Energy Imbalance Market
Neutrality Technical Workshop

Conference Call: September 3, 2013

Updated: September 5, 2013
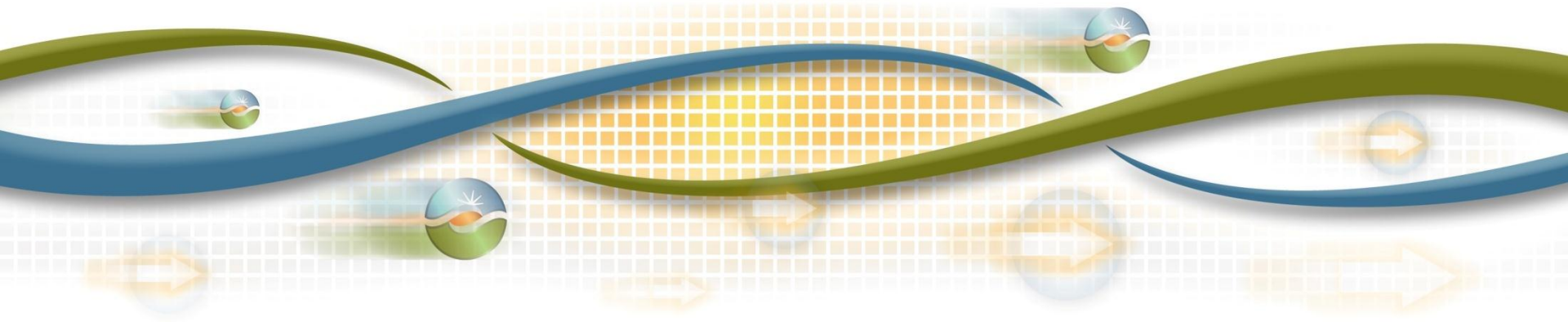
Neutrality accounts needed since not all energy is settled through real-time market

- An excessive rate mitigation measure in the pricing formula for load aggregation points
- Differences between the Load forecast and actual metered Load
- Uninstructed imbalance energy of generation
- Regulation energy
- Real-time marginal loss surplus
- Unaccounted for energy
- Inadvertent energy and time error correction

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Two neutrality accounts needed to keep Market Operator revenue neutral

- ## Real-Time Market BAA Neutrality Settlement
  - All IIE, UIE, UFE less RT BAA Congestion Balancing Account
  - Portion of neutrality allocated to export transfers to other BAAs
  - Then, neutrality is allocated to the EIM Entity SC

- ## Real-Time Market System Neutrality Settlement
  - Any <u>residual</u> amounts after transfers of RT Market BAA Neutrality Settlement between BAAs
  - Allocated based on metered demand of EIM Footprint

