

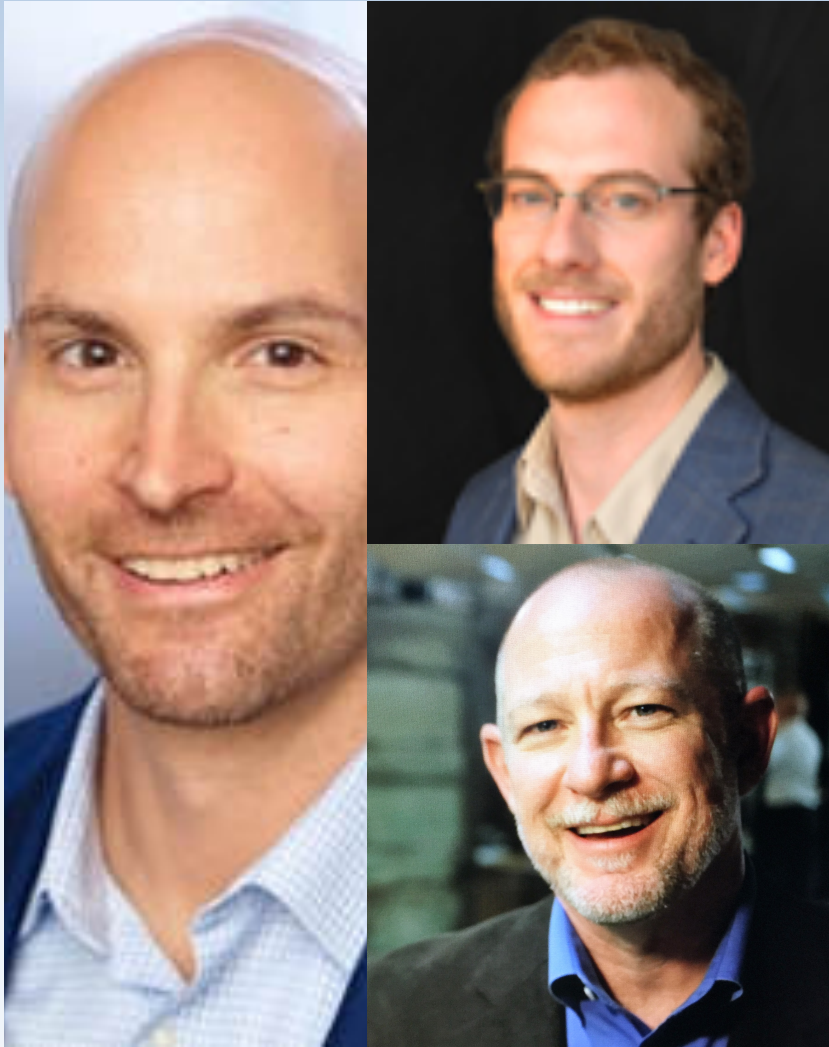
Renewable Energy Planning & Procurement *for Cost Savings and Budget Certainty*

November 1, 2018

**Presented at North Central Texas Council of Governments
Arlington, Texas**



**North Central Texas
Council of Governments**



Speaker Introductions

TJ Ermoian – TEA President & Founder

Mike Bendewald – TEA Chief Operating Officer

Dan Seif – Principal, Seif Consulting



Disclaimers & Disclosures

- 1. The North Central Texas Council of Governments does not endorse or recommend any energy provider, pool or purchasing method, and the material presented here today is for educational purposes.*
- 2. Texas Energy Aggregation (TEA) is providing this information today at our own expense.*
- 3. TEA is compensated by energy providers chosen through an RFP process meeting State purchasing standards. Compensation method for any service provided is listed on the Comptroller's TXSmartBuy web site.*
- 4. TEA is only compensated if we are successful in helping a client obtain an energy agreement.*
- 5. If you have interest in utilizing any of TEA's services, we would be happy to discuss further specifics with you at another date.*

Questions?

Meeting intention and objectives

Intention: Provide NCTCOG members knowledge of opportunities to reduce cost and create long-term budget certainty through renewable energy purchasing agreements.

Objectives:

1. To understand the fundamental economics of how renewables save energy cost and create budget certainty
2. To be able to summarize and simplify the contracting options and process of procurement
3. To increase collaboration among peers and trust in the process
4. To identify common goals for aggregation potential

Tell us about yourself



- **Your name, title and organization**
- **What you hope to get out of today's workshop**
- **Current electricity purchasing method (if you know or would like to share)**
 - Run your own RFP
 - State program (Comptroller or GLO)
 - Interlocal agreement (such as TASB, TIPS, TCAP)
 - Other method?

State Contract Design and Organization



Texas Comptroller, Statewide Procurement Division designs and releases RFP in 2017 for **Electricity Sourcing Services** interlocal purchasing contract



The **State Energy Conservation Office** is chosen to oversee this contract and the RFP process

Any State agency, municipality, school district, college or university may use this contract through the TXSmartBuy portal

2018 - State approval of **Texas Power Pool** through **Electricity Sourcing Services** contract terms



Non-profit **Rocky Mountain Institute** is included as renewables consultant



2017 **Texas Energy Aggregation** wins RFP as selected aggregator/facilitator/consultant





Facilitated by
the Texas Comptroller's
Statewide Procurement Division

Purpose: To provide a simplified method for public entities to:

- Participate in renewable energy buys
- Achieve the lowest historical fixed energy rates
- Ensure adherence to safe, legal State purchasing guidelines
- Access to other comprehensive services in a simplified, unified contract, including:
 - Demand Response programs (voluntary load shedding or dispatch of backup generation assets) for additional revenue/cost reductions
 - On-site solar to reduce regulated delivery costs
 - Includes regulated areas

Ground Rules

- Be present
- Confidentiality
- Step forward, step backward

Today's agenda

[2:00–2:20] Welcome

[2:20–2:55] State of the market

[2:55–3:10] Experiences*

[3:10–3:25] Break

[3:25–4:00] Options for procurement

[4:00–4:30] Action planning*

* Includes small group discussion

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Two types of renewables: utility scale and distributed

	<u>Description</u>	<u>Recent Trends</u>
	<ul style="list-style-type: none">• Greater than 10MW; most often 50+MW• Solar and wind farms• Often located in west and north Texas	<ul style="list-style-type: none">• Corporates are driving demand, largely in Texas• Long-term renewable contracts beat the market price• Aggregations forming to achieve better pricing
	<ul style="list-style-type: none">• Less than 10MW / most often less than 1 MW• Typically solar• Located on site of the buyer's facility	<ul style="list-style-type: none">• Transmission costs have been on the rise, creating tremendous economic case• Regulated-region customers can work with local co-op or muni

Two types of renewables: utility scale and distributed

Description

Recent Trends

Utility Scale

- Greater than 10MW; most often 50+MW
- Solar and wind farms
- Often located in west and north Texas

- Corporates are driving demand, largely in Texas
- Long-term renewable contracts beat the market price
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Distributed Scale

