

Western Power Trading Forum comments on Flexible Resource Adequacy Criteria and Must-Offer Obligation Phase Two Straw Proposal

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WPTF appreciates the opportunity to provide these comments on the ISO's FRAC MOO Phase 2 Straw Proposal posted on December 11, 2015 and call held on December 21, 2015. WPTF strongly supports both the proposal to allow imports to qualify as flexible capacity and the proposed energy market enhancements. Additionally, the comments below address a fundamental concern with the ISO decision to not incorporate downward flexible operational needs in the flexible RA requirement.¹

The FRAC MOO Straw Proposal posted on December 11, 2015 appears to diverge from the ISO's issue paper and working group proposals, the CPUC Scoping Memo and Ruling posted on December 23, and even more confusingly, seems to diverge from statements made by the CEO and executives concerning the need for flexible capability. Unclear requirements lead to regulatory uncertainty, which creates investment, procurement, and contracting challenges among all market participants. As the ISO expands its footprint and California moves toward a 50% renewable future, clear flexible RA requirements are needed to signal the ISO's operational needs to maintain grid reliability through markets.

The FRAC MOO issue paper and working group presentations identified the need for capacity that can ramp downward or has the ability to increase load during peak renewable production periods. The need for additional operational capacities has also been discussed by the ISO's CEO and executives in an array of public events.² Additionally, the CPUC has issued a scoping and ruling order that clearly states their intent to develop a durable flexible capacity requirement in 2016 that will remain consistent into the future, beginning in 2018, in order to provide regulatory certainty. The CPUC asks participants to take a long-term view and consider any reasonably foreseeable needs, which presumably includes resource capabilities needed to implement the 50% renewable requirement.³ WPTF was under the impression that the ISO was going to determine within this initiative what changes were needed to the flexible capacity requirement in order for the ISO to operate a reliable and efficient grid under a 50% renewable target.

The ISO's straw proposal, however, does not propose to expand or even analyze further the current flexible RA requirement. Instead the ISO proposes relatively minor enhancements related to the provision of upward flexible capacity, enhancements to the energy market that will be considered in other initiatives, and to provide LRAs and LSEs information on downward flexible operational needs.

¹ WPTF's position can be summarized in an old ISO tagline- It's not about just providing reliability – it's about providing *reliability through markets*.

² <http://www.utilitydive.com/news/powergen-2015-why-capacity-will-no-longer-be-the-coin-of-the-realm-in-th/410613/>

³ <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M156/K745/156745018.PDF>, pages 3-4

WPTF is concerned with this approach for several reasons.

- First, the ISO's RA program is the best way for the ISO to ensure there is sufficient capacity and resource capability available to the grid in the right location. In a 50% renewable scenario, where models show the need for flexible capacity to accommodate renewable energy, WPTF does not understand or agree with an RA construct that still primarily relies on system capacity. The ISO's mandate is not to reliably operate the grid through manual dispatches and out-of-market curtailments- it is to operate the grid through markets. It is unclear how the current, very low, flexible requirement will enable the ISO to accommodate such large amounts of renewable energy without increasingly relying on manual mechanisms. While WPTF fully supports an energy market that will incentivize economic bids and investment in resources to provide increased flexibility, it is a strong flexible RA requirement that will ensure the ISO can continue to run a functioning market while enabling a 50% renewable target.
- Second, while WPTF is supportive of the proposed energy market enhancements, WPTF is also skeptical that the three energy market changes suggested will influence the investment in resources with the right attributes to mitigate over-generation challenges as the ISO asserts. (1) Lowering the bid floor will likely only influence renewable generation economic bidding. (2) Reassessing current self-schedule priorities merely establishes a rank order for curtailing resource output outside the energy market in periods of oversupply. And lastly, (3) extending the short-term unit commitment (STUC) horizon will enable the real-time market to make better commitment decisions, but it is unclear how it will influence investment decisions in needed operational attributes.
- Finally, WPTF is concerned that down the road if the ISO is ultimately unable to operate the grid reliably using whatever the CPUC determines for its LSEs' flexible RA requirements, that the ISO will initiate yet another stakeholder process to establish new ISO flexible RA requirements. These rules may conflict with the CPUC's and other LRAs' established programs and approved contracts. And LRAs may determine different capability requirements from each other. If it were sufficient to "guide capability procurement" by providing LSEs and LRAs information on the ISO's operational needs and providing energy market incentives, the ISO would not need flexible RA requirements in the first place.⁴

Despite these concerns, WPTF does not believe radical changes are needed to ISO's flexible RA rules in order to ensure the ISO has sufficient flexible capacity. WPTF encourages the ISO to move forward with their ideas and analyses begun in the working group phase of this initiative.

