

## Stakeholder Comments Template

| Submitted by  | Company                           | Date Submitted |
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| Michael Katz, Director of Strategic Planning and Regulatory Affairs | Advanced Rail Energy Storage, LLC | April 18, 2016 |

Please use this template to provide your comments on the ESDER Phase 2 stakeholder initiative Issue Paper posted on March 22 and as supplemented by the presentation and discussion during the stakeholder web conference held on April 4, 2016.

Submit comments to [InitiativeComments@CAISO.com](mailto:InitiativeComments@CAISO.com)

**Comments are due April 18, 2016 by 5:00pm**

The Issue Paper posted on March 22 and the presentation discussed during the April 4 stakeholder web conference may be found on the [ESDER Phase 2](#) webpage.

Please provide your comments on the Issue Paper topics listed below and any additional comments you wish to provide using this template.

### **Other comments**

Advanced Rail Energy Storage, LLC appreciates the opportunity to comment on the ISO's March 22, 2016 Issue Paper. ARES directs its comments to Section 5 covering topics not selected for Phase 2 of this initiative, specifically related to compensation of resources in the regulation market.

While ARES does not see the issue of compensation of resources in the regulation market as one the ISO needs to take to its Board this year, ARES urges the ISO to add it to ESDER Phase 2 so that the ISO is better positioned to design and implement solutions in 2017. ARES believes that the following reasons support adding an examination of how the regulation market compensates fast-responding technologies to ESDER Phase 2:

1. Recent data showing market performance following the ISO's increased procurement of regulation services to 600 MW from 350 MW beginning on February 20, 2016, indicates that the mileage price, already very low in the California market,

- has virtually collapsed. In the ISO’s informational filing with FERC on August 1, 2014, the ISO recognized that “more accurate and faster resources (i.e. resources with higher resource specific mileage multipliers) can help mitigate the need for the CAISO to procure additional regulation up or regulation down capacity to meet the mileage requirements.”<sup>1</sup> With the increased procurement of regulation to address the fact the ISO was depleting regulation in real-time due to changing system conditions, the time is right to begin an examination of this issue now to evaluate whether addressing the market design and pricing for regulation service could be altered to increase the efficiency and reduce overall amounts procured. In addition, adding the examination of this issue to ESDER Phase 2 will provide the ISO with added data in advance of the ISO’s informational report to FERC in June of this year.
2. ARES does not advocate action that would reduce the resources that the ISO relies upon to supply regulation service, as long as the ISO improves the market design such that there is payment differentiation between slow-ramping and inaccurate regulating resources and fast-ramping and accurate-regulating resources. ARES appreciates that demand for regulation services is growing with the increase in intermittent resources on the system. However, ARES strongly urges the ISO to begin evaluating whether the mileage payments alone can successfully pay for performance to encourage the type of fast-response resources that the ISO needs to follow the AGC signal. With the procurement policies for storage accelerating the development of storage resources and the increased need for the ISO to procure regulation, the market should be designed to properly compensate regulation speed and accuracy.
  3. ARES suggests that the ISO also evaluate how self-provision of regulation is affecting mileage prices. In Order 755, FERC required that wholesale power markets devise a rule for compensating units, using a capacity payment reflecting the marginal unit’s opportunity cost and a performance payment reflecting the quantity of regulation service actually provided by a resource accurately following a dispatch signal. If the effect of the ISO’s market design is very little to no compensation for mileage, the ISO’s market design is not fulfilling the framework set out by FERC in Order 755.

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<sup>1</sup> Information Report of the California Independent System Operator Corporation, August 1, 2014, ER23-2630 , at p. 18.

