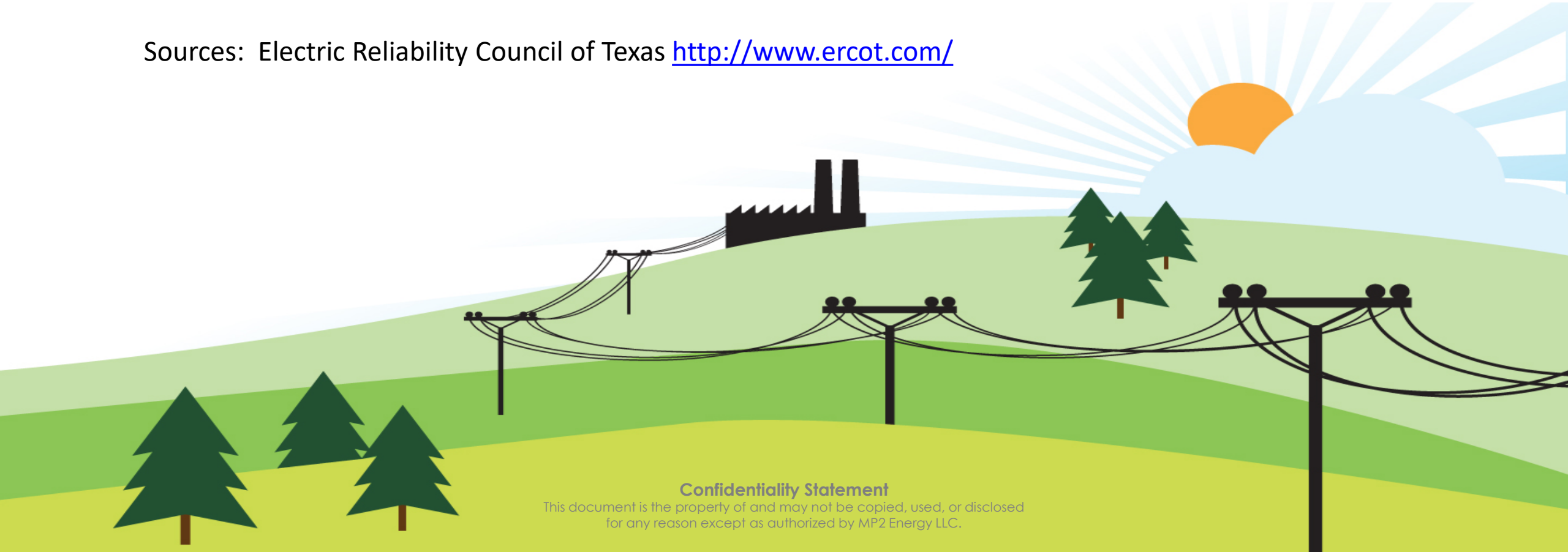
The $9,000 Cap

A Webinar on ERCOT Electric Prices

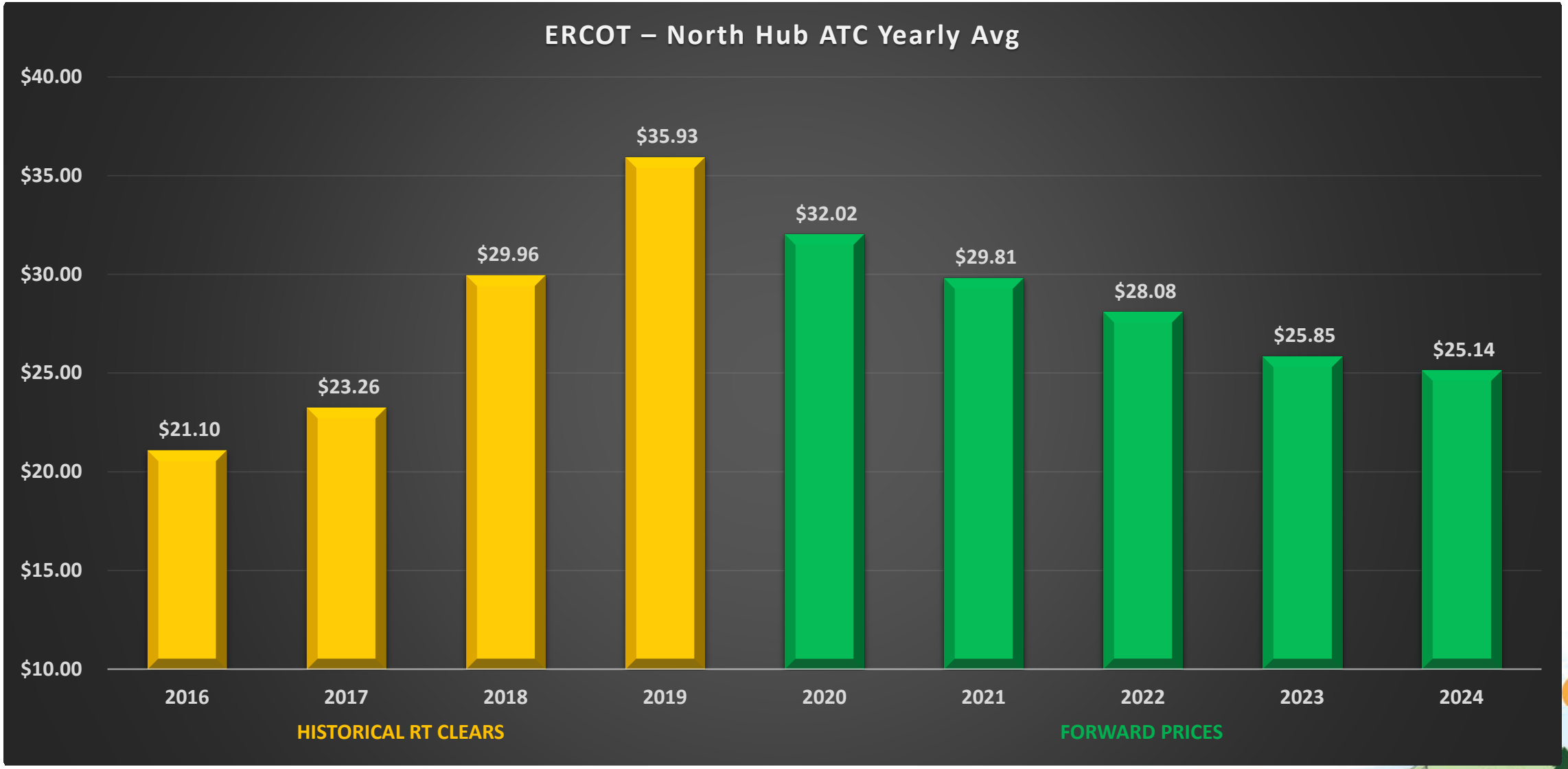
February 12, 2020

ERCOT Fundamentals – February 2020

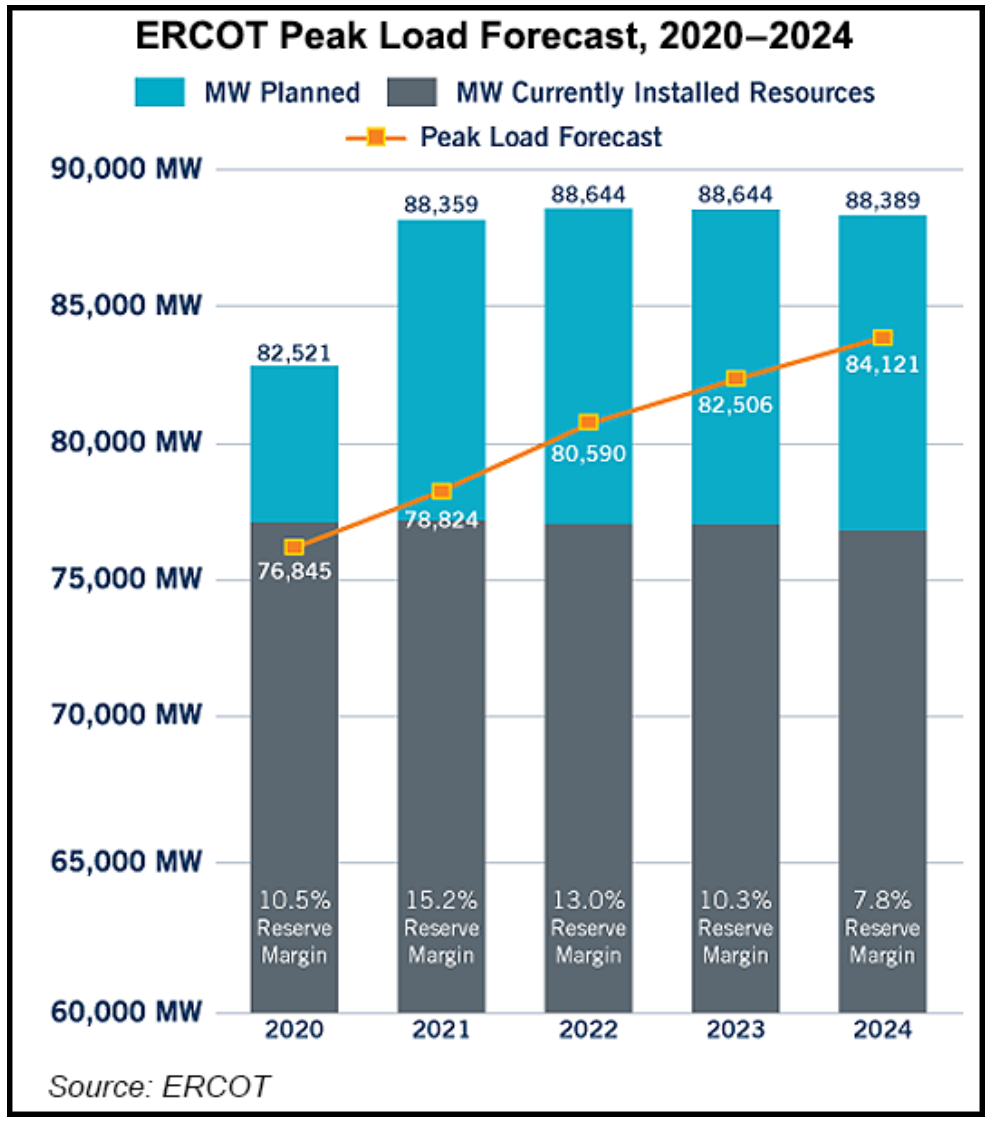
Sources: Electric Reliability Council of Texas http://www.ercot.com/

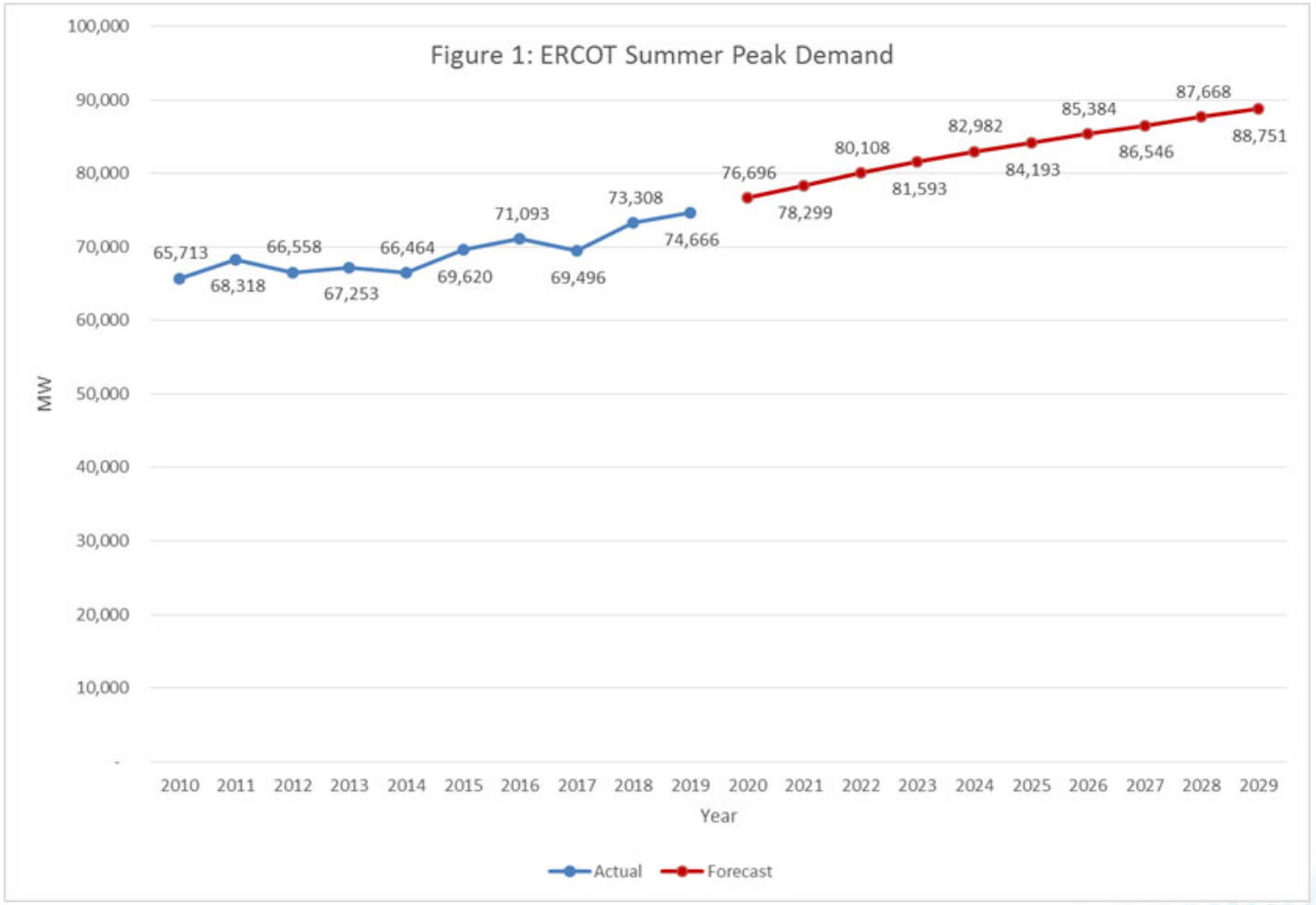


ERCOT – Historical Real Time Prices to Forward Marks



ERCOT – DEMAND – Summer Peak Trends





ERCOT – SUPPLY – Generation Mix

Summer Fuel Types - ERCOT

In MW

Fuel_Type	Capacity_Pct	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Biomass	100%	169	169	169	169	169	169	169	169	169	169
Coal	100%	14,225	14,225	14,225	14,225	14,225	14,225	14,225	14,225	14,225	14,225
Gas	100%	51,846	52,903	52,800	52,800	52,545	52,545	52,545	52,545	52,545	52,545
Nuclear	100%	4,973	4,973	4,973	4,973	4,973	4,973	4,973	4,973	4,973	4,973
Other	68%	850	850	850	850	850	850	850	850	850	850
Hydro	83%	458	458	458	458	458	458	458	458	458	458
Wind-C	63%	2,541	3,195	3,195	3,195	3,195	3,195	3,195	3,195	3,195	3,195
Wind-P	29%	1,352	1,671	1,802	1,874	1,874	1,874	1,874	1,874	1,874	1,874
Wind-O	16%	3,148	3,840	4,044	4,085	4,085	4,085	4,085	4,085	4,085	4,085
Solar	76%	2,841	7,684	8,845	8,845	8,845	8,845	8,845	8,845	8,845	8,845
Storage	0%	-	-	-	-	-	-	-	-	-	-
Total		82,403	89,967	91,361	91,473	91,218	91,218	91,218	91,218	91,218	91,218

In Percentages

Fuel_Type	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Biomass	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Coal	17.3%	15.8%	15.6%	15.6%	15.6%	15.6%	15.6%	15.6%	15.6%	15.6%
Natural Gas	62.9%	58.8%	57.8%	57.7%	57.6%	57.6%	57.6%	57.6%	57.6%	57.6%
Nuclear	6.0%	5.5%	5.4%	5.4%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
Other	1.0%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
Hydro	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Wind-C	3.1%	3.6%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Wind-P	1.6%	1.9%	2.0%	2.0%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%
Wind-O	3.8%	4.3%	4.4%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Solar	3.4%	8.5%	9.7%	9.7%	9.7%	9.7%	9.7%	9.7%	9.7%	9.7%
Storage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