As the ISO stated in their original filing to FERC, "[the flexible RA] methodology provides a balanced approach to meeting the ISO determined flexibility needs and facilitating feasible procurement by load serving entities. The methodology focuses on a single flexibility need – maximum upward ramping need – because the ISO expects that it can satisfy other flexibility

⁴ "The ISO proposes to address forecast oversupply conditions through 1) providing LSEs and LRAs information on forecast operational needs, including downward flexible capacity needs, to help guide capacity procurement..." page 7, FRAC MOO Straw Proposal.

needs through this single measure of flexibility.”⁵ WPTF supports the ISO keeping the majority of the flexible ramping requirement rules and believes the upward flexible requirement can be enhanced to meet foreseeable downward flexibility needs.

WPTF puts forth such an enhancement of the current flexible requirement for consideration in the Appendix to these comments. The enhancement is one of many possible, beneficial enhancements to the flexible RA rules and is not intended in any way to represent a “WPTF proposal.” Instead it is a simple strawman device to illustrate where WPTF thought the ISO might go based on the working group presentations. WPTF hopes it is useful to further discussion at the ISO and eventually the CPUC. WPTF appreciates the ISO’s consideration of these comments.

⁵ http://www.caiso.com/Documents/Aug1_2014_TariffAmendment-FlexibleResourceAdequacyCapacityRequirement_ER14-2574-000.pdf, page 19.

Appendix: Strawman enhancement to flexible RA requirement

The appendix consists of the following sections:

1. Foundation
2. Possible enhancement to flexible RA requirement
3. Capacity that increases load
4. Impact on requirement and ability of LSEs to meet enhanced requirements
5. Other adjustments to flexible RA requirement

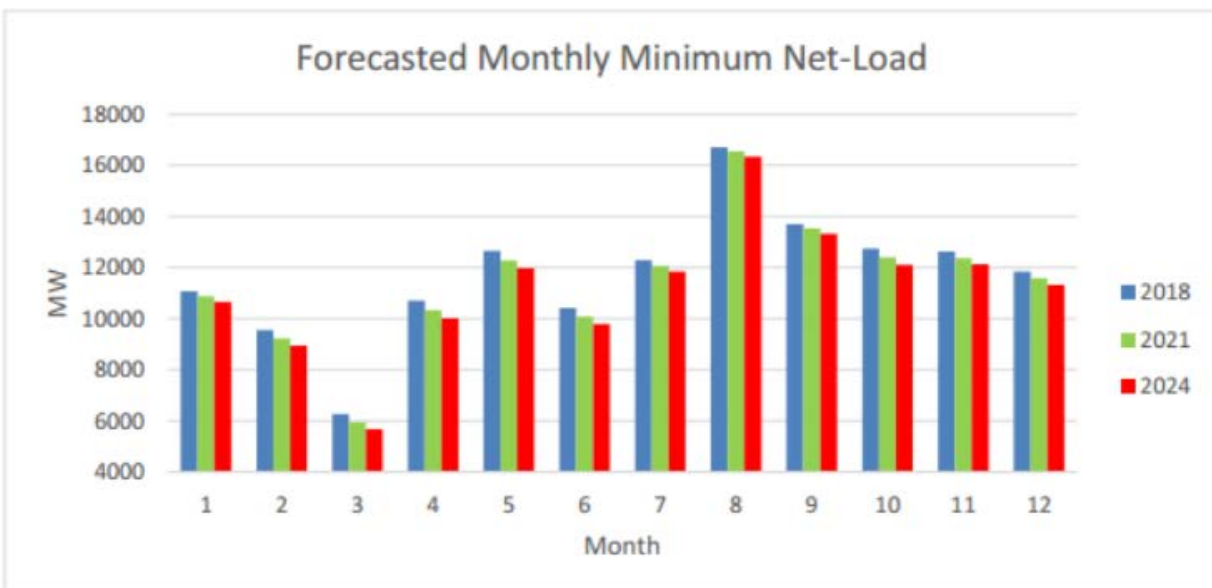
1. Foundation

This enhancement presumes the goal of the RA program is for the ISO to ensure it has the capacity and capability needed in the right locations to operate a reliable and efficient market. That is, that it is not simply enough for the ISO to provide reliability. It must also provide reliability in an efficient manner- primarily through the market optimization.