4. ARES has suggested possible modifications to the ISO regulation market that would provide for a better compensation system for fast-responding resources, including an accuracy adjustment that would result in higher payments for fast and accurate regulation compared to the payments for slow and inaccurate regulation.
5. Finally, ARES suggests that the ISO consider creating a new product for fast and accurate regulating resources. The PJM market has made an effort to create price and payment differentials for faster regulating units by having a “Reg D” product in addition to the slower “Reg A” product. This allows for payment differentials between these regulation products and has created an incentive for fast regulation resources to develop. The market responded with 2/3 of the U.S. storage development in 2014 being located in the PJM market.<sup>2</sup>

The ISO acknowledged in its August 1, 2014 Information Report filed in ER12-1630 that the PJM market, along with other RTO markets, may help inform future refinements to the ISO’s market design, and ARES urges the ISO to begin this examination this year and receive feedback from storage technologies and other stakeholders that will drive market changes in 2017. Signaling to the market that the ISO is actively addressing compensation for fast-responding technologies will greatly assist with the development of these technologies to support the ISO grid.

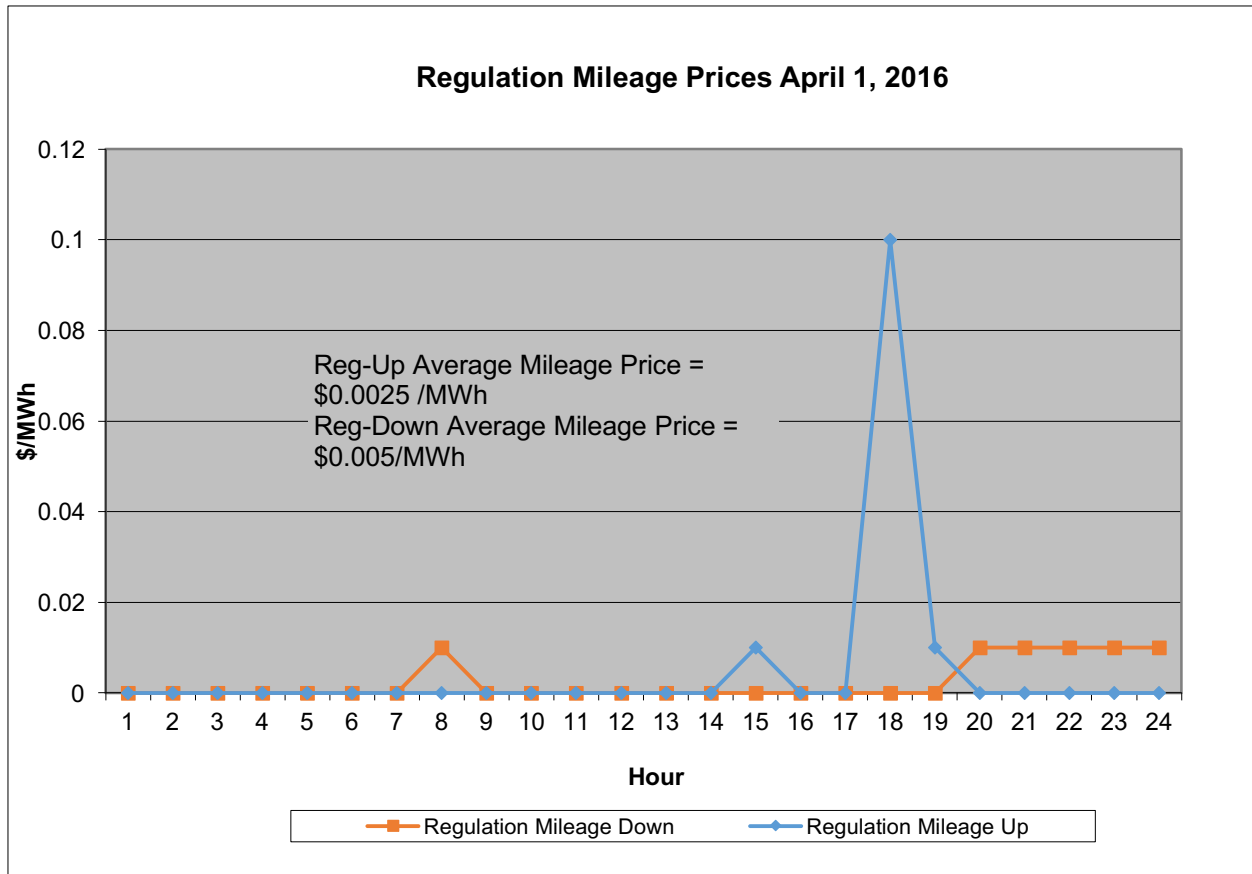
## DISCUSSION

**Mileage prices:** Current mileage prices are typically at zero or close to zero. The reasons for these low prices are unclear, and ARES suggests that this should be explored as part of the ESDER Phase 2 initiative.

