



Committee on Energy Choice's Technical Working Group
July 2017

NEVADA OPEN ENERGY MARKET DESIGN & POLICY

Maura Yates, Co-CEO/Founder Mothership Energy Group



MOTHERSHIP ENERGY GROUP is an energy solutions company providing renewable consulting, advisory and analytic services for energy management to a wide range of clients in the energy space.

OUR COMPANY was founded by former energy traders, wholesale commodity merchants, finance professionals, retail energy specialists and renewable technology veterans with a combined 30+ years experience in the energy industry.

OUR TEAM has distinguished experience working on strategies, structuring and execution of innovative new market solutions across the country.





Topics Discussed

- I. ERCOT Market Background & Structure**
 - Parties to the Transaction
 - How Power is Bought & Sold

- II. Risk in the Market**
 - Settlement & Pricing
 - Supply Hedging & Rates
 - Consumer Protection

- III. Market Efficiencies & Customer Benefits**
 - Retail Supply: Product & Rate Innovation
 - Technology & Customer Experience Innovation



MACRO POSITION

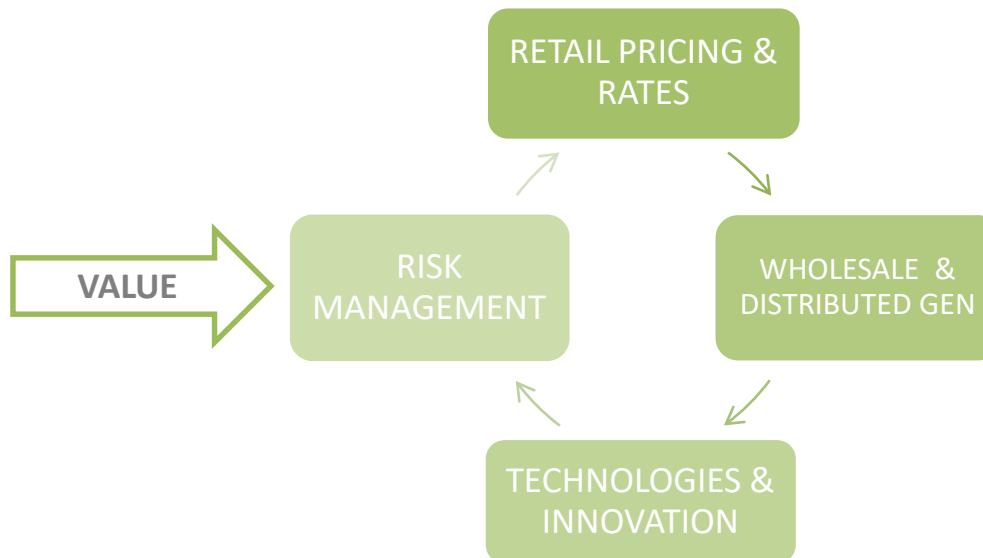
Restructured Markets > Regulated Markets

MICRO POSITION

Retail restructured markets provide more transparency and delivers Customers tailored energy solutions

that are more aligned with what they *CHOOSE TO VALUE*, including:

