

**ERCOT Annual Report Pursuant to P.U.C. SUBST. R. 25.507(g)
Regarding Emergency Response Service for the
Program Year February 1, 2017, through January 31, 2018**

ERS History

On March 20, 2007, the Commission approved Substantive Rule 25.507, *Electric Reliability Council of Texas (ERCOT) Emergency Interruptible Load Service (EILS)*,¹ requiring ERCOT to develop and administer EILS. Later that year, the Commission approved amendments to Rule 25.507 that eliminated the 500 MW procurement floor and increased the annual cost cap from \$20 million to \$50 million.²

On March 22, 2012, the Commission adopted an order repealing the rule and replaced it with a new Rule 25.507 that expanded the program to allow participation by generators and removed certain program restrictions.³ To reflect the broader participation, the program was renamed “Emergency Response Service” (ERS).

Through the end of the program year covered by this report, the ERCOT Board had approved a total of 27 Protocol revisions that directly pertain to ERS.⁴ Only one of these—NPRR 846, *Allow Previously Committed ERS Resources to Participate in MRA Agreements and Other ERS Items*—was approved during the 2017 program year, and the Protocol revisions became effective at the beginning of the first Standard Contract Term in the 2018 program year (February 1, 2018). Many of the Protocol revisions in NPRR 846 were made to conform ERCOT Protocols to an amendment made in 2017 to PUC Substantive Rule 25.507(d)(10), which permits a resource with an existing ERS contract to bid to serve as a Must-Run Alternative (MRA) during the same time period the resource is committed to serve as ERS.⁵

Procurement History and Analysis

Under current Protocols, ERCOT procures ERS three times annually for four-month Standard Contract Terms. In each Standard Contract Term, ERCOT procures ERS according to two different response times—thirty minutes (“ERS-30”) and ten minutes (“ERS-10”). ERCOT can procure Weather-Sensitive and Non-Weather Sensitive ERS.

¹ PUC Rulemaking Concerning a Demand-Response Program for ERCOT Emergency Conditions, Project No. 33457.

² PUC Rulemaking to Amend ERCOT Emergency Interruptible Load Service, Project No. 34706.

³ Rulemaking to Amend Substantive Rule § 25.507, Relating to Electric Reliability Council of Texas (ERCOT) Emergency Interruptible Load Service (EILS), Project No. 39948.

⁴ See Annual Report on Emergency Response Service at 3-4, filed April 14, 2017, *Reports of The Electric Reliability Council of Texas*, Project No. 27706.

⁵ PUC Rulemaking Regarding Emergency Response Service, Project No. 45927.

This was the fourth year that ERCOT used an ERS procurement methodology that was first implemented ahead of the 2014 program year. For the 2017 program year, ERCOT applied risk factors identical to those used during the 2016 program year to each of the ERS time periods. Further, there were only slight differences in the capacity offered for each time period in the 2017 program year as compared to the 2016 program year. In light of this, ERCOT observed only minimal differences in ERS procurement between the 2016 and 2017 program years. (See slides 4 to 13, Attachment B).

A Weather-Sensitive ERS type was implemented in 2014 to help utilize the considerable demand response potential from residential and commercial air conditioning loads in Texas. The greatest opportunity to utilize these loads for demand response occurs during the summer months. In the summer of 2017, ERCOT procured 9.172 MWs of Weather-Sensitive ERS, which was approximately half the amount procured in the previous two summers. ERCOT attributes this decrease to increased competition for these loads from Transmission and Distribution Service Providers (TDSPs) Standard Offer Programs. More specifically, some TDSPs recently modified their Standard Offer Programs to allow increased participation from residential loads, and this in turn served to reduce the amount of load that bid to serve as Weather-Sensitive ERS in 2017.

Attachment B provides detailed results of ERCOT's procurement of ERS during the 2017 program year, including:

- Descriptions of Standard Contract Terms and Time Periods.
- Capacity procurements by Time Period and by Standard Contract Term, including the number of MW procured and the total number of MW offered.
- Number of procured ERS Resources.
- Number of individual Sites submitted to ERCOT for resource identification.
- Summary of final settlement costs of ERS, adjusted to account for payment reductions due to availability and testing results.
- Detailed tables with capacity procurements by Time Period and by Standard Contract Term for each ERS service type, including clearing price (in dollars per MW per hour).

Review of Effectiveness & Benefits

ERCOT Protocols authorize the deployment of thirty-minute ERS (ERS-30) in Level 1 of an Energy Emergency Alert (EEA) and ten-minute ERS (ERS-10) in Level 2 of an Energy Emergency Alert (EEA).⁶ ERCOT did not declare an EEA during the 2017 program year, so there were no ERS deployment events during this period.

Availability

The effectiveness of Non-Weather Sensitive ERS is ensured to a large degree by incentives that encourage resources to maintain a minimal level of availability for deployment. For a QSE's portfolio of Non-Weather Sensitive ERS Resources, the QSE must achieve a portfolio-level

⁶ See Protocols § 6.5.9.4.2(2)(a)(ii).

availability factor of at least 95% across committed Time Periods.⁷ Portfolio-level availability factors are calculated after the end of the Standard Contract Term by aggregating availability factors across resources in each QSE's portfolio; resource-level availability factors are calculated using aggregated site-level interval meter data for each ERS Resource. Any QSE whose portfolio of Non-Weather Sensitive ERS Resources achieves an aggregate availability factor of less than 95% is subject to payment reductions for any individual ERS Resources that achieve an availability factor of less than 85%. For Weather-Sensitive ERS, a comparable evaluation is not a reasonable indicator of the portfolio's ability to provide the service, so ERCOT does not conduct an evaluation of availability.

All ERS Resources regardless of service type are subject to periodic load-shed tests. Each Non-Weather Sensitive ERS Resource is subject to at least one annual unannounced load-shed test, whereas each Weather-Sensitive ERS Resource is tested at least once but no more than twice each month during the Standard Contract Term for which it is obligated to provide the service. ERCOT conducts this testing by issuing a Verbal Dispatch Instruction (VDI) and an XML instruction to each QSE, just as ERCOT would do in an actual EEA event. Failed test performance may result in payment reductions to the QSE. For Weather-Sensitive ERS, test performance is the sole determinant of payment in the absence of an event deployment.

Through the end of the June through September 2017 Standard Contract Term, payment reductions for the 2017 program year due to availability or testing results totaled \$768,501.42. As of the time of this report, the final settlement numbers for the October 2017 through January 2018 Standard Contract Term are not yet known.

Hurricane Harvey's landfall on the central and northern sections of the Texas Gulf Coast also impacted the ERS resources in that area. About 2,300 (out of 8,800) ERS sites were located in the hurricane impact areas. During the course of the hurricane, 350 of the 2,300 sites experienced day-long service interruptions accounting for about 20 MW of ERS capacity reduction. Even though the hurricane did impact the availability of many ERS resources, only one QSE experienced an availability failure below the 95% threshold for the June 2017 through September 2017 Standard Contract Term. This low failure rate can likely be attributed to the conservative approach most ERS providers take when offering to provide the service in order to ensure compliance with ERS availability requirements. (See slide 15, Attachment B).

ERCOT maintains that the combination of performance metrics and payment reduction penalties for non-compliance—which are among the most stringent for any demand response program in North America—provide substantial integrity to the ERS product.

⁷ See Protocols § 8.1.3.1.3.1(1)(a).

Market Benefits

The Commission has previously recognized that a central purpose of ERS is to enable additional demand response participation in the ERCOT market:

The commission agrees . . . that one of the important values of this program is to establish the role of demand-response in providing reliability services in ERCOT by enlisting numerous customers as providers of demand-response, particularly customers in classes that have not participated in the [Load Resource] program. The commission also finds value in having resources that have not participated in demand response programs being enabled to do so by this program. The commission encourages ERCOT to make an effort to attract such customers to the program.⁸

ERCOT's experience with ERS in the 2017 program year reflects that ERS is successfully meeting this Commission goal in the following manner:

- Participating Resources. Since an EPA rule change that effectively prohibits emergency permitted engines from participating in demand response services like ERS became enforceable in May 2016, the number of resources offering to provide ERS has remained relatively constant. Any reduction in participation by certain sites due to the rule change has been offset by new entrants into the service (See slide 11, Attachment B).
- Offer behavior. Since ERCOT adopted its current procurement methodology, the average unit cost per MW of ERS has remained steady. In the 2017 program year, the unit cost per MW of ERS ranged from \$5.55 to \$7.92 per hour. (See slide 4, Attachment B). After taking into consideration the time period risk factors, the unit cost during the 2017 program year was similar to the 2016 program year. (See slide 14, Attachment B). During the 2017 program year, some offered capacity was not procured during each of the ERS time periods due to reaching the time period spend limit constraint established by the procurement methodology. The capacity that was not procured ranged from as little as 0.10 MW for time periods 3 and 4 in the June to September 2017 Standard Contract Term to as much as 19.73 MWs for time period 2 in that same Standard Contract Term.

