

AEIC GRID ADVANCEMENT PROGRAM • CHALLENGE BRIEF

Engaging Customers in a Dynamic Grid

Challenge 08. The operating problem, why it is hard, and what the cohort will work.

Working session**Cadence****Eligibility****Join****Program**

Tuesday, March 9, 2027, 2:00 p.m. ET

Second Tuesday of every month, 2:00 p.m. ET

AEIC members and any electric utility

<https://aeicopscenter.org/grid-advancement>

AEIC Center for Operational Excellence

The problem

For a hundred years the customer was the end of the wire. You served them, you metered them, you billed them. Their load was a given, and the utility's job was to build enough grid to meet it.

That is breaking, and heating is breaking it. As customers come off fossil-fuel heat onto heat pumps and electric resistance, their load stops being a background assumption and starts being a system peak. Summer-peaking utilities are watching a winter peak walk toward them, and in some territories it already arrived.

And this is not like other load growth. A data center is a customer you can negotiate with. A heat pump belongs to a family, and the load it draws at five in the morning in single-digit cold is not a preference. It is a house staying warm. The customer is now a grid resource, and the only resource on the system the utility does not control.

Why this challenge

Because every other answer to winter peak is expensive, slow, or both.

You can build for it. Feeders, transformers, eventually a substation, all sized for the coldest hours of the coldest days and idle the rest of the year. That is the affordability spiral: electrification raises the peak, the peak drives capex, capex drives rates, and rates fall hardest on the people least able to carry them.

The alternative is that the load moves. Not less heat, the same heat at a different hour. Pre-conditioned buildings, thermal mass used as storage, load shaped around the constraint instead of into it. The physics works, and the building envelope is real storage that is already paid for. What does not work is the part where you ask a human being to let you do it.

Where utilities actually are

Nearly everyone is running some version of the same three plays.

Rate design. Time-of-use, critical peak pricing, winter peak rates. A price signal is the cheapest lever a utility has and the weakest. It asks the customer to be paying attention, to understand the rate, and to have somewhere else to put their usage. Many are not, do not, and cannot. That is not apathy. That is a working family on a cold morning.

Direct load control. Thermostat programs, connected water heaters, bring-your-own-device enrollment. Real programs, real relief, all of it resting on an enrollment number that counts like capacity on paper and behaves like something else in an actual event.

Wires. Build the feeder. Always works. Always expensive.

None of these are wrong. They are what you do when you have an obligation to a system and only a relationship with a customer.

The hard part

The technology mostly exists. Connected thermostats, thermal storage, building-level load forecasting, capacity visibility, and orchestration are all real and all deployed somewhere right now. The hard part is not the technology. It is these four things.

1. You can control an asset. You can only ask a customer. A capacitor bank does what it is told, and it has no opinion about whether the living room is cold. Every operating tool a utility owns assumes dispatch authority. The flexible-load thesis rests on something the utility does not have: consent, renewed every single time, from a person who can take it back with one tap on a thermostat.

2. Enrollment is not capacity. Opt-out rates are not constant. They spike in precisely the conditions where you need the load, because the day the system is stressed is the day the house is cold and the customer overrides you. Planning has no honest way to count a resource whose availability falls as the need for it rises, so planning counts it near zero. Which means the program never defers the upgrade it was built to defer, and the enrollment number that carried the business case buys nothing.

3. The equity math runs backward. The households with the most to gain from bill savings have the least room to absorb a cold house, and they are disproportionately on electric resistance heat, because a heat pump is a capital purchase they could not make. So a program built to reward flexibility pays customers who already had money, and the people carrying the highest energy burden take the discomfort and get the least back. That is a design problem, not a communications problem, and it is unsolved.

4. This work falls between two organizations and belongs to neither. The customer relationship sits with a group measured on satisfaction. The load relief is needed by a group measured on peak and capex. And the value of the whole thing is an upgrade you did not have to build, which is the hardest kind of value to take to a rate case. That is a structural problem, and it does not get fixed with a meeting.

If you need one sentence to carry into a planning review: **enrollment is not capacity. The day the system is stressed is the day the house is cold and the customer overrides us, and until we can count that resource honestly, it will never defer the upgrade it was built to defer.**

None of those four barriers is local to you. In some form, all four show up in all ten challenges in this program: the resource you cannot observe or verify, the value that is an avoided build, the work that falls between two functions, and the number that survives a slide but not an event. If your list looks like this one, you are not behind. You are in the same room as everyone else.

And "we do not know what our real override rate is in a genuine cold event" is a legitimate answer here. Few utilities do. It is a finding, and naming it is how you get funded to measure it.

What the cohort will work

Not "what technology should we buy." The room works the questions that actually block deployment.

- What does it take to count a customer program as dependable winter capacity, and has anyone gotten a planner to accept it?
- What are the real override rates in a genuine cold event, not a test event?
- Where is the honest line on comfort and safety, and who gets to draw it?
- How do you design a flexibility program that does not exclude the customers who need the money most?
- What has been tried and did not work? That is the most valuable hour in this program, and it is the one you can only get from peers who have actually tried it.

What to bring

You do not need a solved problem. You need an honest one. Come with:

- One decision you are stuck on
- What your winter peak is actually doing, and what you think is driving it
- The load you are counting on and cannot yet count
- One thing you tried that did not work

If the honest answer to any of those is "we do not know," bring that. It is a finding, not a failure, and you will not be the only one saying it.

What you get

- This brief, and a short video briefing, before the session
- The Flight Plan, a working pilot scaffold, inside InnovationWorks
- The session itself, with the utilities living this problem
- A retrospective afterward: what the cohort tried and what happened

Join

Tuesday, March 9, 2027, 2:00 p.m. ET. Recruitment runs per challenge, so your customer programs and distribution planning people can come to this one without committing to all ten.

Open to AEIC members and to any electric utility. If you run a utility, you are welcome here.

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Knowledge of one is the knowledge of all.

Sources: this challenge was developed from research of public utility filings. The technology landscape for this challenge is maintained separately inside InnovationWorks.