Example – EIM Transfers between BAAs in EIM
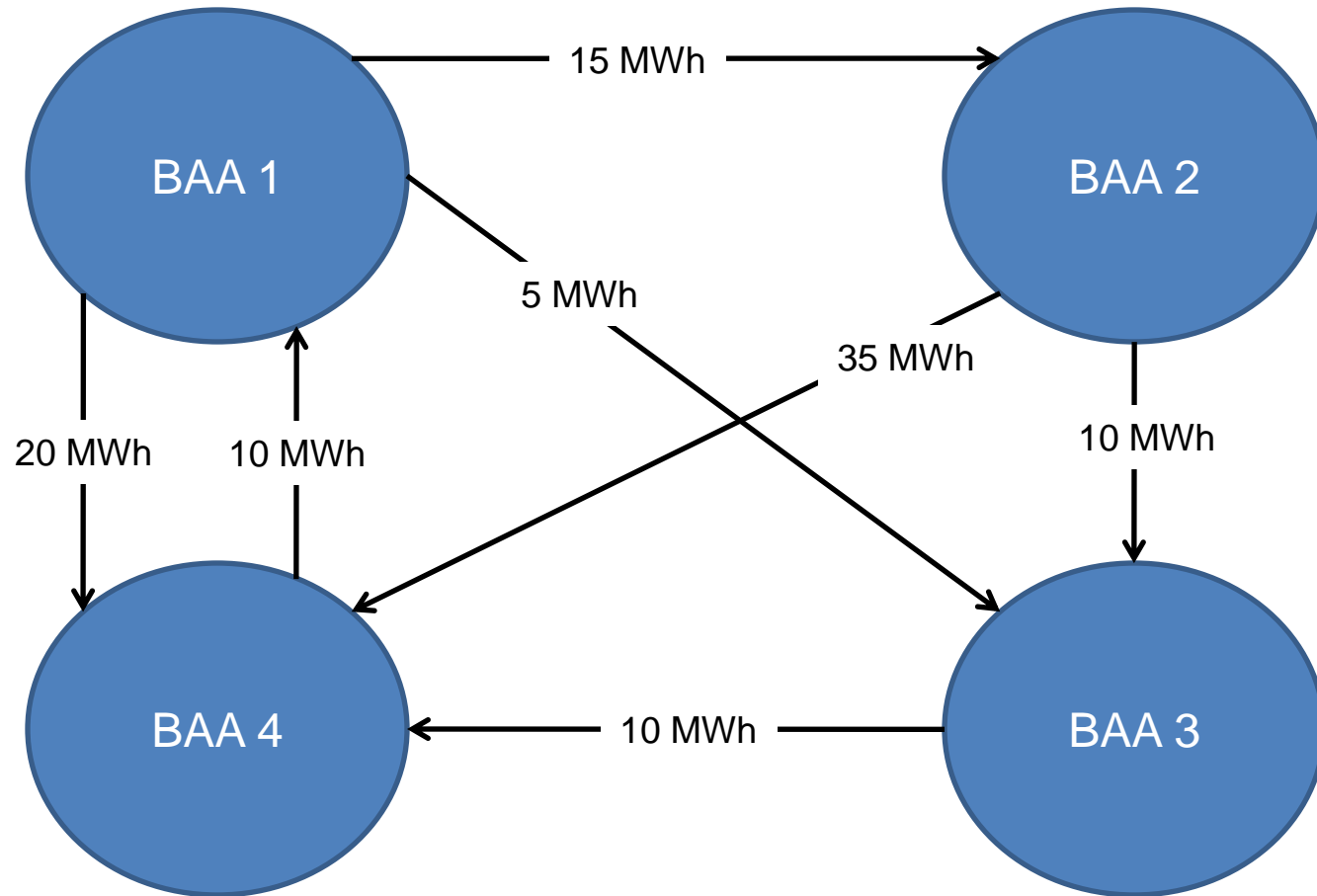
Assumptions to Calculate Neutrality by BAA

MWh	BAA 1	BAA 2	BAA 3	BAA 4
IIE	90	105	40	90
UIE	-60	-75	-40	-145
UFE	10	-5	-10	0
EIM Transfer Out	30	30	0	0
EIM Transfer In	0	0	5	55
EIM Transfer Denominator	100	110	N/A	N/A

$ / MWh	BAA 1	BAA 2	BAA 3	BAA 4
LMP	$20.00	$20.00	$25.00	$40.00

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Calculate the Net Interchange Schedule Settlement

	To			
MWh	BAA 1	BAA 2	BAA 3	BAA 4
BAA 1	-	15	5	20
BAA 2	0	-	10	35
BAA 3	0	0	-	10
BAA 4	10	0	0	-

(From)

	BAA 1	BAA 2	BAA 3	BAA 4
EIM Transfer In	$ 400	$ 300	$ 300	$ 1,350
EIM Transfer Out	$ (800)	$ (900)	$ (250)	$ (400)
Total	$ (400)	$ (600)	$ 50	$ 950

Import priced at source BAA LMP
Export priced at source BAA LMP

Calculation of Neutrality by BAA before Transfers

			BAA 1		BAA 2		BAA 3		BAA 4
IIE * LMP	+	$	(1,800)	$	(2,100)	$	(1,000)	$	(3,600)
UIE * LMP	+	$	1,200	$	1,500	$	1,000	$	5,800
UFE * DLAP LMP	+	$	(200)	$	100	$	250	$	-
RT Transfer * LMP	+	$	400	$	600	$	(50)	$	(950)
RT Congestion Balancing Account	-	$	-	$	-	$	25	$	1,100
Pre-transfer Neutrality Amount	=	$	(400)	$	100	$	175	$	150