- SOLAR:
  - MASSIVE 5% increase from 2020 to 2021 (~7 GW new additions)
- WIND UPDATE:
  - New Capacity Contribution **calculation** for wind results in 1,051 MW incremental increase of wind (1.4%) on the CDR
  - THIS DOES NOT MEAN NEW WIND GEN HAS BEEN ADDED! Apples to apples from last year, reserve margin closer to 9.2% for 2020 rather than 10.6%

ERCOT – Regulatory Highlights

- Operating Reserve Demand Curve
  - 0.25 standard deviation shift in loss of load probability calculation implemented prior to Summer 2019. SECOND 0.25 shift expected for March 1st, 2020, resulting in 0.50 total shift in standard deviation of ORDC

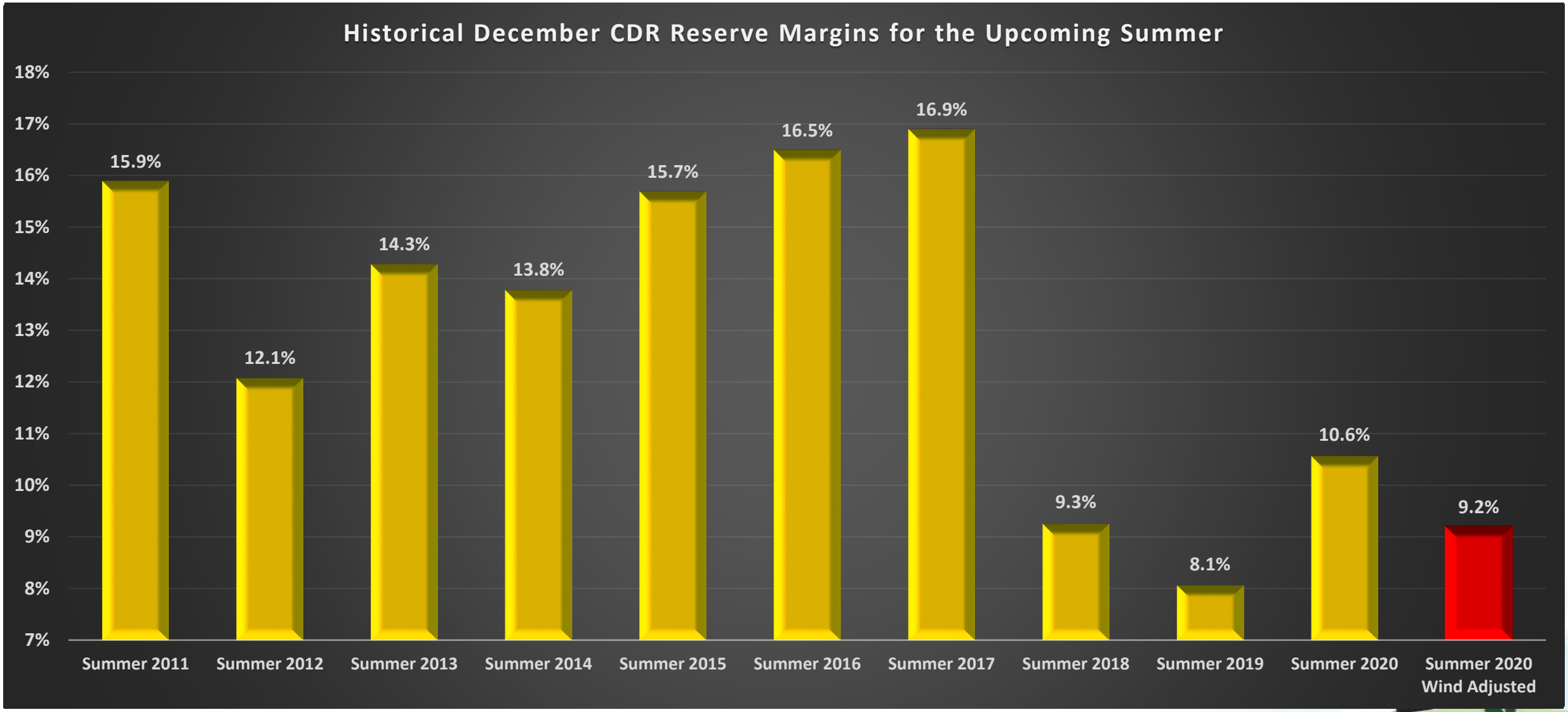
- Peak Load Calculation review
  - Following Summer 2019 which saw twelve 15-minute intervals reach $9,000 system cap, Market Participants agreeing peak our is no longer the worst hour in terms of scarcity on the system. ERCOT in the process of looking at NET PEAK HOUR (or NET PEAK LOAD), rather than peak load, as serious resource adequacy issues arise when wind dies down

ERCOT – Looking Ahead (Capacity)

Summer Summary: 2020-2024					
Load Forecast, MW:	**2020**	**2021**	**2022**	**2023**	**2024**
Summer Peak Demand (based on normal weather)	76,696	78,299	80,108	81,593	82,982
plus: Energy Efficiency Program Savings Forecast, per Utilities Code Section 39.905 (b-4)	1,764	2,065	2,285	2,592	2,821
Total Summer Peak Demand (before Reductions from Energy Efficiency Programs)	78,459	80,363	82,393	84,185	85,803
less: Load Resources providing Responsive Reserves	-1,173	-1,173	-1,173	-1,173	-1,173
less: Load Resources providing Non-Spinning Reserves	0	0	0	0	0
less: Emergency Response Service (10- and 30-min ramp products)	-786	-764	-764	-764	-764
less: TDSP Standard Offer Load Management Programs	-257	-257	-257	-257	-257
less: Energy Efficiency Program Savings Forecast	-1,764	-2,065	-2,285	-2,592	-2,821
Firm Peak Load, MW	**74,480**	**76,105**	**77,914**	**79,399**	**80,788**
Resources, MW:	**2020**	**2021**	**2022**	**2023**	**2024**
Installed Capacity, Thermal/Hydro	65,001	65,237	65,272	65,272	65,272
Switchable Capacity, MW	3,490	3,490	3,490	3,490	3,490
less: Switchable Capacity Unavailable to ERCOT, MW	-842	-542	-542	-542	-542
Available Mothballed Capacity, MW	483	483	365	365	365
Capacity from Private Use Networks	3,327	3,247	3,227	3,227	2,972
Coastal Wind, Peak Average Capacity Contribution (63% of installed capacity)	1,880	1,880	1,880	1,880	1,880
Panhandle Wind, Peak Average Capacity Contribution (29% of installed capacity)	1,218	1,221	1,221	1,221	1,221
Other Wind, Peak Average Capacity Contribution (16% of installed capacity)	2,496	2,487	2,487	2,487	2,487
Solar Utility-Scale, Peak Average Capacity Contribution (76% of installed capacity)	1,649	1,649	1,649	1,649	1,649
Storage, Peak Average Capacity Contribution (0% of installed capacity)	0	0	0	0	0
RMR Capacity to be under Contract	0	0	0	0	0
Capacity Pending Retirement, MW	0	0	0	0	0
Operational Generation Capacity, MW	**78,701**	**79,151**	**79,048**	**79,048**	**78,793**
Non-Synchronous Ties, Capacity Contribution (68% of installed capacity)	850	850	850	850	850
Planned Resources (not wind, solar or storage) with Signed IA, Air Permits and Water Rights	212	813	813	813	813
Planned Coastal Wind with Signed IA, Peak Average Capacity Contribution (63% of installed capacity)	661	1,315	1,315	1,315	1,315
Planned Panhandle Wind with Signed IA, Peak Average Capacity Contribution (29% of installed capacity)	134	450	581	653	653
Planned Other Wind with Signed IA, Peak Average Capacity Contribution (16% of installed capacity)	652	1,353	1,557	1,598	1,598
Planned Solar Utility-Scale, Peak Average Capacity Contribution (76% of installed capacity)	1,192	6,035	7,197	7,197	7,197
Planned Storage, Peak Average Capacity Contribution (0% of installed capacity)	0	0	0	0	0
Total Capacity, MW	**82,403**	**89,967**	**91,361**	**91,473**	**91,218**
Reserve Margin	**10.6%**	**18.2%**	**17.3%**	**15.2%**	**12.9%**
(Total Resources - Firm Load Forecast) / Firm Load Forecast					