In its original FERC filing creating the flexible requirement, the ISO demonstrated that under a 33% percent renewable scenario it can reliably operate the grid using the energy market as long as LSEs at a minimum meet the upward flexible RA requirement. This is because in addition to the flexible RA requirement ensuring RA capacity can meet the ISO's 3-hour ramping need, it also ensures the ISO can meet other important operational needs, such as 5-minute, 15-minute, and hourly load following upward and downward flexible needs. Given California's move toward 50% renewables and the associated impacts on the net load curve described in the FRAC MOO working groups, the question becomes, can the current flexible RA requirement also fulfill the ISO's future downward ramping needs?

Figure 1 shows the ISO's forecasted monthly minimum net-load in 2018, 2021, and 2024.⁶

Figure 1: Forecasted monthly minimum net load

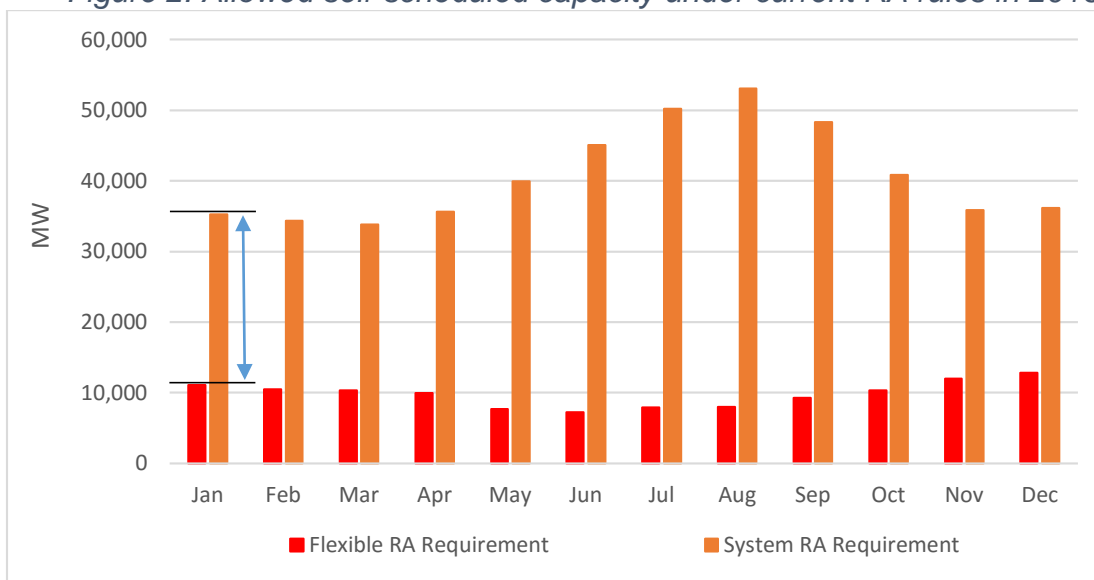


⁶http://www.caiso.com/Documents/IssuePaper_ReliabilityServices_FlexibleRACriteria_MustOfferObligationsPhase2.pdf, page 14.

Although WPTF and other stakeholders have expressed concerns with how the ISO calculates net load, we can use these as estimates of the amount of non-dispatchable or fixed capacity that the ISO can accommodate and still reliably operate the grid solely using the energy market. That is, use the net load to calculate the amount of Pmin, self-scheduled, and otherwise needed online capacity the ISO can accommodate before needing to cut self-schedules. It should be noted that WPTF still strongly supports not including renewables that are willing to be economically curtailed in the net load calculation. Economic curtailment is far preferable to out-of-market curtailment and is already occurring in today's market.