⁸ *PUC Rulemaking to Amend ERCOT Emergency Interruptible Load Service*, Project No. 34706, Order at. 4-5 (November 8, 2007).



ERCOT Emergency Responsive Service (ERS)

Report to the Public Utility Commission of Texas
for the 2017 ERS Program Year

Project No. 27706
Attachment B

DRAFT

Procurement Summary Trends

- Capacity (MW) offered and procured
- Number of ERS Resources (All Service Types)
- Cumulative Individual Sites Participating in ERID Process

Detailed Procurement Results for the 2017 ERS Procurement Year

Settlement Summary

Standard Contract Terms & Time Periods

ERS is procured 3 times annually for 4-month Standard Contract Terms

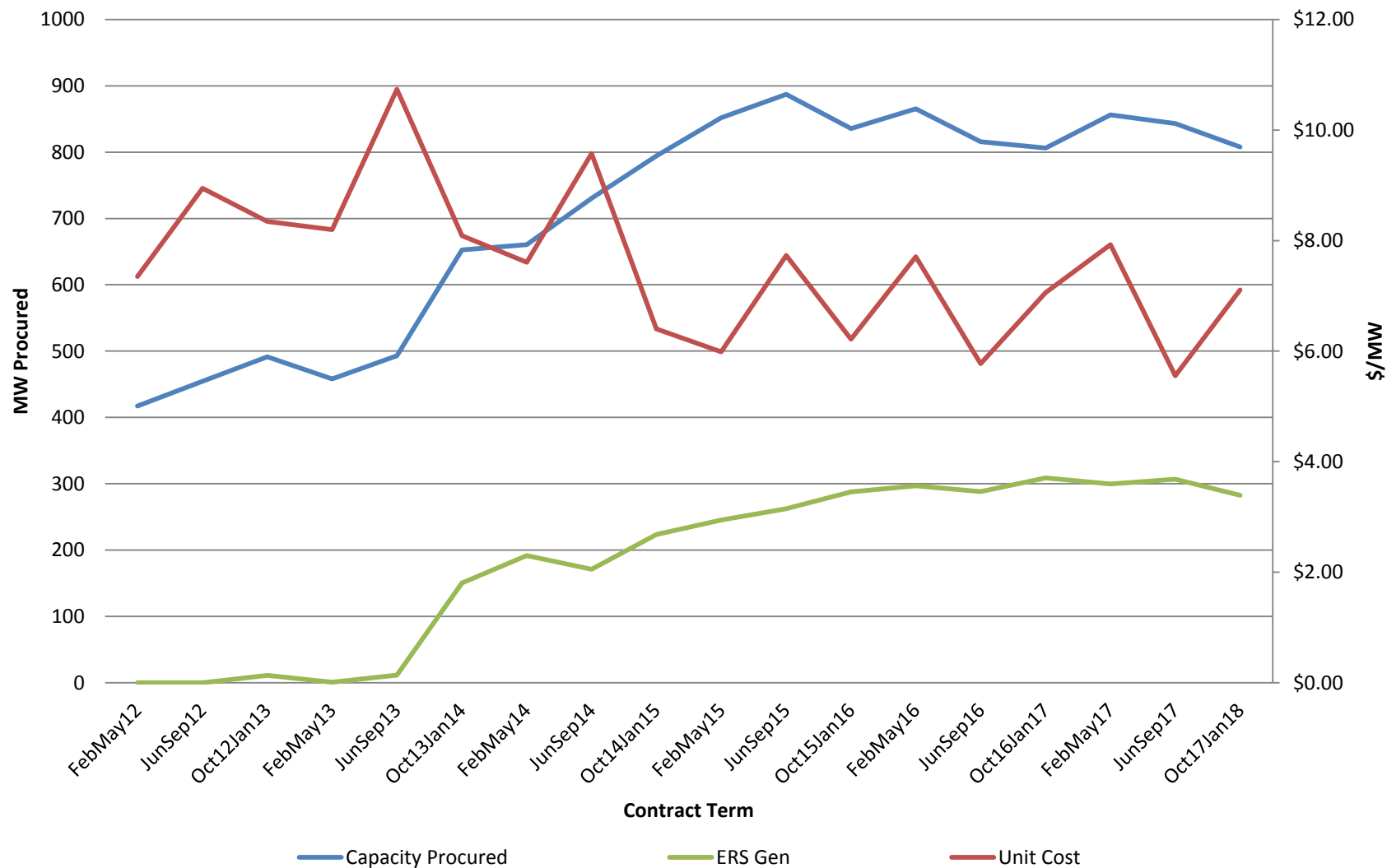
- February through May
- June through September
- October through January

Participants may offer to provide ERS for one or more Time Periods:

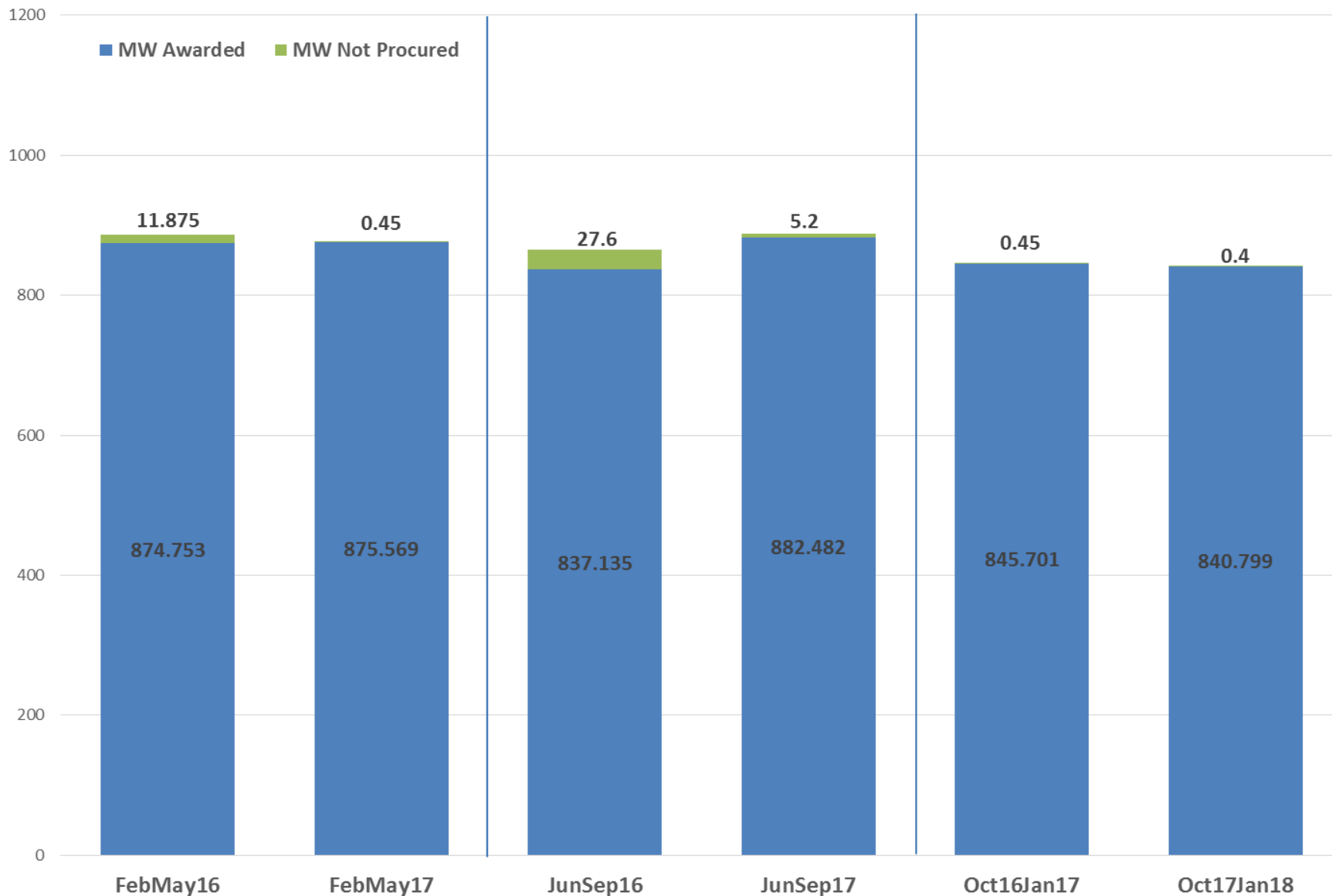
| Time Period | Time Period Hours |
|---------------|---|
| Time Period 1 | Hours Ending 0600 - 0800 (5:00:00 a.m. to 8:00:00 a.m.) Monday through Friday except ERCOT Holidays. |
| Time Period 2 | Hours Ending 0900 - 1300 (8:00:00 a.m. to 1:00:00 p.m.) Monday through Friday except ERCOT Holidays. |
| Time Period 3 | Hours Ending 1400 - 1600 (1:00:00 p.m. to 4:00:00 p.m.) Monday through Friday except ERCOT Holidays. |
| Time Period 4 | Hours Ending 1700 - 1900 (4:00:00 p.m. to 7:00:00 p.m.) Monday through Friday except ERCOT Holidays. |
| Time Period 5 | Hours Ending 2000 - 2200 (7:00:00 p.m. to 10:00:00 p.m.) Monday through Friday except ERCOT Holidays. |
| Time Period 6 | All other hours |