- CDR for Summer 2019 had reserve margins at 8.6%, Summer 2019 had 12 15-minute intervals reach $9,000 system cap
- CDR for Summer 2020 now showing 10.6% reserve margin, but without change in wind's capacity contribution calculation, reserve margin actually closer to 9.2%!
- Summer 2020 showing 7,633 MWs of new capacity additions

ERCOT – Looking Ahead (Reserve Margin)



DEMAND RESPONSE PROGRAMS IN ERCOT

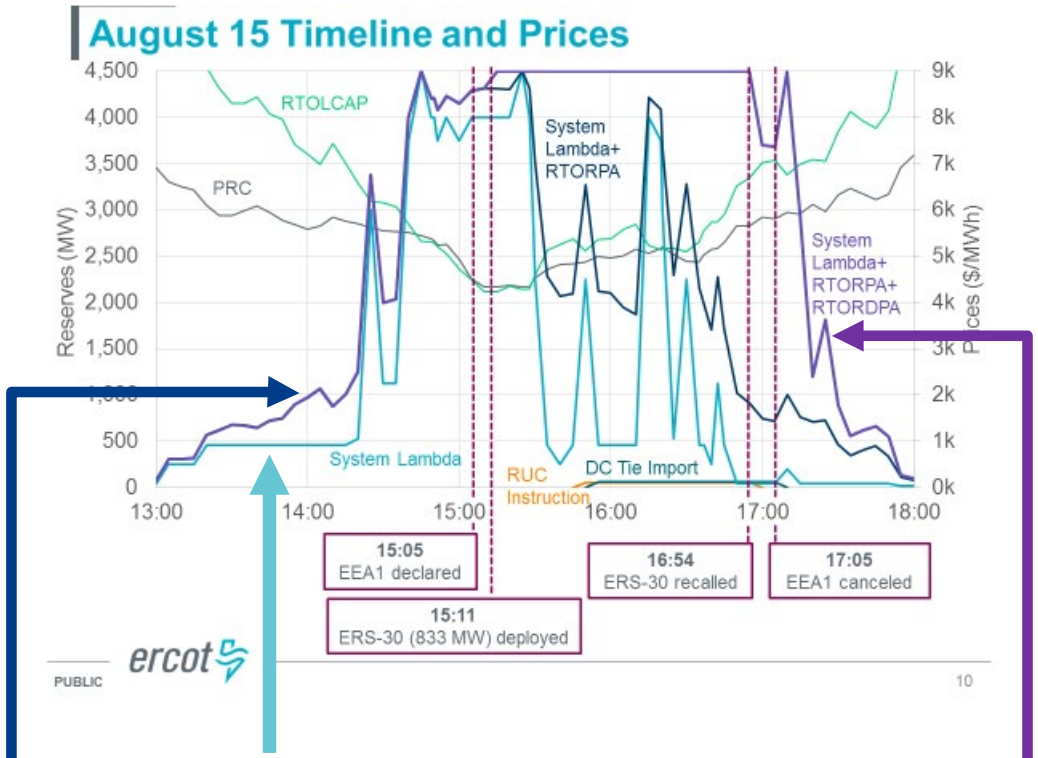
Emergency Programs

Economic Programs

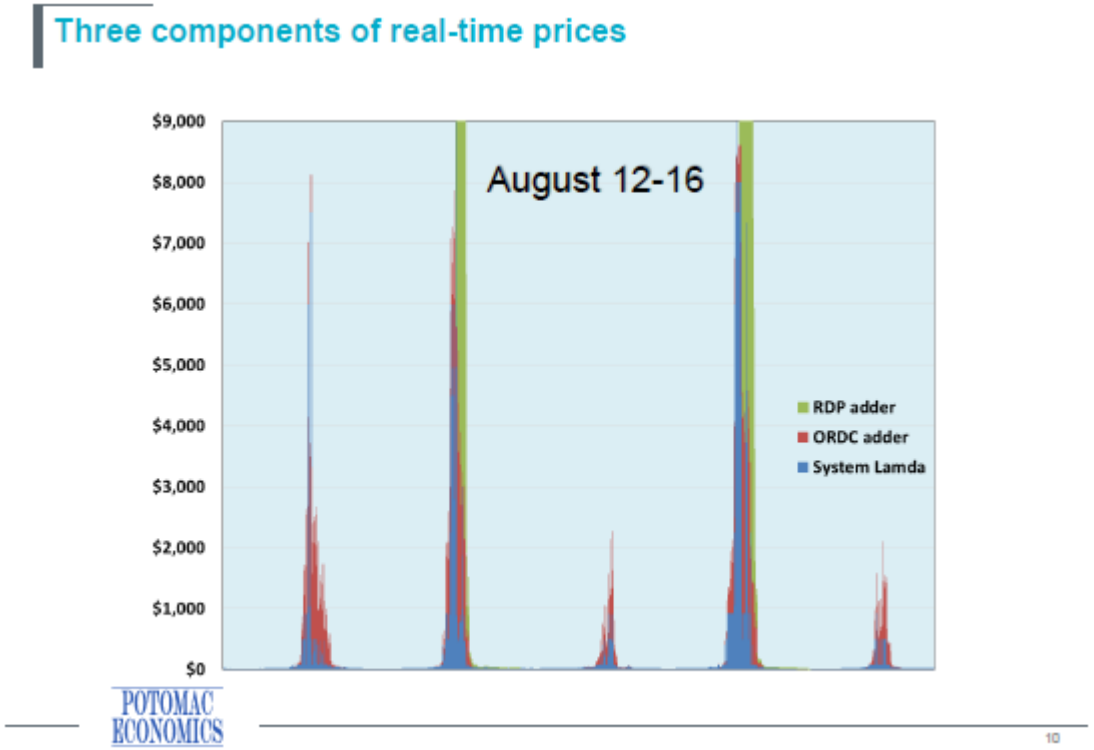
- Emergency Response Service (ERS)
- Load Resource (LR)
- Commercial Load Management (CLM)
- Four Coincident Peak (4CP)
- Economic Price Response

Normal Conditions	• Reserves > 3,000 MW • Normal Operations
Control Room Advisory	• Reserves < 3,000 MW • Advisory Only
Control Room Watch	• Reserves < 2,500 MW • Quick-start capacity & non-spinning reserves (30 min)
Conservation Alert	• Encourage conservation; operating reserves a concern • Monitor for additional generation
Energy Emergency Alert 1	• POWER WATCH; Reserves < 2,300 MW • Utilize all available generation and import capacity; May deploy ERS 30
Energy Emergency Alert 2	• POWER WARNING; Reserves < 1,750 MW • Deploy all demand response
Energy Emergency Alert 3	• POWER EMERGENCY; Reserves continue trend downward and/or frequency at or below 59.8 Hz • Rotating outages

OPERATING RESERVE DEMAND CURVE (ORDC) & THE RELIABILITY DEPLOYMENT PRICE ADDER (RDPA) IMPACTS



- Price before any adders
- Price with ORDC
- Price with both ORDC and RDPA



OPERATING RESERVE DEMAND CURVE (ORDC) & THE RELIABILITY DEPLOYMENT PRICE ADDER (RDPA) IMPACTS - CONTINUED

IMM estimate of the impacts of changes to the ORDC adder

	Average RT Price $/MWh	ORDC contrib $/MWh	ORDC Price increase $/MWh	Percent Price increase	Total RT Market Cost $M	RT Market Cost Increase $M
March	30	<1	<.1	<1	838	<1
April	28	<1	.5	2	751	13
May	28	1	.8	3	907	25
June	29	2	1.6	6	1,010	58
July	34	8	5.6	17	1,332	221
August	164	59	26 - 32	15 - 19	7,259	1,084 – 1,342
Six month	**58**	**19**	**7 - 8**	**12 – 14 %**	**$12,098**	**$1,402 – 1,660**

Effects during Aug 12-16	
RT Market Cost $M	$5,269
Cost Increase $M	$572 - $839

POTOMAC ECONOMICS

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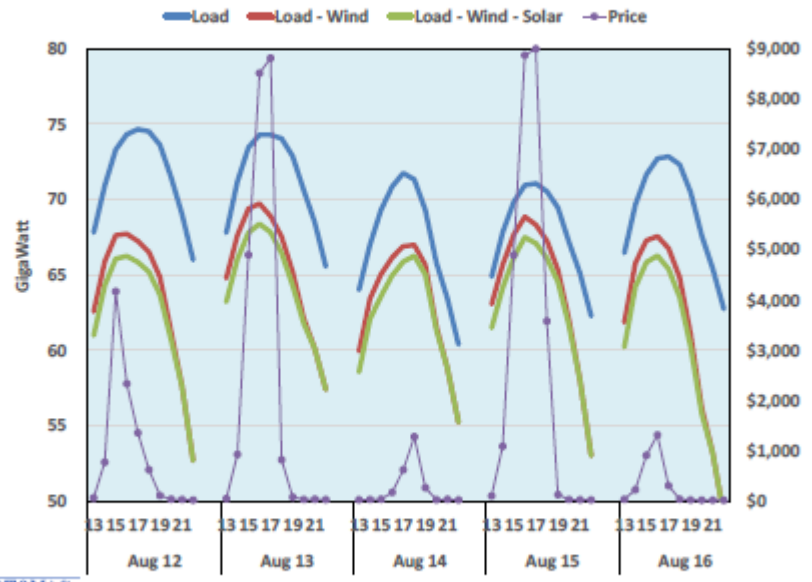
Highest prices are no longer associated with highest loads



POTOMAC ECONOMICS

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- The ORDC had a profound impact on the average RTM price in August.

