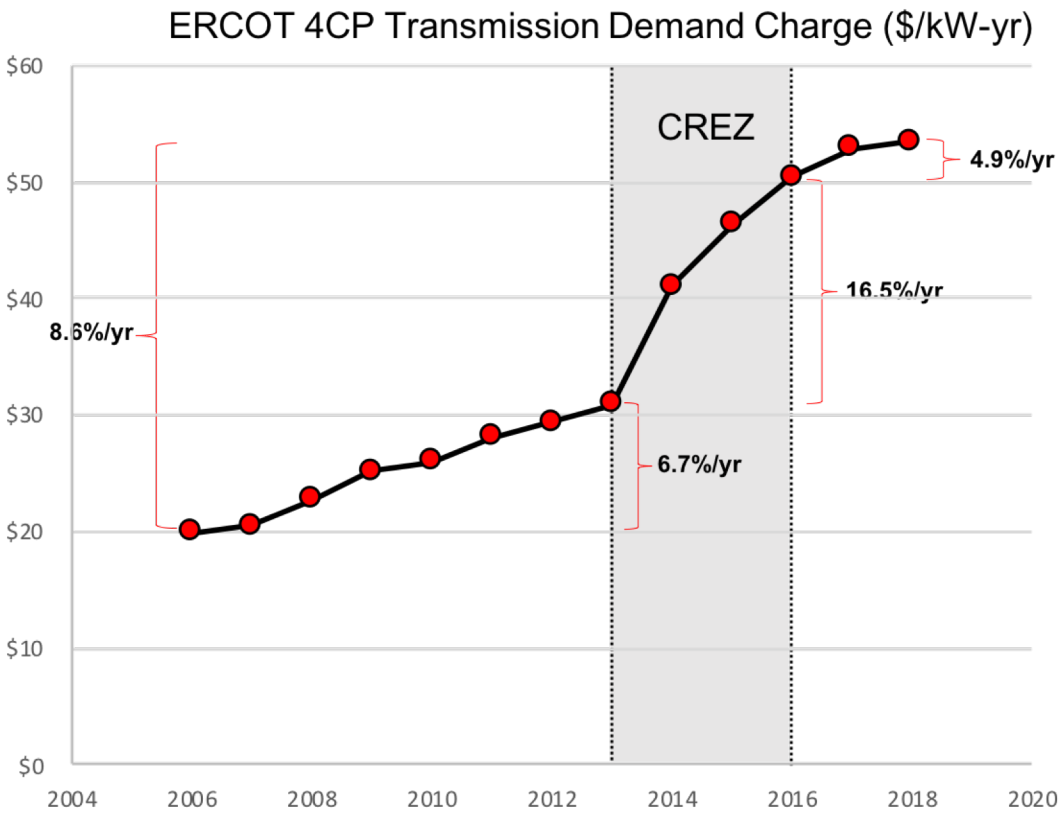
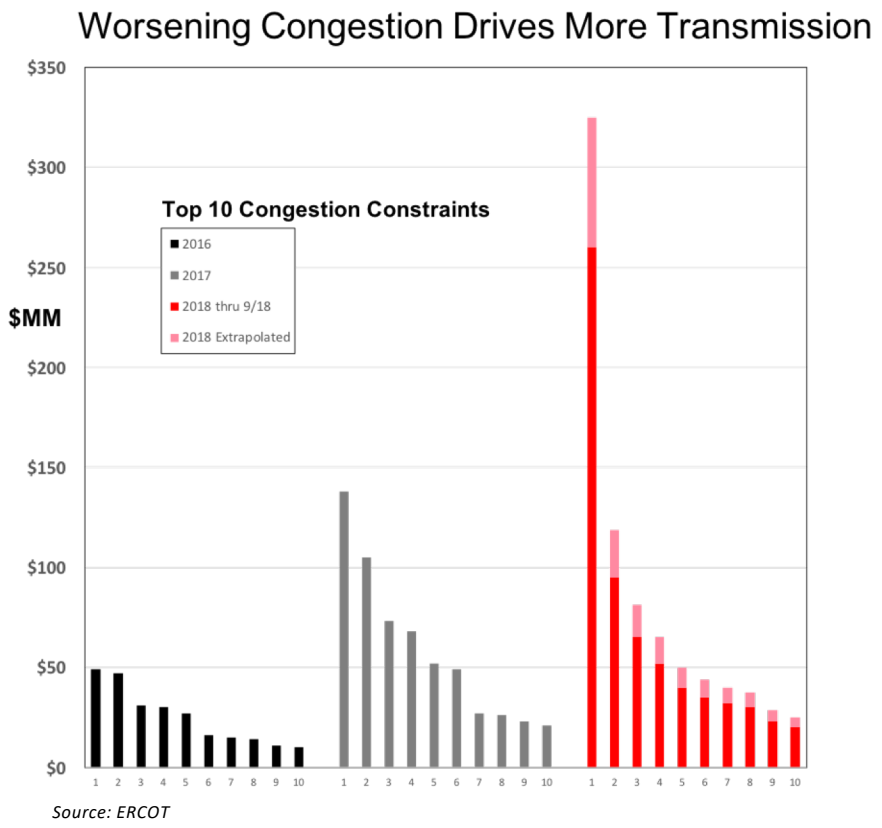
Two types of renewables: utility scale and distributed

