



Item 6: Final Report – 30-Minute Emergency Response Service (ERS) Pilot Project

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Board of Directors Meeting

ERCOT Public

November 19, 2013

Background

- ERCOT Board approved 30-Minute ERS Pilot Project in June 2012 to test an ERS product with a 30-minute ramp capability.
- 30-Minute ERS Pilot Features:
 - Dispatched as early as EEA Level 1
 - Procured via market clearing price mechanism
 - Fleet-wide testing of Pilot Resources
 - Maximum of 8 hours of obligation
 - Only financial consequences for non-compliance; no suspensions
- Procured through 5 Contract Periods:
 - July 2012 through September 2012
 - October 2012 through January 2013
 - February 2013 through May 2013
 - June 2013 through September 2013
 - October 2013 through January 2014

Growth in Participation

- 1597 unique sites offered into 30-Minute ERS
 - 1363 sites with no previous 10-Minute ERS participation
 - 118 sites with more than 12 months since last 10-Minute ERS participation
- Some sites that were unable to comply with ramp requirement of standard 10-Minute ERS product have migrated to 30-Minute ERS Pilot.
- First ever ERS residential aggregations
- QSEs have indicated that more sites would be willing to participate if 30-minute product was made permanent.

Cost Comparison to NSRS & TDSP SOP

- Comparisons to other services:

	JulSep12		Oct12Jan13		FebMay13		JunSep13	
	ERS-30	Non Spin	ERS-30	Non Spin	ERS-30	Non Spin	ERS-30	Non Spin
BH1	\$11.00	\$1.03	\$8.10	\$1.10	\$7.81	\$3.05	\$8.00	\$1.21
BH2	\$16.00	\$19.76	\$9.20	\$2.34	\$8.60	\$5.21	\$8.50	\$9.05
BH3	\$16.00	\$21.41	\$9.50	\$3.12	\$8.90	\$6.84	\$8.80	\$13.07
NBH	\$11.00	\$1.44	\$8.20	\$1.22	\$7.80	\$3.99	\$8.00	\$1.89

– TDSP Load Management Program

- \$79.36/MW/hr
- applies to Business Hours (BH) 2 and BH3 during Jun-Sep Contract Period only

Summary

- Up to 137.9 MW of new dispatchable capacity offered (BH2 of current Contract Period)
- 8 test deployments conducted to date
 - 6 of 8 test deployments were successful with overall response exceeding obligation
 - 1 test deployment failed due to confusion concerning obligations when 30-minute ramp period crosses time periods; resolved with training session at DSWG
 - 1 test deployment failed primarily due to a single large site failing to deploy
- Estimated pilot cost (though current Contract Period) - \$9,158,511.96
- For further details, see Final Report on 30-Minute ERS Pilot Project

Final Report

ERCOT 30-Minute Emergency Response Service Pilot Project

November 2013

ERCOT provides this final assessment of the 30-Minute Emergency Response Service (ERS) pilot project in accordance with the Governing Document for the 30-Minute Emergency Response Service Pilot Project (“Governing Document”), which was approved by the ERCOT Board of Directors on June 19, 2012¹ and amended by the ERCOT Board of Directors on December 11, 2012. This report summarizes ERCOT’s analysis of data concerning the procurement, deployment, performance, and availability of participating Pilot Resources².

Executive Summary

During the last amendments to the PUCT rules pertaining to ERS, the Commission emphasized that ERCOT should establish classes of ERS with differing response times for the purpose of increasing participation in the service. The 30-Minute ERS pilot project has demonstrated that there is additional ERS capacity willing to be available to ERCOT for dispatch during emergency conditions. The capacity offered from various Demand Response providers have increased in each of the five Standard Contract Terms since the inception of the pilot project. The various test deployments conducted during the pilot have shown that the 30-Minute ERS resources generally exceeded the fleet level obligation. The pilot project also helped highlight the varying seasonal needs for ERS which led to the development of a new procurement methodology to be used for all ERS types under a clearing price approach. This methodology requires ERCOT to assess the potential risk of an emergency condition for each Time Period in the ERS calendar year. From this assessment risk factors will be assigned to each Time Period which will provide the appropriate price signals to the DR providers prior to each ERS procurement. This methodology would assign the same clearing price to both 30-Minute ERS

¹ The Governing Document is available at <http://www.ercot.com/mktrules/pilots/>.

² Except where defined by the ERCOT Protocols, capitalized terms in this report are those defined in the Governing Document.

and 10-Minute ERS, since both services are procured for the same reliability purpose and because 30-Minute ERS can be deployed as early as EEA Level 1, and potentially more often, whereas 10-minute ERS is deployed no earlier than EEA Level 2. Adding dispatchable capacity to the ERS program furthers the stated policy of the Commission that a robust demand response program is essential for ensuring the reliable operation of the grid.

Summary of the 30-Minute ERS Pilot Project

As the Governing Document recognizes, the purpose of the pilot project is to:

1. Assess the operational benefits and challenges of deploying an ERS product with a thirty-minute ramp period;
2. Study the optimal means of deploying 30-Minute ERS in an EEA;
3. Gather data to analyze the execution and benefits of a clearing price mechanism;
4. Gather data to assist ERCOT in determining the appropriate price to pay for 30-Minute ERS;
5. Gather data to compare costs and benefits relative to 10-Minute ERS; and
6. Determine overall market interest in 30-Minute ERS before making appropriate ERCOT rule changes.

To evaluate these measures, the amended Governing Document authorizes ERCOT to procure 30-Minute ERS for the following Contract Periods:

Contract Period	Start Date	End Date
July – September 2012	July 15, 2012	September 30, 2012
October 2012 – January 2013	October 1, 2012	January 31, 2013
February – May 2013	February 1, 2013	May 31, 2013
June – September 2013	June 1, 2013	September 30, 2013
October 2013 – January 2014	October 1, 2013	January 31, 2014

The Governing Document requires ERCOT to deploy Pilot Resources a minimum of one time and a maximum of four times in each Contract Period. The deployments may occur during an Energy Emergency Alert (EEA) or through fleet-wide tests. ERCOT has not experienced an EEA event requiring the deployment of Pilot Resources. However, ERCOT has conducted eight test deployments of these Resources over the course of the 5 Contract Periods. ERCOT will continue to test Pilot Resources throughout the duration of the current and final Contract Period.

Purpose 1: Assess the operational benefits and challenges of deploying an ERS product with a thirty-minute ramp period

Data from the seven fleet-wide tests analyzed thus far indicates that an ERS product with a 30-Minute ramp period can provide additional valuable demand response upon dispatch. Table 1, below, summarizes the results of each deployment test conducted to date. With the exception of the first and sixth tests, the fleet provided Load reduction in excess of its aggregate obligation. Resource-level deployment information for each test can be found in the appendix. The results of each test, including explanations for the under-performance in the first and sixth tests, are described below.

	Test Date	Contract Period	Time Period	Fleet Obligation (MW)	Fleet Load Reduction (MW)
Test 1	September 5, 2012	JulSep12	BH1	18.01	9.09
Test 2	September 13, 2012	JulSep12	BH1	19.40	24.13
Test 3	September 26, 2012	JulSep12	BH2	16.25	22.44
Test 4	October 30, 2012	OctJan13	BH2	82.33	93.95
Test 5	November 20, 2012	OctJan13	BH1	80.28	89.32
Test 6	February 28, 2013	FebMay13	BH1	47.57	32.16
Test 7	May 23, 2013	FebMay13	BH1	72.96	77.08
Test 8	September 19, 2013	JunSep13	BH2	87.65	101.27

Table 1: Summary of Test Deployments Conducted To-Date

Test 1 Results

The Dispatch Instruction for this first test deployment was issued during the Non-Business Hours (NBH) Time Period slightly more than 30 minutes before the beginning of the Business Hours 1 (BH1) Time Period. Only those Pilot Resources that had an obligation in both the NBH and BH1 Time Periods were required to remain deployed during BH1. For the first full interval of the deployment in BH1 the fleet's aggregate obligation was 18.0 MW. The actual Load reduction measured during the full interval, however, was only 9.09 MW. Review of the Resource-level performance showed that five of the eight Pilot Resources met their required Load reduction. The fleet-level performance was significantly impacted by the fact that a single Resource accounted for about 48% (8.60 MW) of the total fleet obligation and was among the three Pilot Resources that did not provide the required amount of Load reduction.

ERCOT concluded that the Time Period overlap in the middle of this deployment created some confusion among some Qualified Scheduling Entities (QSEs) and/or their Pilot Resources, and the failure of the 30-Minute ERS fleet to meet its aggregate deployment requirement was largely attributable to this confusion. ERCOT subsequently emphasized to QSEs that their ERS Resources must not only remain deployed when a test or event crosses into a new Time Period but must also meet the obligation associated with that new Time Period. During the Demand Side Working Group meeting held on February 8, 2013, ERCOT reviewed training slides created to emphasize the deployment across Time Periods and also distributed them by email to all QSEs in the 30-Minute ERS Pilot.

Test 2 and 3 Results

The second and third test deployments more clearly demonstrated the demand response capability of the 30-Minute ERS fleet. The September 13, 2012 test deployment occurred entirely in the BH1 Time Period. The overall fleet obligation for the first full interval was 19.4 MW and the overall Load reduction observed was 24.13 MW (a 24% over-provision). Results for the

September 26, 2012 test deployment were similar. The test deployment occurred in the BH2 Time Period, with an overall fleet obligation for the first full interval of 16.25 MW. ERCOT observed an overall Load reduction of 22.44 MW or an over-provision of 38%.

Test 4 and 5 Results

During the second 30-minute ERS Contract Period, ERCOT conducted two additional test deployments on October 30, 2012 and November 20, 2012. For this Contract Period, both the overall capacity (as high as 95.58 MW in BH2) and the number of Pilot Resources participating (30 in BH1 and BH2) was significantly greater than in the first Contract Period.

