

142 FERC ¶ 61,233  
FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, D.C. 20426

Before Commissioners: Jon Wellinghoff, Chairman;  
Philip D. Moeller, John R. Norris,  
Cheryl A. LaFleur, and Tony Clark.

California Independent System Operator Corporation      Docket No. ER12-1630-001

**ORDER ON COMPLIANCE FILING**

(Issued March 27, 2013)

1. On October 19, 2012, the California Independent System Operator Corporation (CAISO) submitted a compliance filing to comply with the Commission's September 20 Order<sup>1</sup> regarding its revised compensation methodology governing the provision of frequency regulation service, in connection with Order No. 755.<sup>2</sup> As discussed below, we accept CAISO's compliance filing, to become effective May 1, 2013.

**I. Background**

**A. Frequency Regulation Service**

2. Frequency regulation is an ancillary service, as required by the Commission's Orders No. 888 and 890, under the Commission's *pro forma* open access transmission tariff (*pro forma* OATT).<sup>3</sup> This ancillary service is relied upon by system operators to control

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<sup>1</sup> See *Cal. Indep. Sys. Operator Corp.*, 140 FERC ¶ 61,206 (2012) (September 20 Order).

<sup>2</sup> *Frequency Regulation Compensation in the Organized Wholesale Power Markets*, Order No. 755, 76 FR 67,260 (Oct. 31, 2011), FERC Stats. & Regs. ¶ 31,324 (2011), *order denying reh'g*, Order No. 755-A, 138 FERC ¶ 61,123 (2012).

<sup>3</sup> See *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities and Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, FERC Stats. & Regs. ¶ 31,036, at 31,705 (1996), *order on reh'g*, Order No. 888-A, FERC Stats. & Regs. ¶ 31,048 (1997), *order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶ 61,046 (1998), *aff'd in part and rev'd in part sub nom. Transmission Access Policy Study*

(continued...)

both actual and anticipated frequency deviations. A frequency deviation, as measured in Hertz, is caused when the supply of dispatched generation, or demand response resources fails to equal the amount of electricity actually consumed (i.e., load, plus losses), at a given moment. When such a deviation exceeds an acceptable range, the system can be impaired, with major deviations causing generation and transmission equipment to disconnect from the grid.

## B. Order No. 755

3. In Order No. 755, the Commission found that the resources relied upon by regional transmission operators (RTO) and independent system operators (ISO) to provide frequency regulation service differ in both their ramping ability, which is their ability to increase or decrease their provision of frequency regulation service, and the accuracy with which these resources can respond to the system operator's dispatch signal.<sup>4</sup> Order No. 755 further found that current compensation policies fail to acknowledge these operational differences. Specifically, Order No. 755 found that existing RTO/ISO compensation methods result in rates that are unjust, unreasonable, and unduly discriminatory or preferential, given that resources are compensated at the same level even when providing different amounts of frequency regulation service.<sup>5</sup> Order No. 755 further found that paying a uniform clearing price that includes opportunity costs would send efficient price signals reflecting the true cost of providing frequency regulation service.<sup>6</sup>

4. To accomplish this objective, Order No. 755 required each RTO/ISO to use market-based mechanisms to select and compensate frequency regulation resources based on a two-part payment methodology. First, Order No. 755 required that a capacity payment be made to a resource to keep its capacity in reserve in the event that it is needed to provide real-time frequency regulation service.<sup>7</sup> Second, Order No. 755 required that performance payments

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*Group v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom. New York v. FERC*, 535 U.S. 1 (2002). *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, FERC Stats. & Regs. ¶ 31,241, at P 135, *order on reh'g*, Order No. 890-A, FERC Stats. & Regs. ¶ 31,261 (2007), *order on reh'g*, Order No. 890-B, 123 FERC ¶ 61,299 (2008), *order on reh'g*, Order No. 890-C, 126 FERC ¶ 61,228 (2009), *order on clarification*, Order No. 890-D, 129 FERC ¶ 61,126 (2009).

