



**ERCOT Monthly Operational Overview**  
(April 2016)

ERCOT Public  
May 15, 2016

# Grid Planning & Operations

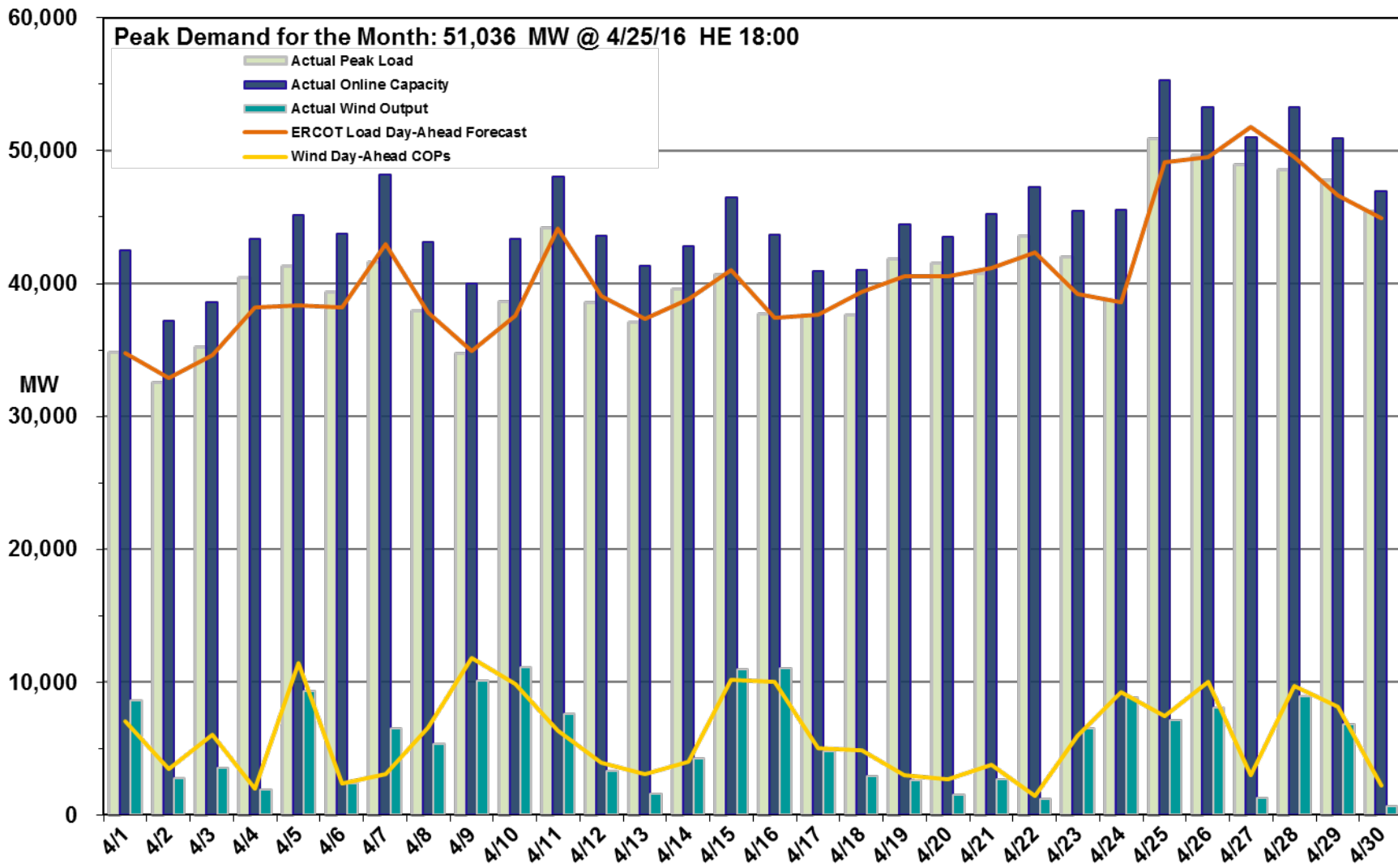
### Operations

- The peak demand of 51,036 MW on April 25th was more than the day-ahead mid-term forecast peak of 49,102 MW of the same operating period. In addition, it was greater than the April 2015 actual peak demand of 45,242 MW. The instantaneous peak load on April 25th was 51,175 MW.
- Day-ahead load forecast error for April was 2.50%
- ERCOT issued nine notifications
  - Eight advisories due to Physically Responsive Capability being less than 3,000 MW
  - One OCN due to a forecasted large wind down-ramp event.

### Planning Activities

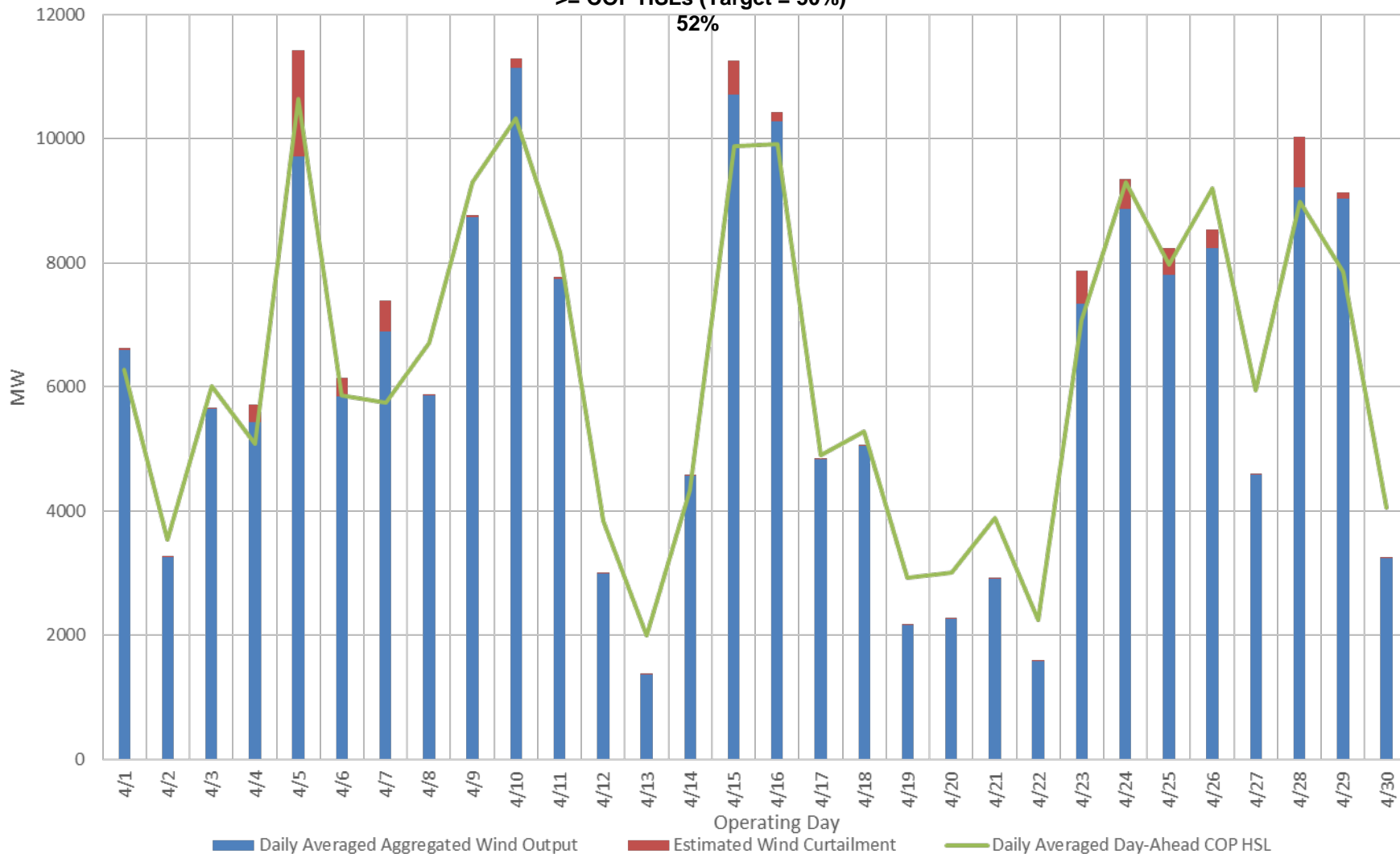
- 241 active generation interconnection requests totaling 56,579 MW, including 24,951 MW of wind generation, as of April 30, 2016. Five additional requests and an increase of 858 MW from March 31, 2016.
- 15,929 MW wind capacity in commercial operations on April 30, 2016.

# Daily Peak Demand: Hourly Average Actual vs. Forecast, Wind Day-Ahead COPs, & On-Line Capacity at Peak – April 2016

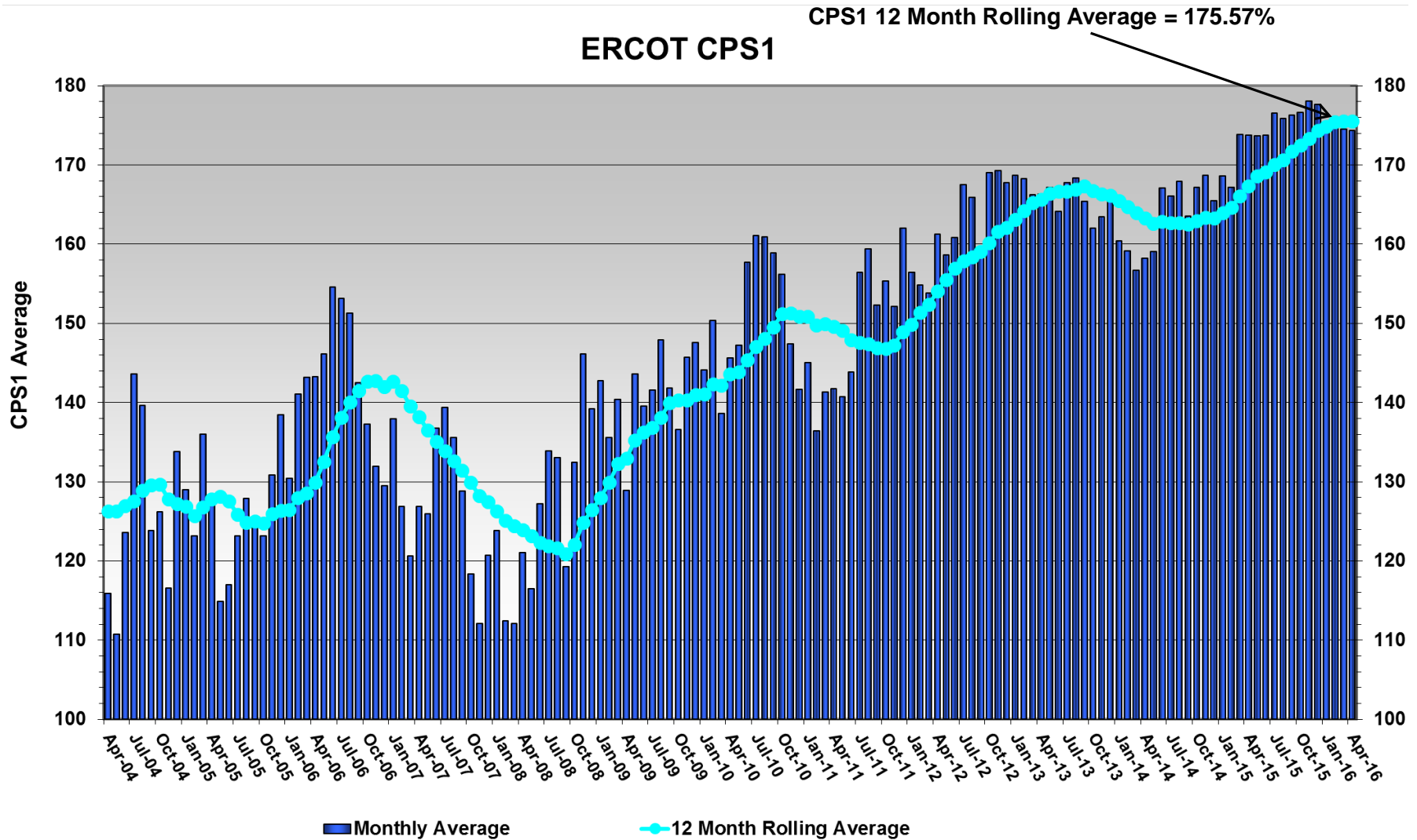


# Actual Wind Output plus Curtailments vs. Wind Day-Ahead COPs for All Hours – April 2016

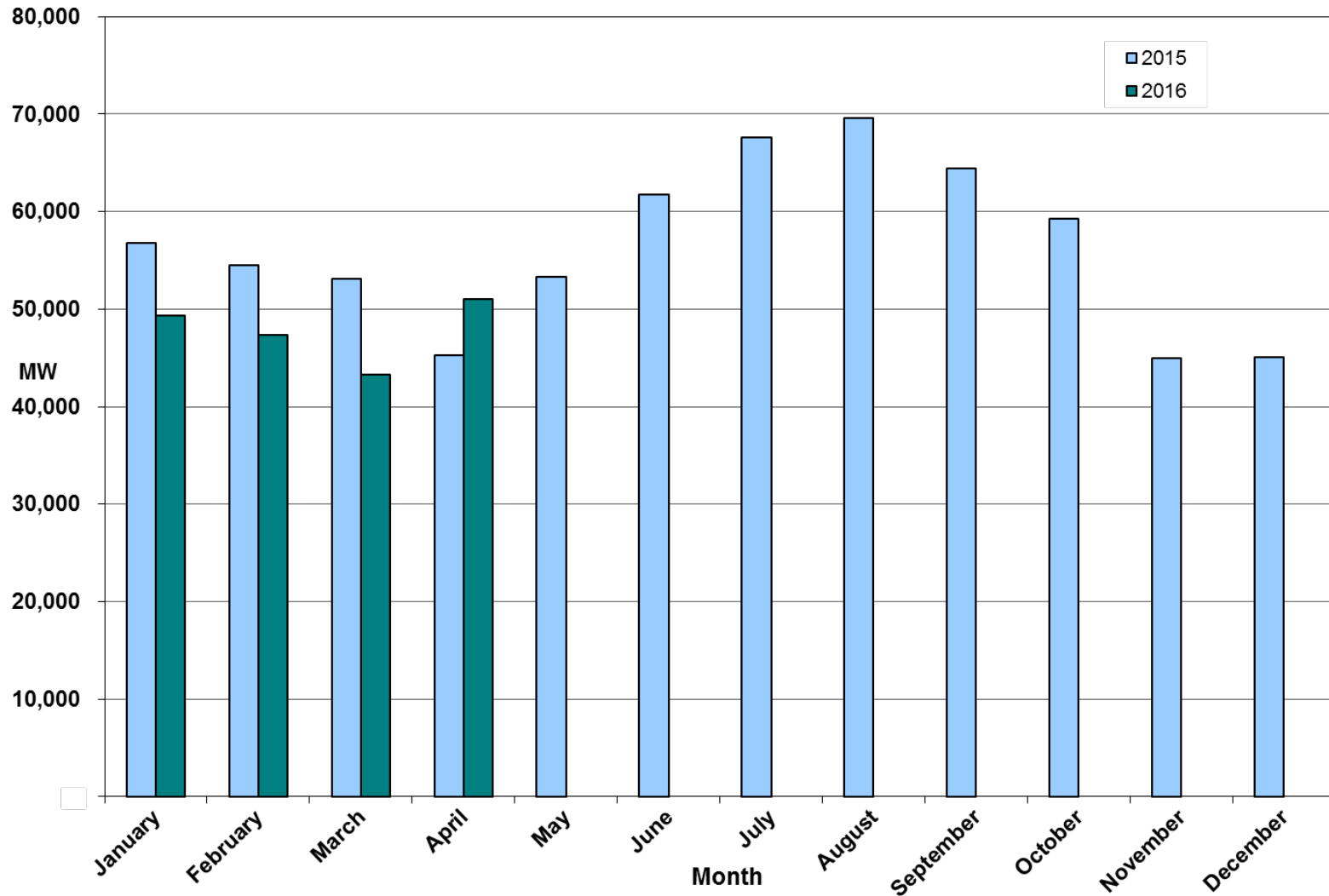
% of Hours when Estimated Uncurtailed Wind Output  
 >= COP HSLs (Target = 50%)



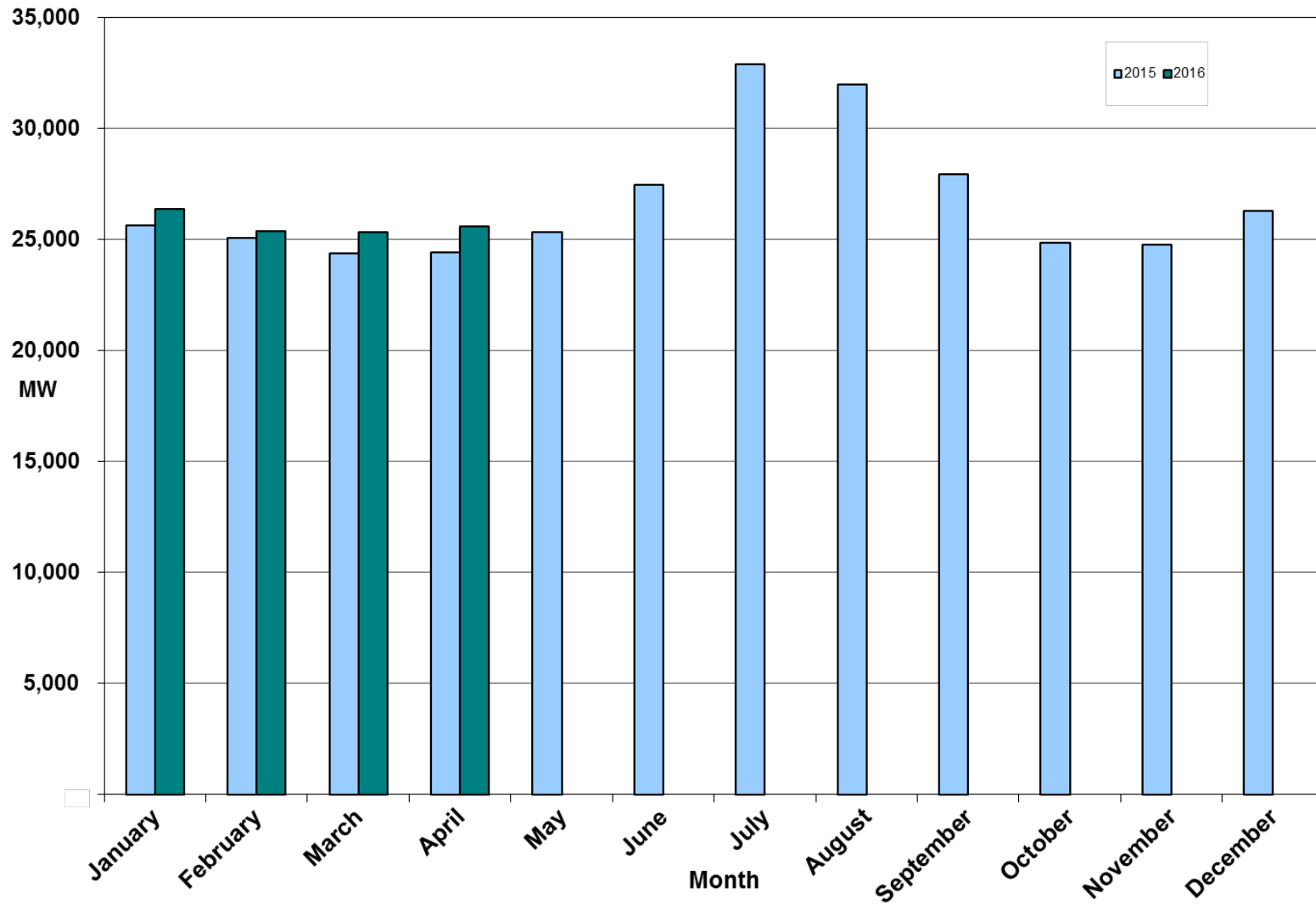
# ERCOT's CPS1 Monthly Performance – April 2016