The following chart shows typical mileage prices in the current market:

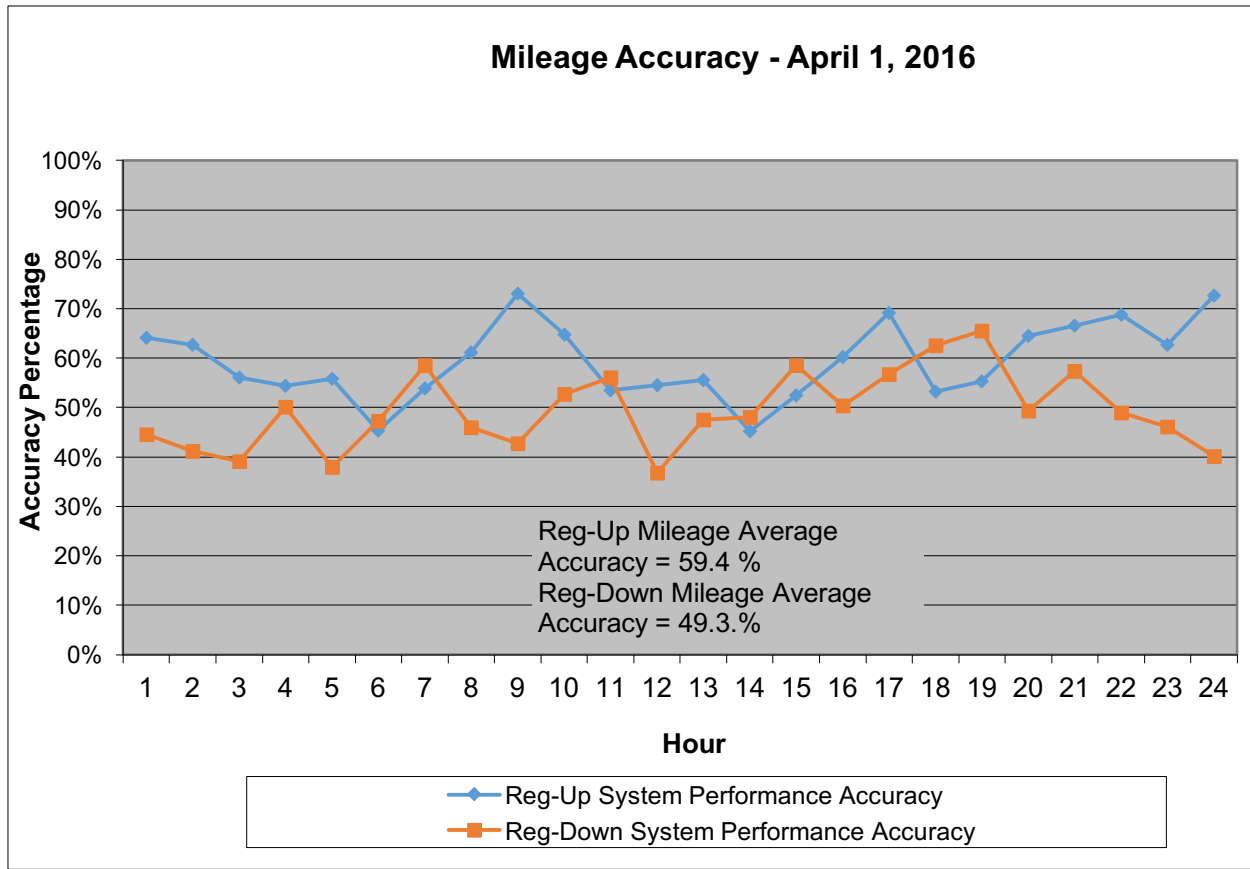
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<sup>2</sup> See <http://analysis.energystorageupdate.com/market-outlook/pjm-leads-us-fast-frequency-regulation-market>



Potential entrants with fast and accurate regulation capabilities will conclude that there is negligible regulation payment differentiation for their units compared to the legacy facilities that have slow ramp rates and inaccurate AGC response.

