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2	UNITED STATES OF AMERICA
3	BEFORE THE
4	FEDERAL ENERGY REGULATORY COMMISSION
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6	
7	California Independent System Operator ) Docket No. ER06000
8	Corporation )
9	
10	
11	PREPARED DIRECT PANEL TESTIMONY
12	OF
13	LORENZO KRISTOV, MARK ROTHLEDER, AND FARROKH RAHIMI
14	REGARDING
15	METERED SUBSYSTEMS
16	
17	

## Docket No. ER06-\_\_\_-000

1	I.	INTRODUCTION
2	Q.	Please state your names and your employer.
3	А.	Our names are Lorenzo Kristov, Mark Rothleder, and Farrokh Rahimi. We are all
4		employed by the California Independent System Operator Corporation ("CAISO")
5		located at 151 Blue Ravine Road, Folsom, California 95630.
6		
7	Q.	Are you the same Lorenzo Kristov, Mark Rothleder, and Farrokh Rahimi
8		who each are sponsoring individual testimony marked as Exhibit No. ISO-1,
9		Exhibit No. ISO-5, and Exhibit No. ISO-4, respectively?
10	<b>A.</b>	Yes, our professional and educational backgrounds are described in the individual
11		testimony that each of us is sponsoring in this proceeding. That information is
12		incorporated by reference and is not repeated here.
13		
14	Q.	What is the purpose of the testimony that the three of you are providing here?
15	А.	The subject matter of this testimony is Metered Subsystems ("MSSs"). The
16		purpose of this testimony is to describe: (i) the use of MSSs in the existing
17		CAISO Tariff, and (ii) the changes necessary to ensure that the treatment of MSSs
18		in the CAISO Tariff is consistent with the MRTU market design.
19		
20	П.	METERED SUBSYSTEMS IN THE EXISTING CAISO TARIFF
21	Q.	What is an MSS?
22	А.	An MSS is a contiguous electric system subsumed within the CAISO Control
23		Area that has been operating as an electric utility for a number of years prior to

1		the CAISO Operations Date as a municipal utility, water district, irrigation district,
2		State agency or Federal power administration. An MSS must have CAISO
3		certified revenue quality meters: (i) at each interface point with the CAISO
4		Controlled Grid, and (ii) on all Generating Units or, if aggregated, each individual
5		resource and Participating Load internal to the system. An MSS must also
6		operate in accordance with an MSS Agreement.
7		
8	Q.	What is an MSS Operator?
9	А.	An MSS Operator is an entity that owns an MSS and has executed an MSS
10		Agreement.
11		
12	Q.	What is the benefit or purpose of an MSS?
13	А.	For entities that qualify as an MSS and that can function as an electric subsystem
13 14	А.	For entities that qualify as an MSS and that can function as an electric subsystem within the CAISO Control Area, the main benefit is the ability to: (i) continue to
	А.	
14	Α.	within the CAISO Control Area, the main benefit is the ability to: (i) continue to
14 15	Α.	within the CAISO Control Area, the main benefit is the ability to: (i) continue to operate the MSS's generating resources, transmission, and distribution facilities in
14 15 16	Α.	within the CAISO Control Area, the main benefit is the ability to: (i) continue to operate the MSS's generating resources, transmission, and distribution facilities in an integrated manner, (ii) schedule transactions using the CAISO Controlled Grid,
14 15 16 17	Α.	within the CAISO Control Area, the main benefit is the ability to: (i) continue to operate the MSS's generating resources, transmission, and distribution facilities in an integrated manner, (ii) schedule transactions using the CAISO Controlled Grid, (iii) participate in the CAISO markets as a buyer and seller, and (iv) elect to pay
14 15 16 17 18	Α.	within the CAISO Control Area, the main benefit is the ability to: (i) continue to operate the MSS's generating resources, transmission, and distribution facilities in an integrated manner, (ii) schedule transactions using the CAISO Controlled Grid, (iii) participate in the CAISO markets as a buyer and seller, and (iv) elect to pay certain CAISO settlement charges on either a net or gross basis, depending on the
14 15 16 17 18 19	Α.	within the CAISO Control Area, the main benefit is the ability to: (i) continue to operate the MSS's generating resources, transmission, and distribution facilities in an integrated manner, (ii) schedule transactions using the CAISO Controlled Grid, (iii) participate in the CAISO markets as a buyer and seller, and (iv) elect to pay certain CAISO settlement charges on either a net or gross basis, depending on the choices of the MSS.