	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 • Aggregations forming to achieve better pricing
Distributed Scale	• Less than 10MW / most often less than 1 MW • Typically solar • Located on site of the buyer's facility	• Transmission costs have been on the rise, creating tremendous economic case • Regulated-region customers can work with local co-op or muni

ERCOT Transmission Charge Escalation



Source: PUCT



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

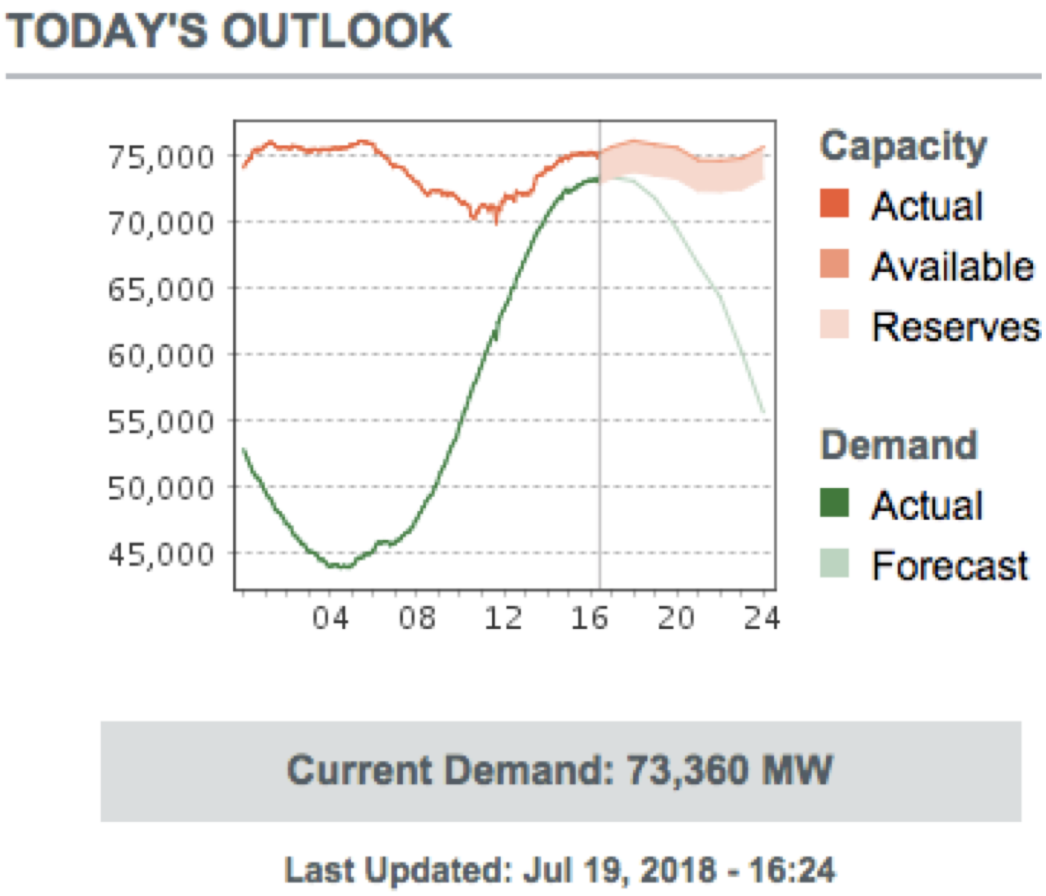
Sept. ‘18 Average Oncor Transmission Cost Recovery Factor (“TCRF”) = $47.48 / kW-yr = $3.96 / kW-mth

