

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

WECC Update Discussion
February 28, 2011

DISCUSSION STARTING AT 3:30 PM EST

Bob Klueber- Midwest ISO

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

Balancing Authority ACE Limit Proof-of-Concept Field Trial

Western Interconnection Field Trial Participation

Western Interconnection Balancing Authority Participants	2010 Frequency Bias	WECC Region	Reliability Coordinator	Start Date
Alberta Electric System Operator (AESO)	-125	NWPP	WECC	March 1, 2010
Arizona Public Service Company (AZPS)	-74.5	AZNMSNV	WECC	March 1, 2010
Bonneville Power Administration (BPAT)	-157.3	NWPP	WECC	March 1, 2010
British Columbia Transmission Corporation (BCTC)	-118	NWPP	WECC	April 1, 2010
California Independent System Operator (CISO)	-485	CAMX	WECC	March 1, 2010
El Paso Electric Company (EPE)	-19	AZNMSNV	WECC	March 1, 2010
NaturEner Power Watch , LLC(GWA)	-2.1	NWPP	WECC	March 1, 2010
Idaho Power Company (IPCO)	-40	NWPP	WECC	March 1, 2010
Los Angeles Department of Water and Power (LDWP)	-62.3	CAMX	WECC	March 1, 2010
Nevada Power Company (NEVP)	-62.29	AZNMSNV	WECC	March 1, 2010
PacifiCorp East (PACE)	-77	NWPP	WECC	March 1, 2010
PacifiCorp West (PACW)	-45	NWPP	WECC	March 1, 2010
Portland General Electric (PGE)	-50	NWPP	WECC	April 1, 2010
Public Service Company of Colorado (PSCO)	-80	RMPA	WECC	March 1, 2010
Public Utility District No.1 of Chelan County(CHPD)	-12	NWPP	WECC	March 1, 2010
Public Utility District No.1 of Douglas County (DOPD)	-7	NWPP	WECC	April 1, 2010
Public Utility District No.2 of Grant County (GCPD)	-25	NWPP	WECC	March 1, 2010
Seattle City Light (SCL)	-40	NWPP	WECC	March 1, 2010
Sacramento Municipal Utility District (SMUD)	-45.18	NWPP	WECC	March 1, 2010
Salt River Project (SRP)	-65.2	AZNMSNV	WECC	May 1, 2010
Sierra Pacific Power Company (SPPC)	-20.04	NWPP	WECC	March 1, 2010
Tucson Electric Power (TEPC)	-30.4	AZNMSNV	WECC	March 1, 2010
Turlock Irrigation District (TIDC)	-6.7	NWPP	WECC	March 1, 2010
Western Area Power Administration – Rocky Mountain Region (WACM)	-55	RMPA	WECC	March 1, 2010
Western Area Power Administration- Desert Southwest Region (WALC)	-54.8	AZNMSNV	WECC	March 1, 2010

Clock-Minute Frequency Below 59.932 Hz FTL_{Low} or Above 60.068 Hz FTL_{High}

PrevailingTime	PTimeZone	FreqError	ActualFreq	SchedFreq
1/14/2011 0:07	PDT	-0.09	59.9132	60.0000
1/14/2011 0:08	PDT	-0.09	59.9078	60.0000
1/14/2011 0:09	PDT	-0.08	59.9166	60.0000
1/14/2011 0:10	PDT	-0.08	59.9158	60.0000
1/14/2011 0:11	PDT	-0.07	59.9319	60.0000
1/19/2011 18:42	PDT	-0.10	59.8955	60.0000
1/19/2011 18:43	PDT	-0.08	59.9154	60.0000
1/19/2011 18:44	PDT	-0.07	59.9291	60.0000
PrevailingTime	PTimeZone	FreqError	ActualFreq	SchedFreq
NONE				

01/14/2011 – Total loss of 1250 MW

01/19/2011 – Total loss of 1338 MW.

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*

BA_Number	Performance Since Entering the Field Trial				Current Month Statistics					
	BAAL _{Low}	BAAL _{High}	ATL _{Low}	ATL _{High}	BAAL _{Low}	BAAL _{High}	ATL _{Low}	ATL _{High}	BAAL _{Low} or ATL _{Low}	BAAL _{High} or ATL _{High}
	Max_MinCtLow	Max_MinCtHigh	Max_MinCtLow2	Max_MinCtHigh2	Max_MinCtLow	Max_MinCtHigh	Max_MinCtLow2	Max_MinCtHigh2	Max_LowLimitCt	Max_HighLimitCt
BA05	44	42	58	49	27	23	24	21	27	23
BA06	16	15	13	15	10	9	0	0	10	9
BA07	23	36	29	41	20	21	6	8	20	21
BA08	22	41	19	34	21	28	18	2	21	28
BA09	11	9	15	55	1	1	3	1	3	1
BA11	10	14	16	7	8	11	0	0	8	11
BA12	10	13	14	17	7	2	6	1	7	2
BA13	7	27	12	45	8	7	2	3	8	7
BA14	23	31	13	55	6	6	0	0	6	6
BA15	5	7	7	5	2	0	0	0	2	0
BA16	14	14	25	34	9	19	10	9	10	19
BA18	7	13	25	15	3	1	1	0	3	1
BA19	11	16	30	34	18	17	2	1	18	17
BA22	5	10	15	14	3	5	0	0	3	5
BA23	20	18	13	27	4	7	5	3	5	7
BA25	15	22	21	14	8	10	2	3	8	10
BA26	13	23	43	41	12	24	15	27	15	27
BA27	23	22	16	15	6	0	4	1	6	1
BA28	13	24	38	39	6	10	11	24	11	24
BA29	17	9	16	16	5	4	4	1	5	4
BA30	19	18	47	39	0	0	2	1	2	1
BA31	20	16	29	28	19	9	8	12	19	12
BA33	26	13	28	58	9	14	8	12	9	15
BA34	16	17	23	29	14	9	13	21	16	21
BA36	69	16	114	25	14	25	6	26	14	26

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

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

MinCtLow2 = Count of consecutive clock-minutes ATL_{Low} was exceeded

MinCtHigh2 = Count of consecutive clock-minutes ATL_{High} was exceeded

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

Statistics of BAAL being exceeded > 20 consecutive clock-minutes :

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	CPS1	ACPS1	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt
01/02/11	21:25	MST	59.9896	60.00	21	0	-3379.87	-3379.87	6	0	21	0
01/03/11	1:13	MST	59.9774	60.00	21	0	-2878.25	-2878.25	0	0	21	0
01/03/11	1:14	MST	59.9790	60.00	22	0	-1746.96	-1746.96	0	0	22	0
01/03/11	1:15	MST	59.9794	60.00	23	0	-1002.64	-1002.64	0	0	23	0
01/03/11	7:48	MST	59.9852	60.00	21	0	-1035.00	-1035.00	0	0	26	0
01/03/11	7:49	MST	59.9706	60.00	22	0	-1621.50	-1621.50	0	0	27	0
01/03/11	8:19	MST	59.9870	60.00	21	0	-5680.85	-5680.85	16	0	21	0
01/03/11	8:20	MST	59.9802	60.00	22	0	-5630.63	-5630.63	17	0	22	0
01/03/11	8:21	MST	59.9803	60.00	23	0	-1024.81	-1024.81	0	0	23	0
01/03/11	11:48	PST	60.0393	60.00	0	21	-2240.65	-2240.65	0	2	0	21
01/03/11	11:49	PST	60.0395	60.00	0	22	-2318.87	-2318.87	0	3	0	22
01/03/11	11:50	PST	60.0420	60.00	0	23	-2442.54	-2442.54	0	4	0	23
01/03/11	11:51	PST	60.0207	60.00	0	24	-1074.13	-1074.13	0	0	0	24
01/03/11	11:52	PST	60.0226	60.00	0	25	-1128.38	-1128.38	0	0	0	25
01/03/11	11:54	PST	60.0218	60.00	0	21	-902.67	-902.67	0	13	0	21
01/03/11	11:55	PST	60.0280	60.00	0	22	-1247.11	-1247.11	0	14	0	22
01/03/11	11:56	PST	60.0322	60.00	0	23	-1405.53	-1405.53	0	15	0	23
01/03/11	11:57	PST	60.0250	60.00	0	24	-895.09	-895.09	0	0	0	24
01/03/11	19:57	MST	59.9920	60.00	21	0	-1505.57	-1505.57	0	0	21	0
01/03/11	19:58	MST	59.9842	60.00	22	0	-2944.95	-2944.95	0	0	22	0
01/04/11	7:43	MST	59.9738	60.00	21	0	-2243.09	-2243.09	0	0	21	0
01/04/11	7:44	MST	59.9775	60.00	22	0	-1924.68	-1924.68	0	0	22	0
01/04/11	7:45	MST	59.9867	60.00	23	0	-1221.60	-1221.60	0	0	23	0
01/05/11	4:50	PST	59.9531	60.00	21	0	-1090.45	-1090.45	0	0	21	0
01/05/11	22:50	MST	60.0417	60.00	0	21	-1099.05	-1099.05	0	0	0	21
01/08/11	9:21	MST	59.9945	60.00	21	0	-1535.12	-1535.12	8	0	21	0
01/08/11	9:22	MST	59.9863	60.00	22	0	-3582.84	-3582.84	0	0	22	0
01/08/11	9:23	MST	59.9897	60.00	23	0	-2304.95	-2304.95	0	0	23	0
01/08/11	9:24	MST	59.9780	60.00	24	0	-4127.60	-4127.60	0	0	24	0
01/08/11	9:25	MST	59.9846	60.00	25	0	-1686.06	-1686.06	0	0	25	0

Statistics of BAAL being exceeded > 20 consecutive clock-minutes :

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	CPS1	ACPS1	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt
01/11/11	16:34	MST	59.9789	60.00	21	0	-1804.50	-1804.50	0	0	21	0
01/11/11	16:35	MST	59.9749	60.00	22	0	-2089.08	-2089.08	0	0	22	0
01/11/11	16:36	MST	59.9848	60.00	23	0	-1083.60	-1083.60	0	0	23	0
01/11/11	16:37	MST	59.9840	60.00	24	0	-1078.18	-1078.18	0	0	24	0
01/12/11	18:31	MST	59.9659	60.00	21	0	-8068.14	-8068.14	0	0	21	0
01/12/11	18:32	MST	59.9686	60.00	22	0	-2239.17	-2239.17	0	0	22	0
01/12/11	20:27	MST	59.9942	60.00	21	0	-1775.24	-1775.24	18	0	21	0
01/12/11	20:28	MST	59.9941	60.00	22	0	-1687.60	-1687.60	19	0	22	0
01/16/11	6:12	MST	59.9820	60.00	21	0	-3538.00	-3538.00	0	0	21	0
01/17/11	16:14	PST	60.0079	60.00	0	21	-723.46	-723.46	0	21	0	21
01/17/11	23:59	MST	60.0080	60.00	0	21	-1241.69	-1241.69	0	0	0	21
01/18/11	0:00	MST	60.0083	60.00	0	22	-1613.71	-1613.71	0	0	0	22
01/18/11	0:01	MST	60.0092	60.00	0	23	-1994.55	-1994.55	0	0	0	23
01/19/11	11:18	PST	60.0254	60.02	0	21	-101.28	-1219.20	0	0	0	21
01/19/11	11:19	PST	60.0305	60.02	0	22	-391.89	-1520.36	0	0	0	22
01/19/11	11:20	PST	60.0375	60.02	0	23	-734.28	-1799.59	0	0	0	23
01/19/11	11:21	PST	60.0399	60.02	0	24	-823.06	-1850.74	0	0	0	24
01/19/11	11:22	PST	60.0340	60.02	0	25	-449.78	-1379.36	0	0	0	25
01/19/11	11:23	PST	60.0246	60.02	0	26	-8.80	-910.73	0	0	0	26
01/19/11	11:24	PST	60.0293	60.02	0	27	-189.14	-1025.99	0	0	0	27
01/19/11	11:25	PST	60.0292	60.02	0	28	-131.49	-855.26	0	0	0	28
01/19/11	12:58	MST	60.0215	60.02	0	21	-463.26	-9306.75	0	6	0	21
01/19/11	12:59	MST	60.0212	60.02	0	22	-313.74	-8876.00	0	7	0	22
01/19/11	13:00	MST	60.0106	60.02	0	23	992.60	-693.78	0	0	0	23
01/23/11	16:29	MST	59.9723	59.98	21	0	-4273.02	-15891.27	21	0	21	0
01/23/11	16:30	MST	59.9648	59.98	22	0	-7628.52	-17929.19	22	0	22	0
01/23/11	16:31	MST	59.9698	59.98	23	0	-295.67	-1267.56	0	0	23	0
01/23/11	16:32	MST	59.9563	59.98	24	0	-587.18	-1251.47	0	0	24	0
01/24/11	6:36	MST	59.9536	60.00	21	0	-6819.86	-6819.86	0	0	21	0
01/24/11	15:14	MST	60.0148	60.00	0	21	-2177.05	-2177.05	0	0	0	21

