The Maine Transactive Energy Pilot: Inside a New Demand Response Program That Puts You in Control

On the hottest days of summer and coldest days of winter, New England's electric grid faces a challenge: energy demand–and price–surges, the transmission and distribution system gets congested, and expensive power plants (typically fossil-fueled "peaker plants") fire up to meet demand. As demand grows due to data centers and the electrification of heating and transportation, these demand peaks are growing in size and frequency. Recent studies suggest that peak demand may triple if grid management doesn't adapt.

Grid congestion is like highway traffic: just as traffic congestion builds up when too many cars use too few lanes, the electric grid gets congested when electricity demand overburdens existing infrastructure. A traditional solution is to build new transmission lines, substations, and peaker plants. But these projects are expensive, slow-to-build, and ultimately not cost-effective because much of this infrastructure is built to address peak demand events, which only occur for a short time, a few times each year. It's like building a five-lane highway for extreme holiday traffic, when three lanes suffice most of the year. Yet, these peaks drive a significant portion of annual grid costs. As electricity use increases, these peaks are expected to become larger and more frequent. With energy costs continuing to rise, relying on these expensive approaches is increasingly unsustainable–but without more flexible, scalable alternatives, this remains the path we're on.

Earlier this year, Post Road Foundation launched the Maine Transactive Energy Pilot (MTEP), in collaboration with A Climate to Thrive and several community groups across Maine, to provide a low-cost, consumer-friendly solution to meet peak demand. This two-year pilot program uses demand flexibility to lower demand during peak periods, like traditional demand response programs, but with a key difference: participants remain in control.

Traditional Demand Response Programs. The logic behind demand response isn't new: reduce energy consumption during peaks to help prevent blackouts, lower emissions, and stabilize ever-increasing energy prices. Under most programs, utilities do this by directly controlling customers' devices, like adjusting thermostats or cutting power to water heaters. While effective, this approach hasn't achieved sustained participation, especially among residential customers. Utilities controlling whose energy will be curtailed, by how much, and for how long, has been unpopular over the long term with customers who prefer to manage their own energy usage.

Reimagining the Consumer's Role. MTEP flips the script. Participants themselves decide how often and how much they participate and thereby can collectively ease grid strain *while* maintaining control, a crucial element for widespread, sustained adoption. This program reengineers the consumer's role in grid management–not as a passive ratepayer, but a central and active contributor. As utilities, regulators, and policymakers look for cost-effective solutions to grid challenges, programs that provide grid flexibility without sacrificing consumer autonomy offer a more durable model.

MTEP leverages existing smart energy devices, like mini-splits, heat pump water heaters, home batteries, and EVs, to shift electricity use during demand peaks. Participants use a mobile app to set preferences for their devices, specifying how much a given device might adjust its energy usage when the grid is congested essentially, how responsive they want that device to be to changing grid conditions. During such events, like heat waves and cold snaps, devices enrolled in the program adjust based on the participant's responsiveness choice. For example, a lower responsiveness setting may mean a mini split adjusts by a degree or two a few times a year, while a higher responsiveness setting may mean it adjusts by, say, three degrees up to ten times a year. Across many homes, these modest shifts can reduce peak demand in a predictable, consumer-friendly way–helping lower energy costs for everyone. As a bonus, MTEP participants earn monetary incentives for how much they help the grid. So far, the over 100 people have expressed interest. Currently, beta installations are underway across the state, with a broad rollout over the next few months.

Balancing the Grid. MTEP seeks to align energy usage with low-cost clean energy production. Nationwide, wind and solar sources occasionally generate more power than the grid can use, sometimes leading to negative pricing (a market phenomenon where renewables producers effectively *pay* customers to use excess electricity). Sometimes, this overproduction occurs on the same day that extreme temperatures force grid operators to rely on peaker plants. For example, during the June 24, 2025 heat wave, Maine's wholesale electricity price jumped from just below $0/MWh between 11 a.m. and 1 p.m. to over $1,500/MWh around 6 p.m. (typical prices range from $20-$50/MWh). MTEP responds to this kind of volatility by shifting not just *how much* energy is used, but *when* it's used. If enough households delay EV charging or reduce mini split loads during peak hours, they could significantly reduce the need for expensive peaker plants and grid upgrades *while* making better use of low-cost solar and wind power.

At scale, this approach could help address Maine's–and eventually, the nation's–grid challenges. Whether it proves effective depends on both the technology's performance and energy consumers' buy-in. MTEP offers a real-world test of a stronger, more resilient grid to ensure we all have adequate access to affordable electricity when we need it most.

To learn more about MTEP, visit mtep.postroadfoundation.org.