The fourth test deployment on October 30, 2012 occurred entirely within the BH2 Time Period. During this Time Period, the total obligation for the first full interval was 82.33 MW, and the overall Load reduction was 93.95 MW representing an over-provision of about 14%.

The fifth test deployment on November 20, 2012 occurred entirely within the BH1 Time Period. During this Time Period, the total obligation for the first full interval was 80.28 MW, and the overall Load reduction was 89.32 MW representing an over-provision of about 11%.

Test 6

This sixth test was targeted to replicate the time parameters of Test 1. The Dispatch Instruction was issued during the NBH Time Period, but just over 30 minutes before the beginning of the BH1 Time Period. Only those Pilot Resources that had an obligation in both the NBH and BH1 Time Periods were required to remain deployed during BH1. For the first full interval of the deployment in BH1 the fleet's obligation was 47.6 MW. The actual Load reduction measured during the full interval, however, was only 32.16 MW. The fleet-level performance was significantly impacted by a single ERS Resource that accounted for approximately 38% (18.0 MW) of the total fleet

obligation. Ten other Resources also failed to meet their required Load reductions, but the fleet nonetheless would have met its aggregate obligation had the one large Resource curtailed as required. Since the fleet failure of this retest was not attributed to the confusion with obligations crossing time periods ERCOT felt it was not necessary to retest again under the same parameters for a third time.

Test 7

The test deployment on May 23, 2013, occurred entirely within the BH1 Time Period. During this Time Period, the total obligation for the first full interval was 72.96 MW, and the overall Load reduction was 77.08 MW representing an over-provision of about 6%.

Test 8

The test deployment on September 19, 2013, occurred within the BH2 Time Period. During this Time Period, the total obligation for the first full interval was 87.65 MW, and the overall Load reduction was 101.27 MW representing an over-provision of about 13%.

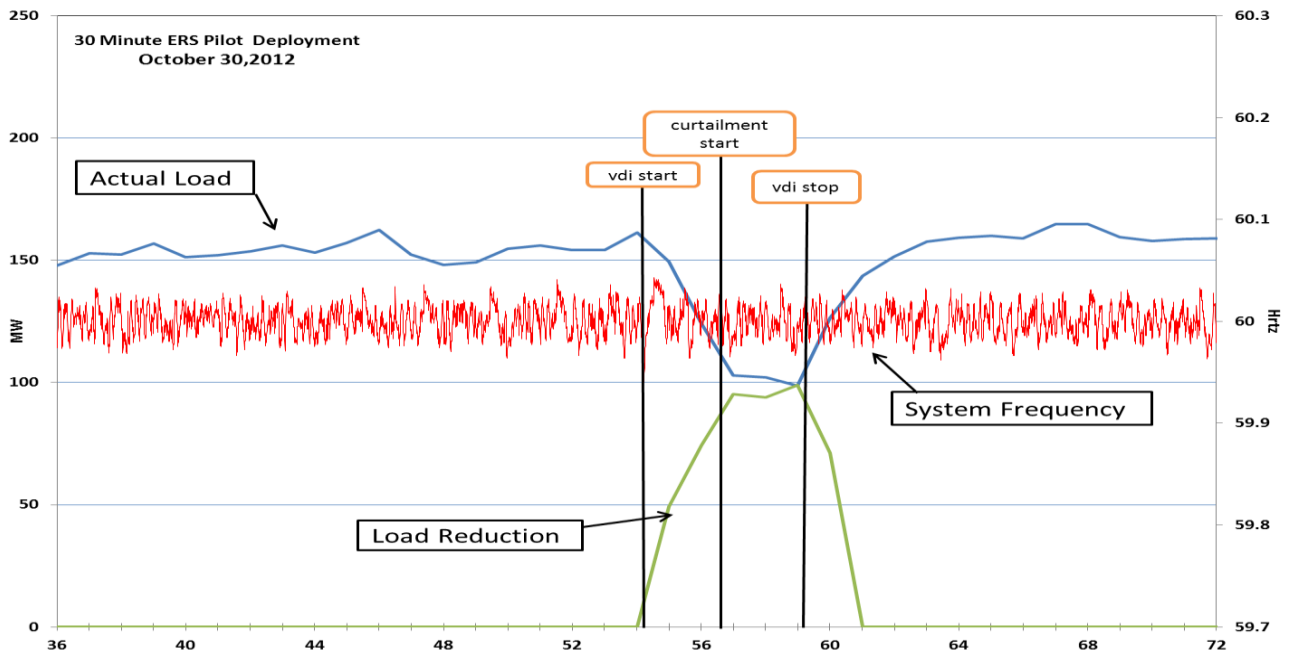
Overall Test Findings

Except for the first and sixth tests, the deployments of 30-Minute ERS have been successful, with the fleet over-providing during each test. The aggregate performance characteristics of these Pilot Resources are similar to the aggregate characteristics observed for conventional 10-minute ERS Resources during the February 2, 2011, and August 4, 2011, ERS deployments.

Impact of Over-Provision of 30-Minute ERS Resources

During the December 2012 Board meeting, a concern was raised about potential unintended consequences related to over-performance by the ERS fleet during a deployment. Graph 1, below, plots the system frequency during

the October 30, 2012 test deployment of the 30-Minute ERS fleet. During the time period for this test deployment, the 30-minute ERS fleet carried an obligation of just over 82 MWs of demand response. The fleet actually delivered approximately 94 MWs or 114% of its obligation. As can be observed from the graph, there is no discernible impact to the frequency during the deployment. This can be largely attributed to the fact that the Pilot Resources tend to provide their obligated Load reduction gradually over the thirty-minute period following the instruction rather than all at once. It should also be noted that the ERCOT frequency bias is typically in the 400-500 MW range, so there is little reason to expect that over-provision of the ERS fleet during deployments will be an issue, especially at the currently anticipated participation levels.



Graph 1: 30 Minute ERS Pilot Deployment for October 30, 2012

Availability Results

30-Minute ERS Resources are evaluated (and paid) based on both event performance and availability during their committed hours. Availability for each Resource is first calculated for each Time Period within a Contract Period; the individual availability factors for each Time Period are subsequently combined across Time Periods on a time- and capacity-weighted basis to provide a single availability factor for the Contract Period. At the time of this report the availability results for the February 1, 2013 through May 31, 2013 Contract Period and the current Contract Period are not available due to the substantial lag in receiving TSP meter data following the Operating Day.

For an ERS Load on a default baseline, the availability factor is equal to the percent of hours for which the metered Load is greater than or equal to 95% of its contracted ERS MW capacity. For an ERS Load on the alternate baseline, availability is equal to the average Load (less the maximum base Load) for the Time Period, divided by its contracted ERS MW capacity. If the result of these calculations is greater than or equal to 95%, the ERS Load is deemed to have been available for that Contract Period.

Table 2 below shows the QSE-level availability for the first three Contract Periods. The only QSE with an availability factor less than 95% was QSE 3, which had a 90% availability factor for the October 2012 – January 2013 Contract Period. As required by the Governing Document, that availability factor was reduced from 90% to 84% for the purposes of calculating payment.

July - September 2012 Availability	
QSE1	1.08
QSE2	1.00
QSE3	1.00
QSE4	0.99
QSE5	1.43
October 2012 - January 2013 Availability	
QSE 1	1.06
QSE 2	1.00
QSE 3	0.84
QSE 4	1.32
QSE 5	1.03
QSE 6	1.04
QSE 7	0.98
QSE 8	1.23
QSE 9	0.98
QSE 10	1.00

February - May 2013 Availability	
QSE 1	111.44
QSE 2	99.61
QSE 3	126.28
QSE 4	107.00
QSE 5	128.23
QSE 6	104.11
QSE 7	115.63
QSE 8	109.50
QSE 9	100.00

Table 2: Availability Results for first three Contract Periods. The June-September 2013 Availability results will not be available until December 2013.

Purpose 2: Study the optimal means of deploying 30-Minute ERS in an EEA

Since there have been no EEA events since the inception of the 30-Minute pilot project, ERCOT has not had the opportunity to assess deployment of 30-Minute ERS in conjunction with other ERCOT operator actions during an actual EEA event. However, based on the demonstrated capability of pilot Resources to deploy within the required ramp period, ERCOT believes that the operational benefit of 30-Minute ERS can be maximized by allowing it to be deployed in EEA level 1, which could decrease the likelihood and/or duration of an EEA level 2 event and also minimize the risk of firm Load shed in EEA level 3. Because 10-Minute ERS can be deployed more quickly, ERCOT supports limiting the deployment of that service to EEA level 2.

Purpose 3: Gather data to analyze the execution and benefits of a clearing price mechanism

Under current Protocols, ERCOT procures 10-Minute ERS on a “pay-as-offer” basis using the criteria defined in the Process for Determining Cost Limits & Reasonableness of Offers, located on the ERCOT website.³ As part of the procurement process, a cross-departmental ERCOT procurement committee convenes to analyze the offer stacks for each ERS Time Period. In evaluating competing offers, the committee considers a number of factors, including historical Ancillary Services prices, historical and projected natural gas prices, the projected demand during the upcoming Standard Contract Term, and spreads in the offers versus capacity. Once the committee determines the appropriate quantity and corresponding price based on the above-mentioned factors, all ERS Resources offering at or below this price are cleared and are awarded their respective offer prices—not the price offered by the marginal Resource.