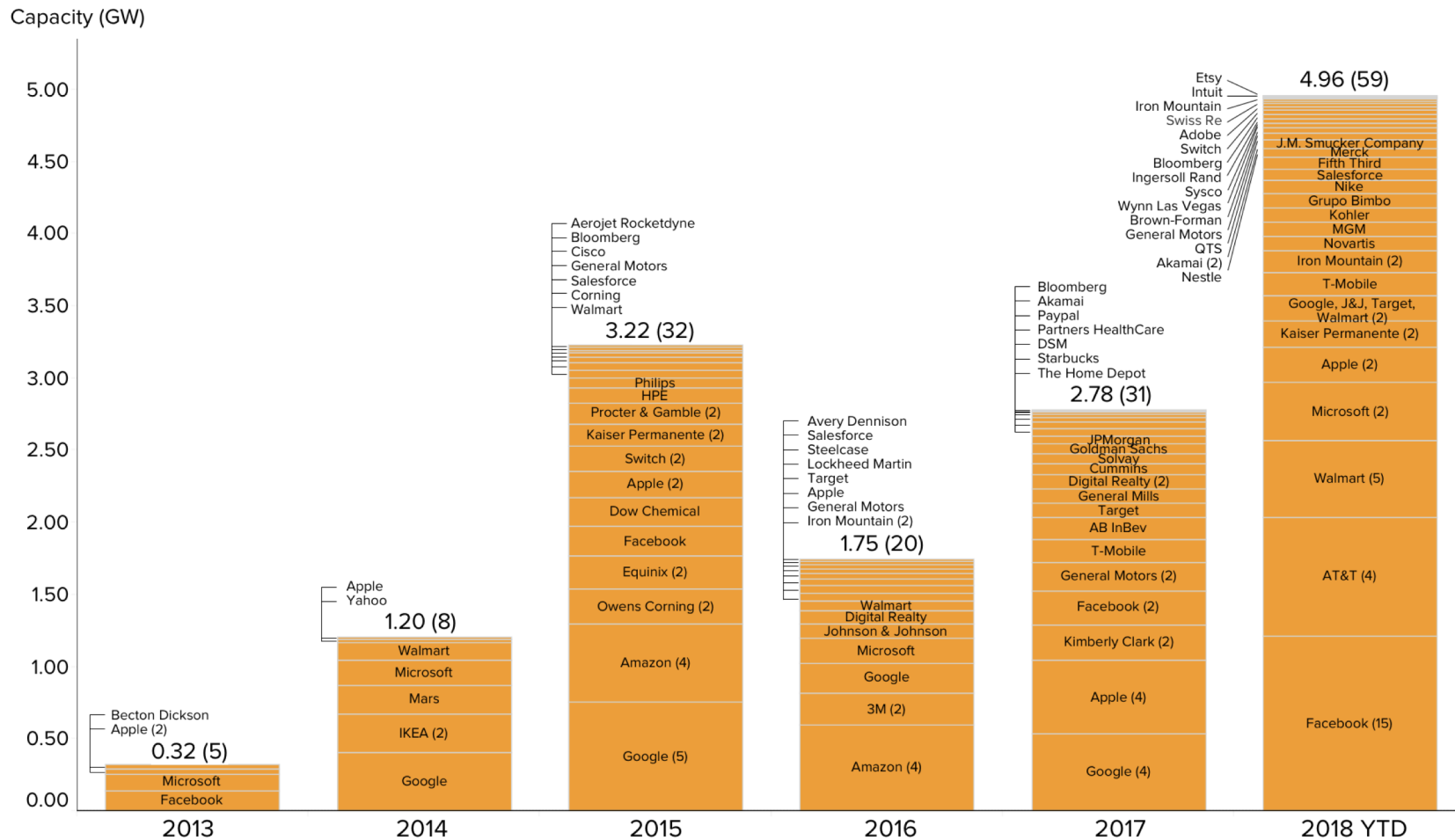
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- Typically solar
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- Transmission costs have been on the rise, creating tremendous economic case
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Corporates are driving much of the demand for utility-scale power purchase agreements