Statistics of BAAL being exceeded > 20 consecutive clock-minutes :

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	CPS1	ACPS1	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt
01/24/11	18:38	MST	59.9704	60.00	21	0	-854.30	-854.30	0	0	21	0
01/24/11	18:39	MST	59.9710	60.00	22	0	-3638.64	-3638.64	0	0	22	0
01/24/11	18:40	MST	59.9781	60.00	23	0	-2442.53	-2442.53	0	0	23	0
01/24/11	18:41	MST	59.9752	60.00	24	0	-2109.65	-2109.65	0	0	24	0
01/24/11	18:42	MST	59.9817	60.00	25	0	-1060.05	-1060.05	0	0	25	0
01/25/11	6:44	MST	59.9663	60.00	21	0	-2177.94	-2177.94	0	0	21	0
01/25/11	6:45	MST	59.9789	60.00	22	0	-894.62	-894.62	0	0	22	0
01/25/11	6:46	MST	59.9798	60.00	23	0	-1053.97	-1053.97	0	0	23	0
01/28/11	3:56	MST	59.9874	60.00	21	0	-4617.29	-4617.29	8	0	21	0
01/28/11	3:57	MST	59.9938	60.00	22	0	-1911.18	-1911.18	9	0	22	0
01/28/11	3:58	MST	59.9889	60.00	23	0	-3778.85	-3778.85	10	0	23	0
01/28/11	3:59	MST	59.9862	60.00	24	0	-4825.47	-4825.47	11	0	24	0
01/28/11	4:00	MST	59.9866	60.00	25	0	-4841.04	-4841.04	12	0	25	0
01/28/11	4:01	MST	59.9802	60.00	26	0	-7603.40	-7603.40	13	0	26	0
01/28/11	4:02	MST	59.9838	60.00	27	0	-1933.09	-1933.09	0	0	27	0
01/28/11	19:13	MST	60.0483	60.02	0	21	-2346.46	-4146.08	0	0	0	21
01/28/11	19:14	MST	60.0540	60.02	0	22	-3087.68	-5021.61	0	0	0	22
01/28/11	19:15	MST	60.0554	60.02	0	23	-3188.23	-5102.48	0	0	0	23
01/28/11	20:06	MST	60.0142	60.02	0	21	731.54	-1101.35	0	0	0	21
01/28/11	20:07	MST	60.0139	60.02	0	22	839.66	-1257.59	0	0	0	22
01/28/11	21:59	MST	60.0289	60.02	0	21	-533.12	-2180.59	0	0	0	21
01/28/11	22:00	MST	60.0334	60.02	0	22	-740.38	-2143.92	0	0	0	22
01/28/11	22:01	MST	60.0379	60.02	0	23	-837.86	-1997.49	0	0	0	23
01/29/11	16:18	MST	59.9718	59.98	21	0	-1149.15	-4439.76	0	0	21	0
01/29/11	16:19	MST	59.9638	59.98	22	0	-2527.63	-5895.08	0	0	22	0
01/29/11	16:20	MST	59.9677	59.98	23	0	-1420.09	-4089.26	0	0	23	0
01/29/11	16:21	MST	59.9682	59.98	24	0	-910.65	-2793.12	0	0	24	0
01/29/11	16:22	MST	59.9665	59.98	25	0	-779.26	-2230.02	0	0	25	0
01/31/11	2:58	MST	59.9698	60.00	21	0	-5303.24	-5303.24	0	0	21	0

Statistics of ATL ($4 \times L_{10}$) being exceeded > 20 consecutive clock-minutes :

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	CPS1	ACPS1	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt
01/01/11	16:57	PST	60.0162	60.00	0	0	-210.79	-210.79	0	21	0	21
01/01/11	16:58	PST	60.0168	60.00	0	0	-214.51	-214.51	0	22	0	22
01/01/11	16:59	PST	60.0204	60.00	0	0	-320.29	-320.29	0	23	0	23
01/01/11	17:00	PST	60.0082	60.00	0	0	10.78	10.78	0	24	0	24
01/02/11	12:40	MST	60.0309	60.00	0	0	16642.53	16642.53	21	0	21	0
01/03/11	10:45	MST	60.0077	60.00	0	0	2925.54	2925.54	21	0	22	0
01/03/11	10:46	MST	60.0020	60.00	0	0	953.26	953.26	22	0	23	0
01/03/11	15:54	MST	59.9866	60.00	0	0	5019.14	5019.14	0	21	0	21
01/08/11	3:58	MST	60.0001	60.00	0	0	242.47	242.47	21	0	21	0
01/08/11	3:59	MST	59.9873	60.00	1	0	-5201.10	-5201.10	22	0	22	0
01/08/11	4:00	MST	60.0035	60.00	0	0	1222.71	1222.71	23	0	23	0
01/09/11	22:21	PST	60.0055	60.00	0	0	-296.92	-296.92	0	21	0	21
01/09/11	22:22	PST	60.0078	60.00	0	0	-450.46	-450.46	0	22	0	22
01/09/11	22:23	PST	60.0128	60.00	0	1	-814.22	-814.22	0	23	0	23
01/09/11	22:24	PST	60.0130	60.00	0	2	-811.14	-811.14	0	24	0	24
01/09/11	22:25	PST	60.0172	60.00	0	3	-1130.34	-1130.34	0	25	0	25
01/09/11	22:26	PST	60.0113	60.00	0	0	-527.62	-527.62	0	26	0	26
01/09/11	22:27	PST	60.0082	60.00	0	0	-197.83	-197.83	0	27	0	27
01/12/11	21:17	MST	59.9940	60.00	9	0	-2426.65	-2426.65	21	0	21	0
01/12/11	21:18	MST	59.9877	60.00	10	0	-5000.38	-5000.38	22	0	22	0
01/12/11	21:19	MST	59.9867	60.00	11	0	-5327.84	-5327.84	23	0	23	0
01/12/11	21:20	MST	59.9805	60.00	12	0	-7131.93	-7131.93	24	0	24	0
01/14/11	9:41	PST	59.9712	60.00	0	0	1305.61	1305.61	0	21	0	21
01/14/11	12:35	PST	60.0276	60.02	0	7	-462.42	-2205.64	0	21	0	21
01/14/11	12:36	PST	60.0281	60.02	0	8	-400.95	-1884.78	0	22	0	22
01/14/11	12:37	PST	60.0268	60.02	0	9	-200.96	-1380.26	0	23	0	23
01/17/11	16:14	PST	60.0079	60.00	0	21	-723.46	-723.46	0	21	0	21
01/17/11	16:15	PST	60.0052	60.00	0	0	-381.36	-381.36	0	22	0	22
01/17/11	16:16	PST	59.9960	60.00	0	0	613.33	613.33	0	23	0	23
01/17/11	16:17	PST	59.9857	60.00	0	0	1494.83	1494.83	0	24	0	24
01/17/11	16:18	PST	59.9831	60.00	0	0	1525.08	1525.08	0	25	0	25
01/17/11	16:19	PST	59.9793	60.00	0	0	1490.88	1490.88	0	26	0	26

Statistics of ATL ($4 \times L_{10}$) being exceeded > 20 consecutive clock-minutes :

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	CPS1	ACPS1	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt
01/18/11	6:31	PST	60.0094	60.00	0	3	-700.60	-700.60	0	21	0	22
01/18/11	6:32	PST	60.0005	60.00	0	0	154.39	154.39	0	22	0	23
01/18/11	6:33	PST	59.9909	60.00	0	0	935.43	935.43	0	23	0	24
01/18/11	6:34	PST	59.9852	60.00	0	0	935.59	935.59	0	24	0	25
01/23/11	2:07	MST	59.9953	60.00	3	0	-2393.21	-2393.21	21	0	21	0
01/23/11	2:08	MST	59.9856	60.00	4	0	-5883.88	-5883.88	22	0	22	0
01/23/11	16:29	MST	59.9723	59.98	21	0	-4273.02	-15891.27	21	0	21	0
01/23/11	16:30	MST	59.9648	59.98	22	0	-7628.52	-17929.19	22	0	22	0
01/25/11	19:22	MST	59.9971	60.00	1	0	-697.52	-697.52	21	0	22	0
01/27/11	16:25	PST	59.9969	60.00	0	0	407.20	407.20	0	21	0	23
01/27/11	16:26	PST	59.9931	60.00	0	0	672.20	672.20	0	22	0	24
01/28/11	4:47	MST	59.9839	60.00	5	0	-9103.72	-9103.72	21	0	21	0
01/28/11	4:48	MST	59.9787	60.00	6	0	-12394.07	-12394.07	22	0	22	0
01/28/11	4:49	MST	59.9797	60.00	7	0	-11801.20	-11801.20	23	0	23	0
01/28/11	4:50	MST	59.9778	60.00	8	0	-12806.86	-12806.86	24	0	24	0
01/28/11	22:49	MST	60.0369	60.02	0	0	5954.77	12765.14	21	0	21	0

