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## Comments on the Draft Amendments to the Load Management Tariff Standard -Docket No 19-OIR-01

*Additional submitted attachment is included below.*

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*Via e-filing*

California Energy Commission
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Docket No. 19-OIR-01
1516 Ninth Street
Sacramento, CA 95814-5512

**Comments on the Draft Amendments to the Load Management Tariff Standard - Docket No. 19-OIR-01**

WattTime is a California non-profit founded in 2014 that provides research, education, and assistance on the environmental benefits of electricity use timing, and advocates for a data driven approach to solving environmental problems. WattTime appreciates the opportunity to comment on the draft Amendments to the Load Management Tariff Standard, and the initiative of the California Energy Commission (CEC) in instituting these proceedings.

**Background**

The stated purpose of the Load Management Rulemaking is to (a) support the State of California's goal of achieving a 100 percent carbon free electricity supply, and (b) support increased demand flexibility to offset a rapidly increasing penetration of renewable supply resources.

WattTime supports this goal of a flexible load management standard that shifts load to times of carbon free energy supply. In addition, WattTime submits the following comments for consideration by the CEC with respect to the provisions of the draft Amendments to the Load Management Tariff Standard, and the Amendments' ability to advance this overall goal:

**The Load Management Tariff Standard should explicitly mention supporting carbon-free electricity as one of the purposes of the standard.**

The draft § 1623. Load Management Tariff Standard states,

> *(a) This standard requires that retail electricity providers develop rates based on marginal costs, submit such rates to its rate-approving body and to the CEC, and make them publicly available for access by customers and their devices. Fixed*

> *charges, rebates, and taxes associated with electric service are not subject to this standard. The purpose of this standard is to provide granular economic signals that enable increased demand flexibility through customer automation of loads, with the goal of moving electric demand away from system load peaks, and toward times of surplus renewable power.*

The draft standard does not explicitly state the intention of the rulemaking proceeding, which is to support the goal of a 100 percent carbon free electricity supply and support increasing penetration of renewable supply sources. There is a meaningful difference between "times of surplus renewable power" and supporting a "100 percent carbon free electricity supply", as the former narrows the objective by focusing only on renewable curtailment, not continuous load management to reduce emissions.

It is therefore recommended that the draft Amendment read,

> *…. The purpose of this standard is to provide granular economic signals that enable increased demand flexibility through customer automation of loads, with the goal of moving electric demand away from system load peaks, and toward times of surplus renewable power* ***in order to assist California in moving to a carbon free electricity supply****.*

**The definition of marginal costs should include marginal social cost of emissions.**

The current draft Amendment defines 'marginal cost' as:

> *Marginal costs are defined as the cost ($/MWh) of serving the next increment of electricity demand in the relevant load area, consistent with existing grid constraints and generators' ability to deliver energy to meet that demand.*

The proposed definition of marginal cost does not include the marginal social cost of carbon emissions, or marginal social cost of health impacts on local communities from harmful mercury, particulate matter, sulphur dioxide, and nitrous oxide pollution from fossil fuel-fired thermal power plants.

The original definition in § 1621. General Provisions excerpted here,

> *"Marginal cost" is the change in current and committed future utility cost that is caused by a customer initiated change in electricity usage. Total marginal cost may be divided into the commonly known categories of marginal energy, marginal capacity, and marginal customer costs,* ***or any other appropriate categories.*** (emphasis supplied)

allows for greater flexibility than the proposed draft definition for including other appropriate categories under marginal cost, such as the social cost of carbon. If this original

definition is replaced, WattTime recommends retaining elements of the original definition that allow additional categories of cost to be included.

The order instituting the proceeding authorizes the CEC to consider tariffs, technologies, **and other measures** that are consistent with this goal, and to revise the existing regulations to promote a demand flexible electricity market.

