

Balancing Authority ACE Limit Proof-of-Concept Field Trial Project 2010-14

Eastern Interconnection Update Discussion

November 30, 2010

Starting at 2:30 PM EDT

Doug Hils – Duke Energy

Balancing Authority Reliability-based Control Standard Drafting Team
(BARCSDT)

Balancing Authority ACE Limit Proof-of-Concept Field Trial

Eastern Interconnection Field Trial Participation

Participation reflects approximately 67% of the projected 2010 peak load for the Eastern Interconnection

Eastern Interconnection Balancing Authority Participants	2010 Frequency Bias	Region	Reliability Coordinator	Start Date
American Electric Power (CSWS)	-103.4	SPP	SPP	September 1, 2005
Associated Electric Cooperative, Inc. (AECI)	-45	SERC	TVA	April 1, 2010
Duke Energy Carolinas (DUK)	-196	SERC	VACS	April 1, 2009
East Kentucky Power Cooperative (EKPC)	-42.73	SERC	TVA	July 6, 2005
Entergy (EES)	-227.1	SERC	ICTE	July 6, 2005
EON-US (LGEE)	-74	SERC	TVA	April 1, 2008
Independent Electricity System Operator (IESO)	-245.8	NPCC	IESO	March 1, 2008
Manitoba Hydro (MHEB)	-43.3	MRO	MISO	July 6, 2005
Midwest Independent Transmission System Operator (MISO)	-1038.6	MRO, RFC, SERC	MISO	January 6, 2009
PJM Interconnection (PJM)	-1358	RFC	PJM	August 1, 2005
Santee Cooper (SC)	-61.52	SERC	VACS	March 1, 2006
Southern Company (SOCO)	-445	SERC	SOCO	October 15, 2005
Tennessee Valley Authority (TVA)	-317.6	SERC	TVA	October 1, 2005

Balancing Authority ACE Limit Proof-of-Concept Field Trial

The Balancing Authority ACE Limit (BAAL) shall not be exceeded for more than 30 consecutive clock-minutes*

	Longest exceedance of the Balancing Authority ACE Limit since starting operation under the Field Trial		October 2010 Performance under BAL-007	
	Max MinCtLow	Max MinCtHigh	Max MinCtLow	Max MinCtHigh
BA01	26	16	5	7
BA02	17	17	9	7
BA03	19	19	11	6
BA04	10	20	7	8
BA05	16	22	6	8
BA06	28	22	12	12
BA07	15	23	5	5
BA08	20	24	7	7
BA09	28	26	11	13
BA10	21	31	8	6
BA11	14	32	6	5
BA12	29	40	11	15
BA13	28	43	8	12

MinCtLow = Count of consecutive clock-minutes BAAL_{Low} was exceeded

MinCtHigh = Count of consecutive clock-minutes BAAL_{High} was exceeded

*BAAL being exceeded for more than 30 consecutive clock-minutes would be a violation under the proposed BAL-007 standard.

Frequency Statistics

Eastern Interconnection

Year	Month	Total Minutes FTL_Low at 59.98 Hz SF	Total Minutes FTL_Low at 60 Hz SF	Total FTL_Low Minutes	Percentage Low During TEC	FTL_Low Events	FTL_Low Max Duration	Total Minutes FTL_High at 60.02 Hz SF	Total Minutes FTL_High at 60 Hz SF	Total FTL_High Minutes	Percentage High During TEC	FTL_High Events	FTL_High Max Duration	Total FTL_Low and FTL_High Minutes at 60 Hz SF	Total FTL_Low and FTL_High Minutes
2005	7	28	30	58	48.28%	32	5	0	16	16	0.00%	11	3	46	74
2005	8	47	91	138	34.06%	56	10	0	35	35	0.00%	21	5	126	173
2005	9	32	39	71	45.07%	33	8	0	39	39	0.00%	21	7	78	110
2005	10	42	48	90	46.67%	43	11	0	33	33	0.00%	23	5	81	123
2005	11	65	43	108	60.19%	58	6	0	35	35	0.00%	22	7	78	143
2005	12	37	36	73	50.68%	41	7	0	27	27	0.00%	19	3	63	100
2006	1	42	33	75	56.00%	43	6	0	61	61	0.00%	27	5	94	136
2006	2	0	64	64	0.00%	39	6	2	43	45	4.44%	24	4	107	109
2006	3	28	51	79	35.44%	50	4	17	37	54	31.48%	33	8	88	133
2006	4	19	86	105	18.10%	58	5	0	76	76	0.00%	46	8	162	181
2006	5	52	67	119	43.70%	54	8	0	72	72	0.00%	39	5	139	191
2006	6	45	34	79	56.96%	41	5	0	59	59	0.00%	24	10	93	138
2006	7	31	40	71	43.66%	34	9	0	50	50	0.00%	29	4	90	121
2006	8	16	85	101	15.84%	49	5	0	58	58	0.00%	26	8	143	159
2006	9	19	60	79	24.05%	39	6	0	53	53	0.00%	33	4	113	132
2006	10	53	42	95	55.79%	51	6	0	54	54	0.00%	28	8	96	149
2006	11	56	35	91	61.54%	47	5	1	36	37	2.70%	22	3	71	128
2006	12	34	18	52	65.38%	34	4	0	54	54	0.00%	29	6	72	106
2007	1	59	29	88	67.05%	44	7	0	55	55	0.00%	31	7	84	143
2007	2	17	31	48	35.42%	33	3	0	39	39	0.00%	21	4	70	87
2007	3	75	83	158	47.47%	76	15	0	78	78	0.00%	38	8	161	236
2007	4	36	41	77	46.75%	45	5	0	58	58	0.00%	31	4	99	135
2007	5	70	46	116	60.34%	64	5	0	95	95	0.00%	49	7	141	211
2007	6	62	30	92	67.39%	47	6	0	51	51	0.00%	25	7	81	143
2007	7	47	20	67	70.15%	33	6	0	39	39	0.00%	20	4	59	106
2007	8	37	25	62	59.68%	31	6	1	55	56	1.79%	32	5	80	118
2007	9	20	75	95	21.05%	41	8	0	27	27	0.00%	16	5	102	122
2007	10	57	65	122	46.72%	73	5	1	56	57	1.75%	36	5	121	179
2007	11	74	21	95	77.89%	60	4	0	34	34	0.00%	24	5	55	129
2007	12	37	22	59	62.71%	38	6	0	61	61	0.00%	38	4	83	120
2008	1	0	75	75	0.00%	34	8	0	48	48	0.00%	24	4	123	123
2008	2	18	71	89	20.22%	46	8	0	51	51	0.00%	24	8	122	140
2008	3	37	65	102	36.27%	55	6	0	40	40	0.00%	34	2	105	142
2008	4	41	65	106	38.68%	60	5	0	59	59	0.00%	33	6	124	165
2008	5	67	39	106	63.21%	63	4	0	40	40	0.00%	20	5	79	146
2008	6	40	21	61	65.57%	34	5	0	35	35	0.00%	19	5	56	96
2008	7	42	17	59	71.19%	29	7	0	17	17	0.00%	12	3	34	76
2008	8	41	19	60	68.33%	35	5	0	29	29	0.00%	17	6	48	89
2008	9	25	44	69	36.23%	39	4	0	55	55	0.00%	21	11	99	124
2008	10	35	33	68	51.47%	38	5	0	27	27	0.00%	19	3	60	95
2008	11	13	9	22	59.09%	13	5	0	13	13	0.00%	9	4	22	35
2008	12	16	34	50	32.00%	35	4	0	11	11	0.00%	8	3	45	61
2009	1	2	26	28	7.14%	16	4	0	19	19	0.00%	9	3	45	47
2009	2	0	34	34	0.00%	18	4	0	18	18	0.00%	11	6	52	52
2009	3	0	41	41	0.00%	23	5	0	25	25	0.00%	11	9	66	66
2009	4	0	59	59	0.00%	37	5	0	27	27	0.00%	20	3	86	86
2009	5	8	35	43	18.60%	31	4	0	27	27	0.00%	15	8	62	70
2009	6	30	28	58	51.72%	28	5	0	25	25	0.00%	16	3	53	83
2009	7	14	22	36	38.89%	22	3	0	28	28	0.00%	16	6	50	64
2009	8	16	10	26	61.54%	20	2	0	13	13	0.00%	10	2	23	39
2009	9	11	22	33	33.33%	21	3	0	20	20	0.00%	14	4	42	53
2009	10	44	45	89	49.44%	44	6	0	18	18	0.00%	10	3	63	107
2009	11	30	19	49	61.22%	33	3	0	34	34	0.00%	21	4	53	83
2009	12	11	23	34	32.35%	20	5	0	22	22	0.00%	15	3	45	56
2010	1	36	26	62	58.06%	35	6	0	16	16	0.00%	9	3	42	78
2010	2	23	16	39	58.97%	24	3	0	26	26	0.00%	16	2	42	65
2010	3	38	71	109	34.86%	65	6	0	40	40	0.00%	22	6	111	149
2010	4	63	38	101	62.38%	65	5	0	54	54	0.00%	34	6	92	155
2010	5	72	30	102	70.59%	60	6	0	40	40	0.00%	29	4	70	142
2010	6	10	28	38	26.32%	27	2	0	10	10	0.00%	9	2	38	48
2010	7	8	19	27	29.63%	17	4	0	30	30	0.00%	13	5	49	57
2010	8	16	29	45	35.56%	24	4	0	17	17	0.00%	11	3	46	62
2010	9	0	56	56	0.00%	31	4	0	22	22	0.00%	11	4	78	78
2010	10	1	60	61	1.64%	40	5	0	19	19	0.00%	15	4	79	80

This chart is a summary of frequency-related statistics gathered since the start of the Field Trial. Of particular interest is the drop in operation outside of the FTL bounds, trending lower in the latter part of 2008 with November 2008 having the least number of clock-minutes of operation outside the FTL bounds, followed by August 2009, over the dataset.