(1) how their electricity is procured & (2) what they're willing to pay for



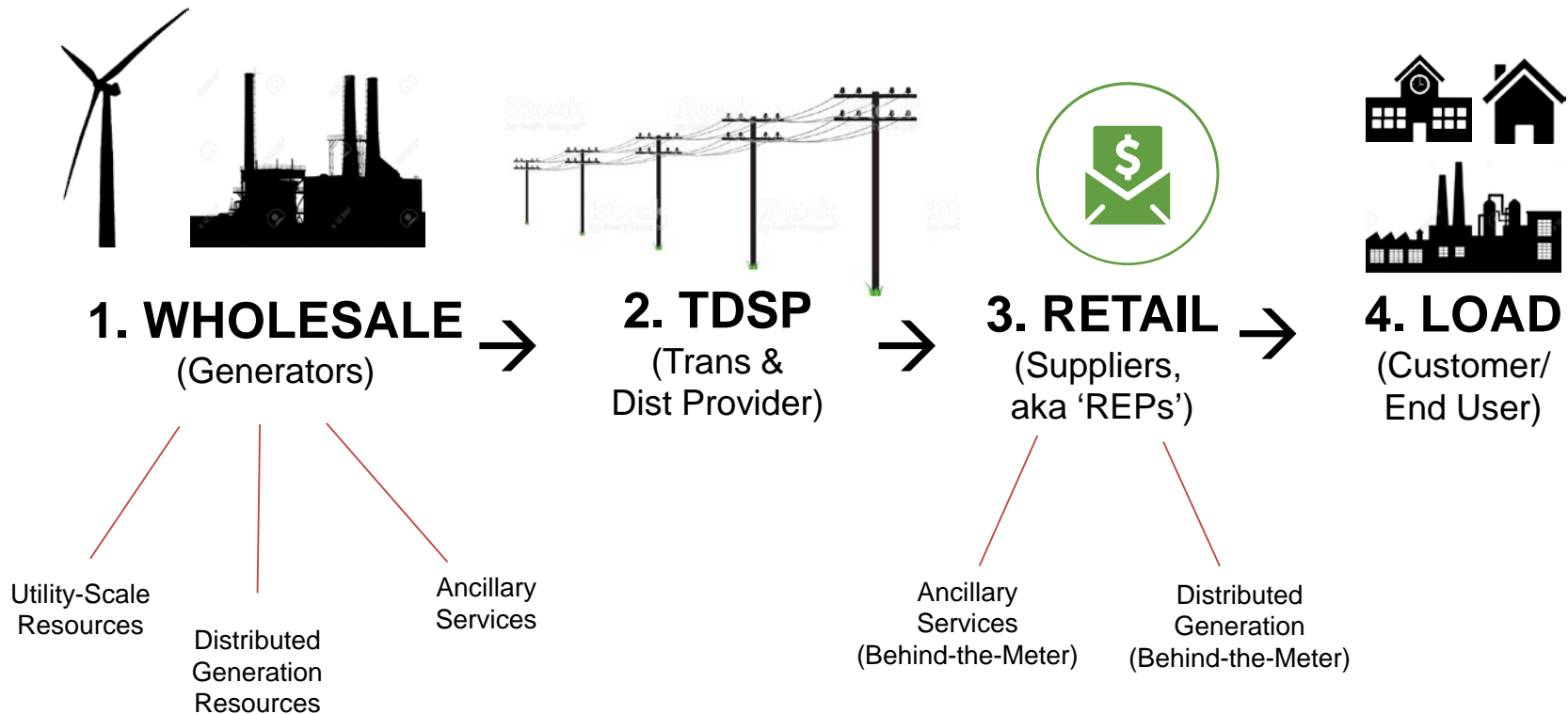


ERCOT Background





ERCOT Market Participants



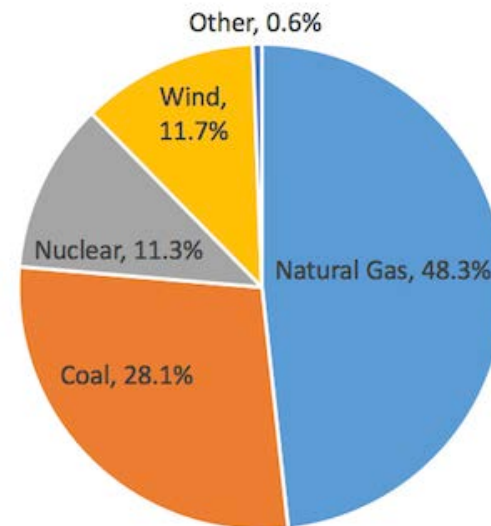


ERCOT Background

GENERATION

- Generation & Retail Restructured
- Energy-only market
- Physical power
- 10 MW DG Threshold
- WIND-HEAVY market
 - Recent record wind generation: 17 GW
 - Penetration: 50%
- Solar Installed Capacity: ~650 MW utility scale
- 1,800+ market participants
- 7 million advanced meters deployed