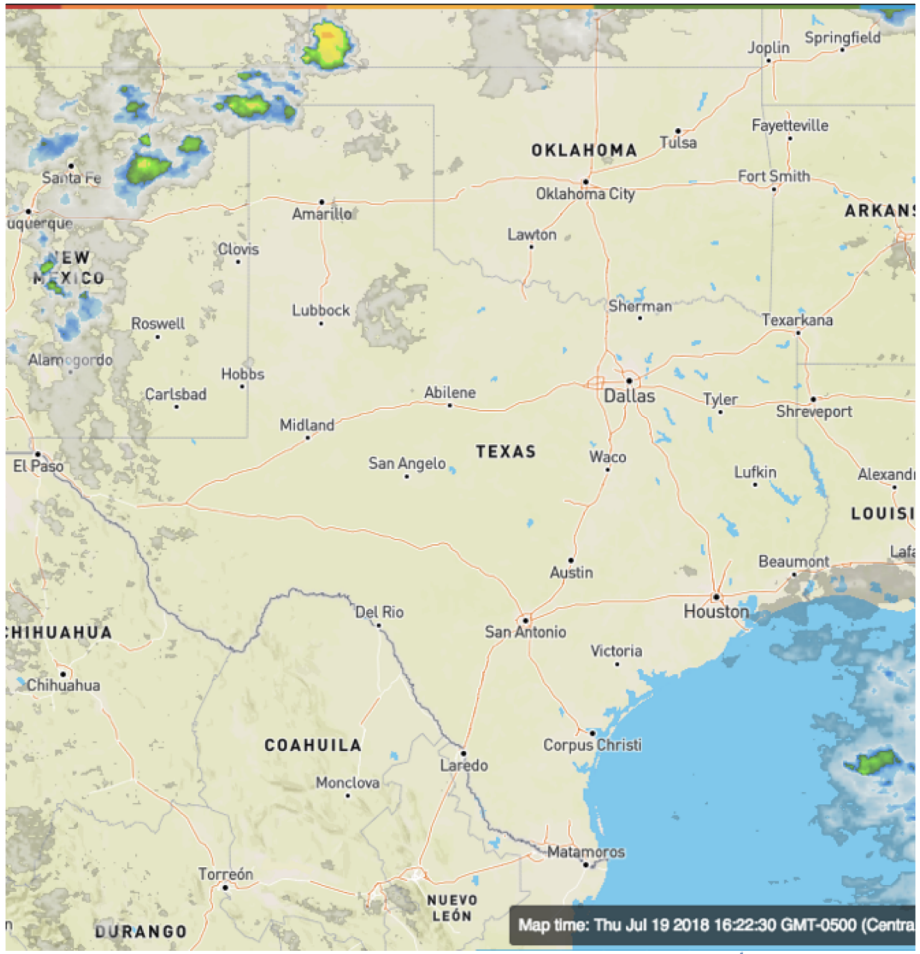
Oncor - Docket 48408		
Class	**Charges**	
Secondary > 10 kW IDR	per 4CP kW	$4.566693
Primary > 10 kW IDR	per 4CP kW	$4.107310
Primary > 10 kW Substation	per 4CP kW	$3.148377
Transmission IDR	per 4CP kW	$4.006269