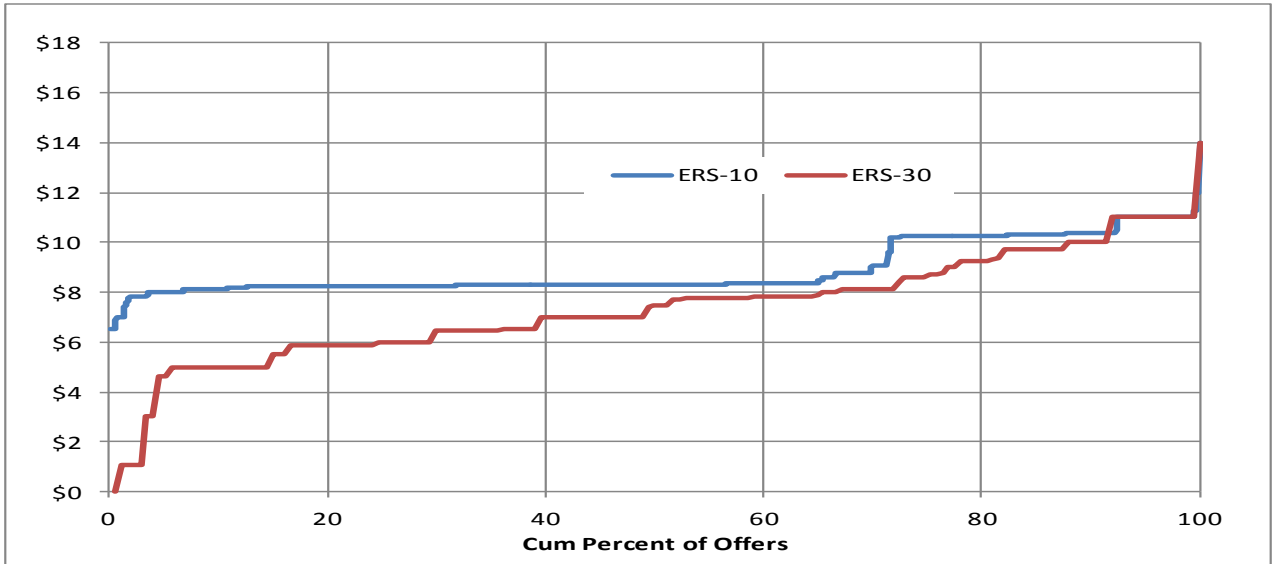
During the 30-Minute ERS Pilot Project, however, ERCOT used basically the same procurement process as used for 10-Minute ERS with the exception that the offer with the highest cleared price established the price paid to all lower priced offers. This allowed ERCOT to gather information from the ERS providers on how the offer behavior might change based on a clearing price.

The change in offer behavior can be observed in Graphs 1-4 provided below. The graphs reveal that 10-Minute ERS offers, under the “pay-as-offer” approach, have a tendency to cluster at higher prices, indicating that the ERS providers are attempting to “guess” the highest price ERCOT is likely to accept. Offers for 30-Minute ERS, on the other hand, do not show this same tendency; instead they are spread out over a much wider range along the entire offer curve. This is the pattern of offers that would be expected for Resources basing their offers at prices relative to their specific cost of providing the service. This

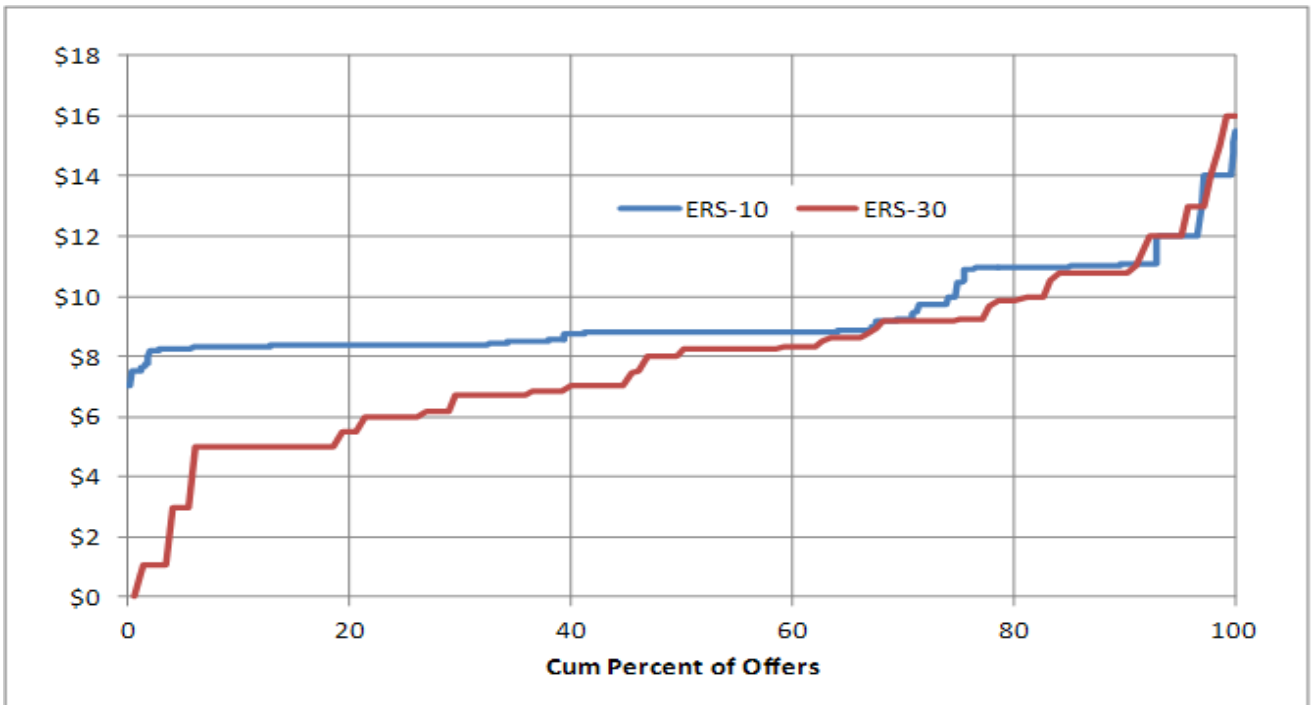
³ Available at:

http://www.ercot.com/content/services/programs/load/eils/ERS_k/Process_for_Determining_Cost_Limits_&_Reasonableness_of_Offers.pdf

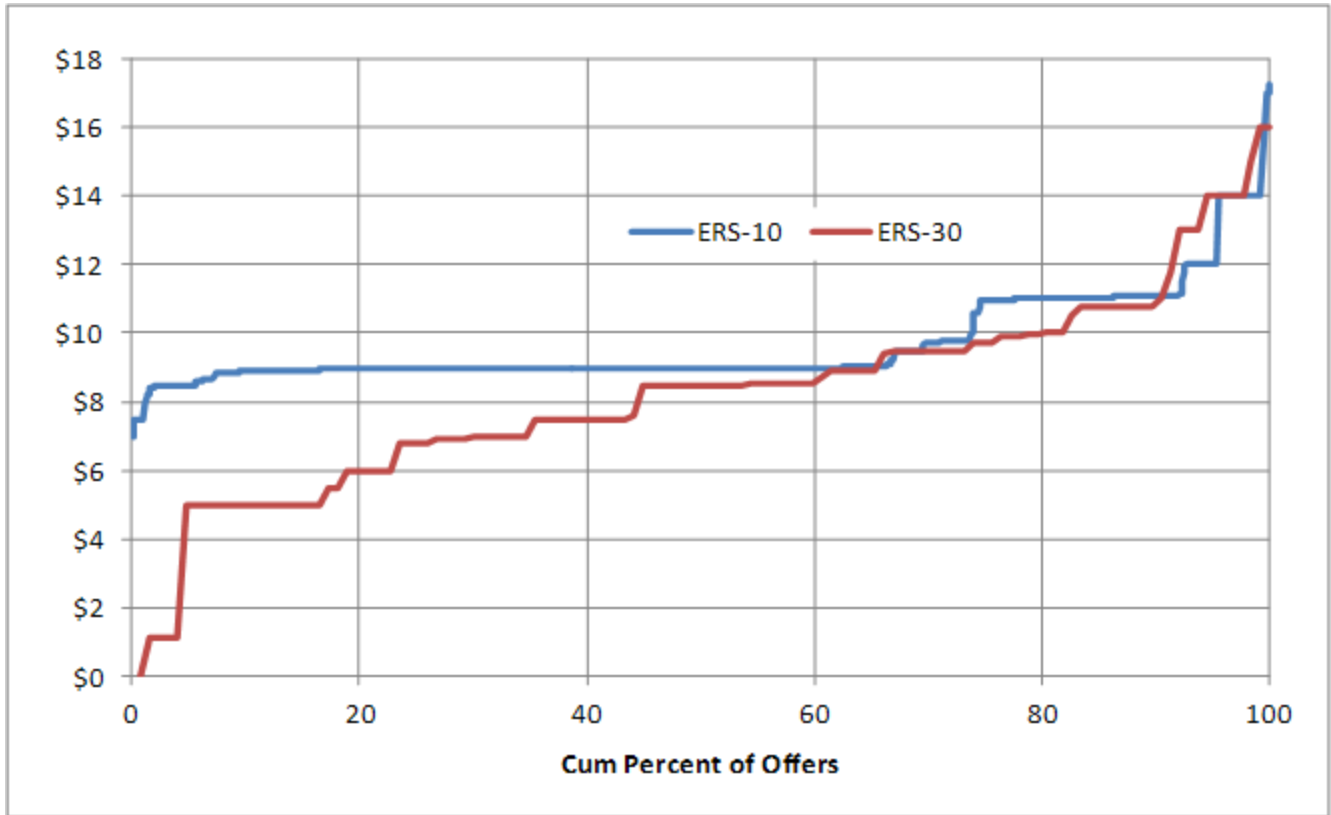
offer behavior should ultimately result in the most economically efficient procurement for the service.