Figure 2 shows the amount of RA capacity that may be self-scheduled under the current RA rules. The orange bars show the 2016 system RA requirement by month and the red bars show the 2016 flexible RA requirement by month. Because flexible capacity also qualifies as system capacity, typically every MW increase in the flexible requirement directly decreases the amount of RA capacity that may be self-scheduled under ISO rules. This is because flexible capacity must be economically offered into the energy market and system capacity may be self-scheduled or economically offered into the energy market. The range illustrated in Figure 2 by the blue arrow therefore shows the amount of RA capacity that is inherently allowed to be self-scheduled under ISO RA rules in January 2016. This is approximately 24,000 MW.

Figure 2: Allowed self-scheduled capacity under current RA rules in 2016



Under a 50% renewable goal, it is reasonable to question why the ISO would continue to explicitly allow 24,000 MW of inflexible capacity. If in 2018 anywhere near the amount of system capacity required began to self-schedule into the market the ISO would not be able to commit and de-commit resources exclusively using energy bids and instead would have to begin cutting self-schedules. In 2018 the ISO expects the minimum net load to be around 11,000 MW, yet explicitly will allow self-scheduling at a much higher level. Because self-scheduled capacity cannot represent the relative willingness to be cut, the ISO must create administrative, out-of-market rules, to determine which resources are cut. This decreases efficiency- and at a high level of intervention, risks reliable grid operations. WPTF does not believe that all 24,000 MW would actually self-schedule, and instead simply questions the efficiency of a system that allows such a high level of self-scheduling into the future.

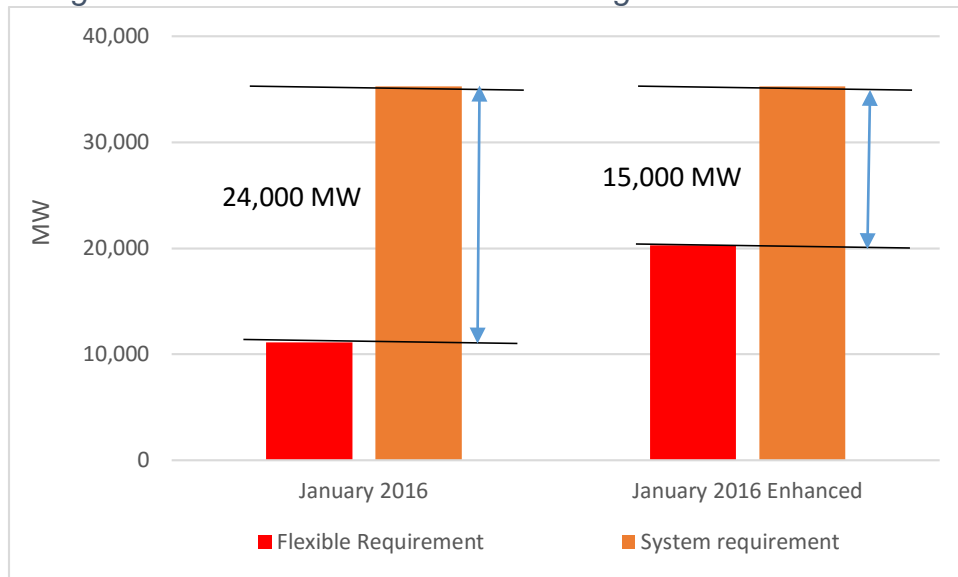
2. Possible enhancement to flexible RA requirement

WPTF believes that there are many potential enhancements to the current flexible RA requirement that could accommodate the need for downward flexibility. One relatively simple way is for the ISO to increase the current flexible requirement to a level that the ISO could reliably operate the grid using RA resources and still primarily commit and dispatch resources through the market optimization. Specifically, the ISO could increase the flexible RA requirement until self-schedules allowed under the system requirement are equal to the forecasted minimum monthly net load.

Figure 3 illustrates how this could be done using the 2016 flexible and system RA requirements and assuming a minimum net-load in January 2016 of 15,000 MW. In Figure 3, the orange bars show the system RA requirement and the red bars show the current flexible RA requirement and the enhanced flexible RA requirement for January 2016. Figure 3 shows the flexible requirement increasing to the point that the ISO can allow all system RA to self-schedule (up to 15,000 MW) and economically commit and dispatch the remaining RA capacity using the energy market optimization. This is because the remaining RA capacity must be flexible capacity and therefore has the associated economic must-offer obligation.