On-site solar reduces transmission charges

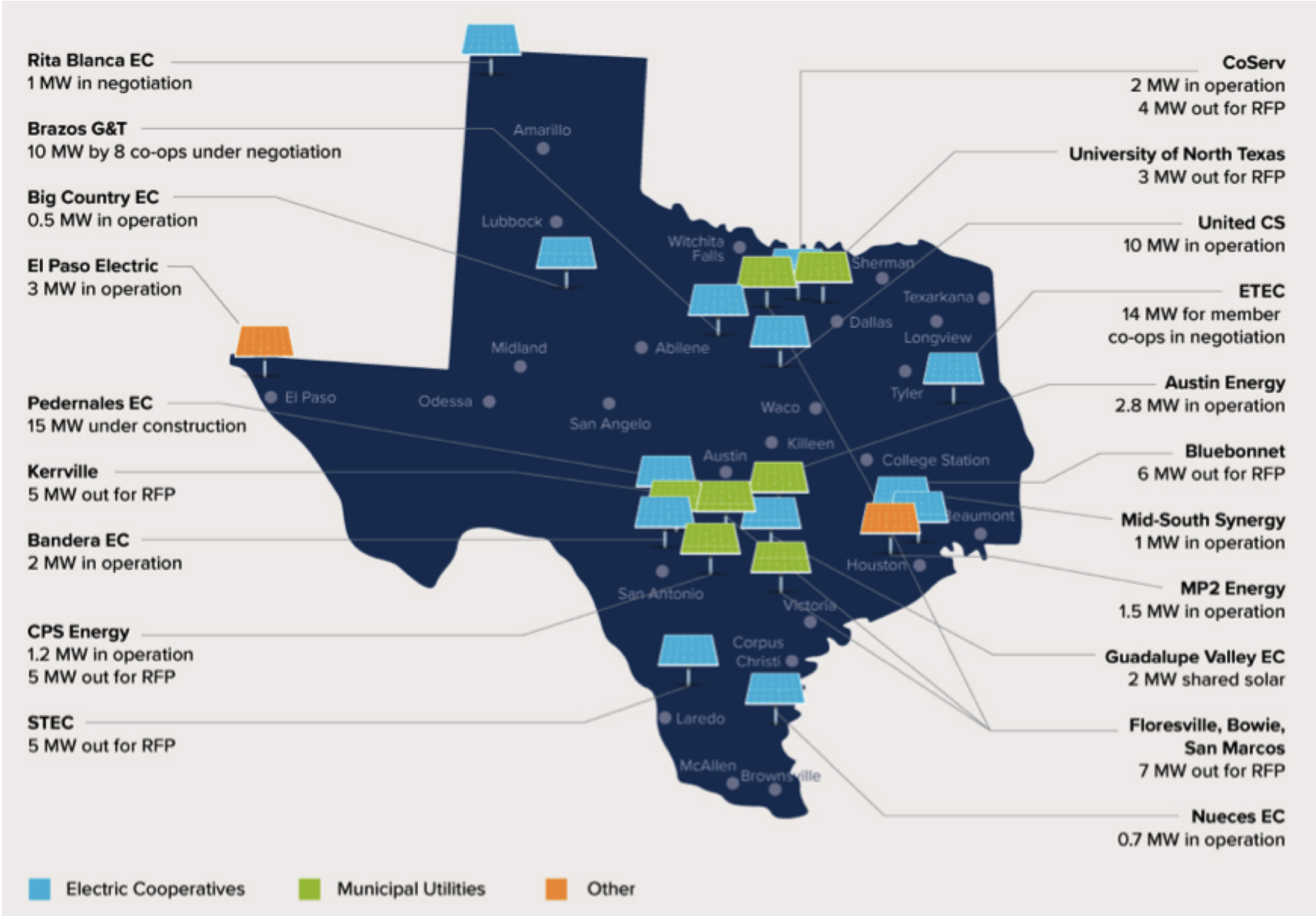
Every 4CP moment has occurred between 3:45 and 5pm…