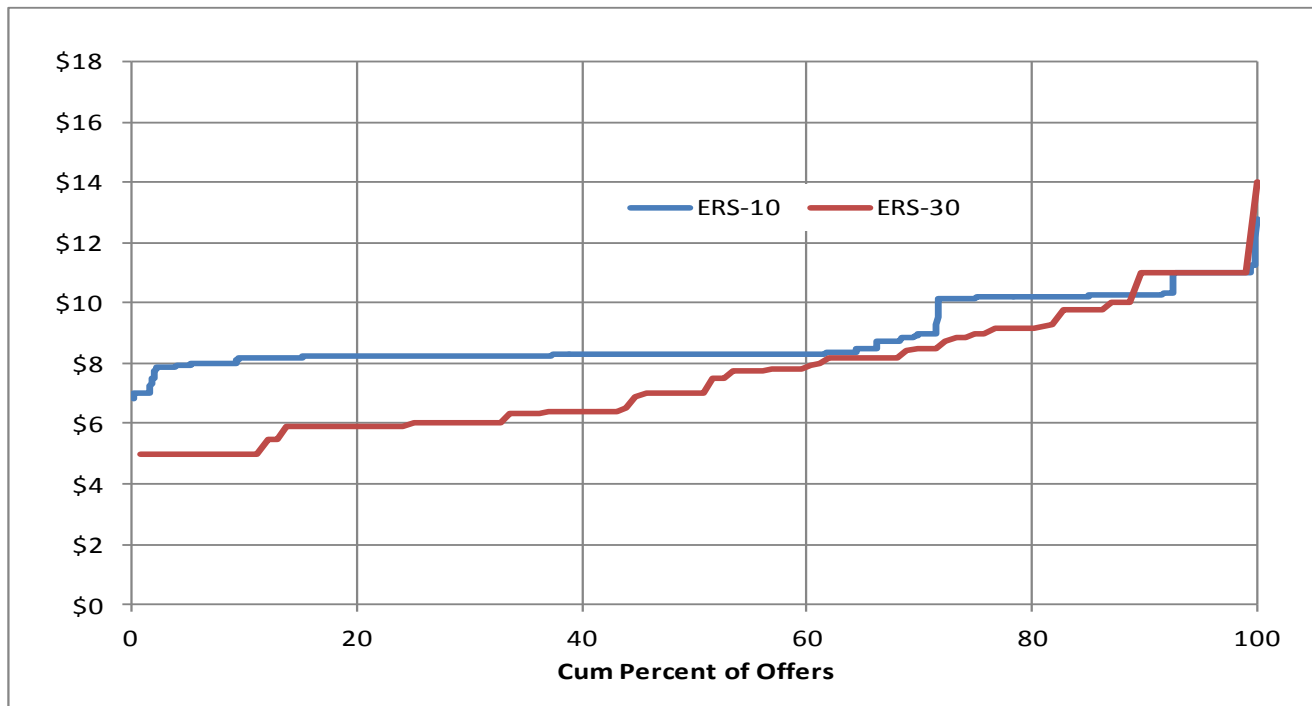
Graph 2: Offer Distribution for BH1 (June 2012-September 2013)



Graph 3: Offer Distribution for BH2 (June 2012 - September 2013)



Graph 4: Offer Distribution for BH3 (June 2012 – September 2013)



Graph 5: Offer Distribution for NBH (June 2012 – September 2013)

While the current 30-Minute ERS procurement methodology does provide a clearing price solution, it still relies on the procurement committee’s subjective judgment about the appropriate price to clear. The methodology for establishing the clearing price has still had the limitation of providing inconsistent results from one Contract Period to the next. During the latter part of this pilot project ERCOT introduced an alternative procurement methodology that would remove much of the subjectivity from the process and that would more closely align the price for the service with the need for the service.

ERCOT has formally proposed this methodology in a draft Other Binding Document (OBD) entitled “Emergency Response Service Procurement Methodology.”⁴ This OBD has been discussed by stakeholders in a special workshop and has received endorsements from both the Wholesale Market Subcommittee and the Protocol Revisions Subcommittee. The OBD is scheduled

⁴ Available at: <http://www.ercot.com/services/programs/load/eils/documents>.

to be discussed at the November 2013 meetings of the Technical Advisory Committee and the ERCOT Board.

Purpose 4 and 5: Gather data to assist ERCOT in determining the appropriate price to pay for 30- Minute ERS and to costs and benefits relative to 10-Minute ERS

ERCOT has compared the clearing prices for 30-Minute ERS to the prices offered and paid for 10-Minute ERS in each of the Contract Periods. Table 3 below shows the highest price cleared and the average price paid for 10-Minute ERS and the clearing price for 30-Minute ERS for each Time Period of the two Contract Periods. Based on these comparisons, it appears that ERS providers value the two services roughly equally. Prices offered for 30-Minute ERS during the pilot are likely to be skewed somewhat higher due to the 100% probability of being deployed through tests.

The Governing Document allows ERCOT to test Pilot Resources up to 4 times per Contract Period, whereas 10-Minute ERS Resources are subject to testing only once per year. The prices for 30-Minute ERS in the first Contract Period were higher than they otherwise would have been because the number of participating Pilot Resources and the amounts offered were small and the ERCOT procurement committee decided to procure all 30-Minute ERS capacity offered. For subsequent Contract Periods, the number of offering Resources increased significantly, giving the committee greater flexibility to reject higher offers.

There were a few instances where QSEs offered the same ERS Resources into both 10-and 30-Minute ERS in the same Time Periods. In the second Contract Period, each ERS Resource was offered in to both services at the same price. For the third Contract Period, however, a few ERS Resources were offered into both services, with significantly higher prices for the 30-Minute service, possibly reflecting costs associated with the certainty of deployment during the pilot.

Contract Period		BH1 HE 0900-1300 M-F except holidays	BH2 HE 1400-1600 M-F except holidays	BH3 HE 1700-2000 M-F except holidays	NBH All Other Hours
10 -Minute ERS Jun-Sep12	Highest Offer Accepted	\$16.00	\$16.00	\$16.00	\$12.75
	Average Price	\$8.70	\$9.67	\$9.97	\$8.83
30 -Minute ERS Pilot Jul 15-Sep12	Clearing Price	\$11.00	\$16.00	\$16.00	\$11.00
10 -Minute ERS Oct12-Jan13	Highest Offer Accepted	\$8.75	\$9.75	\$9.75	\$8.75
	Average Price	\$8.22	\$8.77	\$9.06	\$8.15
30 -Minute ERS Pilot Oct12-Jan13	Clearing Price	\$8.10	\$9.20	\$9.50	\$8.20
10 -Minute ERS Feb-May13	Highest Offer Accepted	\$8.75	\$9.75	\$9.75	\$8.75
	Average Price	\$8.10	\$8.71	\$8.82	\$8.04
30 -Minute ERS Pilot Feb-May13	Clearing Price	\$7.81	\$8.60	\$8.90	\$7.80
10 -Minute ERS Jun-Sep 13	Highest Offer Accepted	\$12.15	\$15.12	\$12.60	\$12.15
	Average Price	\$10.21	\$12.07	\$12.60	\$10.13
30 -Minute ERS Pilot Jun-Sep 13	Clearing Price	\$11.00	\$12.00	\$14.00	\$11.00
10 -Minute ERS Oct12-Jan13	Highest Offer Accepted	\$9.21	\$9.25	\$9.35	\$9.13
	Average Price	\$8.01	\$8.37	\$8.44	\$7.98
30 -Minute ERS Pilot Oct12-Jan13	Clearing Price	\$8.00	\$8.50	\$8.80	\$8.00

Table 3: Price Comparison Table, all prices are \$/MW/Hr

To perform a more in-depth cost/benefit analysis, ERCOT compared the cost of 30-Minute ERS to both the average historical cost of Non-Spinning Reserve Service as well as the incentive payments provided to participants in the TDSP Standard Offer Load Management Programs.

Comparing Cost to Non-Spinning Reserve Service

Like 30-Minute ERS, Non-Spinning Reserve Service (NSRS) is also a 30-Minute ramp service. Table 4 below shows the comparison of the clearing price for 30-Minute ERS versus the average cost of NSRS for the Time Periods defined for ERS.

The prices paid for 30-Minute ERS were less than NSRS prices during the higher risk BH2 and BH3 time periods during the initial June-September Contract Period. Otherwise, NSRS prices were lower than 30-Minute ERS. It should be kept in mind, however that Ancillary Services are procured in the Day-Ahead Market for each Operating Day, whereas 30-Minute ERS is procured three times a year and requires a four-month commitment. NSRS providers have

the opportunity to adjust their offers on a daily and hourly basis to reflect anticipated operating conditions for the next day. ERS providers, on the other hand, are required to make their offers to ERCOT about two weeks before the beginning of each Contract Period and therefore have only historical information and planning reports such as the CDR or SARA to base their offers on.

	JulSep12		Oct12Jan13		FebMay13		JunSep13	
	ERS-30	Non Spin	ERS-30	Non Spin	ERS-30	Non Spin	ERS-30	Non Spin
BH1	\$11.00	\$1.03	\$8.10	\$1.10	\$7.81	\$3.05	\$8.00	\$1.21
BH2	\$16.00	\$19.76	\$9.20	\$2.34	\$8.60	\$5.21	\$8.50	\$9.05
BH3	\$16.00	\$21.41	\$9.50	\$3.12	\$8.90	\$6.84	\$8.80	\$13.07
NBH	\$11.00	\$1.44	\$8.20	\$1.22	\$7.80	\$3.99	\$8.00	\$1.89

Table 4: ERS-30 Prices vs Average Price paid in Day-Ahead for Non-Spinning Reserve Service.