01/13/2011 ending 23:11 PST
5 minute duration below FTL_{Low}

Clock-Minute Average Frequency

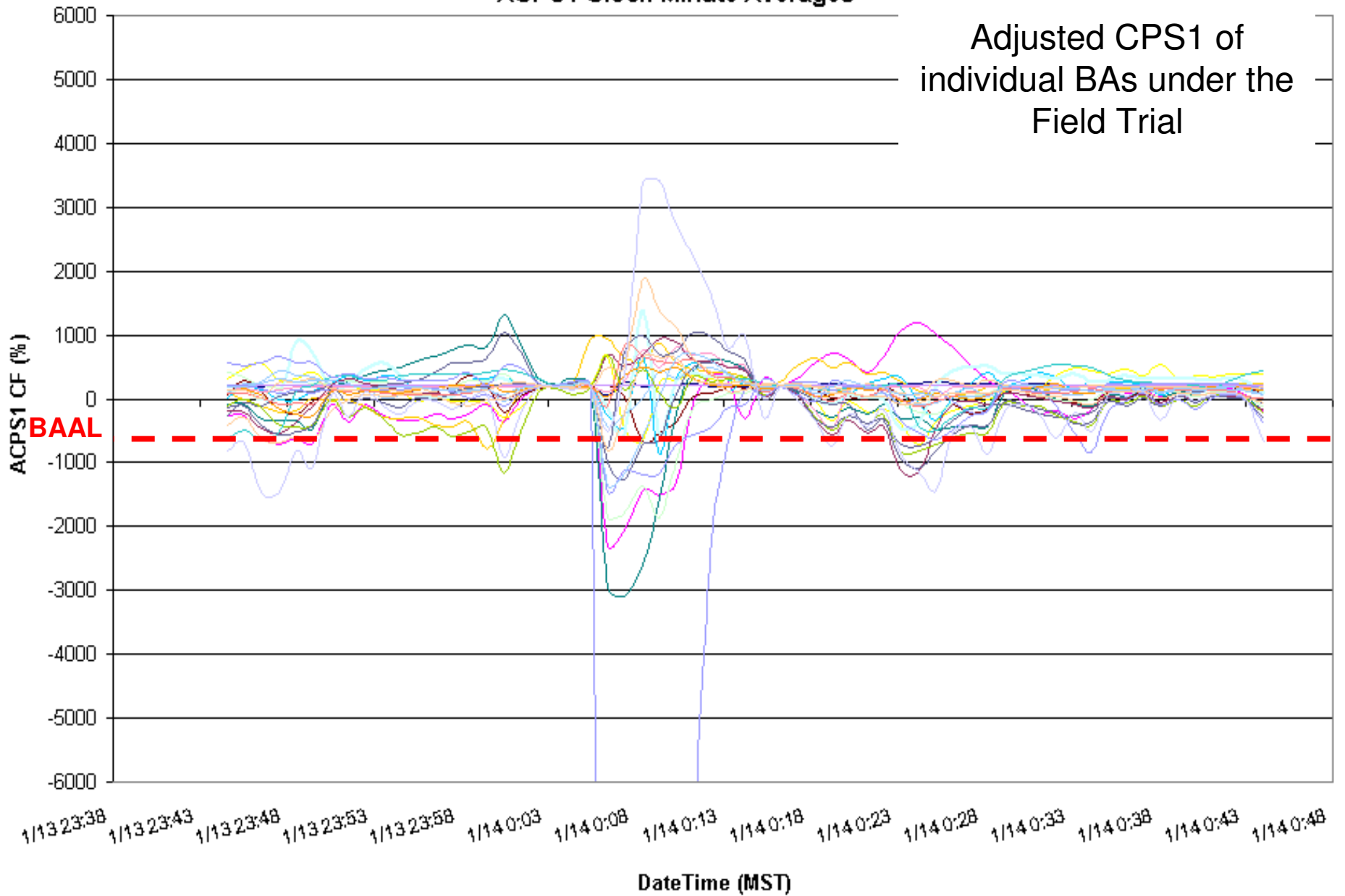


Clock-minute Actual Frequency of Participants

01/13/2011 ending 23:11 PST
5 minute duration below FTL_{Low}

ACPS1 Clock-Minute Averages

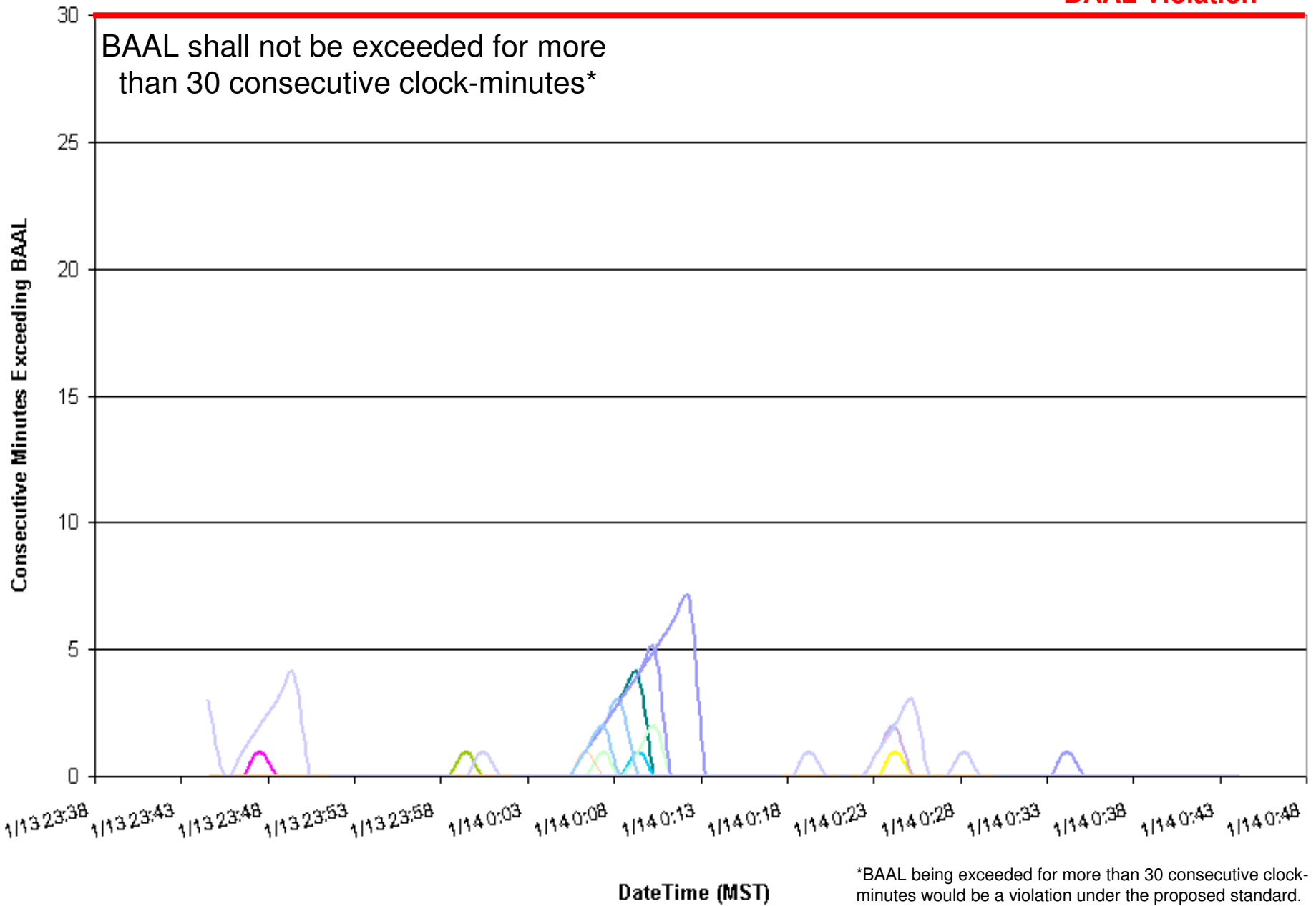
Adjusted CPS1 of
individual BAs under the
Field Trial



01/13/2011 ending 23:11 PST
5 minute duration below FTL_{Low}

Consecutive Minutes Exceeding BAAL

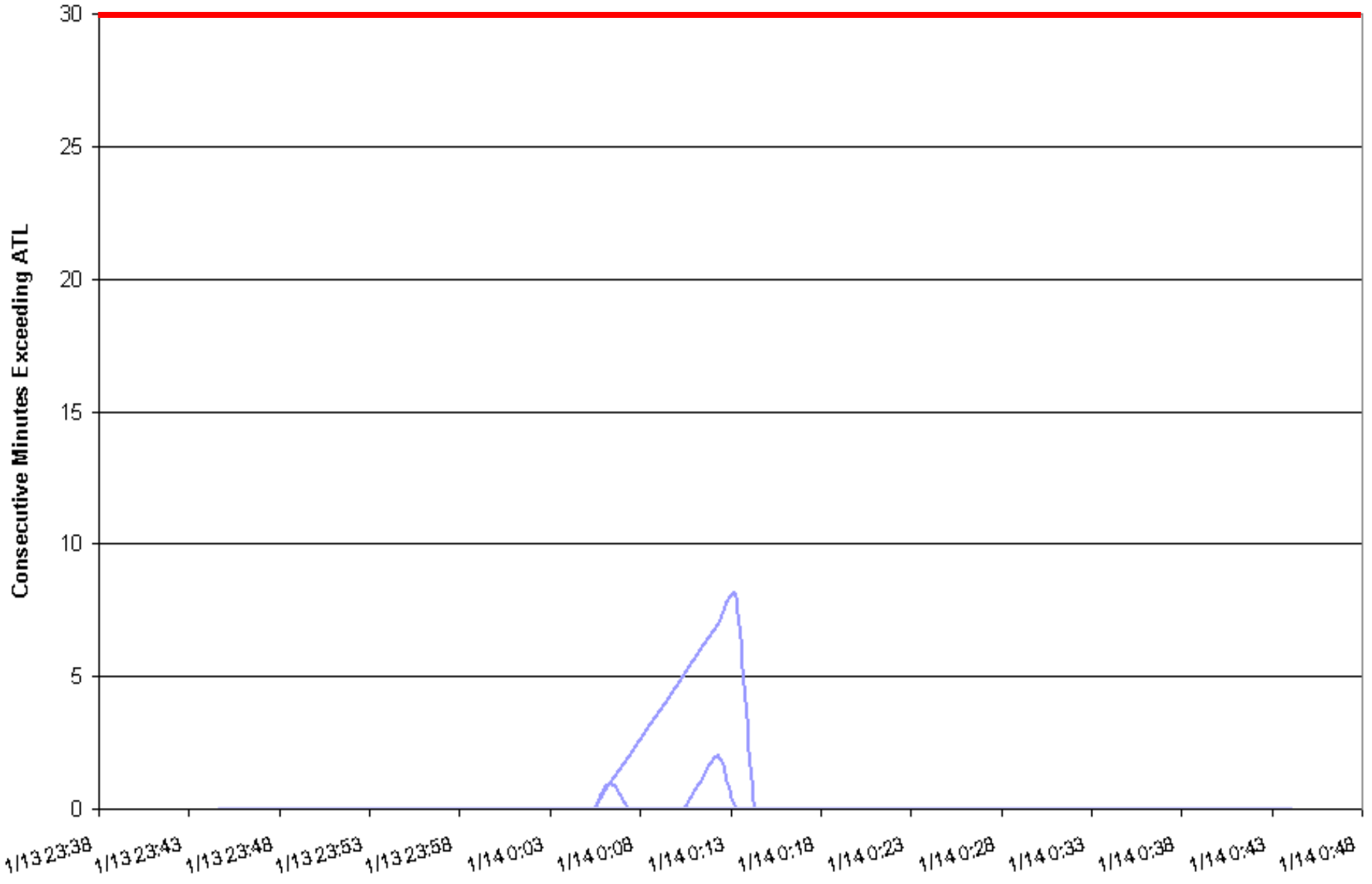
BAAL Violation*



01/13/2011 ending 23:11 PST
5 minute duration below FTL_{Low}

Consecutive Minutes Exceeding ATL

ATL 30 Min Limit*



DateTime (MST)

*Expectation that the BA will not exceed the ATL for more than 30 consecutive clock-minutes within WECC.

