

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

WECC Update Discussion
November 1, 2010

DISCUSSION STARTING AT 3:30 PM EDT

Doug Hils – Duke Energy

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

Balancing Authority ACE Limit Proof-of-Concept Field Trial

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
9/27/10 14:52	PDT	-0.1416	59.8584	60.00
9/27/10 14:53	PDT	-0.1057	59.8943	60.00
9/27/10 14:54	PDT	-0.1174	59.8826	60.00
9/27/10 14:55	PDT	-0.1071	59.8929	60.00
9/27/10 14:56	PDT	-0.1015	59.8985	60.00
9/27/10 14:57	PDT	-0.0712	59.9288	60.00
9/30/10 5:05	PDT	-0.0556	59.9244	59.98
9/30/10 5:06	PDT	-0.0588	59.9212	59.98
9/30/10 5:07	PDT	-0.0584	59.9216	59.98
9/30/10 5:08	PDT	-0.0481	59.9319	59.98
PrevailingTime	PTimeZone	FreqError	ActualFreq	SchedFreq
9/27/10 15:03	PDT	0.0724	60.0724	60.00
9/27/10 15:04	PDT	0.0692	60.0692	60.00
9/27/10 15:05	PDT	0.0680	60.0680	60.00
9/27/10 15:28	PDT	0.0699	60.0699	60.00
9/27/10 15:29	PDT	0.0769	60.0769	60.00
9/27/10 15:30	PDT	0.0763	60.0763	60.00
9/27/10 15:31	PDT	0.0749	60.0749	60.00
9/27/10 15:32	PDT	0.0692	60.0692	60.00

Sept 27 – Two line loss leading to RAS (SPS) operation. Multiple losses of approximately 3500 MW in Northwest

Sept 30 – 777 MW loss of generation in Rocky Mountain region.

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} or ATL _{Low}		BAAL _{High} or ATL _{High}			
	Max	MinCtLow	Max	MinCtHigh	Max	MinCtLow2	Max	MinCtHigh2	Max	LowLimitCt	HighLimitCt			
BA05	44		34		58		49		33	34	38	49	39	49
BA06	13		11		13		15		9	9	11	8	11	9
BA07	21		22		29		41		11	17	29	27	29	27
BA08	13		17		19		34		10	12	19	15	19	15
BA09	11		9		15		31		1	9	5	20	5	20
BA11	10		14		16		7		4	9	16	7	16	9
BA12	10		11		14		17		4	11	14	17	14	17
BA13	6		27		12		45		4	20	6	23	6	23
BA14	7		31		6		55		5	8	3	4	5	8
BA15	5		7		7		5		2	7	7	5	7	7
BA16	12		13		25		34		6	12	18	34	18	34
BA18	7		13		25		15		7	1	6	4	7	4
BA19	11		16		30		34		6	11	6	9	8	11
BA22	4		5		15		14		4	4	4	11	4	11
BA23	9		9		13		27		9	6	8	19	9	19
BA25	15		6		21		14		15	6	21	8	21	8
BA26	13		23		43		39		7	15	22	28	22	28
BA27	23		22		16		15		23	7	16	9	23	9
BA28	9		17		38		36		6	15	25	28	25	28
BA29	17		9		16		16		1	4	3	8	3	10
BA30	19		18		47		39		5	9	47	35	47	35
BA31	20		16		29		28		16	11	24	26	24	26
BA33	26		13		28		58		8	3	15	36	15	36
BA34	13		9		23		29		8	7	21	22	22	27
BA36	9		16		23		25		7	9	6	18	7	18

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 proposed BAL-007 standard.**

Dates in this presentation:

Clock-minute Frequency less than FTL_{Low} on September 27, 2010, ending 14:57 PDT: 6 consecutive clock-minutes¹

Clock-minute Frequency greater than FTL_{High} twice on September 27, 2010, ending 15:05 PDT and 15:32 PDT: 3 and 5 consecutive clock-minutes

Clock-minute Frequency less than FTL_{Low} on September 30, 2010, ending 5:08 PDT: 4 consecutive clock-minutes, 59.98 Hz Scheduled Frequency

Clock-minute ACE more negative than the $BAAL_{Low}$ on September 6, 2010, ending 7:51 PDT: 33 consecutive clock-minutes² coincident with 33 min ATL_{Low}

Clock-minute ACE more positive than the $BAAL_{High}$ on September 14, 2010, ending 16:44 PDT: 34 consecutive clock-minutes coincident with 49 min ATL_{High}

Clock-minute ACE more negative than the ATL_{Low} on September 19, 2010, ending 15:25 PDT: 47 consecutive clock-minutes

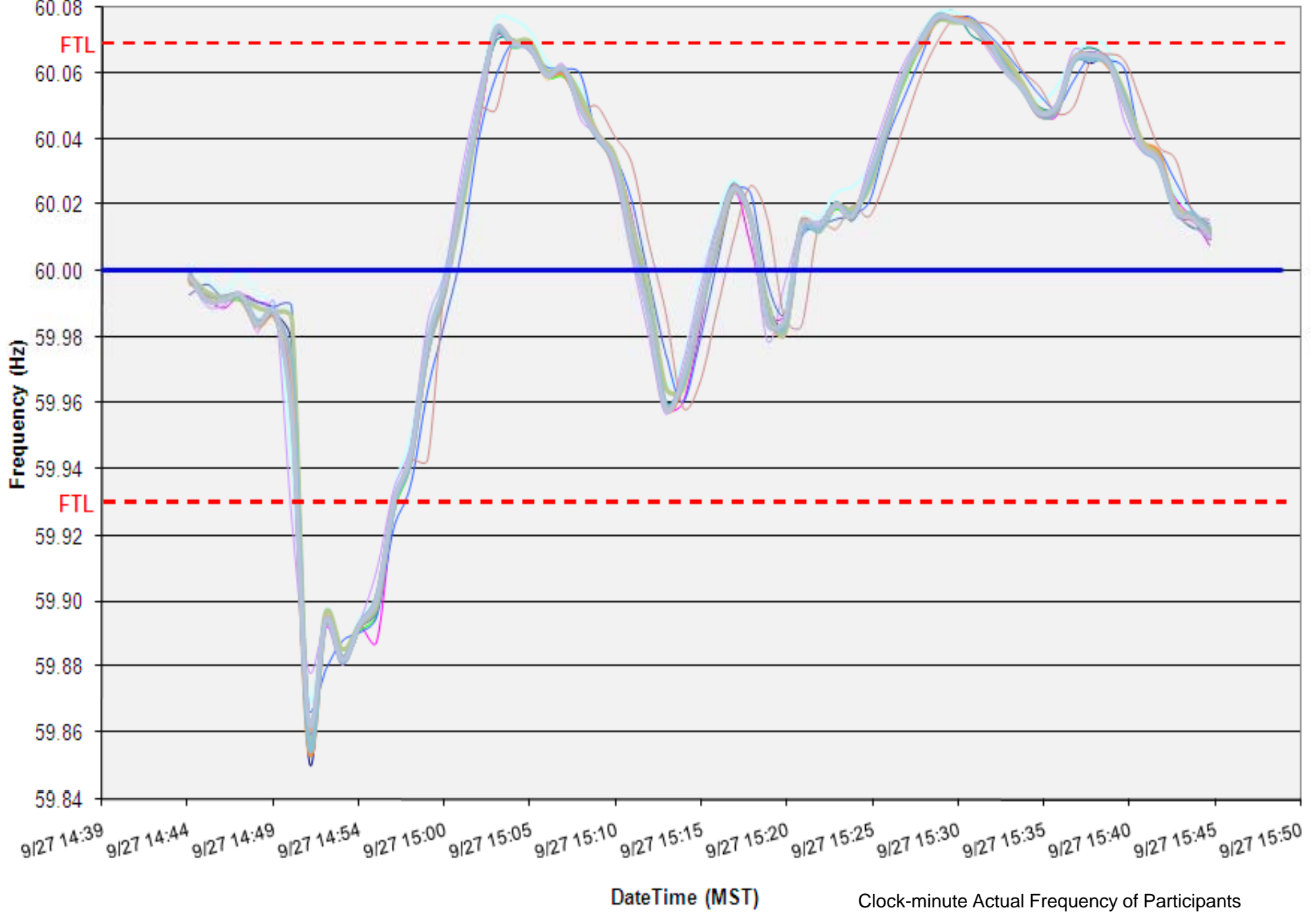
Clock-minute ACE more positive than the ATL_{High} on September 27, 2010, ending 7:50 PDT: 36 consecutive clock-minutes

¹ Under draft BAL-008, a proposed FTL_{Low} violation would occur when the actual frequency is lower than FTL_{Low} for more than 30 consecutive clock-minutes and a proposed FTL_{High} violation would occur when the actual frequency is greater than FTL_{High} for more than 30 consecutive clock-minutes.

² 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.

9/27/2010 6 minute duration below FTL_{Low}
3 and 5 minute durations above FTL_{High}

Clock-Minute Average Frequency



Clock-minute Actual Frequency of Participants

9/27/2010 6 minute duration below FTL_{Low}

3 and 5 minute durations above FTL_{High}

Clock-Minute Average Frequency

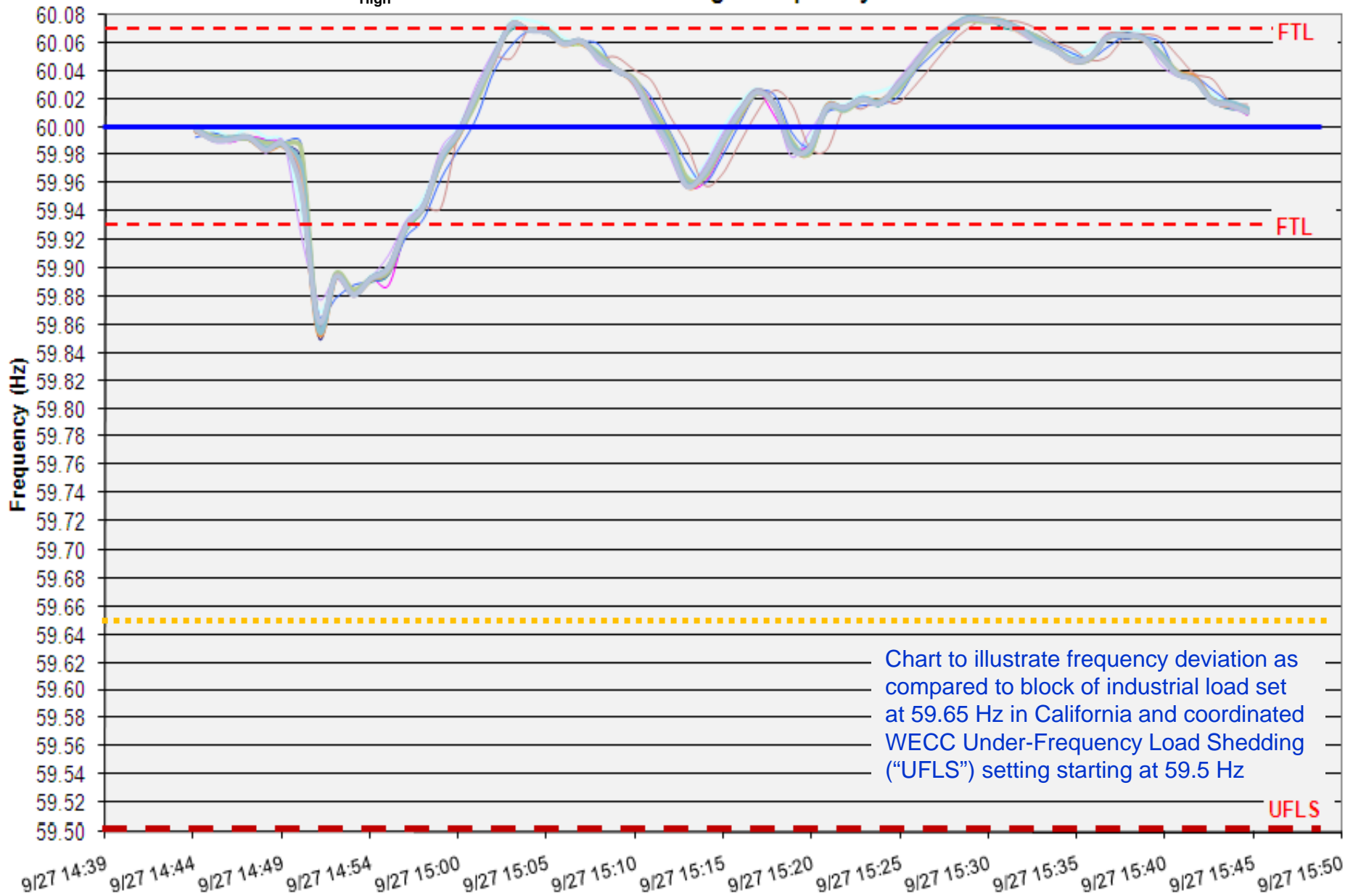
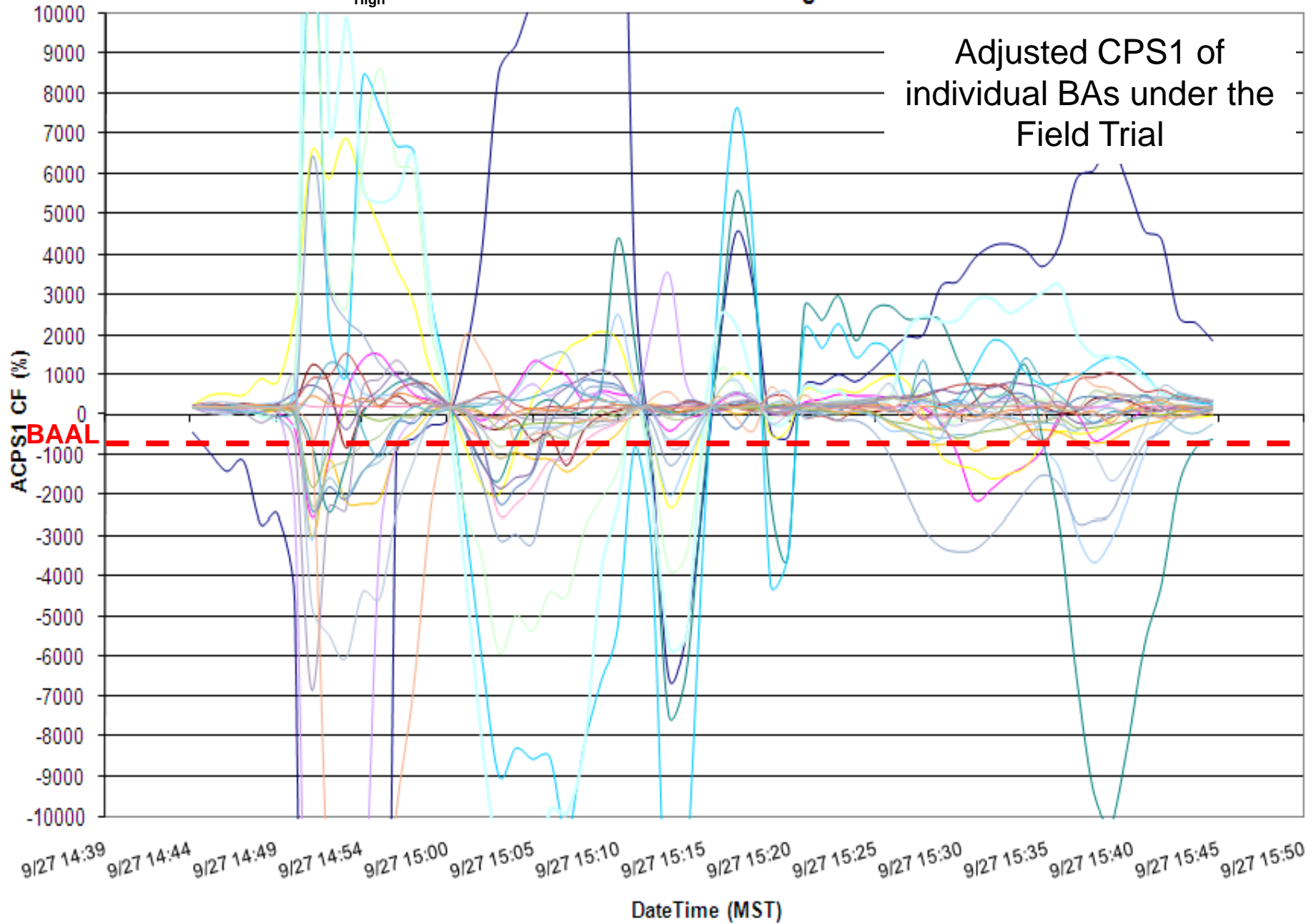