# Monthly Peak Actual Demand – April 2016



# Monthly Minimum Actual Demand – April 2016





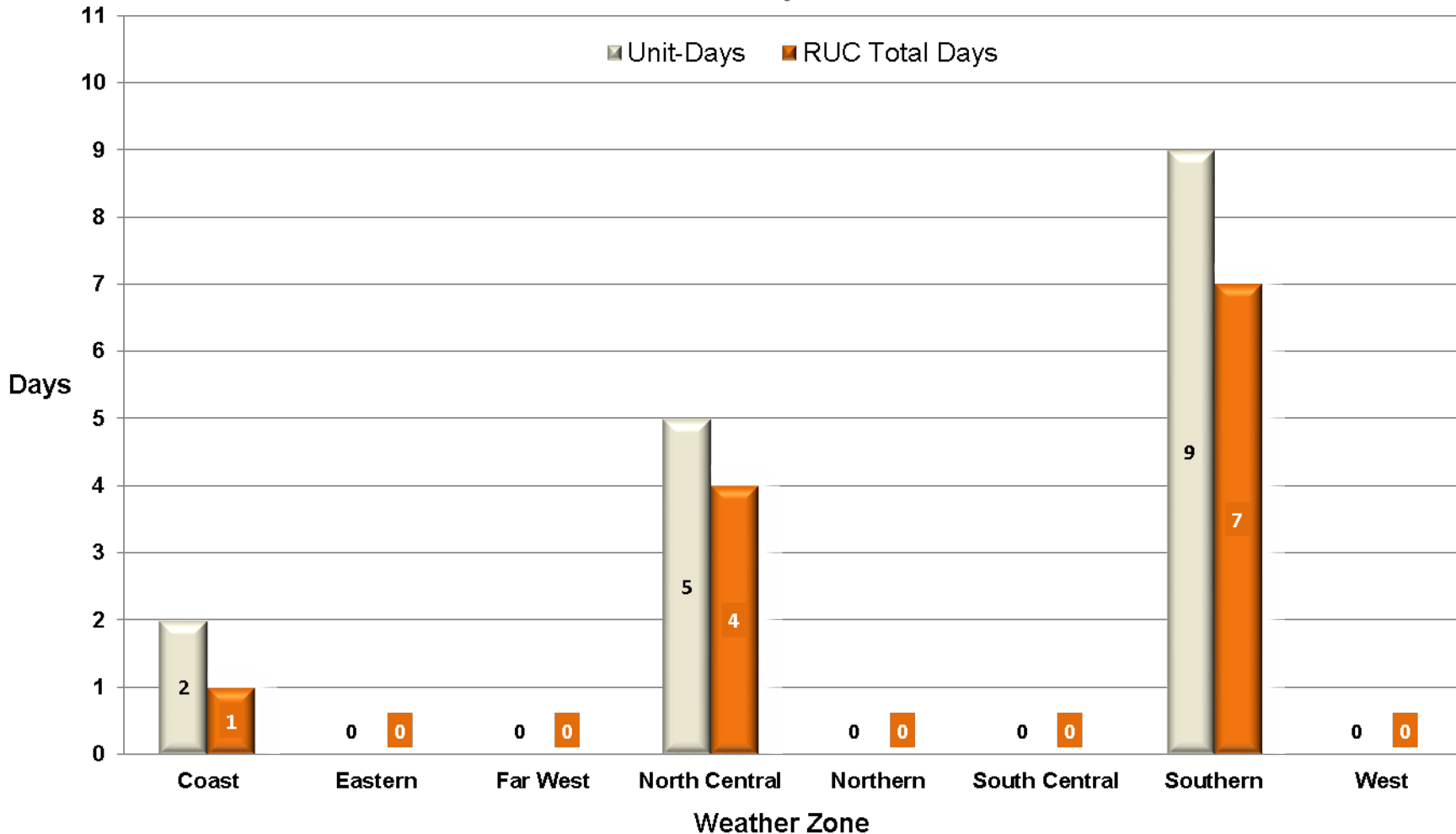
## Day-Ahead Load Forecast Performance – April 2016

**Mean Absolute Percent Error (MAPE) for ERCOT Mid-Term Load Forecast (MTLF)  
Run at 14:00 Day Ahead**

	<b>2013 MAPE</b>	<b>2014 MAPE</b>	<b>2015 MAPE</b>	<b>2016 MAPE</b>	<b>April 2016 MAPE</b>	
<b>Average Annual MAPE</b>	2.86	2.83	2.86	2.67	2.50	
<b>Lowest Monthly MAPE</b>	2.07	2.15	1.89	2.39	<b>Lowest Daily MAPE</b>	1.05 Apr 20
<b>Highest Monthly MAPE</b>	3.50	3.70	3.81	3.22	<b>Highest Daily MAPE</b>	6.10 Apr 18

# Reliability Unit Commitment (RUC) by Weather Zone in April 2016

## RUC Commitments by Weather Zone



## Generic Transmission Constraints (GTCs) – April 2016

GTCs	Apr-15	Feb-16	Mar-16	Apr-16	Last 12 Months Total Days  (May 15 – Apr 16)
	Days GTCs	Days GTCs	Days GTCs	Days GTCs	
North – Houston	0	0	2	0	5
Valley Import	0	0	1	0	4
Zorillo - Ajo	17	4	6	13	100
Panhandle	-	5	5	9	28
Laredo	-	0	0	0	4
Liston	-	24	26	25	99
Molina	-	0	0	0	20

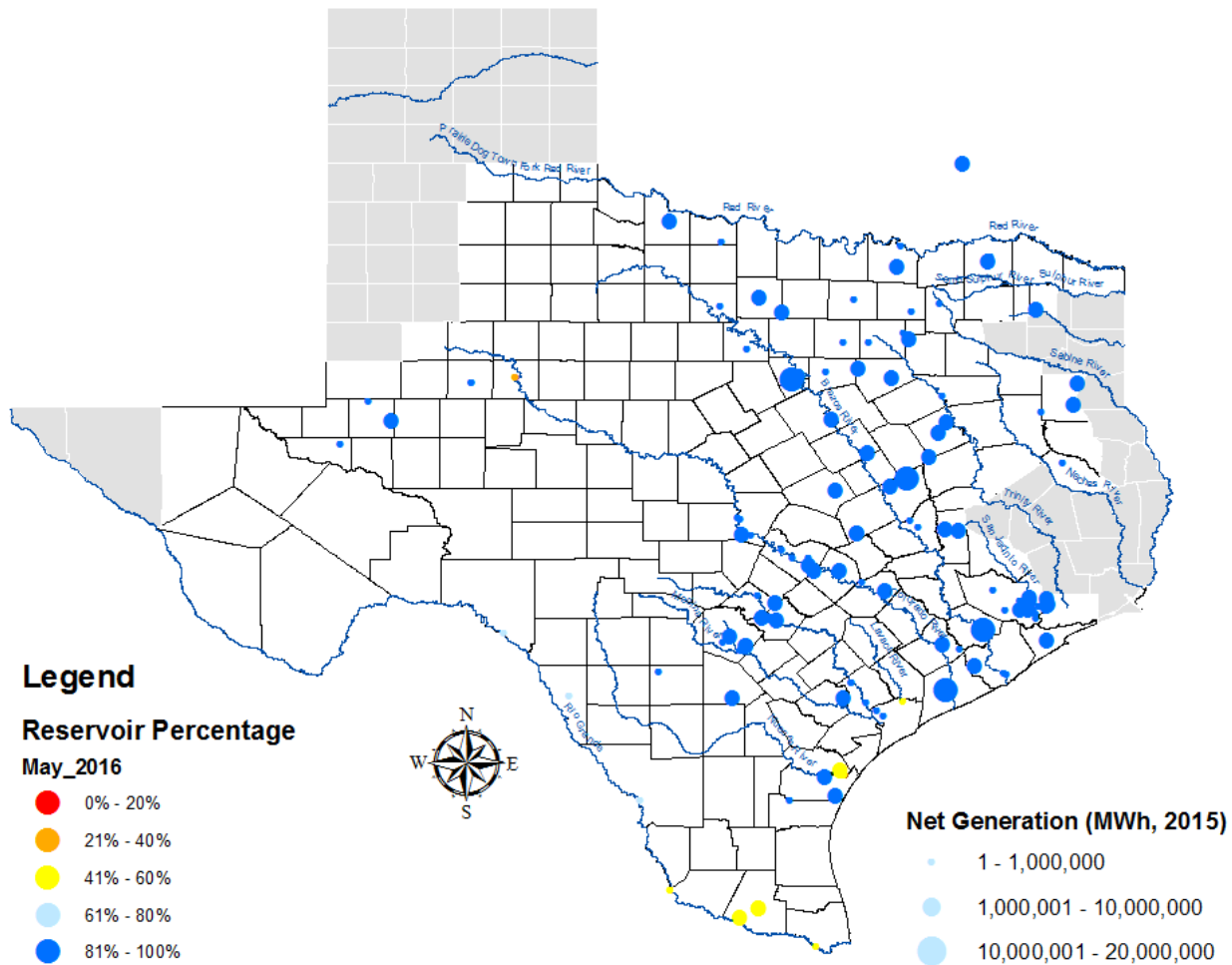
**GTC:** A transmission flow limit more constraining than a Transmission Element’s normal limit established to constrain flow between geographic areas of the ERCOT Transmission System that is used to enforce stability and voltage constraints that cannot be modeled directly in ERCOT’s transmission security analysis applications.

**Note:** This table lists how many times a constraint has been activated to avoid exceeding a GTC limit, it does not imply an exceedance of the GTC occurred.

## Advisories and Watches – April 2016

- Eight advisories issued due to Physically Responsive Capability being less than 3,000 MW.
  - Issued on 4/4, 4/12, 4/14, 4/17, 4/18, 4/19, 4/20, and 4/30
- One OCN issued due to a forecasted large wind down-ramp event.
  - Issued on 4/27

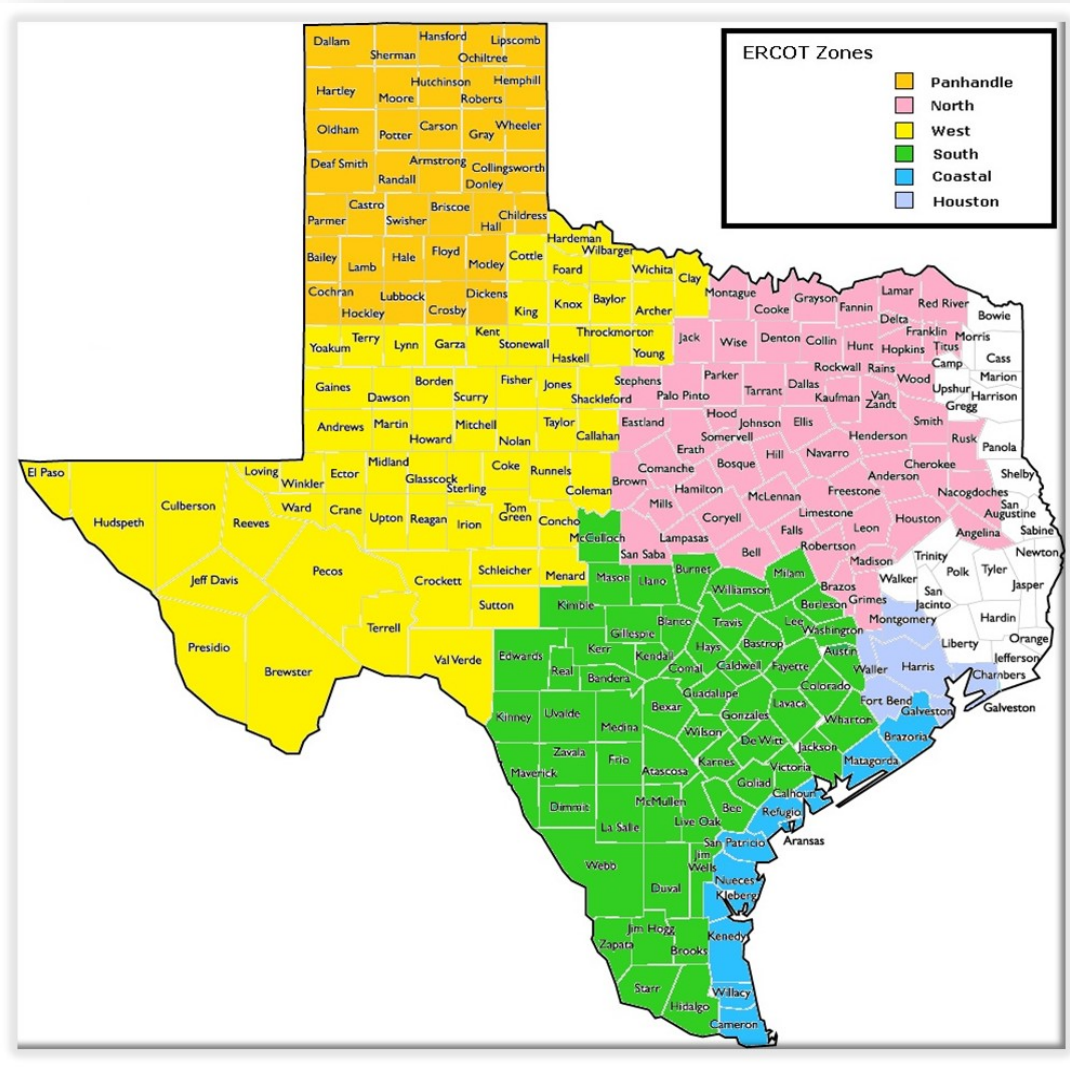
# Lake Levels Update – May 1, 2016



## Planning Summary – April 2016

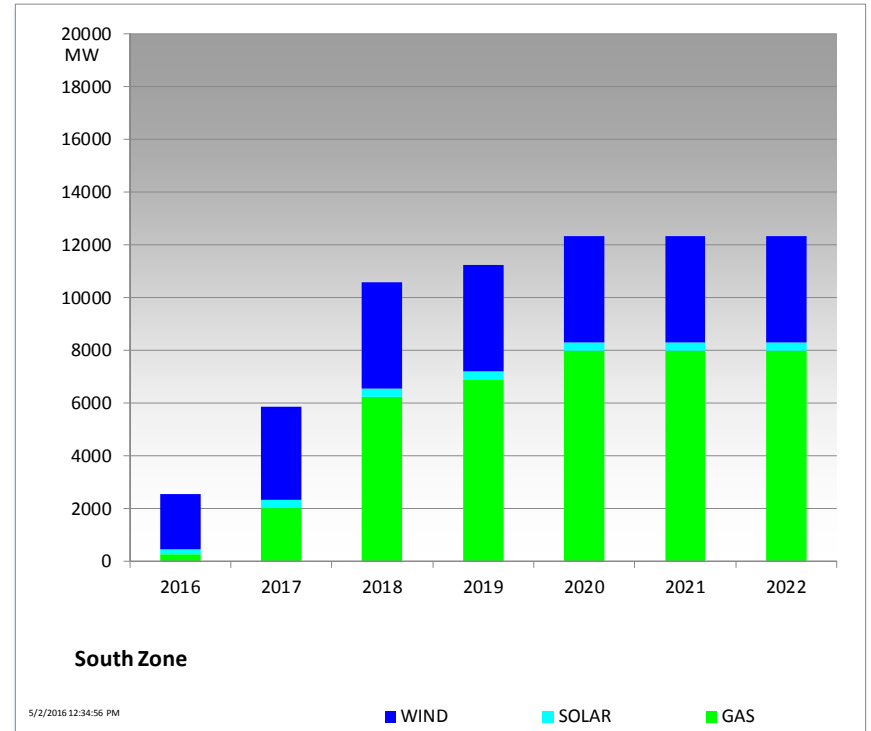
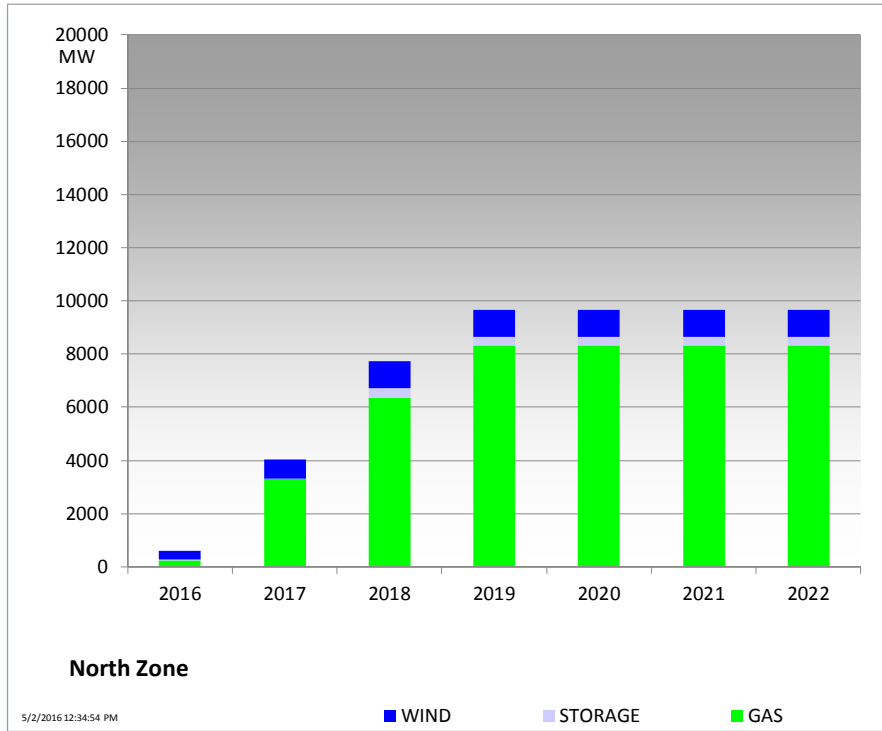
- ERCOT is currently tracking 241 active generation interconnection requests totaling 56,579 MW. This includes 24,951 MW of wind generation.
- ERCOT is currently reviewing proposed transmission improvements with a total cost of more than \$1.5 Billion.
- Transmission Projects endorsed in 2016 total \$58.5 Million.
- All projects (in engineering, routing, licensing, and construction) total approximately \$6.81 Billion.
- Transmission Projects energized in 2016 total about \$149 Million.