Time Periods are designed to allow flexibility for customers during traditional business hours.

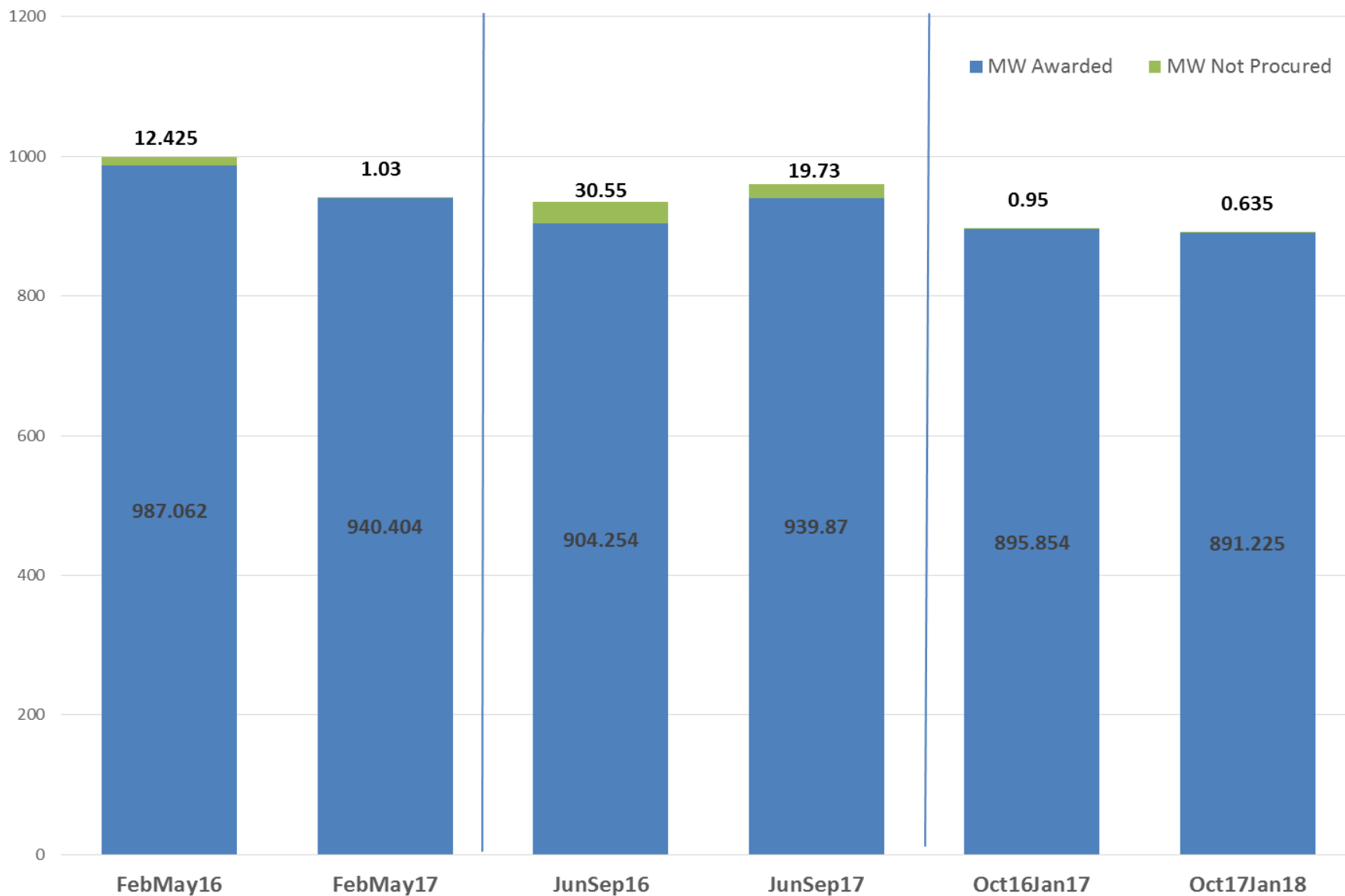
Emergency Response Service Trends



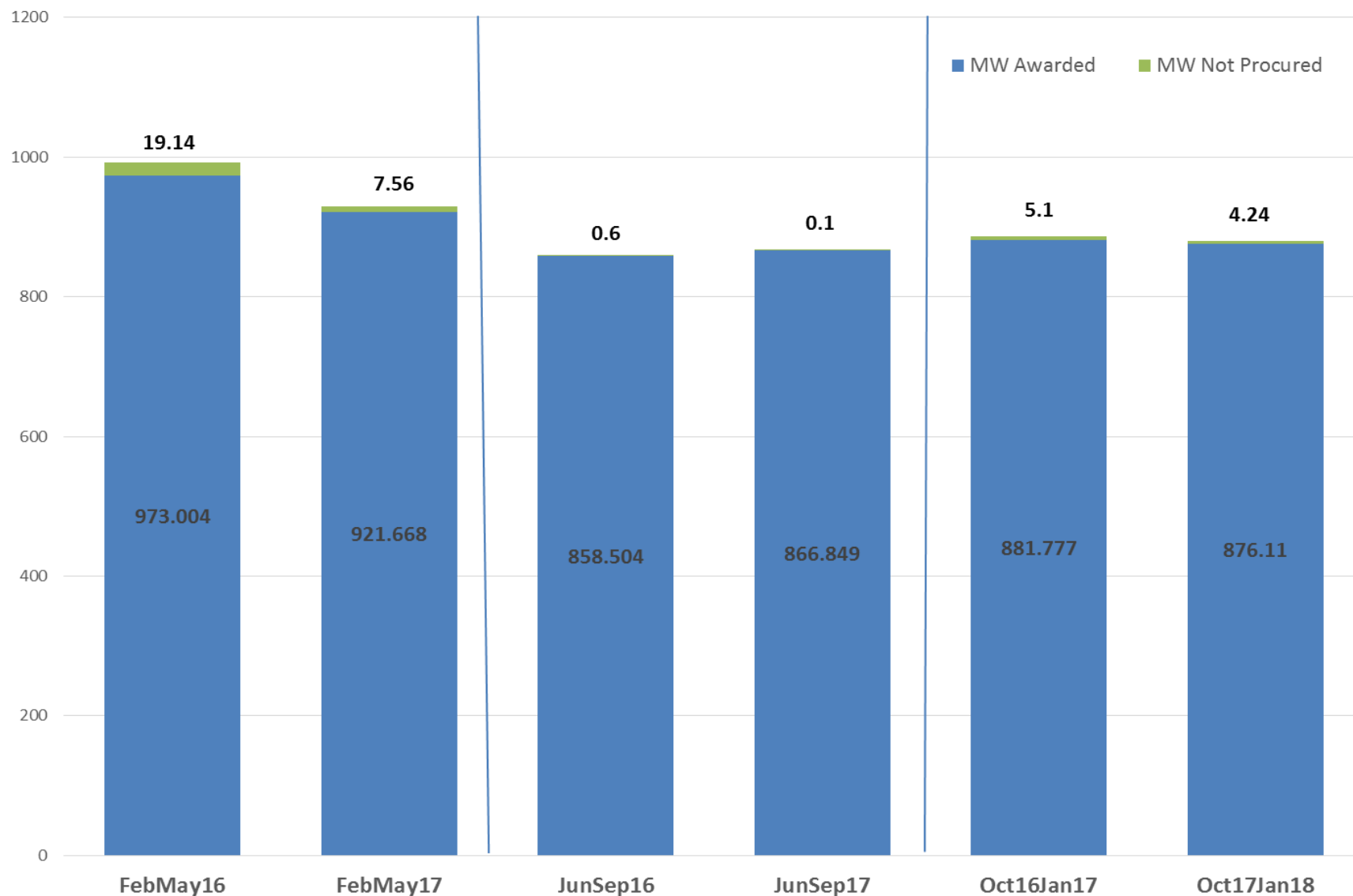
ERS Capacity Procurement Trends (Time Period 1)