Calculate the Real-Time Market BAA Neutrality

	BAA 1	BAA 2	BAA 3	BAA 4	Total
Start	($400)	$100	$175	$150	$25
NSI	30 MW Export	30 MW Export	5 MW Import	55 MW Import	
Transfer Out	$120	($27)	$0	$0	$93
Transfer In	$0	$0	($8)	($85)	($93)
Total	($280)	$73	$167	$65	$25

Calculation and settled on a 5 minute basis

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Calculate the Real-Time Market System Neutrality

			BAA 1		BAA 2		BAA 3		BAA 4
IIE * LMP	+	$	(1,800)	$	(2,100)	$	(1,000)	$	(3,600)
UIE * LMP	+	$	1,200	$	1,500	$	1,000	$	5,800
UFE * DLAP LMP	+	$	(200)	$	100	$	250	$	-
RT Congestion Balancing Account	-	$	-	$	-	$	25	$	1,100
RTM BAA Neutrality	-	$	(280)	$	73	$	167	$	65
RTM System Neutrality	=	$	-						

Allocated to metered demand of BAA in EIM

Energy Imbalance Market
Default Loss Allocation

Conference Call

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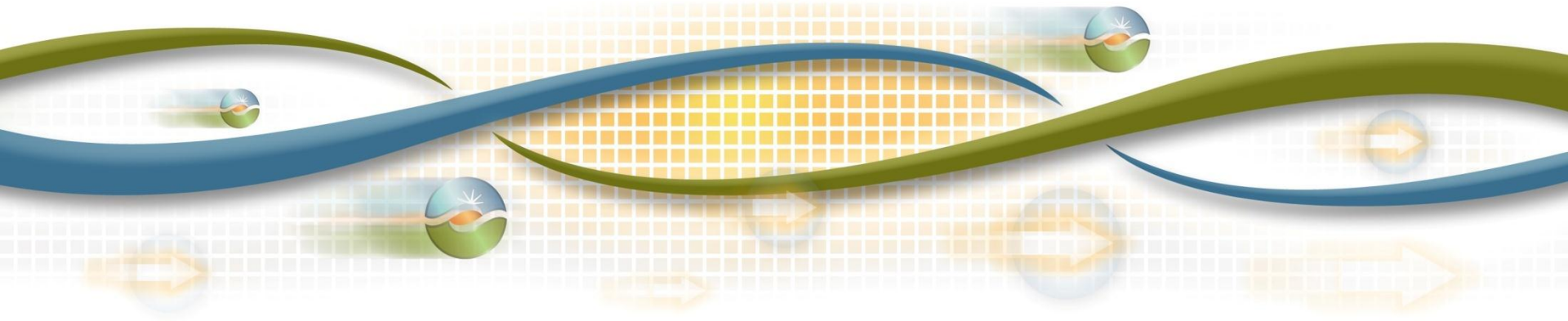
Default Loss Allocation

- ## Purpose:
  - Tariff Section: 11.29.17.2.1
    - each payment default amount allocated to CAISO Creditors through a shortfall allocation pursuant to Section 11.29.17.1 and that remains unpaid by the defaulting Scheduling Coordinator or CRR Holder will be allocated on the next practicable Invoices to the Default-Invoiced SCIDs to which the percentage shares calculated pursuant to Section 11.29.17.2.7 for the current calendar quarter apply, excluding the CAISO Debtor that has not paid the payment default amount.
  - Default Loss Allocation Percentage
    - 20% in proportion to the net amount that were payable in each applicable calendar quarter.
    - 30% in proportion to the sum of the absolute values of the dollar amounts shown on their Invoices payable or receivable in each applicable calendar quarter of each applicable Look- Back Period
    - 50% in proportion to the largest of the five MWh categories in each applicable calendar quarter of each applicable Look- Back Period
  –

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50 % Default Loss Allocation Methodology

1. **Day Ahead Market Supply**
   - Cleared DAM Generation and Import Energy Scheduled, DAM Ancillary Services Award and Self Provisions, DAM Ancillary Service Supply Obligation, and Virtual Supply Awards

2. **Real Time Market Supply**
   - Metered Generation, Real-Time Interchange Import Schedules, HASP and RTM Ancillary Services Award and Self Provisions, and RTM Ancillary Service Supply Obligation

3. **Day Ahead Market Demand**
   - Cleared DAM Load and Export Energy Scheduled, DAM Ancillary Service Demand Obligation, and Virtual Demand Awards

