

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Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.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.