The current average regulation performance accuracy for resources providing regulation is shown below.



Since this is an average for all resources providing regulation, it is likely that many of the existing resources cannot meet the previous accuracy threshold of 50 %<sup>3</sup>. This is problematic for the ISO since there is an increasing need for regulation supplies to allow integration of renewable resources. However, the ISO has not created regulation market rules that encourage new fast-ramping and accurate regulation resources to enter the market.

**Resources are not being paid for performance consistent with the framework set out in FERC Order 755:**

The California ISO needs the existing resources to provide regulation services until new regulation units enter the market. However, the pay-for-performance FERC requirement is currently not being met with the current market design, since payment and award adjustments for performance accuracy are only made to mileage and not regulation. The ISO attempted to comply with FERC Order 755 by providing larger mileage awards to the faster and more accurate regulating units. However, this has resulted in a negligible pay-for-performance impact since mileage prices are extremely low in the ISO market. Mileage awards in a market with

<sup>3</sup> Note that accuracy measurements closer to 100 percent represent better accuracy.

mileage prices at or close to zero do not appropriately pay for the performance differences for accurate and fast ramping facilities compared to the existing facilities providing regulation.

This market design, in conjunction with a waiver to allow facilities that can't even meet a 50 percent accuracy score, results in depressed regulation and mileage prices. This, in turn, discourages the development of fast and accurate regulating resources to enter the market. With the large amount of renewable resources slated for development in California to meet the 50 percent renewable portfolio standard and the retirement of aging fossil-fuel fired power plants, the ISO needs to revise the market rules to encourage the development of fast and accurate responding generation and storage facilities to help integrate the renewable resources.

FERC is aware that the low accuracy standard may impede the development of faster-responding technologies. While FERC gave the ISO time to evaluate the performance of the technologies related to the minimum performance metric, FERC also recognized, as did the ISO, that the lowered standard may need to be revisited as “emerging technologies, such as energy storage, develop and participate as resources on the CAISO grid.”<sup>4</sup>

The current ISO market design attempted to differentiate payments for better regulation facilities compared to slower-ramping and less-accurate regulation units by adjusting mileage awards and payments as a function of performance. It is unclear if this market design can ever achieve the “pay-for-performance” objective, since this creates an incentive for slow and inaccurate facilities to bid more of the value into regulation up and down and less into the mileage bids. For these reasons, ARES urges the ISO to begin examining these issues this year.

### **Possible Market Changes to Achieve Pay for Performance**

ARES filed comments in last year's stakeholder process for ESDER Phase 1 suggesting refinements to the tariff to reduce both regulation capacity and mileage payments by an accuracy adjustment which should result in higher payments for fast and accurate regulation compared to the payments for slow and inaccurate regulation.<sup>5</sup> This proposal has the following potential advantages:

- 1) Simple implementation;
- 2) Allows existing resources to continue to provide regulation, but adjusts total regulation payments as a function of performance; and

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<sup>4</sup> Order Accepting Tariff Revisions, January 30, 2015, 150 FERC 61,056, para. 8.

<sup>5</sup> See <http://www.caiso.com/Documents/ARESComments-EnergyStorageandAggregatedDistributedEnergyResources-ProposedScopeandSchedule.pdf>

- 3) Provides clear payment differentiation for regulation performance which would encourage new fast-ramping and accurate resources to enter the market.

There may be other market redesign options such as incorporating elements of the PJM regulation market to achieve the California ISO's goals of keeping existing regulation units available to provide regulation supplies and encourage new regulation supplies to enter the market. However, the ARES suggested refinements to regulation payments may be a straightforward method to achieve pay for performance for resources providing regulation.

## **CONCLUSION**

ARES looks forward to engaging with the ISO to examine this issue that is so important to technologies that will be well-positioned to provide fast and accurate regulation service as the ISO's needs for these products grows.