Chart to illustrate frequency deviation as compared to block of industrial load set at 59.65 Hz in California and coordinated WECC Under-Frequency Load Shedding ("UFLS") setting starting at 59.5 Hz

Clock-minute Actual Frequency of Participants

9/27/2010 6 minute duration below FTL_{Low}
3 and 5 minute durations above FTL_{High}

ACPS1 Clock-Minute Averages

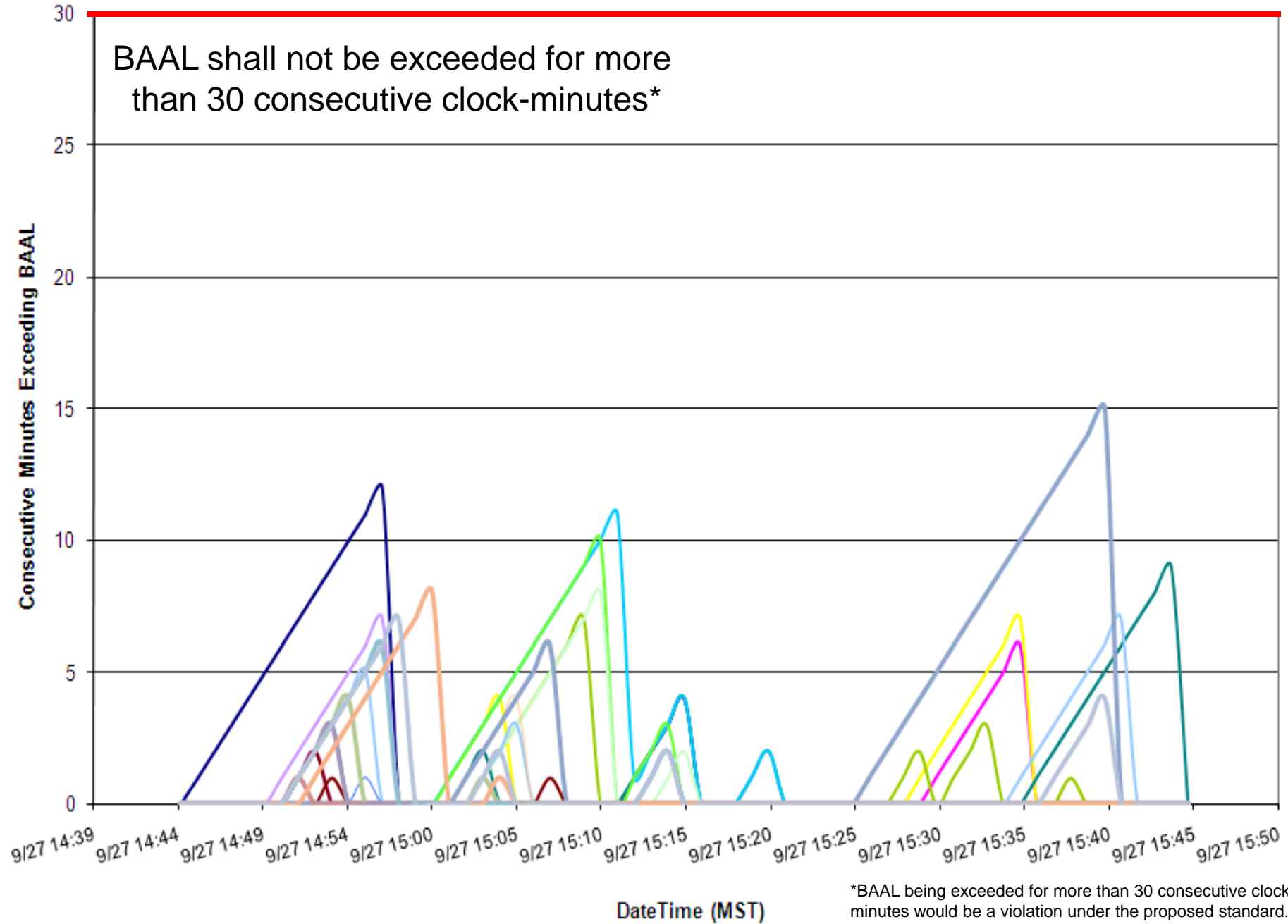


9/27/2010 6 minute duration below FTL_{Low}

3 and 5 minute durations above FTL_{High}

Consecutive Minutes Exceeding BAAL

BAAL Violation*

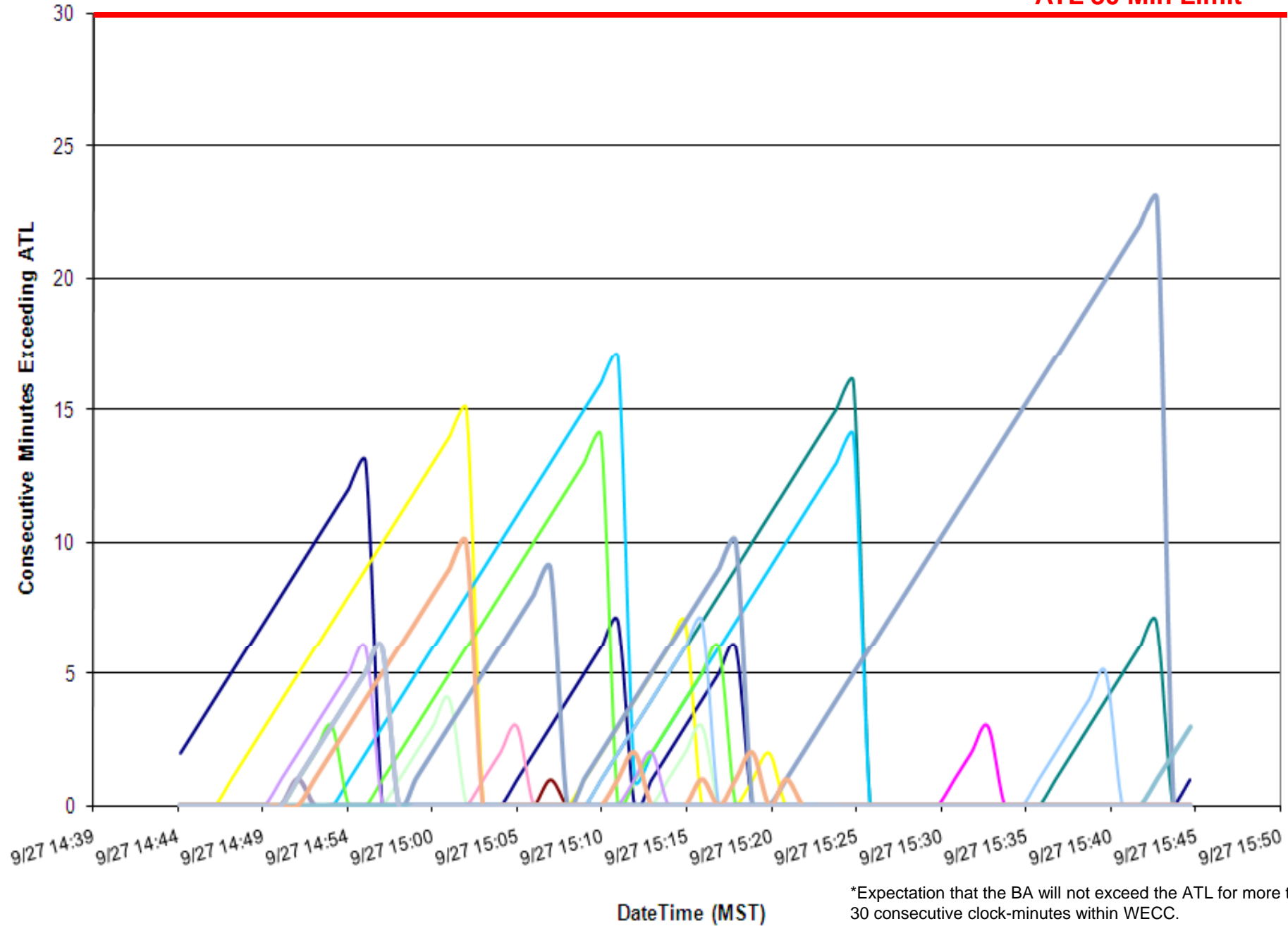


9/27/2010 6 minute duration below FTL_{Low}

3 and 5 minute durations above FTL_{High}

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.

9/30/2010 ending 5:08 PDT

4 minute duration below FTL_{Low}

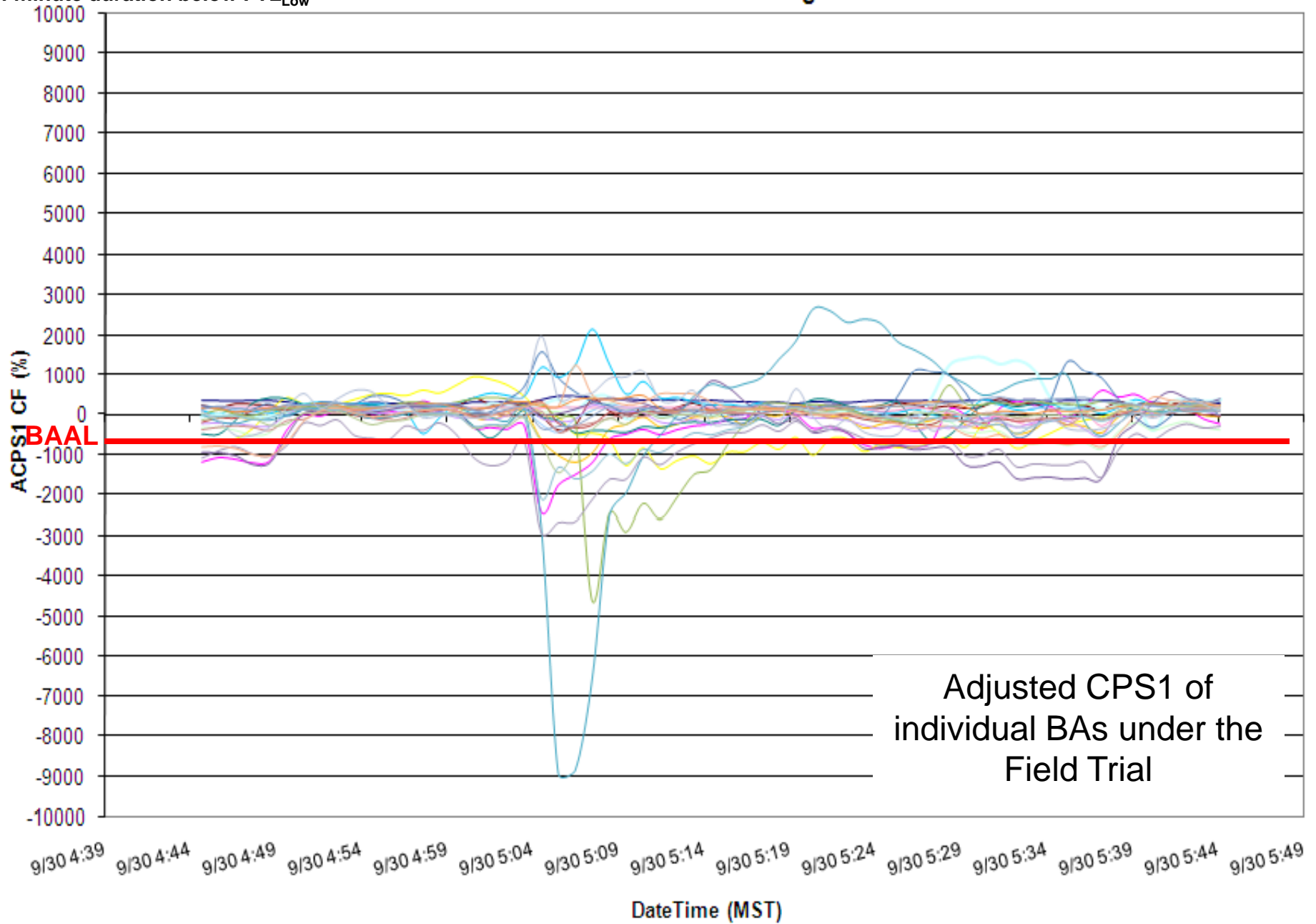
Clock-Minute Average Frequency



9/30/2010 ending 5:08 PDT

4 minute duration below FTL_{Low}

ACPS1 Clock-Minute Averages



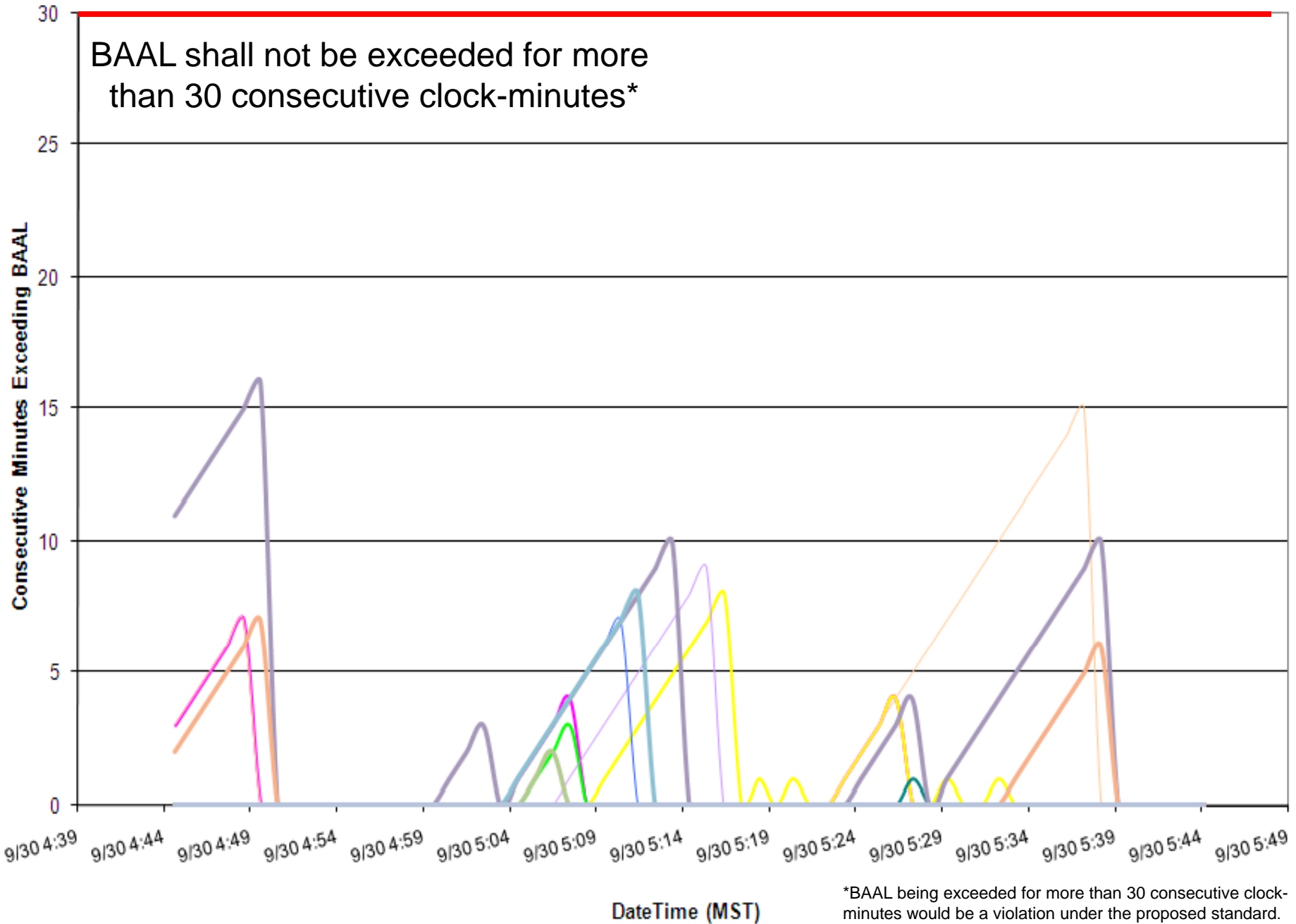
Adjusted CPS1 of
individual BAs under the
Field Trial