4. **Real Time Market Demand**
   - Metered Load, Real-Time Interchange Export Schedules, and RTM Ancillary Service Demand Obligation

5. **Financial Obligation**
   - Maximum (CRR Quantity , Inter-SC Trade Quantity)

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Example – Part 1

Row Labels	CRR_DATA	DA_DMND	DA_SUPPLY	IST	RT_DMND	RT_SUPPLY	Maximum	Percentage
A1B142			$ 914.00		$ 7,496.40	$ 93,943.10	$ 93,943.10	0.314%
A2B143			$ 179,824.00		$ 189,760.51	$ 186,601.74	$ 189,760.51	0.635%
A3B142		$ 106,088.36	$ 97,939.91	$ 800.00	$ 108,907.23	$ 98,688.91	$ 108,907.23	0.364%
A4B141	$ 43,260.94	$ 491,233.50	$ 324,638.67	$ 187,506.20	$ 500,396.31	$ 336,682.02	$ 500,396.31	1.674%
A5B140			$ 22,576.00		$ 2,186.72	$ 41,174.72	$ 41,174.72	0.138%
A6B139	$ 586,290.13	$ 6,671,571.78	$ 4,961,600.67	$ 438,186.00	$ 6,833,658.75	$ 5,458,620.08	$ 6,833,658.75	22.866%
A7B138			$ 7,255.00		$ 157.30	$ 21,176.10	$ 21,176.10	0.071%
A8B137			$ 4,329.60	$ 4,329.60		$ 4,164.57	$ 4,329.60	0.014%
A9B136			$ 140.00		$ 1,583.55	$ 3,563.72	$ 3,563.72	0.012%
A10B135		$ 622,524.24	$ 472,653.04	$ 234,800.00	$ 641,747.14	$ 441,071.46	$ 641,747.14	2.147%
A11B134	$ 21,150.73	$ 180,577.48	$ 102,100.45	$ 53,835.00	$ 184,424.45	$ 99,130.15	$ 184,424.45	0.617%
A12B133			$ 4,156.00		$ 9,403.54	$ 42,171.26	$ 42,171.26	0.141%
A13B132					$ 314,299.44	$ 305,145.08	$ 314,299.44	1.052%
A14B131			$ 52,788.00		$ 39,029.44	$ 51,298.99	$ 52,788.00	0.177%
A15B130			$ 3,729.00		$ 3,005.01	$ 4,833.00	$ 4,833.00	0.016%
A16B129			$ 936.00	$ 113,317.60		$ 966.41	$ 113,317.60	0.379%
A17B128	$ 1,171,804.35	$ 6,864,545.44	$ 4,902,647.46	$ 859,545.07	$ 7,239,250.48	$ 5,239,504.93	$ 7,239,250.48	24.223%
A18B127	$ 7,620,163.49						$ 7,620,163.49	25.498%
A19B126	$ 5,875,371.53						$ 5,875,371.53	19.660%
							$29,885,276.41	

Example – Part 2

SCID	Market Exposure Percentage	Net Invoice Percentage	Net Payable Percentages	Default Loss Percentage
A1B142	0.314%	1.289%	1.66%	0.88%
A2B143	0.635%	0.047%	0.00%	0.33%
A3B142	0.364%	0.140%	0.00%	0.22%
A4B141	1.674%	0.585%	0.75%	1.16%
A5B140	0.138%	0.581%	0.75%	0.39%
A6B139	22.866%	10.848%	0.00%	14.69%
A7B138	0.071%	0.313%	0.40%	0.21%
A8B137	0.014%	0.127%	0.16%	0.08%
A9B136	0.012%	0.030%	0.04%	0.02%
A10B135	2.147%	0.509%	0.65%	1.36%
A11B134	0.617%	0.356%	0.00%	0.42%
A12B133	0.141%	0.489%	0.63%	0.34%
A13B132	1.052%	0.137%	0.00%	0.57%
A14B131	0.177%	0.183%	0.24%	0.19%
A15B130	0.016%	0.027%	0.04%	0.02%
A16B129	0.379%	1.704%	2.19%	1.14%
A17B128	24.223%	10.762%	0.00%	15.34%
A18B127	25.498%	40.582%	52.22%	35.37%
A19B126	19.660%	31.290%	40.27%	27.27%

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