<sup>4</sup> Order No. 755, FERC Stats. & Regs. ¶ 31,324 at P 1.

<sup>5</sup> *Id.* P 64.

<sup>6</sup> *Id.* P 99.

<sup>7</sup> *Id.* P 198.

be made, that reflect the amount of work each resource performs in real-time in response to the system operator's dispatch signal.<sup>8</sup> Order No. 755, however, gave each RTO and ISO discretion in identifying the manner by which it would implement Order No. 755's required two-part payment methodology.<sup>9</sup> Order No. 755 also acknowledged that the market rule revisions required by Order No. 755 contemplate fundamental changes to the way RTOs and ISOs procure and compensate frequency regulation services and that these rule changes may render existing RTO and ISO market power mitigation provisions insufficient to address market power concerns.<sup>10</sup> Accordingly, Order No. 755 required each RTO/ISO to submit revised market power mitigation provisions, as appropriate to their redesigned frequency regulation markets, or explain how their current mitigation methods are sufficient to address market power concerns.

### C. CAISO's Initial Proposal<sup>11</sup>

5. On April 27, 2012, CAISO made a proposal in response to Order No. 755. Under CAISO's proposal, regulation resources are required to submit a two-part offer, consisting of a mileage offer and a capacity offer. "Mileage" refers to the service provided by a resource with a regulation up and regulation down capacity award.<sup>12</sup> CAISO calculates resource-specific mileage multipliers (which is the expected mileage from 1 MW of regulation capacity in a given hour) to identify the maximum mileage award that a resource can receive through the market optimization.<sup>13</sup> CAISO then accepts economic bids and quantities for regulation capacity and economic bids for mileage to meet its requirements based on its forecasts and historical data.<sup>14</sup>

6. After CAISO performs market co-optimization to determine the most efficient way to meet the system's needs, including regulation mileage, CAISO then issues financially

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<sup>8</sup> *Id.* P 199.

<sup>9</sup> *Id.* P 185.

<sup>10</sup> *Id.* P 136.

<sup>11</sup> For a more complete description of CAISO's proposal see the September 20 Order, 140 FERC ¶ 61,206 at PP 10-50.

<sup>12</sup> See September 20 Order, 140 FERC ¶ 61,206 at P 15.

<sup>13</sup> This resource-specific mileage multiplier reflects an individual resource's historical performance accuracy and certified ramp capability. *See id.* PP 23, 36.

<sup>14</sup> *Id.* PP 38-39.

binding energy and ancillary service capacity awards and non-financially binding mileage awards. Resources are compensated for mileage for their actual response to CAISO's control signal at the mileage marginal clearing price. If a resource receives a mileage award below its mileage bid, the resource will be eligible for bid cost recovery.<sup>15</sup>

#### **D. September 20 Order**

7. The Commission, in the September 20 Order, found CAISO's proposed tariff revisions to be just and reasonable and in compliance with the Commission's final rule concerning compensation for frequency regulation in organized wholesale power markets, subject to a further compliance filing.<sup>16</sup> In response to concerns raised regarding the CAISO's proposal, CAISO proposed alternate tariff language for sections 11.8.2.1.6, 11.8.4.1.6, 27.1.3, and 30.5.2.6.1. These sections concerned bid cost recovery, the mileage multiplier and self-provided regulation. The Commission approved the proposed language and directed CAISO to file the revised language on compliance. Also, the Commission directed CAISO, on compliance, to explain in detail how the tunable parameter will be implemented including the notice to affected resources;<sup>17</sup> address how mileage pricing interacts with its existing scarcity pricing provisions; and commit to conducting an operational review based on one year of data after the proposal is implemented and file the informational report within 14 months of the effective date of the proposed tariff revisions.<sup>18</sup> The Commission required the tariff revisions to become effective January 1, 2013.<sup>19</sup>

#### **E. Order on Motion for Extension of Time**

8. CAISO subsequently filed a request for rehearing of the September 20 Order and a motion for extension of time, both of which requested an extension of the effective date until May 1, 2013. On December 3, 2012, the Commission issued an order granting CAISO's motion for an extension of time to extend the effective date set forth in the September 20 Order from January 1, 2013, until May 1, 2013. The Commission also dismissed the request for rehearing as moot.<sup>20</sup>

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<sup>15</sup> *Id.* PP 39-41.

