



INDEPENDENT  
MARKET  
OPERATOR



**November 2013 MAC:**

LFAS Requirement Investigation Update

## July 2013 Analysis

- Calculations confirmed by Sapere
- Results compared with March 2013 results
- “Net All Causes” results similar to March
- Reasons for outliers appear similar to March
- “Option 2 LFAS Usage” (preferred ramp rate, DI start position) results similar to March

# LFAS Causes: March 2013 vs July 2013 (1)

Percentile	March Cause 1 Load	July Cause 1 Load	March Cause 2 NSG	July Cause 2 NSG	March Total SG	July Total SG
0.05%	-77	-102	-89	-69	-96	-104
0.50%	-52	-59	-43	-35	-67	-66
1%	-45	-49	-33	-29	-55	-56
2%	-37	-41	-24	-22	-45	-46
3%	-33	-36	-21	-19	-40	-41
4%	-29	-34	-18	-16	-36	-37
5%	-27	-31	-16	-15	-33	-34
10%	-19	-24	-11	-10	-23	-26
50%	1	-3	0	0	2	-3
90%	22	18	11	10	25	21
95%	30	27	16	15	34	30
96%	32	30	18	16	36	33
97%	35	34	20	19	40	37
98%	39	39	24	22	45	42
99%	47	48	29	28	54	52
99.50%	55	57	36	36	65	62
99.95%	83	85	74	66	94	88

## LFAS Causes: March 2013 vs July 2013 (2)

Percentile	March Cause 3 SG dev from DI	July Cause 3 SG dev from DI	March Net Excl Ramping	July Net Excl Ramping	March Cause 4 BMO ramping	July Cause 4 BMO ramping	March Net All Causes	July Net All Causes
0.05%	-30	-46	-92	-98	-74	-128	-103	-118
0.50%	-14	-21	-60	-61	-43	-84	-65	-82
1%	-9	-15	-49	-52	-34	-67	-54	-69
2%	-6	-10	-39	-42	-25	-53	-43	-56
3%	-4	-6	-34	-37	-20	-42	-38	-49
4%	-3	-4	-30	-33	-17	-36	-33	-43
5%	-3	-3	-27	-30	-14	-32	-30	-39
10%	-1	0	-18	-21	-7	-18	-20	-27
50%	5	6	8	3	0	0	8	3
90%	16	14	33	30	6	22	35	38
95%	20	18	43	41	14	34	46	50
96%	21	20	46	44	17	38	49	54
97%	23	22	51	48	20	43	53	60
98%	26	25	57	54	24	51	60	67
99%	32	31	69	65	32	64	71	79
99.50%	50	41	79	74	43	78	83	89
99.95%	69	92	109	100	74	123	116	117

## LFAS Causes: March 2013 vs July 2013 (3)

- Cause 1: variation from system load forecast:
  - 0.05% percentile larger – all spurious load forecasts
- Cause 2: variation from NSG forecast:
  - Percentile values slightly smaller than March
- Cause 3: deviation of IPP Scheduled Generators from Dispatch Instructions:
  - “Negative” (LFAS Downward) values slightly larger than March
  - “Positive” (LFAS Upward) values generally smaller apart from outliers related to three events (all late start-ups of Facilities)

## LFAS Causes: March 2013 vs July 2013 (4)

- Cause 4: variations due to dispatch at BMO ramp rates:
  - Results consistently larger than March
  - Lowest 200 values restricted to 4 hours of the day, 164 between 7:00 am and 8:00 am
  - Highest 200 values restricted to 7 hours of the day, 129 between 10:00 pm and 11:00 pm

# LFAS Usage: March 2013 vs July 2013 (1)

· · ·Percentile	·March ·Option 1 ·Preferred RR ·actual start	·July ·Option 1 ·Preferred RR ·actual start	·March ·Option 2 ·Preferred RR ·DI start	·July ·Option 2 ·Preferred RR ·DI start	·March ·Option 3 ·BMO RR ·actual start	·July ·Option 3 ·BMO RR ·actual start
·0.05%	--88	-123	--123	-130	--118	-131
·0.50%	--62	-74	--96	-84	--86	-90
·1%	--52	-61	--83	-70	--75	-77
·2%	--42	-50	--70	-58	--65	-63
·3%	--37	-43	--62	-51	--58	-53
·4%	--34	-37	--56	-45	--53	-47
·5%	--31	-33	--52	-40	--50	-42
·10%	--23	-22	--38	-27	--37	-28
·50%	--2	2	·3	13	·2	11
·90%	·21	33	·43	58	·41	57
·95%	·31	47	·57	74	·54	73
·96%	·34	51	·62	78	·58	78
·97%	·39	57	·68	84	·64	84
·98%	·45	65	·77	92	·71	92
·99%	·54	78	·94	104	·83	102
·99.50%	·63	88	·108	118	·94	111
·99.95%	·91	120	·149	158	·136	143

## LFAS Usage: March 2013 vs July 2013 (2)

· · ·Percentile	·March ·Option 4 ·BMO RR ·DI start	·July ·Option 4 ·BMO RR ·DI start	·March ·Option 5 ·Dynamic RR ·actual start	·July ·Option 5 ·Dynamic RR ·actual start
·0.05%	·-141	-140	·-93	-111
·0.50%	·-100	-106	·-64	-69
·1%	·-90	-92	·-54	-57
·2%	·-77	-77	·-44	-44
·3%	·-69	-66	·-39	-37
·4%	·-63	-59	·-35	-33
·5%	·-59	-53	·-32	-30
·10%	·-44	-34	·-23	-19
·50%	·4	16	·-1	3
·90%	·50	69	·23	36
·95%	·65	86	·34	50
·96%	·70	91	·37	54
·97%	·76	97	·42	60
·98%	·84	104	·48	67
·99%	·97	116	·59	80
·99.50%	·111	129	·71	91
·99.95%	·164	162	·105	121



## 2013 Work Plan Update (1)

- Consider Sapere's suggestions for enhancement: IMO and SM, report back to December MAC
- Develop monitoring and reporting plan: IMO and SM, to commence January 2014
- Prepare scope for 5 year Ancillary Services Review: IMO and SM, present to December MAC for noting
- Review SM processes for detecting and correcting load forecast errors: IMO and SM, by end of year

## 2013 Work Plan Update (2)

- Forecast lead times - 15-20 mins vs 25-40 mins ahead: SM, report back December MAC
- Review processes for NSG curtailments: IMO and SM
  - Delayed until early 2014
  - Requires investigation of Technical Rules, exemptions
  - Requires liaison with Intermittent Generators and Network Operator
- Review DI processes for Forced Outages or deviations from Commissioning Test Plans: IMO and SM, workshops scheduled for mid November and early December