1		resource aggregation, load-following capability, participation in Imbalance
2		Energy and Ancillary Service markets, deviations, and settlements is necessary.
3		
4	Q.	What are the scheduling responsibilities of an MSS Operator?
5	А.	All schedules submitted to the CAISO on behalf of an MSS Operator for the
6		delivery of Energy and Ancillary Services either to the MSS Loads or from
7		Generating Units or System Units forming part of the MSS must be submitted by
8		a Scheduling Coordinator ("SC") that complies with all applicable provisions of
9		the CAISO Tariff. The SC for the MSS must submit to the CAISO gross
10		scheduling information for its Generating Units, "System Units," Demand, and
11		any imports into or exports from the CAISO Control Area at a Scheduling Point,
12		in the format and in accordance with the timelines applicable to other SCs.
13		The SC representing the MSS Operator may: (i) bid to supply Energy to,
14		or purchase Energy from, CAISO markets; and (ii) bid or self-provide Ancillary
15		Services from a System Unit or from individual Generating Units or Participating
16		Loads within the MSS. The SC representing the MSS Operator also may
17		purchase Ancillary Services from CAISO or third parties to meet its Ancillary
18		Service obligations under CAISO Tariff.
19		
20	Q.	What is an MSS System Unit?
21	А.	An MSS Operator is not required to but may aggregate its Generating Units into a
22		"System Unit." See Existing CAISO Tariff at § 23.15; Simplified and Revised
23		Tariff at § 4.9.15 A System Unit is defined as one or more individual Generating

1		Units and/or Loads within an MSS that are controlled so as to simulate a single
2		resource with specified performance characteristics, as mutually determined and
3		agreed to by the MSS Operator and the CAISO.
4		The Generating Units and/or Loads making up a System Unit must be in
5		close physical proximity to each other such that the operation of the resources
6		constituting the System Unit does not result in significant differences in flows on
7		the CAISO Controlled Grid. If the MSS Operator elects to establish a System
8		Unit it must comply with certain requirements regarding, e.g., communications
9		links and the provision of information through telemetry to the CAISO's Energy
10		Management System ("EMS"), certification of the System Unit's capability to
11		provide Ancillary Services, and installation of CAISO-certified meters on
12		resources or facilities aggregated to constitute the System Unit. See Existing
13		CAISO Tariff at § 23.15.2; Simplified and Revised Tariff at § 4.9.15.2.
14		
15	Q.	Is the CAISO's authority over a System Unit the same as its authority over

16

## other generating resources?

A. Generally yes. The CAISO has the authority to exercise control over the System
Unit to the same extent that it may exercise control over any other Participating
Generator, Generating Unit or, if applicable, Participating Load. However, the
CAISO does not have the authority to direct the MSS Operator to adjust the
operation of the *individual* resources that make up the System Unit to comply
with directives issued with respect to the System Unit. This is why the