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





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

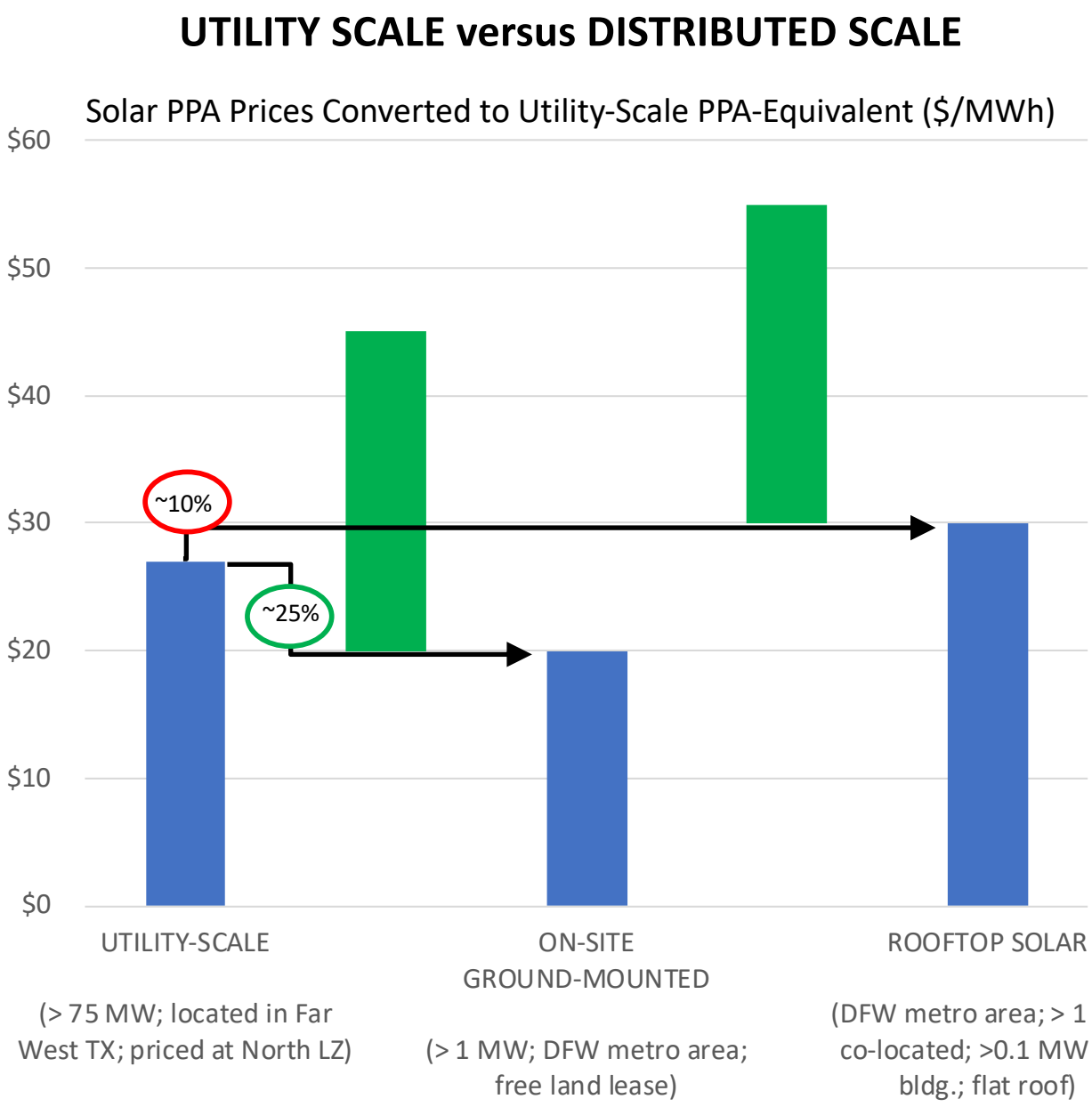
- Provides savings to KPUB via transmission (4CP) and energy cost savings – savings passed on to hosts and low-income housing
- Property tax payments of power projects stays within community