# Mapping of Counties to ERCOT Zones – April 2016



# Cumulative MW Capacity of Interconnection Requests by Zone

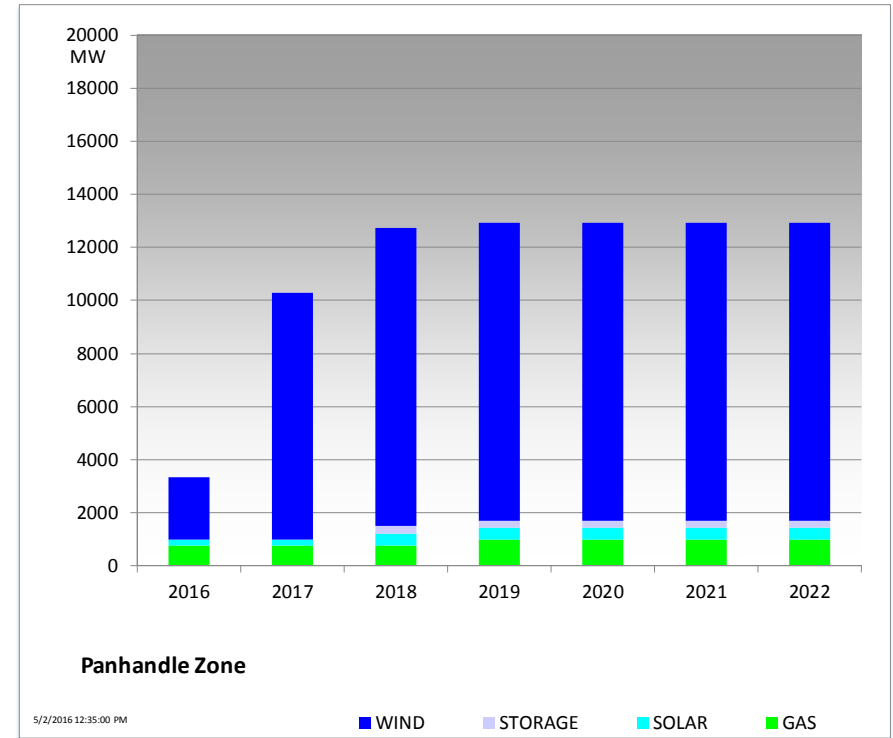
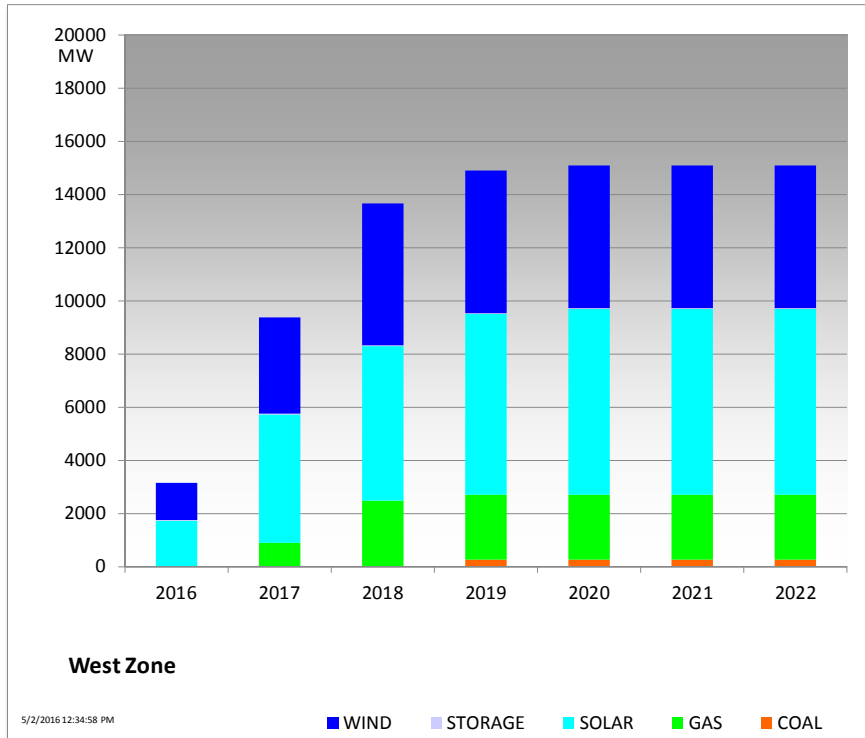
## April 2016





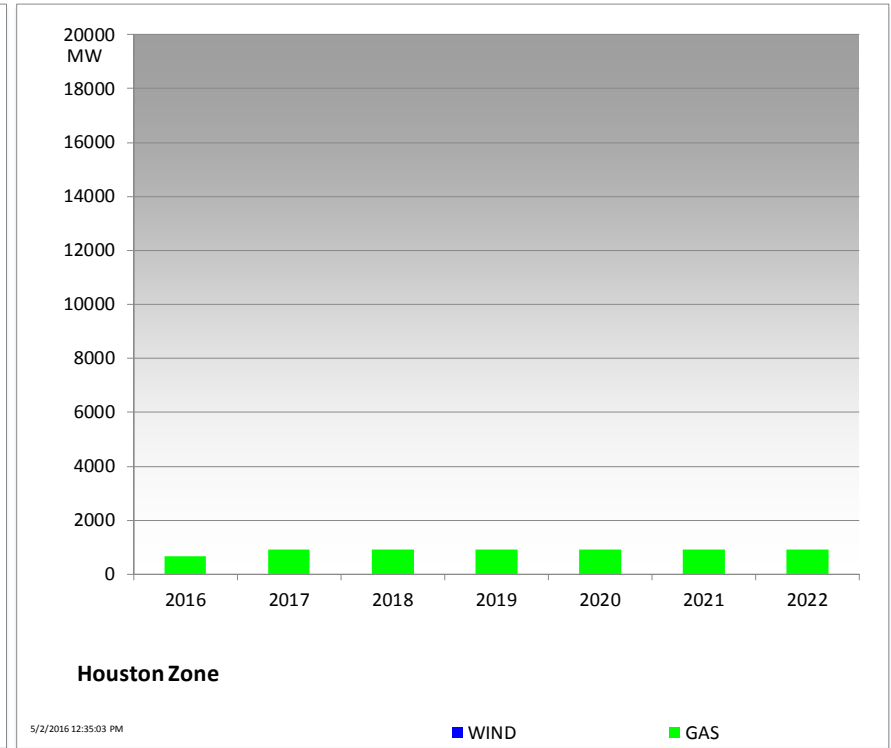
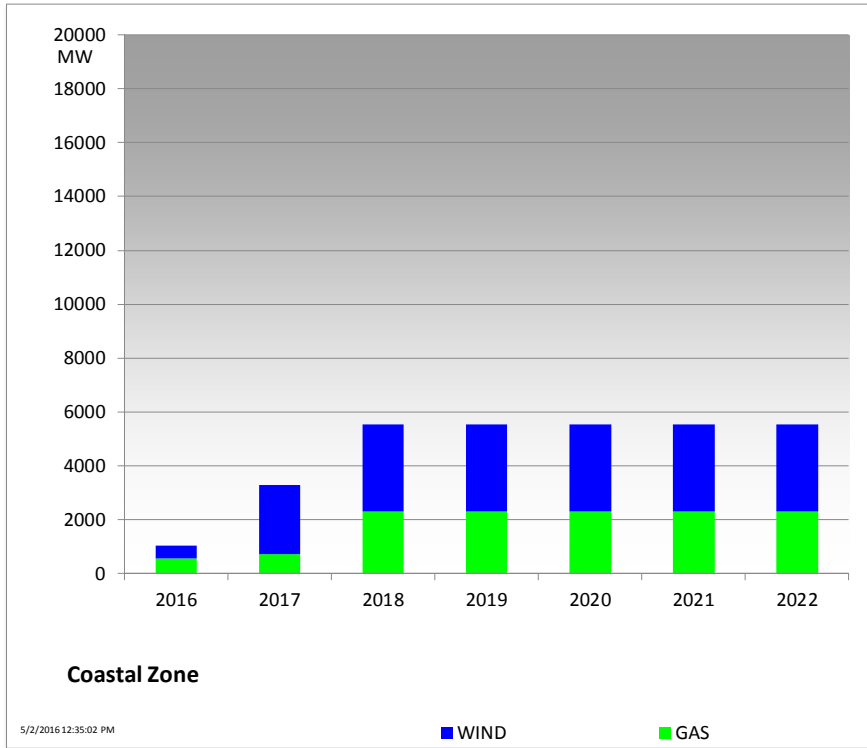
# Cumulative MW Capacity of Interconnection Requests by Zone

## April 2016

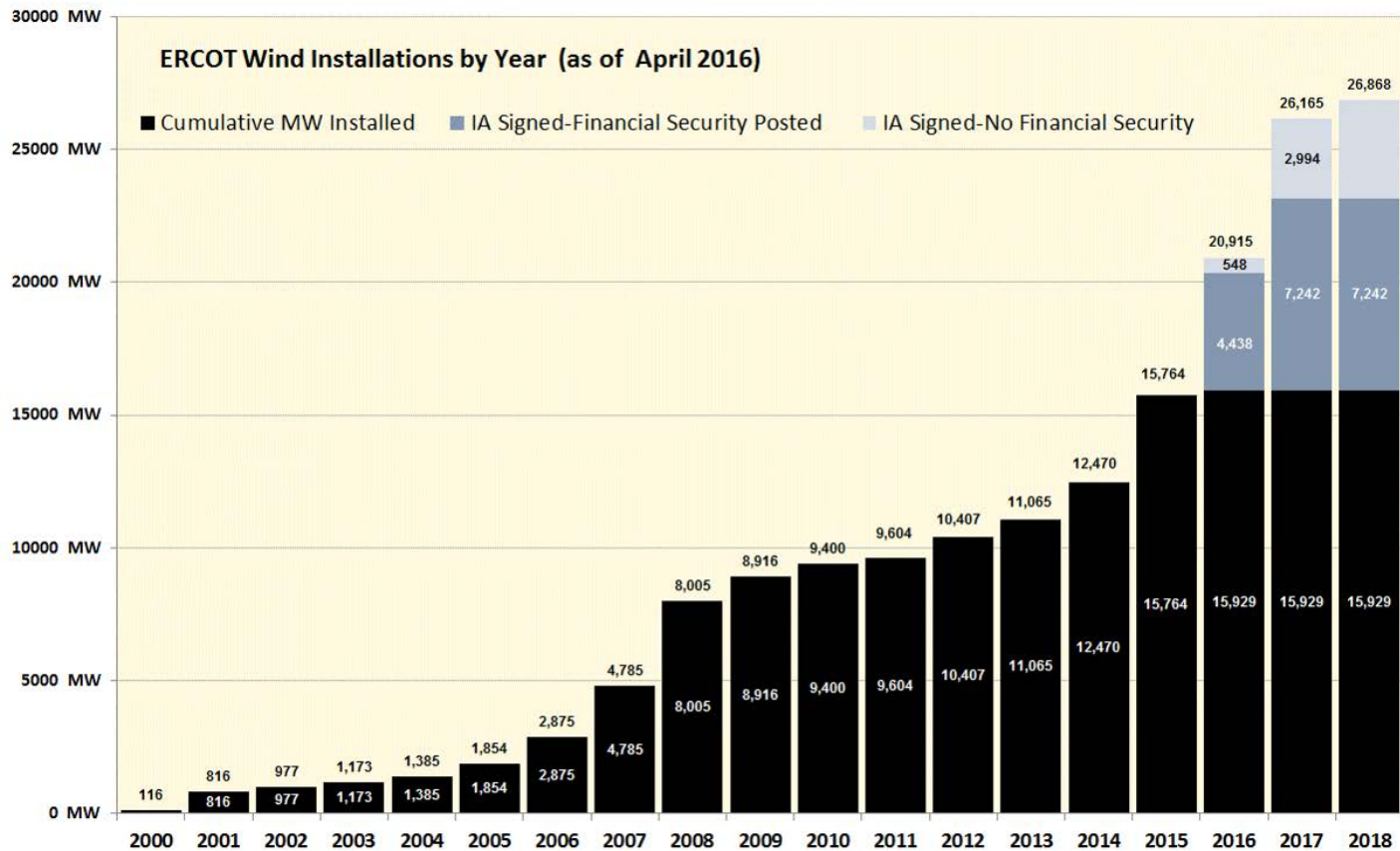


# Cumulative MW Capacity of Interconnection Requests by Zone

## April 2016



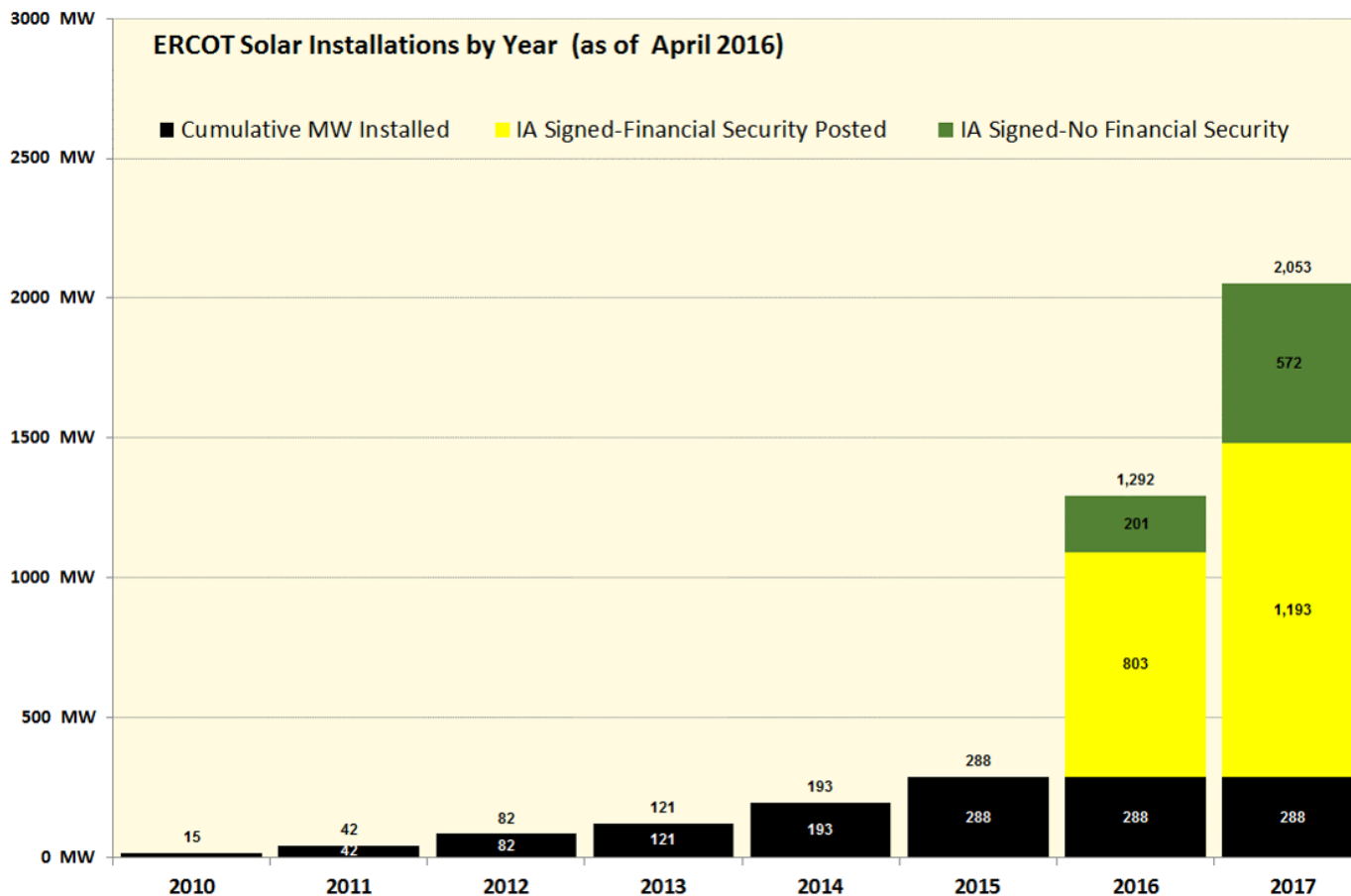
# Wind Generation – April 2016



The data presented here is based upon the latest registration data provided to ERCOT by the resource owners and can change without notice. Any capacity changes will be reflected in current and subsequent years' totals. Scheduling delays will also be reflected in the planned projects as that information is received. This chart reflects planned units in the calendar year of submission rather than installations by peak of year shown.