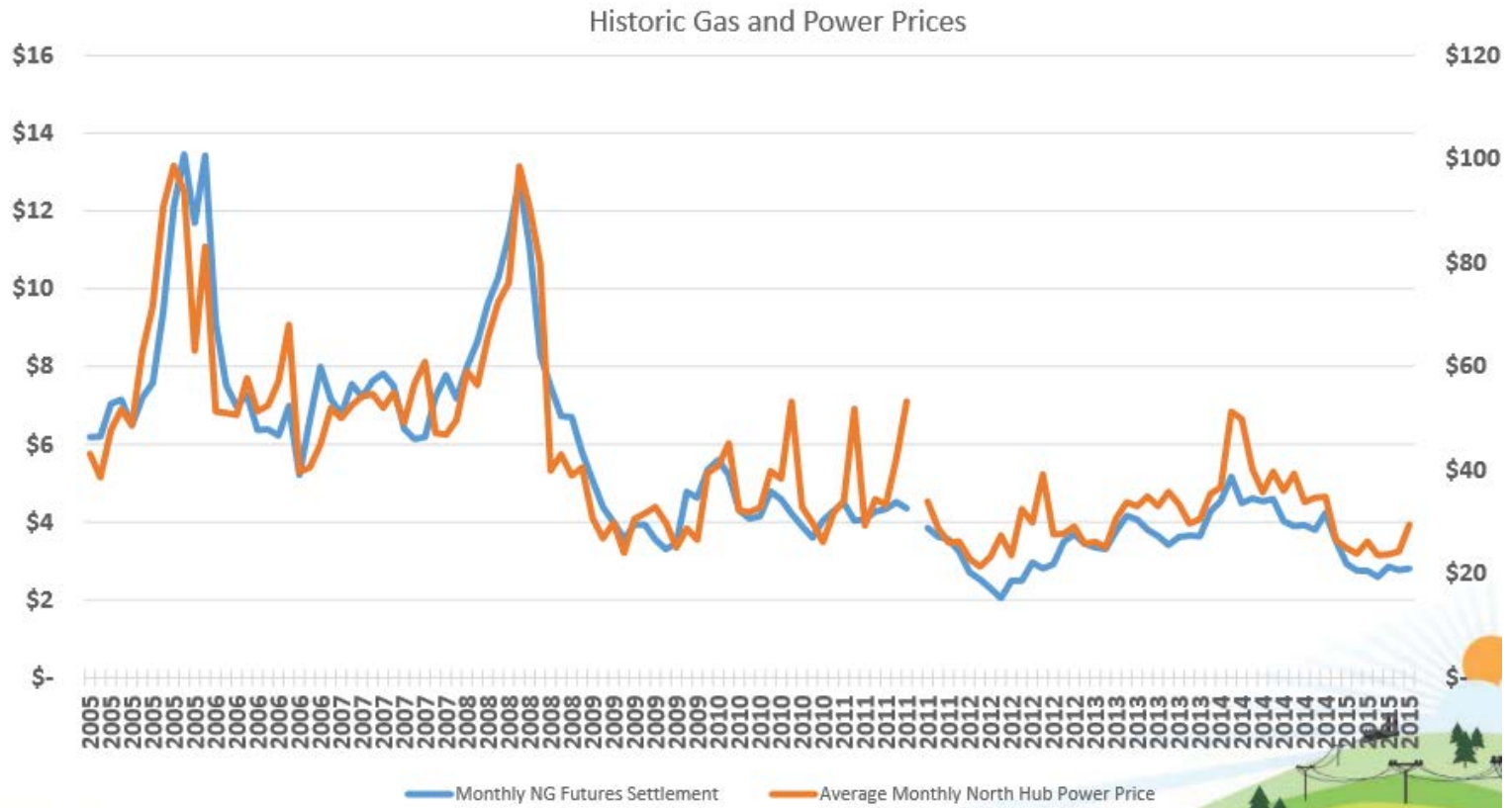
Texas 2015 Cumulative Electricity Generation By Fuel Type, Percent