01/19/2011 ending 17:44 PST

3 minute duration below FTL_{Low}

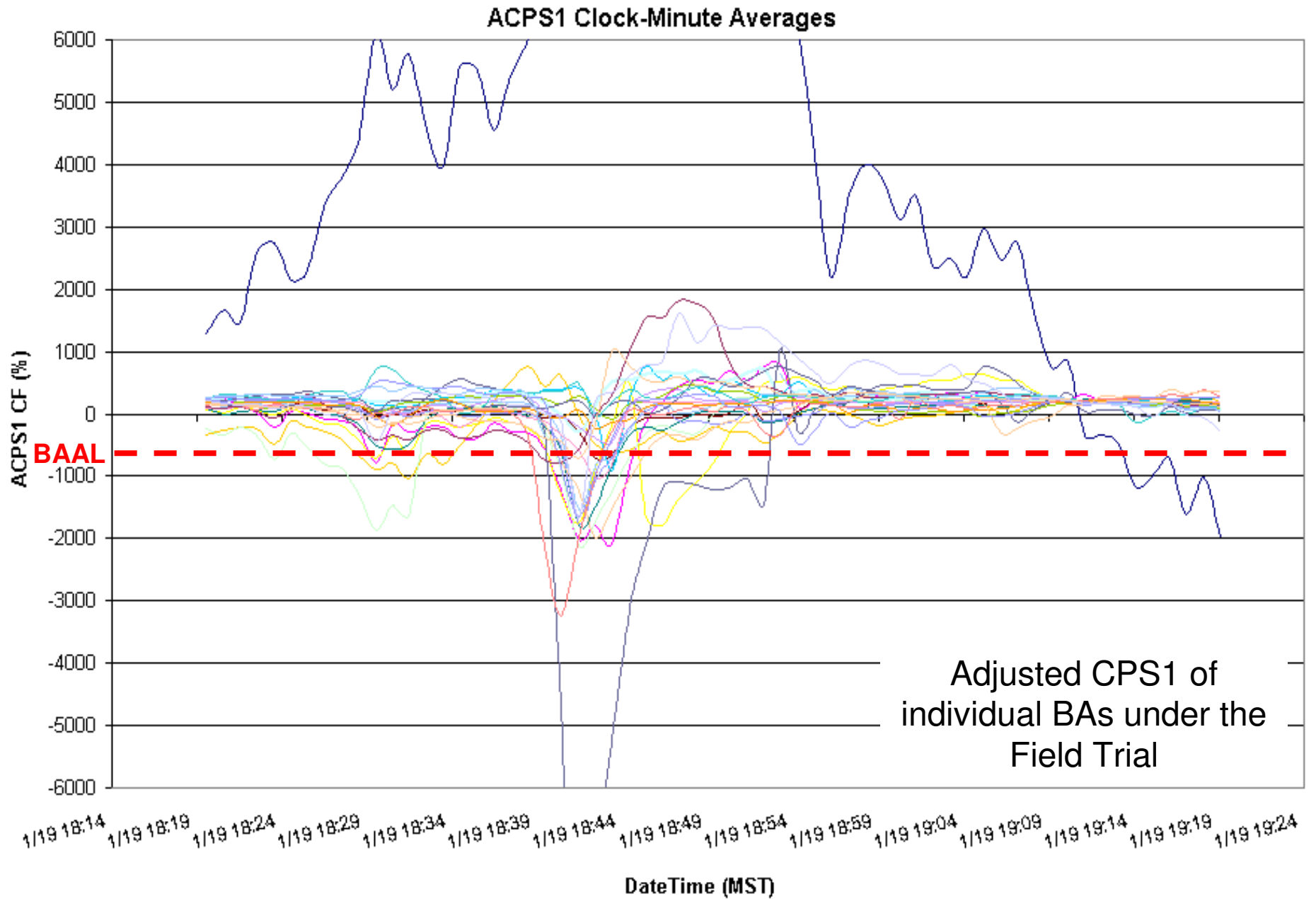
Clock-Minute Average Frequency



Clock-minute Actual Frequency of Participants

01/19/2011 ending 17:44 PST

3 minute duration below FTL_{Low}

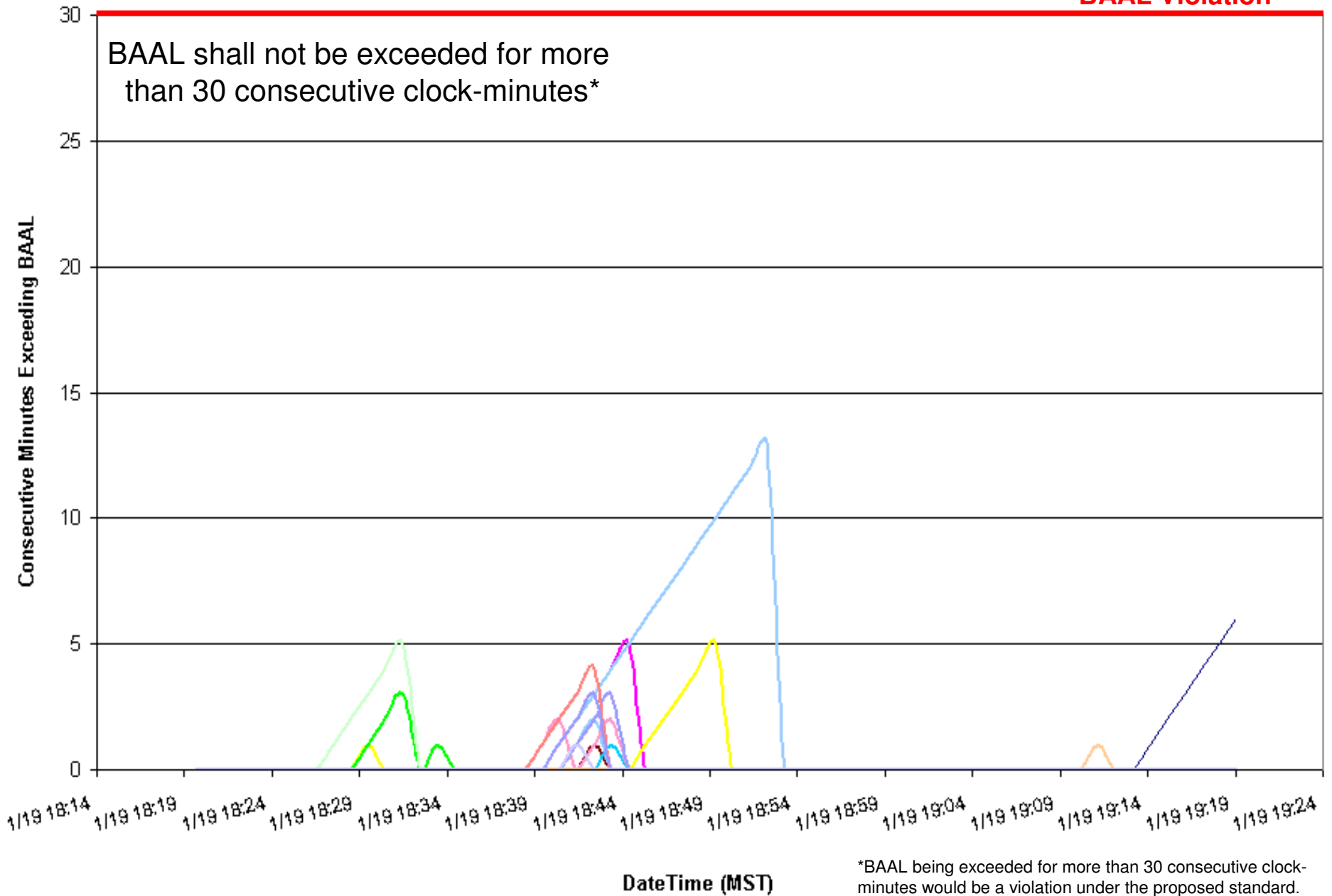


01/19/2011 ending 17:44 PST

3 minute duration below FTL_{Low}

Consecutive Minutes Exceeding BAAL

BAAL Violation*

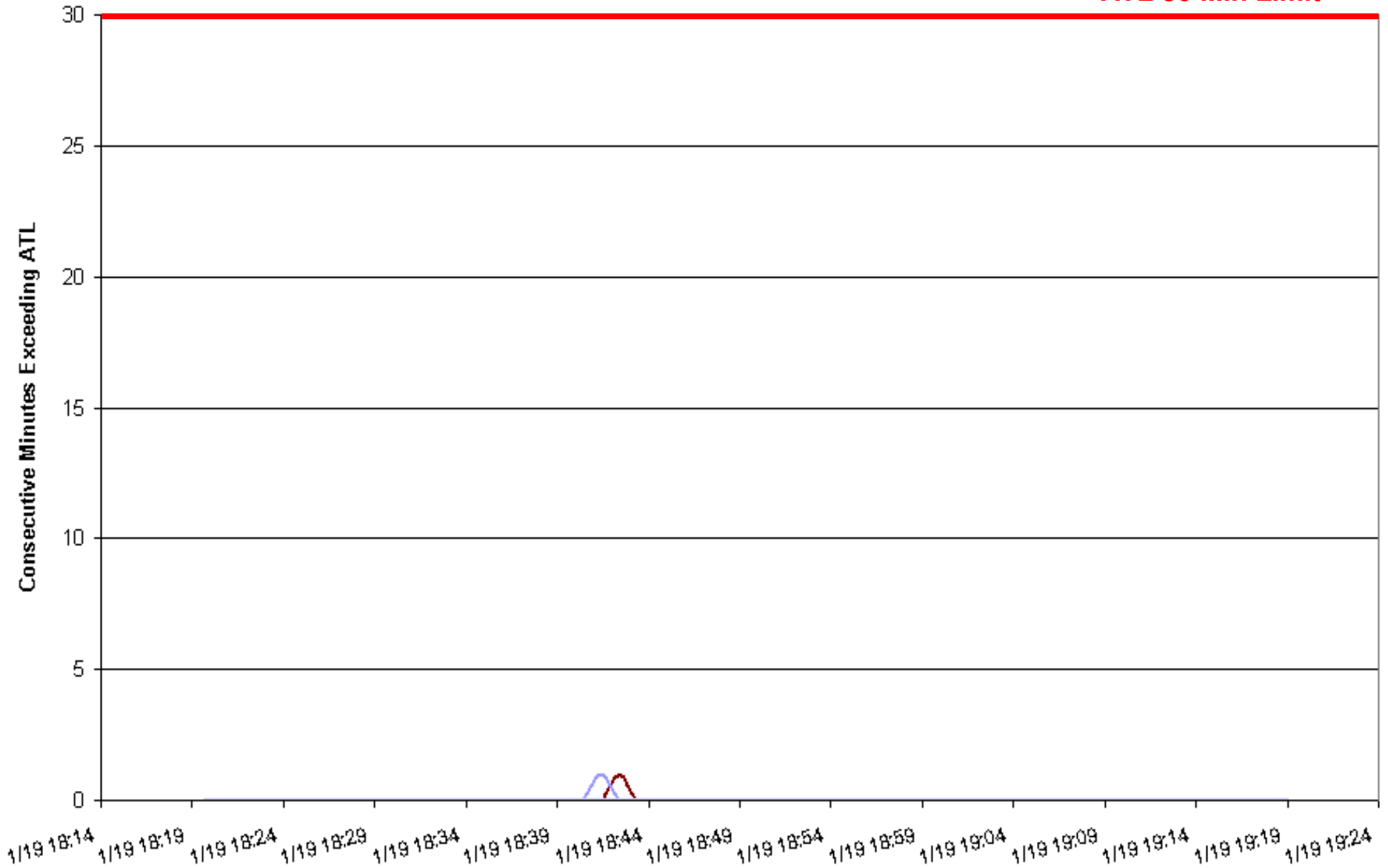


01/19/2011 ending 17:44 PST

3 minute duration below FTL_{Low}

Consecutive Minutes Exceeding ATL

ATL 30 Min Limit



DateTime (MST)

*Expectation that the BA will not exceed the ATL for more than 30 consecutive clock-minutes within WECC.