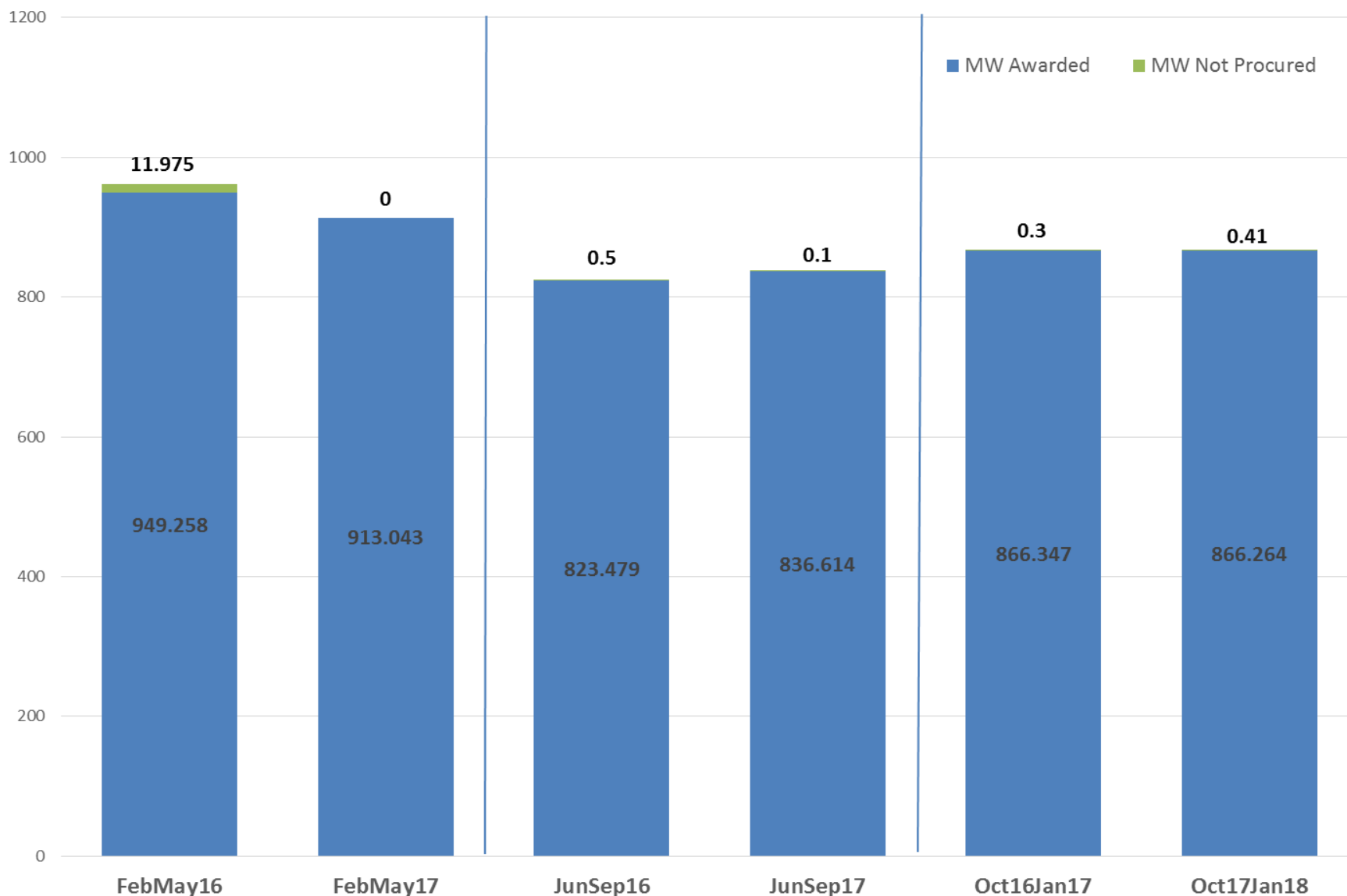
ERS Capacity Procurement Trends (Time Period 2)



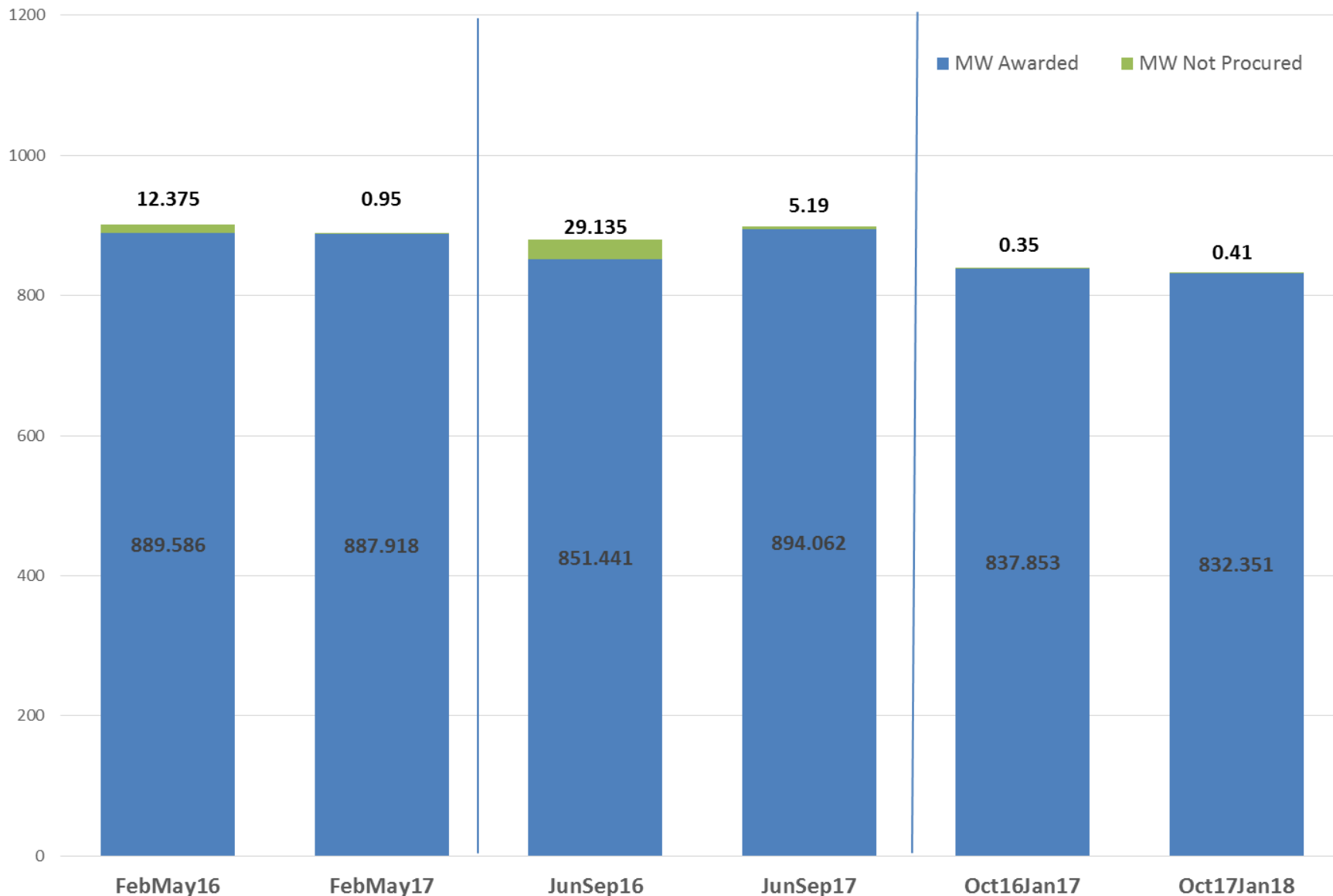
ERS Capacity Procurement Trends (Time Period 3)