ERCOT is a Gas-Indexed Market

Gas & Power Prices Since 2005



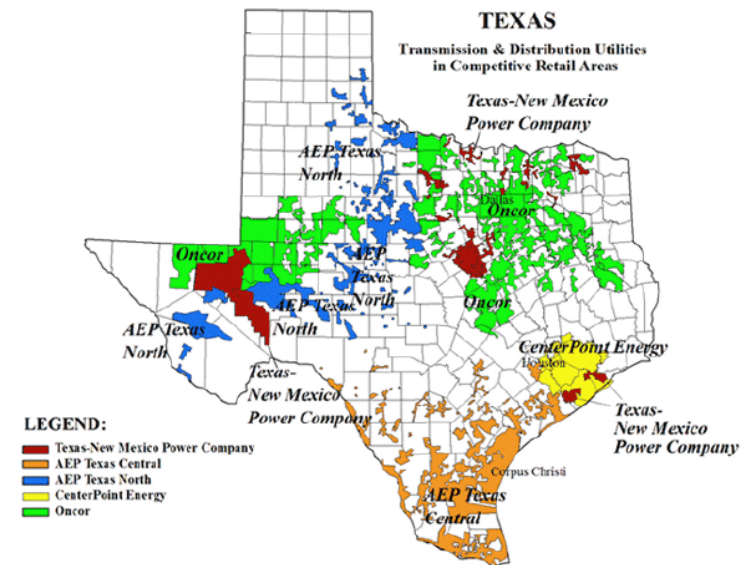
TDSPs in ERCOT

The only 'Regulated' Party in the Market

TDSP RESPONSIBILITIES

- Regulated by Texas PUC
- Own transmission lines, meters, etc.
- Read meters and send data to REP's
- Service the meters and lines
 - Fix outages
 - Meter swaps
- SOLAR INSPECTIONS
- Provide historic usage records
- ...and more!

****All REP's in Texas "pass through" TDSP charges to the customer****



Average TDSP costs for a residential customer (avg monthly usage):

- 648 kWh = ~\$26
- 1,222 kWh = ~\$45
- 1,692 kWh = ~\$64
- 2,214 kWh = ~\$79



TDSPs in ERCOT

Sample Residential TDSP Monthly Charges

TDSP Charges			
Nuclear Decommissioning (NDF)	● 2,214	0.00020	\$.37
Customer Charge	● 1	0.78000	\$.78
Transmission Cost Recovery Factor	● 2,214	0.01220	\$26.99
Transition Charge (TC2)	● 2,214	0.00090	\$2.09
Energy Efficiency Cost Recovery Factor (EECRF)	● 2,214	0.00100	\$2.27
Advanced Metering Cost Recovery Factor	● 1	2.19000	\$2.19
Metering Charge	● 1	2.28000	\$2.28
Transition Charge	● 2,214	0.00050	\$1.16
Distribution System Charge	● 2,214	0.01860	\$41.14
Subtotal – TDSP Charges			\$74.02