<sup>16</sup> *Id.* P 72.

<sup>17</sup> *Id.* P 73.

<sup>18</sup> *Id.* P 75.

<sup>19</sup> *Id.* PP 1, 77.

<sup>20</sup> See *Cal. Indep. Sys. Operator Corp.*, 141 FERC ¶ 61,184 (2012).

## F. CAISO's Compliance Filing

9. In its compliance filing, CAISO: (1) revised tariff section 27.1.3 and explained how the tunable parameter to adjust awarded mileage will be implemented including the notice to affected resources; (2) explained how mileage pricing interacts with its existing scarcity pricing provisions; and (3) revised tariff sections 11.8.2.1.6, 11.8.4.1.6, and 30.5.2.6.1 and committed to conduct an operational review regarding the implementation of Order No. 755 based on a year's data and file it with the Commission in 14 months of the CAISO proposal's effective date. CAISO requests an effective date of May 1, 2013 for the compliance provisions.

### 1. The Tunable Parameter and Adjustments

10. CAISO proposes to revise tariff section 27.1.3 to allow CAISO to modify the mileage that can be awarded to a resource to reflect the expected actual mileage the resource may provide and, therefore, help ensure the efficient selection of resources to satisfy both the mileage and the regulation capacity requirements as part of the co-optimization. CAISO indicates that it will make this modification through adjustments to resource specific mileage multipliers. Originally, in response to concerns raised regarding its proposal, to help ensure the efficient selection of resources, CAISO proposed to file the following revision to tariff section 27.1.3.<sup>21</sup>

The CAISO may adjust a resource's Mileage award to align its awarded Mileage with the resource's expected Mileage.

The Commission directed CAISO to file that revision in its compliance filing.<sup>22</sup> CAISO has now proposed to revise the language as follows:

The CAISO may adjust resource specific Mileage multipliers to align a resource's awarded Mileage with the resource's expected Mileage.

11. CAISO explains that by adjusting the resource specific mileage multipliers, CAISO can modify a resource's awarded mileage to reflect the expected actual mileage that the resource may provide and, therefore, help ensure the efficient selection of resources to satisfy mileage and regulation capacity requirements as part of the co-optimization. According to CAISO, this adjustment can help reduce unanticipated bid cost recovery for mileage by mitigating situations in which a resource receives an award that reflects a high mileage bid price and low capacity bid price.

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<sup>21</sup> See September 20 Order, 140 FERC ¶ 61,206 at P 69.

<sup>22</sup> *Id.* P 72.

12. CAISO states that it plans to apply this adjustment as part of its review of bids to provide regulation mileage. To the extent CAISO's market systems observe significant variances between the mileage awarded to a resource for purposes of establishing a market clearing price and the instructed mileage as adjusted for accuracy, CAISO may adjust a resource's mileage multipliers to align its awarded mileage with the resource's expected mileage. CAISO states that initially, it will consider whether to make an adjustment to a resource's mileage multipliers if the following two conditions occur in 50 percent or more of the settlement intervals in which the resource provides regulation over the course of a month: (1) the resource is awarded mileage equal to the awarded regulation capacity; and (2) the resource's actual mileage has exceeded the product of the actual system mileage multiplier [a quantity reflecting expected mileage from 1 MW of regulation up and regulation down capacity in a given hour] and the resource's awarded regulation capacity. CAISO explains that a resource's mileage deviations could impact market clearing prices and bid cost recovery when both of these conditions occur in a significant number of settlement intervals. According to CAISO, these conditions justify examining whether to make adjustments to a resource's mileage multipliers.

