

HB 1723 - AS INTRODUCED

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

ANALYSIS

This bill requires electric utilities and developers to assess and report the vulnerability of high-voltage transformers to geomagnetically induced currents, and to recommend mitigation strategies.

Explanation: Matter added to current law appears in ***bold italics***.

Matter removed from current law appears [~~in brackets and struck through~~]

Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

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

2 Findings.

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

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

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

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

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

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

3 New Chapter; Survey All Vulnerable Electric Transformers Act. Amend RSA by inserting after chapter 378 the following new chapter:

CHAPTER 378-A

SURVEY ALL VULNERABLE ELECTRIC TRANSFORMERS ACT

378-A:1 Purpose. The purpose of this chapter is to require electric utilities and electric project developers to assess and report the vulnerability of high-voltage transformers to geomagnetically induced currents (GICs) caused by geomagnetic disturbances (GMDs) and high altitude electromagnetic pulse (HEMP), and to recommend mitigation strategies to protect critical electric infrastructure.

378-A:2 Definitions. In this chapter:

I. "Covered entity" means any electric utility or electric project developer, owner, or operator within the state, regardless of public or private ownership or jurisdiction under the North American Electric Reliability Corporation (NERC).

II. "Covered equipment" means any power transformer with a primary voltage of 100 kV or greater and capacity of 25 MVA or greater, and any generator step-up transformer with a secondary voltage of 100 kV or greater and capacity of 25 MVA or greater.

III. "GIC" means geomagnetically induced current, also known as ground induced current, resulting from naturally occurring GMDs or the late-time (E3) component of HEMP.

IV. "Critical energy infrastructure information protocols," "critical electric infrastructure information protocols," or "CEII" means specific engineering, vulnerability, or detailed design protocols and procedures related to proposed or existing critical infrastructure, whether physical or virtual, that relate to the production, generation, transmission, transportation, or distribution of energy, the unauthorized disclosure of which could pose a risk to the security, reliability, or integrity of the infrastructure; such protocols are designated as confidential and exempt from public disclosure, as their release could be useful to a person planning an attack or otherwise causing harm to the infrastructure.

378-A:3 Assessment Requirements.

I. Each covered entity shall, no later than January 1, 2027, conduct a technical assessment of all covered equipment to determine vulnerability to GICs.

II. The assessment shall:

(a) Utilize the waveform in Figure A.5 of IEC 61000-2-9, Edition 2.0 (2025-05), modeling a peak magnetic field strength of 20,000 nT and corresponding electric field of 85 V/km.

(b) Assume transformers are fully loaded during GIC exposure.

(c) Account for transformer age and condition using ANSI/IEEE Standard C57.110 and IEEE Standard C57.91.

(d) Identify susceptibility to half-cycle saturation, GIC-induced harmonics, reactive power consumption, hot spot generation, and insulation degradation.

378-A:4 Reporting Requirements.

I. No later than 180 days after passage of this act, each covered entity shall submit a report to the department of energy, with copies to the public utilities commission, the governor, the chief of homeland security, and the legislature.

II. The report shall include, for each susceptible transformer and substation:

(a) Transformer brand; transformer place of origin, including nation where manufactured; transformer design specifications, including windings and core configuration, winding impedances, winding DC resistances (specify whether assumed or measured), and phase type (single-phase or 3-phase); transformer capacity in megavolt-amperes (MVA); transformer voltage level in kilovolts (kV); transformer age; transformer site location, redacted for CEII; transformer purpose (e.g., generator step-up, autotransformer, step-down, converter), redacted for CEII; transformer replacement lead time; and transformer replacement cost.

(b) Spreadsheet-formatted data and narrative analysis.

- (c) Recommended solutions to protect the grid against GIC by preventing or reducing the half cycle saturation of transformers.
- (d) Total cost to implement GIC protection.
- (e) Priority list of transformers by damage risk and critical infrastructure impact.
- (f) Funding recommendations, including potential grant sources and rate recovery mechanisms.

378-A:5 Operational Standards. Covered entities shall not rely solely on operational procedures such as load shedding or reactive power supply to mitigate GIC risk. Such procedures shall not be considered sufficient protection under this chapter.

378-A:6 Confidentiality. All data submitted under this chapter shall be handled in accordance with CEII protocols as defined in RSA 378-A:2. Location and purpose data shall be redacted from public reports.

4 Effective Date. This act shall take effect July 1, 2026.