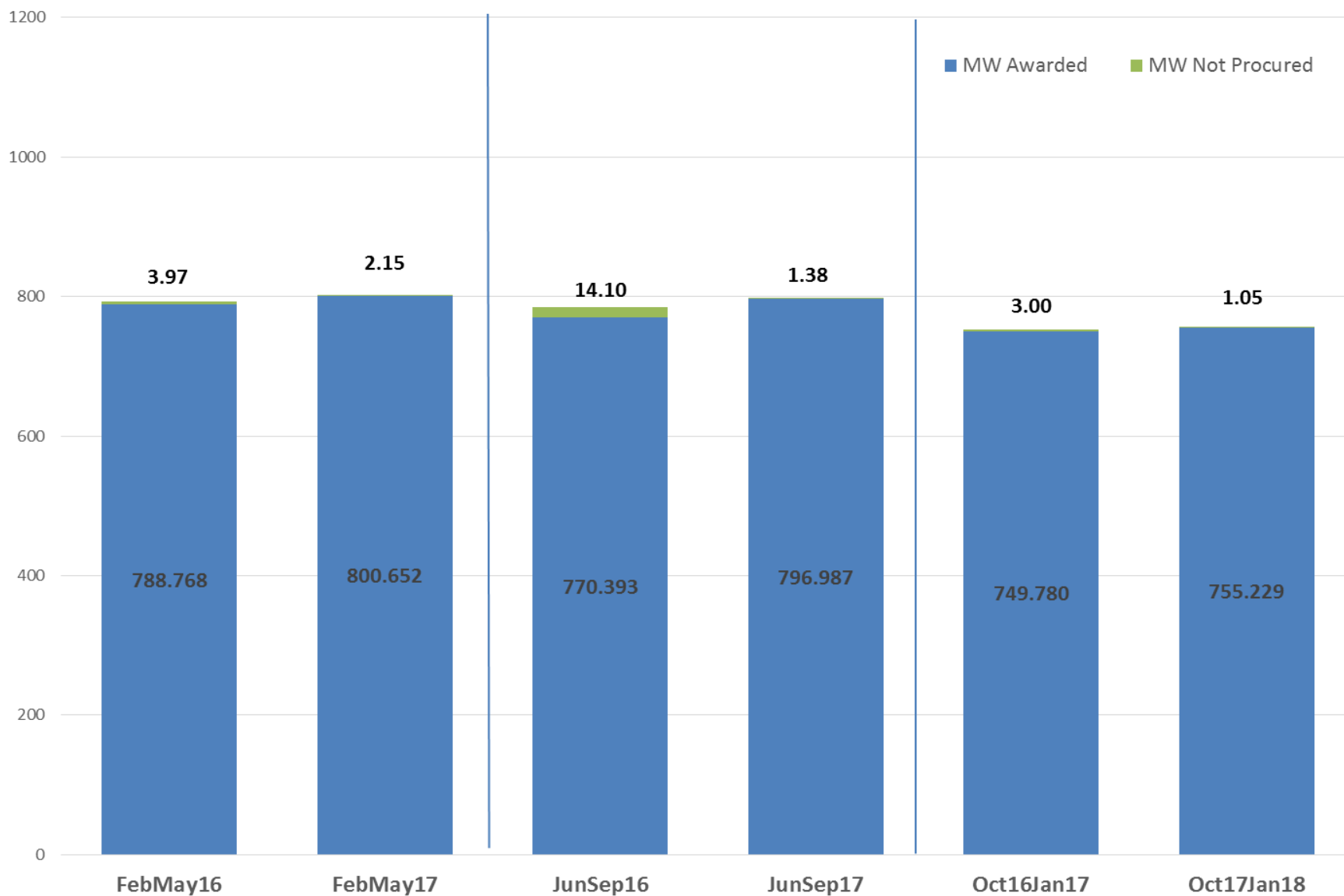
ERS Capacity Procurement Trends (Time Period 4)



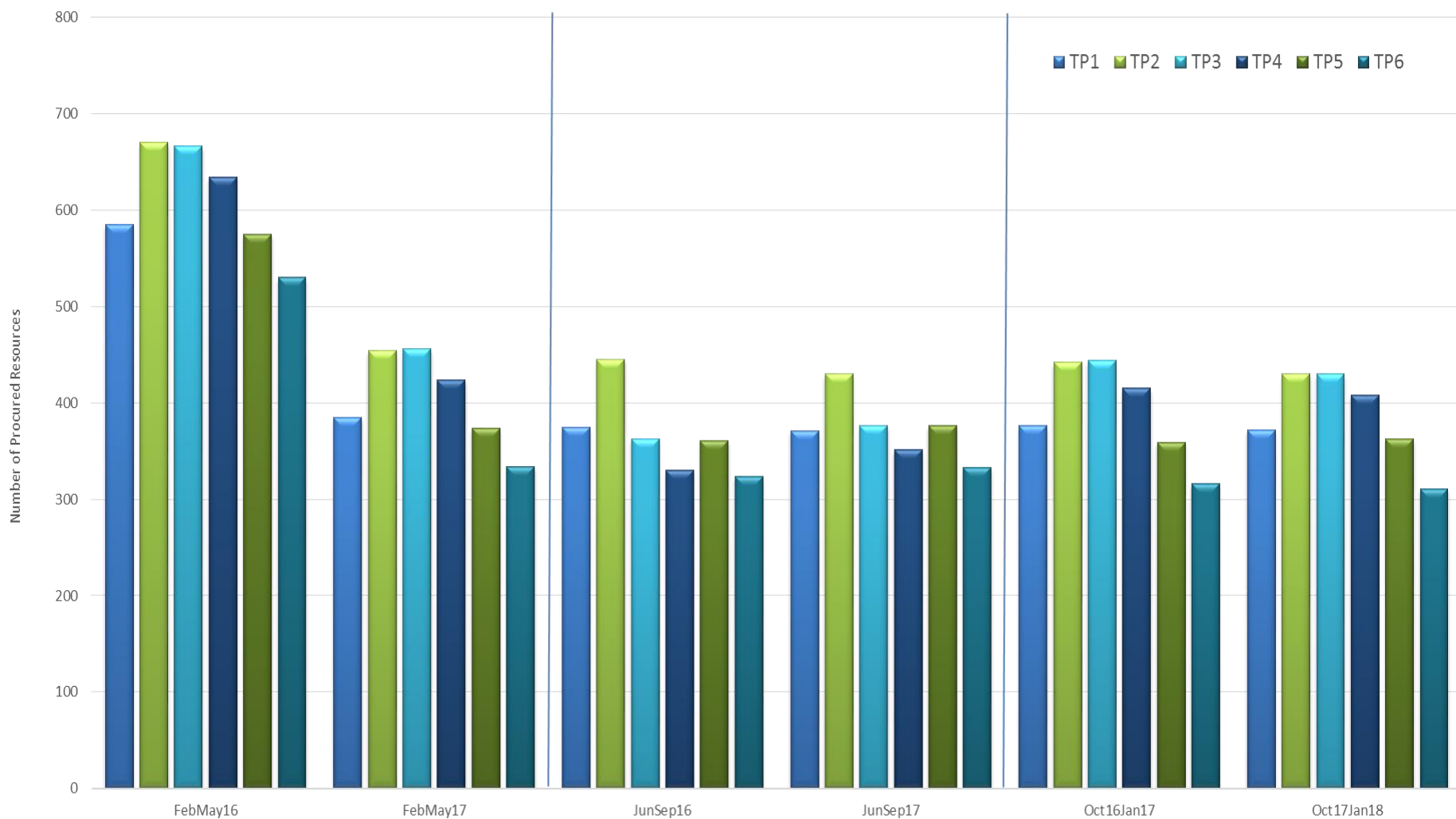
ERS Capacity Procurement Trends (Time Period 5)