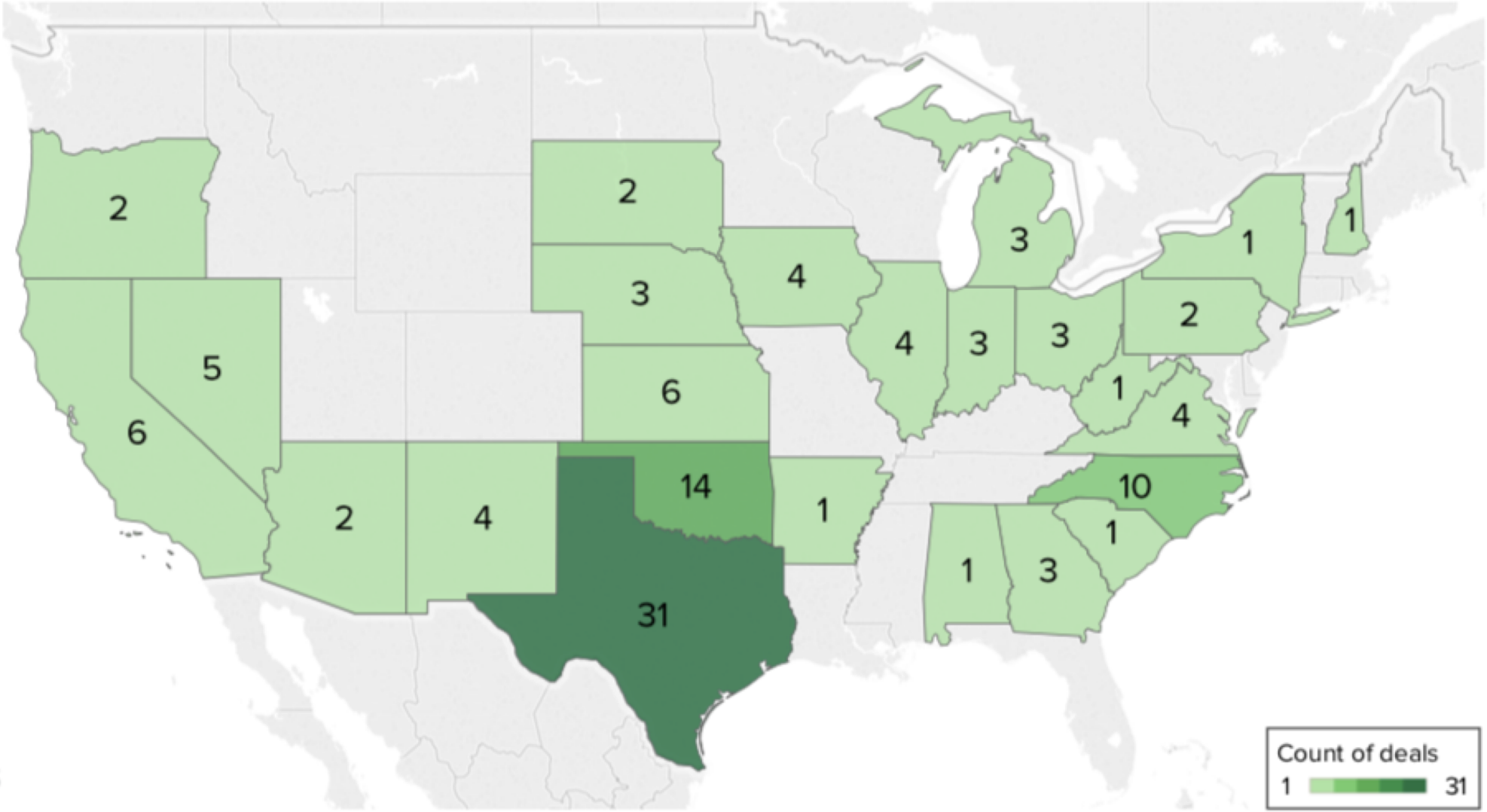


Corporate Renewable Deals 2013 – 2018 YTD



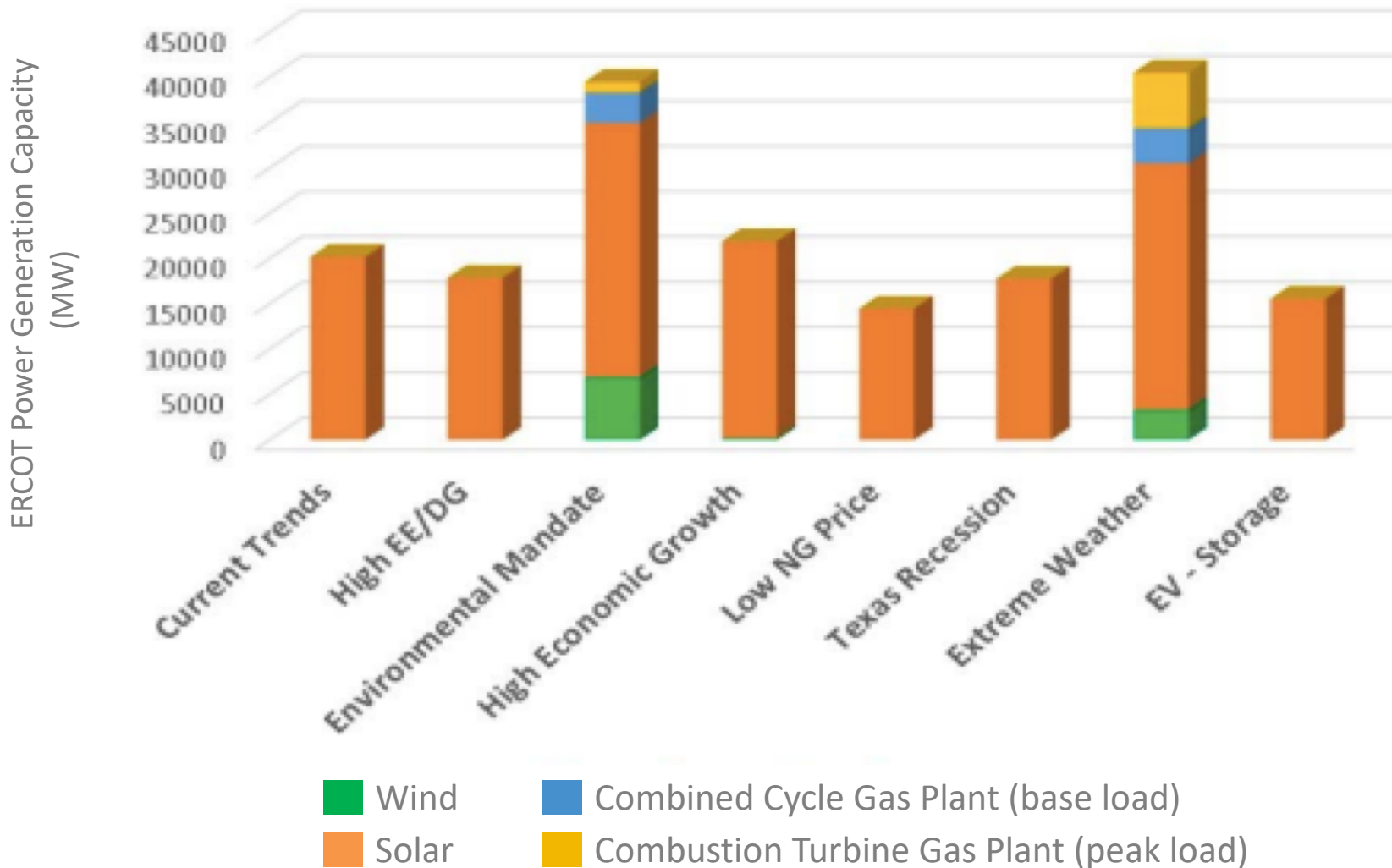
As of October 17, 2018. Publicly announced contracted capacity of corporate Power Purchase Agreements, Green Power Purchases, Green Tariffs, and Outright Project Ownership in the US, 2013 – 2018 YTD. Excludes on-site generation (e.g., rooftop solar PV) and deals with operating plants. (#) indicates number of deals each year by individual companies. Copyright 2018 by Rocky Mountain Institute

Most deals are getting done in Texas



Source: Business Renewables Center

ERCOT's outlook on new-build generation concludes solar is most cost effective the next 20 years



Source: Long term assessment for the ERCOT region,
http://www.ercot.com/content/wcm/lists/89476/2016_Long_Term_System_Assessment_for_the_ERCOT_Region.pdf

City of Houston — off-site solar generation

Description

- “SolaireHolman” 50 MW solar array
- PPA executed in 2016, online in 2017
- 20 year contract
- Meets 10.5% of Houston’s municipally owned load



Lessons

- Long-term (>15 years) necessary for cost savings
- Node for this project has been poorly priced
- Cost savings are somewhat difficult to track
- May be possible to increase project sizes if more power demand viable

203,840 panels, assembled by 148 workers, power....

Benefits

- ~\$2m/yr average savings over term
- Budget certainty for 10.5% of energy-portion of power bill
- #1 US EPA ranking for local government green power users
- #7 ranking by US EPA for overall green power users



Zoo

Bob Lanier
Public Works Bldg.

IAH Terminals

WWT Plants

“As the nation’s largest municipal purchaser of green power, we are living proof that large, industrial cities like Houston can have a robust economy but also help fight climate change”

- Houston Mayor Sylvester Turner

University aggregation case study

Description

- Aggregation of George Washington University (GW), American University (AU) and the George Washington University Hospital (GWUH)
- 53.5 MW of solar

Lessons

- Signed a 20-year power purchase agreement
- ~50% of power consumption is met by solar, remainder is market power