Inherent in this enhancement idea is that upward flexible capacity is also mostly flexible in the downward direction. WPTF believes this is the case with the majority of flexible resources using the ISO's current flexibly qualifying capacity rules, and therefore does not believe the flexible qualifying capacity rules are required to change in order to ensure the flexible requirement can also meet the downward requirement.

Figure 3: Flexible RA enhancement using 2016 illustrative data



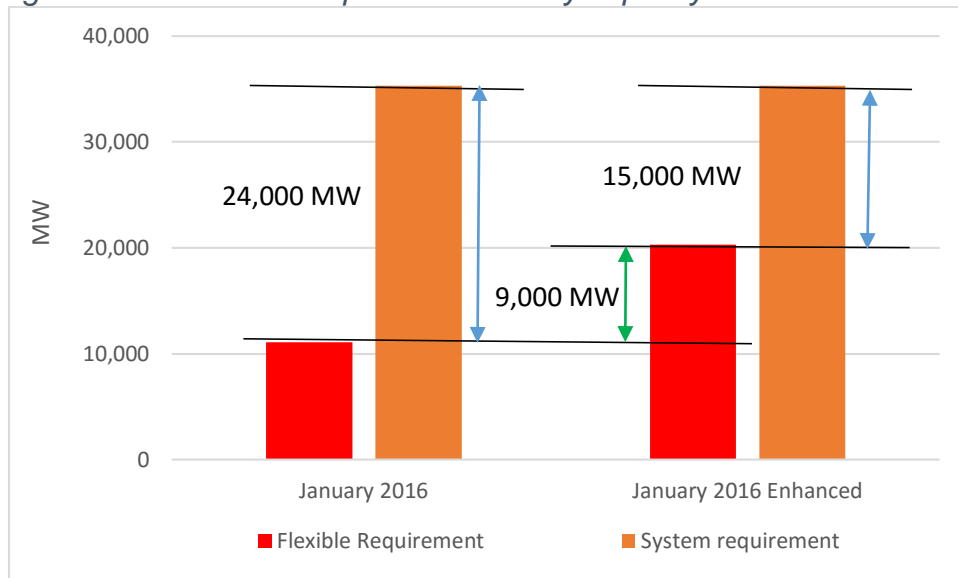
Again, this is an extreme case for illustrative purposes. In reality the ISO could exclude some level of renewable capacity from the minimum net load calculation to account for economic curtailment and could make some adjustments in both directions for inflexible Pmin capacity from flexible resources and flexible system capacity.

3. Capacity that increases load during over-generation conditions

Capacity that has the ability to increase load also can contribute to reliability during over-generation conditions. Exports, storage (charging), and potential other capacity products all allow the ISO to accommodate additional net load capacity. The complication comes from the fact that capacity solely increases load cannot be used by the ISO to meet the peak load requirement or the upward flexible ramping requirement. Therefore, WPTF does not think the ISO should make significant changes to eligible system requirements, but instead should add a category to the flexible RA requirement.

Figure 4 illustrates how the maximum could be set on this new flexible RA category. Figure 4 again shows the illustrative January 2016 example. The red bar on the left represents the amount of upward flexible ramping capacity needed for the ISO to meet its upward ramping requirements. The red bar on the right represents the amount of flexible capacity needed to accommodate a minimum net load curve. The difference between the two bars therefore represents the amount that can be met by capacity that only affects the load side of the equation – in this case 9,000 MW. A simple enhancement to the current flexible RA requirements that accommodates storage and exports is therefore simply to add a 4th category that is capped at the difference between the ISO's upward flexible ramping need and the total flexible need that includes downward capacity. (This is illustrated in Figure 6, category 4.)

Figure 4: Flexible RA requirement met by capacity that increases load



4. Impact on flexible RA requirement and ability of LSEs to meet enhanced requirements

Figure 5 compares the 2016 flexible RA requirement with the enhanced flexible RA requirement and system RA requirement.⁷

⁷ This assumes the 2016 minimum net load curve is 3,500 MW less than 2018 in each month.