Comparing Cost to Incentives Paid to Load Management Programs

As part of meeting their Energy Efficiency Goals, TDSPs in the competitive choice areas in ERCOT administer Load Management Programs during roughly the same Time Period defined as BH2 and BH3 of the June-September ERS Contract Period. Even though the incentives for the TDSP programs are capped by the avoided cost, currently \$80/KW/yr, the utilities typically have paid Load Management Program participants at one-half the avoided cost, or \$40/KW/yr. Based on the commitment hours for the Load Management Programs (summer month weekdays from 1:00 pm to 7:00 pm), the \$40/KW/yr is equivalent to \$79.36/MW/hr and is substantially higher than the prices paid for 30-minute ERS for the comparable time periods.

Purpose 6: Determine overall market interest in 30-Minute ERS before making appropriate ERCOT rule changes.

One of the primary reasons for proposing a new ERS product with a 30-Minute ramp period is that numerous ERS providers have communicated to both ERCOT and the PUCT that a product with a longer ramp could bring additional Demand Response into ERS. As Table 5, below, shows, the MW capacity offered has grown to a high of 137.90 MW in the current Contract Period.

	BH1 - HE 0900-1300	BH2 - HE 1400-1600 M-F except holidays	BH3 - HE 1700-2000 M-F except holidays	NBH All Other Hours
Jul 15-Sep12	19.4 MW	16.25 MW	15.80 MW	9.5 MW
Oct12-Jan13	93.68 MW	95.58 MW	89.01 MW	75.15 MW
Feb-May13	106.26 MW	106.30 MW	95.28 MW	82.61 MW
Jun-Sep13	126.97 MW	87.65 MW	76.19 MW	100.94 MW
Oct13-Jan14	134.65 MW	137.90 MW	124.12 MW	111.77 MW

Table 5: Capacity Offered in each Time Period for 30-Minute ERS

The 30-Minute ERS pilot has attracted more total capacity (about 86 new MW), eight new QSEs, and 1363 new sites. The October 2013-January 2014 contract period has one residential aggregation with 908 sites.

ERCOT Staff has also been advised by a number of ERS providers that a significant amount of ERS capacity would be willing to participate in 30-Minute ERS with the assurance that the program would continue to be available beyond the limited duration of a pilot program.

Follow-Up to July 16, 2013 ERCOT Board Meeting

During the July 16th Board meeting, it was requested that ERCOT perform an analysis of the reliability value of the 30-Minute ERS Pilot. ERCOT feels that the reliability value is the additional resources a 30-Minute ERS product can attract. The capacity offered into the pilot project has grown from 19 MW in the first

Standard Contract Term to just under 138 MW in the October 2013 through January 2014 Standard Contract Term. It is important to note that the loads that offer into ERS are not expected to be able to follow a 5-minute dispatch and therefore would not be able to participate in the new design of Loads in SCED. Therefore 30-Minute ERS is attracting new capacity that otherwise would not be able to participate in the ERCOT market. In addition ERS has proven to be a valuable operational tool to help avert or minimize the effects of a firm load shed as was observed during the deployment events of February 2 and August 4, 2011. During the February 2011 event, 384.2 MW of ERS were deployed which, based on the load profiles for that particular day, was equivalent to a firm load shed of approximately 250,000 residential homes. During the August 2011 event, 489.9 MW were deployed, which helped ERCOT to avoid entering an EEA level 3 and having to require firm load to be shed.

During the July 2013 Board meeting, ERCOT was also asked if a seasonality study for the different time periods had been undertaken. ERCOT acknowledges that the risk of an ERS deployment varies throughout the ERS budget year and that the cost of ERS in some higher-risk time periods is more competitive compared to other services than in other lower-risk time periods. To better align the price for ERS with the risk of deployment, ERCOT's proposed procurement methodology OBD will allow ERCOT to assign potential risk levels to each of the time periods which will help push prices down during lower risk periods. This proposed methodology will require ERCOT to make an assessment of the deployment risk for each Time Period in the ERS budget year. To make this assessment, ERCOT will consider various factors such as projected load forecast, available operating reserves, planned and unplanned outage information, forecasted weather patterns, and drought information. ERCOT will then assign risk factors to each Time Period which will be used to allocate the \$50 million per year ERS expenditure cap across each Time Period. This will help to send the appropriate price signals based on the seasonal risk of deploying ERS.

The development of this new procurement methodology also highlighted concerns with the structure of the current Standard Contract Terms and Time Periods. As an example, the highest risk period for a winter peak is generally 6 to

8 a.m. during December, January and February—about 5.8% of the hours in the ERS budget year. But because these higher risk hours fall within a Time Period that covers 12 hours of each day and within two of the three Standard Contract Terms, ERCOT would have to assign this higher risk value to approximately 53% of the total hours in the ERS budget year. Modifying the existing Standard Contract Terms and Time Periods will therefore help optimize the reliability value of ERS.

Summary of Pilot Project Costs and Benefits

The total cost of the 30-Minute ERS Pilot project is expected to be approximately \$9,158,512. This total includes the cost for the current October 2013 through January 2014 Standard Contract Term, which could vary from the estimate depending on performance.

This 30-Minute ERS type is the result of the most recent ERS rulemaking that suggested ERCOT explore, and where feasible, implement classes of ERS with differing response times for the sole purpose of expanding participation in the service. The primary benefit of 30-Minute ERS is the additional dispatchable capacity that is now available to ERCOT. During the October 2013 through January 2014 Standard Contract Term 137 MW were procured in one Time Period. Most of this capacity had never participated in 10-Minute ERS; those sites that had previously participated in 10-Minute ERS had been unable to meet the 10-minute ramp requirement.

Pilot Conclusions

One of the primary objectives of the 30-Minute ERS pilot was to test the feasibility and usefulness of an ERS type with differing response times, as the commission proposed in its most recent rulemaking concerning the ERS Rule. See Project No. 39948, Rulemaking to Amend Substantive Rule § 25.507, Relating to Electric Reliability Council of Texas Emergency Interruptible Load Service. In its order adopting the amendments to the rule, the commission stated:

The suggestion that ERCOT establish classes of ERS participants with differing response times appears to have merit, and could encourage participation in the program by more load resources than currently participate. The commission encourages ERCOT to expeditiously explore the feasibility and usefulness of implementing this feature. If ERCOT determines that the program should include classes of ERS participants with differing response times, the commission encourages ERCOT to implement this feature as soon as possible but not later than the summer of 2013.

The commission also reiterated its support for demand response programs in general:

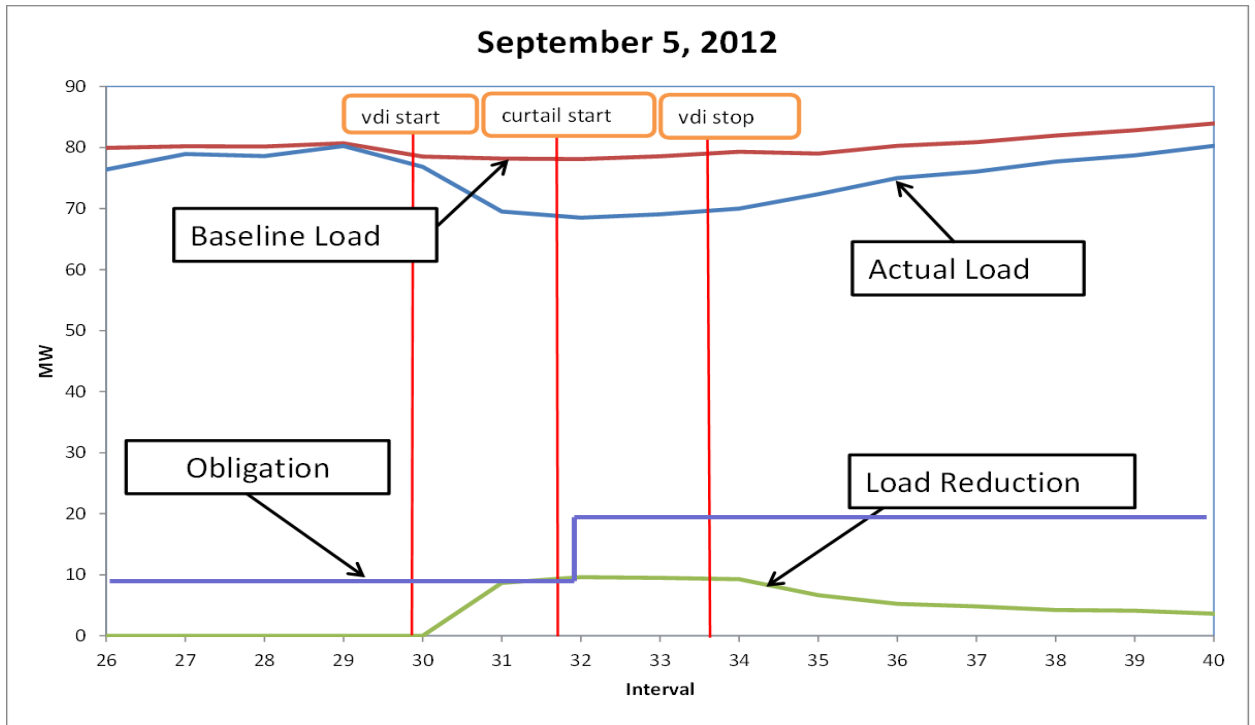
The commission made it clear in the previous rulemakings pertaining to this service that it regards a robust demand response program as an essential tool for ERCOT in fulfilling its responsibilities to ensure reliable operation of the grid. The commission has acted in the past to expand and increase participation in the program. The commission restates here that this continues to be the policy of the commission. EILS has, in the EEA event of February 2011 and in the peak demand periods of the summer of 2011, demonstrated its value in forestalling the need for firm load shedding.