9/30/2010 ending 5:08 PDT

4 minute duration below FTL_{Low}

Consecutive Minutes Exceeding BAAL

BAAL Violation*

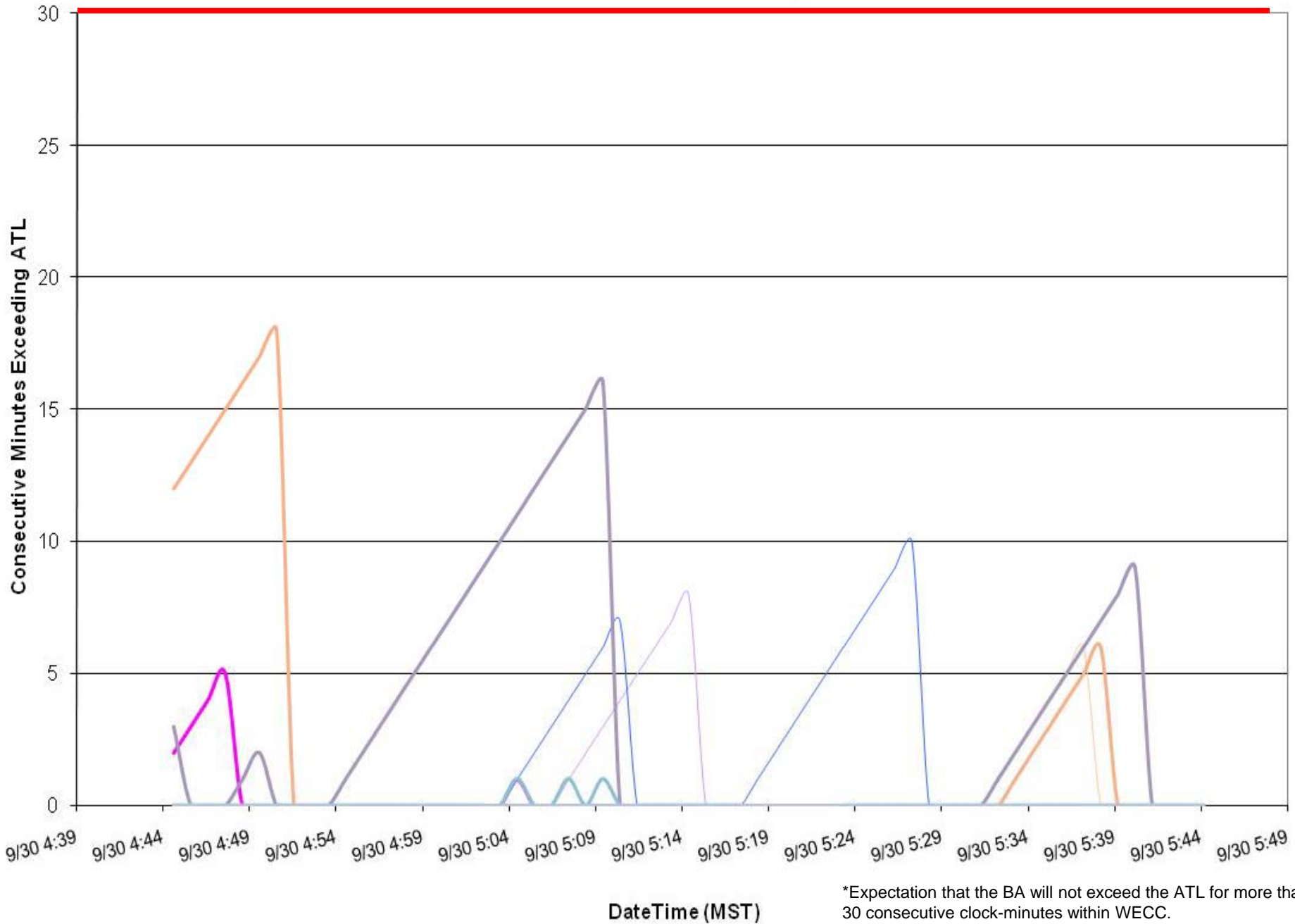


9/30/2010 ending 5:08 PDT

4 minute duration below FTL_{Low}

Consecutive Minutes Exceeding ATL

ATL 30 Min Limit

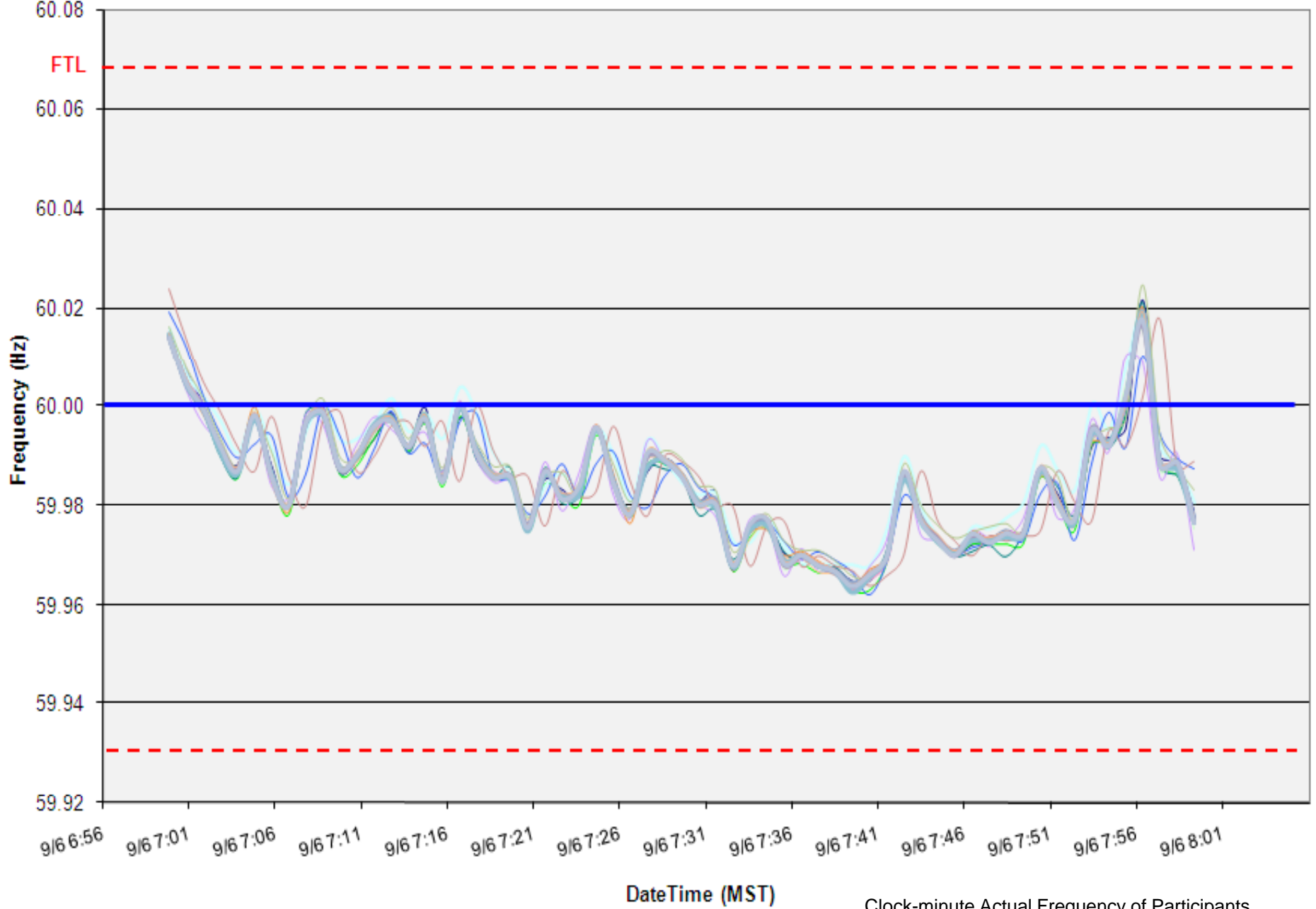


*Expectation that the BA will not exceed the ATL for more than 30 consecutive clock-minutes within WECC.