Given that the overall intent of proceeding is to reduce emissions and support renewable energy integration, the definition of marginal cost and consequently, retail electricity rates should include an explicit mention of marginal emissions expressed as cost. In this regard, it should be noted that the Public Resources Code § 25000.1. states,

> *(c) In calculating the cost effectiveness of energy resources, including conservation and load management options, the commission shall include a value for any costs and benefits to the environment, including air quality.*

In fact, the California Public Utilities Commission (CPUC) issued a final order on May 16, 2019 requiring the use of the social cost of carbon for evaluating distributed energy resources (DERs). Specifically, utilities must conduct a societal cost test (SCT) in resource planning that consists of three parts, one of which is the "avoided social cost of carbon."[1]

However, should the CEC decide to amend the definition, it is recommended that the draft definition read,

> *Marginal costs are defined as the cost ($/MWh) of serving the next increment of electricity demand in the relevant load area, consistent with existing grid constraints and generators' ability to deliver energy to meet that demand,* ***and the marginal damages that would result from the greenhouse gases and pollutants emitted into the atmosphere per MWh.***

**The draft definition of retail electricity rates may not achieve the stated purpose of increasing renewable energy penetration.**

The draft Amendment defines Retail Electricity Rates as:

> *To ensure efficient economic signals required for optimal load management, all retail electricity rates shall be based on the marginal cost of electricity, and shall recover the costs associated with the set of customers who elect that rate.*

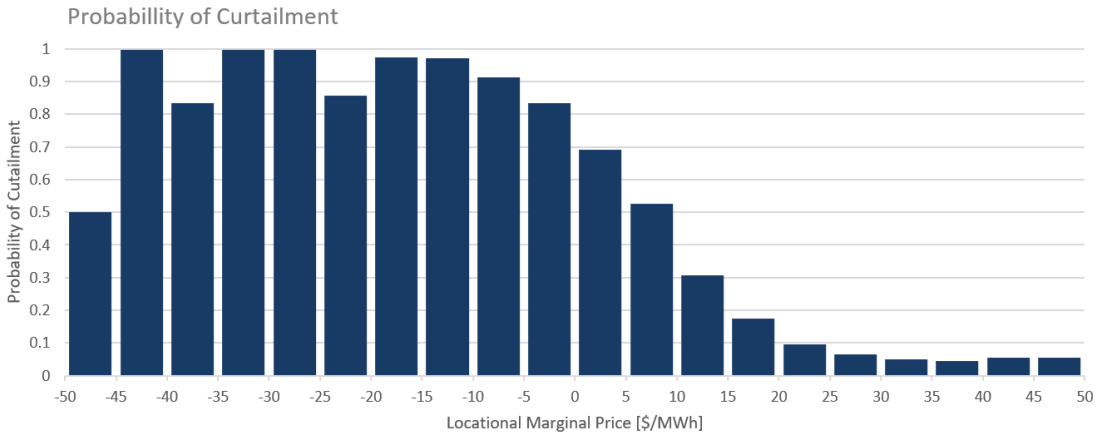
The underlying assumption with the above definition is that at times when marginal costs (i.e. wholesale prices) are high, the retail electricity rate would consequently be high and thereby reduce electricity consumption at those times. Because Locational Marginal Price

[1] Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Distributed Energy Resources ("IDER") (Rulemaking No. 14-10-003).

(LMP) and emissions are relatively well correlated in most regions in California, this is more helpful for supporting carbon-free electricity and increasing renewable penetration than it would be in many other U.S. states. However, price and emissions are certainly not perfectly aligned, and one should not interpret low prices as a valid proxy for low environmental impacts.

