

# **Balancing Authority ACE Limit Proof-of-Concept Field Trial**

WECC Update Discussion  
April 26, 2010

Doug Hils – Duke Energy

Reliability-Based Control Standard Drafting Team

# 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
<b>British Columbia Transmission Corporation (BCTC)</b>	<b>-118</b>	<b>NWPP</b>	<b>WECC</b>	<b>April 1, 2010</b>
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
<b>Portland General Electric (PGE)</b>	<b>-50</b>	<b>NWPP</b>	<b>WECC</b>	<b>April 1, 2010</b>
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
<b>Public Utility District No.1 of Douglas County (DOPD)</b>	<b>-7</b>	<b>NWPP</b>	<b>WECC</b>	<b>April 1, 2010</b>
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
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

# 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	Max_MinCtLow	Max_MinCtHigh	Max_MinCtLow2	Max_MinCtHigh2	Max_LowLimitCt	Max_HighLimitCt
BA05	44	29	44	29	44	34
BA06	4	6	6	8	6	8
BA07	18	19	21	28	21	28
BA08	2	17	0	19	22	19
BA11	3	14	1	0	3	14
BA12	0	0	1	0	1	0
BA13	3	4	2	5	4	6
BA15	2	0	4	0	4	0
BA16	1	1	1	1	14	21
BA19	7	15	30	17	30	17
BA22	4	4	15	8	15	8
BA23	3	7	11	9	11	9
BA25	4	60	3	60	4	1
BA26	9	18	18	39	18	39
BA27	1	1	6	13	6	13
BA28	4	9	12	26	12	26
BA30	2	3	1	1	35	16
BA31	16	13	29	28	29	28
BA33	8	13	20	24	20	24
BA34	8	6	23	26	23	26
BA36	1	1	1	1	14	27

Error

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.

# Balancing Authority ACE Limit Proof-of-Concept Field Trial

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BA08	2	17	0	19	22	19
BA11	3	14	1	0	3	14
BA12	0	0	1	0	1	0
BA13	3	4	2	5	4	6
BA15	2	0	4	0	4	0
BA16	1	1	1	1	14	21
BA19	7	15	30	17	30	17
BA22	4	4	15	8	15	8
BA23	3	7	11	9	11	9
BA25	4	60	3	60	4	1
BA26	9	18	18	39	18	39
BA27	1	1	6	13	6	13
BA28	4	9	12	26	12	26
BA30	2	3	1	1	35	16
BA31	16	13	29	28	29	28
BA33	8	13	20	24	20	24
BA34	8	6	23	26	23	26
BA36	1	1	1	1	14	27

Error

BAAL Maximum Count

ATL 2xL10 Maximum Count

BAAL or ATL Maximum Count

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

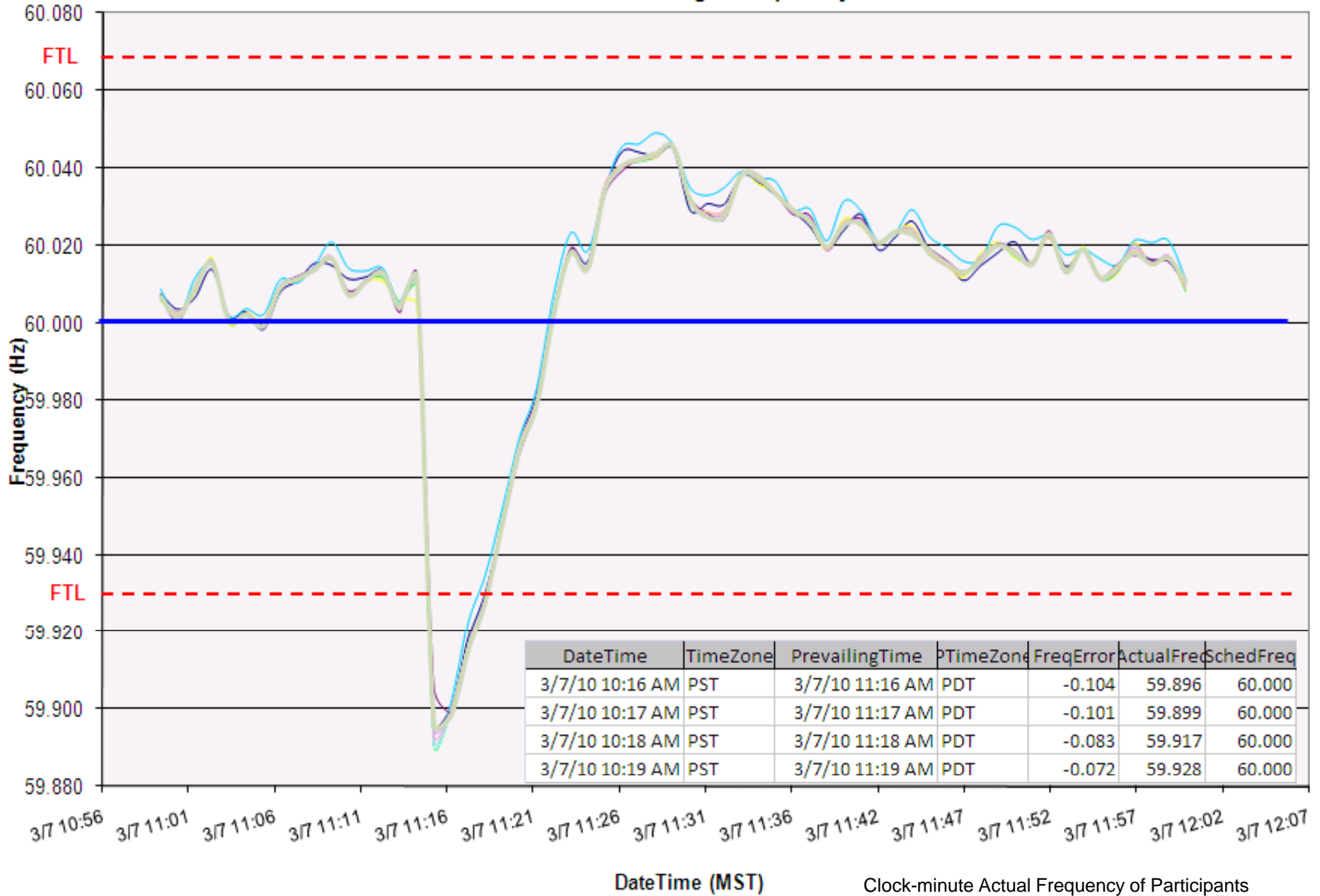
MinCtHigh2 = Count of consecutive clock-minutes ATL\_High was exceeded