1		requirement of close physical proximity mentioned above is crucial in the
2		specification of a System Unit.
3		In addition, to the extent that Energy from a System Unit is scheduled to
4		provide for the needs of the Demand within the MSS (and is not being bid to the
5		CAISO's Ancillary Service or Supplemental Energy markets), the CAISO will
6		have the authority to assume supervisory control over the System Unit only when:
7		(i) the CAISO needs to avert or respond to a real-time system problem or an
8		emergency condition and it has used all other Ancillary Services that are available
9		and effective in responding to the problem, or (ii) the CAISO considers that a
10		System Emergency is imminent or threatened.
11		
12	Q.	You mentioned earlier that, under the CAISO Tariff, an MSS Operator may
13		elect to follow its own Load with its own generating resources and that it may
14		be subject to Imbalance Energy purchases if it Load-follows. Please describe
15		these provisions.
16	А.	As mentioned above, an MSS Operator may or may not elect to aggregate its
17		generating resources into a "System Unit." Similarly, an MSS Operator may or
18		
19		may not elect to follow its own Load with its individual Generating Units or a
19		may not elect to follow its own Load with its individual Generating Units or a System Unit. If an MSS Operator decides to use its generating resources to
20		
		System Unit. If an MSS Operator decides to use its generating resources to
20		System Unit. If an MSS Operator decides to use its generating resources to follow its load within the MSS, the MSS Operator is responsible for purchases of

1		is greater than or equal to three percent of either the MSS's metered Demand and
2		exports or the MSS's Hour-Ahead scheduled Demand and exports - whichever is
3		lower.
4		
5	Q.	What happens if the net of the MSS Generation, imports, Load, and exports
6		is equal to or greater than the three-percent threshold in an interval?
7	А.	If the MSS is selling into the Real-Time Market (i.e., its Generation and imports
8		are greater than its Load and exports by more than the threshold amounts), the
9		payment to the MSS Operator by the CAISO essentially is reversed by requiring
10		the MSS Operator to pay 100 percent of the weighted average Ex Post Price times
11		the amount of Imbalance Energy provided. See Existing CAISO Tariff at §
12		23.12.2.1; Simplified and Revised Tariff at § 4.9.9.2.1.
13		If the MSS is purchasing from the Real-Time Imbalance Energy market
14		(i.e., its Generation and imports are less than its Load and exports by more than
15		the threshold amounts), the MSS Operator must pay the Imbalance Energy
16		charges under the CAISO Tariff plus an amount equal to the CAISO weighted
17		average Ex Post Price times 200 percent of the shortfall amount outside of the
18		Deviation Band. See Existing CAISO Tariff at § 23.12.2.2; Simplified and
19		Revised Tariff at § 4.9.9.2.2. The revenue received from the MSS Operator for
20		the payments described above is used as an offset to the Grid Management
21		Charge ("GMC"). See Existing CAISO Tariff at § 23.12.2; Simplified and
22		Revised Tariff at § 4.9.9.2.

1		A Load-following MSS Operator will not be charged GMC for the amount
2		of MSS Generation and imports that nets against the MSS Load and exports. The
3		MSS will be charged the GMC for the amounts of either excess or insufficient
4		Generation to cover MSS Load and exports. See Existing CAISO Tariff at §§
5		23.12.3.1 and 23.12.3.2; Simplified and Revised Tariff at § 4.9.9.3.1 and §
6		4.9.9.3.2.
7	Q.	You mentioned at the outset that an MSS Operator is responsible for certain
8		CAISO settlement charges on either a net or gross basis. Please describe the
9		settlement provisions specific to MSS Operators.
10		<b>A.</b> An MSS Operator is assessed the neutrality adjustments pursuant
11		to Section 11.2.9 (or collects refunds therefor) based on the net metered Demand
12		and exports of the MSS. Existing CAISO Tariff at § 23.16.1; Simplified and
13		Revised Tariff at § 4.9.16.1. If the CAISO is charging for summer reliability or
14		demand programs, the MSS Operator may petition the CAISO for an exemption
15		from these charges. The CAISO will grant the petition if the MSS Operator
16		provides documentation that the MSS Operator has secured generating capacity
17		for the following calendar year at least equal to 115 percent, on an annual basis,
18		of the peak Demand responsibility of the MSS Operator. Existing CAISO Tariff
19		at § 23.16.2; Simplified and Revised Tariff at § 4.9.16.2.
20		If the CAISO is compensating Generating Units for Emissions Costs,
21		Start-Up Costs, and Minimum Load Costs, and if MSS Operator charges the
22		CAISO for the Emissions Costs, Start-Up Costs, and Minimum Load Costs for
23		Generating Units serving the MSS Demand, then the SC for the MSS shall bear