9/06/2010 ending 7:51 PDT

33 minute duration below BAAL_{Low}

Clock-Minute Average Frequency

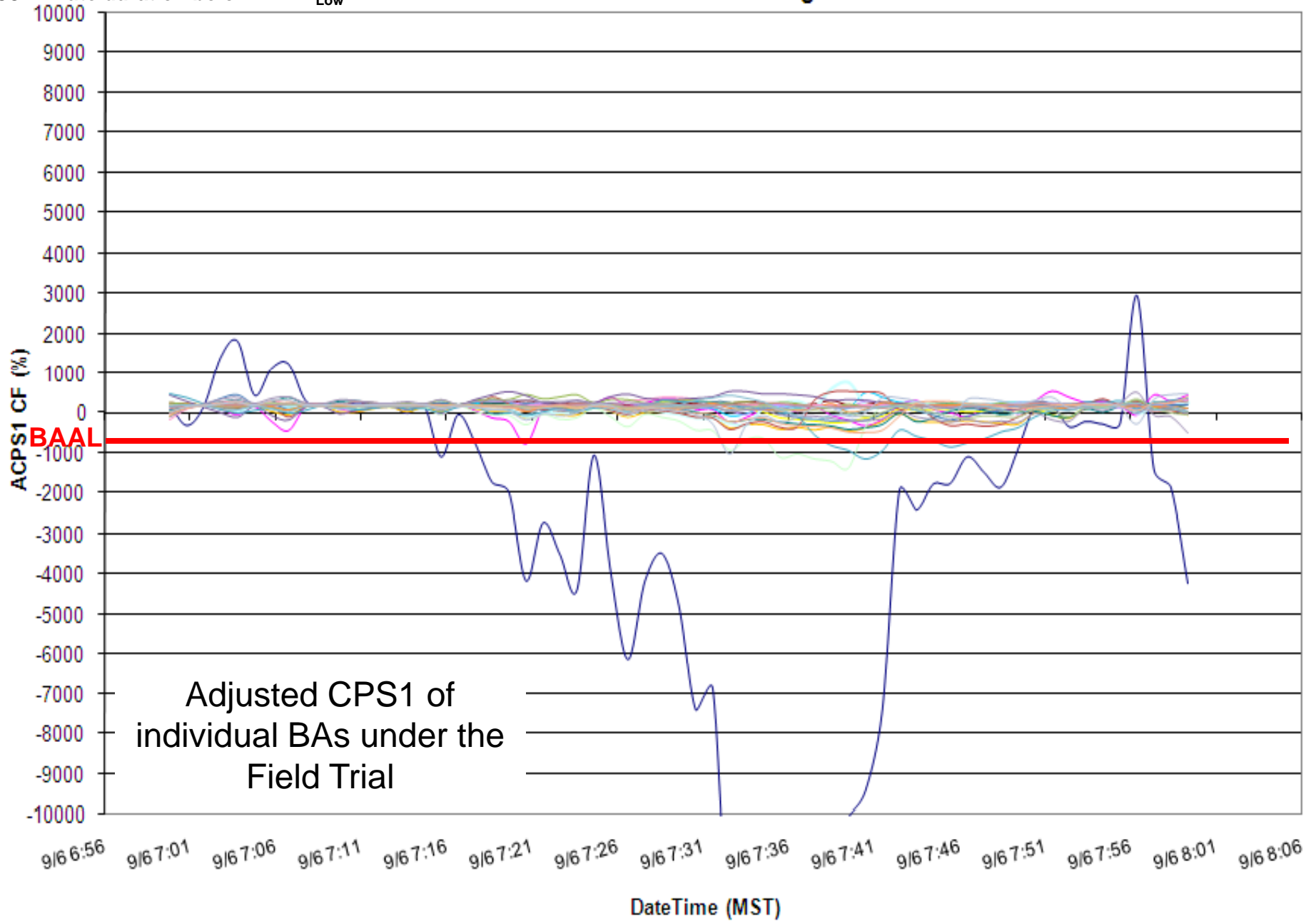


Clock-minute Actual Frequency of Participants

9/06/2010 ending 7:51 PDT

33 minute duration below BAAL_{Low}

ACPS1 Clock-Minute Averages

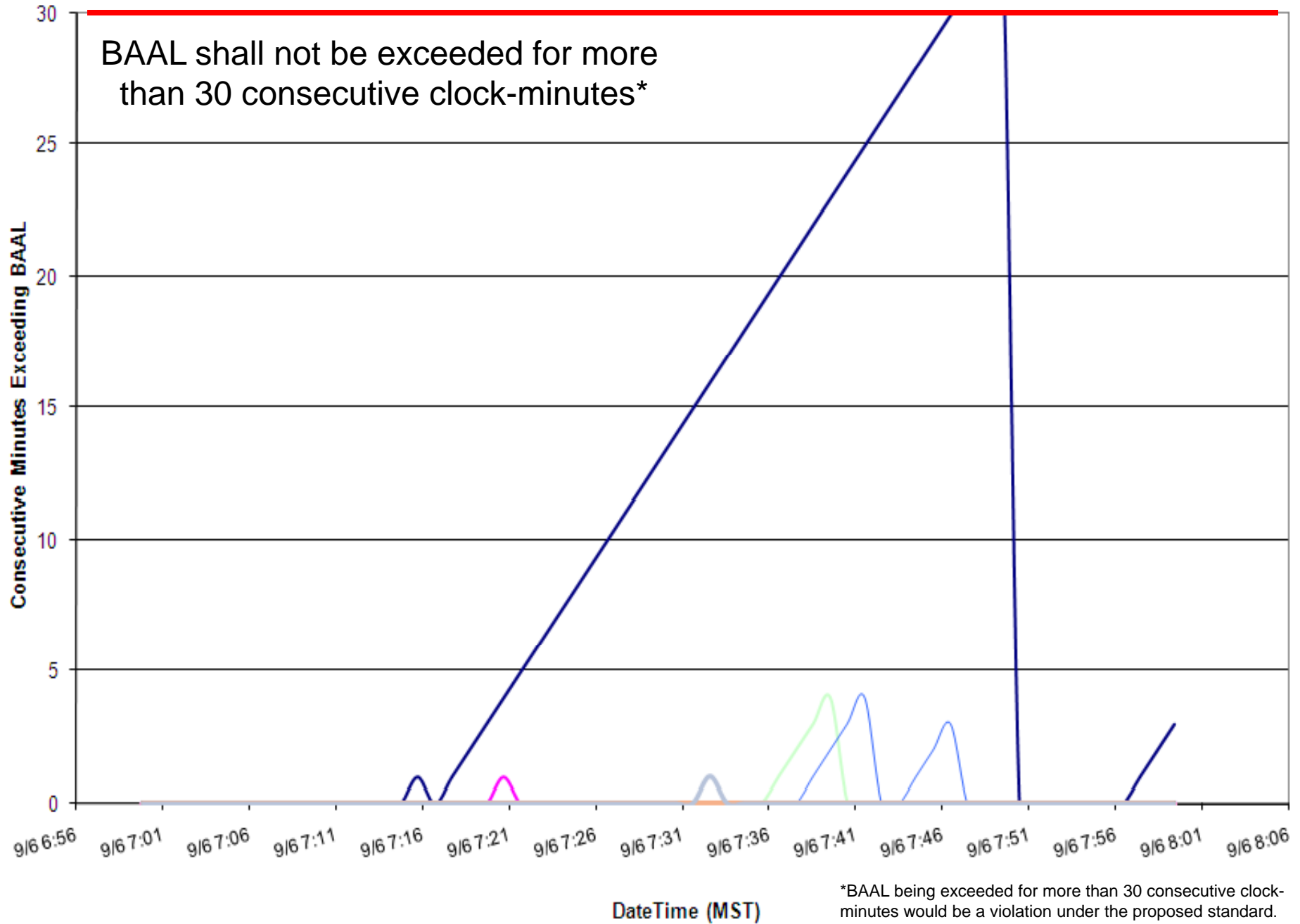


9/06/2010 ending 7:51 PDT

33 minute duration below BAAL_{Low}

Consecutive Minutes Exceeding BAAL

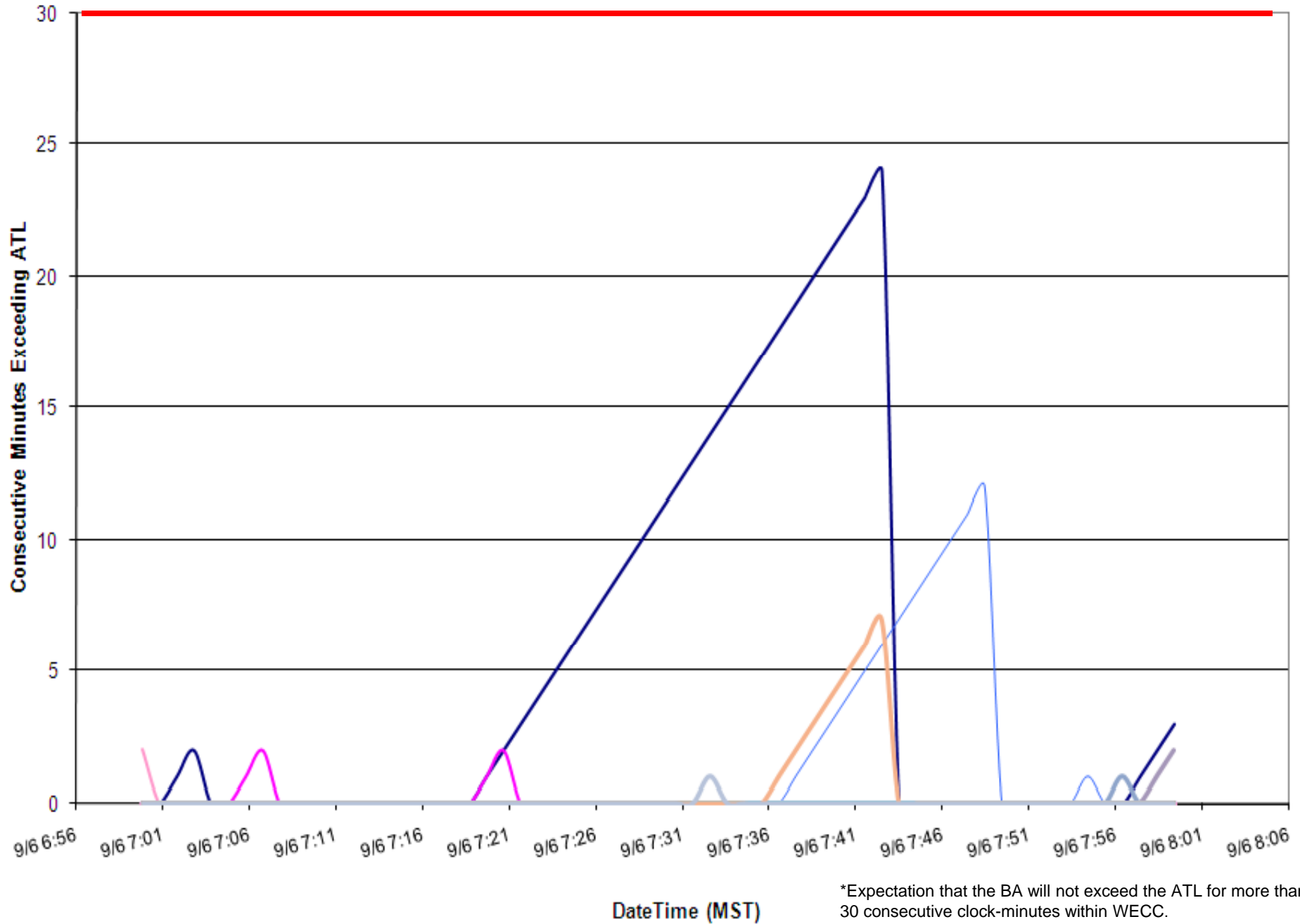
BAAL Violation*



9/06/2010 ending 7:51 PDT
33 minute duration below BAAL_{Low}

Consecutive Minutes Exceeding ATL

ATL 30 Min Limit*

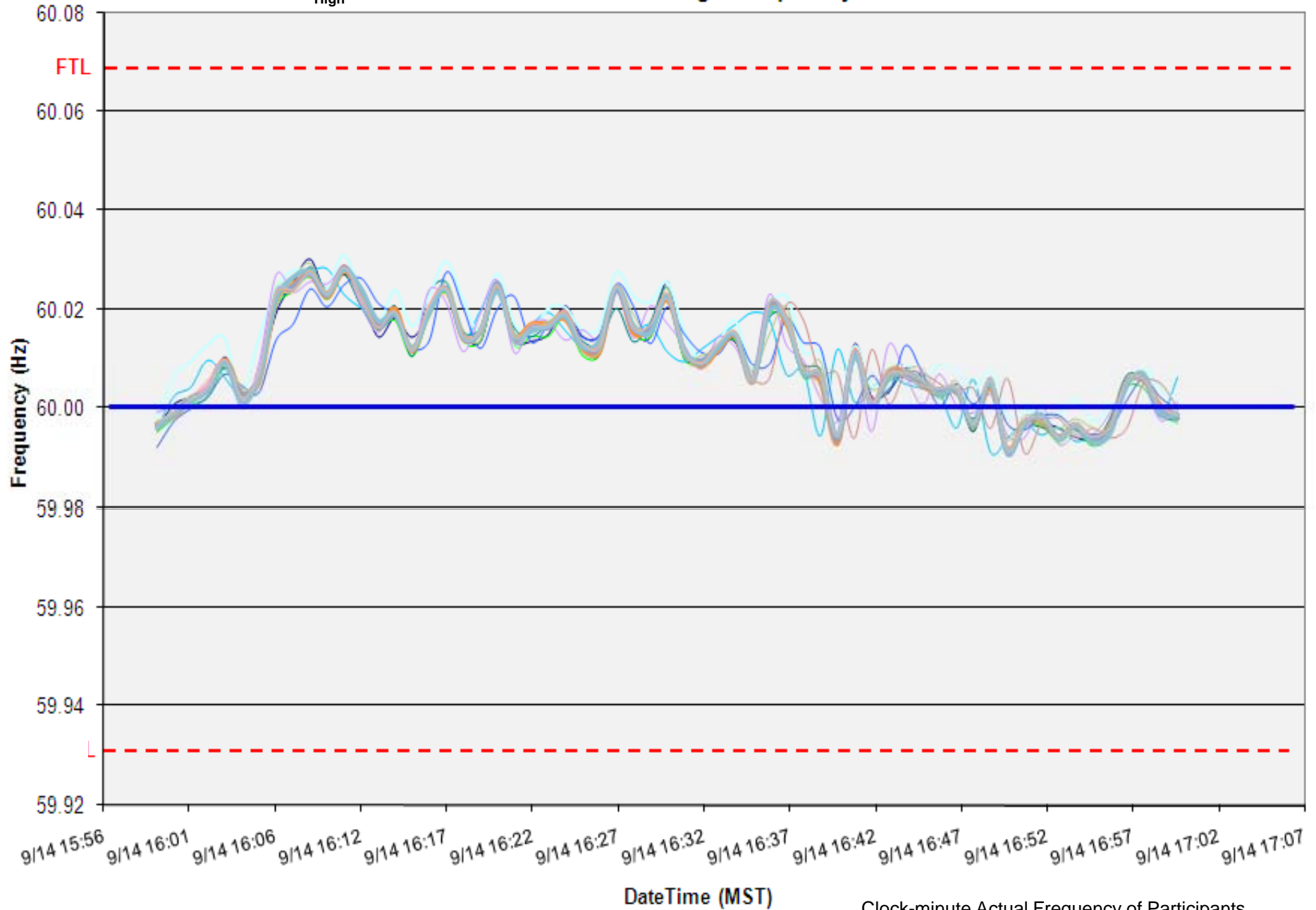


*Expectation that the BA will not exceed the ATL for more than 30 consecutive clock-minutes within WECC.