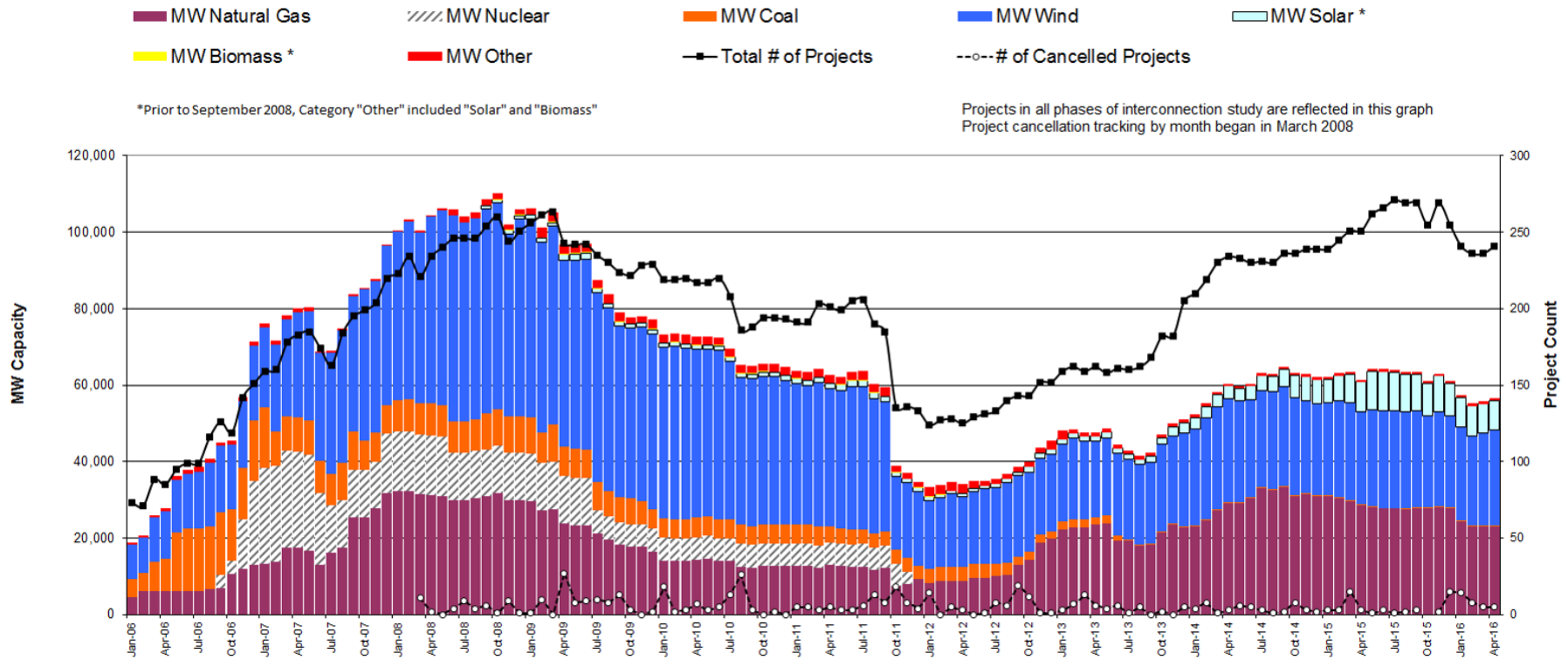
Financial security posted for funding interconnection facilities does not include CREZ security deposits, which are refunded to the Interconnecting Entity when an IA is signed.

# Solar Generation – April 2016

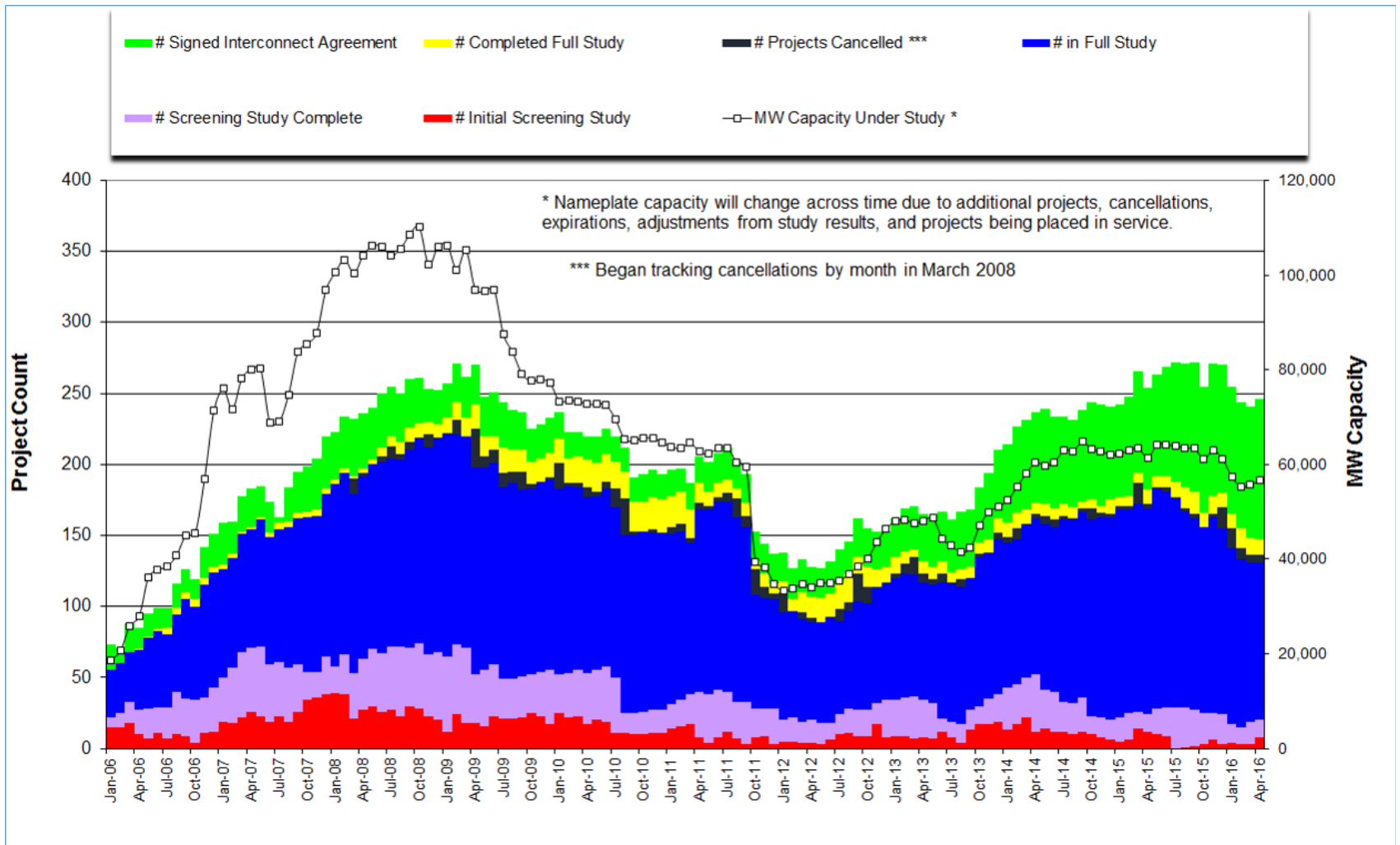


The data presented here is based upon the latest registration data provided to ERCOT by the resource owners and can change without notice. Any capacity changes will be reflected in current and subsequent years' totals. Scheduling delays will also be reflected in the planned projects as that information is received. This chart reflects planned units in the calendar year of submission rather than installations by peak of year shown.