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

3/07/2010 10:15-10:19 PST

4 minute duration below FTL<sub>Low</sub>

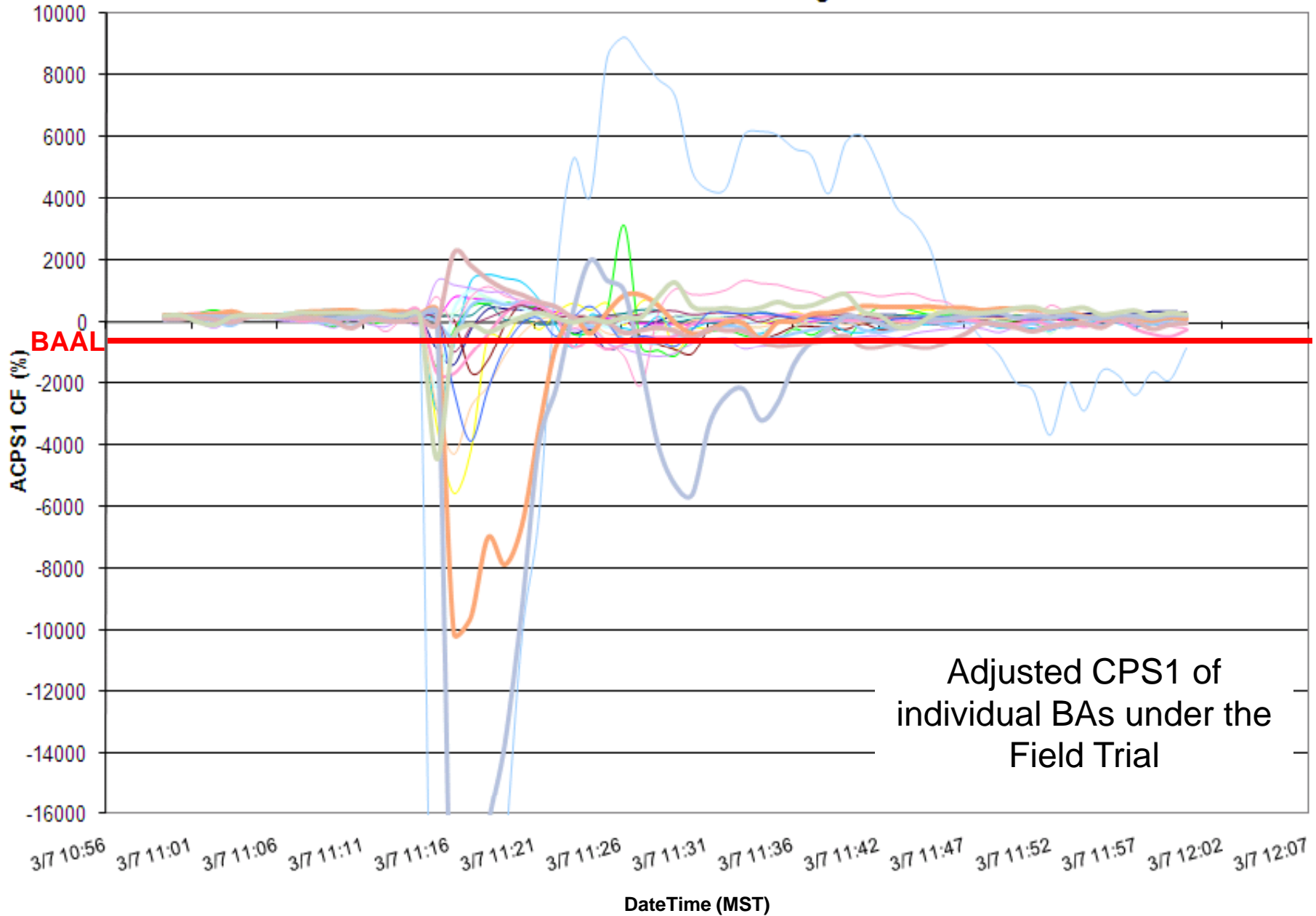
### Clock-Minute Average Frequency



3/07/2010 10:15-10:19 PST

4 minute duration below FTL<sub>Low</sub>

### ACPS1 Clock-Minute Averages



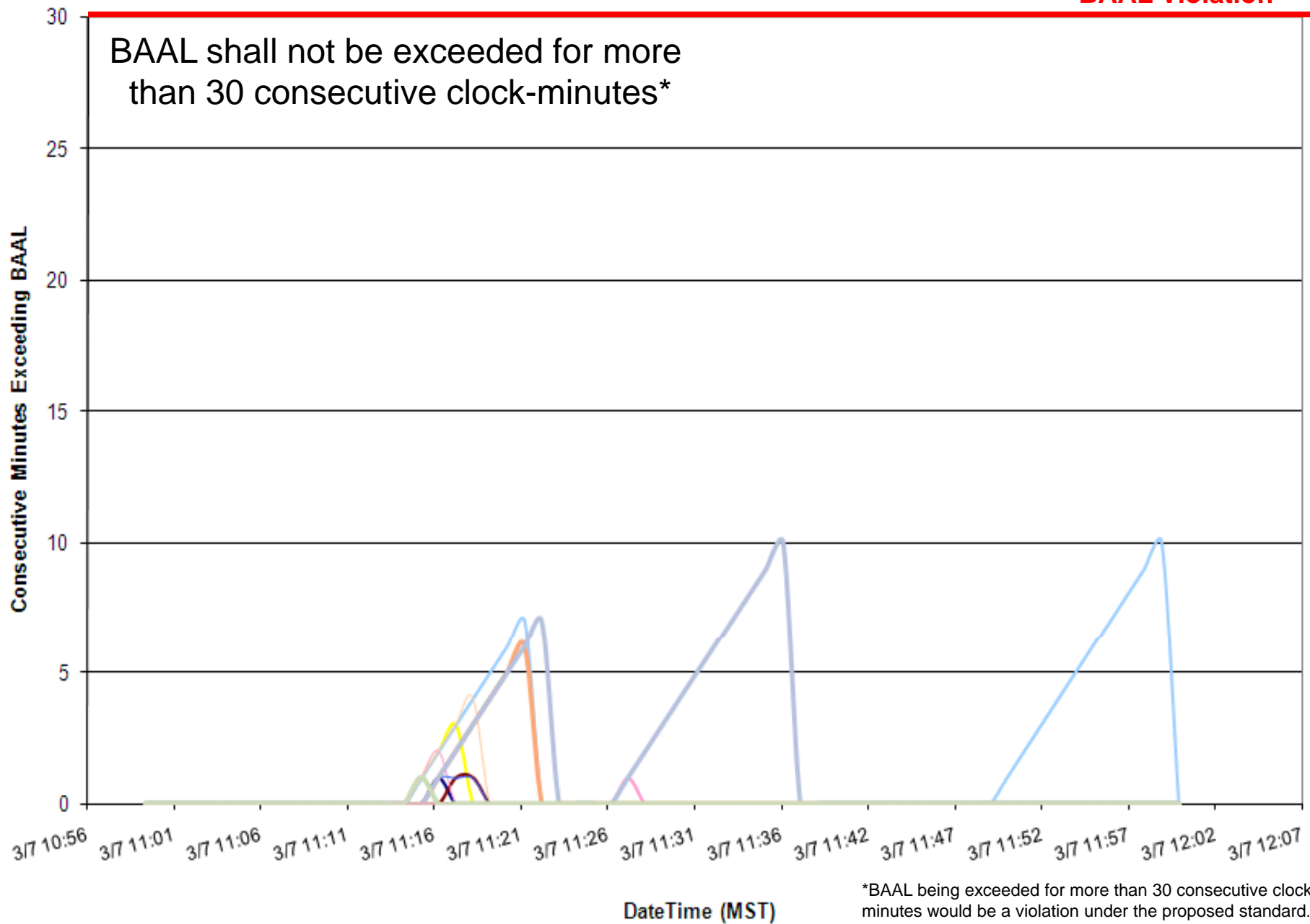
Adjusted CPS1 of individual BAs under the Field Trial

3/07/2010 10:15-10:19 PST

4 minute duration below  $FTL_{Low}$

### Consecutive Minutes Exceeding BAAL

**BAAL Violation\***



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## Discussion

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