Benefits

- Reach carbon reduction goal
- Economic savings over time

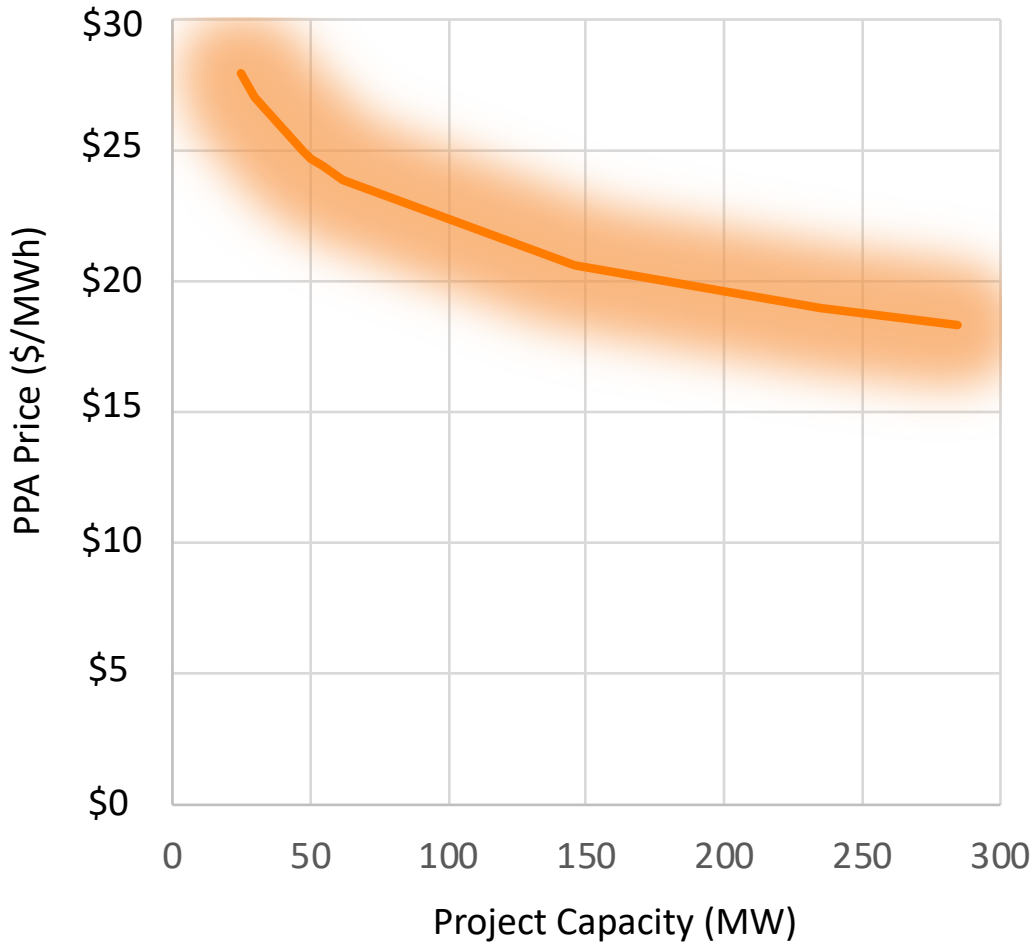


“It really is a model for what universities and other institutions can do together to build capacity for alternative energy.”

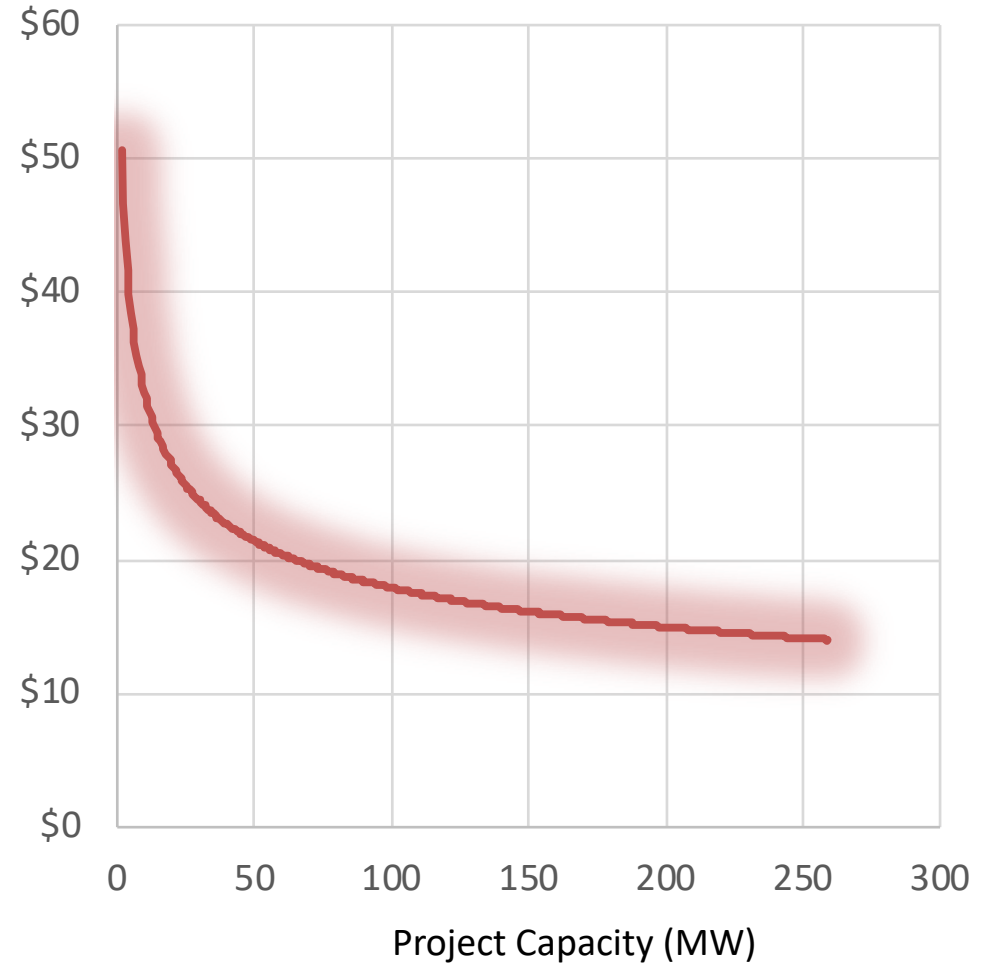
— Steven Knapp, GW President, during remarks to celebrate the one-year anniversary of the project completion

PPA price variability: Bigger projects offer lower pricing

Solar PPA Price vs Project Capacity



Wind PPA Price vs Project Capacity



Data source: Lawrence Berkeley National Lab; data does not distinguish between hub and zone settlement; assume +/- \$4/MWh margin of error

Move quickly or wait?

Current Status

- Solar and wind PPAs at all time low pricing
- Imposition of panel trade tariffs in early 2018 have caused solar PPA pricing plateau, but not increase
- Presumption that wind and solar PPAs only get cheaper is not accurate – Wind PPAs got *more expensive* for 6 consecutive years (2003–2009)
- Immediate savings available

Risks of Waiting

- Elimination-or-reduction of TX Section 313 property tax abatements by Comptroller
- Increases in solar/wind (and related materials like steel) tariffs
- Increase in power market futures prices (projects will then sell at market *and not* cost)—market prices currently near *record lows*
- Tax credits are coming to an end—last opportunity is 2020 for wind and 2020–2023 for solar (steps down over 3 years from 30% to 10%)