Frequency Statistics

Eastern Interconnection

Year	Month	Total Minutes FTL_Low at 59.98 Hz SF	Total Minutes FTL_Low at 60 Hz SF	Total Minutes FTL_Low at 59.98 Hz SF	Total Minutes FTL_Low at 60 Hz SF	Total FTL_Low Minutes	Percentage Low During TEC	FTL_Low Events	FTL_Low Max Duration	FTL_High Max Duration	Total FTL_Low and FTL_High Minutes at 60 Hz SF	Total FTL_Low and FTL_High Minutes
2007	11	74	21	95	77.89%	60	4	4				74
2007	12	37	22	59	62.71%	38	6	6				173
2008	1	0	75	75	0.00%	34	8	8				110
2008	2	18	71	89	20.22%	46	8	8				108
2008	3	37	65	102	36.27%	55	6	6				138
2008	4	41	65	106	38.68%	60	5	5				138
2008	5	67	39	106	63.21%	63	4	4				138
2008	6	40	21	61	65.57%	34	5	5				138
2008	7	42	17	59	71.19%	29	7	7				138
2008	8	41	19	60	68.33%	35	5	5				138
2008	9	25	44	69	36.23%	39	4	4				138
2008	10	35	33	68	51.47%	38	5	5				138
2008	11	13	9	22	59.09%	13	5	5				138
2008	12	16	34	50	32.00%	35	4	4				138
2009	1	2	26	28	7.14%	16	4	4				138
2009	2	0	34	34	0.00%	18	4	4				138
2009	3	0	41	41	0.00%	23	5	5				138
2009	4	0	59	59	0.00%	37	5	5				138
2009	5	8	35	43	18.60%	31	4	4				138
2009	6	30	28	58	51.72%	28	5	5				138
2009	7	14	22	36	38.89%	22	3	3				138
2009	8	16	10	26	61.54%	20	2	2				138
2009	9	11	22	33	33.33%	21	3	3				138
2009	10	44	45	89	49.44%	44	6	6				138
2009	11	30	19	49	61.22%	33	3	3				138
2009	12	11	23	34	32.35%	20	5	5				138
2010	1	36	26	62	58.06%	35	6	6				138
2010	2	23	16	39	58.97%	24	3	3				138
2010	3	38	71	109	34.86%	65	6	6				138
2010	4	63	38	101	62.38%	65	5	5				138
2010	5	72	30	102	70.59%	60	6	6				138
2010	6	10	28	38	26.32%	27	2	2				138
2010	7	8	19	27	29.63%	17	4	4				138
2010	8	16	29	45	35.56%	24	4	4				138
2010	9	0	56	56	0.00%	31	4	4				138
2010	10	1	60	61	1.64%	40	5	5				138

This chart is a summary of frequency-related statistics gathered since the start of the Field Trial. Of particular interest is the drop in operation outside of the FTL bounds, trending lower in the latter part of 2008 with November 2008 having the least number of clock-minutes of operation outside the FTL bounds, followed by August 2009, over the dataset.