This is especially pertinent when considering the issue of renewable energy curtailment, which the draft Amendment does not sufficiently address. In California, negative prices do not always indicate that curtailment is occurring, nor do positive prices always indicate that curtailment is *not* occurring. We show this below using California Independent System Operator (CAISO) data on both. Using historical price data, we show (see Fig 1) that although negative LMP is an indicator of curtailment, the correlation is not perfect as the data indicates that there is still considerable probability of curtailment occuring at prices above zero. As a result, although real-time pricing based on wholesale prices would address curtailment to some extent, it would fail to comprehensively address the issue. Curtailment presents the biggest opportunity for increasing renewable energy penetration and load shifting since renewable energy curtailment is increasing as more renewable resources continue to be added to the grid. Addressing curtailment through a marginal carbon cost as part of the real-time tariff would be able to better achieve a carbon free electricity supply.

Fig 1: Probability of curtailment at different Locational Marginal Prices (CAISO)




Source: CAISO

Looking at other regions may also be instructive in thinking about the potential future of California. The State of Texas previously experienced the highest levels of curtailment in the country. In recent years, after a large statewide investment in transmission infrastructure, curtailment in Texas has fallen. Today, data from the Electric Reliability Council of Texas (ERCOT) shows that even at times when the LMP was low/negative, curtailment was very modest.

Fig 2: Probability of curtailment at different Locational Marginal Prices (ERCOT)

| Upper LMP Bound | Lower LMP Bound | Percentage Curtailment |
|---|---|---|
| | 100 | .0045% |
| 100 | 50 | .0092% |
| 50 | 20 | .0323% |
| 20 | 0 | .4885% |
| 0 | -10 | 12.36% |
| -10 | -20 | 24.02% |
| -20 | | 0% |

Source: ERCOT

If California is to successfully reduce curtailment and integrate larger amounts of renewable energy, the state's own energy future may look similar. As such, low prices may not remain a good indicator of low emissions periods in California. Overall, the wholesale price of electricity is not a perfect indicator of emissions and the CEC should consider directly integrating emissions into the tariff to meet the stated goal of a carbon free electricity supply.

**Customer engagement should include emission benefits of real-time pricing**

The draft Amendment on Public Information states,

> *(c) Public Information. Electricity providers shall ensure that information regarding existing and future rates is accessible to the public and their devices.*
> ……
>
> *(3) Public Campaign. Within 30 days of adopting a real-time tariff, electricity providers shall launch a public information campaign to inform customers why real-time rates are needed and how participants on real-time tariffs can save money.*

In its current form, the draft Amendment considers only financial savings as the benefit of real-time tariffs to inform customers. Financial savings may not be the only, or even most important, motivation for customer participation in a real-time rate. For example, WattTime conducted research on 400 randomly selected individuals throughout the United States, asking how willing each would be to permit devices to shift their electricity

consumption in response to real-time signals. WattTime randomly described the purpose of the program to each individual as either (1) enabling the increased use of renewable energy, or (2) reducing the individual's electricity bill. Individuals to whom the project was described as enabling the increased use of renewable energy were systematically more likely to report willingness to shift the timing of their electricity in response.

Given that the purpose of the proceeding is to achieve a carbon free grid, and that doing so appears to motivate some, if not most consumers more than saving on electricity bills, WattTime recommends that the public campaign also include information about the environmental and health benefits of real-time pricing. It would be even more crucial to publicize the environmental and health benefits of flexible load management if, as currently proposed, the real-time tariff participation is made voluntary/opt-in, as publicizing such benefits (in addition to cost savings) could potentially increase customer participation and increase load shifting and resulting emissions reductions.

As such, we recommend that the draft Amendment read,

> *(3) Public Campaign. Within 30 days of adopting a real-time tariff, electricity providers shall launch a public information campaign to inform customers why real-time rates are needed and* ***the benefits of real-time rates, which may include but are not limited to customer cost savings, emissions reductions, and increased renewable integration.***

**Equity**

While the proposed real-time tariffs will be voluntary, the rates should be designed to ensure that no cost is shifted to non-participating customers, particularly low-income customers. Extending customer choice to some should not constrain others by making electricity unaffordable.

WattTime appreciates the opportunity to submit these comments, and looks forward to participating in the proceeding.

Submitted by

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