01/19/2011 ending 11:25 PST

28 minute duration above BAAL_{High}

60.02 Scheduled Frequency TEC

Clock-Minute Average Frequency



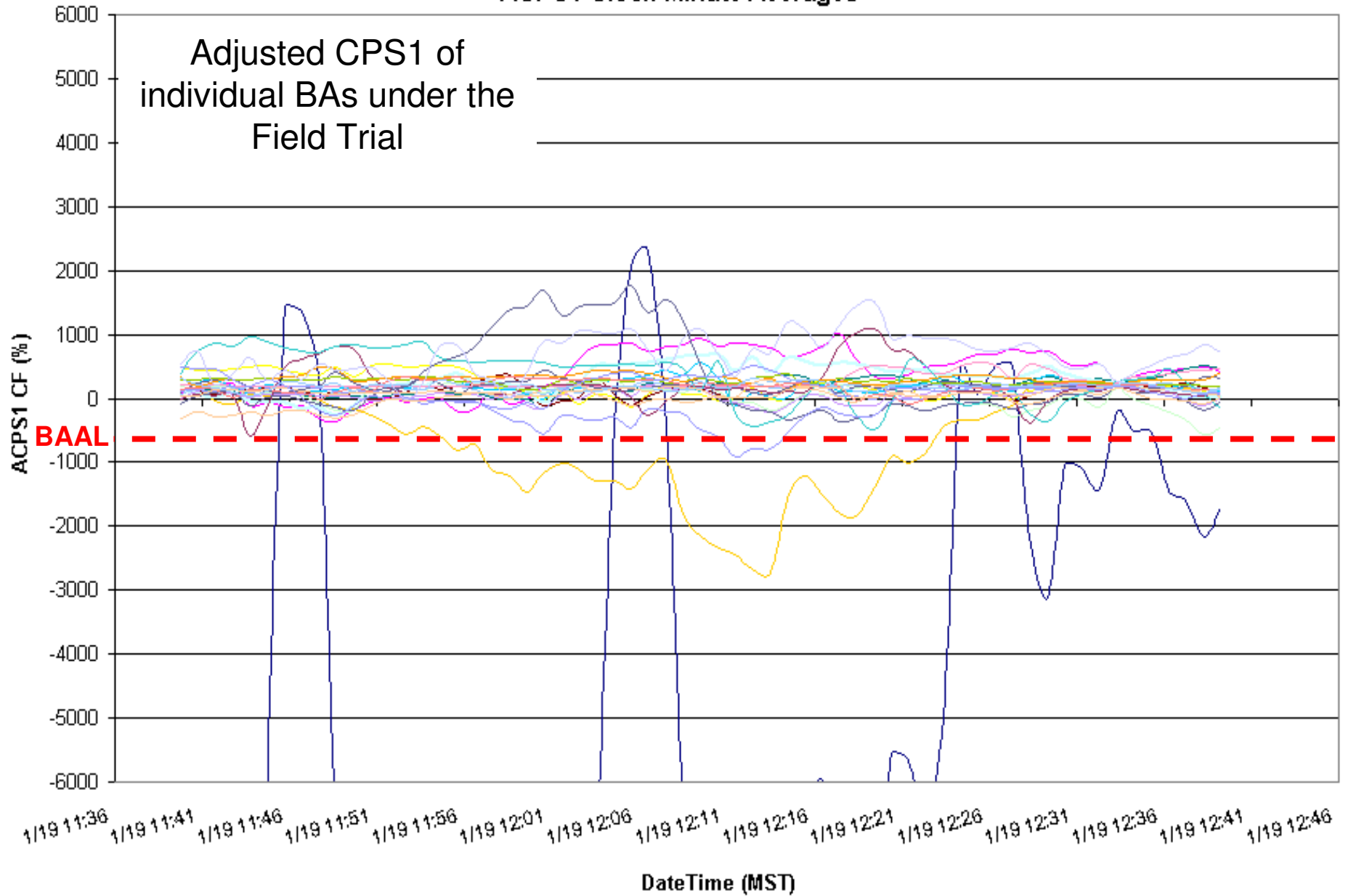
Clock-minute Actual Frequency of Participants