Frequency Statistics

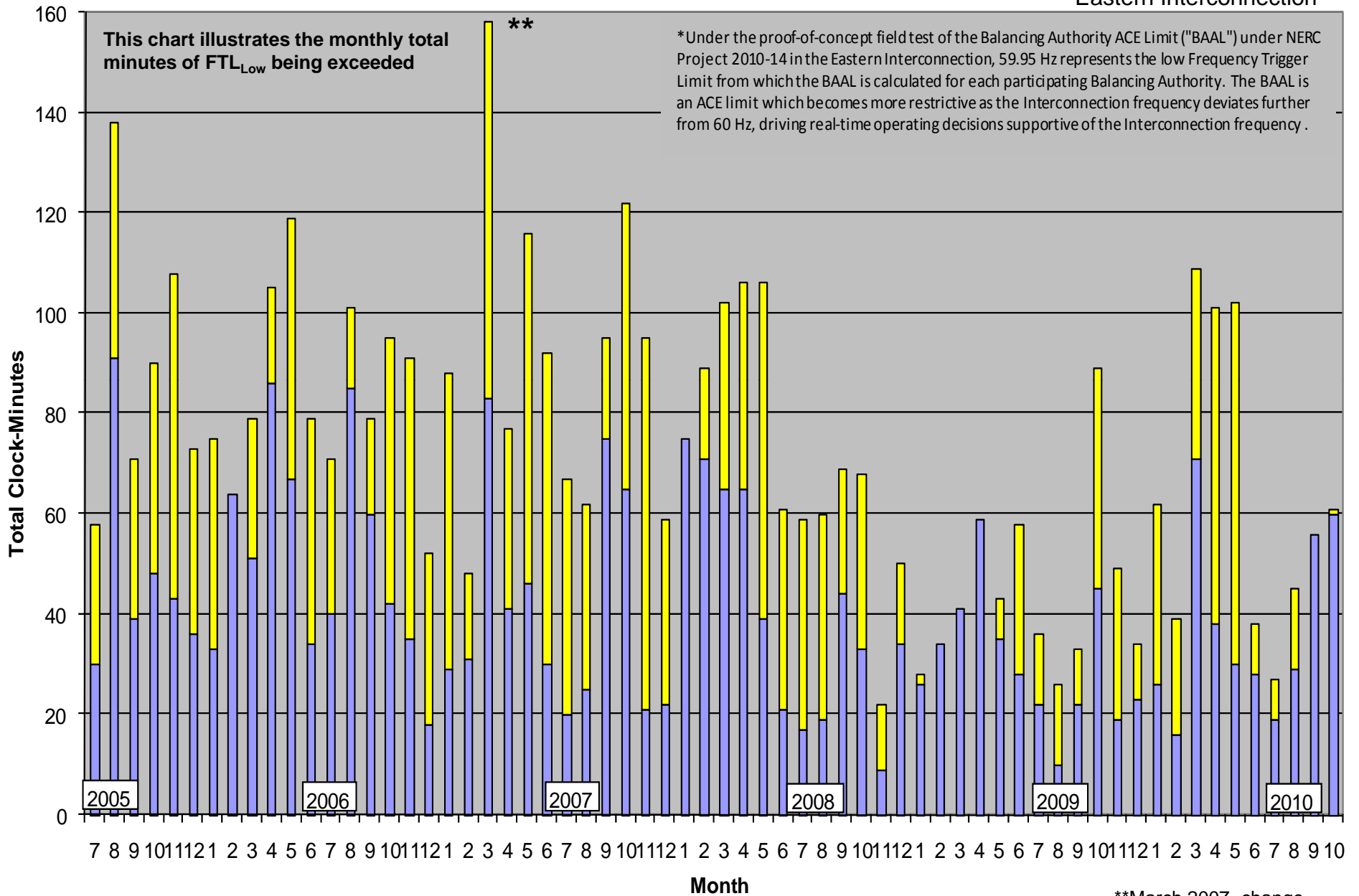
Eastern Interconnection

Year	Month	Total Minutes FTL_High at 60.02 Hz SF	Total Minutes FTL_High at 60 Hz SF	Total FTL_High Minutes	Percentage High During TEC	FTL_High Events	FTL_High Max Duration	Total FTL_Low and FTL_High Minutes at 60 Hz SF	Total FTL_Low and FTL_High Minutes	FTL_Low FTL_High Minutes at 60 Hz SF	Total FTL_Low and FTL_High Minutes
2007	11	0	34	34	0.00%	24	5	55	129	74	74
2007	12	0	61	61	0.00%	38	4	83	120	173	173
2008	1	0	48	48	0.00%	24	4	123	123	110	110
2008	2	0	51	51	0.00%	24	8	122	140	123	123
2008	3	0	40	40	0.00%	34	2	105	142	100	100
2008	4	0	59	59	0.00%	33	6	124	165	138	138
2008	5	0	40	40	0.00%	20	5	79	146	104	104
2008	6	0	35	35	0.00%	19	5	56	96	104	104
2008	7	0	17	17	0.00%	12	3	34	76	100	100
2008	8	0	29	29	0.00%	17	6	48	89	100	100
2008	9	0	55	55	0.00%	21	11	99	124	100	100
2008	10	0	27	27	0.00%	19	3	60	95	100	100
2008	11	0	13	13	0.00%	9	4	22	35	100	100
2008	12	0	11	11	0.00%	8	3	45	61	100	100
2009	1	0	19	19	0.00%	9	3	45	47	100	100
2009	2	0	18	18	0.00%	11	6	52	52	100	100
2009	3	0	25	25	0.00%	11	9	66	66	100	100
2009	4	0	27	27	0.00%	20	3	86	86	100	100
2009	5	0	27	27	0.00%	15	8	62	70	100	100
2009	6	0	25	25	0.00%	16	3	53	83	100	100
2009	7	0	28	28	0.00%	16	6	50	64	100	100
2009	8	0	13	13	0.00%	10	2	23	39	100	100
2009	9	0	20	20	0.00%	14	4	42	53	100	100
2009	10	0	18	18	0.00%	10	3	63	107	100	100
2009	11	0	34	34	0.00%	21	4	53	83	100	100
2009	12	0	22	22	0.00%	15	3	45	56	100	100
2010	1	0	16	16	0.00%	9	3	42	78	100	100
2010	2	0	26	26	0.00%	16	2	42	65	100	100
2010	3	0	40	40	0.00%	22	6	111	149	100	100
2010	4	0	54	54	0.00%	34	6	92	155	100	100
2010	5	0	40	40	0.00%	29	4	70	142	100	100
2010	6	0	10	10	0.00%	9	2	38	48	100	100
2010	7	0	30	30	0.00%	13	5	49	57	100	100
2010	8	0	17	17	0.00%	11	3	46	62	100	100
2010	9	0	22	22	0.00%	11	4	78	78	100	100
2010	10	0	19	19	0.00%	15	4	79	80	100	100

This chart is a summary of frequency-related statistics gathered since the start of the Field Trial. Of particular interest is the drop in operation outside of the FTL bounds, trending lower in the latter part of 2008 with November 2008 having the least number of clock-minutes of operation outside the FTL bounds, followed by August 2009, over the dataset.

Total Clock-Minutes of Frequency below 59.95 Hz*

Eastern Interconnection



■ Total Minutes at 60 Hz
 ■ Addition Minutes During Time-Error Corrections

**March 2007- change to the new Daylight Saving Time.

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	ACPS1
10/2/10	17:47	EST	60.01632	60	0	11	-984.0059
10/2/10	17:48	EST	60.0234	60	0	12	-1469.38
10/2/10	17:49	EST	60.02196	60	0	13	-996.5731
10/2/10	17:50	EST	60.03679	60	0	14	-1526.626
10/2/10	17:51	EST	60.0275	60	0	15	-935.8621
10/5/10	20:57	CDT	60.0256	60	0	11	-1370.179
10/5/10	20:58	CDT	60.0278	60	0	12	-936.0895
10/7/10	20:12	EST	59.98731	60	11	0	-1354.215
10/12/10	7:00	EST	60.02128	60	0	11	-1091.402
10/14/10	6:11	CDT	59.9717	60	11	0	-3070.657
10/14/10	6:12	CDT	59.9817	60	12	0	-1927.189
10/15/10	19:48	EST	60.01998	60	0	11	-2182.512
10/15/10	19:49	EST	60.00867	60	0	12	-782.2628
10/15/10	19:50	EST	60.01673	60	0	13	-1722.12
10/25/10	5:11	EST	59.986	60	11	0	-620.6841
10/25/10	19:56	EST	60.01269	60	0	11	-597.4894
10/25/10	22:57	EST	60.026	60	0	11	-1263.989
10/25/10	22:58	EST	60.031	60	0	12	-1119.788
10/25/10	22:59	EST	60.044	60	0	13	-890.8723
10/25/10	22:59	CDT	60.0442	60	0	11	-2387.143
10/25/10	23:00	CDT	60.0238	60	0	12	-1003.418