Two types of renewables: utility scale and distributed

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Recent Trends

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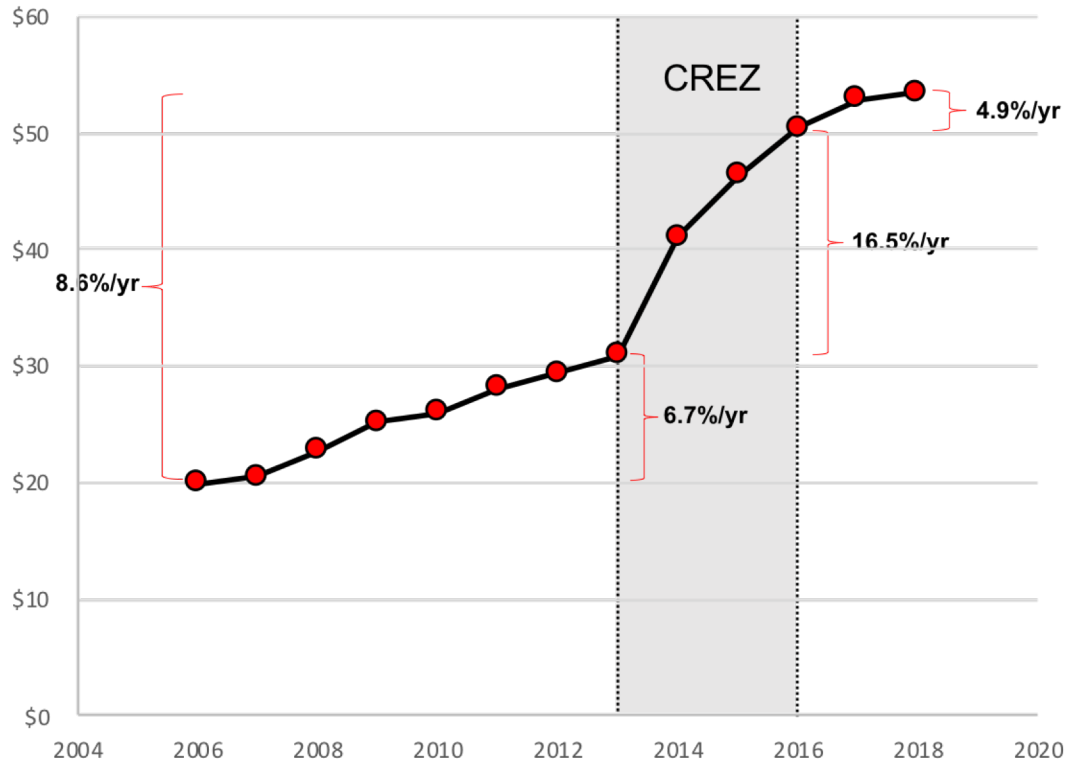
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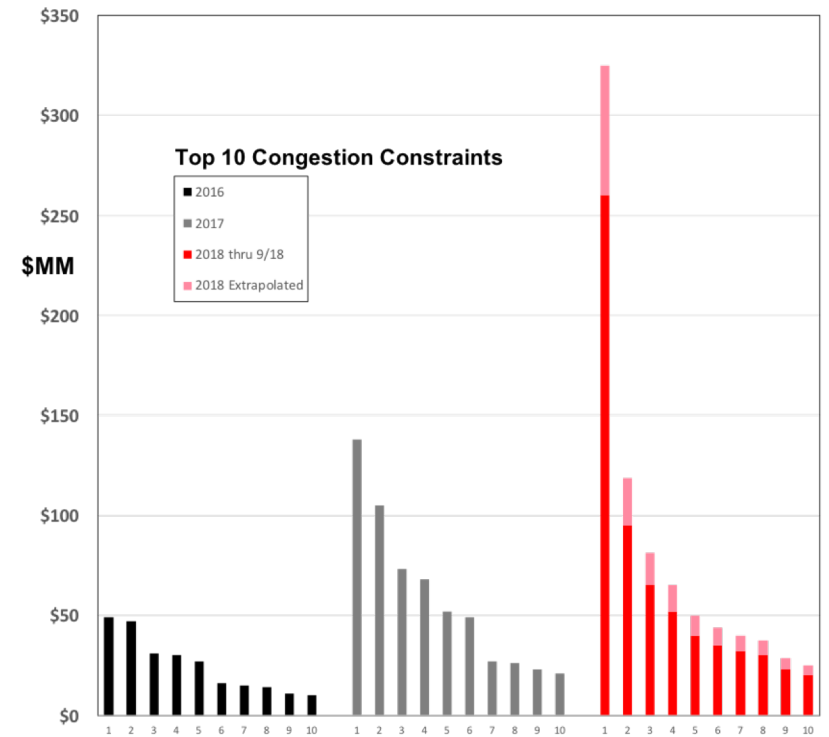
ERCOT Transmission Charge Escalation

ERCOT 4CP Transmission Demand Charge (\$/kW-yr)



Source: PUCT

Worsening Congestion Drives More Transmission



Source: ERCOT

ERCOT Transmission Charge Escalation

- Oncor transmission charges will closely follow ERCOT “Postage Stamp” Rate
- Slight discount to “Postage Stamp” rate due to cross-subsidization (small commercial and residential paying a little more than their fair share)

ERCOT “Postage Stamp” Rate = \$53.58 / kW-yr = \$4.47 / kW-mth

Sept. ‘18 Average Oncor Transmission Cost Recovery Factor (“TCRF”) = \$47.48 / kW-yr = \$3.96 / kW-mth

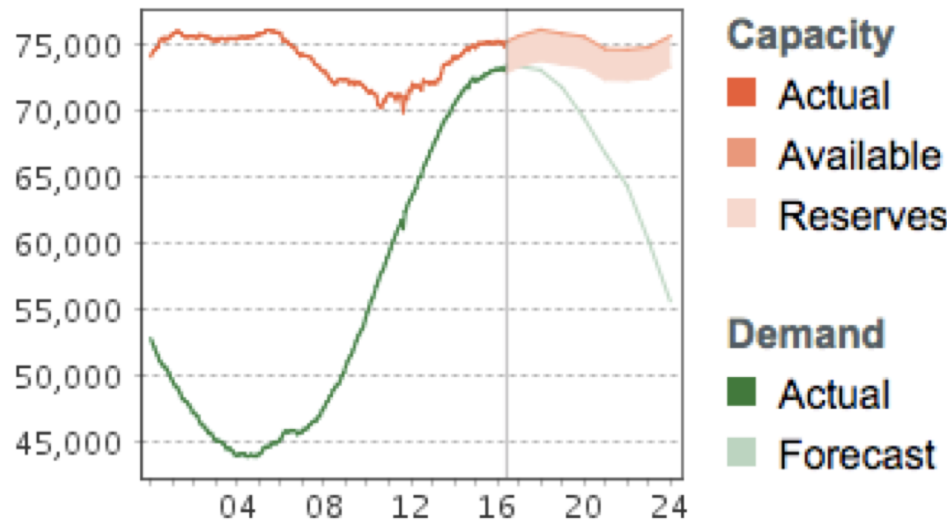
Oncor - Docket 48408		
Class	Charges	
Secondary > 10 kW IDR	per 4CP kW	\$4.566693
Primary > 10 kW IDR	per 4CP kW	\$4.107310
Primary > 10 kW Substation	per 4CP kW	\$3.148377
Transmission IDR	per 4CP kW	\$4.006269

On-site solar reduces transmission charges

Every 4CP moment has occurred between 3:45 and 5pm...

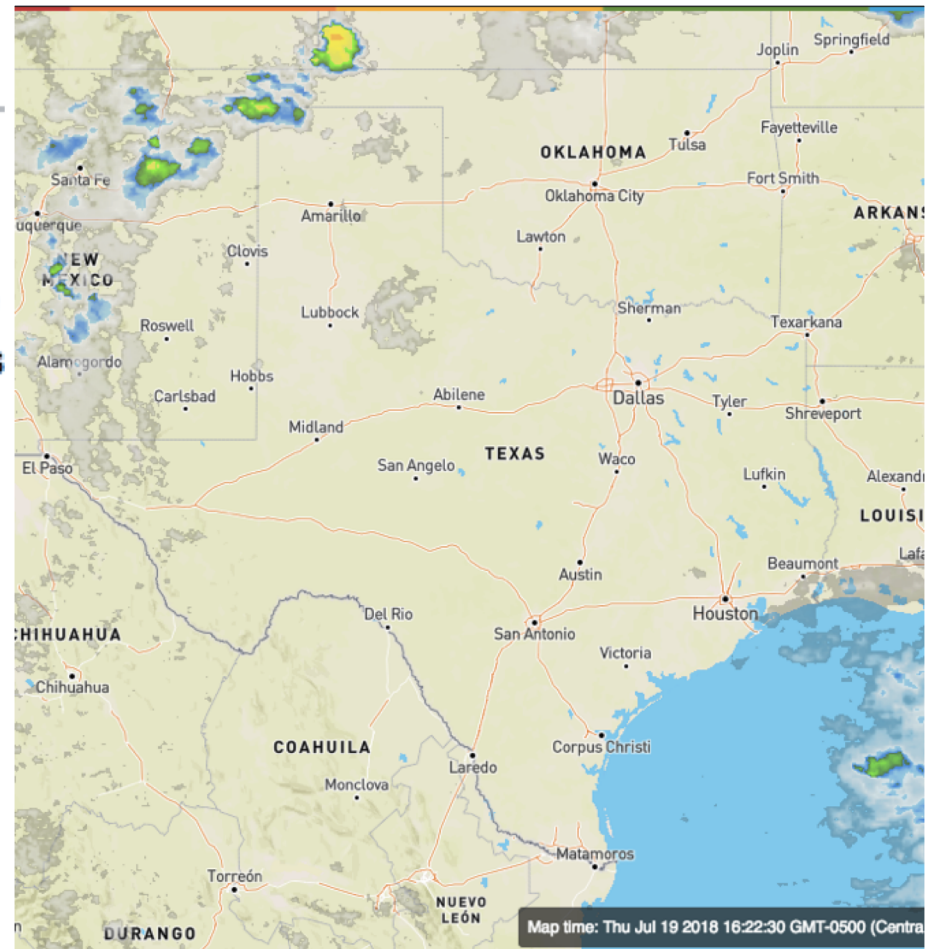
...No need to enroll in 4CP predictive services because the sun is shining >90% of time