9/14/2010 ending 16:44 PDT

34-minute duration above BAAL_{High}

Clock-Minute Average Frequency

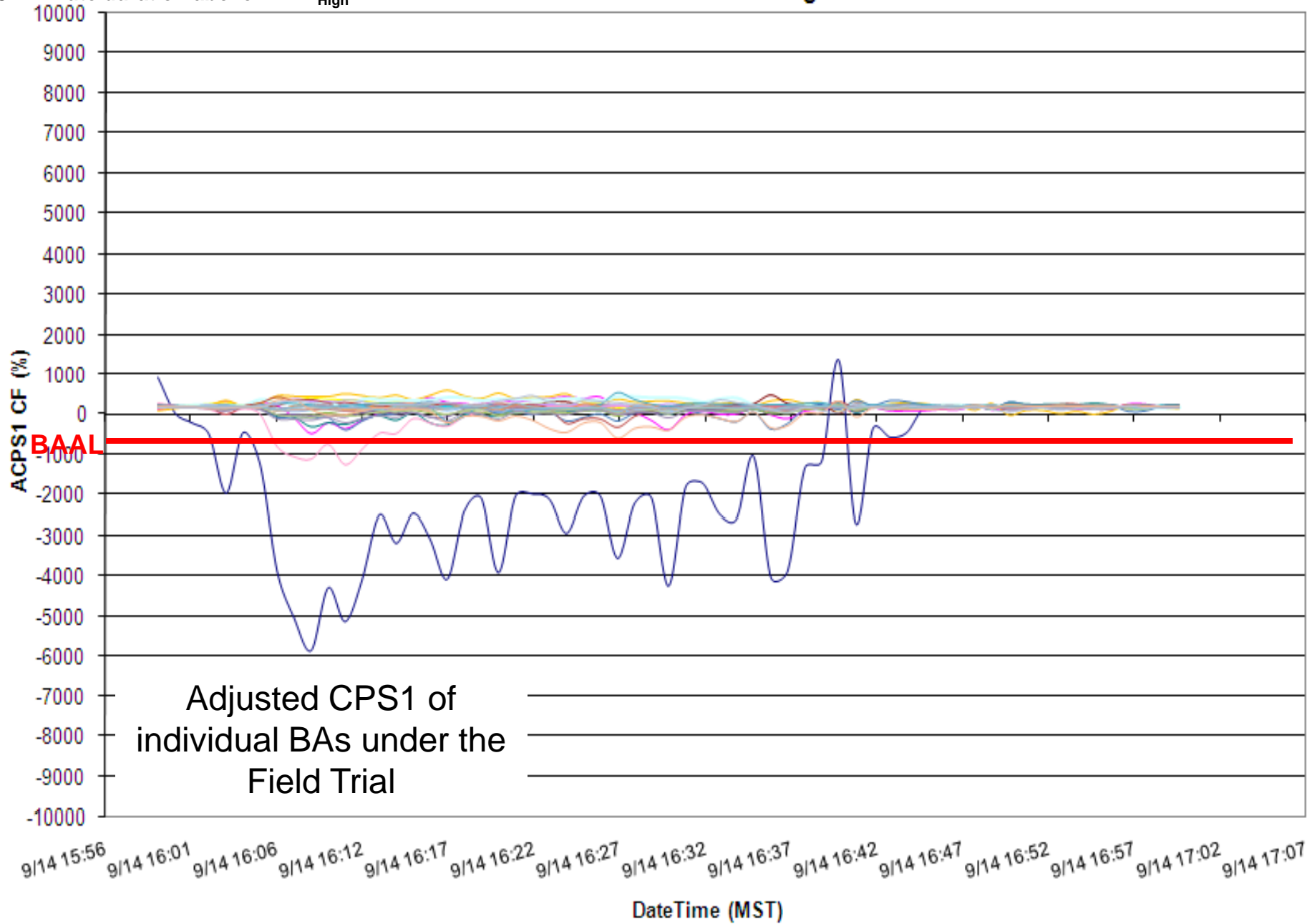


Clock-minute Actual Frequency of Participants

9/14/2010 ending 16:44 PDT

34-minute duration above BAAL_{High}

ACPS1 Clock-Minute Averages

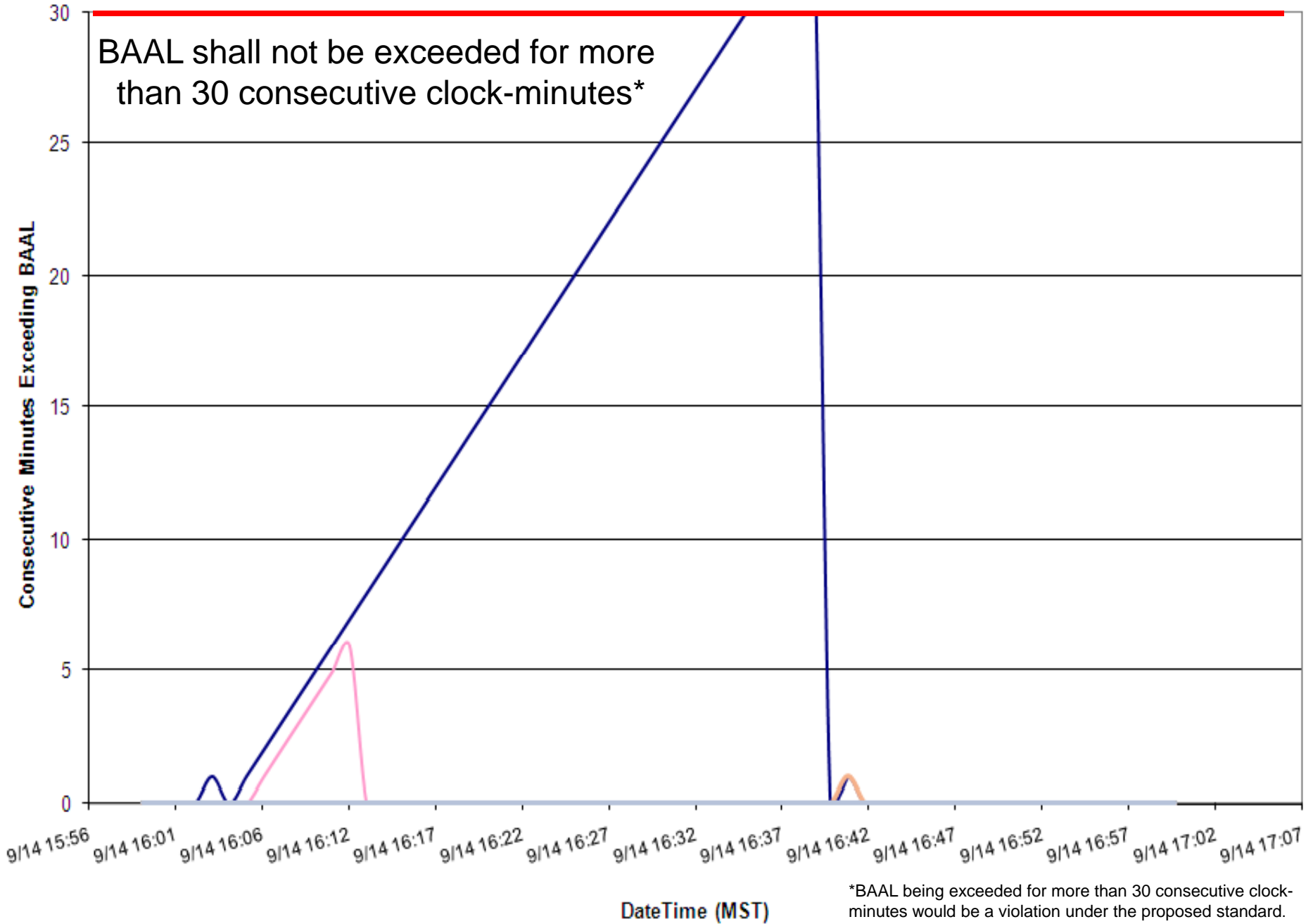


9/14/2010 ending 16:44 PDT

34-minute duration above BAAL_{High}

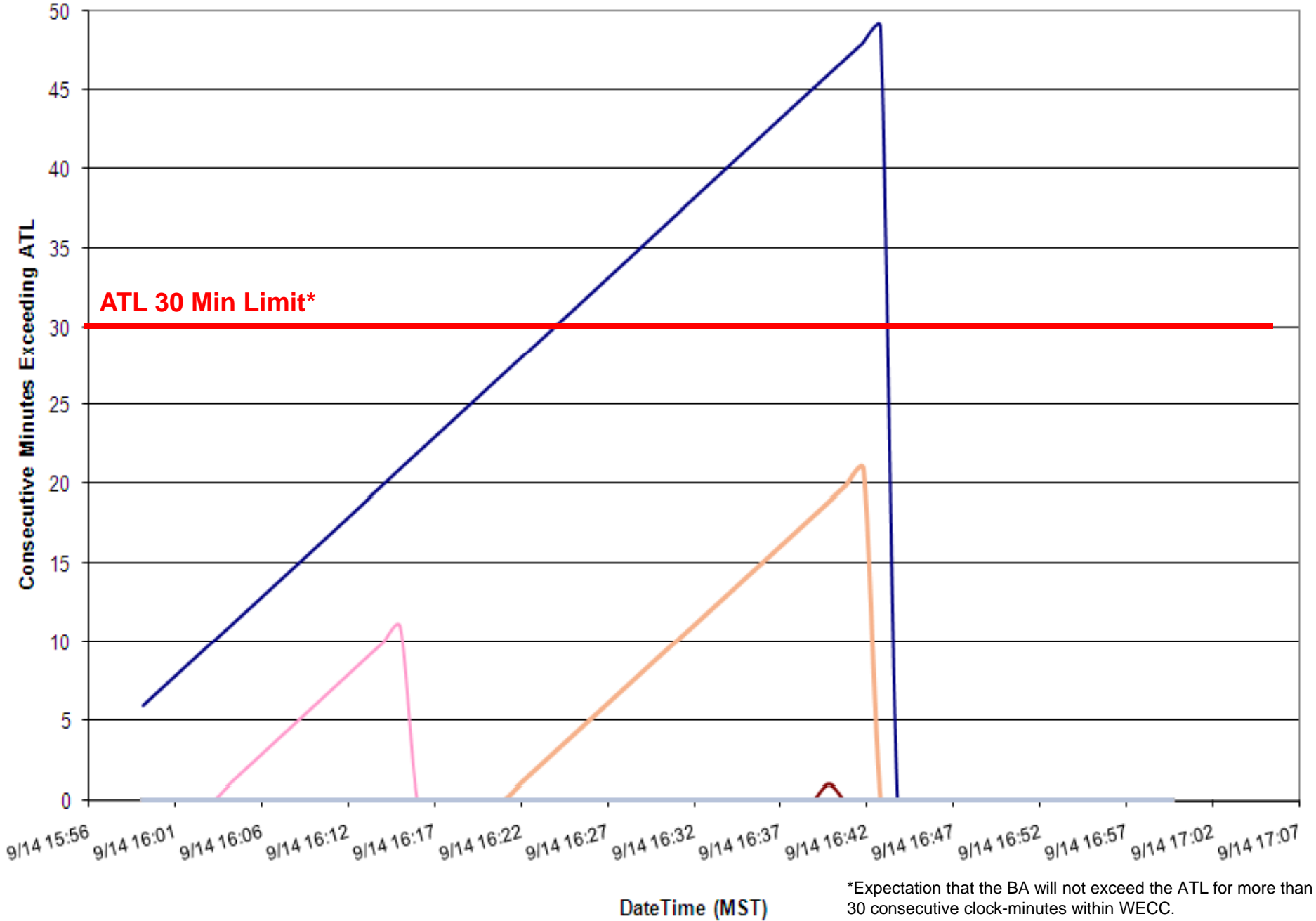
Consecutive Minutes Exceeding BAAL

BAAL Violation*



9/14/2010 ending 16:44 PDT
34-minute duration above BAAL_{High}

Consecutive Minutes Exceeding ATL



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

9/19/2010 ending 15:25 PDT

47-minute duration below ATL_{Low}

Clock-Minute Average Frequency