10/26/10	5:42	EST	59.96608	60	11	0	-2056.511
10/26/10	12:21	EST	59.981867	60	11	0	-2747.226
10/26/10	22:00	CST	60.023	60	0	11	-1063.461
10/26/10	22:01	CST	60.0257	60	0	12	-1116.777
10/26/10	22:01	EST	60.02366	60	0	11	-1299.696
10/26/10	22:02	EST	60.02645	60	0	12	-1500.219
10/27/10	5:10	CDT	59.9749	60	11	0	-1183.096
10/28/10	18:50	CDT	59.9891	60	11	0	-1222.226
10/29/10	21:13	CDT	59.9656	60	11	0	-3723.362
10/29/10	21:14	CDT	59.9864	60	12	0	-1187.566

All minutes of the BAAL being exceeded for more than 10 consecutive clock-minutes noted on left.

Periods of the FTL being exceeded for this presentation:

PrevailingTime	PTimeZone	FreqError	ActualFreq	SchedFreq	Minute_Count
10/7/10 22:53	EDT	0.0501	60.0501	60	1
10/7/10 22:54	EDT	0.0511	60.0511	60	2
10/7/10 22:55	EDT	0.0561	60.0561	60	3
10/7/10 22:56	EDT	0.0609	60.0609	60	4
10/15/10 23:21	EDT	-0.0649	59.9351	60	1
10/15/10 23:22	EDT	-0.0763	59.9237	60	2
10/15/10 23:23	EDT	-0.0645	59.9355	60	3
10/15/10 23:24	EDT	-0.0571	59.9429	60	4
10/27/10 6:30	EDT	-0.0553	59.9447	60	1
10/27/10 6:31	EDT	-0.0575	59.9425	60	2
10/27/10 6:32	EDT	-0.0635	59.9365	60	3
10/27/10 6:33	EDT	-0.0609	59.9391	60	4
10/27/10 6:34	EDT	-0.0505	59.9495	60	5

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	ACPS1
10/2/10	17:47	EST	68.81832	68	0	21	-594.8839
10/2/10	17:48	EST	68.8234	68	0	22	-1483.38
10/2/10	17:49	EST	68.8285	68	0	23	688.8839
10/2/10	17:50	EST	68.8336	68	0	24	1577.8839
10/2/10	17:51	EST	68.8387	68	0	25	2466.8839
10/5/10	20:57						
10/5/10	20:58						
10/7/10	22:13						
10/12/10	7:00						
10/14/10	8:11						
10/14/10	8:12						
10/15/10	19:48						
10/15/10	19:49						
10/15/10	19:50						
10/25/10	5:11						
10/25/10	19:56						
10/25/10	22:57						
10/25/10	22:58						
10/25/10	22:59						
10/25/10	22:59						
10/25/10	22:59						
10/25/10	23:00						
10/26/10	5:42						
10/26/10	12:21						
10/26/10	22:00						
10/26/10	22:01						
10/26/10	22:02						
10/27/10	5:18						
10/28/10	18:50						
10/29/10	21:18						
10/29/10	21:14						

All minutes of the BAAL being exceeded for more than 10 consecutive clock-

Dates in this presentation:

Clock-minute ACE greater than the BAAL_{High} on October 2, 2010, ending 18:51 EDT: 15 consecutive clock-minutes

Clock-minute Frequency greater than the FTL_{High} on October 7, 2010, ending 22:56 EDT: 4 consecutive clock-minutes

Clock-minute Frequency less than the FTL_{Low} on October 15, 2010, ending 23:24 EDT: 4 consecutive clock-minutes

Clock-minute Frequency less than the FTL_{Low} on October 27, 2010, ending 6:34 EDT: 4 consecutive clock-minutes

Under draft BAL-007, a proposed BAAL_{Low} violation would occur when the ACE is lower than BAAL_{Low} for more than 30 consecutive clock-minutes and a proposed BAAL_{High} violation would occur when the ACE is greater than BAAL_{High} for more than 30 consecutive clock-minutes.

Under draft BAL-008, a proposed FTL_{Low} violation would occur when the Frequency is lower than FTL_{Low} for more than 30 consecutive clock-minutes and a proposed FTL_{High} violation would occur when the Frequency is greater than FTL_{High} for more than 30 consecutive clock-minutes.

ed for

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	ACPS1	Minute_Count
10/27/10	6:30	EDT	-8.8538	58.9467	68			1
10/27/10	6:31	EDT	-8.8573	58.9435	68			2
10/27/10	6:32	EDT	-8.8605	58.9403	68			3
10/27/10	6:33	EDT	-8.8639	58.9371	68			4
10/27/10	6:34	EDT	-8.8673	58.9339	68			5