It is ERCOT's opinion that the added new dispatchable capacity that the 30-Minute ERS pilot has attracted proves the reliability value of this program. It is also ERCOT's opinion that the new procurement methodology proposed by ERCOT will help increase the value of this service by better aligning the price paid for the service with the assigned risk levels for each time period. And finally it is ERCOT's recommendation to work with the Demand Side Working Group (DSWG) on the necessary changes to the ERS Standard Contract Terms and Time Periods that will ultimately help improve the value of ERS across all ERS Time Periods.

Appendix: Test Results

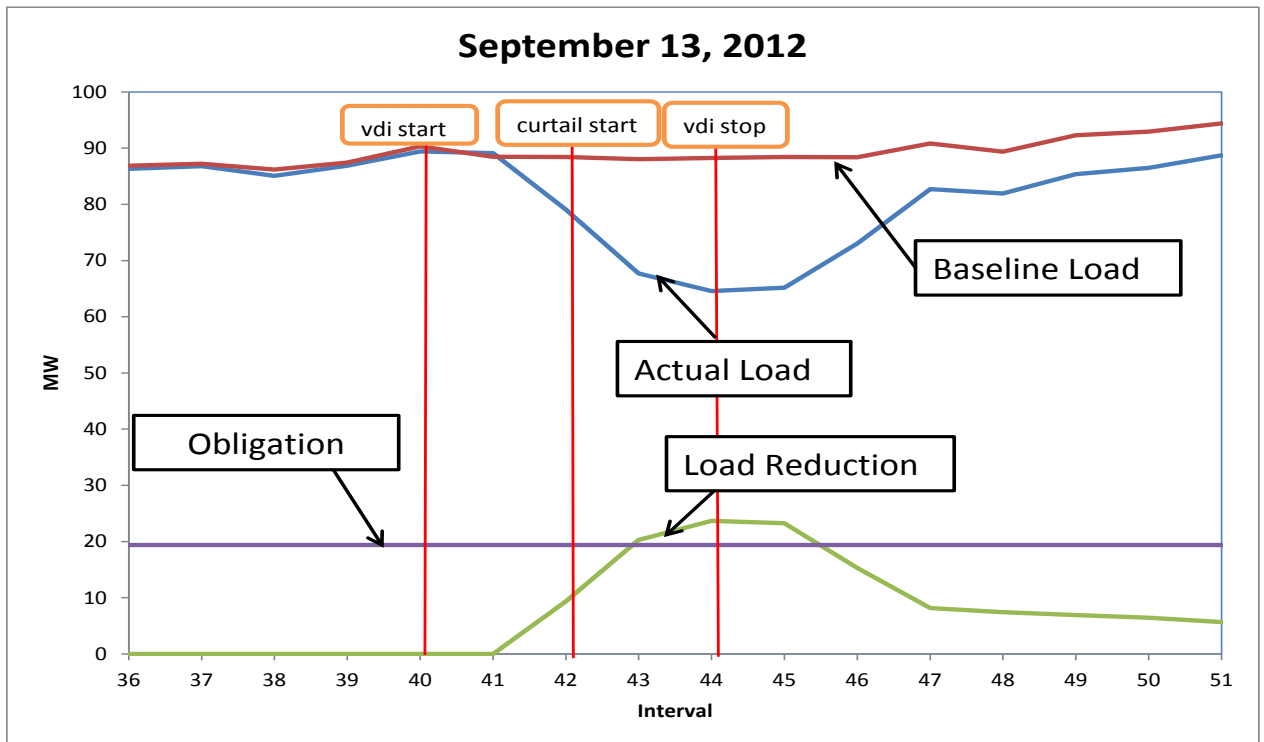
Resource Level Summary & Fleet Performance for September 5, 2012 Test

Resource	Event Performance Factor	Obligation (MW)	Load Reduction (MW)
Resource 1	1.000	0.30	0.31
Resource 2	0.050	8.60	0.17
Resource 3	1.000	0.40	0.50
Resource 4	1.000	6.00	6.38
Resource 6	0.476	0.10	0.06
Resource 9	0.067	2.00	0.25
Resource 11	1.000	0.30	1.06
Resource 12	1.000	0.30	0.37
Fleet	0.830	18.00	9.09



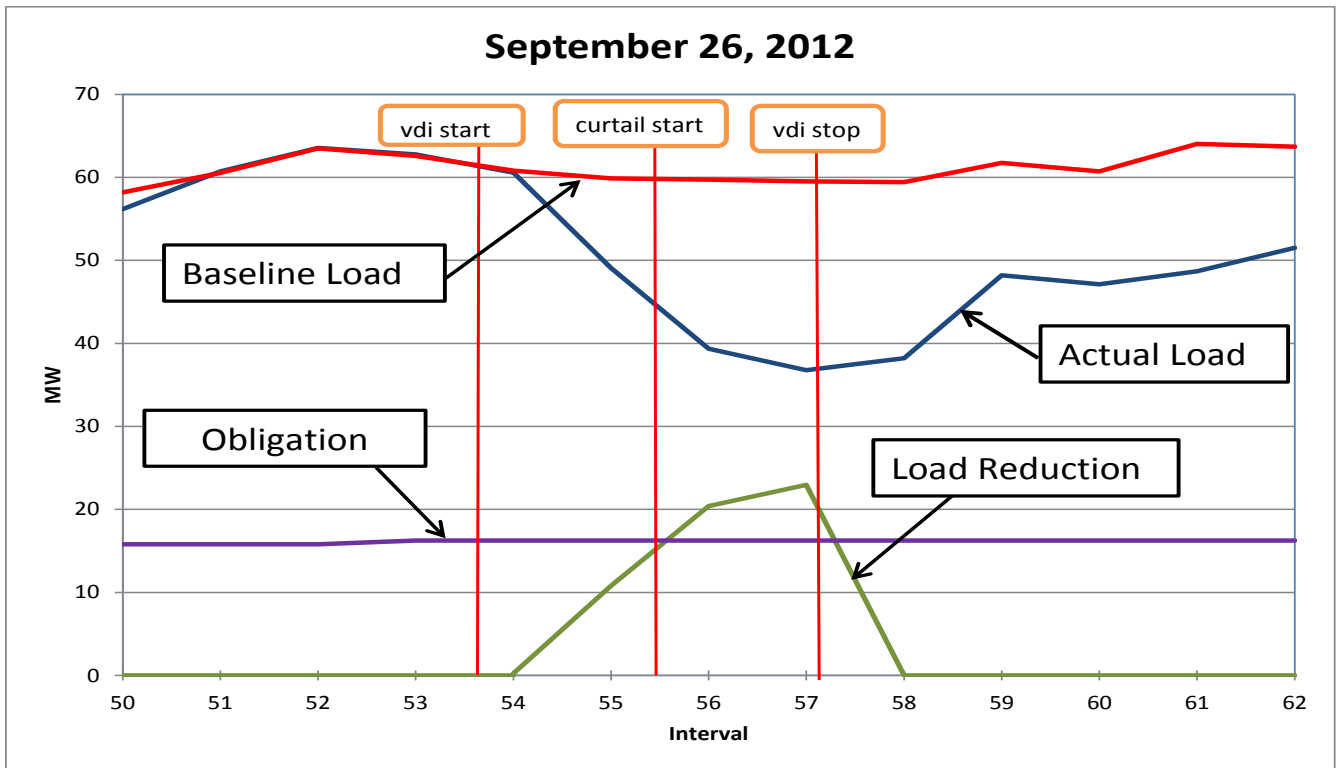
Resource Level Summary & Fleet Performance for September 13, 2012 Test

Resource	Event Performance Factor	Obligation (MW)	Load Reduction (MW)
Resource 1	1.000	0.30	0.37
Resource 2	1.000	8.60	12.43
Resource 3	1.000	0.40	0.50
Resource 4	1.000	6.00	6.77
Resource 5	1.000	0.20	0.30
Resource 6	0.545	0.10	0.18
Resource 8	0.624	0.20	0.11
Resource 9	0.482	2.00	0.83
Resource 10	1.000	1.00	1.80
Resource 11	1.000	0.30	0.48
Resource 12	1.000	0.30	0.35
Fleet	1.235	19.40	24.13



Resource Level Summary & Fleet Performance for September 26, 2012 Test

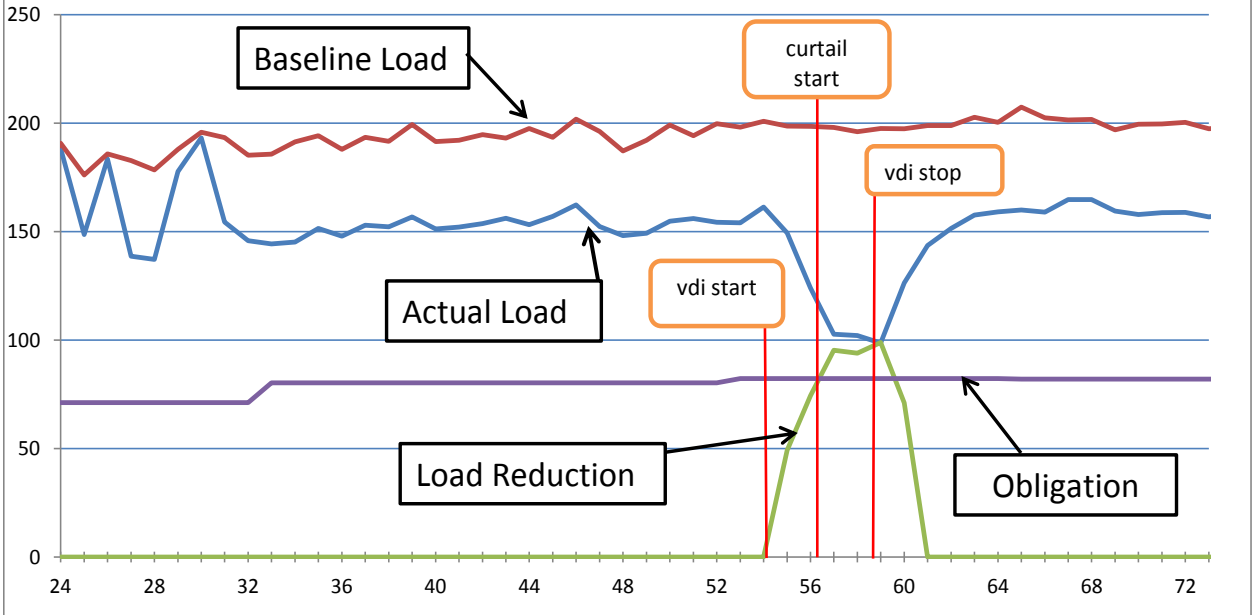
Resource	Event Performance Factor	Obligation (MW)	Load Reduction (MW)
Resource 2	1.000	8.60	14.63
Resource 3	1.000	0.50	0.60
Resource 4	1.000	6.00	7.25
Resource 5	0.000	0.20	-0.03
Resource 6	1.000	0.10	0.27
Resource 7	0.400	0.35	0.12
Resource 8	0.798	0.20	0.13
Resource 11	0.389	0.30	-0.53
Fleet	1.638	16.25	22.44