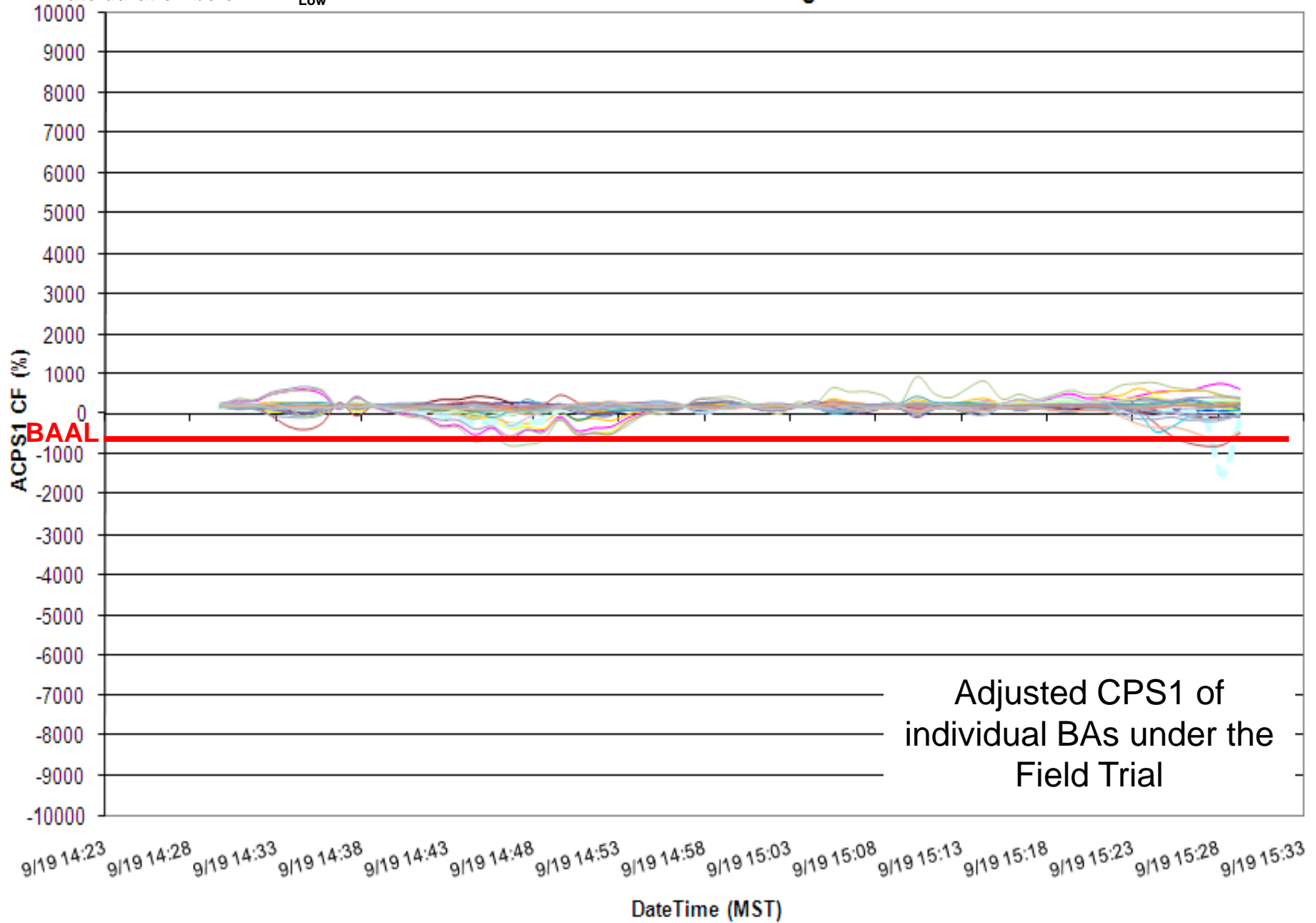


Clock-minute Actual Frequency of Participants

9/19/2010 ending 15:25 PDT

47-minute duration below ATL_{Low}

ACPS1 Clock-Minute Averages

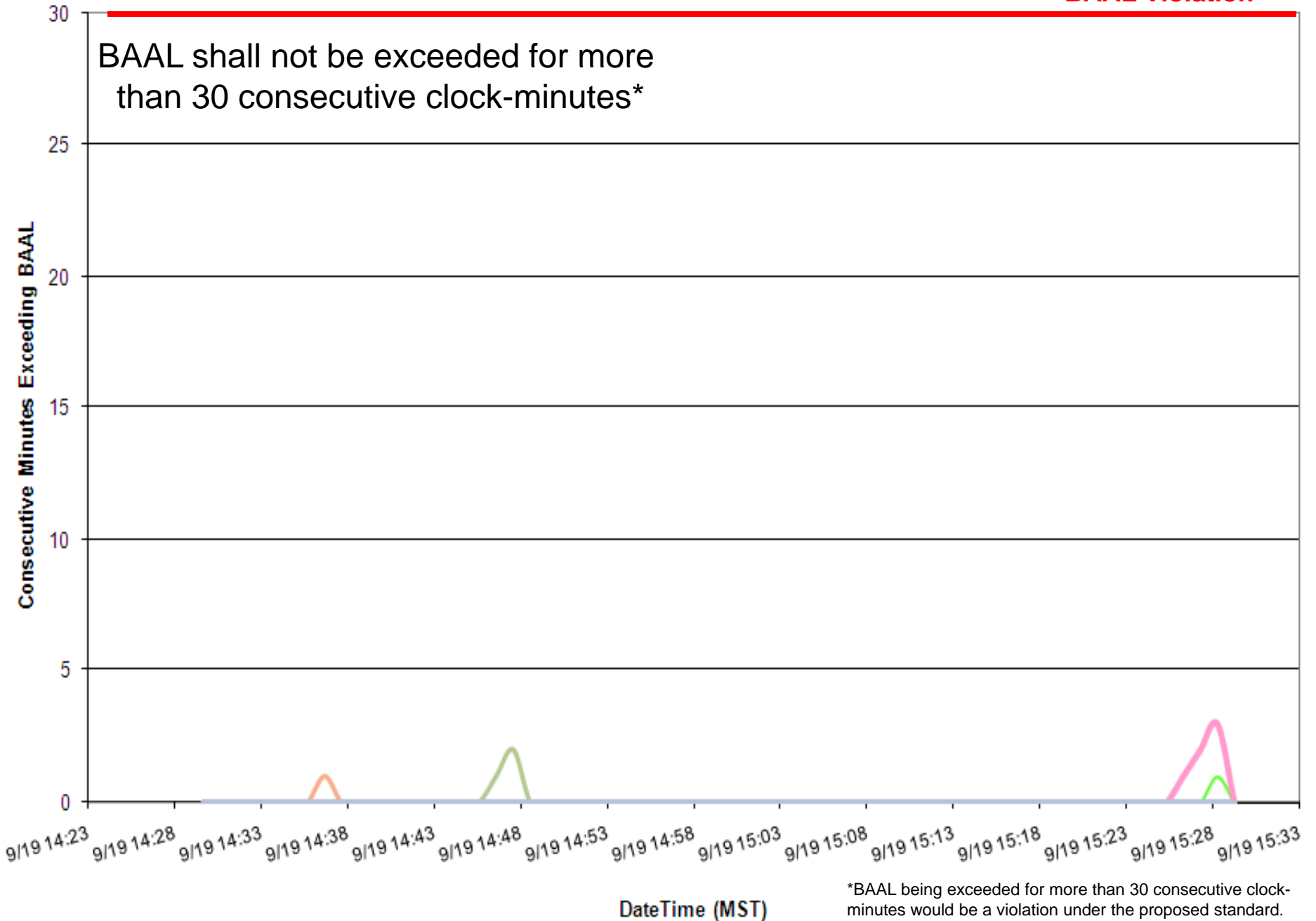


9/19/2010 ending 15:25 PDT

47-minute duration below ATL_{Low}

Consecutive Minutes Exceeding BAAL

BAAL Violation*

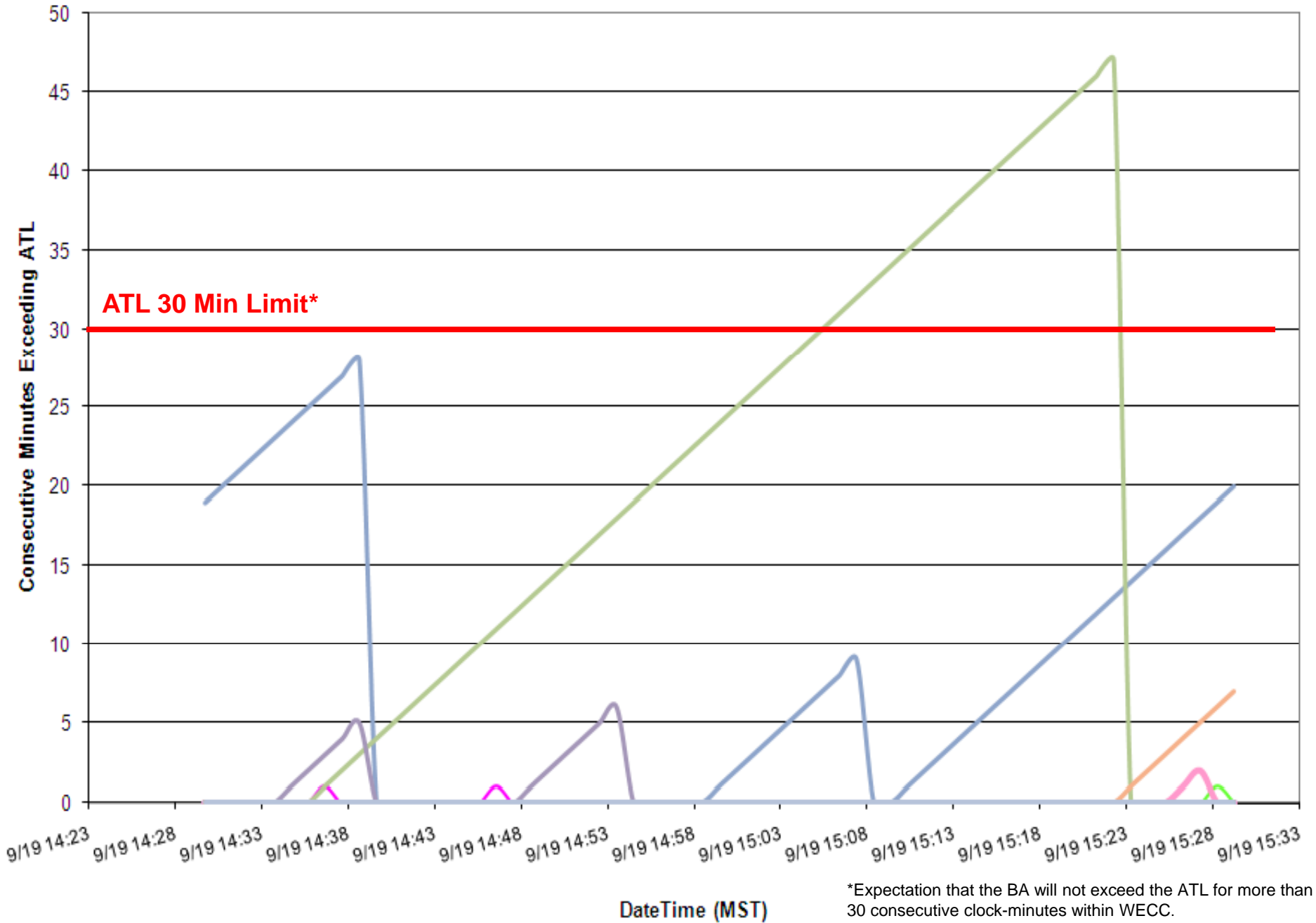


*BAAL being exceeded for more than 30 consecutive clock-minutes would be a violation under the proposed standard.

9/19/2010 ending 15:25 PDT

47-minute duration below ATL_{Low}

Consecutive Minutes Exceeding ATL

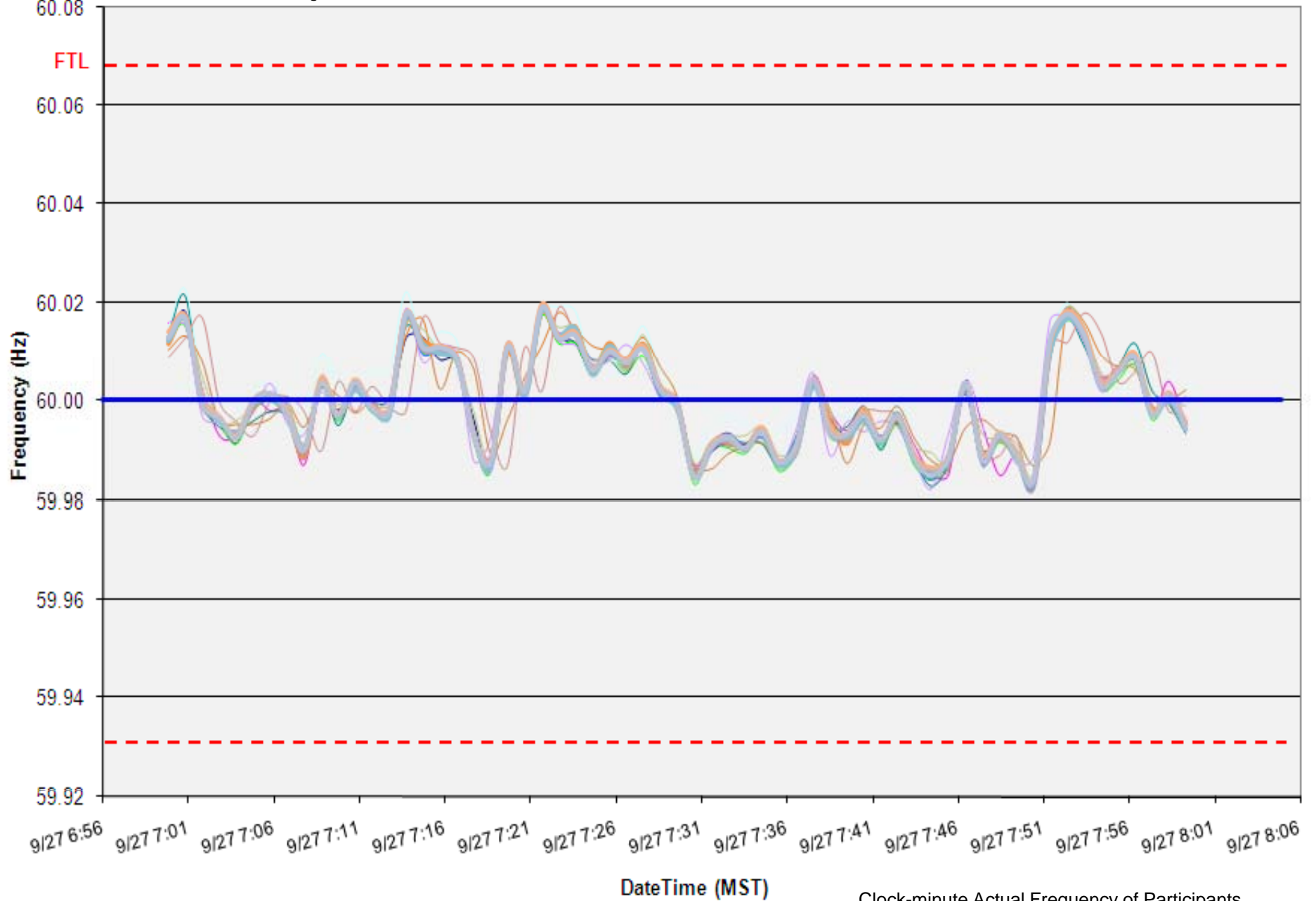


*Expectation that the BA will not exceed the ATL for more than 30 consecutive clock-minutes within WECC.