EMERGENCY RESPONSE SERVICE (ERS)

Emergency Response Service (ERS)

Deployed by ERCOT only during emergencies.

Requires curtailment in **30 minutes** (10 min version available).

Customize participation with three 4-month contracts each with 6 different time periods.

IDR or AMS metering required.

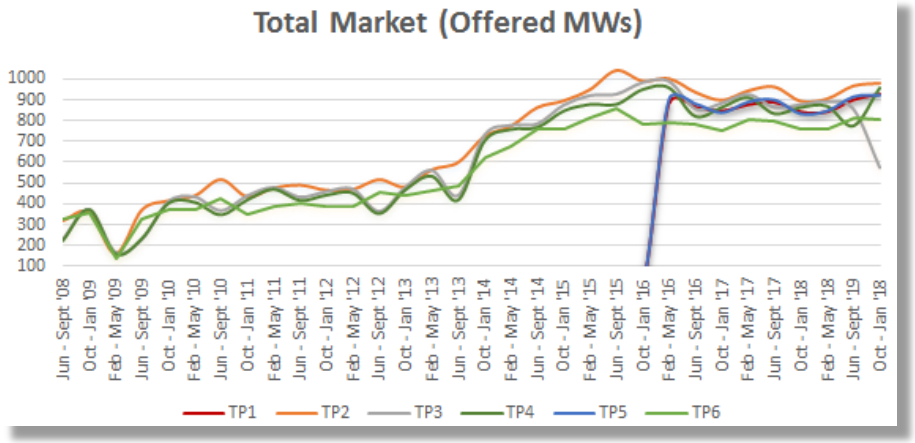
Gross revenues historically $58,000 per MW annually.

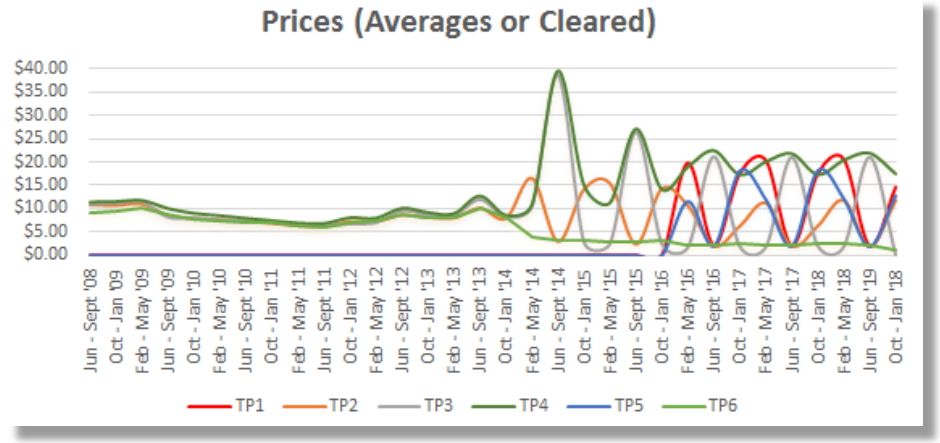
ERS Deployments - 2008 to Present

Date	Start Time	Stop Time	Program	Hours Deployed
2/2/11	5:48 AM	10:01:00 AM on 2/3/2011	ERS10	28 hours, 11 minutes*
8/4/11	3:44 PM	6:09 PM	ERS10	2 hours, 25 minutes
1/6/14	7:17 AM	7:53 AM	ERS10	36 minutes
	7:33 AM	7:53 AM	ERS30	20 minutes
8/13/19	3:55 PM	4:18 PM	ERS30 (WS & NWS)	23 minutes
	3:44 PM	3:58 PM	ERS10	14 minutes
8/15/19	3:43 PM	4:55 PM	ERS30 (WS & NWS)	1 hour, 12 minutes

* since this event, program changed to limit deployments to 8 hours (+4 if emergency persists)

Time Period	Time Period Hours
Time Period 1	Hours Ending 0600 - 0900 (5:00:00 a.m. to 9:00:00 a.m.)M-F, non-ERCOT holidays.
Time Period 2	Hours Ending 1000 - 1300 (9:00:00 a.m. to 1:00:00 p.m.) M-F, non-ERCOT holidays.
Time Period 3	Hours Ending 1400 - 1600 (1:00:00 p.m. to 4:00:00 p.m.) M-F, non-ERCOT holidays.
Time Period 4	Hours Ending 1700 - 1900 (4:00:00 p.m. to 7:00:00 p.m.) M-F, non-ERCOT holidays.
Time Period 5	Hours Ending 2000 - 2200 (7:00:00 p.m. to 10:00:00 p.m.) M-F, non-ERCOT holidays.
Time Period 6	Hours Ending 0600 - 0900 (5:00:00 a.m. to 9:00:00 a.m.) Weekends and ERCOT Holidays.
Time Period 7	Hours Ending 1600 - 2100 (3:00:00 p.m. to 9:00:00 p.m.) Weekends and ERCOT Holidays.
Time Period 8	All other hours





FOUR COINCIDENT PEAK (4CP)

Four Coincident Peak (4CP)

Voluntarily respond to expected summer monthly peaks to reduce TDSP charges.

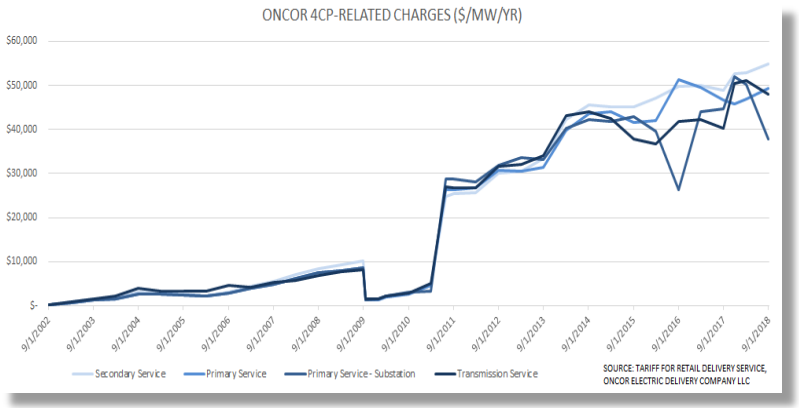
MP2 provides week-ahead forecast, morning of and afternoon of forecasts.

June through September, typically from 4:00 to 5:00. MP2 averages 10-14 predictions each summer.

Only applicable to IDR meters.

Up to $66,000 per MW annually.