1		its proportionate share of the total amount of those costs incurred by the CAISO
2		based on the gross metered MSS Demand and exports, and the MSS Generating
3		Units shall be made available to the CAISO through the submittal of
4		Supplemental Energy bids. Existing CAISO Tariff at § 23.16.3; Simplified and
5		Revised Tariff at § 4.9.16.3. If the MSS Operator chooses not to charge the
6		CAISO for the Emissions Costs, Start-Up Costs, and Minimum Load Costs of the
7		Generating Units serving the MSS load, then the MSS bears its proportionate
8		share of the total amount of the costs incurred by the CAISO based on the net
9		metered MSS Demand and exports. Id.
10		Regarding Transmission Losses, the MSS Operator is responsible for
11		Transmission Losses within the MSS and to and from points of interconnection
12		between the MSS and the CAISO Controlled Grid. Existing CAISO Tariff at §
13		23.16.4; Simplified and Revised Tariff at § 4.9.16.4. Finally, if the MSS Operator
14		has elected to load-follow, the MSS is allocated costs associated with bid cost
15		recovery on a net metered Demand basis. Existing CAISO Tariff at § 23.16.5;
16		Simplified and Revised Tariff at § 4.9.16.5.
17		
18	III.	METERED SUBSYSTEMS PROVISIONS UNDER THE REVISED MRTU
19		TARIFF
20	Q.	Are changes necessary to ensure that the treatment of MSS in the CAISO
21		Tariff is consistent with the MRTU market design?
22	<b>A.</b>	Yes.
23		

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1	Q.	Please describe changes related to scheduling by an MSS Operator that are
2		necessary to ensure consistency with the MRTU market design.
3	<b>A.</b>	SCs that represent MSS Operators may submit Bids for Energy and Ancillary
4		Services (including Self-Schedules and Ancillary Services Self-Provision
5		schedules) and Residual Unit Commitment ("RUC") to the Day-Ahead Market
6		("DAM"). All SCs that represent MSS Operators must submit Demand Bids at
7		the relevant MSS Load Aggregation Point ("MSS-LAP"). Specific MSS-LAPs
8		will be defined for each MSS, having unique Load Distribution Factors that
9		reflect the distribution of the MSS Demand to the network nodes within the MSS.
10		Under MRTU, an MSS Operator may elect to opt into or opt out of the
11		RUC procurement process for the Demand within the MSS. In addition, an MSS
12		Operator either may or may not elect to follow its Load with its generating
13		resources. If the MSS Operator elects to Load-follow, then it also automatically
14		elects to opt out of RUC. Finally, the MSS Operator may elect "gross" or "net"
15		Energy settlement. These elections are made on an annual basis and must
16		coincident with, or just prior to, the annual Congestion Revenue Rights ("CRR")
17		Allocation and Auction process.
18		Independent of the MSS's decisions whether or not to load-follow and opt
19		into or opt out of the RUC procurement process, an MSS Operator may: (i) bid to
20		upply Energy to or purchase Energy from CAISO markets, (ii) bid to provide
21		available capacity in RUC, and (iii) bid or Self-Provide Ancillary Services from a
22		"System Unit" or from individual Generating Units or Participating Loads within