# Generation Interconnection Activity by Fuel – April 2016

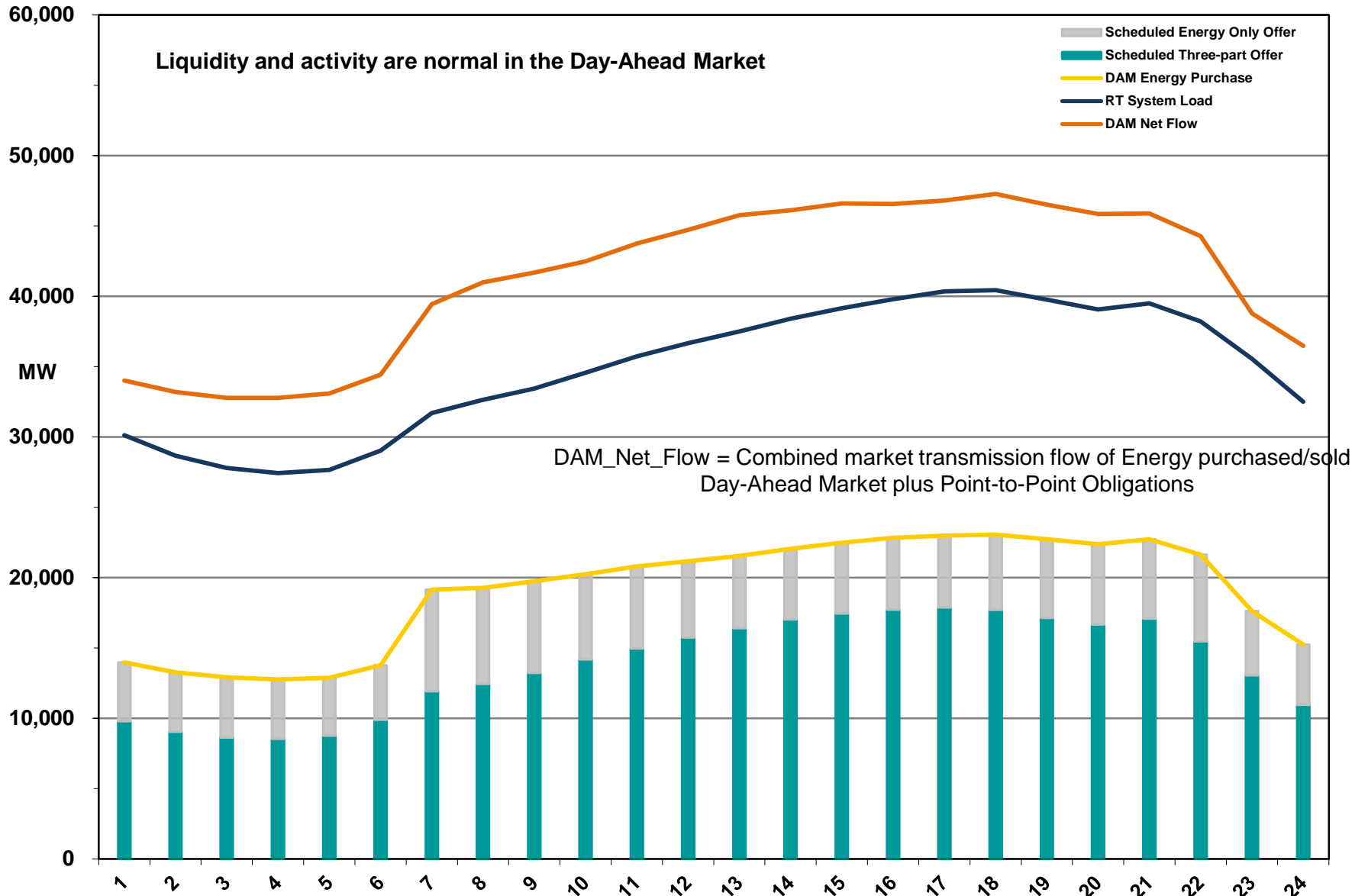


# Generation Interconnection Activity by Project Phase – April 2016



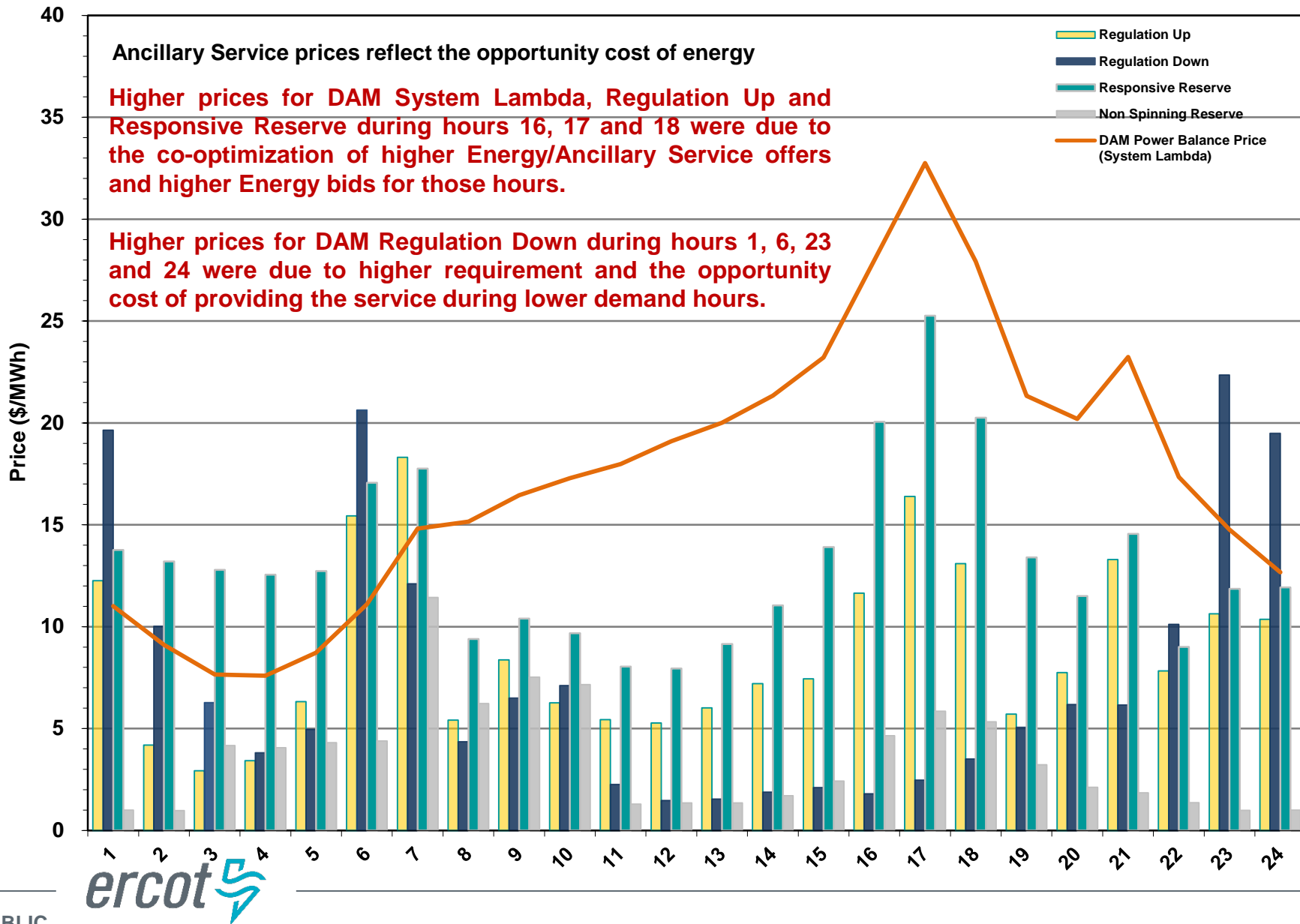
# Market Operations

# Day-Ahead Schedule (Hourly Average) – April 2016

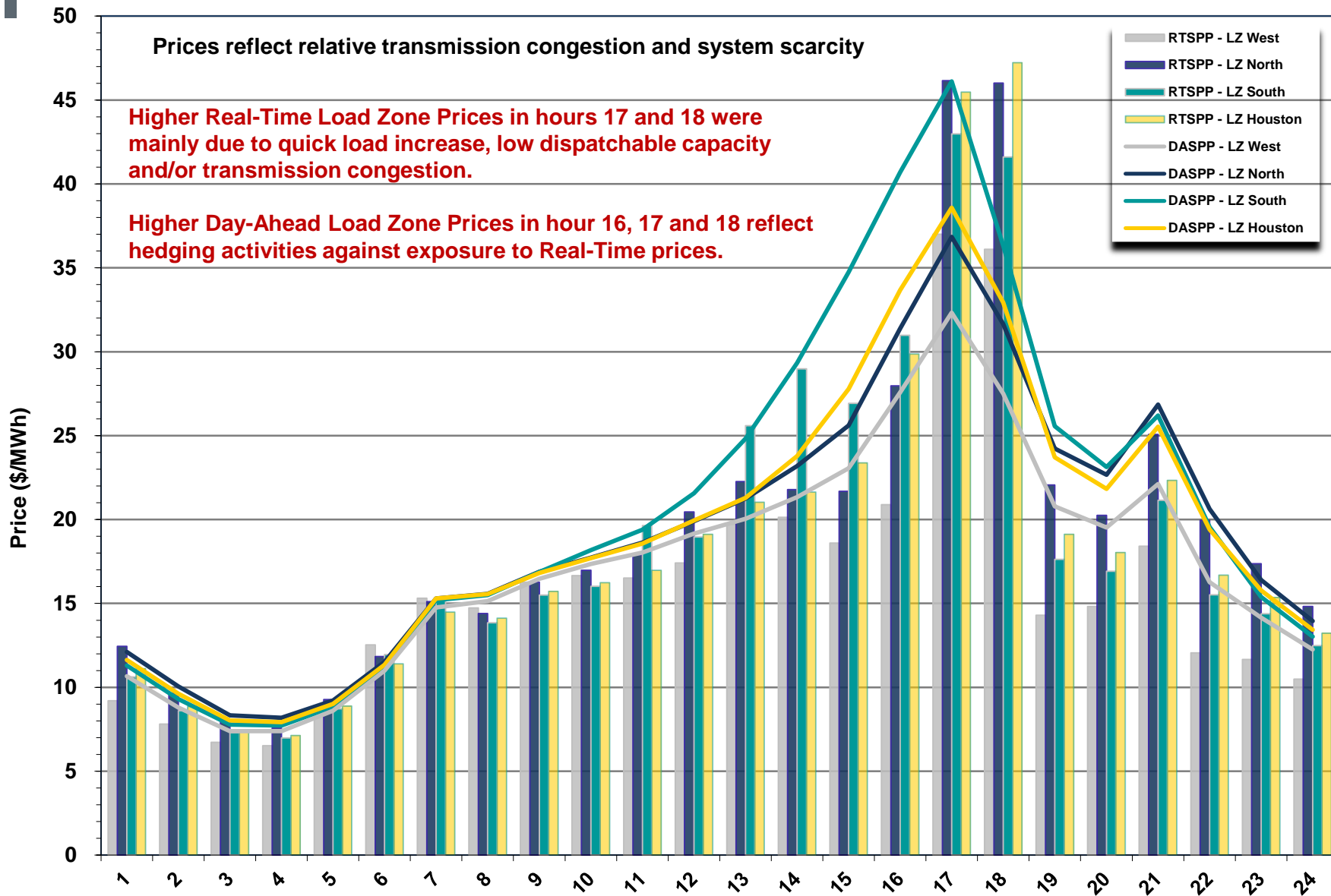




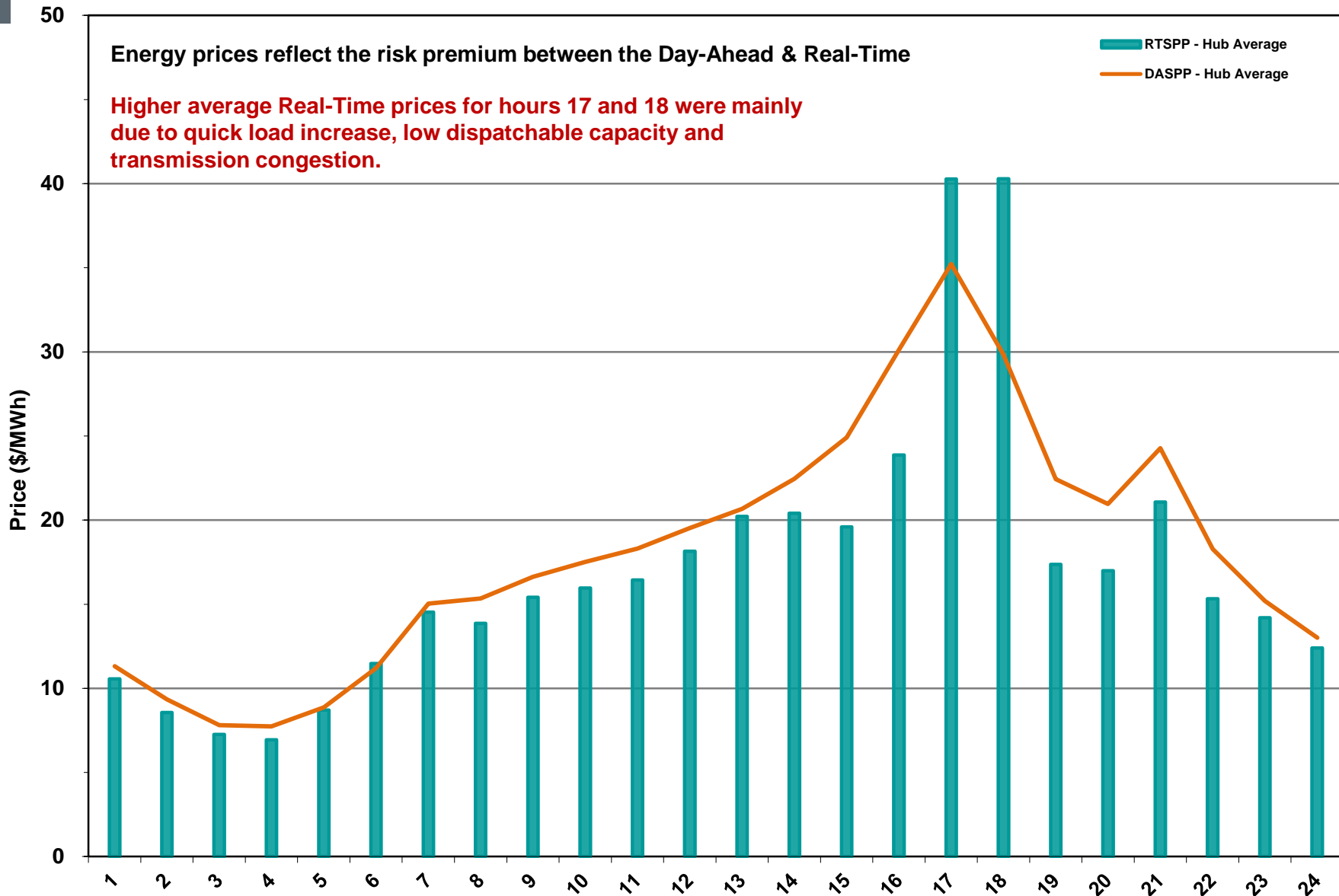
# Day-Ahead Electricity And Ancillary Service Hourly Average Prices – April 2016



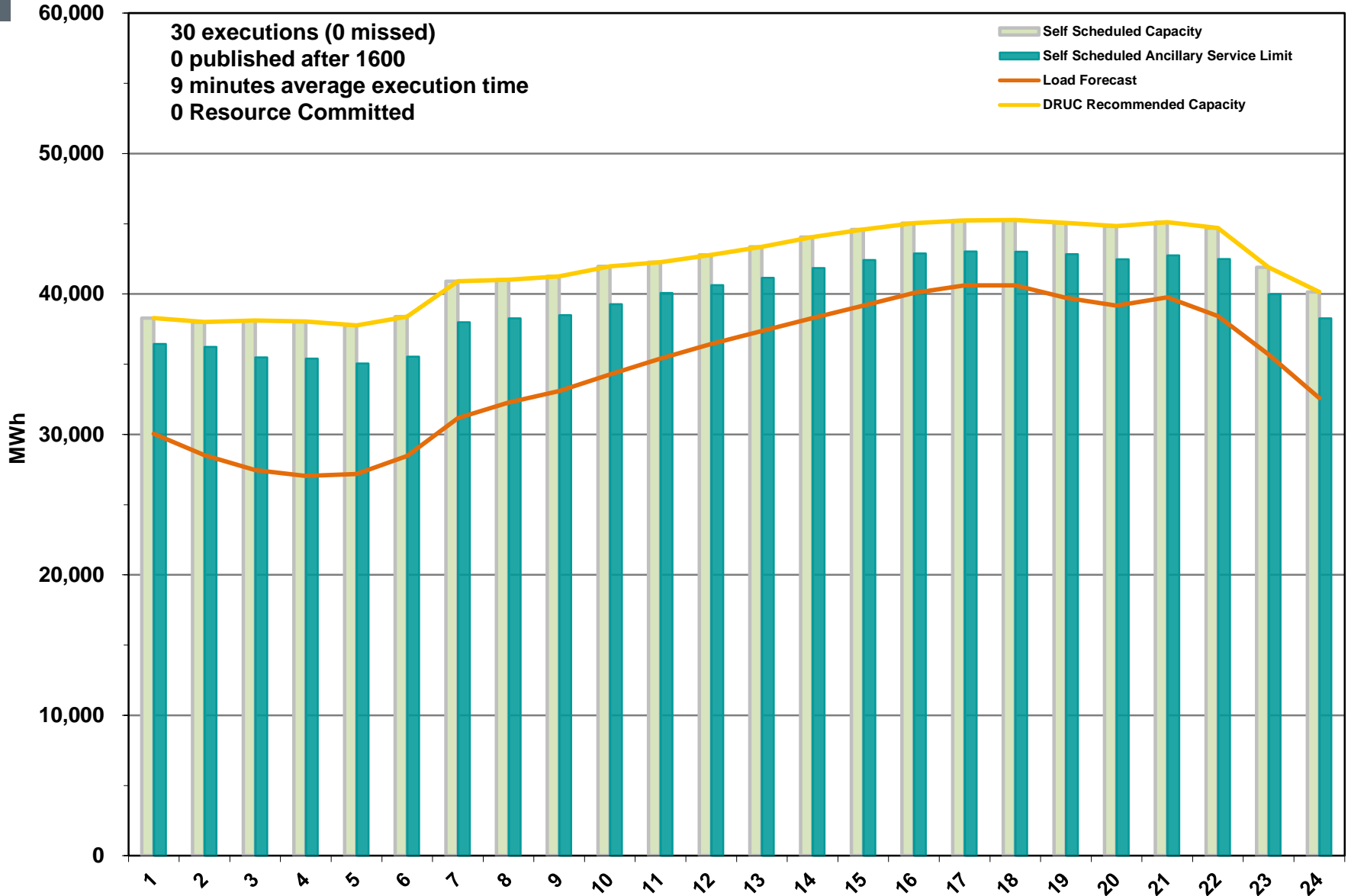
# Day-Ahead Vs Real-Time Load Zone SPP (Hourly Average) – April 2016



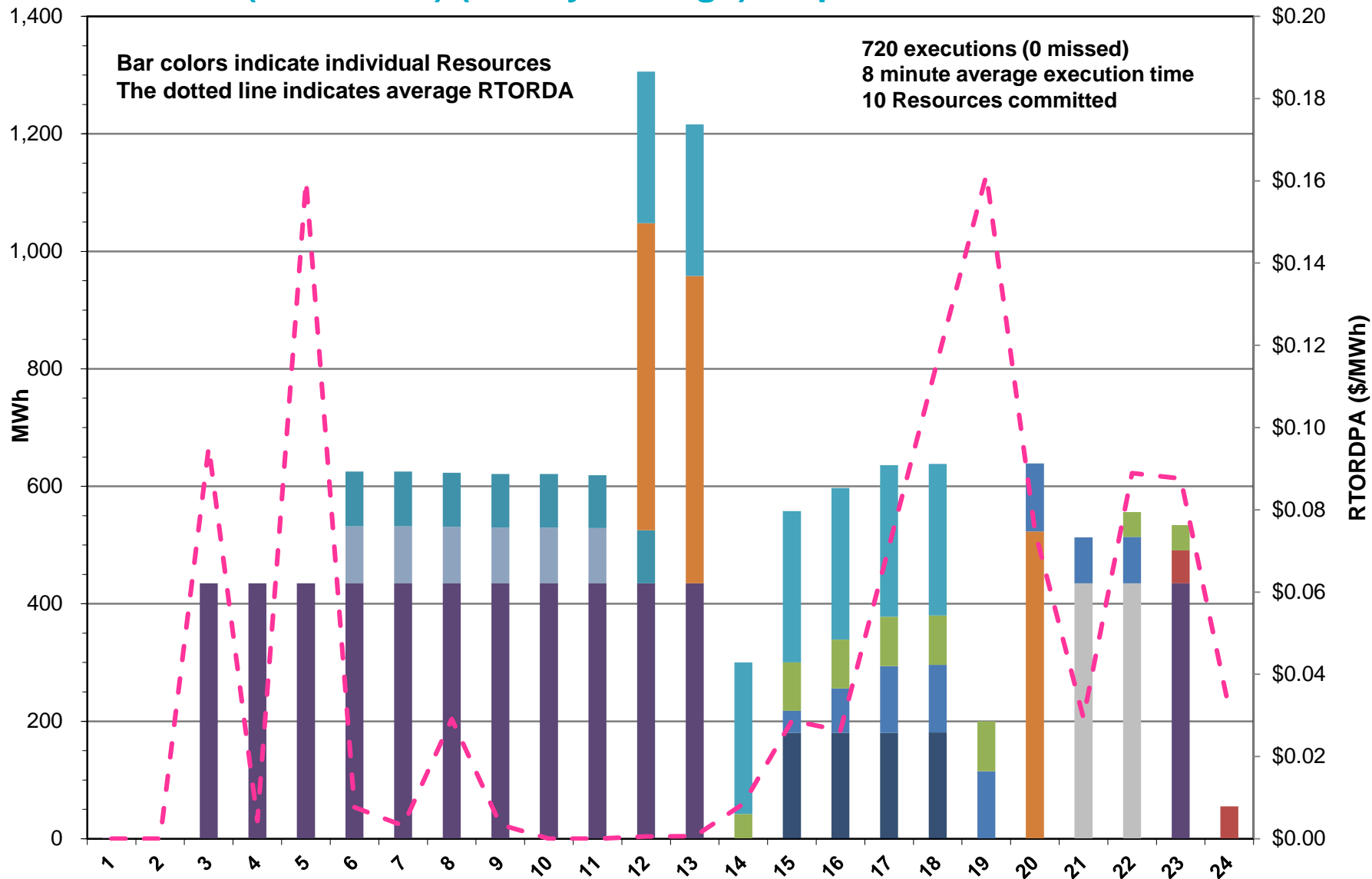
# Day-Ahead Vs Real-Time Hub Average SPP (Hourly Average) – April 2016



# DRUC Monthly Summary (Hourly Average) – April 2016



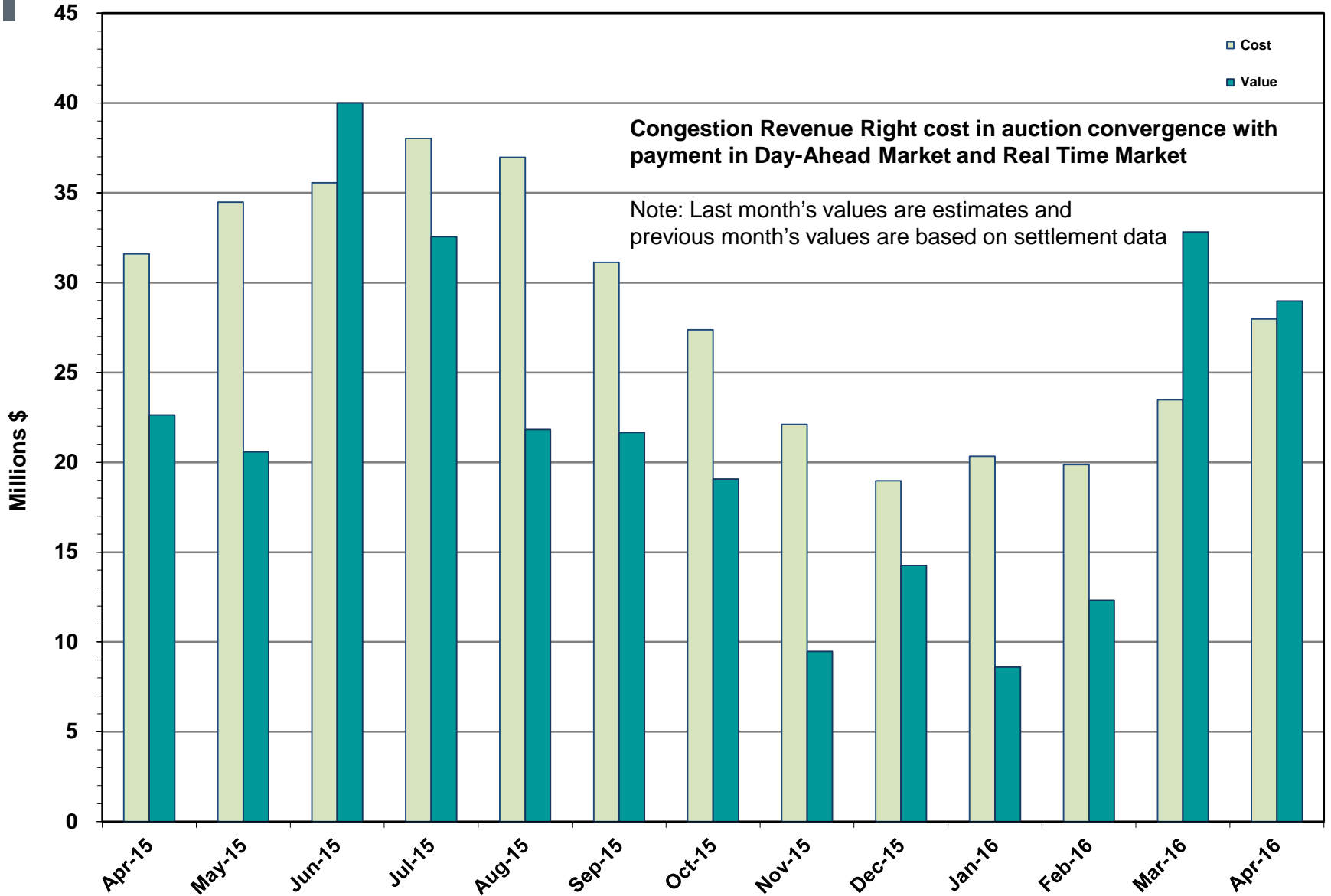
# HRUC Monthly Summary and Real Time On-Line Reliability Deployment Price Adder (RTORDPA) (Hourly Average) – April 2016



## Non-Spinning Reserve Service Deployment – April 2016

Deployment Start Time	Deployment End Time	Deployment Duration (Hours)	Max Deployment (MW)	Reason
4/22/2016 15:10	4/22/2016 22:00	6.82	78	Local Congestion
4/25/2016 16:15	4/25/2016 20:00	3.74	78	Local Congestion
4/30/2016 17:08	4/30/2016 18:02	0.89	155	Low Available Capacity

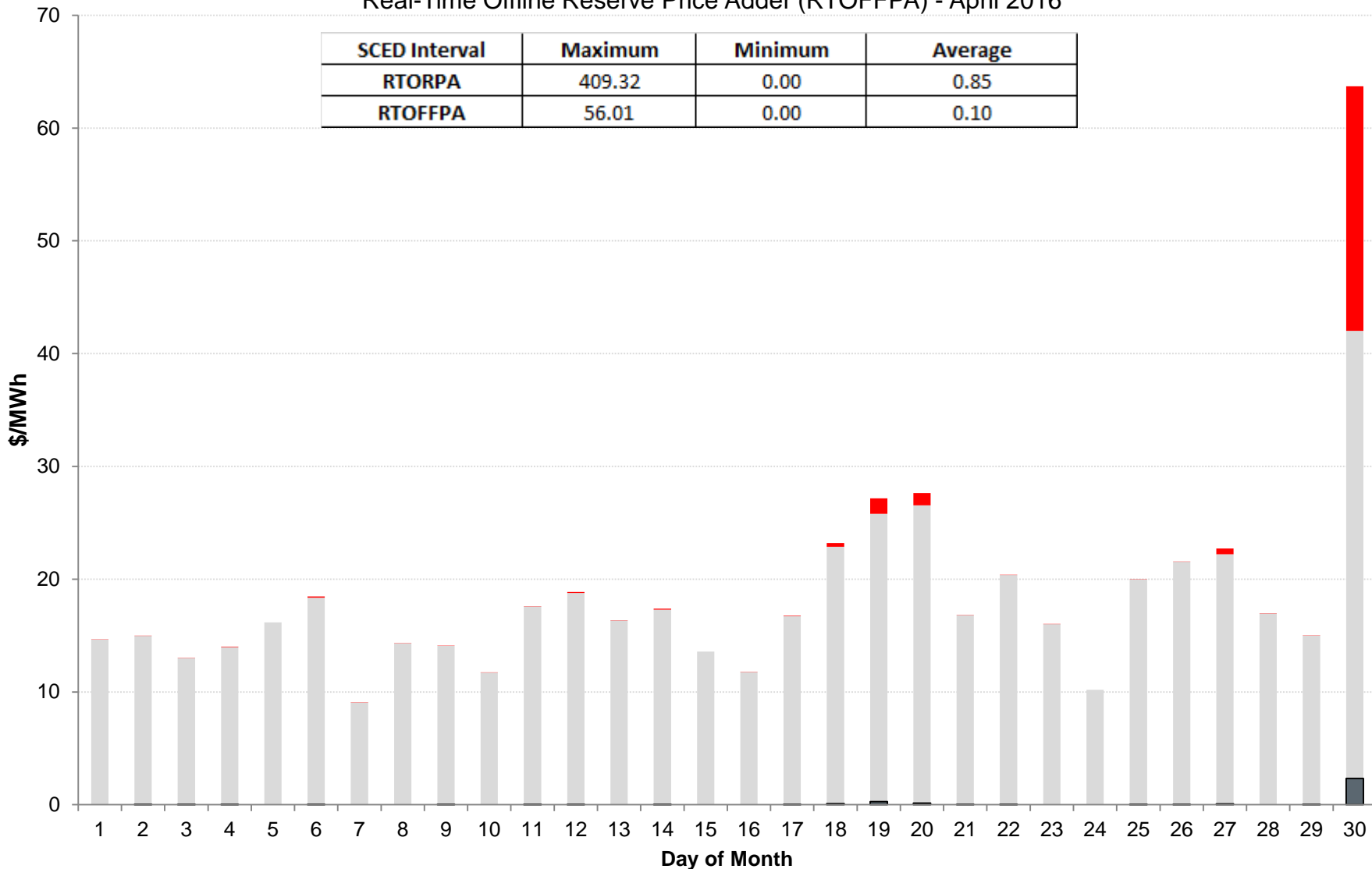
# CRR Price Convergence – April 2016



# ORDC Price Adder (Daily Average) – April 2016

Average Daily Real-Time System Lambda, Real-Time On-Line Reserve Price Adder (RTORPA), and Real-Time Offline Reserve Price Adder (RTOFFPA) - April 2016