01/19/2011 ending 11:25 PST

28 minute duration above BAAL_{High}

60.02 Scheduled Frequency TEC

ACPS1 Clock-Minute Averages



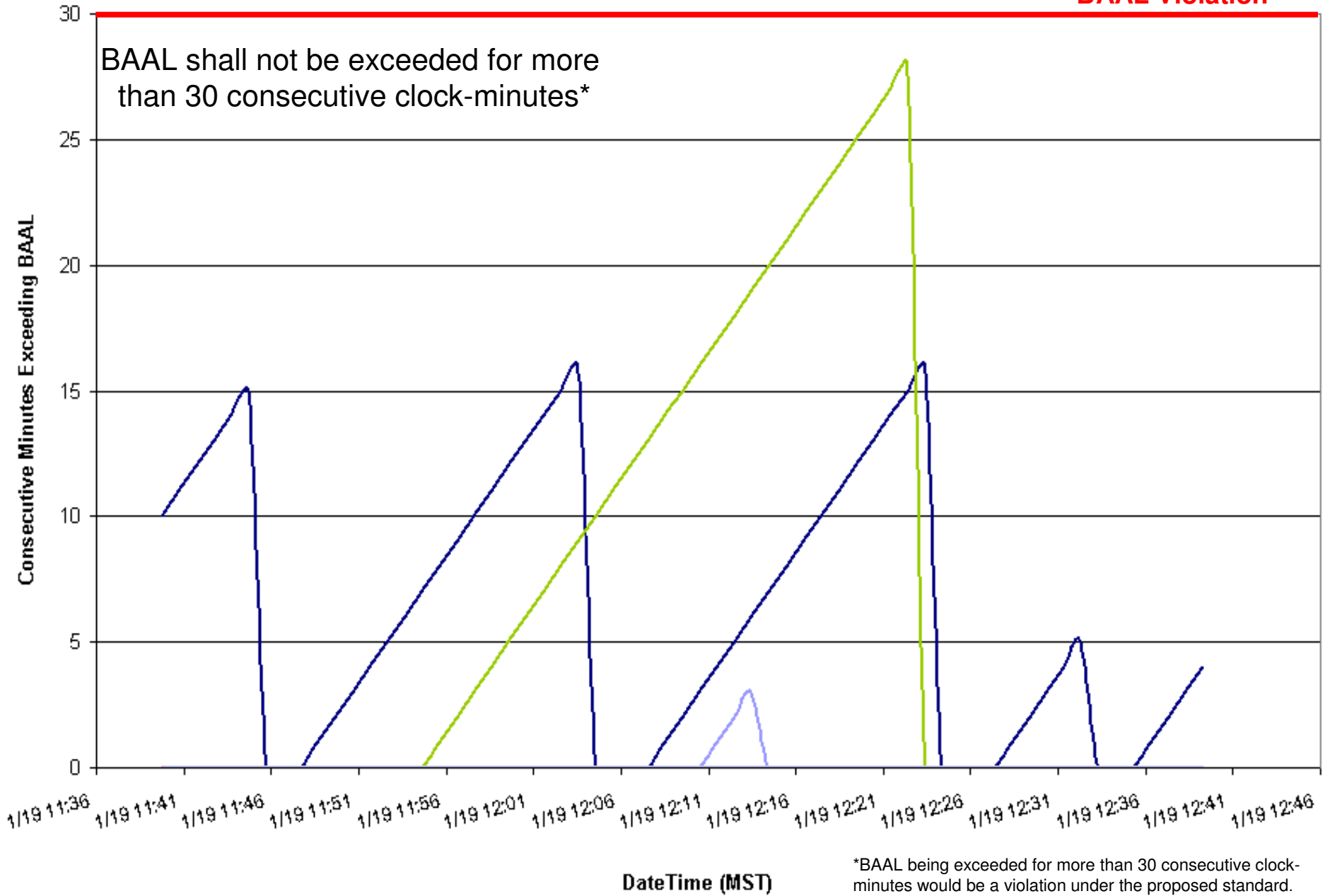
01/19/2011 ending 11:25 PST

28 minute duration above BAAL_{High}

60.02 Scheduled Frequency TEC

Consecutive Minutes Exceeding BAAL

BAAL Violation*



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

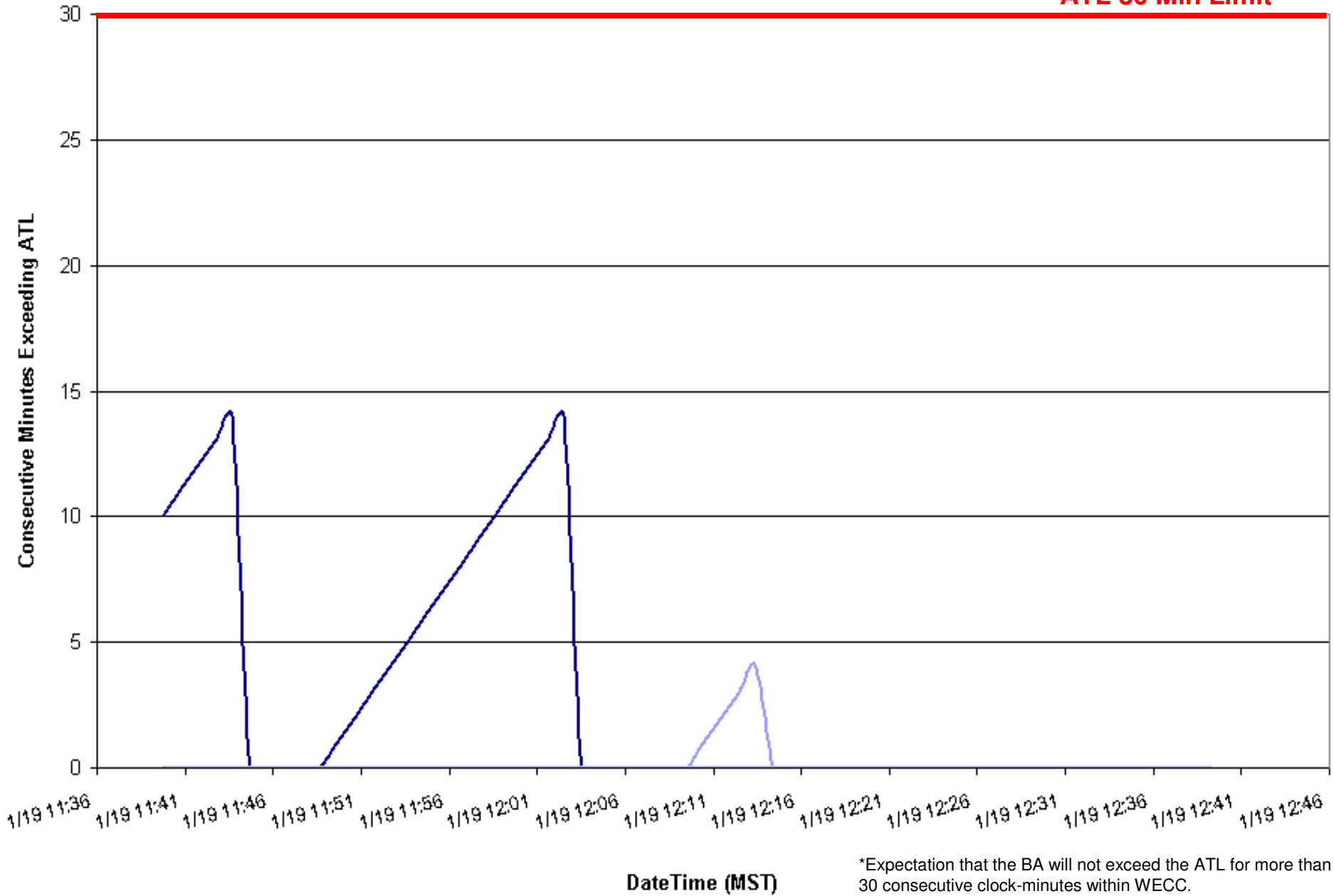
01/19/2011 ending 11:25 PST

28 minute duration above BAAL_{High}

60.02 Scheduled Frequency TEC

Consecutive Minutes Exceeding ATL

ATL 30 Min Limit*

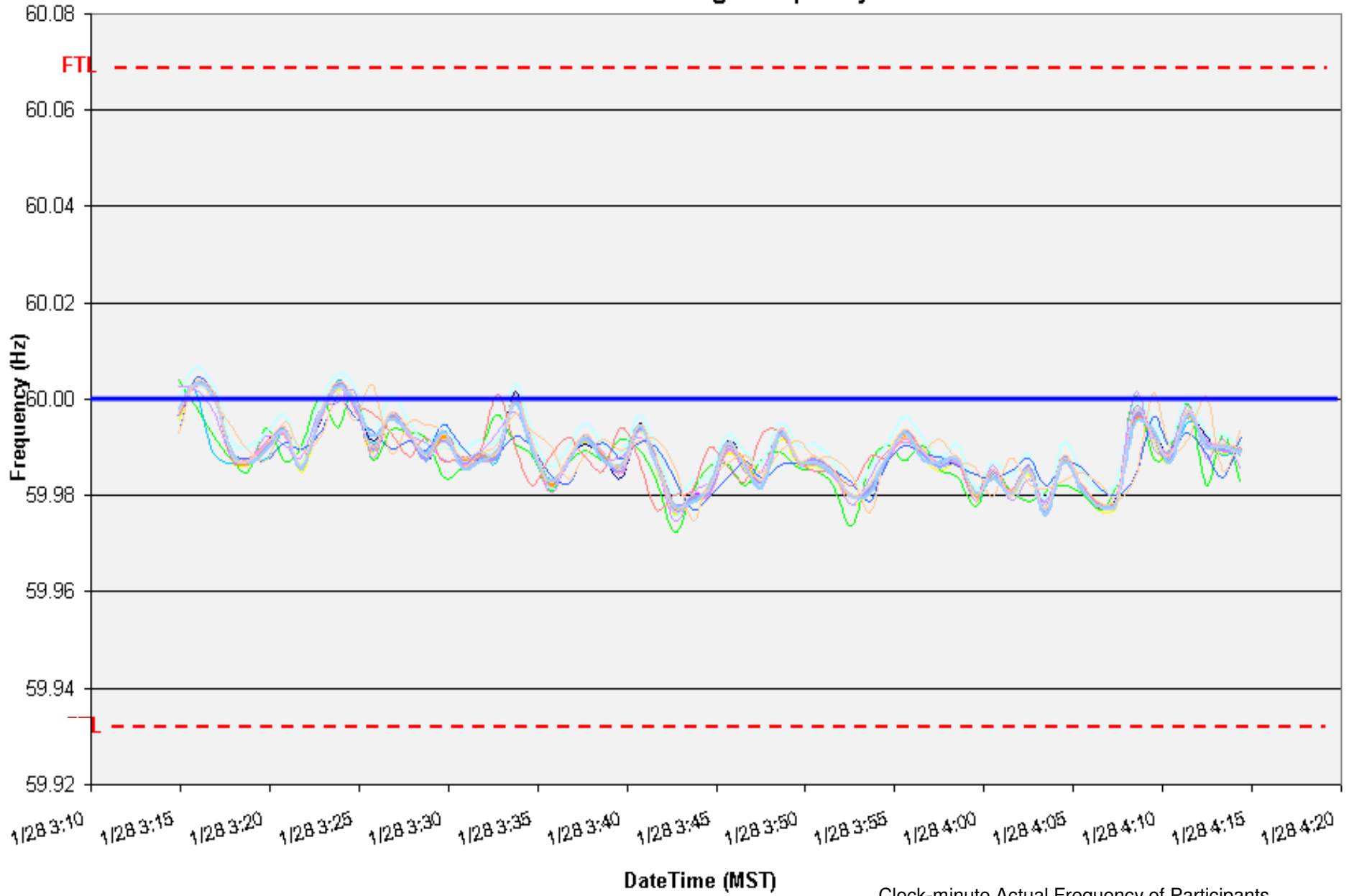


*Expectation that the BA will not exceed the ATL for more than 30 consecutive clock-minutes within WECC.