= fixed monthly charges



= volumetric monthly charges

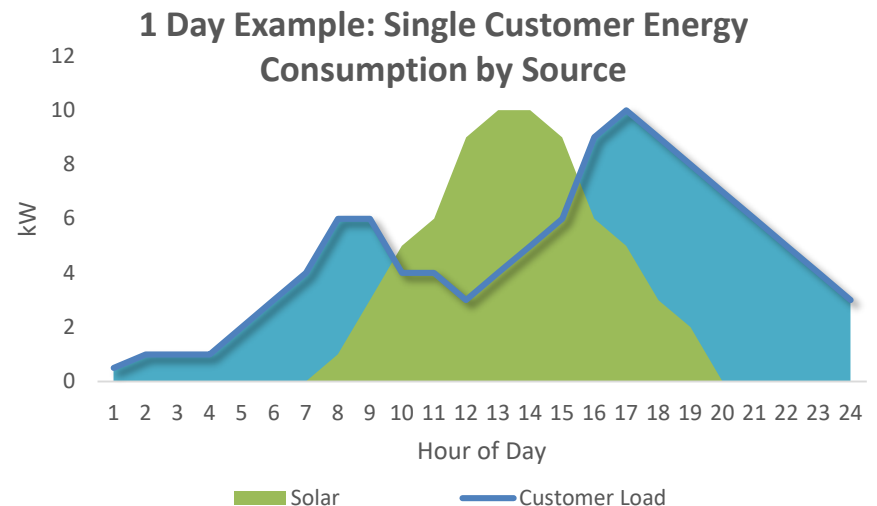


Retail Supply via REP

Buying Energy + Adders, Passing Through Demand

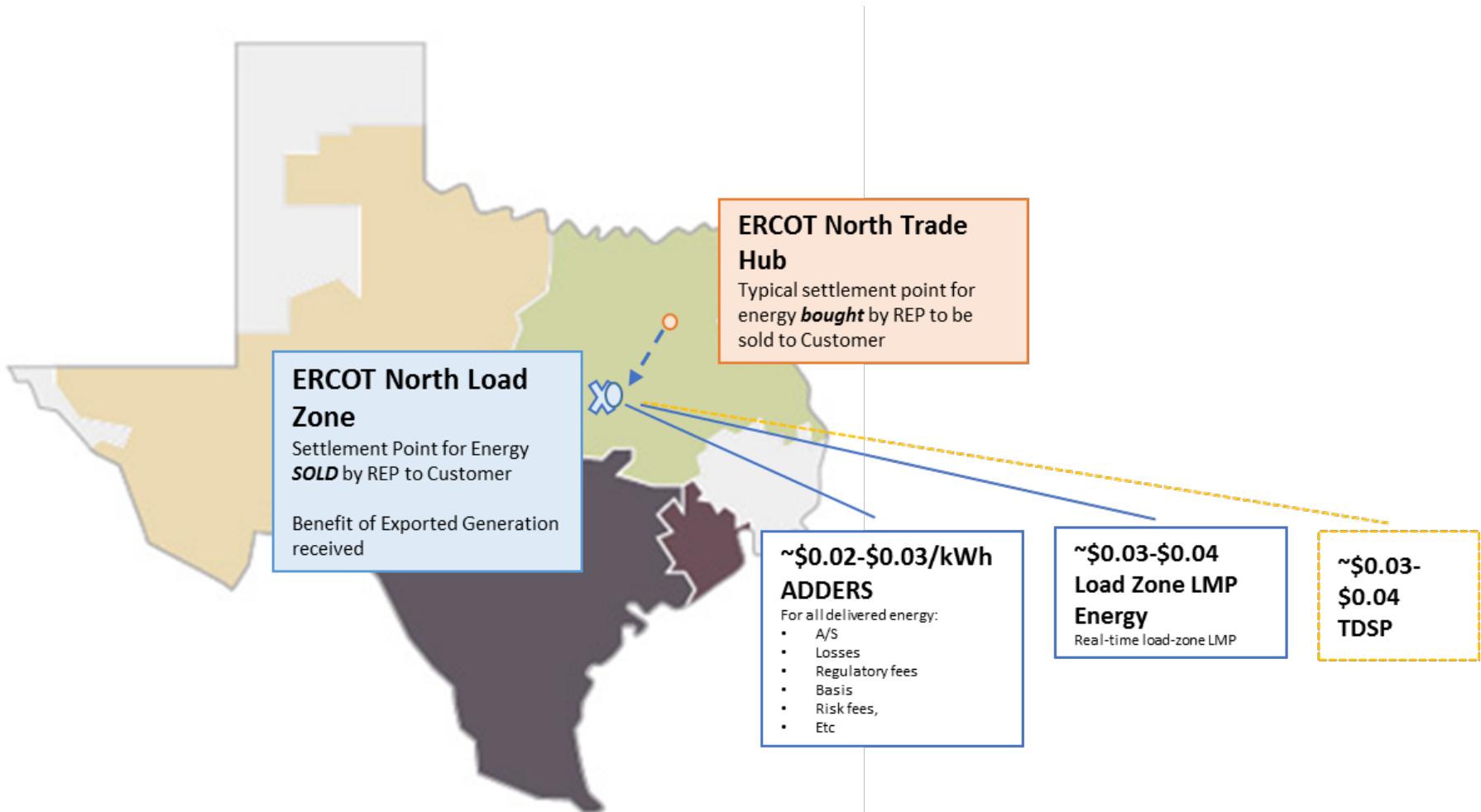
RETAIL SUPPLIER RESPONSIBILITIES

- Provide balancing energy and “firms” intermittent BTM resources to make sure the customer receives reliable power and isn’t unnecessarily exposed to market volatility
- Sell and schedule electricity to end-user
- 3 types of REPs---Option 1, 2, 3
- BILL customers for electricity based on what is delivered---and includes pass-through of TDSP charges
- Create the “rates”
- Compensate for any excess generation from a non-ERCOT DG resource
- 24,000,000 ESI IDs