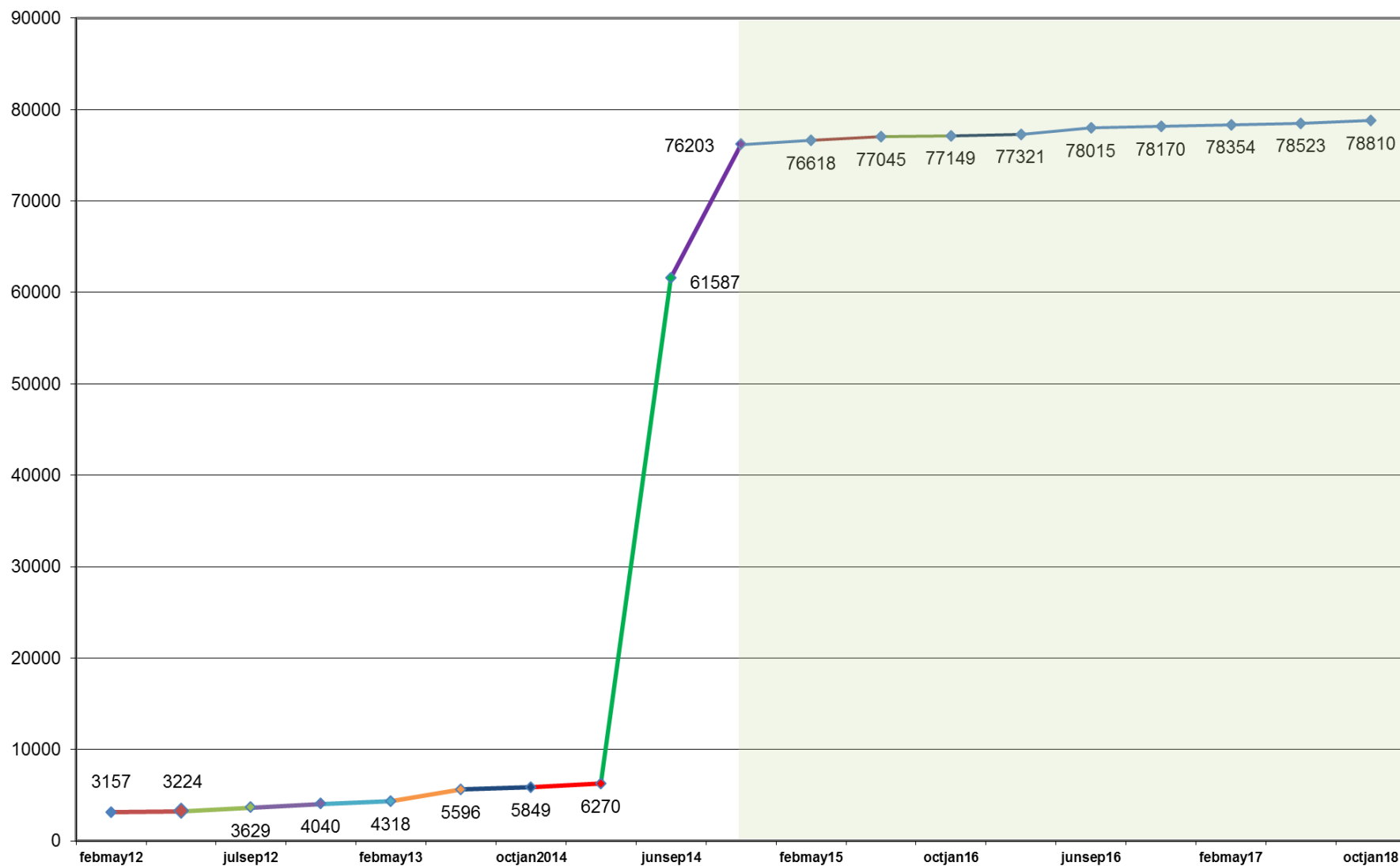
ERS Capacity Procurement Trends (Time Period 6)



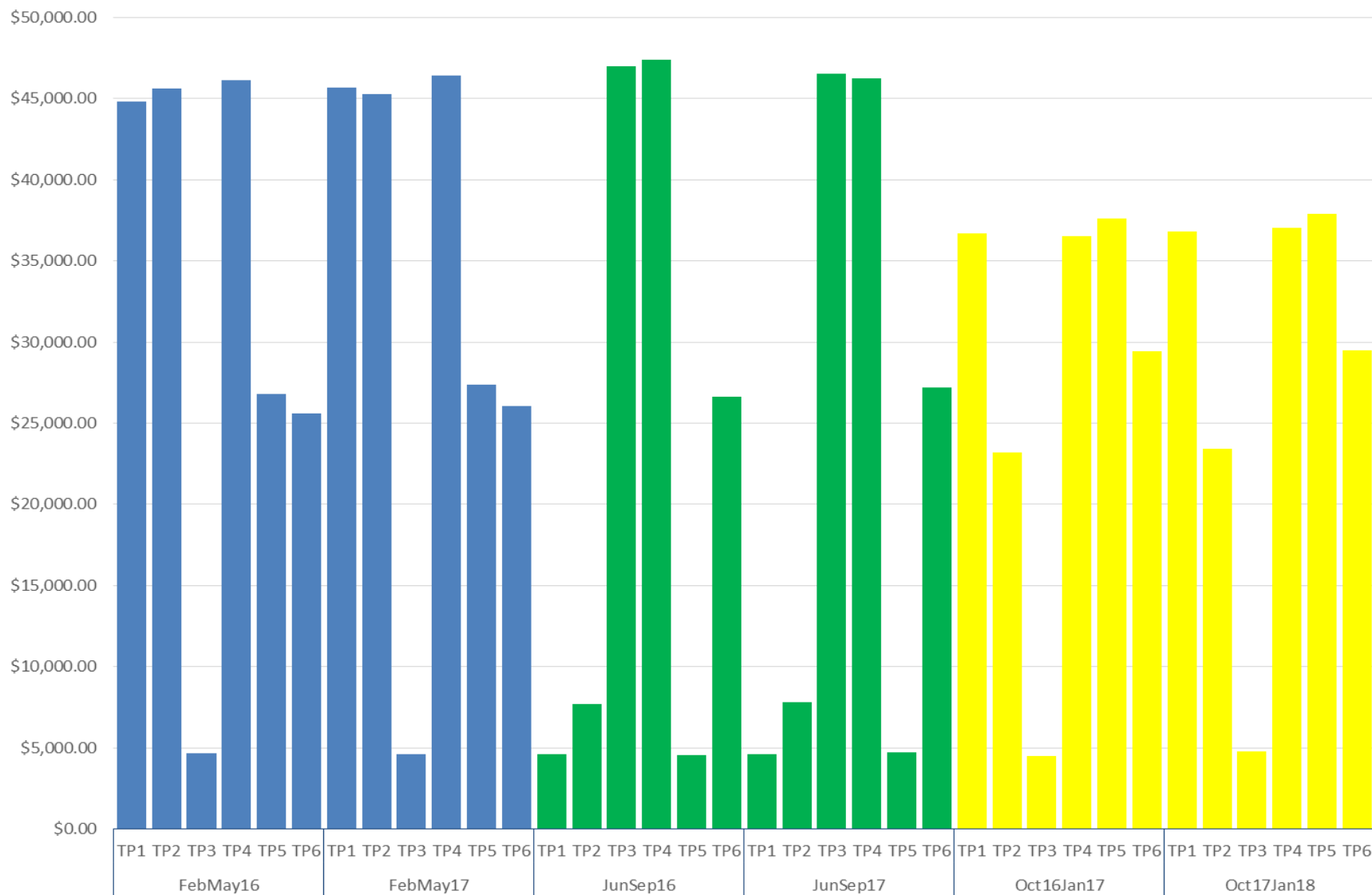
ERS Procurement Trends (Number of Resources)