‘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



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

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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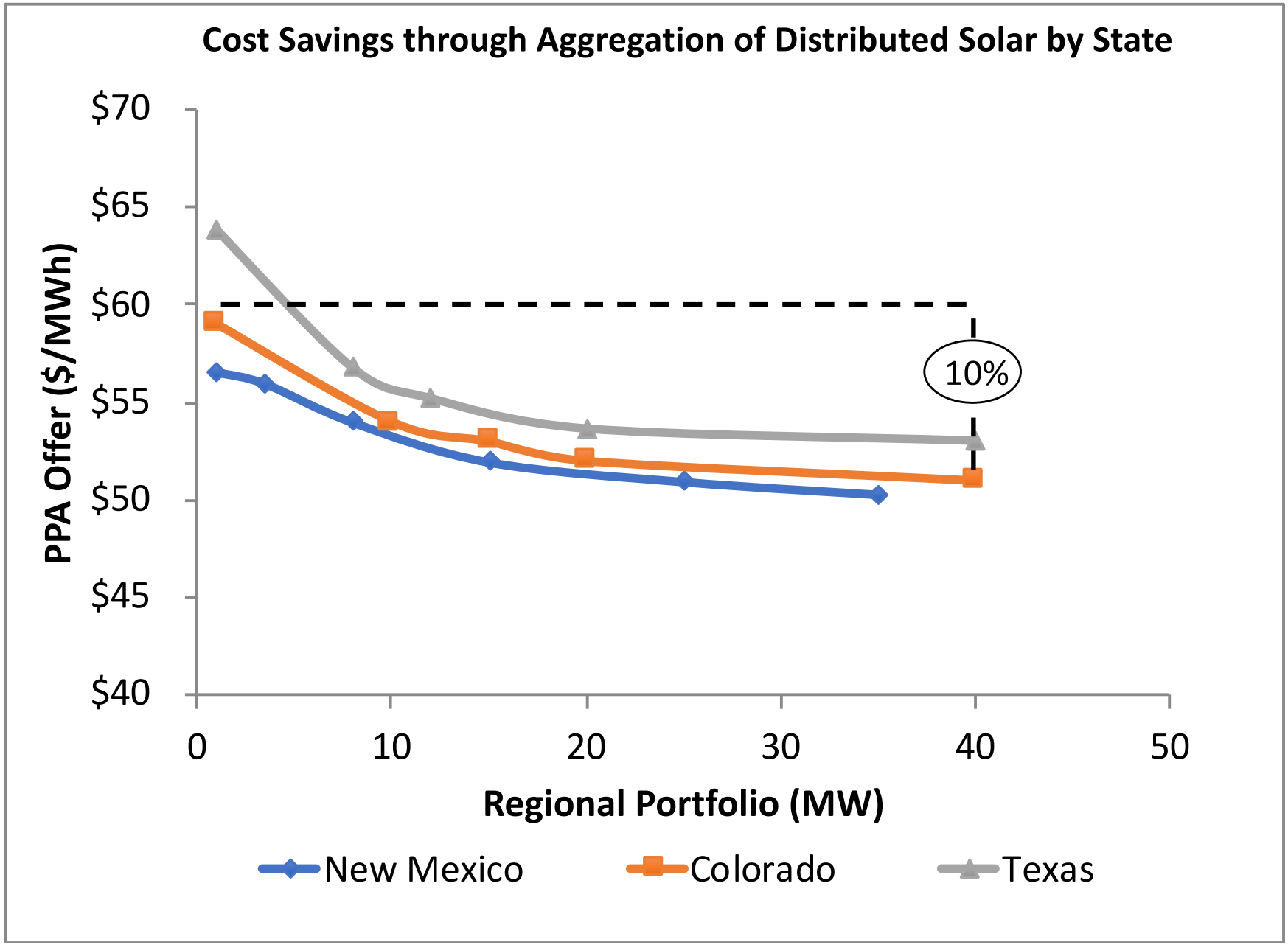
Framework: Rate your priorities

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

	Description	Assessment
1. Self-procurement	• Release RFP • Evaluate bids and select a provider	• **Highly customized** • **Proceed at your own pace** • **Higher price**
2. Muni or Co-op	• Work with local utility to procure the solar • Bilateral contract/tariff	• **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	• Multiple entities release RFP together • Individual contracts	• **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