SCED Interval	Maximum	Minimum	Average
RTORPA	409.32	0.00	0.85
RTOFFPA	56.01	0.00	0.10



■ AVERAGE\_OF\_SYSTEM\_LAMBDA ■ AVERAGE\_OF\_RTORPA ■ AVERAGE\_OF\_RTOFFPA





## ERS Procurement for – February 2016 – May 2016

	TP1	TP2	TP3	TP4	TP5	TP6
Non Weather-Sensitive ERS-10 MW	366.951	399.284	401.933	392.785	376.621	344.994
Non Weather-Sensitive ERS-30 MW	507.802	587.778	571.071	556.473	512.965	443.774
Weather-Sensitive ERS-10 MW	0	0	0	0	0	0
Weather-Sensitive ERS-30 MW	0	0	0	0	0	0
Total MW Procured	874.753	987.062	973.004	949.258	889.586	788.768
Clearing Price	\$19.87	\$10.75	\$1.86	\$18.84	\$11.67	\$2.25

**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.

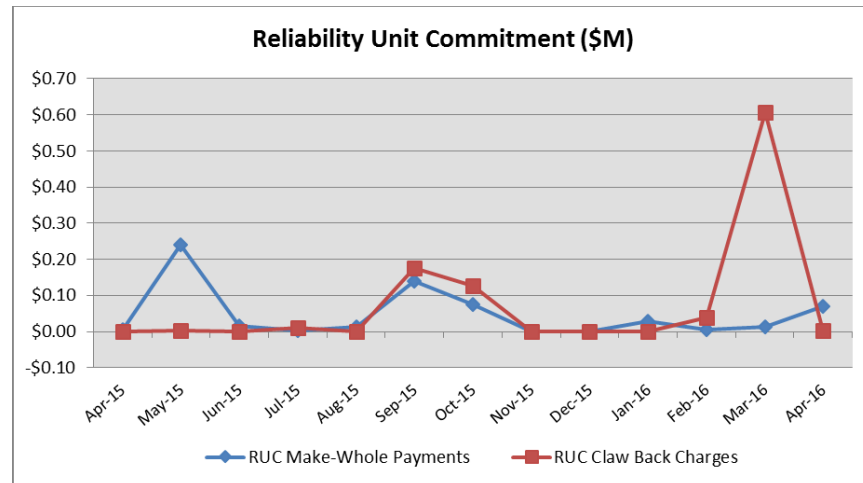
Time Period 4      Hours Ending 1700 - 1900 (4:00:00 p.m. to 7:00:00 p.m.) Monday through Friday except ERCOT Holidays.

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

## Reliability Services – April 2016

Reliability Unit Commitment (RUC)	\$ in Millions
RUC Make-Whole Payments	(\$0.07)
RUC Clawback Charges	\$0.00
<b>RUC Commitment Settlement</b>	<b>(\$0.07)</b>
RUC Capacity Short Charges	\$0.07
RUC Make-Whole Uplift	\$0.00
<b>RUC Commitment Cost Allocation</b>	<b>\$0.07</b>
RUC Decommitment Payments	\$0.00



RUC Make-Whole Payments were \$0.07M in April 2016.  
RUC Clawback Charges were \$0.00M.

There was \$0.00M allocated directly to load in April 2016, compared to:

- \$0.61M in March 2016
- \$0.00M in April 2015

## Capacity Services – April 2016

<b>Capacity Services</b>	<b>\$ in Millions</b>
<b>Regulation Up Service</b>	\$2.21
<b>Regulation Down Service</b>	\$1.96
<b>Responsive Reserve Service</b>	\$24.04
<b>Non-Spinning Reserve Service</b>	\$4.34
<b>Black Start Service</b>	\$0.62
<b>Voltage Services - Reactive Power</b>	\$0.00
<b>Voltage Services - Lost Opportunity</b>	\$0.00
<b>Total Charges</b>	<b>\$33.17</b>

Capacity Services costs decreased from last month and increased from April 2015.

April 2016 cost was \$33.17M, compared to:

- A charge of \$33.91M in March 2016
- A charge of \$32.51M in April 2015

## Energy Settlement – April 2016

Day-Ahead Market Energy Settlement	\$ in Millions
Energy Purchases	\$281.09
Point to Point Obligation Purchases	\$26.42
RMR Day-Ahead Revenue	\$0.00
Energy Sales	(\$275.19)
Day-Ahead Congestion Rent	\$32.32
Day-Ahead Market Make-Whole Payments	(\$0.07)

Day-Ahead Market and Real-Time Market energy settlement activity increased from last month and decreased from April 2015.

Real-Time Market Energy Settlement	\$ in Millions
Energy Imbalance at a Resource Node	(\$238.07)
Energy Imbalance at a Load Zone	\$410.49
Energy Imbalance at a Hub	(\$138.58)
Real Time Congestion from Self Schedules	\$0.29
Block Load Transfers and DC Ties	(\$2.48)
Impact to Revenue Neutrality	\$31.65
Emergency Energy Payments	(\$0.03)
Base Point Deviation Charges	\$0.23
Real-Time Metered Generation (MWh in millions)	24.98

## Congestion Revenue Rights (CRR) – April 2016

	\$ in Millions
Annual Auction	(\$23.90)
Monthly Auction	(\$4.09)
<b>Total Auction Revenue</b>	<b>(\$27.99)</b>
Day-Ahead CRR Settlement	(\$28.98)
Day-Ahead CRR Short-Charges	\$0.49
Day-Ahead CRR Short-Charges Refunded	(\$0.49)
Real-Time CRR Settlement	\$0.00
Real-Time CRR Short-Charges	\$0.00
Real-Time CRR Short-Charges Refunded	\$0.00
<b>Total CRR Funding</b>	<b>(\$28.98)</b>
Day-Ahead Point to Point Obligations Settlement	\$26.42
Real-Time Point to Point Obligation Settlement	(\$34.40)
<b>Net Point to Point Obligation Settlement</b>	<b>(\$7.98)</b>

Congestion Revenue Rights settlement payments were fully funded and excess funds were allocated to Load.

Point to Point Obligations settled with a net credit of \$7.98M compared to a net credit of \$13.52M last month.

## CRR Balancing Account Fund – April 2016

<b>CRR Balancing Account Fund</b>	<b>\$ in Millions</b>
<b>Beginning Balance for the Month</b>	\$10.00
<b>CRR Balancing Account Credit Total</b>	\$3.83
<b>CRR PTP Option Award Charges</b>	\$0.05
<b>Day-Ahead CRR Short-Charges Refunded</b>	(\$0.49)
<b>Load Allocated CRR Amount</b>	(\$3.39)
<b>Total Fund Amount</b>	\$10.00

ERCOT implemented the rolling CRR Balancing Account Fund beginning with Operating Month December 2014.

In the month of April 2016, the fund cap remained at \$10M and excess funds of \$3.39M were allocated to Load.

# Revenue Neutrality – April 2016

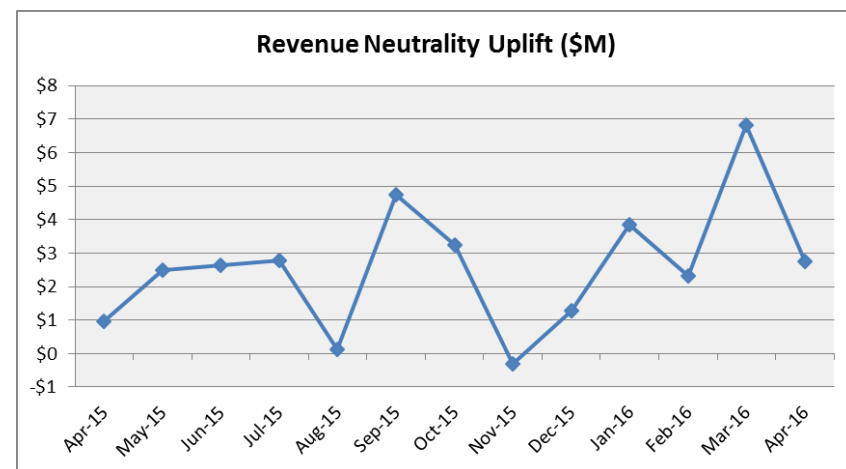
## Revenue Neutrality Settlement

	\$ in Millions
Real-Time Point to Point Obligation Settlement	(\$34.40)
Real-Time Point to Point Options and Options with Refund Settlement	\$0.00
Real-Time Energy Imbalance Settlement	\$33.84
Real-Time Congestion from Self-Schedules Settlement	\$0.29
DC Tie & Block Load Transfer Settlement	(\$2.48)
<b>Charge to Load</b>	<b>\$2.75</b>

Revenue Neutrality charges to load decreased compared to last month and increased compared to April 2015.

April 2016 was a charge of \$2.75M, compared to:

- \$6.83M charge in March 2016
- \$0.97M charge in April 2015



## Real-Time Ancillary Service Imbalance (ORDC) – April 2016

<b>Real-Time Ancillary Service Imbalance</b>	\$ in Thousands
<b>Real-Time AS Imbalance Payment Amount</b>	\$1.01
<b>Load Allocated AS Imbalance Revenue Neutrality Amount</b>	(\$1.02)
<b>Total Charges</b>	(\$1.02)

In April 2016, total charges to QSEs w/an Ancillary Service Imbalance were \$1013, while total credits in March 2016 were \$82,365.

8 of the 30 days in April had settlement dollars equal to \$0 for the day.

21 days in April with settlement greater than \$0 were settled as a net credit to QSEs w/ an Ancillary Service Imbalance and as a charge to QSEs representing load.

One day in April was settled as a net charge to QSEs w/ an Ancillary Service Imbalance and as a credit to QSEs representing load.

The highest payment to QSEs w/an Ancillary Service Imbalance occurred on April 19<sup>th</sup> in the amount of \$42,425.

The highest payment to QSEs representing load occurred on April 30<sup>th</sup> in the amount of \$112,648.



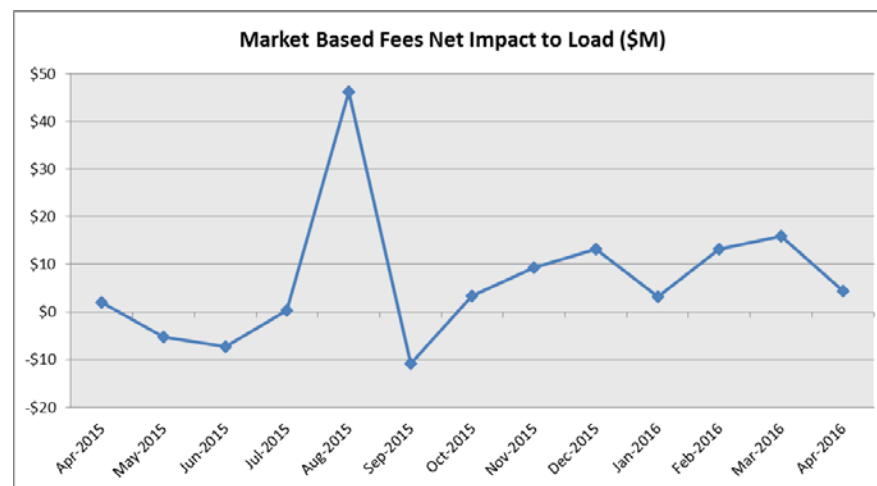
## Net Allocation to Load – April 2016

Market-Based Allocation	\$ in Millions
CRR Auction Revenue Disbursement Settlement	(\$27.99)
Balancing Account Proceeds Settlement	(\$3.39)
Net Reliability Unit Commitment Settlement	\$0.00
Ancillary Services Settlement	\$33.17
Reliability Must Run Settlement (incl. RMR for Capacity)	\$0.00
Real-Time Revenue Neutrality Settlement	\$2.75
Emergency Energy Settlement	\$0.03
Base Point Deviation Settlement	(\$0.23)
ORDC Settlement	\$0.00
<b>Total</b>	<b>\$4.34</b>
<b>Fee Allocation</b>	
ERCOT Administrative Fee Settlement	\$13.94
<b>Net Allocated to Load</b>	<b>\$18.28</b>

The charge for the net allocation to Load decreased from last month and increased from April 2015.

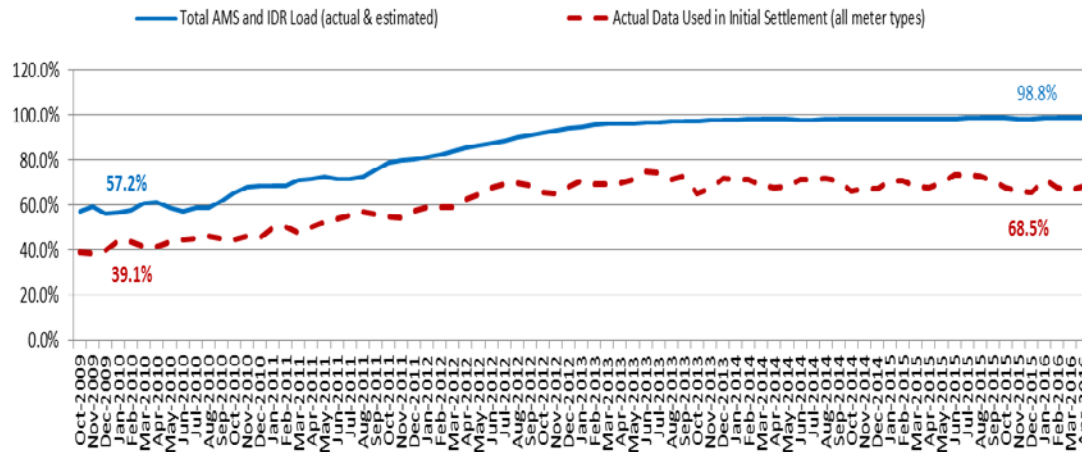
April 2016 was a charge of \$18.28M, compared to:

- A charge of \$29.52M in March 2016
- A charge of \$13.57M in April 2015



# Advanced Meter Settlement Impacts – April 2016

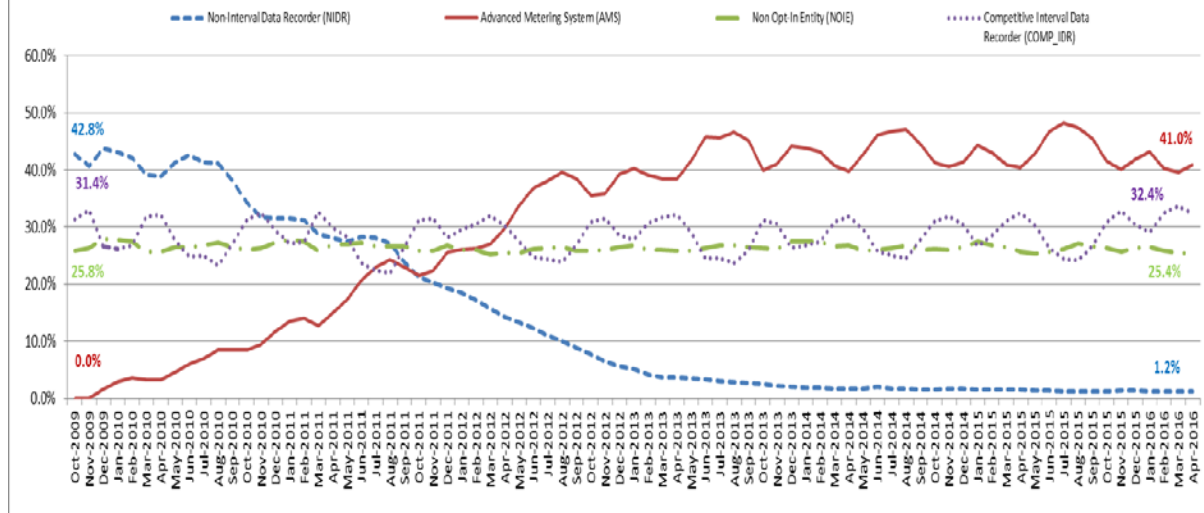
Percent Actual/Percent Interval Data Recorder (IDR)



