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NRDC Comments on Load Management Standards

Additional submitted attachment is included below.

Comments of the Natural Resources Defense Council (NRDC)
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The Natural Resources Defense Council (NRDC) is a non-profit membership organization with more than 95,000 California members who is advocating for affordable and equitable decarbonization and clean air policies to help mitigate the climate crisis.

NRDC strongly supports CEC's proposed revisions to the Load Management Standards, including requirements that utilities develop marginal cost-based rate offerings and provide time-dependent rates to a central database. This data infrastructure will transmit location-based price and emissions signals to devices in real time, encouraging automated shifts of electricity consumption to times of day when electricity is cleanest. Along with more efficient clean energy use, greater electric demand flexibility will reduce electric grid costs, delivering cost savings to electricity customers, bolster grid reliability, and spur clean technological innovation.

The Load Management Standards provide the infrastructure for demand flexible devices across sectors to automatically optimize their energy use. These technologies may include electric space and water heaters, building appliances, vehicle charging stations, and industrial systems.[1] Air source heat pumps, for example, tend to run during morning and evening peak load periods, when dirtier peak resources are on the grid.[2] With load management, however, price-responsive devices can consume the most electricity when marginal costs are low (i.e. mid-day, when solar energy is plentiful). By automatically preheating and precooling when electricity is cheapest and cleanest, heat pumps can save customers money and reduce emissions. Electric vehicle charging stations and other programmable battery storage-based systems can also respond to time-dependent price signals and charge during the cleanest periods of electricity generation, along with appliances such as clothes dryers and dishwashers.

Aligning retail electricity rates with time-dependent marginal costs has clear environmental benefits. As renewable energy has no fuel costs and typically the lowest marginal costs, marginal cost-based rate offerings incentivize customers to use appliances that shift electricity consumption to periods when energy is cleanest.[3] This contrasts with our current methods of

[1] IRENA. *Demand-side flexibility for power sector transformation*. International Renewable Energy Agency. Abu Dhabi, 2019. https://irena.org/publications/2019/Dec/Demand-side-flexibility-for-power-sector-transformation
[2] Delforge, Pierre. "Electric Heat Pumps Can Slash Emissions in California Homes." NRDC, November 26, 2018. https://www.nrdc.org/experts/pierre-delforge/electric-heat-pumps-can-slash-emissions-california-homes
[3] Hogan, William W. "Electricity Market Design and Zero-Marginal Cost Generation." Current Sustainable Renewable Energy Reports 9, 15–26 (2022). https://doi.org/10.1007/s40518-021-00200-9

electricity pricing, which exceeds social marginal costs to encourage conservation generally, rather than only when the grid is powered by fossil fuels.[4] Such pricing made sense when the grid was carbon-heavy, but with a growing share of California's electricity coming from zero-carbon sources, this creates a barrier to shifting electric load to times when energy is cleanest and cheapest, and to switching away from dirtier fossil fuels to cleaner electricity.[5] Governor Newsom has set ambitious targets for building, vehicle, and industry electrification, and made it clear that "the future is electric."[6] Lower marginal cost-based rates reflecting clean energy generation are essential to help achieve large-scale electrification across sectors.

Marginal cost-based rates make electricity more affordable by shifting consumption to lower-cost periods. During typically low-demand periods with high renewable generation, customers can take advantage of cheaper electricity prices that reflect the lower marginal costs of clean energy. At typically high-demand periods with lower renewable generation, customers will still see cost savings because of lower demand and less use of expensive peak resources. By increasing consumption and avoiding curtailment when energy is cheap and clean, more efficient renewable energy use will reduce electricity prices across the board. As a result, CEC analysis estimates a tenfold return on investment benefiting utilities and customers.[7]

Load management bolsters power sector reliability by mitigating grid overload during peak demand. Marginal cost-based rates even out consumption between high- and low-demand periods, which helps ensure an adequate electricity supply at peak times. Load-shifting reduces the likelihood of supply failures and the need for emergency load shedding. This is critical to support existing electric loads and new ones as California ramps up its decarbonization efforts. Additional requirements for emergency signals will also redirect demand during crises such as wildfires, earthquakes, or extreme heat events.

The Load Management Standards will foster innovation of price-responsive technologies, complementing the development of Flexible Demand Appliance Standards (under SB 49). The standards will provide the infrastructure necessary for demand flexible technology development by guaranteeing the availability of, and standardizing access to, cost-based price signals. When

[4] Borenstein, Severin and James Bushnell. "Do Two Electricity Pricing Wrongs Make a Right? Cost Recovery, Externalities, and Efficiency." Energy Institute at Haas, September 2018. https://ei.haas.berkeley.edu/research/papers/WP294.pdf

[5] "New Data Indicates California Remains Ahead of Clean Electricity Goals." CEC, February 22, 2022. https://www.energy.ca.gov/news/2022-02/new-data-indicates-california-remains-ahead-clean-electricity-goals

[6] Office of Governor Gavin Newsom. "Governor Newsom Outlines Historic $10 Billion Zero-Emission Vehicle Package to Lead the World's Transition to Clean Energy, Combat Climate Change." CA.gov, January 26, 2022. https://www.gov.ca.gov/2022/01/26/governor-newsom-outlines-historic-10-billion-zero-emission-vehicle-package-to-lead-the-worlds-transition-to-clean-energy-combat-climate-change/

[7] Herter, Karen and Gavin Situ. 2021. Analysis of Potential Amendments to the Load Management Standards: Load Management Rulemaking, Docket Number 19-OIR-01. California Energy Commission. Publication Number: CEC-400-2021-003-SF. (p.3)

off-peak prices are lower than the lowest prices on non-load management rates, automation technologies that shift load from peak to off-peak prices can reduce customers' bills. The possibility of such bill savings is the very incentive that will facilitate rapid market development of load-management products across sectors. Demand flexibility at scale assures manufacturers of the market potential for price-responsive products. With more smart electric devices on the market, clean alternatives will become increasingly cost-competitive.

Therefore, NRDC strongly recommends CEC adopt the revised Load Management Standards, establishing a statewide system of dynamic price and emissions signals for end-use automation to provide demand flexibility on the grid. Marginal cost rates that drive demand when electricity sources are cleaner will make electricity more affordable and dependable for all Californians. These standards will also spur the development and proliferation of smart and clean electric technologies, furthering California's decarbonization goals.

NRDC thanks the Commission for their work on this critical topic and urges adoption of the proposed regulatory language. Please reach out to us with any questions or requests for further information.

Sincerely,

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