13. If a resource meets these two criteria, CAISO states it will discuss adjusting the resource's mileage multipliers with the resource's scheduling coordinator. In addition, pursuant to tariff section 27.1.3, upon request, CAISO will provide a resource with the historical data used to derive the resource's mileage multipliers. CAISO also states that it will notify market participants through the Market and Performance Planning Forum of the number of resources participating in the regulation market that have had their mileage multiplier adjusted. CAISO explains that it will also report on the use of these adjustments as part of its informational report that it will file with the Commission based on one year of experience with its market design for this enhancement.

## **2. Mileage and Scarcity Pricing Interaction**

14. CAISO states that its market design to comply with Order No. 755 establishes a mileage requirement in each operating hour that will not exceed the sum of the products of each resource's specific mileage multiplier and its self-provided or bid-in regulation capacity. According to CAISO, this design avoids mileage scarcity by never setting the mileage requirement at a level that is greater than what bid-in capacity is able to provide. CAISO explains that this prevents a scarcity condition in regulation capacity from creating a scarcity condition in regulation mileage. CAISO explains that after gaining operational experience with its Order No. 755 compensation design, it may revisit adopting a scarcity pricing mechanism for mileage.

### **3. Miscellaneous**

15. CAISO indicates that it has revised tariff sections 11.8.2.1.6, 11.8.4.1.6 and 30.5.2.6.1, concerning bid cost recovery and self-provided regulation service, consistent with the September 20 Order.<sup>23</sup>

### **II. Notice of Filing and Responsive Pleadings**

16. Notice of CAISO's compliance filing was published in the *Federal Register*, 77 Fed. Reg. 65,871 (2012), with interventions and protests due on or before November 9, 2012. Pacific Gas and Electric Company (PG&E), a party in the underlying docket, filed comments on November 9, 2012. On November 19, 2012, CAISO filed an answer (CAISO Answer) responding to PG&E's comments.

### **III. Discussion**

#### **A. Procedural Matters**

17. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2012), prohibits an answer to a protest unless otherwise ordered by the decisional authority. We will accept CAISO's answer because it has provided information that assisted us in our decision-making process.

#### **B. PG&E's Comments and CAISO Answer**

18. PG&E requests that in order to provide more transparency into the tunable parameter, the Commission should order CAISO to produce a technical paper further explaining its methodology for adjusting the mileage awarded to specific resources. PG&E recommends issuance of this technical paper in advance of the launch of the Order No. 755 reforms. According to PG&E, the technical paper should stipulate the methodology and limits of CAISO's abilities, and should solicit stakeholder input into the methodology.

19. In addition, PG&E recommends that tariff language in the third paragraph of the proposed tariff section 27.1.3 be revised to: "The CAISO may adjust the range for a specific resource's Mileage award to more closely align awarded mileage with the resource's expected mileage." According to PG&E, the language as proposed by CAISO could be construed to allow for adjustments to a resource's mileage multiplier.

20. In its answer, CAISO explains that it has discussed developing a technical paper with PG&E, and CAISO is willing to develop a paper that clarifies the mechanics of how

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<sup>23</sup> *Id.* P 73.

adjustments will work with examples to explain instances in which CAISO will make adjustments to mileage awarded to a resource. CAISO indicates that it will make the paper available to all stakeholders and provide an opportunity for stakeholder input and questions during the implementation and testing stage of this market enhancement.

21. CAISO argues that the Commission should accept CAISO's proposed tariff language pertaining to the potential to adjust to resource-specific mileage multipliers in tariff section 27.1.3. CAISO explains that to implement an adjustment as part of the optimization (i.e., before a resource receives a mileage award), CAISO must adjust the resource-specific mileage multipliers. According to CAISO, this already accomplishes the intent of PG&E's proposed language (i.e., an adjustment to the range for a specific resource's mileage award). By adjusting resource-specific mileage multipliers, CAISO states it can modify a resource's awarded mileage to reflect the expected actual mileage the resource may provide and, therefore, help ensure the efficient selection of resources to satisfy mileage and regulation capacity requirements as part of the co-optimization. Therefore, CAISO contends that PG&E's recommended tariff language changes are unnecessary.

