

To address surging power demand, let's value all clean energy

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We stand at an energy crossroads.

Surging demand from data centers, electric vehicles and other new loads has utilities clamoring to build new natural gas power plants. If built, we will sacrifice our long-term climate goals in favor of short-term utility profits, locking in long-term emissions and guaranteeing we will fall short of even our most modest climate goals.

The good news is we have other tools at our disposal. To unleash them, we need to embrace new zero-carbon energy technologies — and new market mechanisms to finance them.

The old way: peaker plants

The main challenge facing utilities in this new era of growth is meeting demand for just a few specific hours of the day when energy usage is highest, typically between 5 p.m. and 10 p.m., when air conditioners are blasting, electric vehicles are charging and all sorts of ancillary devices are running. The United States Energy Department is expecting 60 gigawatts of peak-demand growth in the U.S. by 2030, the equivalent of powering 60 million more homes every evening.

To add to the challenge, peak demand typically occurs in the early evening — after the sun has stopped shining and before the wind has started blowing — so it can't be met by our most prevalent renewable energy sources.

Evening demand is currently met with gas “peaker plants.” Peaker plants require 50% more gas to operate than baseload gas plants, and typically sit adjacent to some of the most racially-segregated, economically-disadvantaged communities in the country. Unbeknownst to

most of us, our internet search results, powered by artificial intelligence, and 66-degree indoor temperatures in the summer could be causing asthma in a nearby low-income neighborhood.

It may make business sense for utilities to double down on peaker plants because managing a power plant is easy and familiar to these companies. But without a commitment to clean energy, utilities across the country will invest billions of customer dollars into power plants that make shareholders rich and leave the rest of us with higher bills, dirtier air and a declining planet.

The new way: Distributed energy

There is another way — and it involves learning a few acronyms.

Distributed energy resources (DERs), like rooftop solar panels, home batteries and smart thermostats, are flexible technologies designed to optimize energy use and can be deployed in unison across households and neighborhoods to solve the challenge of peak demand.

It can be complicated to orchestrate these resources and they don't lead to big bonuses for utility executives. But they do solve the problem of peak demand without sacrificing our future.

The power of DERs can be unlocked through Virtual Power Plants (VPPs), when hundreds of thousands of individual devices coordinate to operate like a traditional power plant. Rooftop solar generates electricity, which can be shared in real-time or stored in a battery; batteries can meet afternoon and evening peak demand, while smart controllers can manage usage at times when renewables aren't available.

Some utilities, notably in Vermont, Massachusetts and Colorado, are using VPPs to manage peak demand and reduce reliance on gas-powered peaker plants, and the Energy Department aims to expand national VPP capacity to as much as 160 GW by 2030. But the pace at which these resources are being utilized relative to the desire to build new fossil fuel power plants suggests more investment is desperately needed.

Learn more about Virtual Power Plants in this Cipher explainer.

Voluntary clean energy markets allow corporations to invest in renewable energy projects in exchange for renewable energy certificates (RECs),

which they can use to meet their sustainability goals. These markets have been crucial in accelerating large-scale wind and solar projects. Seventy percent of new utility-scale wind and solar projects deployed in 2023 were financed by corporate clean energy buyers, according to the Clean Energy Buyers Association.

However, RECs only value energy generation, not energy saved or shifted, nor carbon emissions avoided. Consequently, these legacy energy markets fail to extend the same credit for investing in distributed clean energy technologies like batteries, despite their instrumental role in managing peak energy demand.

By valuing the environmental benefits of DERs, we can open them up to investment through energy attribute certificates (EACs), a granular solution that tracks and values all attributes — including energy and carbon-emission savings. EACs can unlock corporate capital to incentivize the development of new distributed energy resources, from smart thermostats and heat pumps to rooftop solar and batteries.

Clean energy companies that help customers participate or otherwise shift energy use away from peak hours will benefit substantially from the secondary revenue stream provided by EACs, much the same way that wind and solar projects have benefited from REC markets. My company helps clean energy companies use EACs to incentivize more participation in these programs.

A clean energy future is a distributed energy future. It's also an equitable and abundant future. Distributed energy provides independence from utilities and protection from rate hikes, gets toxic fossil fuel combustion out of our homes and enables people to actively engage in our shared energy system. It's a new mindset rooted in collectively managing our energy resources, rather than simply consuming more power from concentrated, fossil-fuel based sources.