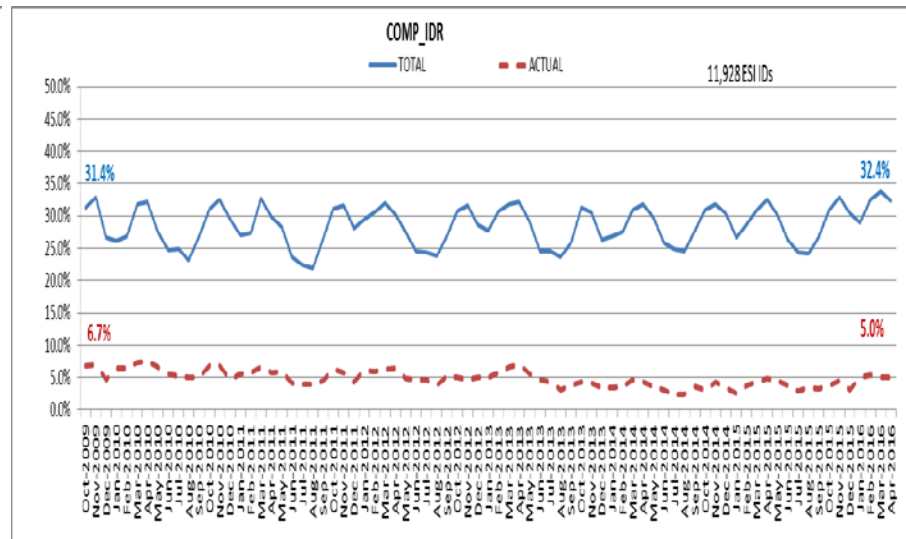
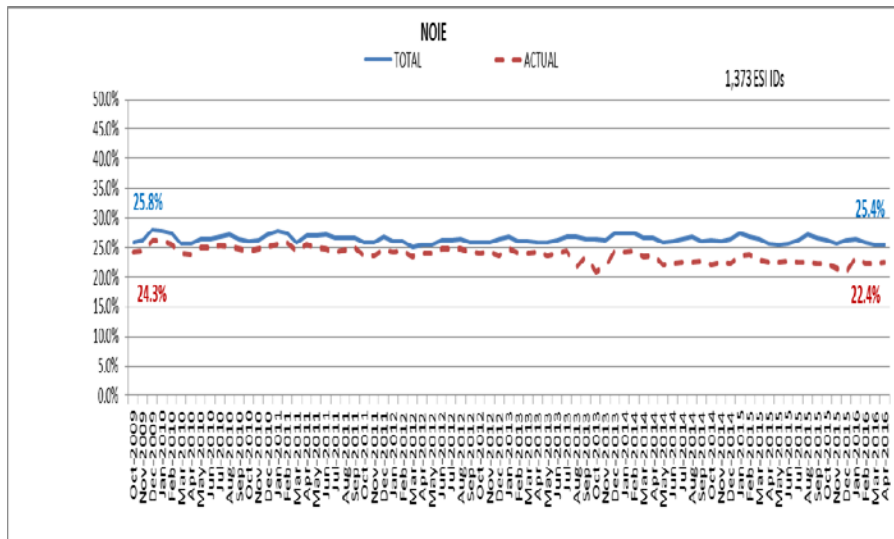
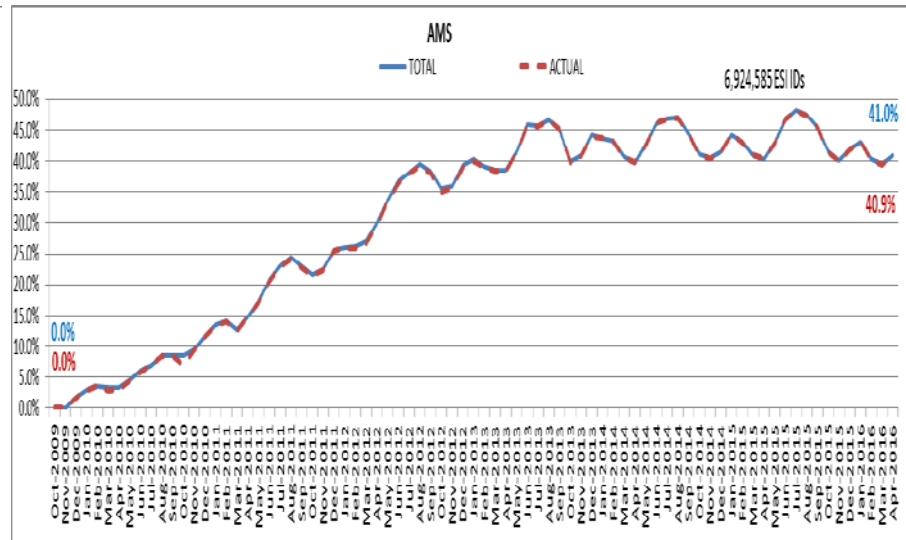
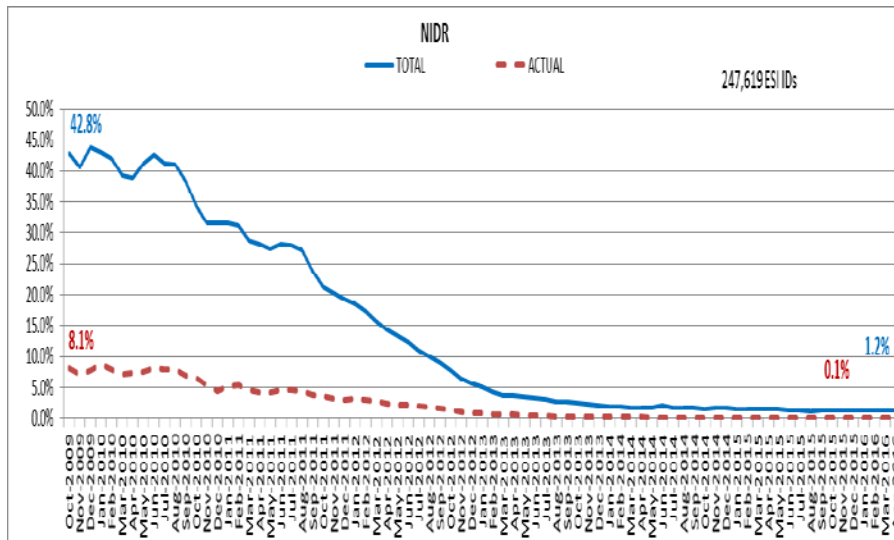
April 2016: At month end, settling 6.9M ESIDs using Advanced Meter data.

April 2016: 98.8% of the load in ERCOT is settled with 15-min interval data (AMS, Competitive IDR, and NOIE IDR).

Percent of Load by Meter Type



# ERCOT Wide Load Volumes by Meter Type – INITIAL Settlement – April 2016

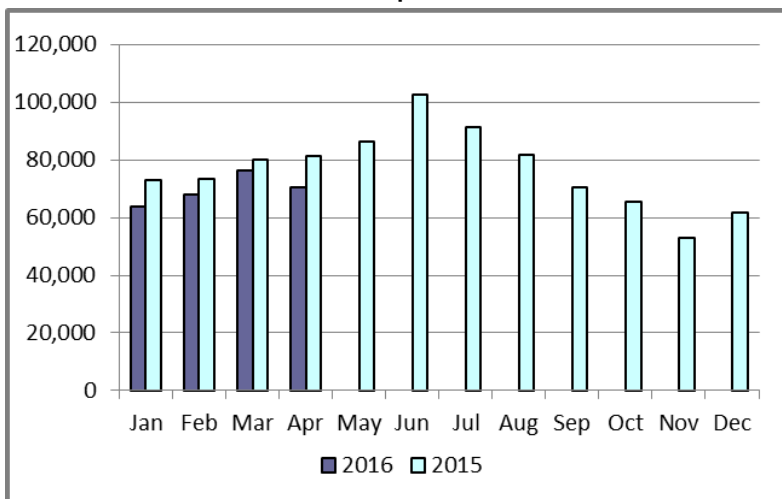


## Retail Transaction Volumes – Summary – April 2016

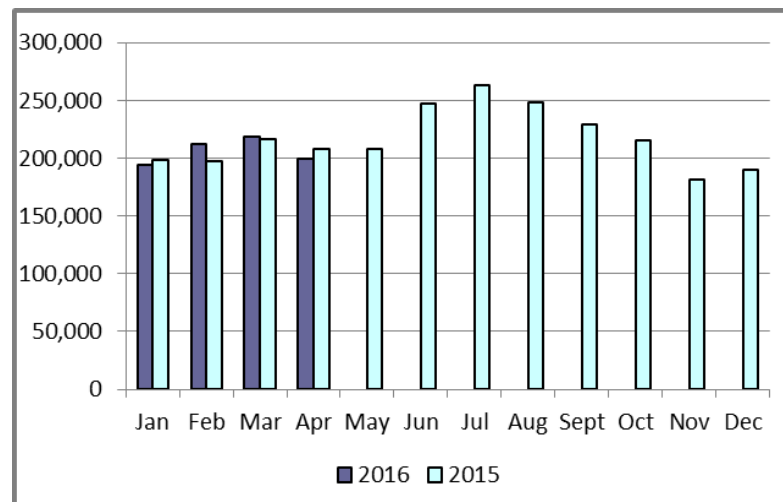
Transaction Type	Year-To-Date		Transactions Received	
	April 2016	April 2015	April 2016	April 2015
Switches	278,546	307,531	70,300	81,255
Acquisition	0	0	0	0
Move - Ins	824,239	819,672	199,804	207,932
Move - Outs	413,442	410,231	103,789	108,275
Continuous Service Agreements (CSA)	209,590	164,630	59,475	44,247
Mass Transitions	0	0	0	0
<b>Total</b>	<b>1,725,817</b>	<b>1,702,064</b>	<b>433,368</b>	<b>441,709</b>