Figure 5: 2016 Flexible RA requirement compared to enhanced requirement

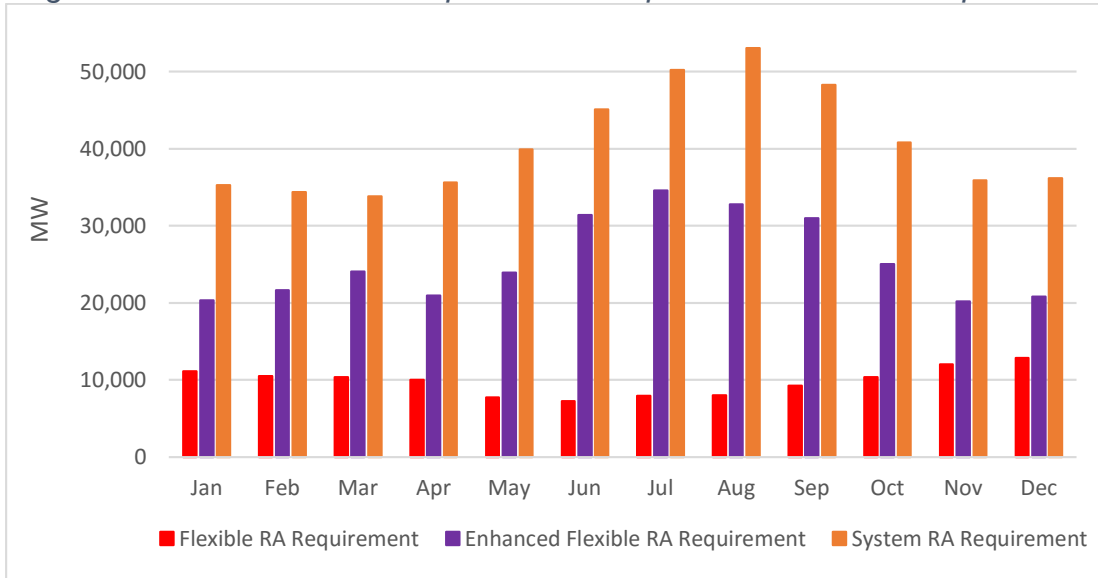


Figure 6 shows December 2016 broken down by category, including the new category 4 which storage charging, exports, and potential other capacity could qualify to provide. Resources that qualify in lower categories may count toward higher categories. Because the enhanced requirement is only to accommodate the need for downward flexibility, there is no increase to the minimum category 1 requirement and no changes to the category 2 or 3 maximums. The total requirement has increased (shown in Figure 5), and this change is completely reflected in the category 4 maximum.

Figure 6: December 2016 Flexible RA requirement compared to enhanced requirement by category