### C. Commission Determination

22. The Commission finds CAISO's proposed tariff revisions to be just and reasonable and in compliance with the September 20 Order and the Commission's final rule concerning compensation for frequency regulation in organized wholesale power markets, explained below.

23. We find that the revisions to tariff section 27.1.3 address both the concerns stated in the September 20 Order and those of PG&E here. CAISO acknowledges that the proposed revisions to tariff section 27.1.3 are different from those directed by the Commission in the September 20 Order and explains that these most recent revisions clarify that CAISO may adjust resource mileage multipliers and not mileage awards in order to align a resource's awarded mileage with its expected mileage. According to CAISO, the revised language clarifies that any adjustment will occur as part of the co-optimization and not after a resource has received an award.<sup>24</sup>

24. Although the language proposed by CAISO in section 27.1.3 is slightly different from that which the Commission directed CAISO to file in the September 20 Order, the result is the same in that CAISO has the ability to direct a more economic outcome when inefficiencies are observed. Since the multiplier informs the co-optimization process, CAISO's ability through the tunable parameter to adjust the resource's multiplier will directly affect the amount of mileage the resource is awarded. The practical effect of the revision is that CAISO has clearly explained how it will influence a more economic

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<sup>24</sup> CAISO Compliance Filing at n.10.

outcome. Accordingly, we find that the language is consistent with the directive in the September 20 Order. We also determine that PG&E's suggested revision to tariff section 27.1.3 is unnecessary because CAISO must adjust the resource-specific mileage multipliers before a resource receives a mileage award to align the award with the expected mileage consistent with the intent of PG&E's request.

25. We also note that, consistent with the September 20 Order, CAISO has provided additional information on how it will use the tunable parameter and notify effected resources. CAISO has identified criteria that it believes indicate when a resource's actual mileage deviates from its expected mileage such that it could impact market clearing prices and bid cost recovery. Also, in response to PG&E's request for greater transparency through a technical paper, CAISO has agreed to develop such a paper. We urge the CAISO, in consultation with market participants, to develop the necessary resources that enhance the understanding of the workings of the frequency regulation scheme. We agree that additional information provides transparency and should help market participants better understand how CAISO uses its discretion to effectuate more economic market outcomes. We therefore support CAISO's commitment to solicit stakeholder input into a technical paper that explains the methodology and limits of CAISO's discretion in adjusting the mileage awarded to specific resources prior to the launch of Order No. 755 reforms.

26. With respect to scarcity pricing for mileage, CAISO explained that its market design avoids mileage scarcity by never setting the mileage requirement at a level that is greater than what bid-in capacity is able to provide, and thus, prevents a scarcity condition in regulation capacity from creating a scarcity condition in regulation mileage. Further, its market design does not allow mileage requirements to create an artificial need to increase capacity requirements. As a result, CAISO's existing scarcity pricing demand curves and pricing need not be revised. Nothing on the record before us indicates that CAISO's current scarcity pricing requires revision and no party claims that it does. Accordingly, we agree that no change appears necessary, at this time.

27. We find that CAISO's revisions to tariff sections 11.8.2.1.6, 11.8.4.1.6 and 30.5.2.6.1 are consistent with the Commission's direction in the September 20 Order and therefore we accept the changes with no further modifications. We also note that CAISO has committed to conduct an operational review regarding its implementation of Order No. 755, consistent with the Commission's direction in the September 20 Order. Also, consistent with our December 3, 2012 order on CAISO's motion for extension of time, these tariff provisions will become effective May 1, 2013.

The Commission orders:

CAISO's compliance filing is hereby accepted, as discussed in the body of this order.

By the Commission.

( S E A L )

Nathaniel J. Davis, Sr.,  
Deputy Secretary.