TODAY'S OUTLOOK

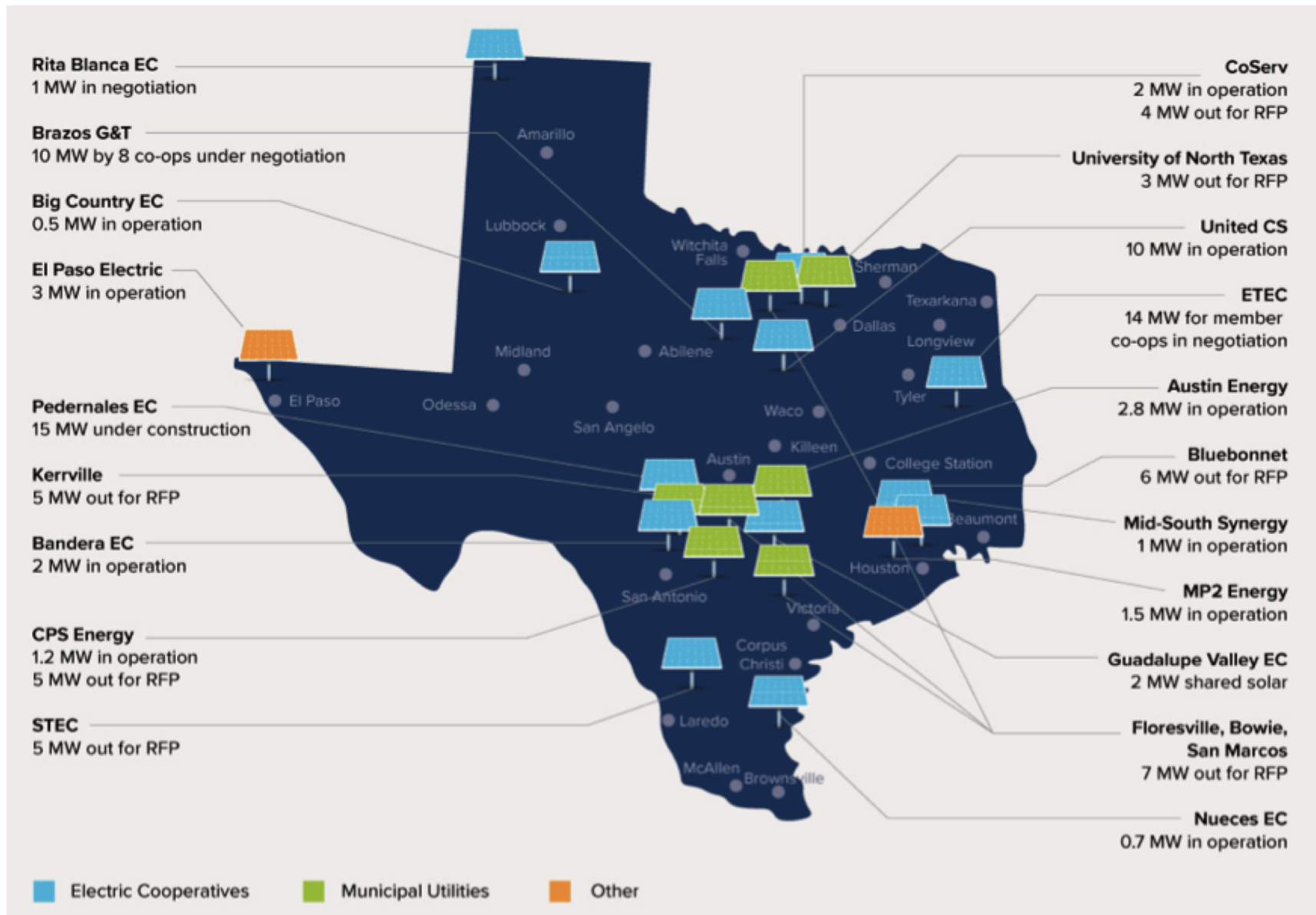


Current Demand: 73,360 MW

Last Updated: Jul 19, 2018 - 16:24



Co-ops and muni's are racing ahead with solar



Source: Rocky Mountain Institute, <https://www.greenbiz.com/article/why-distributed-solar-winning-texas>

City of Kerrville — utility-customer solar generation agreement

Description

- Local non-profits host solar arrays for municipal utility, KPUB
- Projects are front-of-the-meter (on distribution grid)
- Sized at 0.99 MW to capture transmission savings
- Hosts receive discounted power rates
- Remaining power provides lower rates to low income housing.
- KPUB developed tariff structure, determined hosting finalists, and awarded solar projects in 2018

Lessons

- Took a substantial time and internal resources for KPUB to find non-profit hosts and the solar provider
- Utility-scale renewables procurement is a lower resource burden for KPUB

Benefits

- Provides savings to KPUB via transmission (4CP) and energy cost savings – savings passed on to hosts and low-income housing
- Property tax payments of power projects stays within community