9/27/2010 ending 7:50 PDT

36-minute duration above ATL_{High}

Clock-Minute Average Frequency

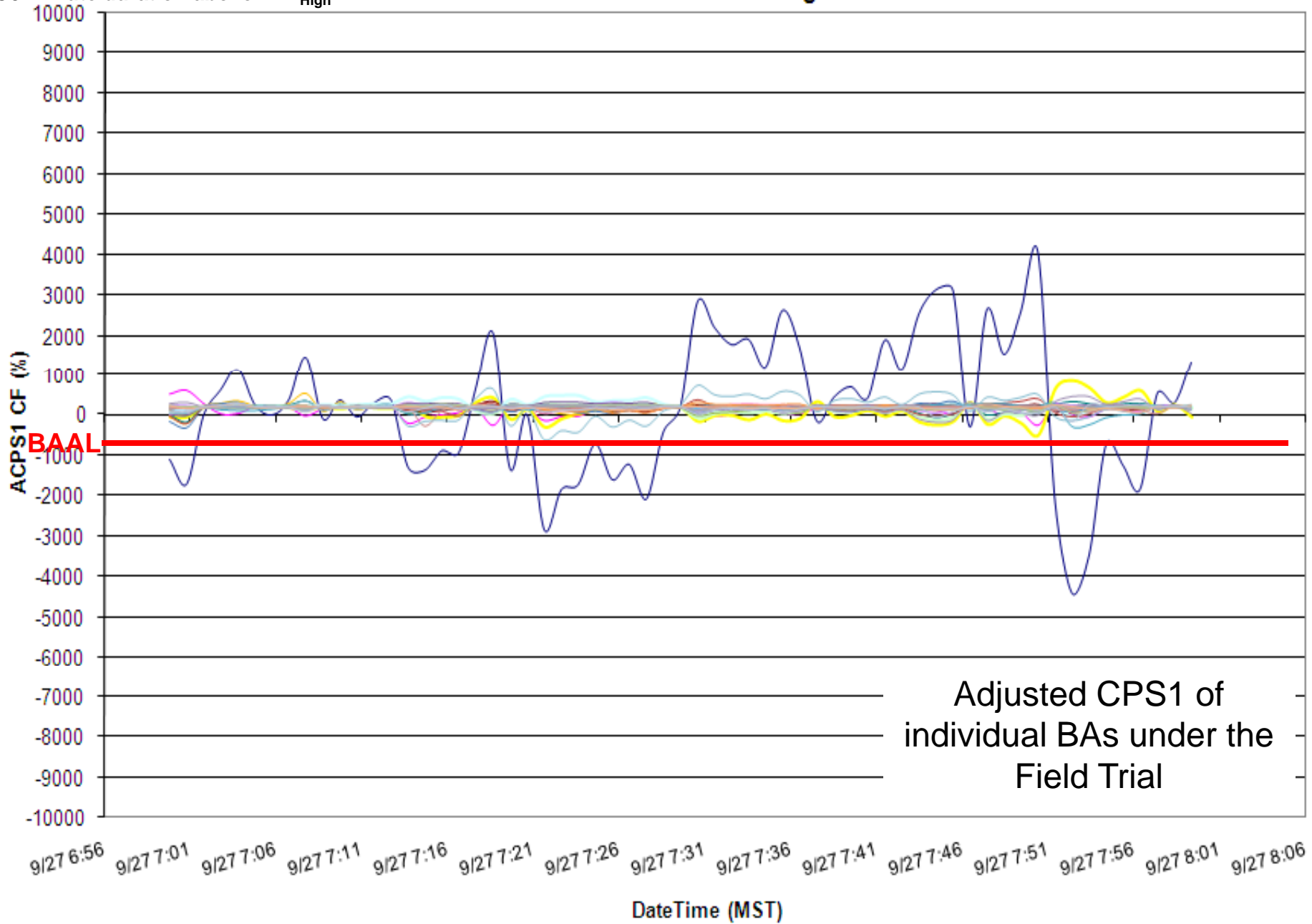


Clock-minute Actual Frequency of Participants

9/27/2010 ending 7:50 PDT

36-minute duration above ATL_{High}

ACPS1 Clock-Minute Averages

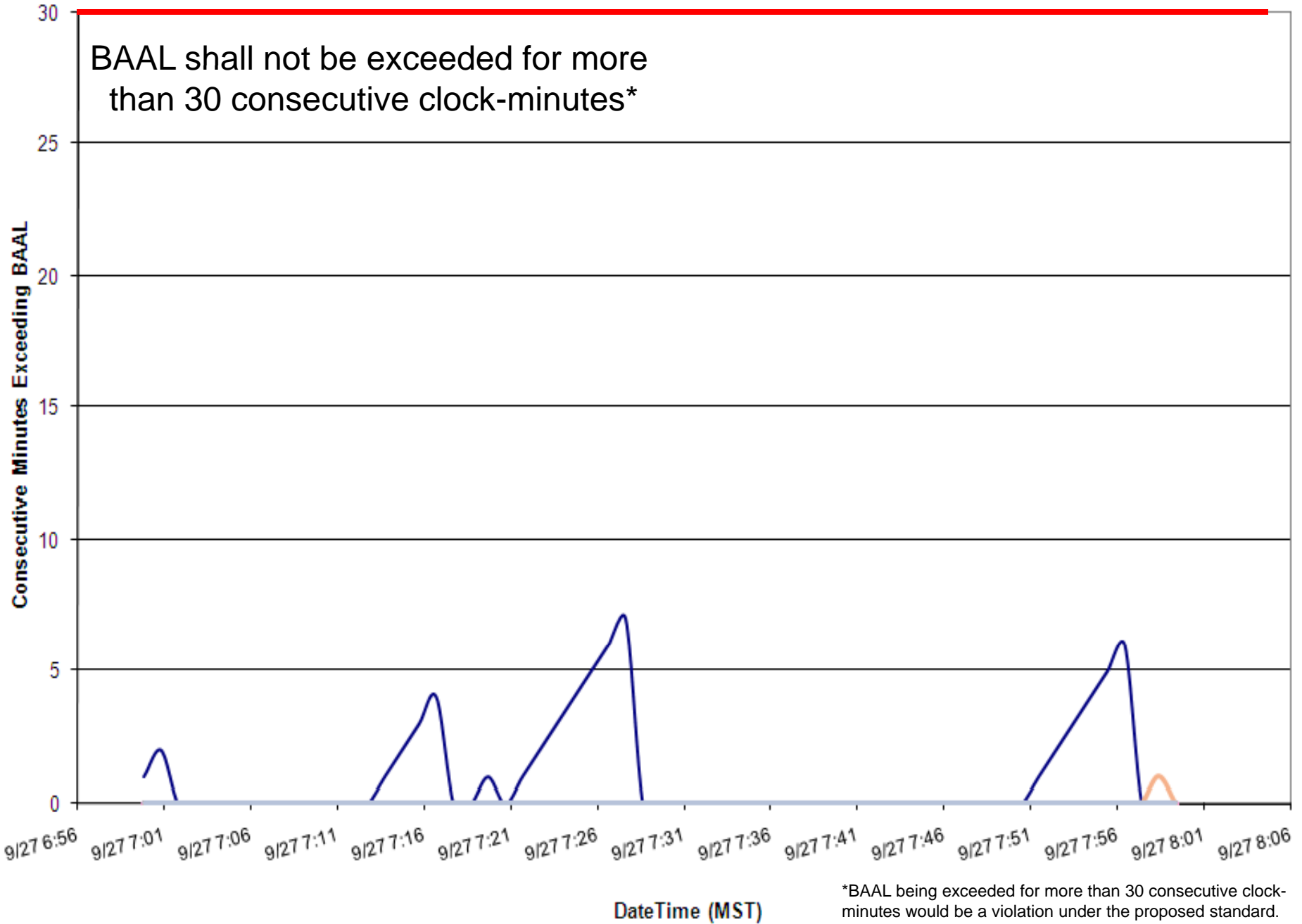


Adjusted CPS1 of individual BAs under the Field Trial

9/27/2010 ending 7:50 PDT
36-minute duration above ATL_{High}

Consecutive Minutes Exceeding BAAL

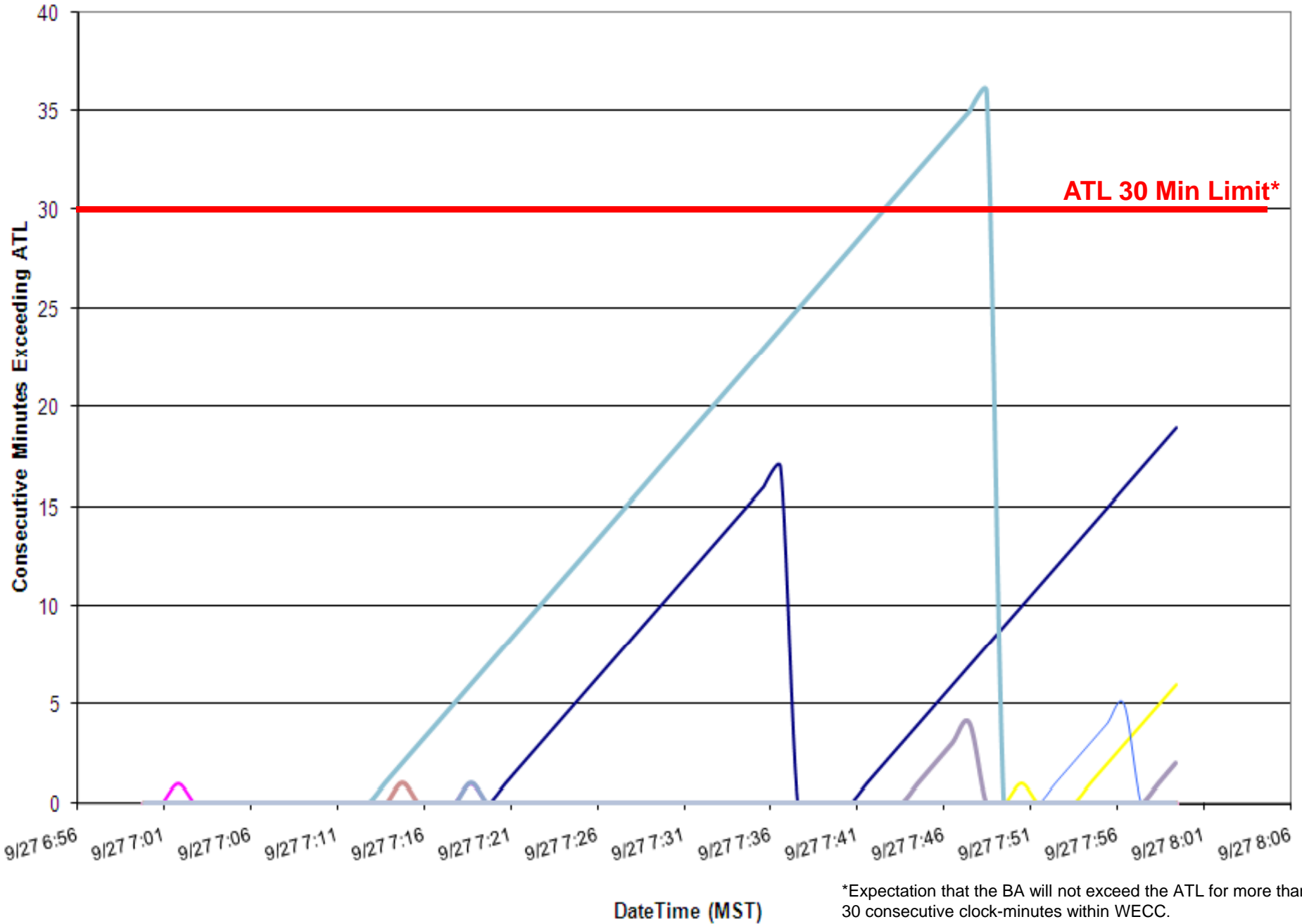
BAAL Violation*



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

9/27/2010 ending 7:50 PDT
36-minute duration above ATL_{High}

Consecutive Minutes Exceeding ATL



*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 Project 2010-14

Discussion

Doug Hils

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

Doug.Hils@duke-energy.com

Statistics of 30-minute bounds being exceeded:

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/01/10	13:28	MDT	59.9840	60.00	0	0	0	16	0	16	9/1/2010 12:28
09/01/10	13:29	MDT	59.9940	60.00	0	0	0	17	0	17	9/1/2010 12:29
09/01/10	13:30	MDT	59.9894	60.00	0	0	0	18	0	18	9/1/2010 12:30
09/01/10	13:31	MDT	59.9869	60.00	0	0	0	19	0	19	9/1/2010 12:31
09/01/10	13:32	MDT	59.9805	60.00	0	0	0	20	0	20	9/1/2010 12:32
09/01/10	13:33	MDT	59.9721	60.00	0	0	0	21	0	21	9/1/2010 12:33
09/01/10	13:34	MDT	59.9754	60.00	0	0	0	22	0	22	9/1/2010 12:34
09/01/10	13:35	MDT	59.9927	60.00	0	0	0	23	0	23	9/1/2010 12:35
09/01/10	13:36	MDT	59.9886	60.00	0	0	0	24	0	24	9/1/2010 12:36
09/01/10	13:37	MDT	59.9794	60.00	0	0	0	25	0	25	9/1/2010 12:37
09/01/10	13:38	MDT	59.9798	60.00	0	0	0	26	0	26	9/1/2010 12:38
09/01/10	13:39	MDT	59.9743	60.00	0	0	0	27	0	27	9/1/2010 12:39
09/01/10	13:40	MDT	59.9860	60.00	0	0	0	28	0	28	9/1/2010 12:40
09/01/10	13:41	MDT	59.9846	60.00	0	0	0	29	0	29	9/1/2010 12:41
09/01/10	13:42	MDT	59.9861	60.00	0	0	0	30	0	30	9/1/2010 12:42
09/01/10	13:43	MDT	59.9747	60.00	0	0	0	31	0	31	9/1/2010 12:43
09/01/10	13:44	MDT	59.9801	60.00	0	0	0	32	0	32	9/1/2010 12:44
09/01/10	13:45	MDT	59.9803	60.00	0	0	0	33	0	33	9/1/2010 12:45
09/01/10	13:46	MDT	59.9884	60.00	0	0	0	34	0	34	9/1/2010 12:46

Statistics of 30-minute bounds being exceeded:

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/05/10	3:15	MDT	60.0047	60.00	0	0	15	0	16	0	9/5/2010 2:15
09/05/10	3:16	MDT	59.9976	60.00	1	0	16	0	17	0	9/5/2010 2:16
09/05/10	3:17	MDT	59.9924	60.00	2	0	17	0	18	0	9/5/2010 2:17
09/05/10	3:18	MDT	59.9916	60.00	3	0	18	0	19	0	9/5/2010 2:18
09/05/10	3:19	MDT	59.9899	60.00	4	0	19	0	20	0	9/5/2010 2:19
09/05/10	3:20	MDT	59.9879	60.00	5	0	20	0	21	0	9/5/2010 2:20
09/05/10	3:21	MDT	59.9959	60.00	6	0	21	0	22	0	9/5/2010 2:21
09/05/10	3:22	MDT	60.0096	60.00	0	0	22	0	23	0	9/5/2010 2:22
09/05/10	3:23	MDT	60.0045	60.00	0	0	23	0	24	0	9/5/2010 2:23
09/05/10	3:24	MDT	59.9966	60.00	1	0	24	0	25	0	9/5/2010 2:24
09/05/10	3:25	MDT	60.0027	60.00	0	0	25	0	26	0	9/5/2010 2:25
09/05/10	3:26	MDT	60.0062	60.00	0	0	26	0	27	0	9/5/2010 2:26
09/05/10	3:27	MDT	59.9934	60.00	1	0	27	0	28	0	9/5/2010 2:27
09/05/10	3:28	MDT	59.9916	60.00	2	0	28	0	29	0	9/5/2010 2:28
09/05/10	3:29	MDT	60.0060	60.00	0	0	29	0	30	0	9/5/2010 2:29
09/05/10	3:30	MDT	60.0133	60.00	0	0	30	0	31	0	9/5/2010 2:30
09/05/10	3:31	MDT	60.0102	60.00	0	0	31	0	32	0	9/5/2010 2:31
09/05/10	3:32	MDT	60.0016	60.00	0	0	32	0	33	0	9/5/2010 2:32
09/05/10	3:33	MDT	60.0102	60.00	0	0	33	0	34	0	9/5/2010 2:33
09/05/10	3:34	MDT	60.0075	60.00	0	0	34	0	35	0	9/5/2010 2:34
09/05/10	3:35	MDT	60.0112	60.00	0	0	35	0	36	0	9/5/2010 2:35
09/05/10	3:36	MDT	60.0064	60.00	0	0	36	0	37	0	9/5/2010 2:36
09/05/10	3:37	MDT	60.0093	60.00	0	0	37	0	38	0	9/5/2010 2:37
09/05/10	3:38	MDT	59.9974	60.00	1	0	38	0	39	0	9/5/2010 2:38

Statistics of 30-minute bounds being exceeded:

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/06/10	8:34	MDT	59.9685	60.00	16	0	14	0	16	0	9/6/2010 7:34
09/06/10	8:35	MDT	59.9751	60.00	17	0	15	0	17	0	9/6/2010 7:35
09/06/10	8:36	MDT	59.9767	60.00	18	0	16	0	18	0	9/6/2010 7:36
09/06/10	8:37	MDT	59.9706	60.00	19	0	17	0	19	0	9/6/2010 7:37
09/06/10	8:38	MDT	59.9695	60.00	20	0	18	0	20	0	9/6/2010 7:38
09/06/10	8:39	MDT	59.9678	60.00	21	0	19	0	21	0	9/6/2010 7:39
09/06/10	8:40	MDT	59.9675	60.00	22	0	20	0	22	0	9/6/2010 7:40
09/06/10	8:41	MDT	59.9650	60.00	23	0	21	0	23	0	9/6/2010 7:41
09/06/10	8:42	MDT	59.9650	60.00	24	0	22	0	24	0	9/6/2010 7:42
09/06/10	8:43	MDT	59.9699	60.00	25	0	23	0	25	0	9/6/2010 7:43
09/06/10	8:44	MDT	59.9857	60.00	26	0	24	0	26	0	9/6/2010 7:44
09/06/10	8:45	MDT	59.9767	60.00	27	0	0	0	27	0	9/6/2010 7:45
09/06/10	8:46	MDT	59.9734	60.00	28	0	0	0	28	0	9/6/2010 7:46
09/06/10	8:47	MDT	59.9703	60.00	29	0	0	0	29	0	9/6/2010 7:47
09/06/10	8:48	MDT	59.9722	60.00	30	0	0	0	30	0	9/6/2010 7:48
09/06/10	8:49	MDT	59.9733	60.00	31	0	0	0	31	0	9/6/2010 7:49
09/06/10	8:50	MDT	59.9749	60.00	32	0	0	0	32	0	9/6/2010 7:50
09/06/10	8:51	MDT	59.9737	60.00	33	0	0	0	33	0	9/6/2010 7:51

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/14/10	17:11	MDT	60.0231	60.00	0	5	0	16	0	16	9/14/2010 16:11
09/14/10	17:12	MDT	60.0279	60.00	0	6	0	17	0	17	9/14/2010 16:12
09/14/10	17:13	MDT	60.0229	60.00	0	7	0	18	0	18	9/14/2010 16:13
09/14/10	17:14	MDT	60.0147	60.00	0	8	0	19	0	19	9/14/2010 16:14
09/14/10	17:15	MDT	60.0185	60.00	0	9	0	20	0	20	9/14/2010 16:15
09/14/10	17:16	MDT	60.0146	60.00	0	10	0	21	0	21	9/14/2010 16:16
09/14/10	17:17	MDT	60.0193	60.00	0	11	0	22	0	22	9/14/2010 16:17
09/14/10	17:18	MDT	60.0247	60.00	0	12	0	23	0	23	9/14/2010 16:18
09/14/10	17:19	MDT	60.0155	60.00	0	13	0	24	0	24	9/14/2010 16:19
09/14/10	17:20	MDT	60.0136	60.00	0	14	0	25	0	25	9/14/2010 16:20
09/14/10	17:21	MDT	60.0242	60.00	0	15	0	26	0	26	9/14/2010 16:21
09/14/10	17:22	MDT	60.0139	60.00	0	16	0	27	0	27	9/14/2010 16:22
09/14/10	17:23	MDT	60.0138	60.00	0	17	0	28	0	28	9/14/2010 16:23
09/14/10	17:24	MDT	60.0152	60.00	0	18	0	29	0	29	9/14/2010 16:24
09/14/10	17:25	MDT	60.0209	60.00	0	19	0	30	0	30	9/14/2010 16:25
09/14/10	17:26	MDT	60.0148	60.00	0	20	0	31	0	31	9/14/2010 16:26
09/14/10	17:27	MDT	60.0150	60.00	0	21	0	32	0	32	9/14/2010 16:27
09/14/10	17:28	MDT	60.0247	60.00	0	22	0	33	0	33	9/14/2010 16:28
09/14/10	17:29	MDT	60.0161	60.00	0	23	0	34	0	34	9/14/2010 16:29
09/14/10	17:30	MDT	60.0146	60.00	0	24	0	35	0	35	9/14/2010 16:30
09/14/10	17:31	MDT	60.0258	60.00	0	25	0	36	0	36	9/14/2010 16:31
09/14/10	17:32	MDT	60.0112	60.00	0	26	0	37	0	37	9/14/2010 16:32
09/14/10	17:33	MDT	60.0099	60.00	0	27	0	38	0	38	9/14/2010 16:33
09/14/10	17:34	MDT	60.0135	60.00	0	28	0	39	0	39	9/14/2010 16:34
09/14/10	17:35	MDT	60.0136	60.00	0	29	0	40	0	40	9/14/2010 16:35
09/14/10	17:36	MDT	60.0060	60.00	0	30	0	41	0	41	9/14/2010 16:36
09/14/10	17:37	MDT	60.0195	60.00	0	31	0	42	0	42	9/14/2010 16:37
09/14/10	17:38	MDT	60.0187	60.00	0	32	0	43	0	43	9/14/2010 16:38
09/14/10	17:39	MDT	60.0071	60.00	0	33	0	44	0	44	9/14/2010 16:39
09/14/10	17:40	MDT	60.0063	60.00	0	34	0	45	0	45	9/14/2010 16:40
09/14/10	17:41	MDT	59.9945	60.00	0	0	0	46	0	46	9/14/2010 16:41
09/14/10	17:42	MDT	60.0132	60.00	0	1	0	47	0	47	9/14/2010 16:42
09/14/10	17:43	MDT	60.0025	60.00	0	0	0	48	0	48	9/14/2010 16:43
09/14/10	17:44	MDT	60.0034	60.00	0	0	0	49	0	49	9/14/2010 16:44