1		the MSS. The MSS Operator also may purchase Ancillary Services from CAISO
2		or third parties to meet its Ancillary Service obligations under the MRTU Tariff.
3		
4	Q.	Does an MSS Operator have to submit Demand Forecast information to the
5		CAISO?
6	<b>A.</b>	Yes, the SC for an MSS must provide the CAISO with a Demand Forecast for the
7		MSS. To the extent that the SC does not provide the requisite Demand Forecast
8		for the MSS, the CAISO shall produce a Demand Forecast for the MSS. MSS
9		Operators that have opted out of the RUC procurement process must Self-
10		Schedule Demand in the DAM equal to 100 percent of the Demand Forecast for
11		the MSS. For an MSS Operator that elects to load-follow, the MSS Operator
12		must also Self-Schedule or bid supply in the DAM to match the Demand Forecast
13		of the MSS.
14		
15	Q.	You stated that MSS Operators may opt out of the RUC procurement
16		process for the Demand within the MSS. Please elaborate on the RUC
17		procurement process as it relates to MSS.
18	<b>A.</b>	The CAISO will run the RUC process after the Integrated Forward Market
19		("IFM") in order to commit additional resources and identify additional capacity
20		to ensure sufficient on-line resources to meet Demand for each hour of the next
21		Trading Day. MSS Operators must make an annual election, timed to coincide
22		with the CAISO's annual CRR cycle, to opt into or out of RUC participation.

1	If an MSS Operator opts into the RUC procurement process, the SC for
2	the MSS will be treated like any other SC that bids in the DAM with respect to
3	RUC procurement by the CAISO and allocation of RUC costs. The CAISO will
4	consider the Forecast of the MSS Demand in setting the RUC procurement target,
5	and the SC for the MSS will be responsible for any applicable allocation of costs
6	related to RUC.
7	If an MSS Operator opts out of the RUC procurement process, the CAISO
8	will not consider the Forecast of the MSS Demand in the RUC procurement target,
9	and the CAISO will not commit resources in RUC to serve the MSS Demand.
10	Instead, the MSS Operator will be responsible for fully meeting the Supply
11	requirements for serving its own Demand. Such an MSS Operator may elect
12	Load-following, in which case it will be meeting its Supply requirements through
13	the Load-following requirements. An MSS Operator that does not elect Load-
14	following will have two options as to how the CAISO will monitor its compliance
15	with the responsibility for fully meeting the Supply requirements for serving its
16	own Demand, and the MSS Operator will select between these two options on an
17	hourly basis implicitly depending on how it Self-Schedules its Demand in the
18	Day-Ahead Market ("DAM").
19	Under the first option, if the non-Load-following MSS Operator Self-
20	Schedules hourly Demand in the DAM that is equal to or greater than the CAISO
21	Demand Forecast for the MSS, it will be deemed to have met its Supply
22	requirement for that hour. Alternatively, if the MSS Operator Self-Schedules
23	hourly Demand in the DAM that is less than the CAISO Demand Forecast for the