10/2/2010 ending 18:51 EDT
15-minute duration above BAAL_{High}

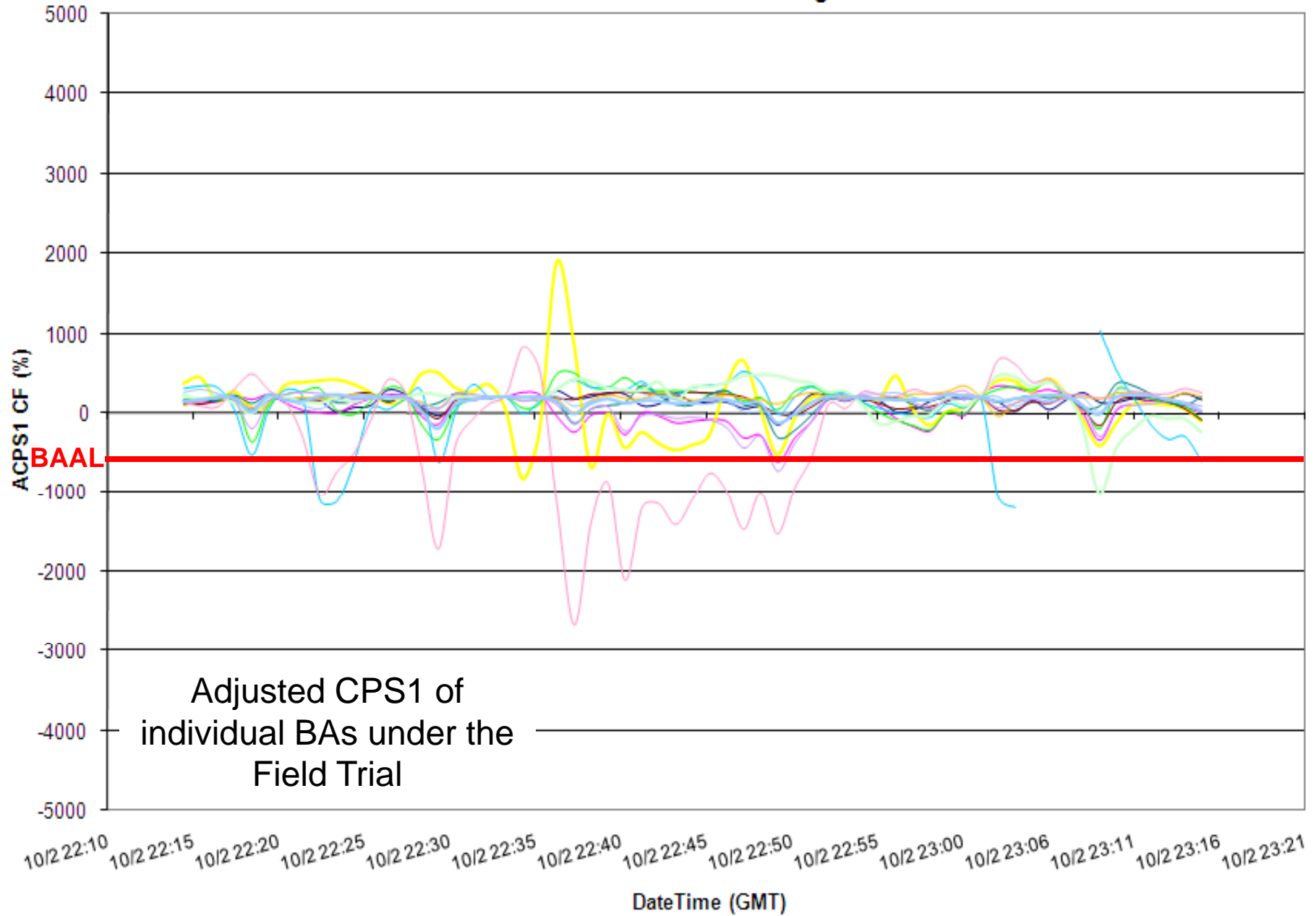
EI Clock-Minute Average Frequency



Clock-minute Actual Frequency of Participants

10/2/2010 ending 18:51 EDT
15-minute duration above BAAL_{High}

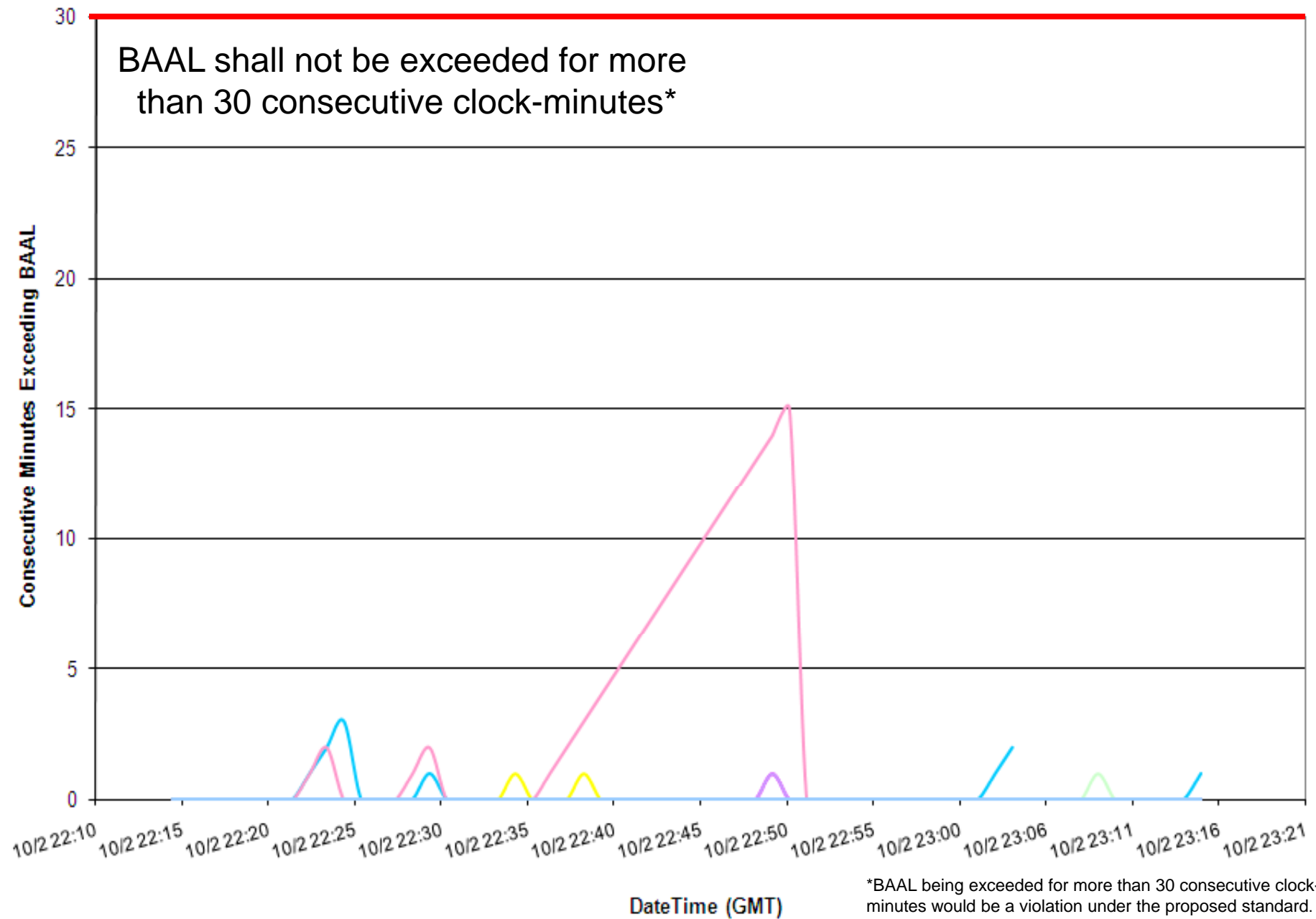
ACPS1 Clock-Minute Averages



10/2/2010 ending 18:51 EDT
15-minute duration above BAAL_{High}

Consecutive Minutes Exceeding BAAL

BAAL Violation*

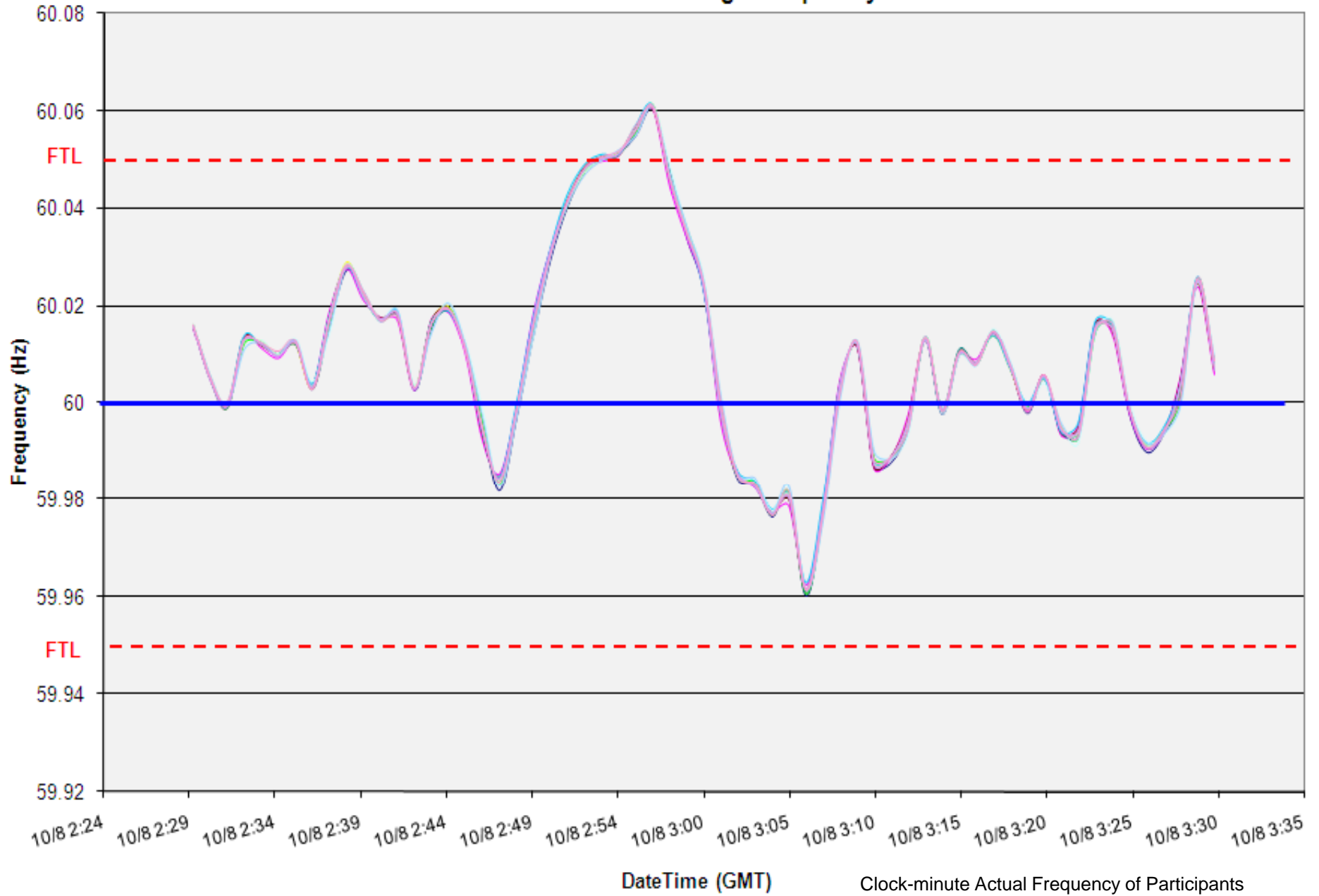


*BAAL being exceeded for more than 30 consecutive clock-minutes would be a violation under the proposed standard.