How Retail Power is Bought/Sold



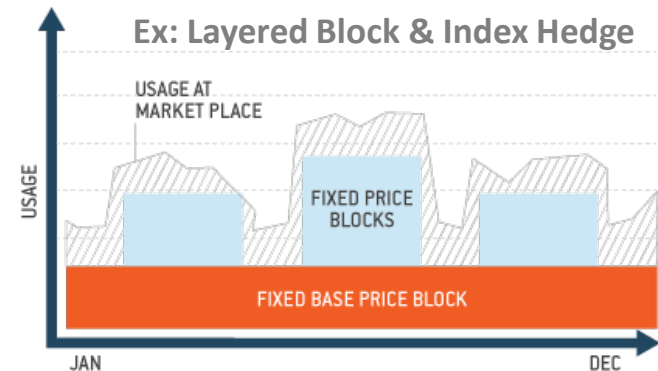
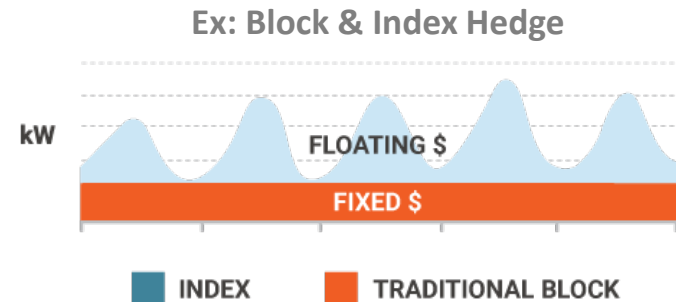


Retail Supply Rate Structures

Suppliers are having to compete for business on more than price.

They now differentiate based on: Hedge Product, Type, and Term

Type of Hedge Product	Pricing Structure for Hedge
1. Block & Index	Fixed Price or Heat Rate + Index (LMP)
2. Shaped Block w/ swing	Fixed Price or Heat-Rate
3. Full Requirements	Fixed Price or Heat-Rate
4. Unhedged/Real-time	Day Head/LMP
5. Layered Block & Index	Fixed Price or Heat-Rate + Index (LMP)
SELF-PROCUREMENT	REP Service Fee**





RISK IN THE MARKET

1. Retail Settlement & Price Points
2. Retail Supply Hedging & Rates
3. Consumer Protection



Risk: ERCOT Settlement & Pricing

Weather/natural gas volatility and grid congestion cause price retail risk

NODAL PRICE=

- ✓ UTILITY SCALE GEN 'SELL' PRICE

Unique busbar pricing for every utility-scale generation resource

TRADE HUB PRICE=

- ✓ RETAIL SUPPLY 'BUY' PRICE

Single price point reflecting the simple average of all Nodes in each of the four Load Zones