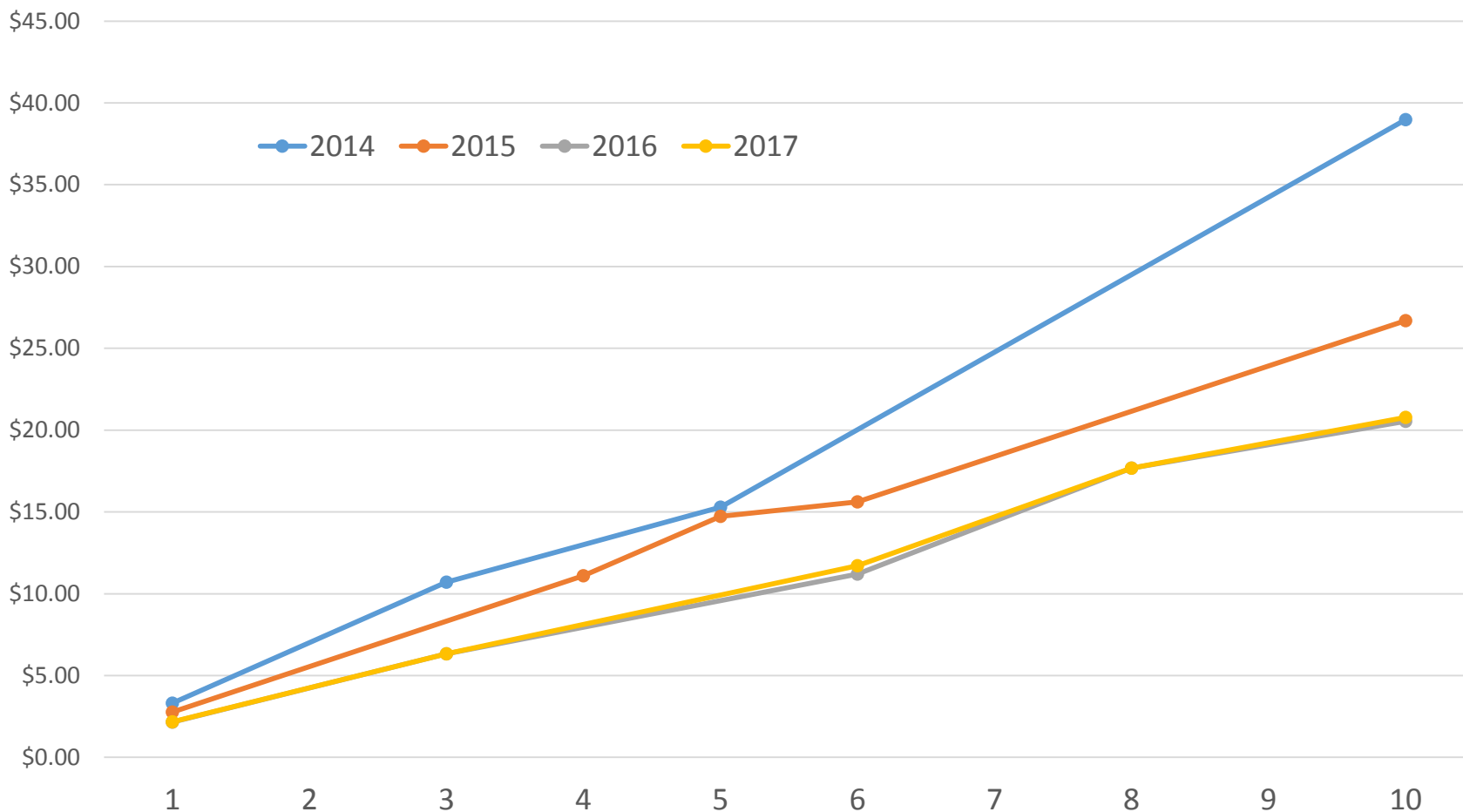
Cumulative Sites (Unique) Participating in ERID Process



ERS Cost Comparisons per Time Period

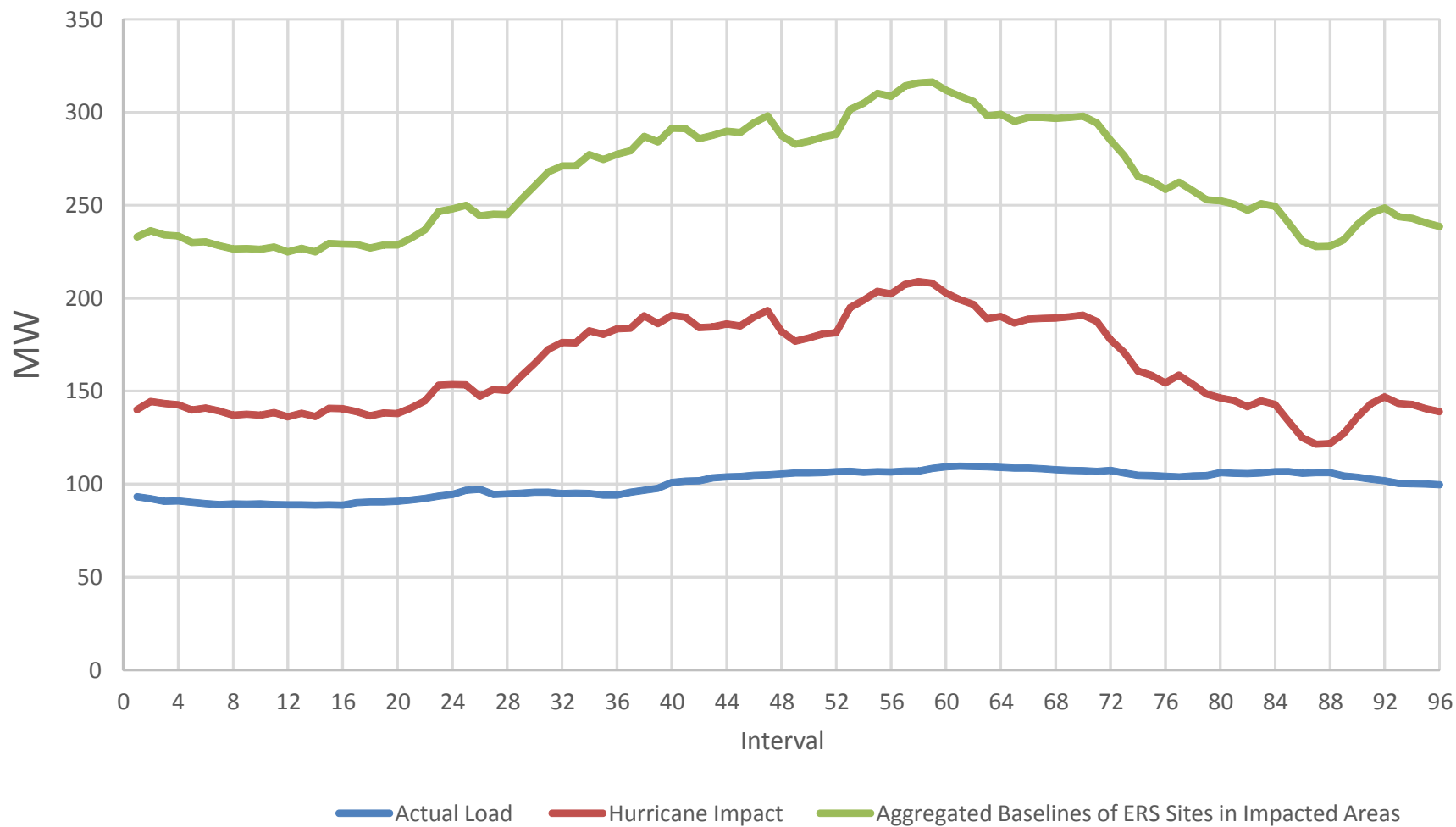


Average Unit Cost (\$/MW/hr) vs Time Period Risk Factors



Hurricane Harvey Impacts on ERS Sites

August 29, 2017



2017 ERS Procurement Results

February-May 2017 Standard Contract Term

Values for the combined offer stack

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) | Clearing Price | Highest Offer Received (\$) |
|-----|-------------------------|-----------------------------|----------------|-----------------------------|
| TP1 | 875.569 | .45 | \$20.45 | \$22.68 |
| TP2 | 940.404 | 1.03 | \$11.33 | \$14.68 |
| TP3 | 921.668 | 7.56 | \$1.96 | \$14.68 |
| TP4 | 913.043 | .44 | \$19.93 | \$21.96 |
| TP5 | 887.918 | .95 | \$12.08 | \$14.68 |
| TP6 | 800.652 | 2.15 | \$2.27 | \$5.00 |

Non-Weather Sensitive **ERS-10 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | 304.071 | 0 |
| TP2 | 314.139 | 0 |
| TP3 | 312.787 | 1.25 |
| TP4 | 307.631 | 0 |
| TP5 | 301.799 | .1 |
| TP6 | 285.273 | .9 |

Weather Sensitive **ERS-10 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|--|-------------------------|-----------------------------|
| | 0 | 0 |
| | | |
| | 0 | 0 |
| | 0 | 0 |
| | 0 | 0 |
| | | |