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1		MSS and less than the MSS's actual metered Demand for that hour, the MSS
2		Operator may accumulate penalty points according to a set of criteria described in
3		Section 31.5.2.2.2 of the MRTU Tariff. The maximum penalty points that may be
4		assessed to an MSS Operator on any given day is five. If the MSS Operator
5		accumulates a total of more than twenty penalty points within twelve consecutive
6		months, the MSS will be required to opt into the RUC process for the remainder
7		of the current annual CRR cycle and for the following annual CRR cycle.
8		As noted earlier, even if an MSS Operator elects to opt out of the RUC
9		procurement process, the SC for the MSS Operator may still submit RUC
10		Availability Bids for capacity of its Generating Units or System Units and receive
11		RUC Availability Payments and RUC Compensation, subject to the same bidding
12		and operational requirements as any other resources providing RUC capacity.
14		and operational requirements as any other resources providing reoc capacity.
13		and operational requirements as any other resources providing reoc capacity.
	Q.	You stated that the SC for an MSS Operator may select either gross
13	Q.	
13 14	Q.	You stated that the SC for an MSS Operator may select either gross
13 14 15	Q. A.	You stated that the SC for an MSS Operator may select either gross settlements or net settlements. How will that choice affect the treatment of
13 14 15 16	-	You stated that the SC for an MSS Operator may select either gross settlements or net settlements. How will that choice affect the treatment of an MSS Operator?
13 14 15 16 17	-	You stated that the SC for an MSS Operator may select either gross settlements or net settlements. How will that choice affect the treatment of an MSS Operator? For MSS Operators that elect <i>gross</i> settlements, gross MSS Generation will be
<ol> <li>13</li> <li>14</li> <li>15</li> <li>16</li> <li>17</li> <li>18</li> </ol>	-	You stated that the SC for an MSS Operator may select either gross settlements or net settlements. How will that choice affect the treatment of an MSS Operator? For MSS Operators that elect <i>gross</i> settlements, gross MSS Generation will be settled at the respective Generating Unit Locational Marginal Prices ("LMPs")
<ol> <li>13</li> <li>14</li> <li>15</li> <li>16</li> <li>17</li> <li>18</li> <li>19</li> </ol>	-	You stated that the SC for an MSS Operator may select either gross settlements or net settlements. How will that choice affect the treatment of an MSS Operator? For MSS Operators that elect <i>gross</i> settlements, gross MSS Generation will be settled at the respective Generating Unit Locational Marginal Prices ("LMPs") and gross MSS Demand will be settled at the relevant Default LAP price. For
<ol> <li>13</li> <li>14</li> <li>15</li> <li>16</li> <li>17</li> <li>18</li> <li>19</li> <li>20</li> </ol>	-	You stated that the SC for an MSS Operator may select either gross settlements or net settlements. How will that choice affect the treatment of an MSS Operator? For MSS Operators that elect <i>gross</i> settlements, gross MSS Generation will be settled at the respective Generating Unit Locational Marginal Prices ("LMPs") and gross MSS Demand will be settled at the relevant Default LAP price. For MSS Operators that elect <i>net</i> settlements, net MSS Generation ( <i>i.e.</i> , the amount by
<ol> <li>13</li> <li>14</li> <li>15</li> <li>16</li> <li>17</li> <li>18</li> <li>19</li> <li>20</li> <li>21</li> </ol>	-	You stated that the SC for an MSS Operator may select either gross settlements or net settlements. How will that choice affect the treatment of an MSS Operator? For MSS Operators that elect <i>gross</i> settlements, gross MSS Generation will be settled at the respective Generating Unit Locational Marginal Prices ("LMPs") and gross MSS Demand will be settled at the relevant Default LAP price. For MSS Operators that elect <i>net</i> settlements, net MSS Generation ( <i>i.e.</i> , the amount by which MSS Generation exceeds MSS Demand) will be settled at an output-

1		which MSS Demand exceeds MSS Generation) will be settled at the specific
2		MSS-LAP price. Finally, it is important to point out that the concept of net
3		settlement for an MSS Operator only applies to resources located within the MSS.
4		If the MSS Operator utilizes resources located outside the MSS, then the output of
5		such resources is settled on a gross basis at the resource-specific LMP, and is not
6		netted against the MSS Demand.
7		
8	Q.	Please describe the bidding requirements for an MSS Operator.
9	А.	All Bids from MSS Generating Units or System Units must identify each
10		Generating Unit on an individual unit basis; the CAISO will not accept
11		aggregated Generation Bids. For an MSS Operator that elects Load-following,
12		the MSS Operator must include the following additional information with its Bids:
13		the Generating Unit(s) that are Load-following; the range of the Generating Unit(s)
14		being reserved for Load-following; whether the quantity of Load-following
15		capacity is either up or down; and, if there are multiple Generating Units in the
16		MSS, the priority list or distribution factors among the Generating Units. The SC
17		for the MSS Operator may change these characteristics through the Bid
18		submission process in the Hour-Ahead Scheduling Process ("HASP").
19		
20	Q.	Are there any limitations on which resources an MSS Operator may
21		designate for Load-following in its Bids?
22	<b>A.</b>	Yes. The MSS Operator's designation of Load-following resources in its Bids
23		must be consistent with the pool of resources it has identified as Load-following