LOAD ZONE PRICE=

- ✓ LOADS 'BUY' PRICE
- ✓ BTM DIST GEN 'SELL' PRICE

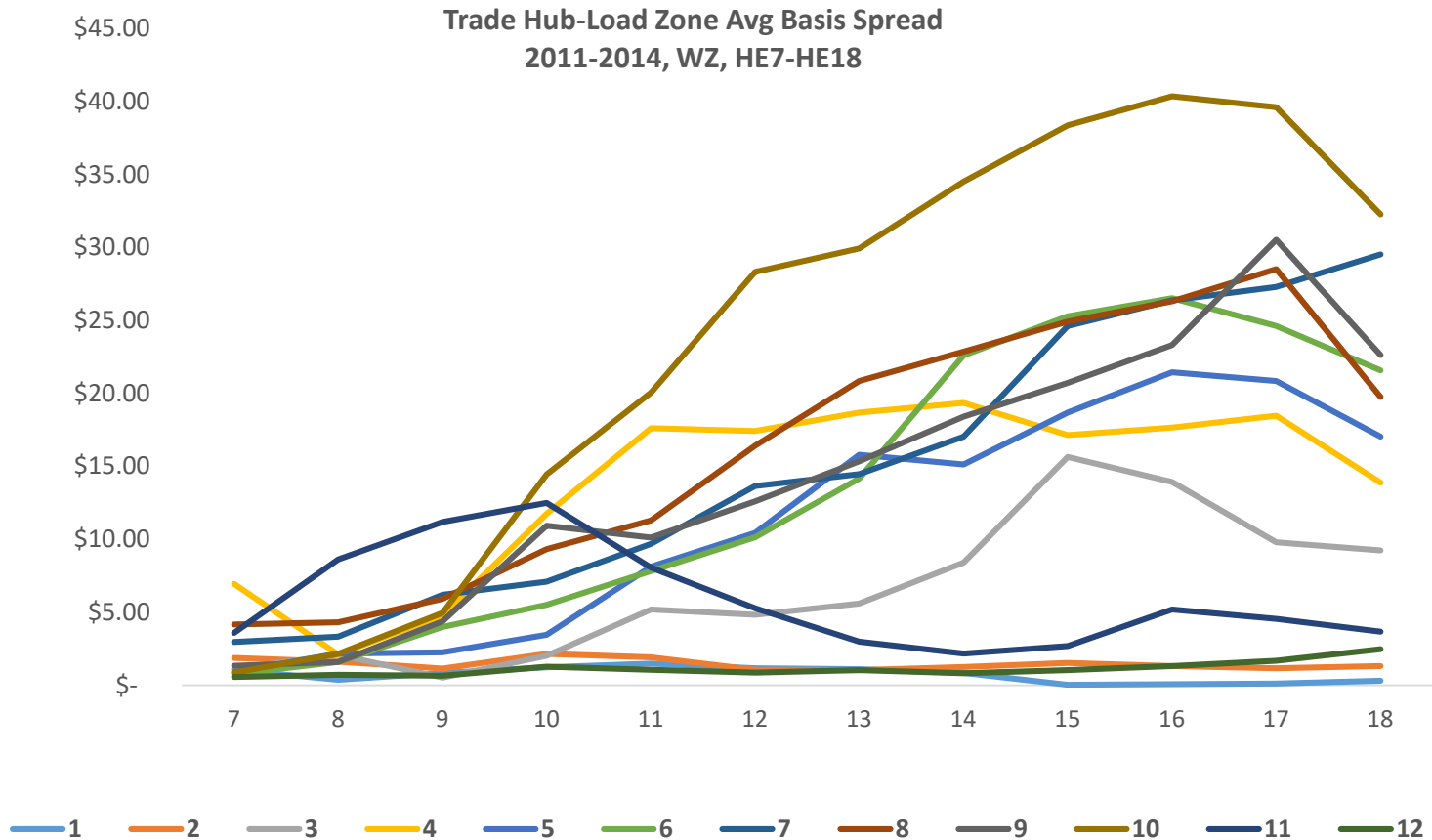
Single price point reflecting the load-wtd avg price of all Nodes in each of the four Load Zones





Risk: ERCOT Settlement & Pricing

Basis, Basis, Basis!



Risk: Retail Supply Hedging & Rates

“Cost of Service” rate-making....Hedging based on Customer Value

Retail Supply Cost Components	% of total Energy Supply Price	Market Hedge Available?
Trade Hub Energy	67.77%	Yes
Shaping	7.68%	No
Imbalance	0.43%	N
Straddle	2.07%	N
Energy Losses	4.12%	Y
Ancillary	4.01%	Y
RUC	0.13%	Y
RTRNA	0.43%	Y
ISO Fees	2.07%	N
Load Zone Basis	1.73%	Y
REC	0.24%	Y
Voluntary REC	0.00%	Y
Credit Fee**	2.53%	N
Broker & REP Fee**	5.00%	N
Margin**	3.00%	N
CRR Adjustment	-1.20%	N

Considerations like....

1. Long-term price certainty?
2. Load shape?
3. Completely de-risked supply?
4. Renewables?
5. Low-cost power?
6. Load growth?
7. Reliability and back-up generation?
8. Monetizing onsite assets?