Non-Weather Sensitive **ERS-30 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | 570.588 | .45 |
| TP2 | 626.265 | 1.03 |
| TP3 | 608.201 | 6.31 |
| TP4 | 604.502 | .44 |
| TP5 | 586.119 | .85 |
| TP6 | 515.379 | 1.25 |

Weather Sensitive **ERS-30 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|--|-------------------------|-----------------------------|
| | .91 | 0 |
| | | |
| | .68 | 0 |
| | .91 | 0 |
| | 0 | 0 |
| | | |

Final Cost for this Standard Contract Term: \$19,175,674.58

June-September 2017 Standard Contract Term

Values for the combined offer stack

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) | Clearing Price | Highest Offer Received (\$) |
|-----|-------------------------|-----------------------------|----------------|-----------------------------|
| TP1 | 882.482 | 5.20 | \$2.05 | \$14.00 |
| TP2 | 939.870 | 19.73 | \$1.95 | \$14.00 |
| TP3 | 866.849 | .10 | \$21.06 | \$22.00 |
| TP4 | 836.614 | .10 | \$21.68 | \$22.40 |
| TP5 | 894.062 | 5.19 | \$2.06 | \$14.00 |
| TP6 | 796.987 | 1.38 | \$2.30 | \$3.00 |

Non-Weather Sensitive **ERS-10 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | 238.153 | .10 |
| TP2 | 238.502 | 12.6 |
| TP3 | 226.089 | 0 |
| TP4 | 220.575 | 0 |
| TP5 | 234.775 | .10 |
| TP6 | 229.501 | .10 |

Weather Sensitive **ERS-10 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | | |
| TP2 | | |
| TP3 | 0 | 0 |
| TP4 | 0 | 0 |
| TP5 | | |
| TP6 | | |

Non-Weather Sensitive **ERS-30 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | 644.329 | 5.10 |
| TP2 | 701.368 | 7.13 |
| TP3 | 631.588 | .10 |
| TP4 | 606.867 | .10 |
| TP5 | 659.287 | 5.09 |
| TP6 | 567.486 | 1.28 |

Weather Sensitive **ERS-30 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | | |
| TP2 | | |
| TP3 | 9.172 | 0 |
| TP4 | 9.172 | 0 |
| TP5 | | |
| TP6 | | |

Final Cost for this Standard Contract Term: \$13,300,962.41

October 2017-January 2018 Standard Contract Term

Values for the combined offer stack

| | Capacity Procured (MWs) | Amount Spent | Capacity Not Procured (MWs) | Clearing Price | Highest Offer Received (\$) |
|-----|-------------------------|----------------|-----------------------------|----------------|-----------------------------|
| TP1 | 840.799 | \$3,678,436.77 | 0.40 | \$17.57 | \$20.54 |
| TP2 | 891.225 | \$2,344,902.10 | 0.635 | \$6.34 | \$14.00 |
| TP3 | 876.110 | \$479,933.06 | 4.24 | \$2.20 | \$14.00 |
| TP4 | 866.264 | \$3,705,721.46 | 0.41 | \$17.18 | \$19.51 |
| TP5 | 832.351 | \$3,790,701.25 | 0.41 | \$18.29 | \$20.23 |
| TP6 | 755.229 | \$2,946,344.69 | 1.05 | \$2.53 | \$14.00 |

Non-Weather Sensitive **ERS-10 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | 203.909 | 0 |
| TP2 | 215.019 | 0 |
| TP3 | 212.619 | 0 |
| TP4 | 207.967 | 0 |
| TP5 | 203.656 | 0 |
| TP6 | 193.926 | 0 |

Weather Sensitive **ERS-10 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | 0 | 0 |
| TP2 | | |
| TP3 | 0 | 0 |
| TP4 | 0 | 0 |
| TP5 | | |
| TP6 | | |

Non-Weather Sensitive **ERS-30 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | 631.590 | .4 |
| TP2 | 676.206 | 0.635 |
| TP3 | 659.791 | 4.24 |
| TP4 | 652.997 | 0.41 |
| TP5 | 628.695 | 0.41 |
| TP6 | 561.303 | 1.05 |

Weather Sensitive **ERS-30 Minute**

| | Capacity Procured (MWs) | Capacity Not Procured (MWs) |
|-----|-------------------------|-----------------------------|
| TP1 | 5.3 | 0 |
| TP2 | | |
| TP3 | 3.7 | 0 |
| TP4 | 5.3 | 0 |
| TP5 | | |
| TP6 | | |

2017 ERS Procurement Overview

| | |
|----------------------------|-----------------|
| Expenditure Limit for 2017 | \$50,000,000.00 |
| Amount Spent (Projected) | \$49,422,676.32 |
| Unspent (Projected) | \$577,323.68 |

| 2017 ERS Cap | FebMay17 Total (Final) | JunSep17 Total (Final) | Oct17Jan18 Total (Awarded) |
|--------------|---------------------------|---------------------------|-------------------------------|
| \$50,000,000 | \$19,175,674.58 | \$13,300,962.41 | \$16,946,039.33 |

Settlement Summary (3 year look back)

| Standard Contract Term | 10M projected cost | 10M Final | reduction amount | 30M projected cost | 30M Final | reduction amount | WS projected cost | WS Final | reduction amount |
|------------------------|-------------------------|-------------------------|----------------------|-------------------------|-------------------------|---------------------|----------------------|----------------------|------------------|
| FebMay15 | \$ 9,462,731.35 | \$ 9,260,321.63 | \$ 202,409.72 | \$ 5,226,665.62 | \$ 4,983,232.14 | \$243,433.48 | | | |
| JunSep15 | \$ 8,272,555.20 | \$ 7,929,791.40 | \$ 342,763.80 | \$ 11,462,947.50 | \$ 11,010,208.50 | \$452,739.00 | \$ 349,921.82 | \$ 270,902.91 | 79,018.91 |
| Oct15Jan16 | \$ 6,471,502.80 | \$ 6,343,651.45 | \$ 127,851.35 | \$ 8,860,998.35 | \$ 8,668,574.38 | \$192,423.97 | | | |
| Total 2015 | \$ 24,206,789.35 | \$ 23,533,764.48 | \$ 673,024.87 | \$ 25,550,611.47 | \$ 24,662,015.02 | \$888,596.45 | \$ 349,921.82 | \$ 270,902.91 | 79,018.91 |
| FebMay16 | \$ 8,081,457.33 | \$ 8,067,175.06 | \$ 14,282.27 | \$ 11,282,427.49 | \$ 10,903,286.09 | \$379,141.40 | | | |
| JunSep16 | \$ 4,779,935.72 | \$ 4,700,109.22 | \$ 79,826.50 | \$ 8,756,997.06 | \$ 8,493,991.72 | \$263,005.34 | \$ 253,062.26 | \$ 178,582.78 | 74,479.48 |
| Oct16Jan17 | \$ 5,927,501.64 | \$ 5,685,340.28 | \$ 242,161.36 | \$ 10,854,543.42 | \$ 10,548,517.13 | \$306,026.29 | \$ 18,246.63 | \$ 12,685.26 | \$ 5,561.37 |
| Total 2016 | \$ 18,788,894.69 | \$ 18,452,624.56 | \$ 336,270.13 | \$ 30,893,967.97 | \$ 29,945,794.94 | \$948,173.03 | \$ 271,308.89 | \$ 191,268.04 | 80,040.85 |
| FebMay17 | \$ 6,676,346.50 | \$ 6,622,079.93 | \$ 54,266.57 | \$ 12,850,377.39 | \$ 12,544,030.25 | \$306,347.14 | \$ 9,710.04 | \$ 9,564.40 | \$ 145.64 |
| JunSep17 | \$ 3,661,877.87 | \$ 3,632,614.75 | \$ 29,263.12 | \$ 9,946,863.73 | \$ 9,579,410.83 | \$367,452.90 | \$ 99,962.88 | \$ 88,936.83 | \$11,026.05 |
| Oct17Jan18 | \$ 4,147,990.11 | N/A | N/A | \$ 12,750,162.78 | N/A | N/A | \$ 47,886.44 | N/A | N/A |
| Total 2017 | \$ 14,486,214.48 | \$ 14,402,684.79 | \$ 83,529.69 | \$ 35,547,403.91 | \$ 34,873,603.86 | \$673,800.05 | \$ 157,559.35 | \$ 146,387.67 | 11,171.69 |