Statistics of 30-minute bounds being exceeded:

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/29/10	20:18	MDT	59.9999	60.00	0	0	0	16	0	16	9/29/2010 19:18
09/29/10	20:19	MDT	60.0036	60.00	0	0	0	17	0	17	9/29/2010 19:19
09/29/10	20:20	MDT	60.0012	60.00	0	0	0	18	0	18	9/29/2010 19:20
09/29/10	20:21	MDT	60.0047	60.00	0	0	0	19	0	19	9/29/2010 19:21
09/29/10	20:22	MDT	60.0025	60.00	0	0	0	20	0	20	9/29/2010 19:22
09/29/10	20:23	MDT	60.0103	60.00	0	1	0	21	0	21	9/29/2010 19:23
09/29/10	20:24	MDT	60.0115	60.00	0	2	0	22	0	22	9/29/2010 19:24
09/29/10	20:25	MDT	60.0144	60.00	0	3	0	23	0	23	9/29/2010 19:25
09/29/10	20:26	MDT	60.0153	60.00	0	4	0	24	0	24	9/29/2010 19:26
09/29/10	20:27	MDT	60.0112	60.00	0	5	0	25	0	25	9/29/2010 19:27
09/29/10	20:28	MDT	59.9991	60.00	0	0	0	26	0	26	9/29/2010 19:28
09/29/10	20:29	MDT	59.9947	60.00	0	0	0	27	0	27	9/29/2010 19:29
09/29/10	20:30	MDT	59.9977	60.00	0	0	0	28	0	28	9/29/2010 19:30
09/29/10	20:31	MDT	59.9917	60.00	0	0	0	29	0	29	9/29/2010 19:31
09/29/10	20:32	MDT	59.9882	60.00	0	0	0	30	0	30	9/29/2010 19:32
09/29/10	20:33	MDT	59.9927	60.00	0	0	0	31	0	31	9/29/2010 19:33

Statistics of 30-minute bounds being exceeded:

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/30/10	17:42	MDT	60.0170	60.00	0	11	0	15	0	16	9/30/2010 16:42
09/30/10	17:43	MDT	60.0148	60.00	0	12	0	16	0	17	9/30/2010 16:43
09/30/10	17:44	MDT	60.0170	60.00	0	13	0	17	0	18	9/30/2010 16:44
09/30/10	17:45	MDT	60.0169	60.00	0	14	0	18	0	19	9/30/2010 16:45
09/30/10	17:46	MDT	60.0140	60.00	0	15	0	19	0	20	9/30/2010 16:46
09/30/10	17:47	MDT	60.0140	60.00	0	16	0	20	0	21	9/30/2010 16:47
09/30/10	17:48	MDT	60.0140	60.00	0	17	0	21	0	22	9/30/2010 16:48
09/30/10	17:49	MDT	60.0140	60.00	0	18	0	22	0	23	9/30/2010 16:49
09/30/10	17:50	MDT	60.0140	60.00	0	19	0	23	0	24	9/30/2010 16:50
09/30/10	17:51	MDT	60.0140	60.00	0	20	0	24	0	25	9/30/2010 16:51
09/30/10	17:52	MDT	60.0140	60.00	0	21	0	25	0	26	9/30/2010 16:52
09/30/10	17:53	MDT	60.0140	60.00	0	22	0	26	0	27	9/30/2010 16:53
09/30/10	17:54	MDT	60.0140	60.00	0	23	0	27	0	28	9/30/2010 16:54
09/30/10	17:55	MDT	60.0140	60.00	0	24	0	28	0	29	9/30/2010 16:55
09/30/10	17:56	MDT	60.0140	60.00	0	25	0	29	0	30	9/30/2010 16:56
09/30/10	17:57	MDT	60.0140	60.00	0	26	0	30	0	31	9/30/2010 16:57
09/30/10	17:58	MDT	60.0140	60.00	0	27	0	31	0	32	9/30/2010 16:58
09/30/10	17:59	MDT	60.0140	60.00	0	28	0	32	0	33	9/30/2010 16:59
09/30/10	18:00	MDT	60.0140	60.00	0	29	0	33	0	34	9/30/2010 17:00
09/30/10	18:01	MDT	60.0140	60.00	0	30	0	34	0	35	9/30/2010 17:01
09/30/10	18:02	MDT	60.0140	60.00	0	31	0	35	0	36	9/30/2010 17:02
09/30/10	18:03	MDT	60.0140	60.00	0	32	0	36	0	37	9/30/2010 17:03
09/30/10	18:04	MDT	60.0138	60.00	0	33	0	37	0	38	9/30/2010 17:04

Frequency data needs to be reviewed

Statistics of 30-minute bounds being exceeded:

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/15/10	6:11	PDT	59.9614	60.00	0	0	0	16	0	16	9/15/2010 6:11
09/15/10	6:12	PDT	59.9644	60.00	0	0	0	17	0	17	9/15/2010 6:12
09/15/10	6:13	PDT	59.9684	60.00	0	0	0	18	0	18	9/15/2010 6:13
09/15/10	6:14	PDT	59.9961	60.00	0	0	0	19	0	19	9/15/2010 6:14
09/15/10	6:15	PDT	59.9788	60.00	0	0	0	20	0	20	9/15/2010 6:15
09/15/10	6:16	PDT	59.9781	60.00	0	0	0	21	0	21	9/15/2010 6:16
09/15/10	6:17	PDT	59.9813	60.00	0	0	0	22	0	22	9/15/2010 6:17
09/15/10	6:18	PDT	59.9862	60.00	0	0	0	23	0	23	9/15/2010 6:18
09/15/10	6:19	PDT	60.0177	60.00	0	1	0	24	0	24	9/15/2010 6:19
09/15/10	6:20	PDT	60.0089	60.00	0	0	0	25	0	25	9/15/2010 6:20
09/15/10	6:21	PDT	60.0002	60.00	0	0	0	26	0	26	9/15/2010 6:21
09/15/10	6:22	PDT	59.9933	60.00	0	0	0	27	0	27	9/15/2010 6:22
09/15/10	6:23	PDT	59.9948	60.00	0	0	0	28	0	28	9/15/2010 6:23
09/15/10	6:24	PDT	59.9878	60.00	0	0	0	29	0	29	9/15/2010 6:24
09/15/10	6:25	PDT	59.9804	60.00	0	0	0	30	0	30	9/15/2010 6:25
09/15/10	6:26	PDT	59.9810	60.00	0	0	0	31	0	31	9/15/2010 6:26
09/15/10	6:27	PDT	60.0029	60.00	0	0	0	32	0	32	9/15/2010 6:27
09/15/10	6:28	PDT	59.9978	60.00	0	0	0	33	0	33	9/15/2010 6:28
09/15/10	6:29	PDT	59.9901	60.00	0	0	0	34	0	34	9/15/2010 6:29

Statistics of 30-minute bounds being exceeded:

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/19/10	8:59	PDT	60.0181	60.00	0	5	0	16	0	16	9/19/2010 8:59
09/19/10	9:00	PDT	60.0212	60.00	0	6	0	17	0	17	9/19/2010 9:00
09/19/10	9:01	PDT	60.0338	60.00	0	7	0	18	0	18	9/19/2010 9:01
09/19/10	9:02	PDT	60.0229	60.00	0	8	0	19	0	19	9/19/2010 9:02
09/19/10	9:03	PDT	60.0054	60.00	0	0	0	20	0	20	9/19/2010 9:03
09/19/10	9:04	PDT	60.0079	60.00	0	0	0	21	0	21	9/19/2010 9:04
09/19/10	9:05	PDT	60.0116	60.00	0	0	0	22	0	22	9/19/2010 9:05
09/19/10	9:06	PDT	60.0024	60.00	0	0	0	23	0	23	9/19/2010 9:06
09/19/10	9:07	PDT	60.0092	60.00	0	0	0	24	0	24	9/19/2010 9:07
09/19/10	9:08	PDT	60.0164	60.00	0	0	0	25	0	25	9/19/2010 9:08
09/19/10	9:09	PDT	60.0054	60.00	0	0	0	26	0	26	9/19/2010 9:09
09/19/10	9:10	PDT	60.0109	60.00	0	0	0	27	0	27	9/19/2010 9:10
09/19/10	9:11	PDT	60.0024	60.00	0	0	0	28	0	28	9/19/2010 9:11
09/19/10	9:12	PDT	60.0105	60.00	0	0	0	29	0	29	9/19/2010 9:12
09/19/10	9:13	PDT	60.0129	60.00	0	0	0	30	0	30	9/19/2010 9:13
09/19/10	9:14	PDT	59.9984	60.00	0	0	0	31	0	31	9/19/2010 9:14
09/19/10	9:15	PDT	60.0002	60.00	0	0	0	32	0	32	9/19/2010 9:15
09/19/10	9:16	PDT	60.0002	60.00	0	0	0	33	0	33	9/19/2010 9:16
09/19/10	9:17	PDT	59.9951	60.00	0	0	0	34	0	34	9/19/2010 9:17
09/19/10	9:18	PDT	59.9981	60.00	0	0	0	35	0	35	9/19/2010 9:18

Statistics of 30-minute bounds being exceeded:

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/19/10	14:54	PDT	59.9795	60.00	0	0	16	0	16	0	9/19/2010 14:54
09/19/10	14:55	PDT	59.9788	60.00	0	0	17	0	17	0	9/19/2010 14:55
09/19/10	14:56	PDT	59.9858	60.00	0	0	18	0	18	0	9/19/2010 14:56
09/19/10	14:57	PDT	59.9936	60.00	0	0	19	0	19	0	9/19/2010 14:57
09/19/10	14:58	PDT	59.9941	60.00	0	0	20	0	20	0	9/19/2010 14:58
09/19/10	14:59	PDT	59.9974	60.00	0	0	21	0	21	0	9/19/2010 14:59
09/19/10	15:00	PDT	60.0050	60.00	0	0	22	0	22	0	9/19/2010 15:00
09/19/10	15:01	PDT	60.0069	60.00	0	0	23	0	23	0	9/19/2010 15:01
09/19/10	15:02	PDT	60.0072	60.00	0	0	24	0	24	0	9/19/2010 15:02
09/19/10	15:03	PDT	60.0033	60.00	0	0	25	0	25	0	9/19/2010 15:03
09/19/10	15:04	PDT	59.9970	60.00	0	0	26	0	26	0	9/19/2010 15:04
09/19/10	15:05	PDT	59.9945	60.00	0	0	27	0	27	0	9/19/2010 15:05
09/19/10	15:06	PDT	60.0033	60.00	0	0	28	0	28	0	9/19/2010 15:06
09/19/10	15:07	PDT	60.0012	60.00	0	0	29	0	29	0	9/19/2010 15:07
09/19/10	15:08	PDT	60.0146	60.00	0	0	30	0	30	0	9/19/2010 15:08
09/19/10	15:09	PDT	60.0107	60.00	0	0	31	0	31	0	9/19/2010 15:09
09/19/10	15:10	PDT	60.0108	60.00	0	0	32	0	32	0	9/19/2010 15:10
09/19/10	15:11	PDT	60.0075	60.00	0	0	33	0	33	0	9/19/2010 15:11
09/19/10	15:12	PDT	60.0018	60.00	0	0	34	0	34	0	9/19/2010 15:12
09/19/10	15:13	PDT	60.0200	60.00	0	0	35	0	35	0	9/19/2010 15:13
09/19/10	15:14	PDT	60.0085	60.00	0	0	36	0	36	0	9/19/2010 15:14
09/19/10	15:15	PDT	60.0056	60.00	0	0	37	0	37	0	9/19/2010 15:15
09/19/10	15:16	PDT	60.0118	60.00	0	0	38	0	38	0	9/19/2010 15:16
09/19/10	15:17	PDT	60.0180	60.00	0	0	39	0	39	0	9/19/2010 15:17
09/19/10	15:18	PDT	60.0059	60.00	0	0	40	0	40	0	9/19/2010 15:18
09/19/10	15:19	PDT	60.0104	60.00	0	0	41	0	41	0	9/19/2010 15:19
09/19/10	15:20	PDT	60.0057	60.00	0	0	42	0	42	0	9/19/2010 15:20
09/19/10	15:21	PDT	60.0090	60.00	0	0	43	0	43	0	9/19/2010 15:21
09/19/10	15:22	PDT	60.0132	60.00	0	0	44	0	44	0	9/19/2010 15:22
09/19/10	15:23	PDT	60.0094	60.00	0	0	45	0	45	0	9/19/2010 15:23
09/19/10	15:24	PDT	60.0100	60.00	0	0	46	0	46	0	9/19/2010 15:24
09/19/10	15:25	PDT	60.0175	60.00	0	0	47	0	47	0	9/19/2010 15:25

Statistics of 30-minute bounds being exceeded:

Date	Time	TimeZone	ActualFreq	SchedFreq	MinCtLow	MinCtHigh	MinCtLow2	MinCtHigh2	LowLimitCt	HighLimitCt	DateTimeMST
09/27/10	7:30	MST	60.0023	60.00	0	0	0	16	0	16	9/27/2010 7:30
09/27/10	7:31	MST	59.9986	60.00	0	0	0	17	0	17	9/27/2010 7:31
09/27/10	7:32	MST	59.9851	60.00	0	0	0	18	0	18	9/27/2010 7:32
09/27/10	7:33	MST	59.9914	60.00	0	0	0	19	0	19	9/27/2010 7:33
09/27/10	7:34	MST	59.9922	60.00	0	0	0	20	0	20	9/27/2010 7:34
09/27/10	7:35	MST	59.9905	60.00	0	0	0	21	0	21	9/27/2010 7:35
09/27/10	7:36	MST	59.9940	60.00	0	0	0	22	0	22	9/27/2010 7:36
09/27/10	7:37	MST	59.9871	60.00	0	0	0	23	0	23	9/27/2010 7:37
09/27/10	7:38	MST	59.9896	60.00	0	0	0	24	0	24	9/27/2010 7:38
09/27/10	7:39	MST	60.0030	60.00	0	0	0	25	0	25	9/27/2010 7:39
09/27/10	7:40	MST	59.9952	60.00	0	0	0	26	0	26	9/27/2010 7:40
09/27/10	7:41	MST	59.9926	60.00	0	0	0	27	0	27	9/27/2010 7:41
09/27/10	7:42	MST	59.9961	60.00	0	0	0	28	0	28	9/27/2010 7:42
09/27/10	7:43	MST	59.9916	60.00	0	0	0	29	0	29	9/27/2010 7:43
09/27/10	7:44	MST	59.9977	60.00	0	0	0	30	0	30	9/27/2010 7:44
09/27/10	7:45	MST	59.9883	60.00	0	0	0	31	0	31	9/27/2010 7:45
09/27/10	7:46	MST	59.9862	60.00	0	0	0	32	0	32	9/27/2010 7:46
09/27/10	7:47	MST	59.9878	60.00	0	0	0	33	0	33	9/27/2010 7:47
09/27/10	7:48	MST	60.0034	60.00	0	0	0	34	0	34	9/27/2010 7:48
09/27/10	7:49	MST	59.9897	60.00	0	0	0	35	0	35	9/27/2010 7:49
09/27/10	7:50	MST	59.9929	60.00	0	0	0	36	0	36	9/27/2010 7:50