1	Resources on an annual basis when it makes its election to Load-follow. In its
2	Bidding, the MSS Operator may indicate that one or more of these resources will
3	not be available to Load-follow in any given hours, but it cannot designate in its
4	Bid a Load-following resource that was not previously designated in the annual
5	election. In making the annual designation, a Load-following MSS Operator that
6	elects net settlement must designate all resources within the MSS as Load-
7	following resources. A Load-following MSS Operator that elects gross settlement
8	has the flexibility not to designate the resources within the MSS as Load-
9	following resources. Load-following MSS Operators may also have resources
10	external to the MSS, and under both the net and gross settlement options they will
11	have the flexibility to designate these resources as Load-following or not. Once
12	designated for the year, as we noted above, the Load-following resources are the
13	only resources the MSS Operator may designate in its Bids for Load-following.

14

#### 15

16

Q.

# Please describe the provisions for MSS in relation to the Real-Time Market ("RTM") under MRTU.

A. SCs that represent MSS Operators may submit Bids for Supply of Energy to the
RTM, irrespective of whether the MSS is a Load-following MSS. In fact, the
MSS Operator may submit Bids to supply Energy from a Load-following resource,
provided the amount of the resource's capacity designated for Load-following
plus the amount of capacity providing Bids to the RTM is within the resource's
Pmax. All Bids submitted for Generating Units within an MSS in the HASP for
the RTM, and all Dispatch Instructions, will be Generation-Unit specific. On a

1		continuing basis, a Load-following MSS Operator will provide the CAISO with
2		an estimate of the number of MWh that the applicable Generating Units will be
3		generating in five-minute intervals over the next two hours, as well as with the
4		telemetry of the MSS response to the Load-following instructions. The State
5		Estimator will estimate all MSS Load in Real-Time and will incorporate the
6		information provided by the Load-following MSS Operator in clearing the RTM
7		and in its Dispatch Instructions. MSS Operators are responsible for following
8		Dispatch Instructions.
9		
10	Q.	How will Real-Time deviation penalties be applied to an MSS Operator's
11		Generating Units?
12	А.	The application of Real-Time deviation penalties to an MSS Generating Unit will
13		depend on whether the specific Generating Unit has been designated for Load-
14		following or not. Any MSS resources that are not designated for Load-following
15		will be eligible to set Real-Time LMPs and will be subject to the CAISO's
16		Uninstructed Deviation Penalty ("UDP") just like any non-MSS resources. For
17		the Load-following resources of a Load-following MSS, the CAISO's UDP does
18		not apply, and instead there is a Load-following Deviation Penalty ("LFDP") that
19		applies to the MSS Operator's Load-following resources on an aggregated basis,
20		and the Load-following resources are ineligible to set Real-Time LMPs. Such
21		resources will, however, be eligible to receive Bid Cost Recovery to ensure that
22		the price they are paid for CAISO-Dispatched Energy is not less than their
23		accepted Bid price.

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1	The LFDP is the same irrespective of whether the MSS Operator elects net
2	or gross settlement, and works as follows. For each Real-Time Settlement
3	Interval, the LFDP is computed for the MSS Operator based on the quantity (G
4	minus L), where G is the total MWh of Energy produced by MSS Load-following
5	resources adjusted for Energy generated in compliance with CAISO accepted
6	forward schedules and issued Dispatch Instructions, including adjustments for
7	Transmission Losses based on pre-specified factors for each Generator location,
8	and L is the total MSS Metered Demand for the interval adjusted for accepted
9	Day-Ahead MSS Demand schedules. As long as G minus L is within a Tolerance
10	Band in each interval, there will be no LFDP applied. If G minus L is positive
11	and exceeds the Tolerance Band, representing excess Generation, then payment
12	for the excess Energy will be rescinded in an amount equal to the quantity of
13	Energy above the Tolerance Band times the highest non-negative LMP paid to
14	MSS Load-following Generation in the interval. If G minus L is negative and
15	exceeds the Tolerance Band, representing excess Load relying on the CAISO
16	markets and not served by the MSS Operator's Load-following, the UDP will
17	equal two times the Default LAP price for the interval times the quantity of
18	Energy beyond the Tolerance Band. The LFDP will be applied in addition to the
19	Imbalance Energy settlement for the full G-minus-L amount.
20	