# Retail Transaction Volumes – Summary – April 2016

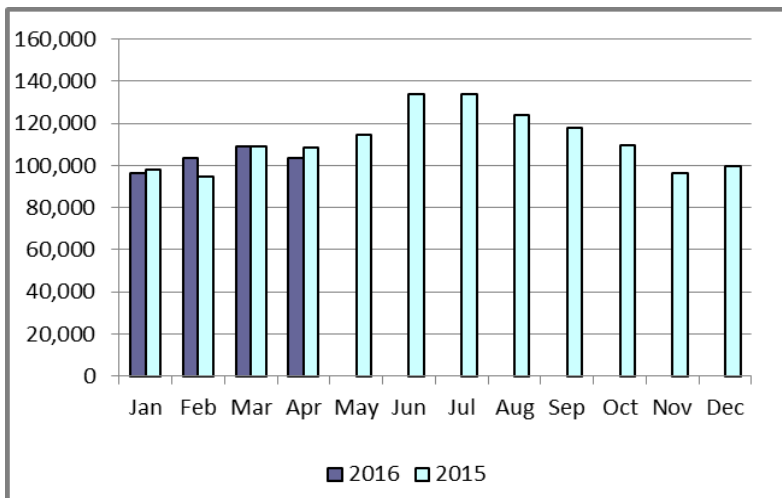
## Switches/Acquisitions



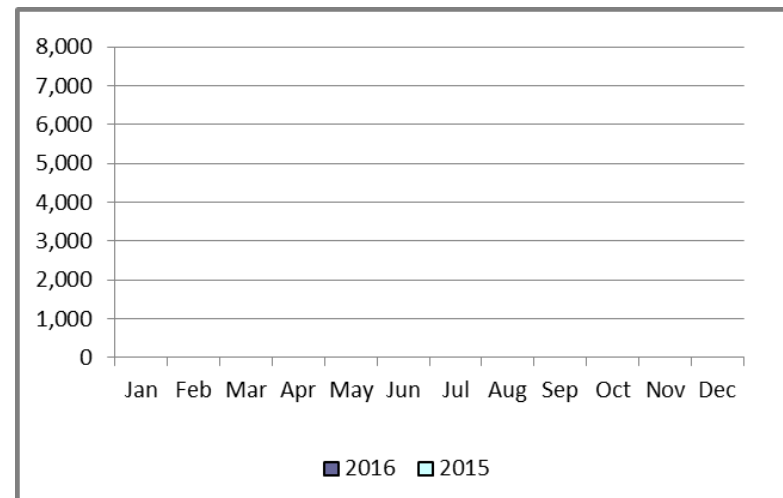
## Move-Ins



## Move-Outs

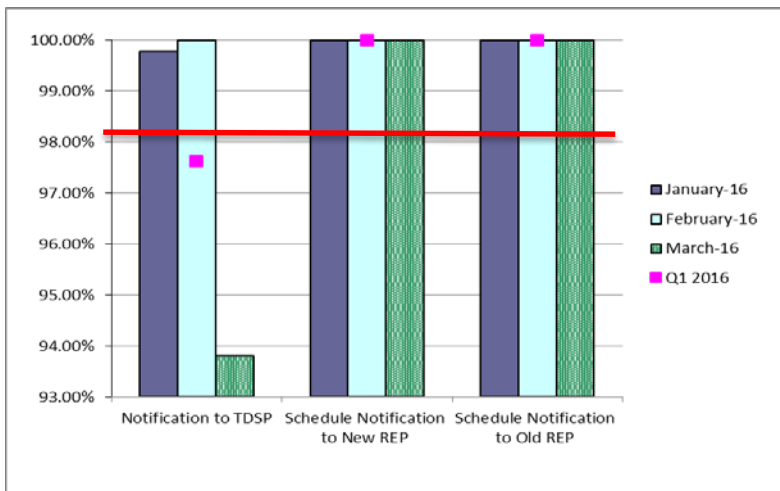


## Mass Transition

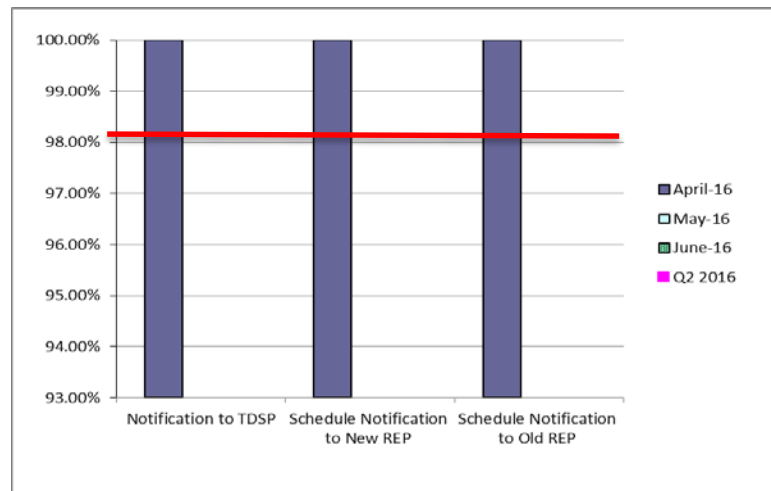


# Retail Performance Measures – Switch – April 2016

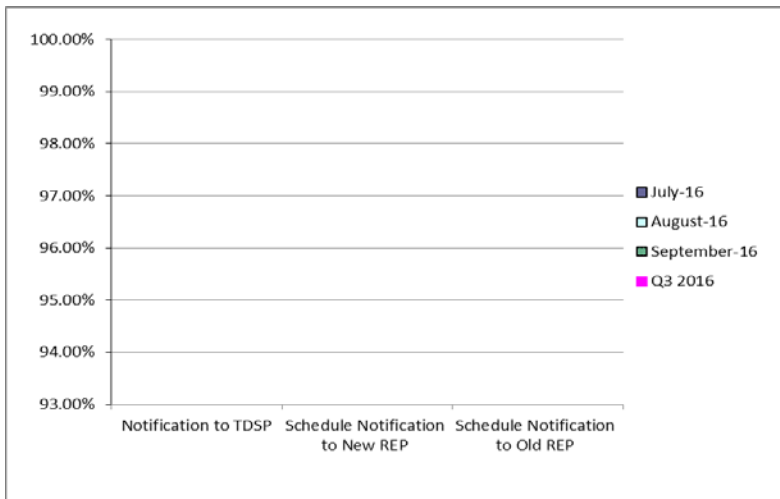
## 1<sup>st</sup> Quarter



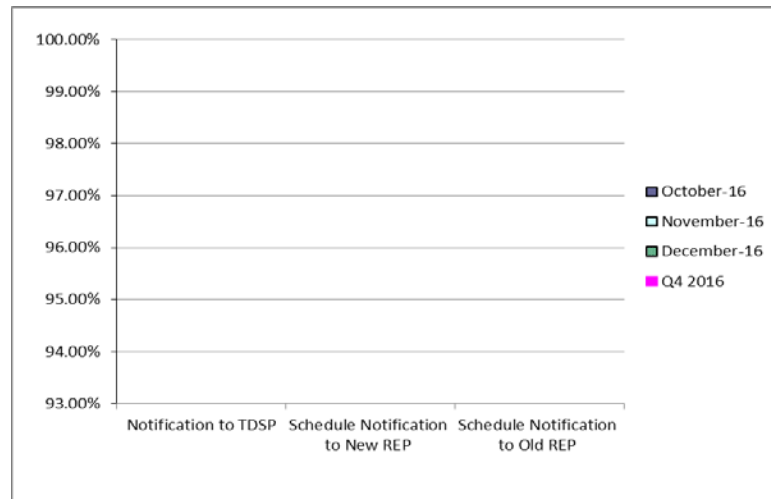
## 2<sup>nd</sup> Quarter



## 3<sup>rd</sup> Quarter

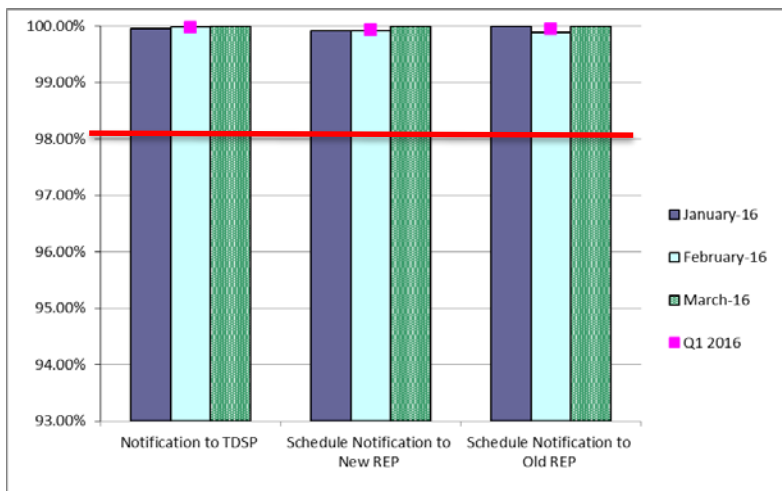


## 4<sup>th</sup> Quarter

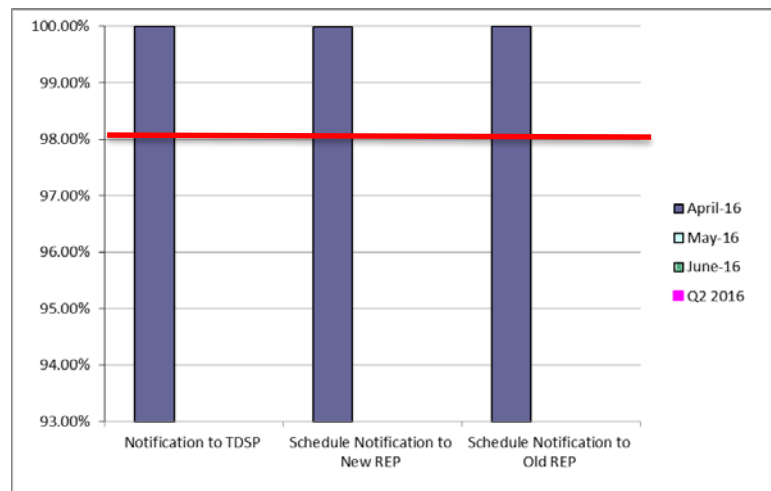


# Retail Performance Measures – Same Day Move-In – April 2016

## 1<sup>st</sup> Quarter



## 2<sup>nd</sup> Quarter



## 3<sup>rd</sup> Quarter

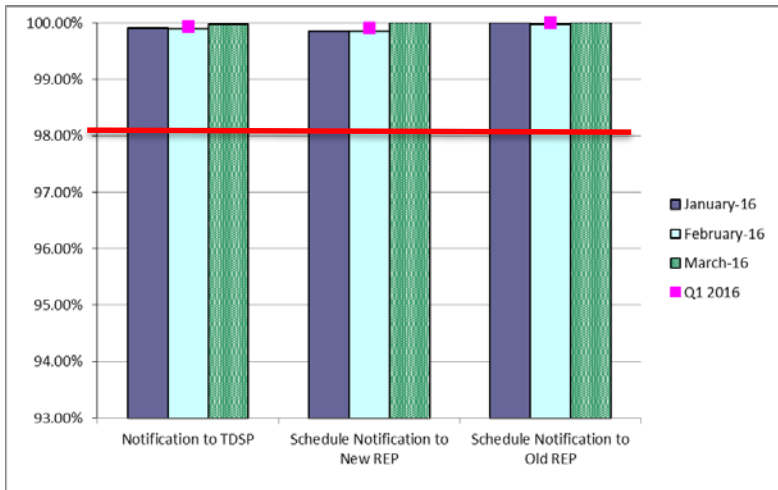


## 4<sup>th</sup> Quarter

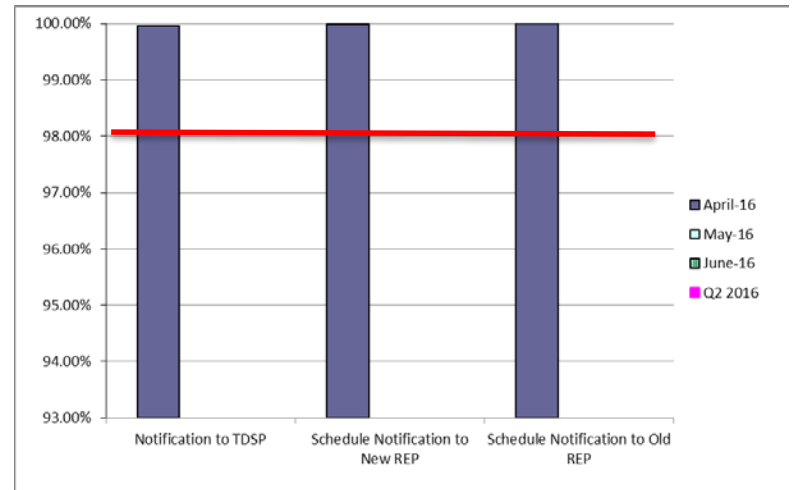


# Retail Performance Measures – Standard Move-In – April 2016

## 1<sup>st</sup> Quarter



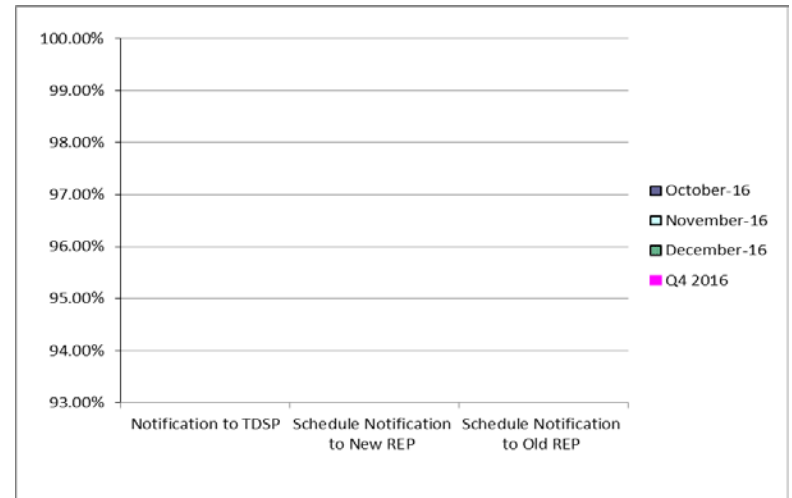
## 2<sup>nd</sup> Quarter



## 3<sup>rd</sup> Quarter



## 4<sup>th</sup> Quarter





# Projects Report

# ERCOT Portfolio Stoplight Report – April 2016

Impact Metric Tolerances	2016 Project Funding	\$ 22,500,000	2016 Portfolio Spending Estimate
Unfavorable variances are represented as negative numbers within the report. - Green = No more than 4.9% unfavorable variance - Yellow = Unfavorable variance between 4.9% and 9.9% - Red = Unfavorable variance more than 9.9%	Projects In Flight/On Hold (Count = 58)		\$ 17,463,471
	Projects Not Yet Started (Count = 18)		\$ 2,009,706
	Projects Completed (Count = 13)		\$ 211,749
	Carryover of Excess 2015 Project Spending		\$ 1,743,545
	Spending Reductions Required to Maintain Capital Budget		\$ -
	<b>TOTAL</b>		<b>\$ 21,428,472</b>

Note: Approximately \$1.75M in PPL spending was accelerated from 2016 to 2015

Project Number	Projects in Initiation Phase (Count = 5)	Footnotes
NPRR272	Definition and Participation of Quick Start Generation Resources	1 - One or more phases took longer than expected, resulting in additional time required 2 - One or more phases required more labor than expected, resulting in additional funding and/or time required 3 - Project placed on hold NA - Metric not calculated because: - it is reported at the parent project level, or - it is an administrative project
NPRR495	Changes to Ancillary Services Capacity Monitor	
NPRR736	Updates to the Ancillary Service Capacity Monitor Display	
Various	NPRR495 and NPRR736 Changes to Ancillary Services Capacity Monitor	
TBD	GINR Project Status Application Replacement	

Project Number	Projects in Planning Phase (Count = 22)	Baseline Phase Start	Baseline Phase Finish	Scheduled Go-Live Date	Scheduled Phase Finish	Schedule Impact	Budget Impact
158-01	Load Forecast Enhancements	1/14/2015	6/19/2015	TBD	6/1/2016	2 -223%	2 -90%
170-03	ECAP - Enterprise Content Management System (Proof of Concept)	1/13/2016	5/17/2016	TBD	5/23/2016	-4%	58%
170-04	ECAP - ERCOT Information Governance and Taxonomy	1/13/2016	6/6/2016	TBD	6/9/2016	-2%	60%
172-01	Physical Security Project #2	8/27/2015	6/8/2016	TBD	6/15/2016	-2%	5%
173-01	ERCOT Flight Certification Website	7/23/2015	11/2/2016	TBD	11/2/2016	0%	44%
173-01	MarkeTrak Software Upgrade	7/23/2015	11/2/2016	TBD	11/2/2016	0%	
181-01	CRR Framework Upgrade	12/16/2015	8/31/2016	TBD	8/31/2016	0%	0%
183-01	CMM Tech Refresh	12/16/2015	8/17/2016	TBD	8/17/2016	0%	NA See 2015 CMM NPRRs
185-01	Records Management and eDiscovery	1/28/2016	8/31/2016	TBD	8/10/2016	9%	1%
188-01	Mass Transition/Acquisition Enhancements (MTAQ)	2/24/2016	5/25/2016	TBD	5/25/2016	0%	-3%
190-01	SharePoint Governance Project	4/27/2016	7/20/2016	TBD	7/20/2016	0%	-4%
193-01	PMU Tool Evaluation and Implementation	5/4/2016	11/9/2016	TBD	11/9/2016	0%	0%
Various	2015 CMM NPRRs	12/16/2015	8/17/2016	TBD	8/17/2016	0%	11%
RMGRR126	Additional ERCOT Validations for Customer Billing Contact Information File	12/16/2015	5/25/2016	TBD	5/25/2016	0%	See #188-01
SCR777	Bilateral CRR Interface Enhancement	12/16/2015	8/31/2016	TBD	8/31/2016	0%	See #181-01
SCR786	Retail Market Test Environment	4/13/2016	6/1/2016	TBD	6/1/2016	0%	2%
NPRR439	Updating a Counter-Party's Available Credit Limit for Current Day DAM	12/16/2015	8/17/2016	TBD	8/17/2016	0%	NA See 2015 CMM NPRRs
NPRR484	Revisions to Congestion Revenue Rights Credit Calculations and Payments - Phase 1b / 2	12/16/2015	8/17/2016	TBD	8/17/2016	0%	NA See 2015 CMM NPRRs
NPRR519	Exemption of ERS-Only QSEs from Collateral and Capitalization Requirements	12/16/2015	8/17/2016	TBD	8/17/2016	0%	NA See 2015 CMM NPRRs
NPRR620	Collateral Requirements for Counter-Parties with No Load or Generation	12/16/2015	8/17/2016	TBD	8/17/2016	0%	NA See 2015 CMM NPRRs
NPRR683	Revision to Available Credit Limit Calculation	12/16/2015	8/17/2016	TBD	8/17/2016	0%	NA See 2015 CMM NPRRs
NPRR702	Flexible Accounts, Payment of Invoices, and Disposition of Interest on Cash Collateral	12/16/2015	8/17/2016	TBD	8/17/2016	0%	NA See 2015 CMM NPRRs



# ERCOT Portfolio Stoplight Report – April 2016

Project Number	Projects in Execution Phase (Count = 22)	Baseline Phase Start	Baseline Go-Live Target	Scheduled Go-Live Date	Scheduled Phase Finish	Schedule Impact	Budget Impact
052-01	EMS Upgrade	9/24/2014	5/25/2016	5/26/2016	11/1/2016	0%	7%
065-01	NMMS Upgrade	12/17/2014	9/22/2016	9/22/2016	10/31/2016	0%	3%
169-01	Short Circuit Ratio Functionality	1/20/2016	9/19/2016	9/19/2016	9/30/2016	0%	19%
170-01	Enterprise Content Alignment Program	8/26/2015	11/15/2017	9/25/2017	9/25/2017	6%	0%
170-05	ECAP - ERCOT Identity Alignment	2/24/2016	7/30/2016	6/30/2016	6/30/2016	19%	2
174-01	2015 Outage Scheduler Enhancements	12/2/2015	9/14/2016	9/22/2016	10/21/2016	-2%	4%
177-01	Cyber Security Project #19	4/6/2016	7/13/2016	7/17/2016	8/4/2016	-4%	0%
179-01	Infoblox Hardware Refresh	2/4/2016	8/12/2016	7/18/2016	7/18/2016	13%	8%
180-01	Upgrade of MDM - GEMS	3/30/2016	6/17/2016	6/15/2016	7/13/2016	2%	10%
187-00	Capital Efficiencies and Enhancements - 2016	1/1/2015	12/31/2016	12/31/2016	12/31/2016	0%	0%
189-01	Enterprise Resource Planning	4/13/2016	9/27/2016	9/27/2016	11/2/2016	0%	9%
191-01	CRR Auction Improvements	4/27/2016	8/18/2016	8/18/2016	10/26/2016	0%	0%
191-01	Improved CRR Credit Limit Display and Calculation Triggers	4/27/2016	8/18/2016	8/18/2016	10/26/2016	0%	See #191-01
191-01	Improved Re-Calculation of CRR Baseloading for CRR Auctions	4/27/2016	8/18/2016	8/18/2016	10/26/2016	0%	See #191-01
Various	NPRR617 and 700 Implementation	1/27/2016	6/23/2016	6/23/2016	8/10/2016	0%	2%
NPRR219	Resolution of Alignment Items A33, A92, A106, and A150 - TSPs Must Submit Outages for Resource Owned Equipment and Clarification of Changes in Status of Transmission Element Postings	12/2/2015	9/14/2016	9/22/2016	10/21/2016	-2%	NA
NPRR515	Day-Ahead Market Self-Commitment of Generation Resources	10/5/2015	3/31/2016	6/23/2016	7/7/2016	2	-47%
NPRR553	Monthly BLT Payment and Charge for Presidio Exception	4/9/2015	6/23/2016	6/23/2016	6/23/2016	0%	NA
NPRR617	Energy Offer Flexibility	1/27/2016	6/23/2016	6/23/2016	8/10/2016	0%	NA
NPRR662	Proxy Energy Offer Curves	3/2/2016	8/11/2016	8/18/2016	9/8/2016	-4%	4%
NPRR700	Utilizing Actual Fuel Costs in Startup Offer Caps	1/27/2016	6/23/2016	6/23/2016	8/10/2016	0%	NA
SCR783	Outage Scheduler Enhancements – Group 2, Usability and Filtering Enhancements	12/2/2015	9/14/2016	9/22/2016	10/21/2016	-2%	NA

# ERCOT Portfolio Stoplight Report – April 2016

Project Number	Projects in Stabilization (Count = 3)	Baseline Execution Phase Start	Baseline Go-Live Target	Actual Go-Live Date	Scheduled Execution Phase Finish	Schedule Impact		Budget Impact	
NPRR419	Revise Real Time Energy Imbalance and RMR Adjustment Charge	1/13/2016	4/12/2016	4/12/2016	6/6/2016		0%	2	-32%
168-01	Configuration Management System Requirements for CIP v5 Readiness	7/6/2015	12/16/2015	12/16/2015	7/1/2016		0%	2	-26%
171-01	CIP v5 Readiness Project	7/22/2015	4/29/2016	4/29/2016	6/6/2016		0%		-1%
Project Number	Projects On Hold (Count = 6)	Forecast Start Date	Baseline Phase Finish	Scheduled Go-Live Date	Scheduled Phase Finish	Schedule Impact		Budget Impact	
SCR781	MP Online Data Entry - Market Requirements	8/20/2014	11/28/2014	TBD	TBD	3		3	See #106-01
NPRR573	Alignment of PRC Calculation	TBD	TBD	TBD	TBD	3		3	
106-01	MP Online Data Entry - Ph 1	10/9/2013	3/5/2014	TBD	TBD	3		3	
129-01	Access and Roles Management	7/1/2014	10/1/2014	TBD	TBD	3		3	
141-01	Production Virtualization	11/6/2014	11/18/2015	TBD	TBD	3		3	
166-01	Jboss Application Monitoring & Management (JAMM)	TBD	TBD	TBD	TBD	3		3	
Project Number	Projects Completed (Count =13)	Baseline Execution Phase Start	Baseline Go-Live Target	Actual Go-Live Date	Actual Execution Phase Finish	Schedule Status		Total Variance	
NPRR556	Resource Adequacy During Transmission Equipment Outage	9/21/2015	10/23/2015	10/23/2015	12/10/2015		0%		23%
NPRR588	Clarifications for PV Generation Resources	9/16/2015	2/19/2016	2/9/2016	3/30/2016		6%	NA	See #161-01
NPRR615	PVGR Forecasting	9/16/2015	2/19/2016	2/9/2016	3/30/2016		6%	NA	See #161-01
NPRR680	Allow QSEs to Self-Arrange AS Quantities Greater Than Their AS Obligation	10/28/2015	12/11/2015	12/11/2015	12/18/2015		0%		13%
NPRR686	Changing the IRR Forecast from Next 48 Hours to Next 168 Hours	9/16/2015	2/19/2016	2/10/2016	3/30/2016		5%	NA	0%
116-01	Collage Replacement	2/6/2014	9/22/2014	2/29/2016	4/7/2016	2	-230%	2	-121%
120-01	IT Production Hardening	5/21/2015	4/1/2016	4/14/2016	4/27/2016		-4%		32%
134-01	Privileged Account Management	4/1/2015	9/30/2015	9/30/2015	1/27/2016		0%		14%
143-01	OSI Pi Visualization Enhancements	1/16/2015	6/19/2015	1/22/2016	2/18/2016	1	-140%		-3%
144-01	OC-48 Replacement with DWDM	2/4/2015	12/22/2015	1/12/2016	3/2/2016	1	-6%		3%
161-01	NPRRs 588 and 615	9/16/2015	2/19/2016	2/9/2016	3/30/2016		6%		-1%
163-01	Cyber Security Project #10	7/1/2015	9/15/2015	9/22/2015	12/16/2015	1	-9%		9%
165-00	Capital Efficiencies and Enhancements - 2015	1/1/2015	12/31/2015	12/31/2015	12/31/2015		0%		42%



## ERCOT Portfolio Stoplight Report – April 2016

Project Number	2016 Projects Not Yet Started (Count = 18)	Forecast Start Date
TBD	Appworx Application Manager Upgrade	May-2016
NPRR741	Clarifications to TPE and EAL Credit Exposure Calculations	May-2016
NPRR743	Revision to MCE to Have a Floor For Load Exposure	May-2016
NOGRR147	Reactive Power Testing Requirements	May-2016
TBD	AREA - Demand and Energy Report	May-2016
TBD	Reactive Power Coordination	May-2016
TBD	REC Rewrite & Refresh	May-2016
RRGRR003	Modifications to Improve Wind Forecasting	Jun-2016
RRGRR006	Clarification of Descriptions and Alignment with Resource Asset Registration Forms	Jun-2016
RRGRR007	Adding Solar Resource Registration Inputs	Jun-2016
TBD	Replace Sun DSEE	Jul-2016
TBD	Appworx Replaces TIBCO Code in CSI Framework	Jul-2016
NPRR714	Real-Time Make-Whole Payment for Exceptional Fuel Cost	Aug-2016
TBD	Automation of NPRR487 - QSGR Dispatch Adjustment	Aug-2016
TBD	EIF Database Utilization	Aug-2016
TBD	Emergency Energy Settlements Inputs Automation	Aug-2016
TBD	Replace Paperfree	Sep-2016
NOGRR084	Daily Grid Operations Summary Report	Oct-2016