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The Center for Energy Efficiency and Renewable Technologies (CEERT) and Renewable Northwest (RNW) respectfully submit the following comments on the September 26, 2017 Flexible Resource Adequacy Criteria and Must Offer Obligations 2 (FRAC MOO 2) Working Group Meeting. CEERT and RNW are supportive of the direction the California Independent System Operator (CAISO) is taking for the FRAC MOO 2 framework. As California adds variable renewable resources in pursuit of carbon emission reductions on its electric grid, flexibility is a key capability needed of the grid resources.

**The current flexible capacity requirement framework is insufficient and inefficient for meeting the flexibility needs of the grid.**

In previous comments, CEERT and RNW have supported a comprehensive evaluation of flexibility needs and realignment of Flexible Capacity Requirements (FCR), due to a reliance on long start resources, exacerbating the duck curve and related operational challenges.<sup>1</sup> CEERT and RNW are supportive of the CAISO’s decision to better identify and define the flexibility need and redefine FCR. The CAISO has continued to demonstrate the trend of increasing operational challenges due to a lack of flexibility “tools” in the market. Without proactively developing the needed market signals for the capabilities needed for a low carbon grid, the resources with those capabilities may not be available as they become more critical.

**The CAISO has taken a critical step by defining the flexibility need with more granularity.**

The CAISO defined the flexibility needs based on durations between the market timeframes: Integrated Forward Market (IFM) shaping, IFM to Fifteen Minute Market (FMM), FMM to Real Time Market (RTM), and intra-interval RTM (regulation)<sup>2</sup>. This is a positive step to determine needed resource capabilities, develop unique products to address each flexibility need in the market, and then develop the FCR framework to ensure those products are available to the grid operator, at least until the in-market signal is strong enough to retain the needed resources.

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<sup>1</sup> CEERT and Renewable Northwest Comments, 22 May 2017  
[https://www.caiso.com/Documents/CEERTandRNWComments\\_FlexibleResourceAdequacyCriteriaandMustOfferObligationPhase2-RevisedStrawProposal.pdf](https://www.caiso.com/Documents/CEERTandRNWComments_FlexibleResourceAdequacyCriteriaandMustOfferObligationPhase2-RevisedStrawProposal.pdf)

<sup>2</sup> “Flexible Resource Adequacy Criteria and Must Offer Obligations 2 Working Group Meeting”, CAISO, 26 September 2017, Slides 30,31, and 43

The CAISO has also determined that the flexibility need is impacted by the quantity of non-dispatchable or self-scheduled resources, or inflexible resources in the market. It would be helpful for stakeholders if the CAISO would illustrate the inflexible vs flexible generation with example profiles and quantities of flexible and inflexible resources in the CAISO market, especially on days which proved to be operationally challenging for the CAISO.

**The CAISO should address how flexibility-driven market products fit in the flexible capacity requirement framework.**

While the purpose of FRAC MOO is to develop the FCR criteria and framework, the CAISO should address how the product(s) developed for addressing flexibility, such as the Flexible Ramping Product (FRP)<sup>3</sup>, are related to the FCR framework. Do flexibility driven market products reduce the FCR need? Is the FCR intended to ensure that resources are available for flexibility-driven products? Is FCR intended to ensure flexible resources “survive” the transition to a low carbon grid and are available for flexibility-driven products as they’re developed? While it is clear that multiple efforts are being made at both the CAISO and the California Public Utilities Commission to address the flexibility needs of a low carbon grid, it would be helpful to stakeholders to see how they are connected or coordinated.

**The proposed Must Offer Obligation framework enables low carbon regional resources to support the flexibility needs of the grid.**

While CEERT and RNW are supportive of in-market products and measures to address the flexibility need, under the current proposal, CEERT and RNW are supportive of the common sense framework for Must Offer Obligations (MOOs) for FCR. Multiple studies have demonstrated the benefit of regional coordination, especially with high levels of variable renewable energy resources<sup>4</sup>. By only requiring MOOs into those markets that the FCR products are intended to provide flexibility for, for example the day ahead product only must bid into the IFM, it allows resources that cannot provide real time flexibility to still be able to shape the ramp in the IFM. This enables clean, zero carbon hydroelectricity to provide flexibility and meet the evening ramp, instead of idling long start, GHG and criteria pollutant emitting resources in-state.

As the MOO framework is further developed, it should be determined whether resources can overlap between product types if they make economic bids into the required markets. For example, would a Five Minute Product count towards the Day Ahead Product because it also makes bids into the IFM? As the FRAC MOO process moves forward, how FCR interacts with System RA and Local Capacity Requirements (LCR) should also be addressed. For example, if a System or LCR resource commit to just making economic bids into the required markets can they count towards FCR?

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<sup>3</sup> <https://www.caiso.com/informed/Pages/StakeholderProcesses/FlexibleRampingProduct.aspx>

<sup>4</sup> E.g. California 2030 Low Carbon Grid Study [www.lowcarbongrid2030.org](http://www.lowcarbongrid2030.org)

**CEERT and RNW are supportive of continued, expeditious development the proposed framework while addressing the questioned posed by CEERT and RNW.**

Again, CEERT and RNW are supportive of the direction of the proposed FRAC MOO 2 framework. Differentiating between predictable ramping needs and variability between market intervals is important to develop effective products for the low carbon grid. The MOO framework proposed would better enable clean, regional resources to provide flexibility for the CAISO grid, instead of idling long start, high GHG emitting resources to be available for the evening ramp. As the FRAC MOO 2 process moves forward, it would be helpful for stakeholders if the CAISO addressed the questions posed in these comments, such as how FCR interacts with flexibility-driven market products and how the proposed FCR products interact with each other and other resource adequacy requirements.