**Resource Level Summary & Fleet Performance for
October 30, 2012 Test**

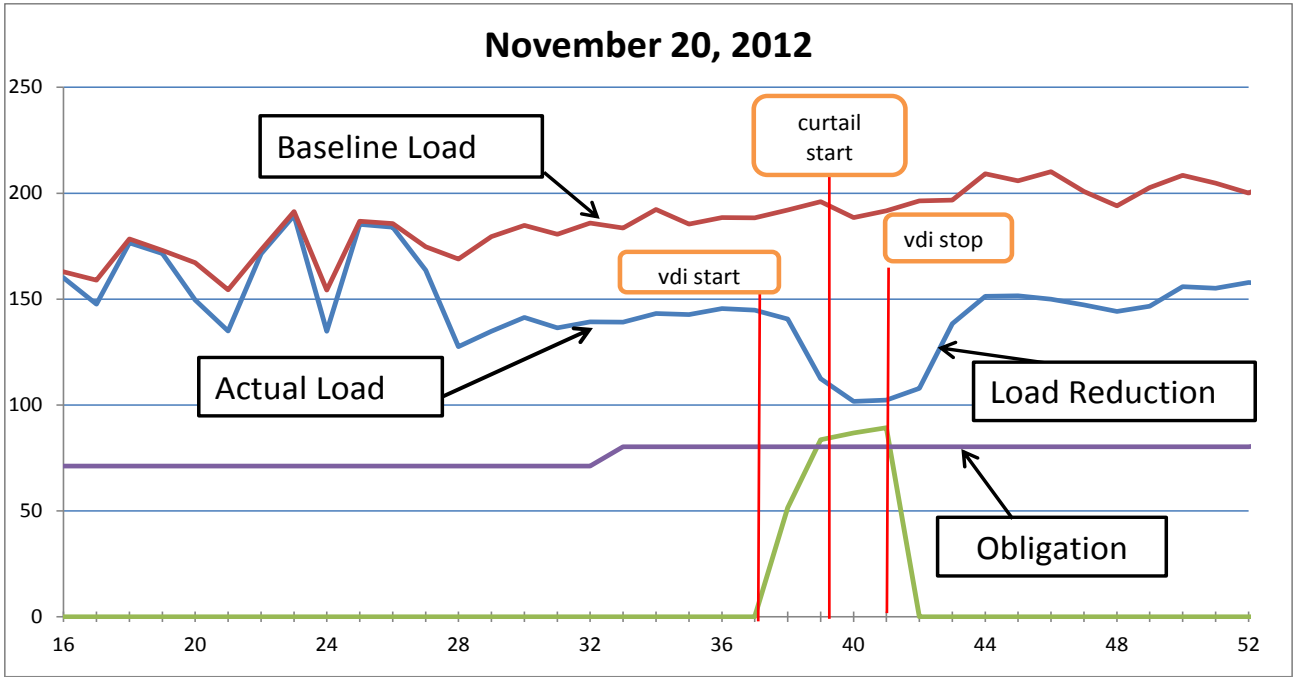
Resource	Event Performance Factor	Obligation (MW)	Load Reduction (MW)
Resource 1	0.877	4.50	2.22
Resource 2	1.000	0.80	1.03
Resource 3	1.000	0.80	1.27
Resource 4	1.000	0.20	0.21
Resource 5	1.000	0.10	0.16
Resource 6	0.470	0.15	0.11
Resource 7	0.178	0.18	0.00
Resource 8	1.000	0.55	0.42
Resource 9	0.456	0.85	0.27
Resource 10	1.000	2.20	3.46
Resource 11	0.694	1.70	1.01
Resource 12	0.115	2.00	0.00
Resource 13	0.714	1.00	0.14
Resource 14	0.728	0.60	0.43
Resource 15	1.000	4.73	5.46
Resource 16	1.000	1.60	1.44
Resource 17	0.992	0.20	0.22
Resource 18	0.082	0.20	0.01
Resource 19	1.000	0.20	0.26
Resource 20	1.000	0.30	0.31
Resource 21	1.000	0.80	1.10
Resource 22	1.000	0.20	0.29
Resource 23	1.000	0.30	0.38
Resource 24	0.955	18.00	16.62
Resource 25	1.000	2.60	3.37
Resource 26	1.000	0.43	0.37
Resource 27	1.000	0.55	0.44
Resource 28	1.000	34.00	50.61
Resource 29	0.081	0.10	0.00
Resource 30	0.963	2.50	2.34
Fleet	1.342	82.33	93.95

October 30, 2012



**Resource Level Summary & Fleet Performance for
November 20, 2012 Test**

Resource	Event Performance Factor	Obligation (MW)	Load Reduction (MW)
Resource 1	1.000	4.50	5.06
Resource 2	0.000	0.80	0.00
Resource 3	0.080	0.80	0.07
Resource 4	1.000	0.20	0.20
Resource 5	0.000	0.10	0.00
Resource 6	0.000	0.15	0.00
Resource 7	0.261	0.18	0.00
Resource 8	1.000	0.60	0.40
Resource 9	0.067	0.75	0.01
Resource 10	1.000	2.20	3.55
Resource 11	0.486	1.00	0.00
Resource 12	1.000	1.60	1.21
Resource 13	0.774	1.70	1.14
Resource 14	0.957	0.60	0.55
Resource 15	0.370	2.00	1.46
Resource 16	1.000	4.73	5.23
Resource 17	1.000	0.20	0.20
Resource 18	1.000	0.30	0.36
Resource 19	0.957	2.60	3.63
Resource 20	0.672	18.00	10.52
Resource 21	1.000	0.20	0.23
Resource 22	1.000	0.20	0.33
Resource 23	1.000	0.80	1.00
Resource 24	0.115	0.20	0.03
Resource 25	1.000	0.30	0.42
Resource 26	1.000	0.43	0.41
Resource 27	1.000	0.55	0.56
Resource 28	1.000	32.00	49.25
Resource 29	1.000	0.10	0.19
Resource 30	1.000	2.50	3.29
Fleet	1.231	82.33	93.95

