storm. Preliminary results
28 showed a peak electric field strength of 30 V/km to 40 V/km.

1 X. In May 2025, the International Electrotechnical Commission (IEC) updated the
2 international standard IEC 61000-2-9 for E3 HEMP to 85 V/km.

3 XI. The NERC GMD Standard requires New Hampshire to model roughly 3 V/km.

4 XII. With the existence of validated GIC mitigation hardware that protects power
5 transformers and improves grid resilience against these severe GIC events, reliance on load
6 shedding or operating procedures which cannot block GIC are no longer justified.

7 3 Geomagnetic and Electromagnetic Disturbance Electric Transmission; Department of Energy;
8 Vulnerability Investigation.

9 I. The department of energy shall investigate the vulnerability of electric transmission
10 transformers and other system components to geomagnetically induced currents. The investigation
11 shall answer the following questions:

12 (a) What studies and assessments have previously been performed that reviewed
13 transmission system vulnerabilities to geomagnetic and electromagnetic disturbances?

14 (b) How were those studies conducted and what were the transmission system grid
15 vulnerabilities identified?

16 (c) Given the current NERC GMD standard of 3 V/km and the IEC international
17 standard of 85 V/km, did the magnetic field standard utilized adequately assess the vulnerability of
18 the transmission system in New Hampshire to geomagnetic and electromagnetic disturbances?

19 (d) If the magnetic field standard utilized in previous studies did not adequately assess
20 transmission infrastructure vulnerability, what standard should be used?

21 (e) What would be the cost to conduct a transmission infrastructure assessment at a
22 higher standard than has previously been used?

23 (f) How long would an additional assessment at a higher standard take to complete?

24 (g) What mitigation strategies and response methods are currently utilized to protect
25 transmission system infrastructure from geomagnetic and electromagnetic disturbances and are
26 those strategies and methods adequate?

27 (h) What role can the state of New Hampshire play in assessing transmission system
28 vulnerabilities that fall under the jurisdiction of the Federal Energy Regulatory Commission and in
29 directing transmission-owning utilities to implement infrastructure and non-infrastructure
30 solutions?

31 (i) What funding sources are available to conduct additional assessments or support the
32 installation of equipment to further protect vulnerable transmission system infrastructure from
33 geomagnetic and electromagnetic disturbances?

34 II. The department shall commence the investigation within 90 days of the effective date of
35 this subsection and complete the investigation within a time period not to exceed 12 months of its
36 commencement. At the conclusion of the investigation, the department shall issue a report of its
37 findings and recommendations to the house science, technology and energy committee, the senate

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1 energy and natural resources committee, and the division of homeland security and emergency
2 management and the department shall also send the report to the United States Secretary of
3 Energy, the Federal Energy Regulatory Agency, and ISO-New England.

4 III. Notwithstanding any other law, rule, or order to the contrary, the department shall have
5 the authority necessary to conduct this investigation and implement this subdivision, including, but
6 not limited to, the authority to request information from public utilities, including transmission
7 utilities, regarding transmission infrastructure located within the state of New Hampshire, and to
8 specifically assess utilities an amount not to exceed \$350,000 for this investigation.

9 IV. Confidentiality. All data submitted under this subsection shall be handled in accordance
10 with critical energy infrastructure information protocols and location and purpose data shall be
11 redacted from public reports. "Critical energy infrastructure information protocols" means specific
12 engineering, vulnerability, or detailed design protocols and procedures related to proposed or
13 existing critical infrastructure, whether physical or virtual, that relate to the production, generation,
14 transmission, transportation, or distribution of energy, the unauthorized disclosure of which could
15 pose a risk to the security, reliability, or integrity of the infrastructure; such protocols are designated
16 as confidential and exempt from public disclosure, as their release could be useful to a person
17 planning an attack or otherwise causing harm to the infrastructure.

18 4 Effective Date. This act shall take effect upon its passage.

RESOLUTION

ELECTROMAGNETIC PULSES AND SOLAR FLARES

WHEREAS, protecting the nation's electric power grid and ensuring a reliable and affordable supply of energy are key priorities for the electric power sector and state and federal governments; and

WHEREAS, the power grid is a complex, interconnected network of generation, transmission, distribution, control, and communication technologies that can be impacted by natural events—including weather, earthquakes and geomagnetic disturbances (GMDs) like those caused by solar flares—and by malicious events, like cyber or physical attacks including electromagnetic pulses (EMPs); and

WHEREAS, the electric and nuclear sectors are critical infrastructure providers with mandatory and enforceable standards to help protect the reliability and security of the power and grid assets they own and operate; and

WHEREAS, standards can ensure that every electric utility meets a baseline level of security and the electric industry also relies on close coordination and partnerships with federal law enforcement and security agencies to help defend against hostile nation-states or other attacks against the United States, including EMP threats from a nuclear device; and

WHEREAS, intentional, manmade EMPs, such as those from directed energy weapons or high-altitude nuclear blasts, and naturally occurring GMDs, such as those caused by solar flares, need to be assessed and addressed with appropriate mitigation and protection strategies implemented for each; and

WHEREAS, preventing an EMP event is a national security issue, as the planning and launching of a nuclear attack on U.S. critical infrastructure constitutes an act of war or terrorism, thus the federal government is primarily responsible for preventing a high-altitude EMP as a matter of national security; and

WHEREAS, reasonably cost effective technological solutions are emerging to protect from EMP threats that could be implemented in phases, starting with the greatest risks first;

NOW, THEREFORE, BE IT RESOLVED, that the National Conference of State Legislatures urges members of Congress and the President of the United States to initiate and coordinate efforts with state governments and the electric power sector to implement plans and preparation for the protection of electric power generation, transmission and distribution assets from EMPs and geomagnetic disturbances (solar flares); first addressing those sectors most vulnerable and with the longest lead times for repair, and then by using a risk based assessment approach to harden the remainder of nation's electric production, transmission and distribution systems for resilience against, and recovery from, all types of malicious or naturally occurring events that could adversely impact the electric power grid.