01/28/2011 ending 04:02 MST

27 minute duration below BAAL_{Low}

Clock-Minute Average Frequency

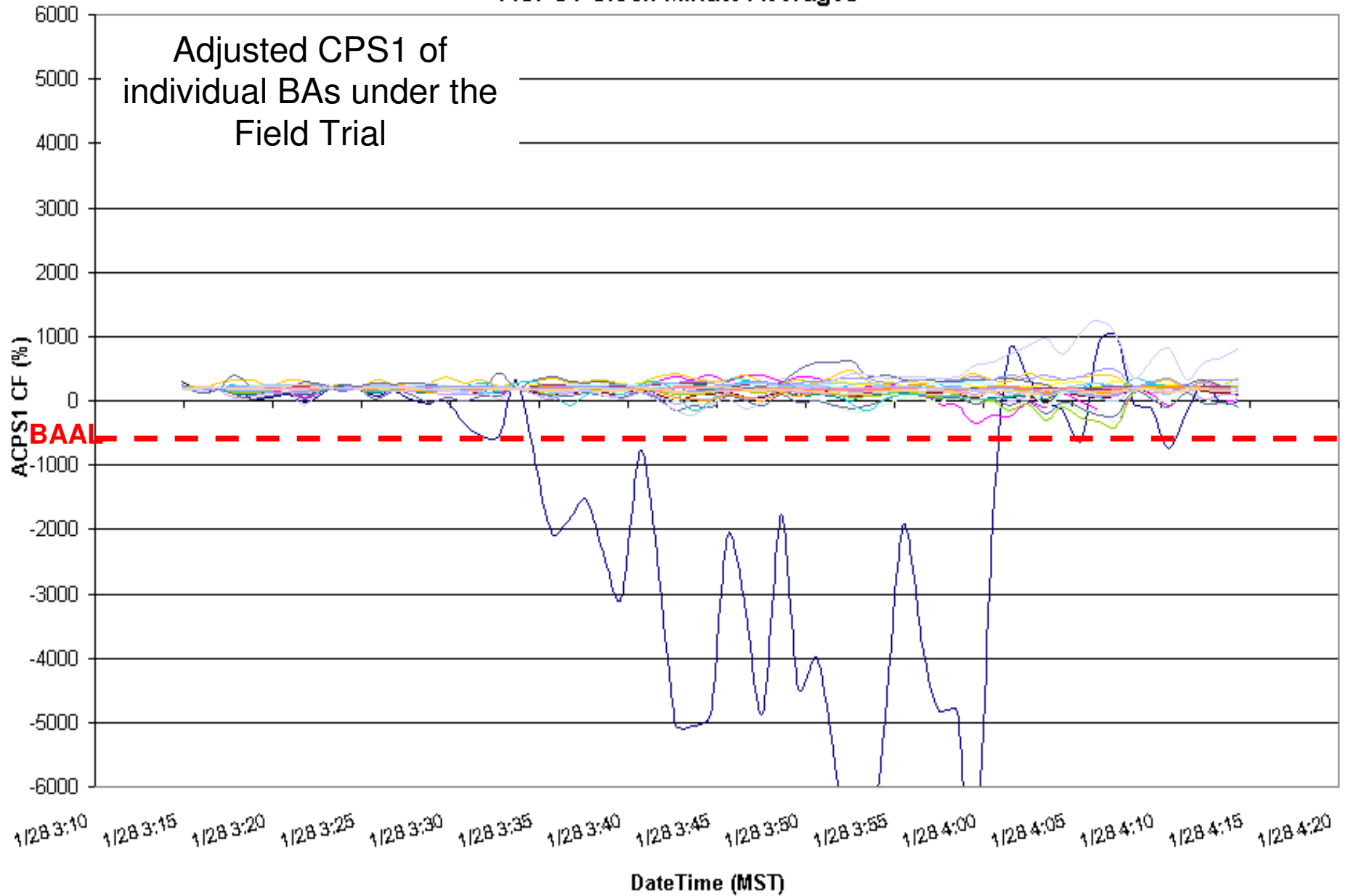


Clock-minute Actual Frequency of Participants

01/28/2011 ending 04:02 MST

27 minute duration below BAAL_{Low}

ACPS1 Clock-Minute Averages

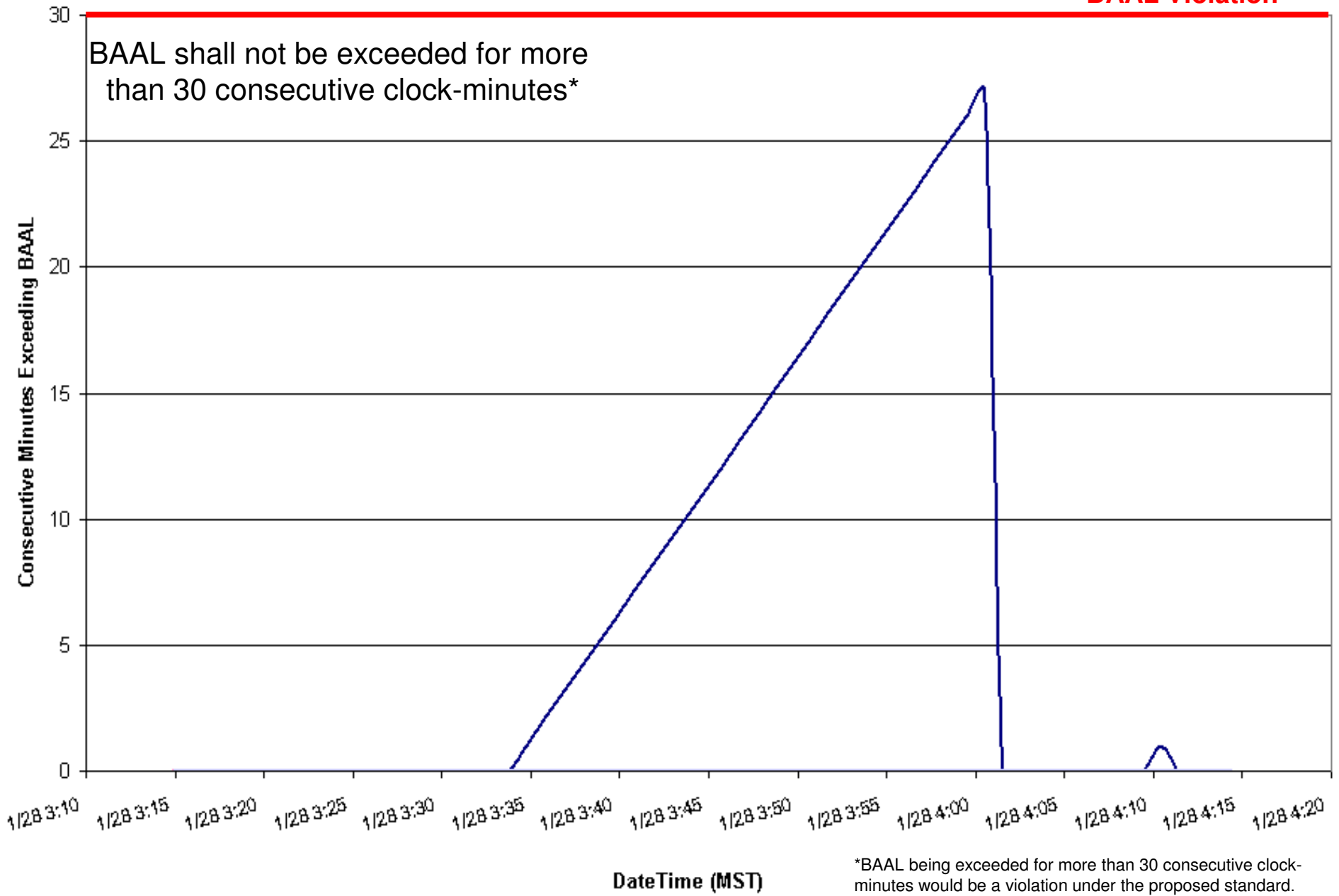


01/28/2011 ending 04:02 MST

27 minute duration below BAAL_{Low}

Consecutive Minutes Exceeding BAAL

BAAL Violation*

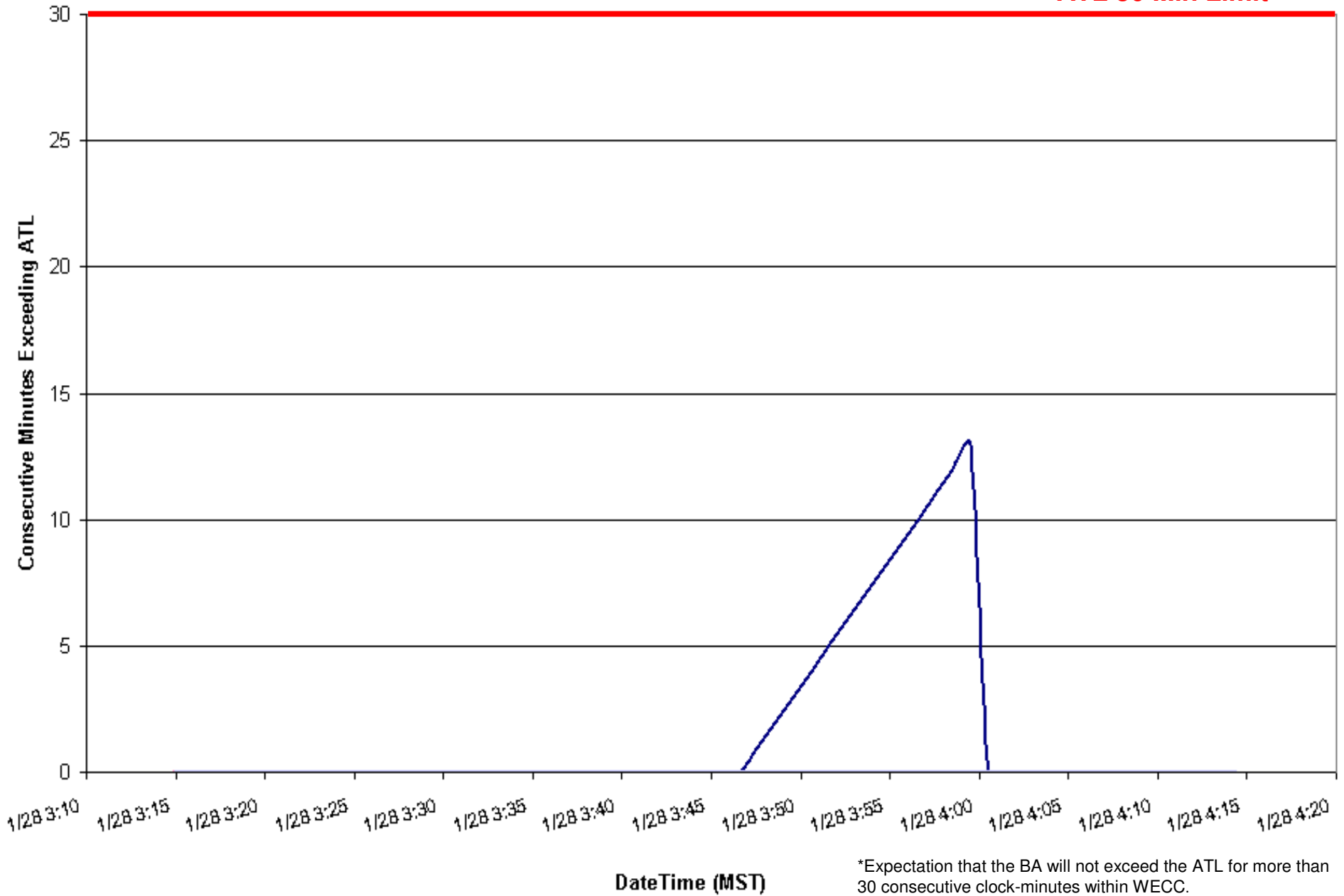


01/28/2011 ending 04:02 MST

27 minute duration below BAAL_{Low}

Consecutive Minutes Exceeding ATL

ATL 30 Min Limit*



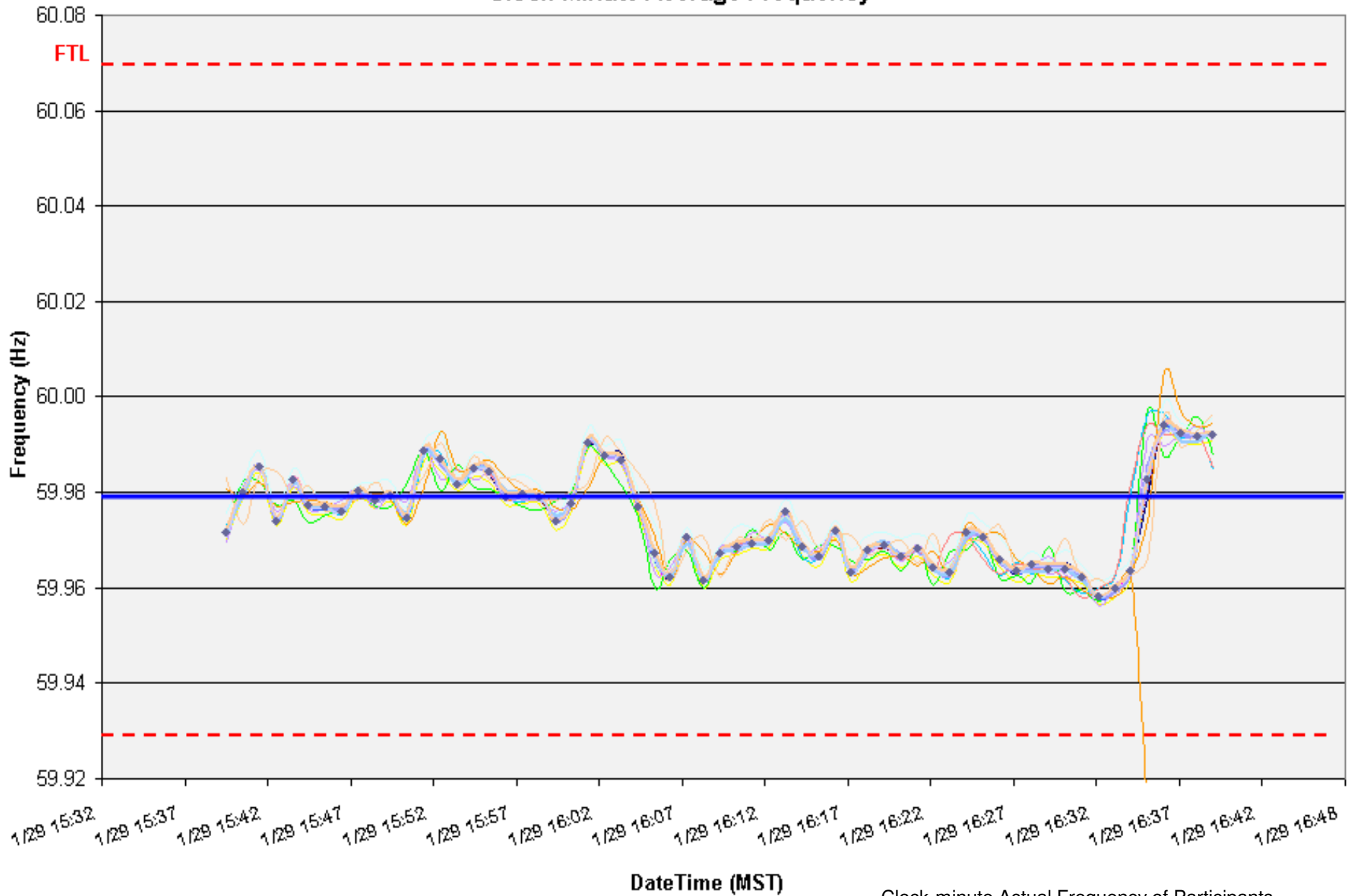
*Expectation that the BA will not exceed the ATL for more than 30 consecutive clock-minutes within WECC.

01/29/2011 ending 16:22 MST

25 minute duration below BAAL_{Low}

59.98 Scheduled Frequency TEC

Clock-Minute Average Frequency



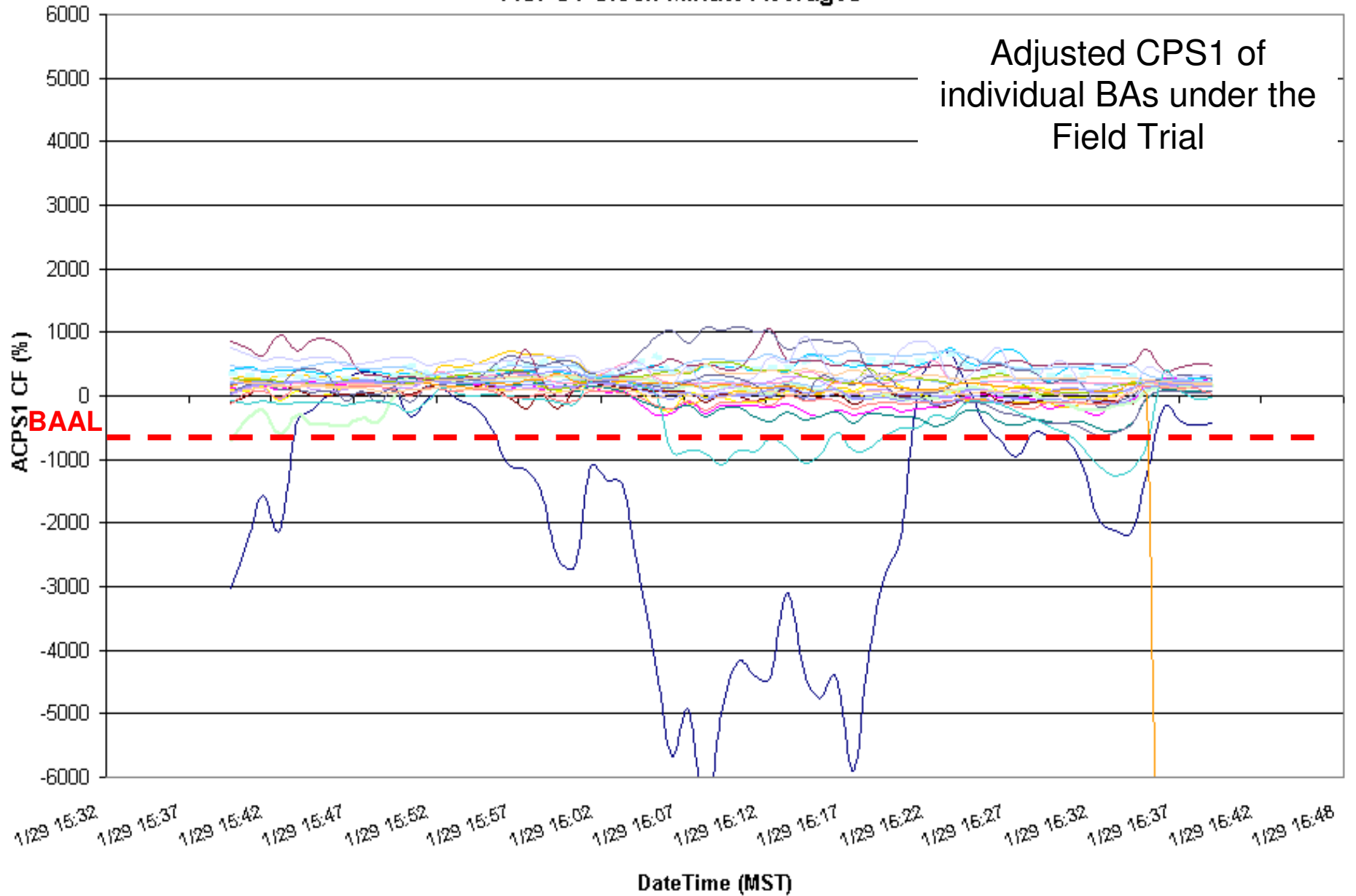
Clock-minute Actual Frequency of Participants