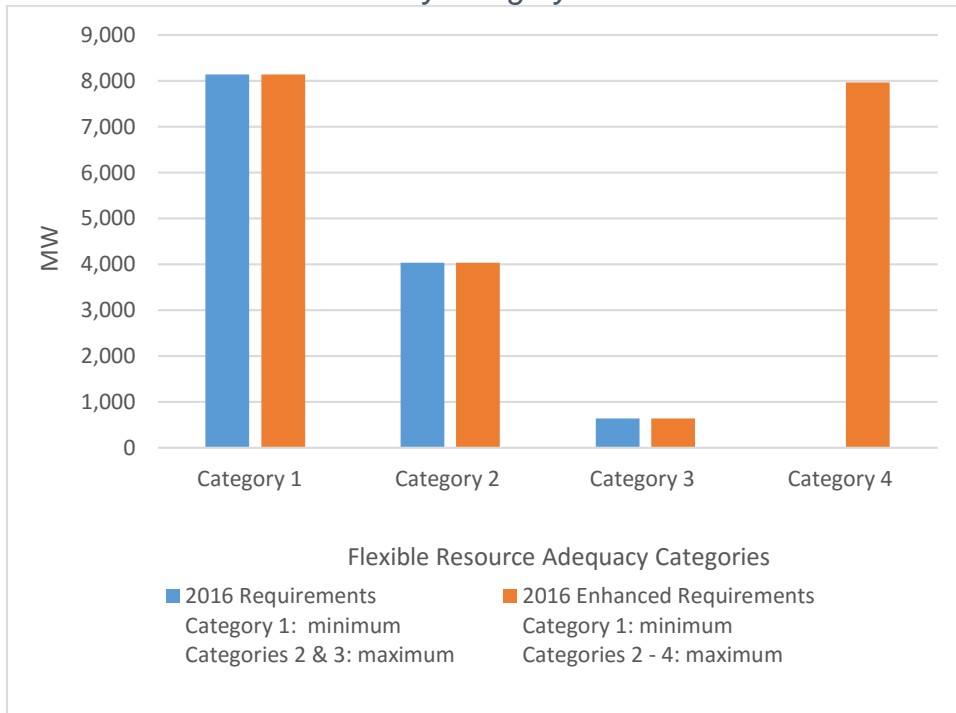
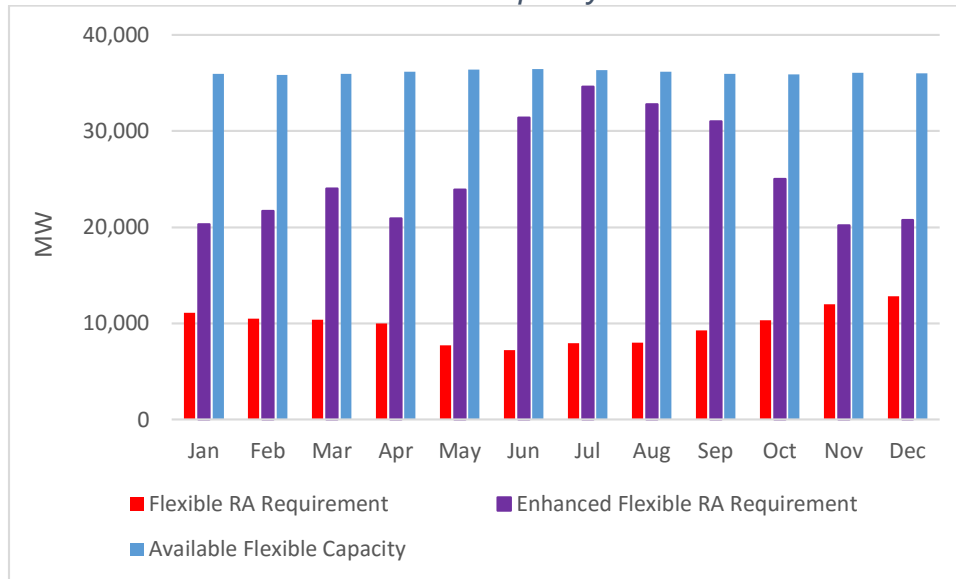


Figure 7 shows the 2016 current and enhanced requirement compared to the total available flexible RA qualified in 2016.⁸ Even without accounting for new resources being able to qualify meet the flexible RA requirement (imports, exports, storage charging, etc.) LSEs would be able to meet the enhanced requirement. Additionally, more accurate estimates of the net load curve would reduce the enhanced flexible requirement creating an additional flexible capacity buffer—particularly in the summer months.

Figure 7: 2016 current and enhanced flexible RA requirements compared to available flexible capacity



5. Adjustments to proposed flexible RA enhancement

WPTF believes the enhancement to the flexible RA requirement described above represents a more extreme example on how to adjust the upward flexible RA requirement to accommodate downward flexible operational needs. In reality, the minimum net load curve is only as low as used to create the illustrative enhanced requirement if the ISO assumes no economic participation from renewable resources – unlikely given the fact that many renewable resources are already economically bidding. Additionally, not all system resources exclusively self-schedule. Many system RA resources may self-schedule a portion of their capacity and then economically offer in the rest of their capacity to the market. Finally, not all upward flexible capacity is flexible in the downward direction. While energy market enhancements will enable the ISO to better commit and de-commit flexible resources, it is unlikely any resource will be perfectly flexible.

There are many things that should be considered in the development of a flexible RA requirement that actively enables a 50% renewable future. However, WPTF maintains that the ISO’s original goal to create a flexible requirement that balances ISO operational needs with LSE’s ability to efficiently procure is still valid when incorporating the need for downward flexibility. WPTF encourages the ISO to continue down their initial path to develop robust flexible RA requirements that meet foreseeable ISO operational needs and hopes the above proposal provided a platform for continued discussion.

⁸ <http://www.caiso.com/Documents/FinalEffectiveFlexibleCapacityList2016.xlsx>