- 20
- 21 Q. How does the CAISO treat network constraints within the MSS boundary?
- 22 A. The Full Network Model used by the CAISO will include a full model of MSS
- 23 transmission networks used for power flow calculations and Constraint

1		management in the CAISO markets. The CAISO will monitor but not enforce
2		MSS network Constraints. If Constraints are observed in the IFM that are internal
3		to the MSS or at the MSS boundaries and are attributable to MSS operations, the
4		CAISO will inform the SC for the MSS and coordinate any manual redispatch
5		required in Real-Time (i.e., the manual Dispatch could be one type of
6		"Exceptional Dispatch" under the MRTU design). If the SC for the MSS is
7		unable to resolve Congestion internal to the MSS or at the MSS boundaries in
8		Real-Time, independent of the CAISO, the CAISO will use Exceptional Dispatch
9		Instructions on resources that have been bid into the HASP and RTM. Redispatch
10		costs associated with MSS resources to resolve internal Congestion and
11		Transmission Losses in the MSS will be the responsibility of the MSS Operator.
12		
12		
12	Q.	Does the option of the MSS Operator to elect gross or net settlements affect
	Q.	Does the option of the MSS Operator to elect gross or net settlements affect CRR allocations?
13	Q. A.	
13 14	-	CRR allocations?
13 14 15	-	<b>CRR allocations?</b> Yes. An MSS Operator that elects gross settlement will be entitled to CRR
13 14 15 16	-	<b>CRR allocations?</b> Yes. An MSS Operator that elects gross settlement will be entitled to CRR allocations in the same manner as a Load-Serving Entity serving Load internal to
13 14 15 16 17	-	<b>CRR allocations?</b> Yes. An MSS Operator that elects gross settlement will be entitled to CRR allocations in the same manner as a Load-Serving Entity serving Load internal to the CAISO Control Area. An MSS Operator that chooses net settlement will still
<ol> <li>13</li> <li>14</li> <li>15</li> <li>16</li> <li>17</li> <li>18</li> </ol>	-	CRR allocations? Yes. An MSS Operator that elects gross settlement will be entitled to CRR allocations in the same manner as a Load-Serving Entity serving Load internal to the CAISO Control Area. An MSS Operator that chooses net settlement will still be eligible for CRR allocations but its Seasonal and Monthly CRR Eligible
<ol> <li>13</li> <li>14</li> <li>15</li> <li>16</li> <li>17</li> <li>18</li> <li>19</li> </ol>	-	CRR allocations? Yes. An MSS Operator that elects gross settlement will be entitled to CRR allocations in the same manner as a Load-Serving Entity serving Load internal to the CAISO Control Area. An MSS Operator that chooses net settlement will still be eligible for CRR allocations but its Seasonal and Monthly CRR Eligible Quantities will be calculated based on its net hourly Demand, since that is the
<ol> <li>13</li> <li>14</li> <li>15</li> <li>16</li> <li>17</li> <li>18</li> <li>19</li> <li>20</li> </ol>	-	CRR allocations? Yes. An MSS Operator that elects gross settlement will be entitled to CRR allocations in the same manner as a Load-Serving Entity serving Load internal to the CAISO Control Area. An MSS Operator that chooses net settlement will still be eligible for CRR allocations but its Seasonal and Monthly CRR Eligible Quantities will be calculated based on its net hourly Demand, since that is the

- 1 A. No. We intend to address how the allocation of Bid Cost Recovery will apply to
- 2 MSS in a subsequent filing.
- 3

# 4 Q. Does this conclude your testimony?

5 **A.** Yes.