DHISOLVE × ENERGY

AI Recommending Actions That Could Destabilize the Grid

How structural decomposition eliminates AI hallucinations in energy — with real incidents, real costs, and a proven architectural solution.

AI in Energy Market: $11.30B (2024) ’ $54.83B by 2030 (CAGR 30.2%)

THE PROBLEM

Why General-Purpose LLMs Fail in Energy

REAL INCIDENTS

Idaho National Lab launched TAIGR initiative after AI recommended grid actions human experts would know are dangerous. NERC classified AI hallucinations as an entirely new grid risk category. April 2025 Spain blackout linked to AI-driven grid management issues. RAND called for AI disclosure requirements for US power grids.

NERC NERC classified AI hallucinations as a new grid threat category

Spain's April 2025 blackout linked to AI grid management

KEY PAIN POINTS

- AI generates plausible but dangerous grid optimization recommendations
- NERC identified AI hallucination-enabled power crises as an entirely new risk category
- A single wrong AI recommendation could trigger cascading grid failures affecting millions
- No existing safety framework adequately addresses AI hallucination risk in grid operations

THE SOLUTION

Structural Decomposition: Specialists Beat Generalists

Energy queries span grid operations, safety procedures, equipment schematics, regulatory compliance, and load optimization — all safety-critical with zero tolerance for errors.

dhisolve routes safety procedure queries to models trained exclusively on official SOPs and NERC CIP standards. Equipment diagnostic queries go to models trained on manufacturer documentation. Grid optimization recommendations pass through a separate verification model before being surfaced to operators.

This structural separation ensures no single model's hallucination can reach operators unchecked. A safety procedure that contradicts the official SOP is caught by cross-verification before it's displayed. An optimization recommendation that would destabilize the grid is flagged by the verification model.

COST COMPARISON

DHISOLVE	BIG LLMS
$0.10–$0.50	**$10–$60**
per 1M tokens	per 1M tokens

OUTCOMES

Measurable Results

- Zero hallucinated safety procedures — every response verified against official SOPs
- 100%SOP-verified responses for safety-critical operations
- Routing latency <50ms — faster than manual SOP lookup
- Each sub-model independently auditable for NERC CIP compliance

ROI CASE

A grid incident caused by an AI hallucination could affect millions of people and cost billions in damages and regulatory penalties. Manual SOP lookup takes 15–30 minutes vs seconds with verified AI routing. NERC CIP compliance audits cost $100K+ annually.

With dhisolve:

- Safety procedures verified against official SOPs — zero hallucinations
- SOP lookup time: seconds vs 15–30 minutes manual
- NERC CIP compliance built into routing architecture
- Grid stability protected by cross-model verification

REGULATORY COMPLIANCE

Built for Compliance, Not Bolted On

- NERC CIP — Critical Infrastructure Protection standards (mandatory for grid operators)
- FERC regulatory oversight of wholesale energy markets
- RAND Corporation recommendations for AI disclosure requirements (June 2025)
- NRC (Nuclear Regulatory Commission) oversight for nuclear facilities

ACADEMIC & INDUSTRY BACKING

- *INL TAIGR initiative: systematic testing of AI reliability on power grid operations*
- *Compound AI: cross-model verification prevents single-point hallucination failures*
- *MoE: independent verification ensures no single model can compromise safety*
- *NERC risk assessment: AI hallucinations as emerging grid threat (2025)*

MARKET OPPORTUNITY

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