Utility	Annual Value per MW
CNP - Secondary	$50,895
CNP - Primary	$48,458
CNP - Transmission	$49,576
Oncor - Secondary	$54,800
Oncor - Primary (distribution line)	$49,288
Oncor - Primary (substation)	$37,781
Oncor - Transmission	$48,075
AEP - TNC - Secondary	$57,871
AEP - TNC - Primary	$46,337
AEP - TNC - Transmission	$26,284
AEP - TCC - Secondary	$44,729
AEP - TCC - Primary	$66,412
AEP - TCC - Transmission	$48,070
TNMP - Secondary	$48,425
TNMP - Primary	$44,281
TNMP - Transmission	$46,930



ERCOT Daily 4CP Forecast - *September 2017*

9/20/2017

MP2 ENERGY

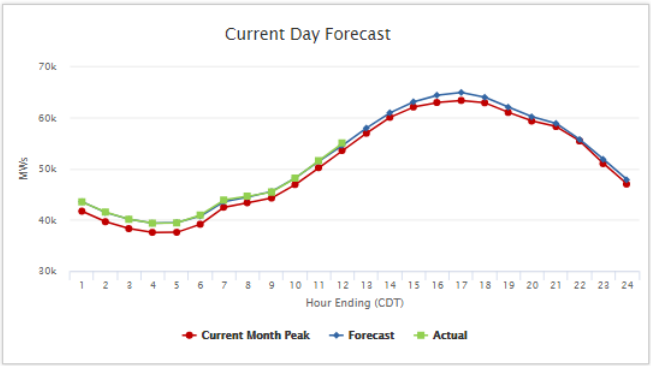
Today's Threat Level:

High

There is still a High threat of setting the final September Peak Demand today. Currently, demand is trending slightly higher than this morning's forecast and is on pace to exceed the current day's peak. The forecasted peak is now 64,870 MW. The afternoon rain threat has decreased over the past few hours. Today presents the last credible threat to the September Peak. To the extent your operations safely allow, we recommend you curtail your load from 3:30pm to 5:15pm this afternoon.

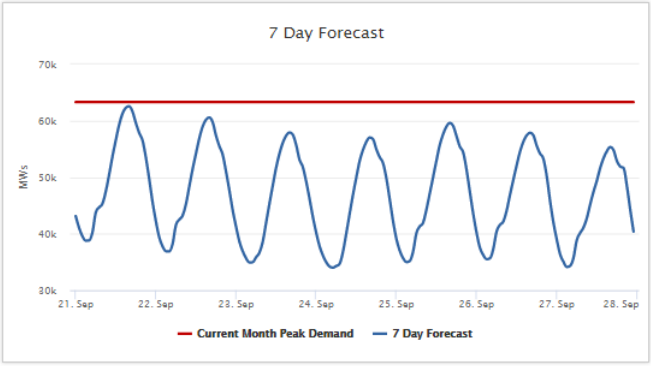
Demand Performance This Month

Hour Ending	Current Peak	Forecast	Actual	Delta to Peak Day
1:00	41,701	43,550	43,495	1,794
2:00	39,640	41,434	41,524	1,884
3:00	38,294	40,118	40,089	1,795
4:00	37,557	39,360	39,372	1,815
5:00	37,568	39,463	39,408	1,840
6:00	39,138	40,752	40,942	1,804
7:00	42,467	43,571	43,889	1,422
8:00	43,343	44,443	44,600	1,257
9:00	44,250	45,535	45,420	1,170
10:00	46,891	48,182	48,144	1,253
11:00	50,177	51,450	51,558	1,381
12:00	53,537	54,591	54,983	1,446
13:00	56,905	57,923		
14:00	60,011	60,893		
15:00	62,021	63,052		
16:00	62,900	64,318		
17:00	63,301	64,870		
18:00	62,839	63,926		
19:00	60,962	61,999		
20:00	59,286	60,107		
21:00	58,214	58,824		
22:00	55,390	55,693		
23:00	50,978	51,795		
24:00	46,984	47,835		



Historical Demand Peak

September 2016 Peak Demand:	67,097 MW
September Record Peak Demand:	67,097 MW
ERCOT Record Peak Demand: *	71,147 MW
	*August 2016



Need more info?

Email Drew Baird or call 832.510.1070

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ECONOMIC PRICE RESPONSE

Economic Price Response

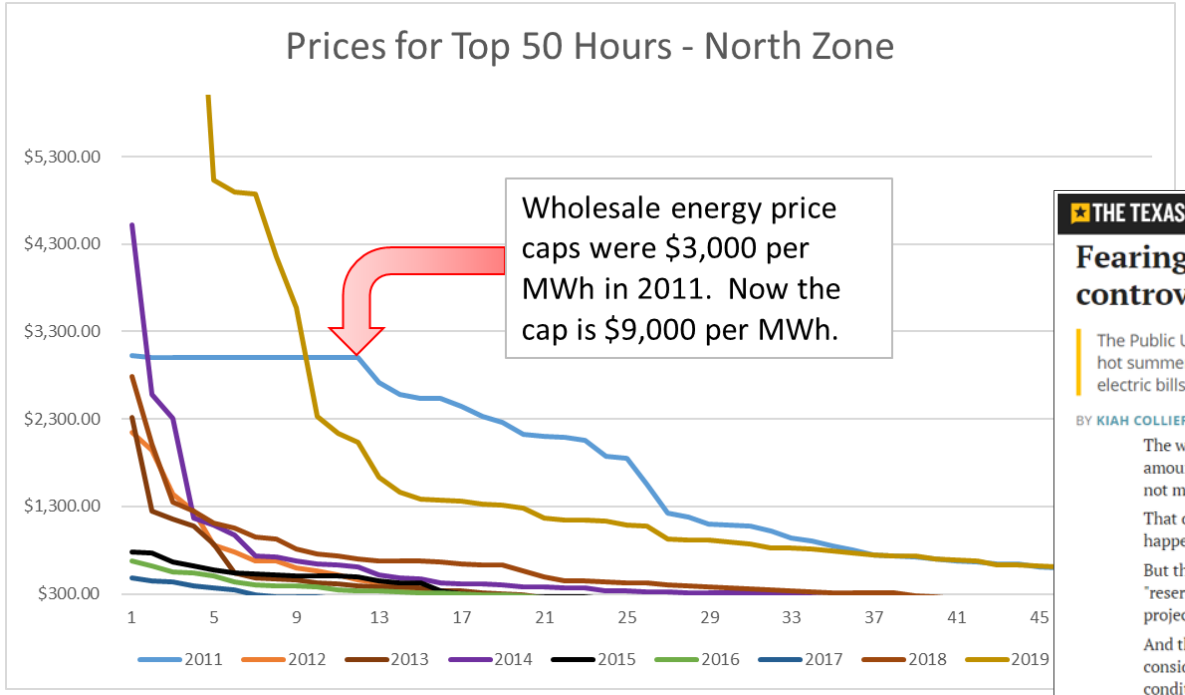
Voluntarily respond to high real time energy prices.

ERCOT publishes actual and forecasted **5 minute prices**. MP2 further assist with dispatch.

Must be on proper retail energy contract to realize benefits.

If on AMS meter, REP must settle using AMS (and not profiled) meter data.

ERCOT pricing can reach $9,000 per MWh. Changes to supply mix and ORDC increases likelihood.



THE TEXAS TRIBUNE

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Fearing outages, Texas regulators consider controversial plan to boost power generation

The Public Utility Commission is considering measures to ensure Texans don't lose power in the hot summer months. A plan generators are pushing would cost $4 billion — and lead to higher electric bills.

BY KIAH COLLIER DEC. 6, 2018 4 PM

The warnings from the operator of Texas' electric grid came several times: The amount of power the state's generators were slated to produce last summer might not meet escalating demand, resulting in rolling blackouts and bloated utility bills.

That didn't happen, despite record-setting power demand. And it's not expected to happen next summer either.

But the Electric Reliability Council of Texas is already warning that the so-called "reserve margin" — the amount of power generators are expected to produce beyond projected demand —will likely be significantly slimmer next summer.

And the state's Public Utility Commission, which regulates electric utilities, is considering a variety of ways to increase the odds that the lights — and air conditioning — stay on.

One of those ideas has generated pushback from across the political spectrum, in part because it could significantly increase the price of electricity, potentially adding a few hundreds dollars per year to the power bill of a family of four. Those who oppose the plan fear it just might fly, given the outsized influence of who's championing it.

Major power generators including Calpine, Exelon and NRG are asking the commission to tweak an existing formula known as the operating reserve demand curve to increase the amount of money they receive when demand for power escalates. The formula was implemented several years ago as part of a compromise deal that stemmed from a similar debate around reliability.