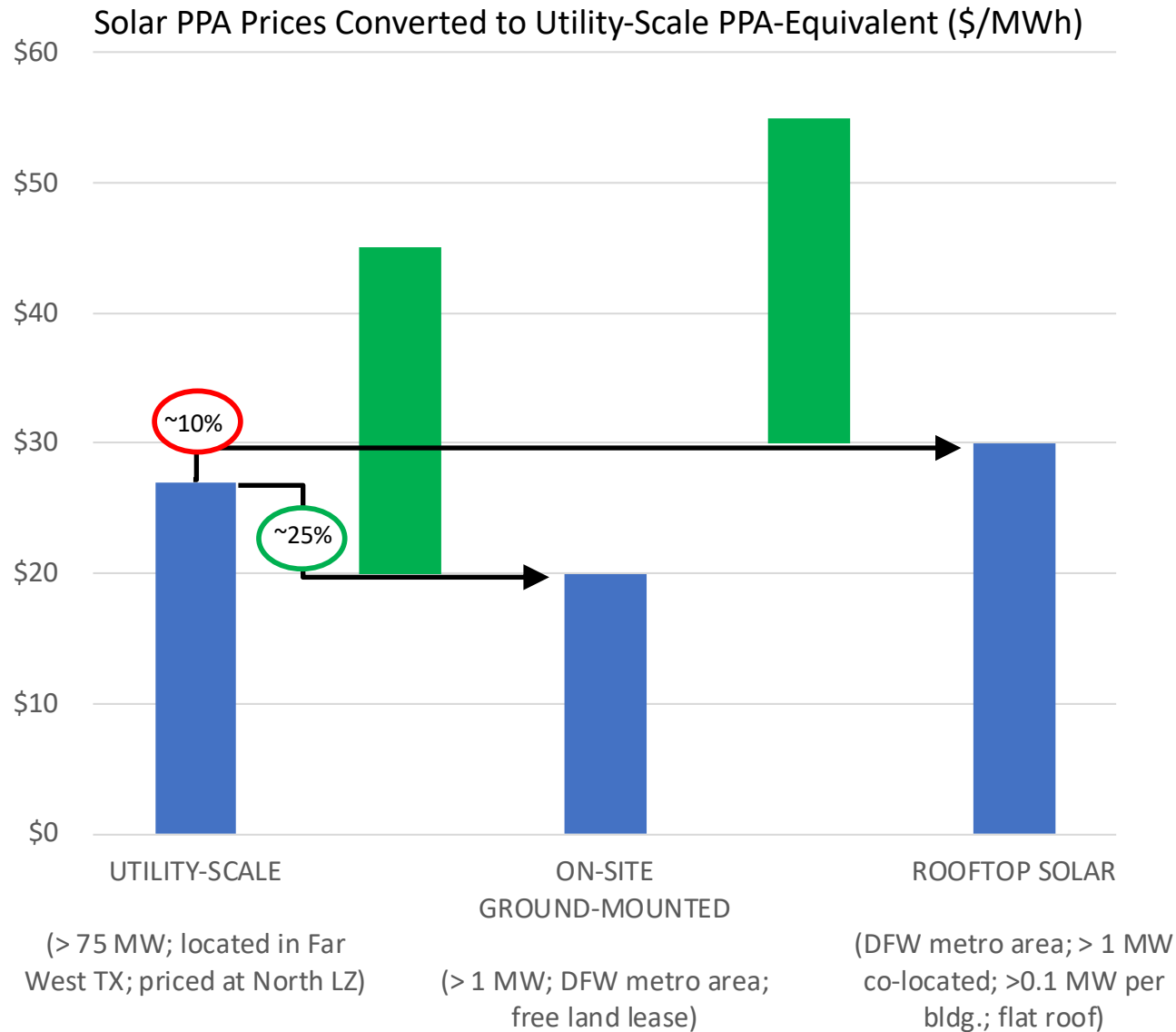
‘Solar Partners’ chosen for two local panel sites

Mike Wittler, general manager of Kerrville Public Utility Board, explained the planned north-south orientation of solar panels to be erected on this acreage on Schreiner University's Weston Farm between East Main Street and Singing Wind Drive. The SU property is one of two leases set for the project.

Source: Hill Country Community Journal

Comparing utility- and distributed-scale solar

UTILITY SCALE versus DISTRIBUTED SCALE



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[3:25–4:00] Options for procurement

[4:00–4:30] Action planning*

* Includes small group discussion

Experiences

2:55–3:10

1. Form small groups
2. Share your experiences with renewables (10 min)
 - a) Have you considered renewables? Why or why not?
 - b) How did the renewable energy offers perform?
3. Sharing in the plenary (5 min)
 - a) Volunteers share their discussions/insights

Framework: How do the renewables energy offers perform?

Performance Indicator	Performance 1 = very weak 5 = very strong
Contracting simplicity	
Competitively bid on supplier qualifications	
Competitively bid on price	
Budget certainty	
Length of contract	
Cost savings	
Ability to track savings	
Additionality (sustainability)	
Scale (% of your consumption)	

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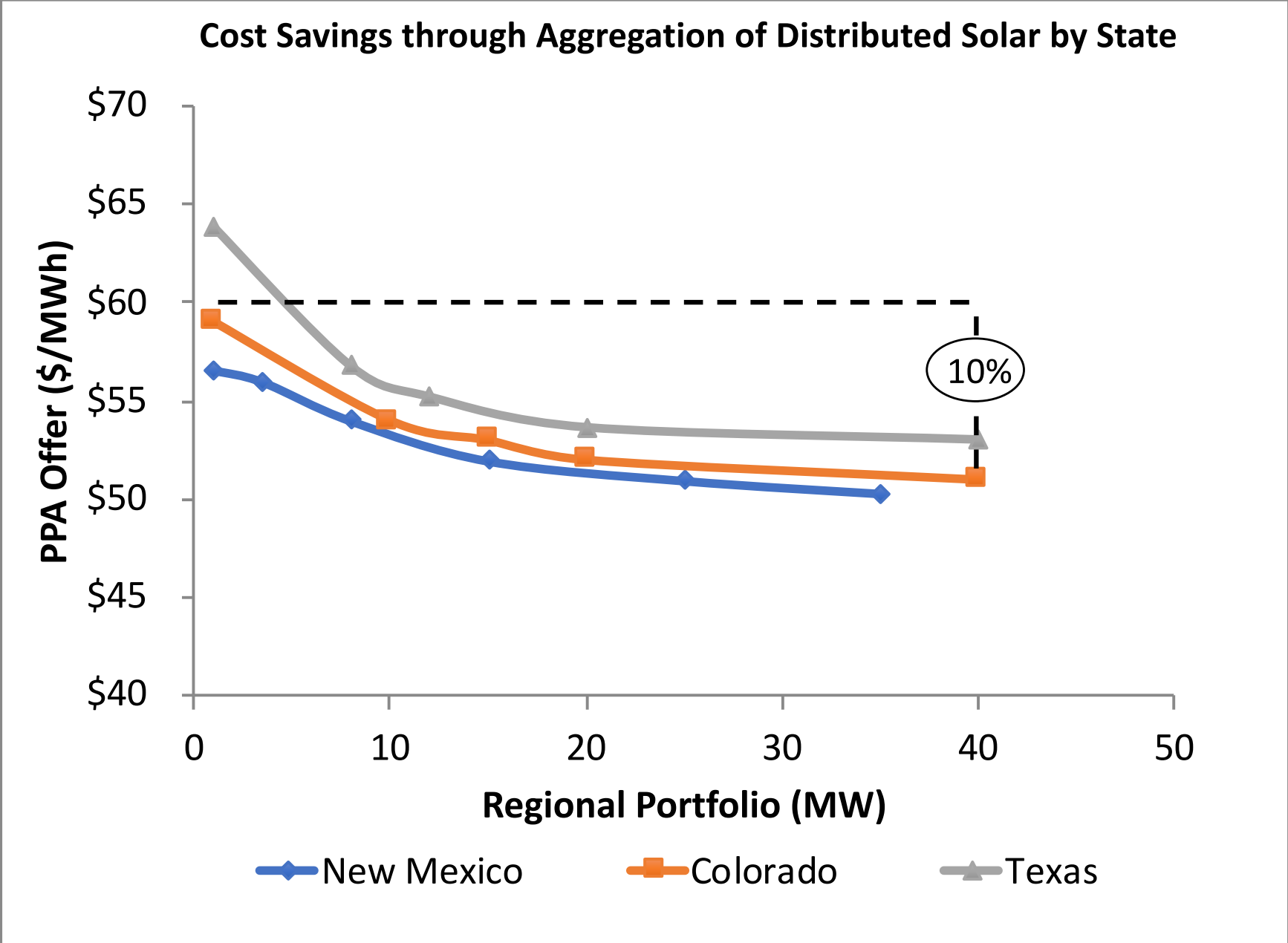
Framework: Rate your priorities