01/29/2011 ending 16:22 MST

25 minute duration below BAAL_{Low}

59.98 Scheduled Frequency TEC

ACPS1 Clock-Minute Averages



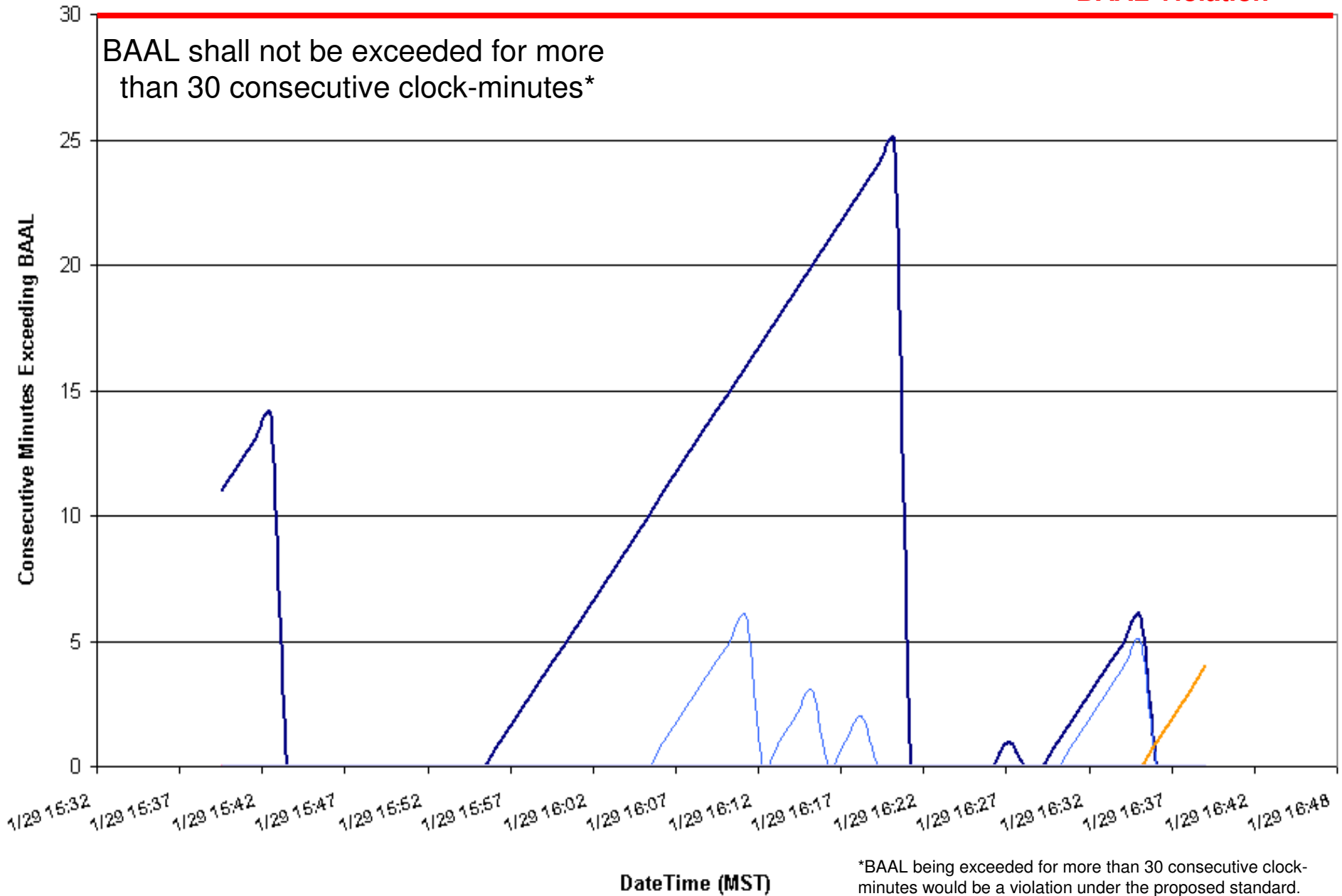
01/29/2011 ending 16:22 MST

25 minute duration below BAAL_{Low}

59.98 Scheduled Frequency TEC

Consecutive Minutes Exceeding BAAL

BAAL Violation*



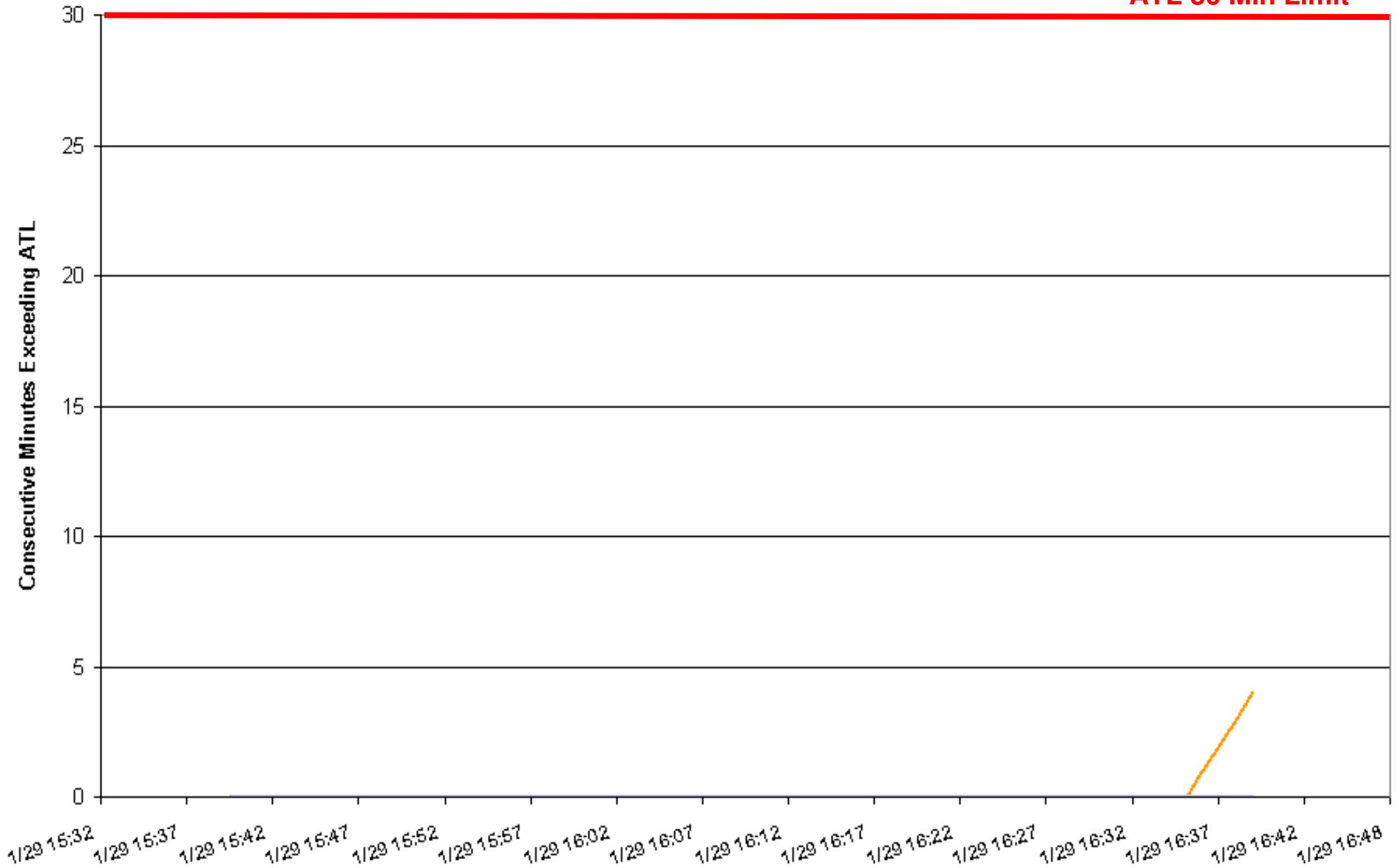
01/29/2011 ending 16:22 MST

25 minute duration below BAAL_{Low}

59.98 Scheduled Frequency TEC

Consecutive Minutes Exceeding ATL

ATL 30 Min Limit*



DateTime (MST)

*Expectation that the BA will not exceed the ATL for more than 30 consecutive clock-minutes within WECC.

Balancing Authority ACE Limit Proof-of-Concept Field Trial

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

Limit Exceeded (Enter one of the following: BAAL high, BAAL low, ATL high, ATL low)	Clock-minute of ACE exceeding the BAAL or ATL (mm/dd/yy hh:mm)	Clock-minute of ACE returning within the BAAL or ATL (mm/dd/yy hh:mm)	TimeZone	Total duration of ACE exceeding the BAAL or ATL (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
ATL Low	1/3/11 7:23	1/3/11 7:50	MST	27	0	0	
ATL High	1/9/11 22:01	1/9/11 22:27	PST	27	0	0	wind event
ATL High	1/17/11 15:54	1/17/11 16:19	PST	26	0	0	Raw ACE was running at +100 mw when 176 mw was ramped into the balancing area between 15:50 and 16:10. During that time the load was estimated to increase by 200 mw but only increased by ~25 mw. Hydro plants were in a must-run condition and therefore were not backed. Coal units in adjacent BA were backed to reduce the dynamic overlay between the BA's which took ~20 minutes to back off once dispatched.
MinCTHigh	1/19/11 10:58	1/19/11 11:25	PST	28	0.00	0	Insufficient units on AGC
ATL Low/ BAAL Low	1/28/11 3:36	1/28/11 4:03	MST	27	0	0	

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

Discussion

Bob Klueber- Midwest ISO

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

bklueber@midwestiso.org