ECONOMIC DEMAND RESPONSE vs. EMERGENCY DEMAND RESPONSE

- Can ERS participants really shut down for high prices? What if an event is called?
  - Yes! The PUCT has been clear on this since the inception of the program.
  - There are certain considerations regarding baseline methodology and impacts to availability to consider.
- If I participate as an LR ("LaaR"), how can I avoid high energy price exposure?
  - Your retail energy contract is one way. Another reasonable strategy may be to participate in ERS during summer months only, providing flexibility to respond to 4CP and high energy prices while also receiving a reservation payment.
- What if I don't curtail for high energy prices or 4CP?
  - Curtailing for high energy prices is *completely* voluntary. While there will be financial implications, there is no obligation to reduce usage.
- What if I don't curtail for ERS?
  - Enrolling in ERS entails a commitment to curtailing by the MWs awarded. ERS will only be dispatched during emergencies and ERS is vital to robust grid operations.
- Can I participate in ERS if I have on-site solar?
  - Yes; for ERS purposes only, ERCOT will add the solar production back into your load to measure your curtailment.

THREE RENEWABLE PRODUCTS FOR C&I CUSTOMERS

1 BEHIND-THE-METER

- On-site Solar
- Virtual Solar
- On-site Solar in combination with storage

2 OFF-SITE RENEWABLES

- Retail Power contracts – all MWh's are from renewable sources
- Additionality & Locationality – for both spinning and new build developments
- Environmental Attributes (RECs / SRECs) retired for the customer

3 PPA INTEGRATION

- For existing customer PPA's/VPPA's
- Shed most of the risk taken on to get more budget certainty

ENERGY STORAGE AND ELECTRIC VEHICLES

1 ENERGY STORAGE

- Batteries as stand alone and paired with solar
- Enhances solar system dynamics
- Provides resiliency
- Economic dispatch for price arbitrage and demand management
- Use stored power to charge electric vehicle during peak

2 ELECTRIC VEHICLES

- Supply for charging infrastructure
- Assistance with demand management
- Analysis of charging infrastructure for commercial applications
- Electric vehicle rate structures for commercial applications
- Electric vehicle incentive rate structures for consumer applications

Onsite Solar Value

SOLAR VALUE….	*…HOW THIS TRANSLATES TO RETAIL VALUE*
Solar output is warrantied for 20+ years and produces $0 energy for 30+ years	✓ **Enables** long term hedging of RTC power (5-20 years)
Solar can be installed at all different scales (10 kW to 10 MW+) which allows it to be a Load or Wholesale Generation Resource	✓ **Enables** long term hedging of RTC supply components like Hub/LZ Basis
Solar production is highly correlated to peak and super peak pricing	✓ **Provides** shaped hedge for the most volatile, **on-peak times in the market**
Solar can now be contracted within Retail Supply Agreement	✓ **Simplified process:** streamlined contracting
Solar is the latest buzz…	✓ **Attractive** PR and marketing opportunities

- Shaped Savings - $3-5/MWh.
- Demand Savings – 15-25%.
- Excess Generation Revenue.
- Resiliency and Sustainability.

Onsite Solar - Shape is Key

Load Intensity Pre-Solar

WD	1	2	3	4	5	6	7	8	9	10	11	12
1	0.75	0.87	0.73	0.87	0.88	0.90	0.97	1.09	1.08	0.97	0.87	0.56
2	0.75	0.86	0.72	0.85	0.86	0.89	0.93	1.06	1.02	0.96	0.85	0.56
3	0.74	0.85	0.71	0.85	0.85	0.88	0.92	1.06	1.01	0.94	0.84	0.55
4	0.74	0.84	0.71	0.86	0.84	0.86	0.91	1.07	0.99	0.93	0.82	0.54
5	0.74	0.84	0.71	0.85	0.83	0.85	0.90	1.06	0.98	0.92	0.81	0.54
6	0.74	0.85	0.73	0.84	0.84	0.86	0.91	1.04	0.96	0.91	0.80	0.55
7	0.75	0.86	0.76	0.85	0.85	0.85	0.92	1.07	0.97	0.93	0.81	0.60
8	0.82	0.95	0.82	0.92	0.89	0.93	1.01	1.08	1.02	1.03	0.89	0.60
9	0.87	1.02	0.86	0.99	0.99	1.02	1.08	1.14	1.10	1.12	0.94	0.63
10	0.90	1.05	0.89	1.03	1.02	1.05	1.11	1.21	1.20	1.16	0.96	0.65
11	0.93	1.07	0.89	1.07	1.04	1.07	1.13	1.26	1.24	1.17	0.98	0.66
12	0.94	1.08	0.90	1.10	1.06	1.07	1.14	1.27	1.27	1.19	0.99	0.67
13	0.94	1.09	0.90	1.10	1.05	1.07	1.14	1.29	1.28	1.19	1.00	0.67
14	0.94	1.08	0.89	1.11	1.03	1.08	1.14	1.28	1.28	1.18	1.00	0.66
15	0.93	1.07	0.88	1.10	1.02	1.07	1.13	1.27	1.26829	1.17	0.99	0.65
16	0.92	1.05	0.86	1.08	1.01	1.06	1.11	1.25	1.25	1.15	0.97	0.64
17	0.90	1.02	0.83	1.05	0.99	1.06	1.10	1.24	1.22	1.13	0.96	0.60
18	0.87	0.99	0.80	1.02	0.96	1.05	1.05	1.21	1.19	1.10	0.94	0.61
19	0.90	1.01	0.79	1.00	0.92	1.02	1.01	1.17	1.14	1.07	0.95	0.63
20	0.88	0.99	0.79	0.97	0.89	0.99	0.99	1.11	1.12	1.07	0.92	0.62
21	0.86	0.97	0.79	0.97	0.92	0.97	0.98	1.10	1.10	1.05	0.89	0.60
22	0.83	0.94	0.77	0.94	0.93	0.98	1.00	1.14	1.13	1.01	0.87	0.58
23	0.83	0.94	0.76	0.92	0.91	0.96	0.95	1.13	1.10	0.99	0.86	0.57
24	0.81	0.91	0.75	0.89	0.89	0.94	0.93	1.10	1.07	0.96	0.82	0.56

Load Intensity Post-Solar

WD	1	2	3	4	5	6	7	8	9	10	11	12
1	0.75	0.87	0.73	0.87	0.88	0.90	0.97	1.09	1.08	0.97	0.87	0.56
2	0.75	0.86	0.72	0.85	0.86	0.89	0.93	1.06	1.02	0.96	0.85	0.56
3	0.74	0.85	0.71	0.85	0.85	0.88	0.92	1.06	1.01	0.94	0.84	0.55
4	0.74	0.84	0.71	0.86	0.84	0.86	0.91	1.07	0.99	0.93	0.82	0.54
5	0.74	0.84	0.71	0.85	0.83	0.85	0.90	1.06	0.98	0.92	0.81	0.54
6	0.74	0.85	0.73	0.84	0.84	0.86	0.91	1.04	0.96	0.91	0.80	0.55
7	0.75	0.86	0.76	0.85	0.85	0.84	0.92	1.07	0.97	0.93	0.81	0.60
8	0.81	0.94	0.75	0.75	0.66	0.69	0.79	0.91	0.84	0.88	0.83	0.59
9	0.65	0.78	0.49	0.56	0.49	0.49	0.57	0.64	0.63	0.63	0.67	0.38
10	0.33	0.48	0.24	0.34	0.25	0.26	0.33	0.45	0.46	0.40	0.43	0.10
11	0.11	0.29	-0.02	0.21	0.06	0.12	0.18	0.32	0.31	0.16	0.24	-0.06
12	0.01	0.16	-0.11	0.07	-0.05	0.01	0.09	0.23	0.30	0.08	0.18	-0.12
13	-0.02	0.05	-0.19	0.02	-0.12	-0.05	0.05	0.26	0.27	0.04	0.11	-0.20
14	-0.01	0.07	-0.18	0.18	-0.04	0.03	0.08	0.20	0.32	0.07	0.20	-0.16
15	0.12	0.20	-0.08	0.19	0.09	0.15	0.21	0.31	0.44	0.25	0.32	-0.04
16	0.32	0.33	0.09	0.34	0.26	0.27	0.38	0.51	0.54	0.46	0.48	0.12
17	0.61	0.60	0.32	0.52	0.52	0.54	0.59	0.77	0.81	0.77	0.78	0.41
18	0.85	0.90	0.64	0.83	0.77	0.81	0.81	1.02	1.09	1.09	0.94	0.61
19	0.90	1.01	0.79	1.00	0.91	1.02	1.00	1.17	1.14	1.07	0.95	0.63
20	0.88	0.99	0.79	0.97	0.89	0.99	0.99	1.11	1.12	1.07	0.92	0.62
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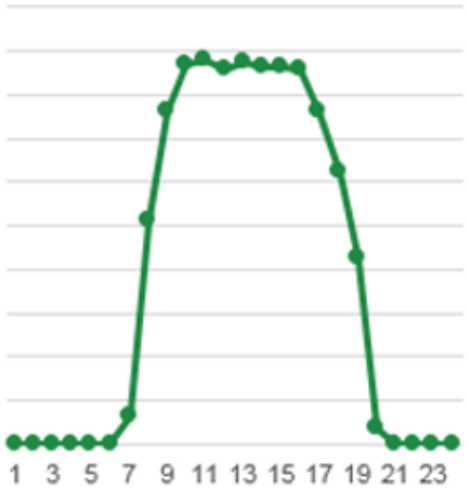
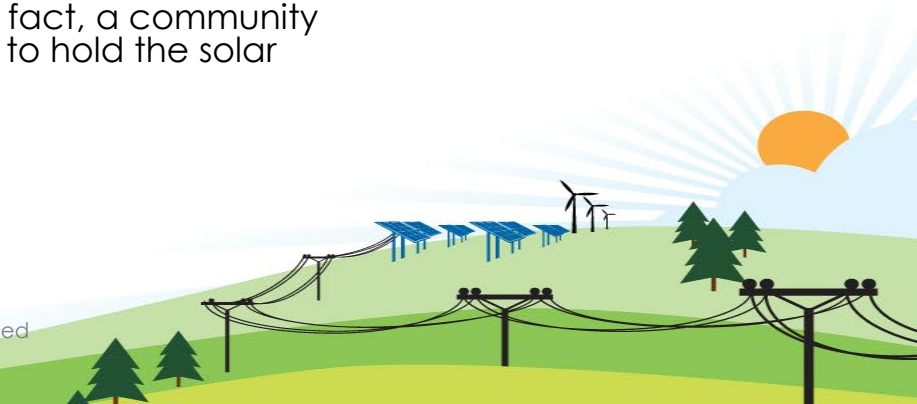
24	0.81	0.91	0.75	0.89	0.89	0.94	0.93	1.10	1.07	0.96	0.82	0.56