Performance Indicator	How important? 1 = not important 5 = very important
Contracting simplicity	
Competitively bid on supplier qualifications	
Competitively bid on price	
Budget certainty	
Length of contract	
Cost savings	
Ability to track savings	
Additionality (sustainability)	
Scale (% of your consumption)	

Distributed Solar: Options for Procurement

	<u>Description</u>	<u>Assessment</u>
1. Self-procurement	<ul style="list-style-type: none">• Release RFP• Evaluate bids and select a provider	<ul style="list-style-type: none">• Highly customized• Proceed at your own pace• Higher price
2. Muni or Co-op	<ul style="list-style-type: none">• Work with local utility to procure the solar• Bilateral contract/tariff	<ul style="list-style-type: none">• Enables transmission cost savings for better economics• Can be part of an aggregation• Muni or co-op can be challenging to work with
3. Aggregation	<ul style="list-style-type: none">• Multiple entities release RFP together• Individual contracts	<ul style="list-style-type: none">• Can reduce cost by ~10% in relation to self-procurement• Additional buyers can complicate the procurement

Aggregation of distributed solar saves 10% on PPA price



Utility-scale Renewables: Options for Procurement

Description

1. Retail Electricity Provider

- Contract for “100% renewable” power
- Fixed price, matches load
- 2–10 year term

2. Power Purchase Agreement

- Agreement with renewable project developer
- Variable volume, fixed price
- 15–20 year term

3. Public Power Blocks

- Subscription to an aggregated power purchase
- Fixed price block
- 15–20 year term

RECS = Renewable Energy Certificates

Public Power Block is the biggest public entity renewables aggregation, offering low prices and budget certainty



What it is

- A 150+ MW block of power composed of new-build solar, new-build wind, and grid power (natural gas, coal, nuclear, and existing renewables)
- 15–20 year term, beginning mid-2020
- To be competitively bid on price and qualifications for the Texas Power Pool early 2019

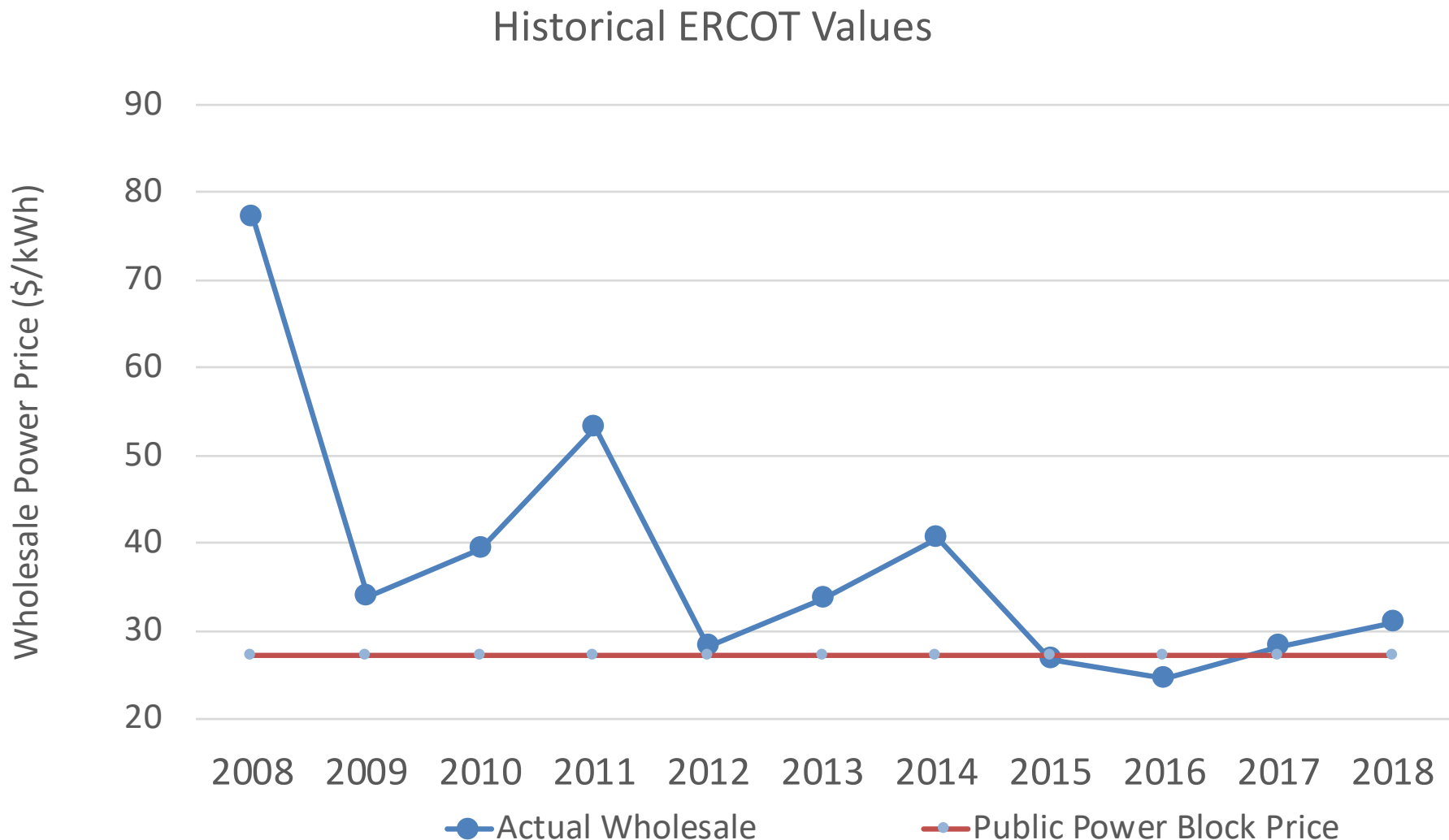
Why it matters

- Immediate cost savings
- Reduced exposure to electricity market volatility
- Integrates with existing and future retail electricity provider contracts
- Enables 150–200 MW of new-build solar and/or wind
- Creates revenue for Texas university systems

Target Customers

- State of Texas entities or AA-rated-or-higher Texas municipal entities, ISDs and universities
- Minimum 20 million kWh annual power consumption

The Public Power Block (PPB) enables public entities to lock in historic low *temporary* pricing, but now for 15–20 years



Source: Actual wholesale values are historical load zone settlement prices taken from ERCOT State of the Market reports.

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Action Planning

4:00–4:25

1. Form small groups
2. How can you overcome renewable energy procurement challenges? (5 min)
 - a) What are your procurement challenges?
 - b) What does success look like?
3. What are the most important steps to take? (10 min)
 - a) What do you need to accomplish?
 - b) Who should be involved?
 - c) How will you know when you are making progress?
4. Sharing in the plenary (10 min)
 - a) Volunteers share their discussions/insights

Concluding messages

- Texas Power Pool is a power purchasing option made available through the Comptroller Statewide Procurement Division
- Renewable energy is the lowest cost power in Texas if procured long-term
- No need to wait for your retail power contract to expire
- Renewable energy provides long term hedge against future prices
- Savings vs long-term market prices are not guaranteed, but most deals are done based on high probability

THANK YOU

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