10/07/2010 ending 22:56 EDT

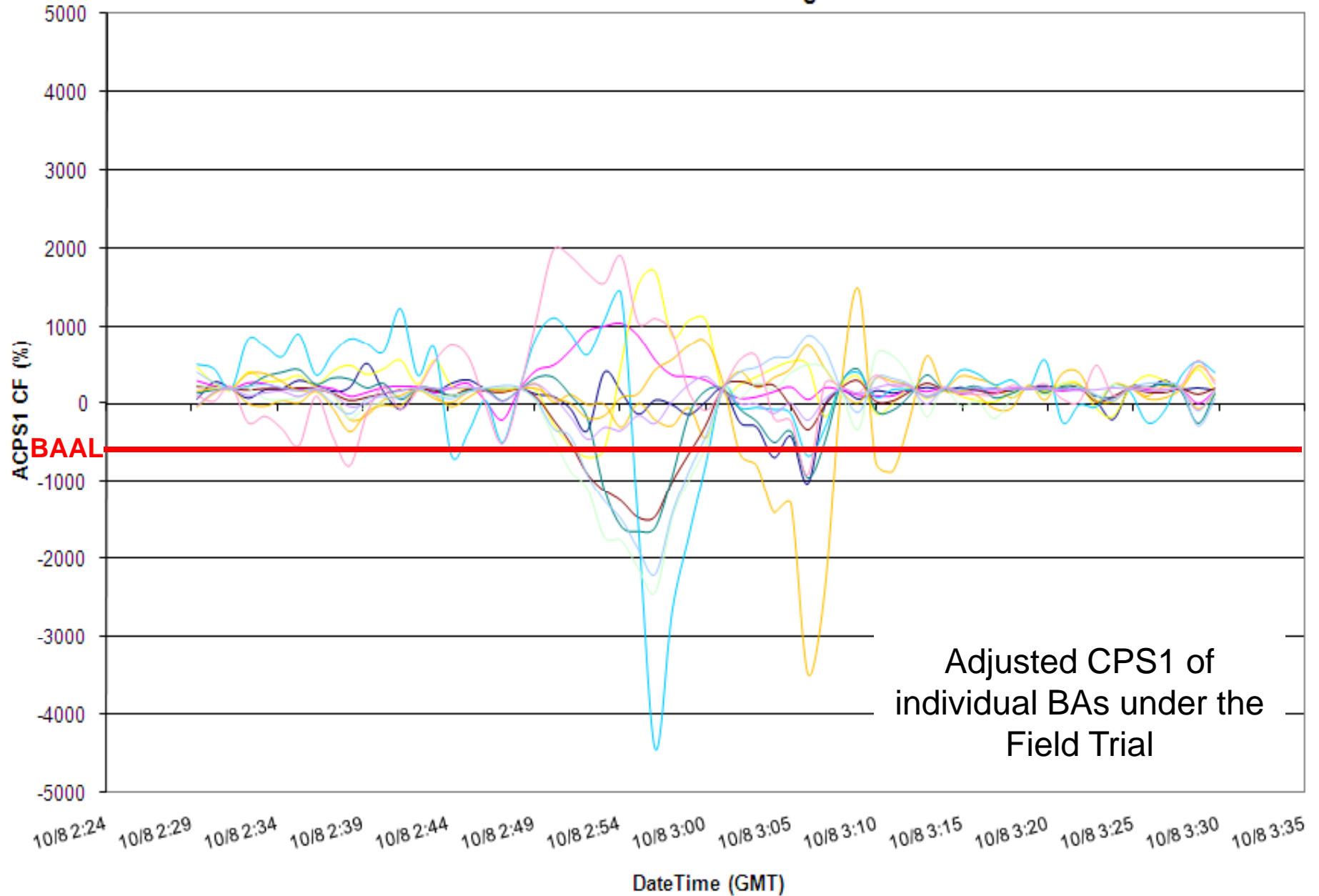
4-minute duration above FTL_{High}

EI Clock-Minute Average Frequency



10/07/2010 ending 22:56 EDT
4-minute duration above FTL_{High}

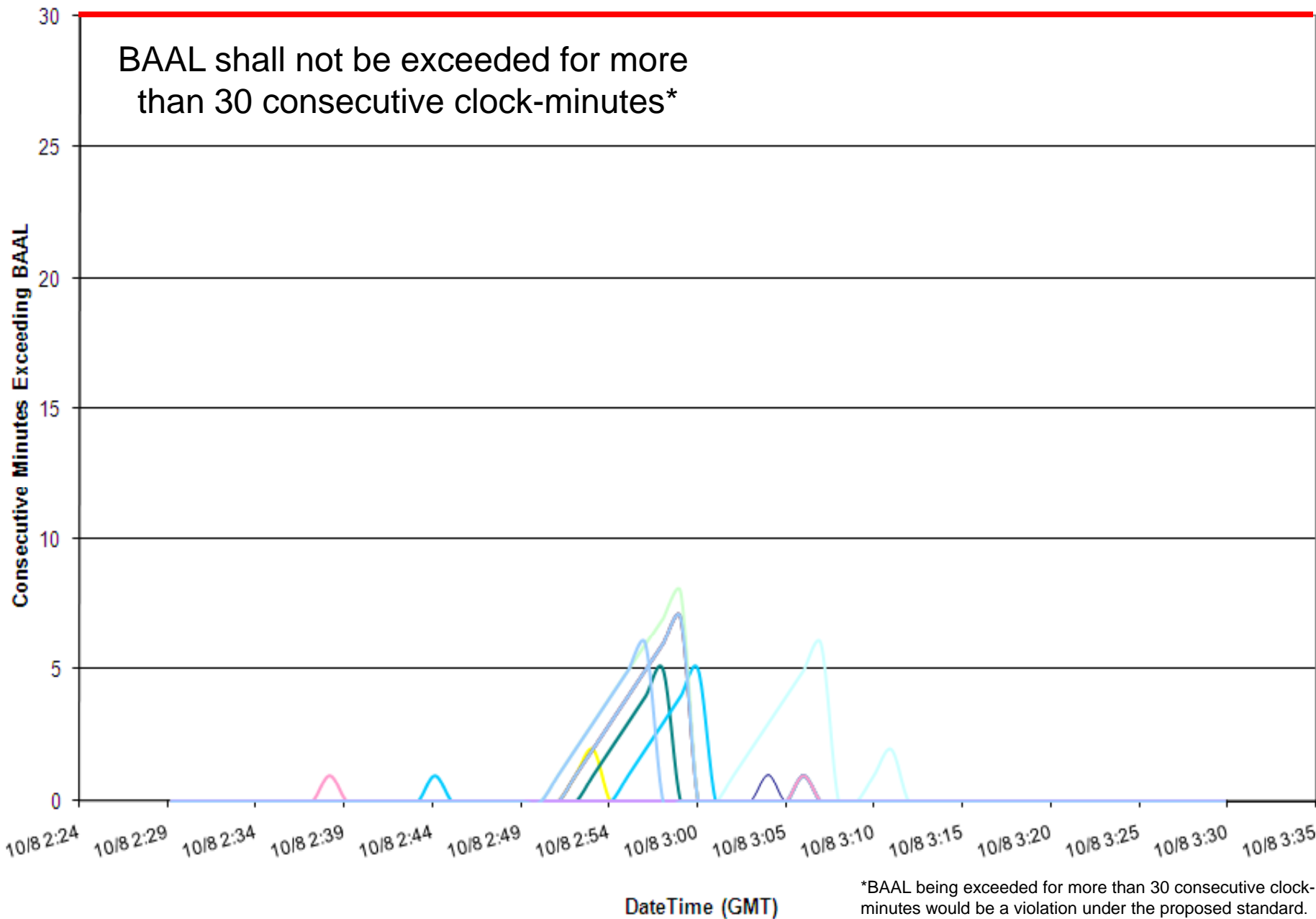
ACPS1 Clock-Minute Averages



10/07/2010 ending 22:56 EDT
4-minute duration above FTL_{High}

Consecutive Minutes Exceeding BAAL

BAAL Violation*

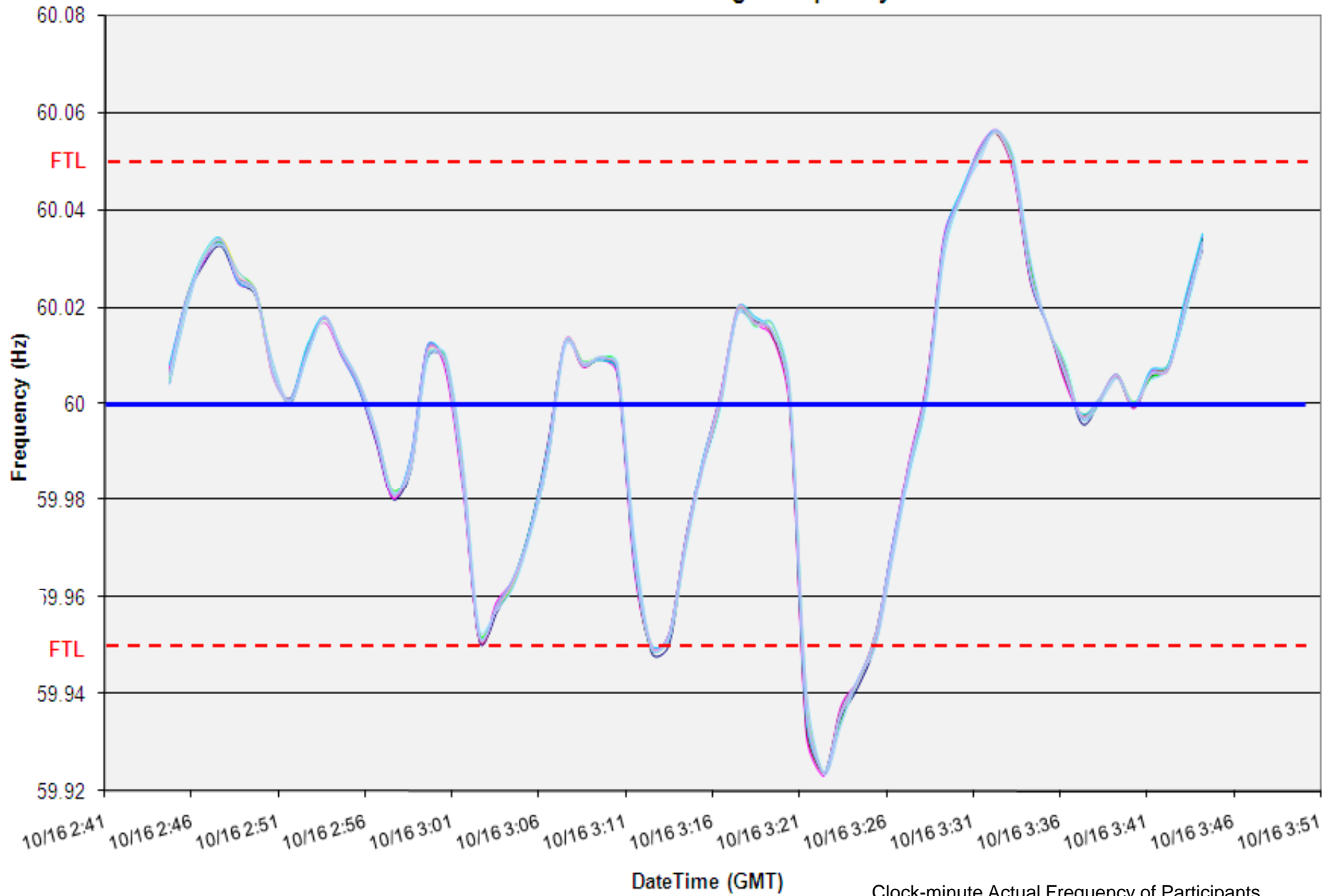


*BAAL being exceeded for more than 30 consecutive clock-minutes would be a violation under the proposed standard.