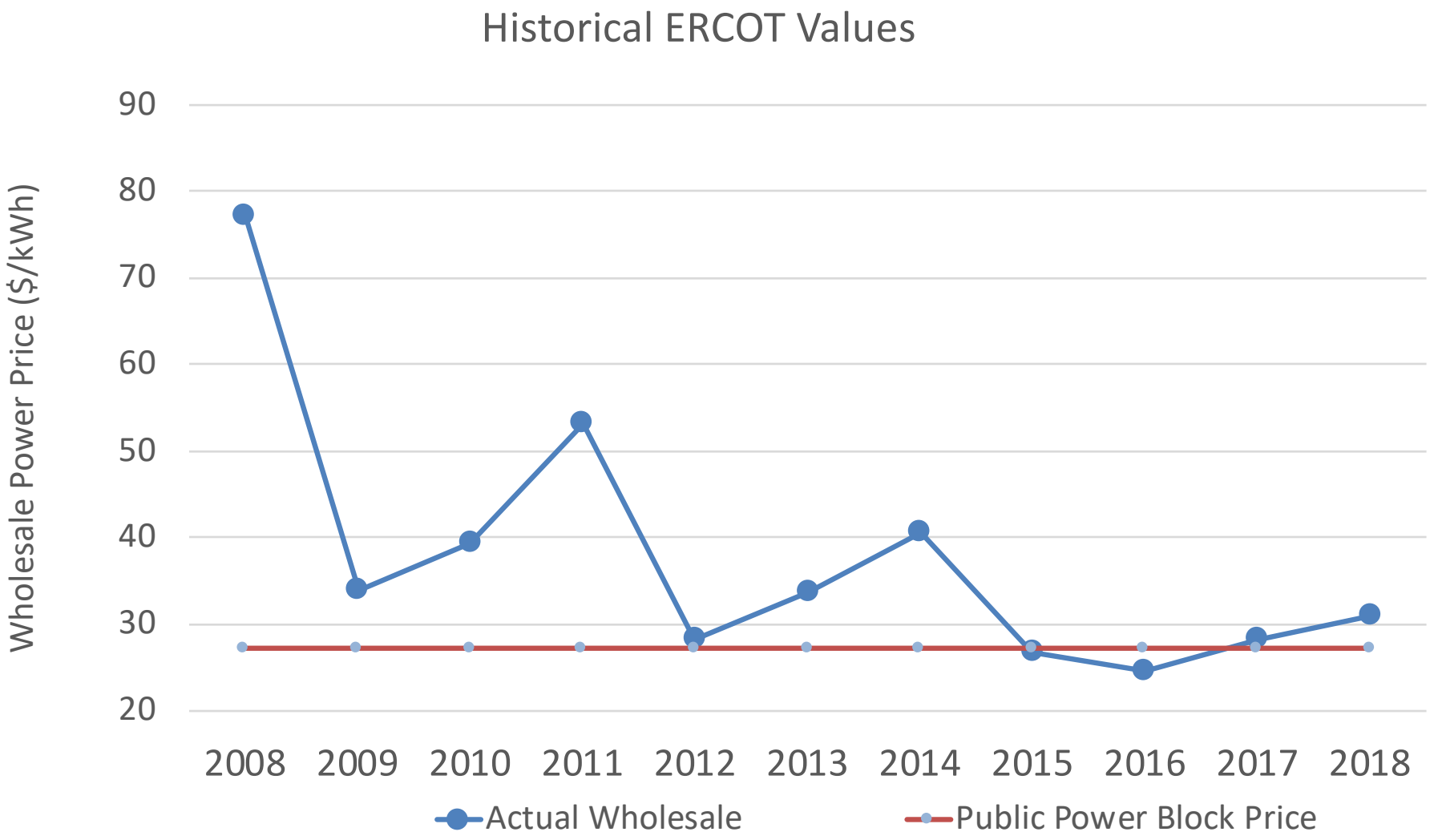
- Immediate cost savings
- Reduced exposure to electricity market volatility
- Integrates with existing and future retail electricity provider contracts
- Enables 150–200 MW of new-build solar and/or wind
- Creates revenue for Texas university systems

Target Customers

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

TexasEnergy Aggregation Brokers Consultants

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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* Includes small group discussion

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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