Solar Gen during Coincident Peak Periods

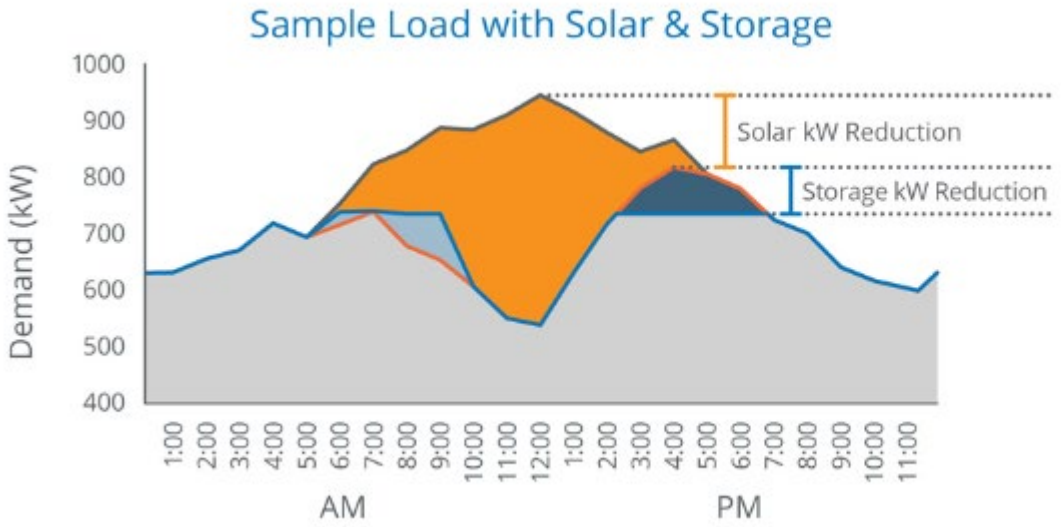
Onsite Solar Benefits

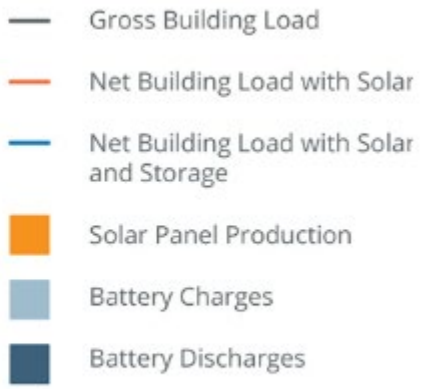
- **Lower electric bills**: Customers who participate get credits on their bills for the electricity generated by the solar installation.
- **Lower electric bills for non-subscribers**: Adding renewable energy to the power grid increases electricity supply, lessens the need for expensive, polluting power plants, and lowers market prices for all residents.
- **Greater reliability**: By encouraging generation near the point of consumption, solar reduces strain on the grid, and that reduces system maintenance and repair and prevents costly "line losses," in which electricity is lost along the transmission and distribution system.
- **Reduced peak demand**: Community solar adds more electricity to the grid, which would help reduce demand during peak times—when prices skyrocket and power plants produce the most pollution.
- **Added financial benefit through selling Solar Renewable Energy Credits (SRECs)**: Under the Future Energy Jobs Act, the state will purchase a community solar project's RECs to meet Illinois' renewable energy goals.
- **Consumer education**: Homeowners involved in solar tend to be more aware of, and therefore more conscientious about, their energy consumption.
- **Community improvement**: Community solar installations make efficient use of space that would otherwise be wasted, such as the rooftop of a school, or an eyesore, such as a "brownfield"—a former industrial site that remains vacant because it has environmental contamination. In fact, a community center could use the financial benefits of such a program to help fund a new roof to hold the solar panels.

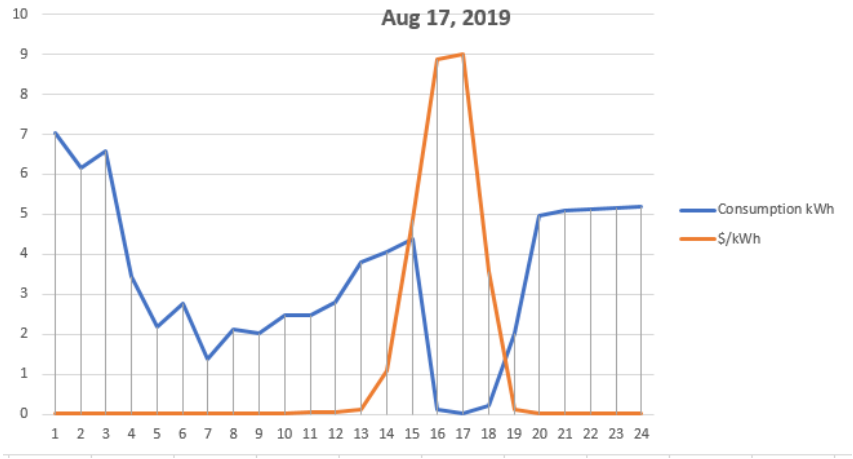


Solar plus Storage: Combining Value

- Solar delivers peak energy that replaces grid energy.
- Battery storage can level off continued peak usage when the sun is setting and solar power diminishes.
- Sophisticated software can be used to set optimal times when the battery charges and discharges increasing the customer benefit.
- Reducing the spikes in demand will lower cost further by reducing expensive utility demand charges as well as coincident peak capacity obligations.







Offsite Solar Benefits

- Ability to support shorter contract terms to 10 years as opposed to 20 year PPAs.
- Smaller volume (10K+ MWhs) size availability so more customers than ever can now participate in these markets.
- Simplified contracting structure and purchasing option to meet renewable / sustainability goals and mandates. Load following retail contract that provides a single, predictable price per MWh.
- Renewable energy and environmental attributes from a specific facility on their grid.
- Delivery to Hub or Load Zone.
- Also supports new facility build that can include “additionality” claims.
- Environmental Attributes equaling the amount of renewable energy purchased are retired on Customer’s behalf.
- No complex derivative accounting required
- Quicker timing than a PPA or VPPA. Can turn around inside of a week as opposed to months.
- Customer volume is shaped and can be matched with Off-Peak wind and On-Peak solar for better market alignment and grid support.