10/15/2010 ending 23:24 EDT

4-minute duration below FTL_{Low}

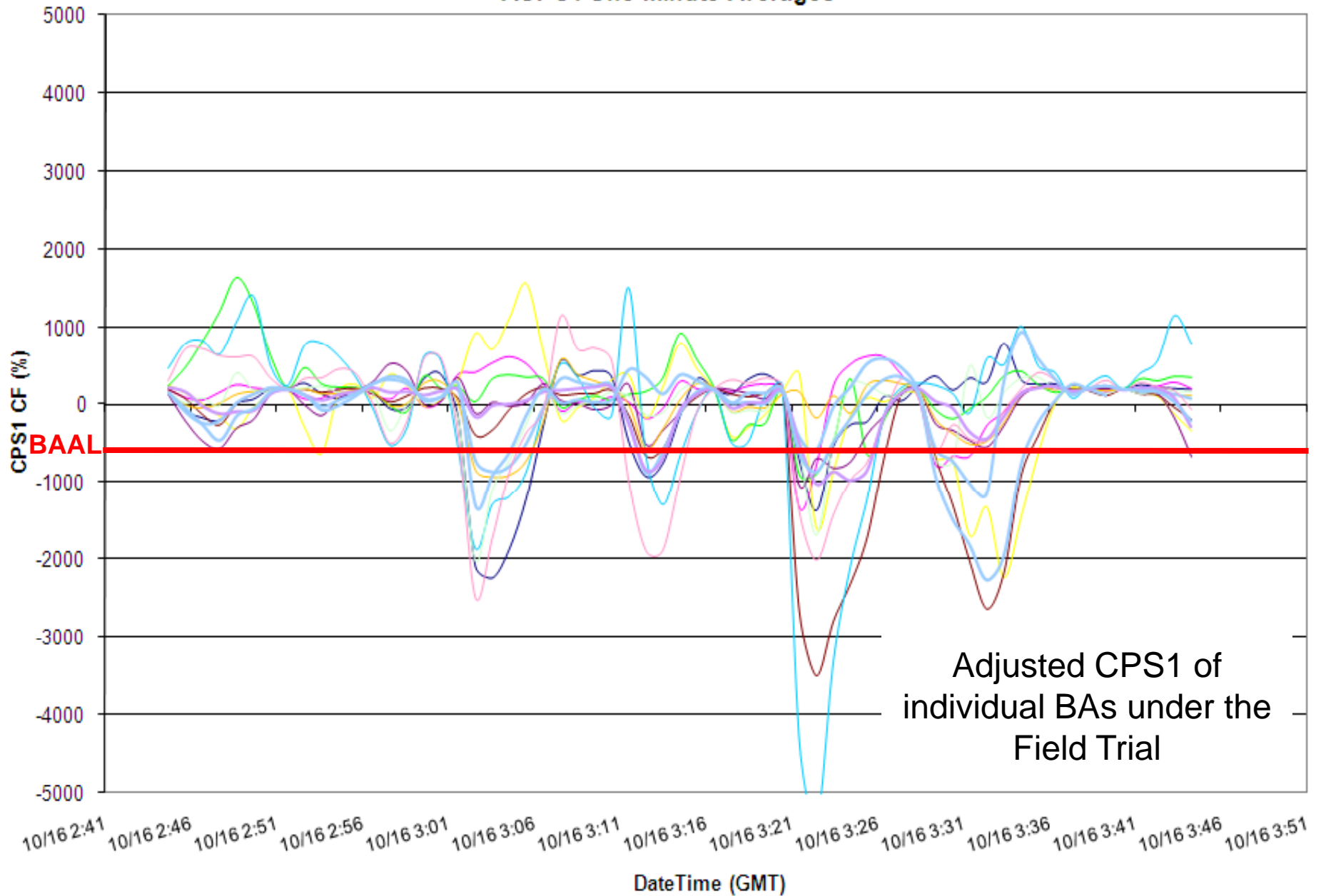
EI Clock-Minute Average Frequency



Clock-minute Actual Frequency of Participants

10/15/2010 ending 23:24 EDT
4-minute duration below FTL_{Low}

ACPS1 One-Minute Averages

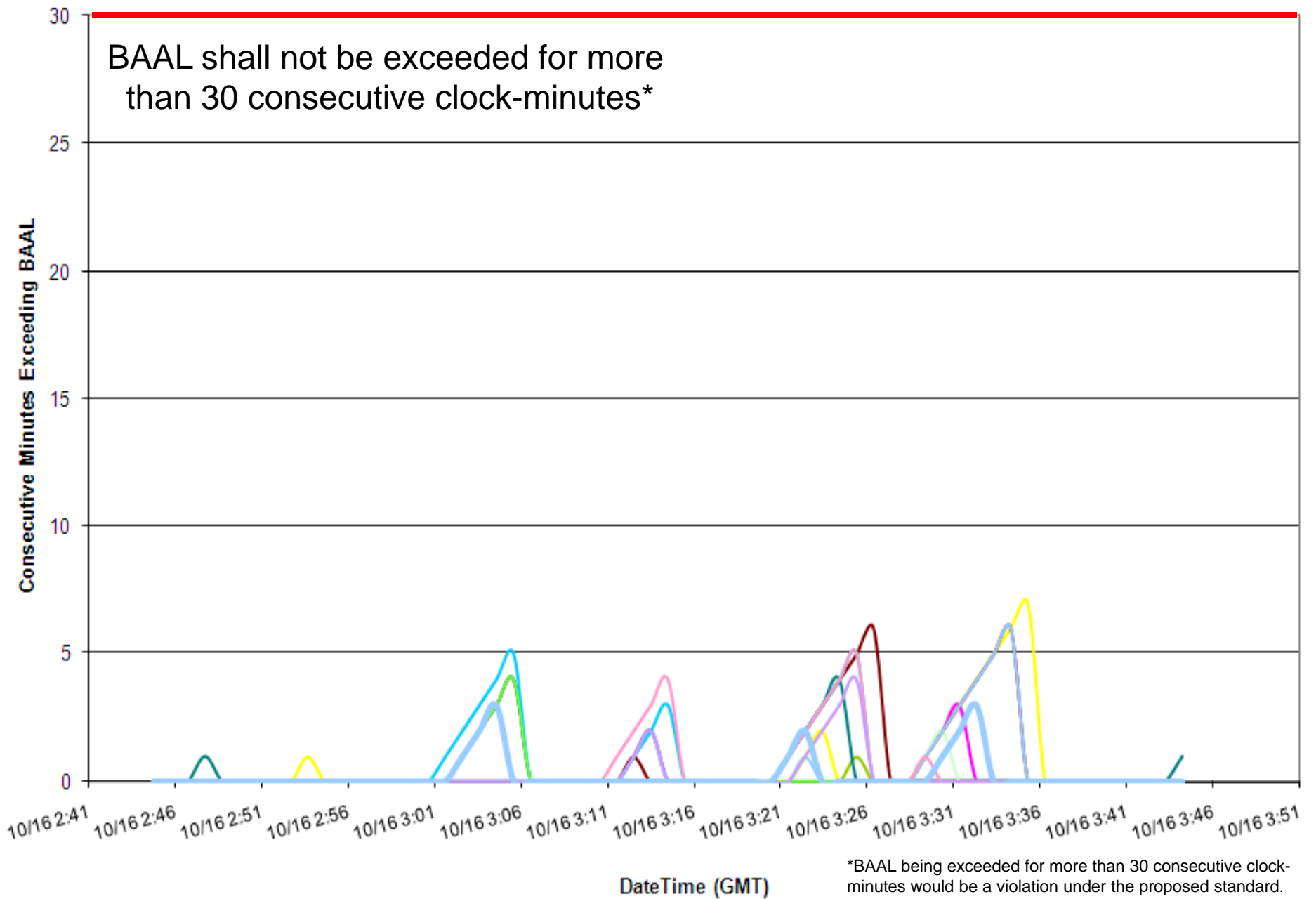


10/15/2010 ending 23:24 EDT

4-minute duration below FTL_{Low}

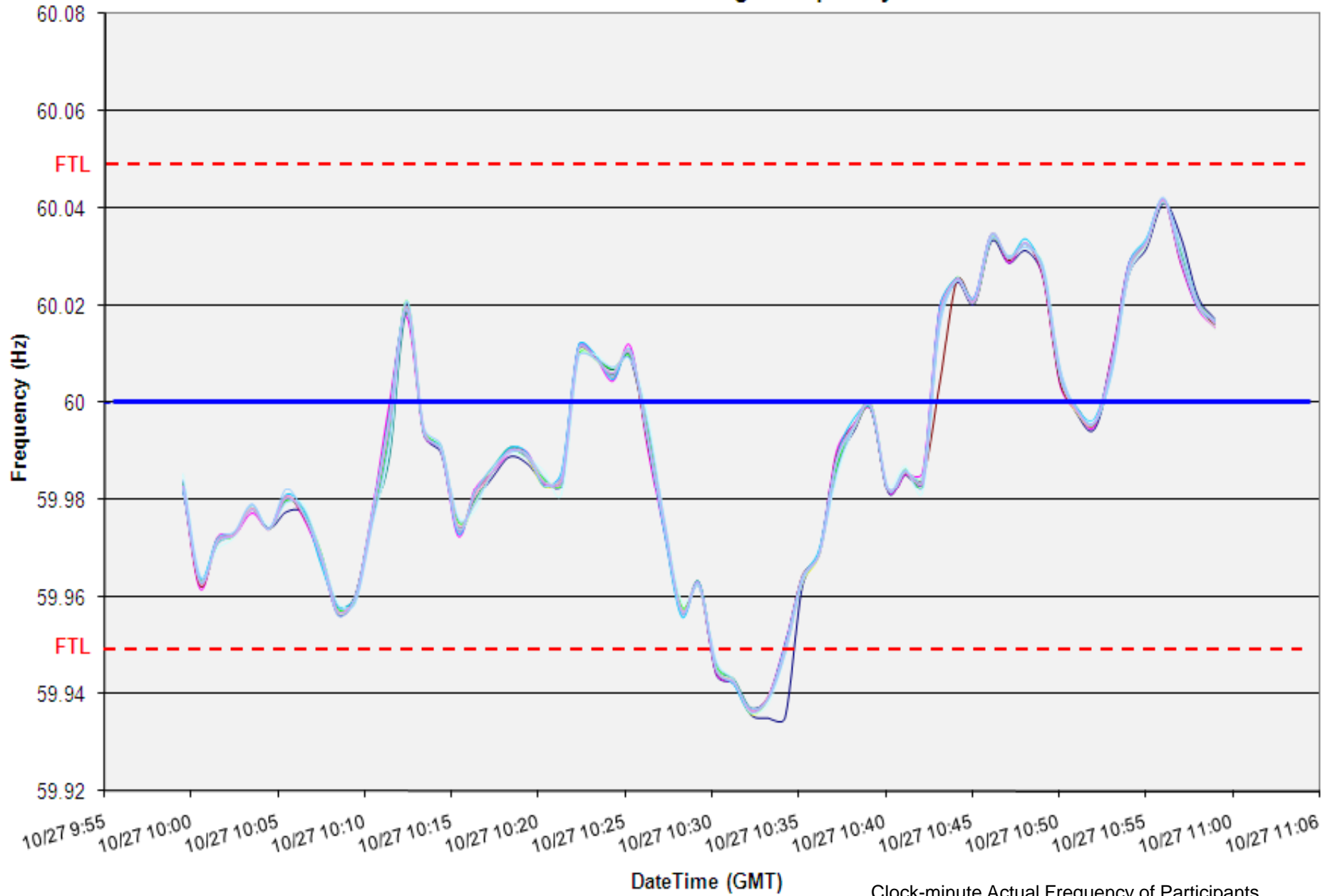
Consecutive Minutes Exceeding BAAL

BAAL Violation*



10/27/2010 ending 6:34 EDT
5-minute duration below FTL_{Low}

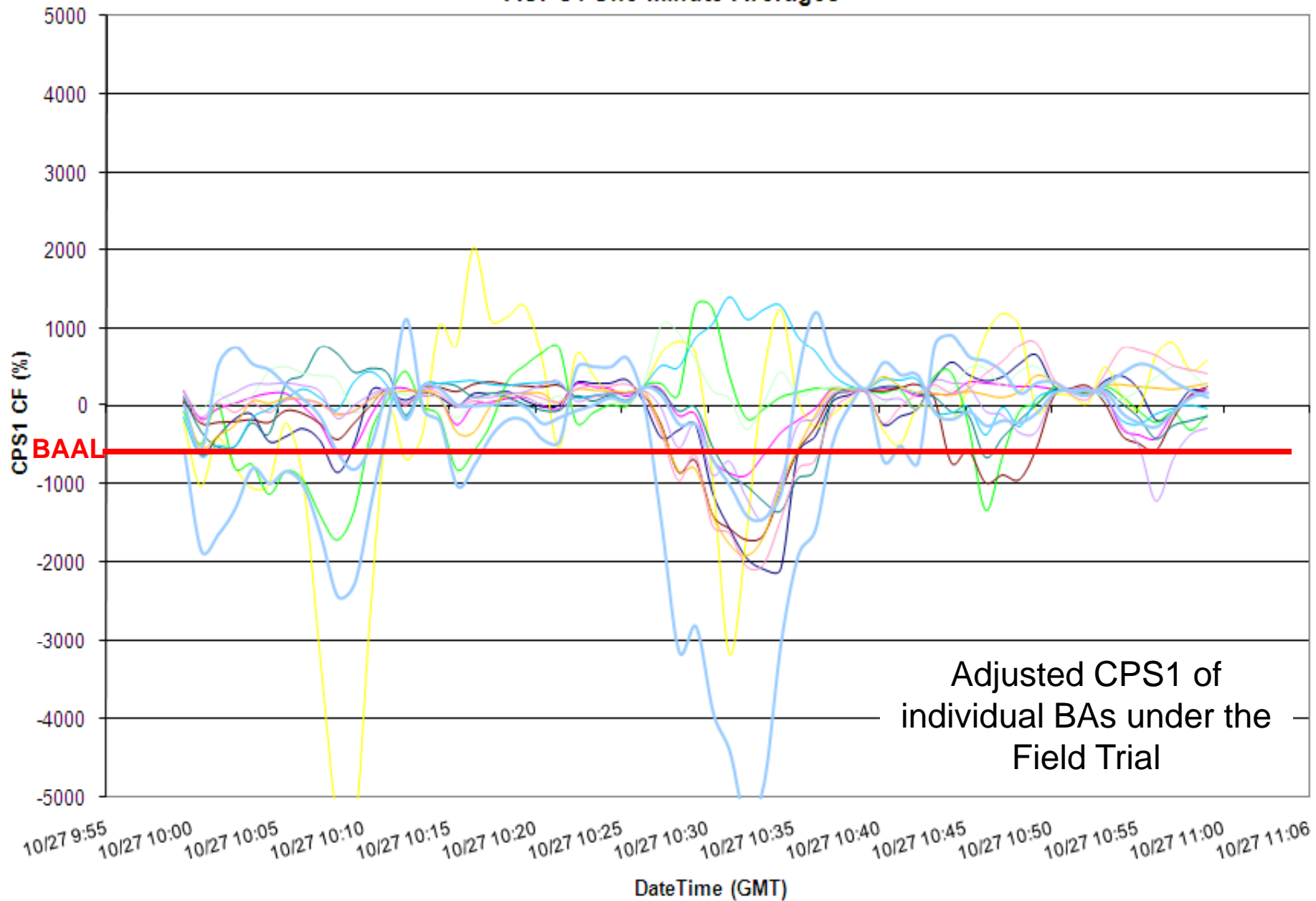
EI Clock-Minute Average Frequency



Clock-minute Actual Frequency of Participants

10/27/2010 ending 6:34 EDT
5-minute duration below FTL_{Low}

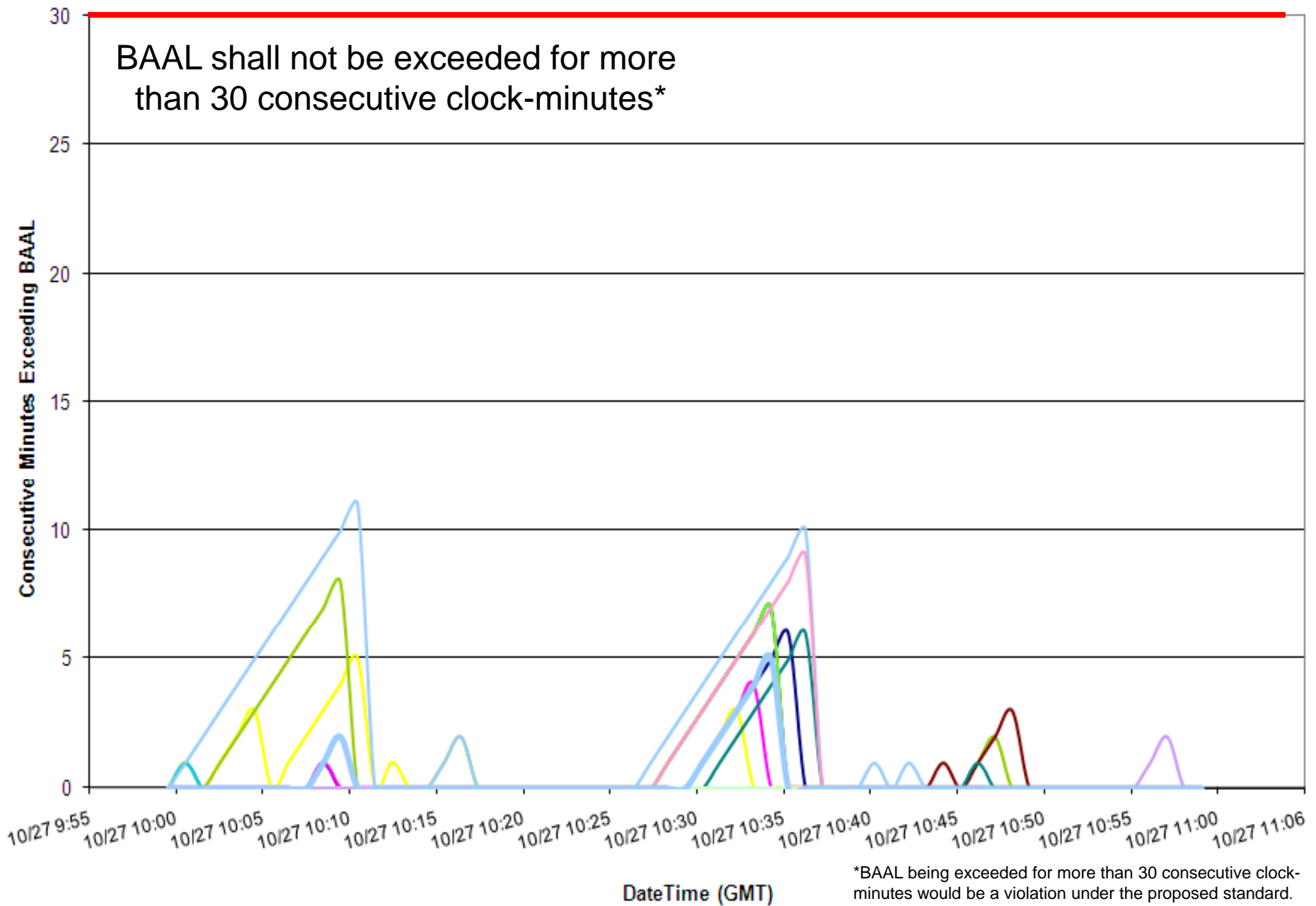
ACPS1 One-Minute Averages



10/27/2010 ending 6:34 EDT
5-minute duration below FTL_{Low}

Consecutive Minutes Exceeding BAAL

BAAL Violation*



Balancing Authority ACE Limit Proof-of-Concept Field Trial

Examples of circumstances when BAAL was exceeded and actions taken if appropriate

Clock-minute of ACE exceeding the BAAL (mm/dd/yy hh:mm)	Clock-minute of ACE returning within the BAAL (mm/dd/yy hh:mm)	TimeZone	Total duration of ACE exceeding the BAAL (minutes)	Event associated with a DCS-Reportable Event? (0=No, 1=Yes)	Event associated with a resource loss other than a DCS-Reportable Event? (0=No, 1=Yes)	Brief explanation of circumstances and notable actions taken if applicable
10/5/10 20:47	10/5/10 20:59	CDT	0:12	0	0	A large schedule change at the top of the hour and high frequency.
