The Operator's Question

Why The Grid Needs the Institution Before the Technology

By AEIC VP of Technical Strategy Elizabeth Cook

In 1969, in a hotel room in Sausalito, a little-known Seattle banker named Dee Hock sat with a problem most of his peers already agreed was unsolvable. The BankAmericard network was collapsing under fraud, paper drafts, and incompatible rules. Hock refused the obvious technical fix and asked a different question: "If we could design this from scratch, with no constraints, what would the ideal system look like?"

The answer, when it came, was not technology. It was an institution. Competing banks, operating under shared definitions, enforceable standards, and distributed governance, built the conditions that made the technology work. Within two years the system was compounding at 50 percent a year. We now call it Visa.

The electric utility industry is facing its own Sausalito moment, and the question is the same. Walk into any planning department, operations center, or rate case workroom and the pressure is identical. Load is moving faster than the models can track it. Data center interconnection requests are arriving in hundreds of megawatts with timelines measured in months, not the decades for which our capital planning cycles were built.

Inverter-based resources (IBRs) are accumulating faster than the planning engineers handing them off to operations can validate their behavior under disturbance. Every one of these pressures eventually collides with a rate case cycle, a capital recovery mechanism, and a regulatory posture architected for a steady-load, vertically-integrated world that no longer exists in most service territories.

The honest diagnosis is not that any one of these challenges is unsolvable. It is that the industry is being asked to solve all of them simultaneously without the data foundation that would let it see clearly what is happening or model honestly what is coming.

Elizabeth Cook is AEIC Vice President of Technical Strategy and AEIC Program Director, AEIC Center for Operational Excellence.

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Load Forecasting Was Never the Real Problem

Load forecasting sits at the root of almost every important utility decision. Investment plans, resource adequacy filings, interconnection studies, and transmission expansion all flow downstream of the forecast. Yet the inputs are inconsistent across utilities, siloed within organizations, incompatible across vendor platforms, and in

many cases inadequate for the analytical demands of the modern grid.

That is not a modeling problem. Machine learning, probabilistic scenario planning, high-resolution AMI, and advanced grid sensing are all available. The bottleneck is organizational: The absence of shared definitions, common standards, and distributed governance over what gets measured, how it gets validated, and what obligations come with participation in a collective intelligence effort.

Hock saw this same pattern in 1968. He spent eighteen months building the institution before even a single line of VisaNet code was written.

A Forecasting Problem Dressed as a Capacity Problem

Hyperscale data center load has exposed the fragility of the current system more acutely than any actor class in recent memory. Load pipelines develop in opacity. Capacity requests move between utilities as customers shop territories. Supply chain constraints on transformers, switchgear, and long-lead components compete across every forecast simultaneously. The AEIC Data Center Task Force exists because no single utility, OEM, EPC, or regulator can make sense of the signal alone.

What the Task Force is quietly constructing is a disclosure architecture Hock would recognize immediately: A structured way for large new loads to participate in the ecosystem without collapsing the planning process that serves everyone else. That is governance construction, the pre-technology institutional design that made the Visa network possible.

IBRs: Planning-To-Execution Gap

If load forecasting is where the data foundation fails upstream, IBRs are where it fails across the handoff. A planning engineer models an IBR from a manufacturer data sheet. A protection engineer designs coordination around an assumed fault contribution. A distribution operator commissions the asset into a control scheme. A market settlement system prices its output.

Every one of those roles depends on a different representation of the same device, and, today, those representations do not reliably reconcile. When they fail to reconcile in the field, we see it as ride-through events, unexpected tripping, and model validation gaps that erode confidence across the whole planning-to-execution chain.

This is the chaordic challenge in miniature. The technical problem is solvable. The organizational problem is shared definitions, validation protocols that every party along the handoff can trust, and governance that gives every

role a meaningful voice without letting any single actor dictate terms.

Financial/Regulatory Structures Can't Outrun the Data Gap

The hardest layer of this work is the structural tension between utilities and their regulators. Rate case cycles run on a cadence that predates the investment curves utilities are now expected to deliver. Capital recovery mechanisms reward the assets the old models optimized for, not the data, software, and distributed capabilities the new ones require. Regulators, for their part, receive forecasts with understandable skepticism when the underlying models are opaque and the assumptions difficult to verify independently.

Hock's answer to the analogous problem in banking was architectural. He did not ask Bank of America and its licensee banks to trust each other. He designed a system in which trust was structural rather than personal. Accountability was enforceable, governance was transparent, and every participant, including the most powerful one, was subject to the same standards.

A shared data framework does the same work for the utility-regulator relationship. When the inputs underlying a forecast are built on common, independently verifiable standards, the conversation shifts from adversarial interrogation of opaque models to collaborative interpretation of shared evidence. That shift is what makes the current financial and regulatory structures navigable. It converts business intelligence from a private asset into a shared foundation every stakeholder can stand on.

The Data Framework Working Group Is the Room

The AEIC Data Framework Working Group is not a research project. It is the Hock moment made practical. It is the group building the shared definitions, validation protocols, and governance model that every other workstream, load forecasting, the Data Center Task Force, IBR integration, and regulatory strategy, ultimately depends on. The fundamentals being developed here are the business intelligence foundation that utilities have been trying to activate from inside their own walls and cannot complete alone.

Knowledge of one is the knowledge of all. That is not a slogan. It is the chaordic principle that Hock proved half a century ago, and it is the principle the grid is waiting for leaders to act on now.

The forecasting methods, IBR integration practices, data center disclosure protocols, and regulatory frameworks that will serve the next 30 years do not yet exist in their final form. The institution capable of building them is assembling in our conference rooms and on our working calls right now.

The question Hock asked in 1969 is the one the utility industry is being asked to answer today. If we could design this from scratch, with no constraints, what would the ideal system look like? And then: Who among us is willing to be in the room while we build it?

If this work intersects with your organization's planning, operations, data, large-load, or inverter-based resource challenges, AEIC welcomes your participation in the conversation. To learn more or contribute to the discussion, please contact Elizabeth Cook at ecook@aeic.org PUF

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