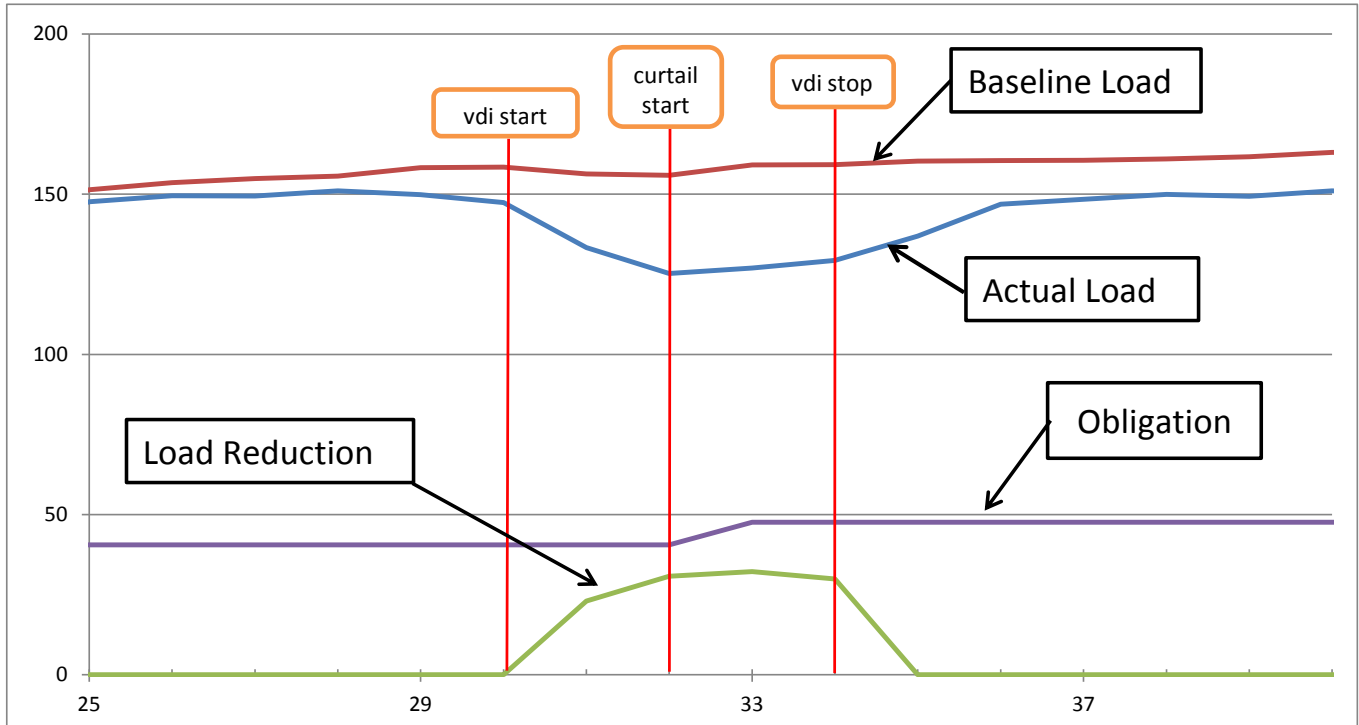


**Resource Level Summary & Fleet Performance for
February 28, 2013 Test**

Resource	Event Performance Factor	Obligation (MW)	Load Reduction (MW)
Resource 1	1.000	0.25	0.76
Resource 2	1.000	0.40	0.51
Resource 3	0.503	0.15	0.07
Resource 4	0.017	0.80	0.01
Resource 5	1.000	1.30	1.57
Resource 6	1.000	1.00	1.63
Resource 7	0.576	0.10	0.00
Resource 8	1.000	0.39	0.12
Resource 9	1.000	0.22	0.33
Resource 10	0.893	0.35	0.28
Resource 11	1.000	2.30	2.53
Resource 12	0.889	0.95	0.91
Resource 13	0.532	0.25	0.05
Resource 14	1.000	0.50	0.82
Resource 15	1.000	0.50	0.51
Resource 16	1.000	5.00	7.85
Resource 17	1.000	1.60	2.16
Resource 18	1.000	0.30	0.44
Resource 19	1.000	0.23	0.26
Resource 20	1.000	0.18	0.50
Resource 21	1.000	0.10	0.54
Resource 22	1.000	0.20	0.22
Resource 23	0.491	0.20	0.17
Resource 24	1.000	0.20	0.21
Resource 25	1.000	0.30	1.41
Resource 26	0.018	18.00	0.00
Resource 27	0.811	1.40	1.15
Resource 28	1.000	0.60	0.78
Resource 29	0.201	0.30	0.00
Resource 30	1.000	0.30	0.40
Resource 31	0.943	5.00	4.50
Resource 32	0.040	1.20	0.03

Resource 33	0.410	3.00	1.44
Fleet	0.826	47.56	32.16

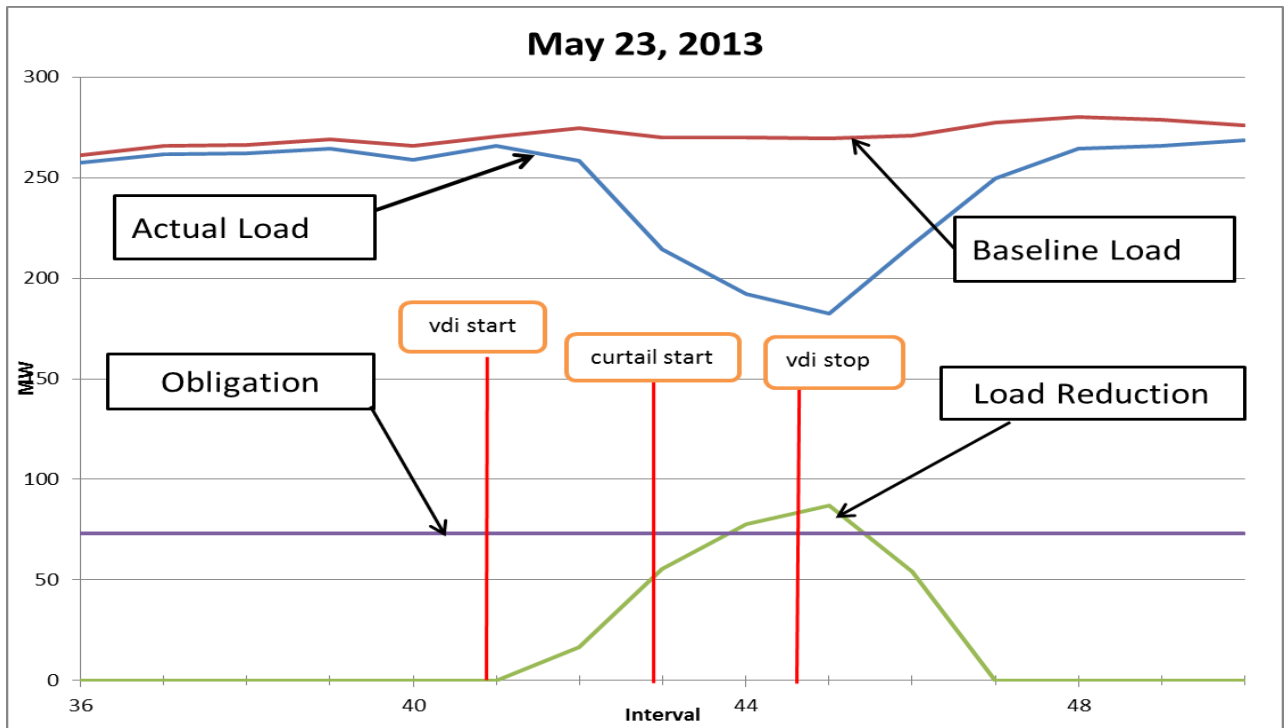
February 28, 2013



**Resource Level Summary & Fleet Performance for
May 23, 2013 Test**

Resource	Event Performance Factor	Obligations (MW)	Load Reduction (MW)
Resource 1	1.000	0.25	0.36
Resource 2	1.000	0.40	0.89
Resource 3	1.000	0.40	0.66
Resource 4	1.000	0.15	0.35
Resource 5	1.000	0.80	1.04
Resource 6	1.000	1.30	1.62
Resource 7	1.000	0.20	0.24
Resource 8	1.000	0.30	0.00
Resource 9	0.000	1.00	1.33
Resource 10	0.034	0.10	0.00
Resource 11	0.568	0.39	0.08
Resource 12	0.480	0.22	0.10
Resource 13	1.000	0.35	0.62
Resource 14	1.000	2.30	4.56
Resource 15	1.000	1.20	1.41
Resource 16	0.607	0.95	0.56
Resource 17	0.034	0.28	0.00
Resource 18	0.000	0.25	0.00
Resource 19	1.000	0.50	0.85
Resource 20	1.000	0.50	0.56
Resource 21	1.000	5.00	6.79
Resource 22	1.000	1.60	1.77
Resource 23	1.000	0.20	0.29
Resource 24	0.966	0.13	0.19
Resource 25	0.000	0.80	0.00
Resource 26	0.000	1.00	0.00
Resource 27	1.000	0.20	0.29
Resource 28	1.000	1.90	3.21
Resource 29	0.000	0.18	0.00
Resource 30	0.966	0.10	0.15
Resource 31	0.953	0.18	0.17
Resource 32	0.487	0.13	0.06
Resource 33	0.951	0.13	0.21

Resource 34	1.000	0.23	0.44
Resource 35	0.683	0.35	0.25
Resource 36	0.000	0.75	0.00
Resource 37	0.986	0.50	0.66
Resource 38	0.115	0.30	0.03
Resource 39	0.497	0.18	0.09
Resource 40	1.000	0.10	0.39
Resource 41	0.000	1.20	0.00
Resource 42	1.000	0.20	0.35
Resource 43	1.000	0.20	0.25
Resource 44	0.000	0.20	0.00
Resource 45	1.000	0.30	0.65
Resource 46	1.000	18.00	19.82
Resource 47	1.000	2.60	3.28
Resource 48	1.000	1.40	1.66
Resource 49	1.000	1.30	1.56
Resource 50	0.492	0.60	0.79
Resource 51	1.000	0.30	0.44
Resource 52	1.000	0.30	0.32
Resource 53	0.755	10.80	8.06
Resource 54	0.797	5.00	3.95
Resource 55	1.000	0.10	0.54
Resource 56	0.000	0.50	0.00
Resource 57	0.739	1.20	0.88
Resource 58	1.000	3.00	4.98
Fleet	1.764	72.96	77.75



**Resource Level Summary & Fleet Performance for
September 19, 2013 Test**

Resource	Event Performance Factor	Obligations (MW)	Load Reduction (MW)
Resource 1	1.00	0.30	0.71
Resource 2	0.00	0.15	0.00
Resource 3	1.00	0.25	1.04
Resource 4	1.00	0.23	0.66
Resource 5	0.18	0.10	0.02
Resource 6	0.91	0.50	0.44
Resource 7	0.00	1.00	0.00
Resource 8	0.07	0.30	0.00
Resource 9	0.92	0.65	0.58
Resource 10	0.59	0.10	0.07
Resource 11	1.00	1.28	1.76
Resource 12	1.00	0.15	0.18
Resource 13	0.93	0.25	0.21
Resource 14	0.21	0.35	0.09
Resource 15	0.49	0.15	0.00
Resource 16	0.99	1.45	1.60
Resource 17	0.95	0.20	0.18
Resource 18	0.00	0.13	0.00
Resource 19	1.00	0.20	0.45
Resource 20	0.00	0.10	0.00
Resource 21	1.00	0.30	1.37
Resource 22	0.00	1.50	0.00
Resource 23	0.61	20.00	11.32
Resource 24	1.00	4.00	6.82
Resource 25	1.00	2.40	3.62
Resource 26	1.00	10.80	16.36
Resource 27	1.00	0.55	0.61
Resource 28	1.00	36.30	47.42
Resource 29	1.00	0.90	1.34
Resource 30	1.00	1.25	2.31
Resource 31	0.99	0.55	0.76
Resource 32	0.62	0.48	0.31

Resource 33	0.97	0.80	1.04
Fleet	1.190	87.65	101.27

Resource Level Summary & Fleet Performance for September 19, 2013 Test