10/14/10 6:01	10/14/10 6:13	CDT	0:12	0	1	Loss of a large combined cycle gas plant created the initial issue. Scheduled 150 MW in on the half.
10/25/10 22:49	10/25/10 23:01	CDT	0:12	0	0	Schedule and load changes during high frequency.
10/26/10 12:11	10/26/10 12:22	EST	0:11	0	1	Lost a 525 MW unit due to ID Fan issue, Operator started a CT, adjusted interchange and picked up spinning reserves in response
10/26/10 21:51	10/26/10 22:02	CDT	0:11	0	1	1) SOC re-dispatched Unit A total to X MW min, Unit B to Y MW min and Unit C total generation to Z MW min. Unit D was re-dispatched to AA MW min. Transmission requested that certain units run an additional hour. 2) Issued a Low Load Alert and dispatched units to AB MW. Dispatched E to AC MW and cut unit 3 schedule to AD MW. Sold AE MW. (SOC had indicated it would be releasing some re-dispatch, however, did not until 22:09.
10/29/10 21:03	10/29/10 21:15	CDT	0:12	0	0	Load did not drop as quickly as expected. Prepared to cut schedule, but frequency went high and ended exceedance.
10/25/10 22:46	10/25/10 22:59	EST	0:13	0	0	A large industrial customer (steel mill) experienced a brief pause in process, causing ACE to exceed BAAL-high. The operator began decreasing generation and the steel mill restarted their process to return ACE within limits.

Balancing Authority ACE Limit Proof-of-Concept Field Trial

Discussion

Doug Hils

Balancing Authority Reliability-based Control Standard Drafting Team (BARCSDT)

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