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**PeraWatt Energy Comments on Electric Program Investment
Charge 2026-2030 Investment Plan**

Additional submitted attachment is included below.



Thursday, June 18, 2026

Energy Research and Development Division
California Energy Commission
715 P Street
Sacramento, California 95814

RE: PeraWatt Energy Comments on the California Energy Commission's Electric Program Investment Charge 2026-2030 Investment Plan

Dear Energy Research and Development Division staff,

On behalf of PeraWatt Energy Inc. (PeraWatt), we write to encourage the California Energy Commission (CEC) to make research, development, and demonstration (RD&D) for advanced soft magnetic materials an explicit, fundable priority within EPIC 5. Advancement of this technology area through commercialization is critical to several of the initiatives presented at the recent EPIC 5 workshop and to achieving California's electrification, emissions reduction, and affordability goals.

PeraWatt is a Berkeley-based company commercializing a new class of advanced soft magnetic materials for high-frequency power electronics and electric motors.

A foundational technology, overdue for innovation

[Soft magnetic materials](#) (SMMs) are the cores inside the transformers, inductors, and motors that perform the power conversion at the heart of essentially every electrical device and system. Despite this central role, they are one of the least-modernized parts of the electricity system – no fundamentally new commercial material has emerged in decades. As a result, they've become one of the biggest bottlenecks to efficiency gains in next-generation power systems.

This bottleneck is most acute in two areas. First, in high-frequency power electronics: as wide-bandgap (WBG) semiconductors such as silicon carbide (SiC) and gallium nitride (GaN) push systems to higher switching frequencies, legacy SMMs increasingly limit how efficient, compact, and affordable those systems can be, constraining critical applications including solid-state transformers, EV onboard and off-board chargers, solar microinverters, and data-center power converters. For this reason, the U.S. Department of Energy (DOE) identified improved SMMs as *"the greatest opportunity for reduction in*

losses” in WBG-enabled power electronics in its [2025 Wide Bandgap Power Electronics Strategic Framework](#).

Second, in electric motors: today's highest-efficiency traction and industrial motors rely on permanent magnets made from heavy rare-earth elements, materials carrying significant supply-chain risk and price volatility. High-performance SMMs can enable motor designs that reduce or eliminate rare-earth content while maintaining performance. That is why DOE and major automakers noted in their [2024 U.S. DRIVE Electric Drive Technical Team Roadmap](#) that *“improved soft magnetic materials are necessary to access sustainable non-heavy rare earth PM [permanent magnet] motor designs. Additionally, high performance soft magnets can enable innovative motor designs that do not require the use of PMs.”*

Who benefits

The direct beneficiaries are spread across California's clean-energy economy: WBG semiconductor designers whose SiC and GaN innovations are constrained by outdated magnetics; EV and EVSE manufacturers; solar and energy-storage inverter and converter makers; industrial motor users; data-center operators and their power-supply OEMs facing acute energy and cooling costs; utilities deploying distribution transformers and grid-edge equipment; and the California small businesses, universities, and national-lab partners developing these technologies.

EV drivers benefit on two fronts: lower losses in off-board chargers mean more of the energy drawn from the grid reaches the battery, reducing charging costs, while lower losses in onboard chargers and traction motors mean more of the battery's stored energy reaches the wheels, extending range. More efficient motor stators can also reduce the rare-earth magnet content a motor requires, lowering vehicle cost and reducing California's dependence on imported critical minerals.

Ultimately, all California ratepayers benefit due to system-wide savings of lowering energy losses at every point of power conversion from generation to end loads.

Alignment with the draft EPIC 5 initiatives

Because soft magnetics sit beneath so many systems, this technology supports several of the initiatives presented at the CEC's June 11 EPIC 5 workshop:

- **Distributed Energy Resource Integration: Accelerating Grid Connection of Clean Resources and Beneficial Loads.** Advanced soft magnetics are enabling components of the solid-state transformers (SSTs) identified as bridging solutions,

reducing the core losses that limit SST size, cost, and efficiency at WBG-enabled frequencies – and improving the economics of every converter-based DER.

- **Transportation Electrification: Harnessing the Value of Transportation Electrification for Ratepayers.** More efficient magnetics improve the EV charging chain and traction motors, extending range, lowering charging losses on an increasingly EV-strained grid, and reducing a meaningful EV cost driver.
- **Achieving 100 Percent Net-Zero Carbon Emissions: Enhancing Clean Energy Technology Safety, Supply Chains, and Life Cycle Benefits.** Soft magnetics built from abundant, domestic elements – and more efficient magnetics that reduce or eliminate permanent-magnet content in motors – directly strengthen critical-material supply chains and lower system costs.

EPIC is uniquely positioned to support this work given limited federal funding in this space. EPIC-funded California-relevant validation is precisely the step that can turn a promising material into a system-wide solution proven in relevant state conditions. In addition, EPIC support can help SMM innovators like PeraWatt leverage emerging funding opportunities with cost-share requirements, shaping that combined investment toward California's ratepayer needs.

We appreciate the opportunity to comment and would welcome the chance to discuss this concept further with CEC staff.

Sincerely,

Edson Perez
Co-Founder & Chief Operating Officer
PeraWatt Energy Inc.
edson@perawatt.com
(415) 969-1805