**CUSTOMER NEEDS & VALUES DRIVE
 RETAIL PRODUCT (hedge) SELECTION**

**TDSP CHARGES CANNOT BE HEDGED and
 make-up 30-40% of customer bill**



Risk: Consumer Protection

The Texas PUC Still Tightly Regulates Elements of the Residential Customer Acquisition via PURA Chapter 25, Subchapter R (Customer Protection)

Electricity Fact Label (EFL)

Electricity Facts Label										
Green Mountain Energy Company (REP Cert. No. 10009) Pollution Free™ Conserve 12 Choice CenterPoint Energy Service Area Date: 06/30/2017										
<i>Electricity price</i>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>Average monthly use:</td> <td>500 kWh</td> <td>1000 kWh</td> <td>2000 kWh</td> </tr> <tr> <td>Average price per kWh:</td> <td>8.5¢</td> <td>6.9¢</td> <td>9.9¢</td> </tr> </table>		Average monthly use:	500 kWh	1000 kWh	2000 kWh	Average price per kWh:	8.5¢	6.9¢	9.9¢
	Average monthly use:	500 kWh	1000 kWh	2000 kWh						
Average price per kWh:	8.5¢	6.9¢	9.9¢							
<p>This price disclosure is based on the following components:</p> <p style="margin-left: 40px;">Base Charge: \$10.00 per month</p> <p style="margin-left: 40px;">Energy Charge: (0 to 1000 kWh) 1.834300¢ per kWh</p> <p style="margin-left: 40px;">Energy Charge: (> 1000 kWh) 9.381300¢ per kWh</p> <p style="margin-left: 40px;">CenterPoint Energy Delivery Charges: \$5.47 per month and 3.5686¢ per kWh</p> <p><i>CenterPoint Energy Delivery Charges include all recurring charges passed through without mark-up. This price disclosure is an example based on average prices - your average price for service will vary according to your usage. The price you pay each month will consist of the Base Charge, Energy Charge, and CenterPoint Energy Delivery Charges.</i></p>										
<i>Other Key Terms and questions</i>	<p>See Terms of Service statement for a full listing of fees, deposit policy, and other terms.</p>									
<i>Disclosure Chart</i>	Type of Product	Fixed Rate								
	Contract Term	12 Months								
	Do I have a termination fee or any fees associated with terminating service?	Yes. \$150 early cancellation fee.								
	Can my price change during contract period?	Yes, but only in the limited circumstances described below.								
	If my price can change, how will it change, and by how much?	The price can only change to reflect actual price changes that are allowed by Public Utility Commission rules due to changes in law or regulatory charges.								
What other fees may I be charged?	If applicable, we may bill you for certain non-recurring late payment, insufficient funds, disconnection or other fees as described in Section 8 of your Terms of Service.									
Is this a pre-pay or pay in advance product?	No.									

Power to Choose website

Company	Plan Details	Price/kWh	Pricing Details	Ordering Info
Infuse Energy	PTC True Blue Infusion 9 - Fixed Rate - 9 Months - 10% Renewable - NEW CUSTOMERS	1,000 kWh: 3.2¢ 500 kWh: 12.4¢ 2000 kWh: 9.4¢	Minimum Usage Fees / Credits Cancellation Fee: \$175.00	Special Terms (844) 463-8732 OR SIGN UP
DISCOUNT POWER	Prime Plus - 9 - Fixed Rate - 9 Months - 12% Renewable	1,000 kWh: 3.5¢ 500 kWh: 12.6¢ 2000 kWh: 7.5¢	Minimum Usage Fees / Credits Cancellation Fee: \$100.00	Special Terms (866) 584-7776 OR SIGN UP
Infuse Energy	PTC True Blue Infusion 3 - Fixed Rate - 3 Months - 10% Renewable - NEW CUSTOMERS	1,000 kWh: 4¢ 500 kWh: 10.7¢ 2000 kWh: 8.2¢	Minimum Usage Fees / Credits Cancellation Fee: \$100.00	Special Terms (844) 463-8732 OR SIGN UP
StarTex Power	3 Month Usage Bill Credit - Fixed Rate - 3 Months - 10% Renewable - NEW CUSTOMERS	1,000 kWh: 4.1¢ 500 kWh: 8.2¢ 2000 kWh: 4.9¢	Minimum Usage Fees / Credits Cancellation Fee: \$50.00	Special Terms (855) 797-8465 OR SIGN UP
Infuse Energy	Keep it Simple Savings 3 - Fixed Rate - 3 Months - 10% Renewable - NEW CUSTOMERS	1,000 kWh: 4.3¢ 500 kWh: 8.6¢ 2000 kWh: 9.2¢	Cancellation Fee: \$100.00	Special Terms (844) 463-8732 OR SIGN UP



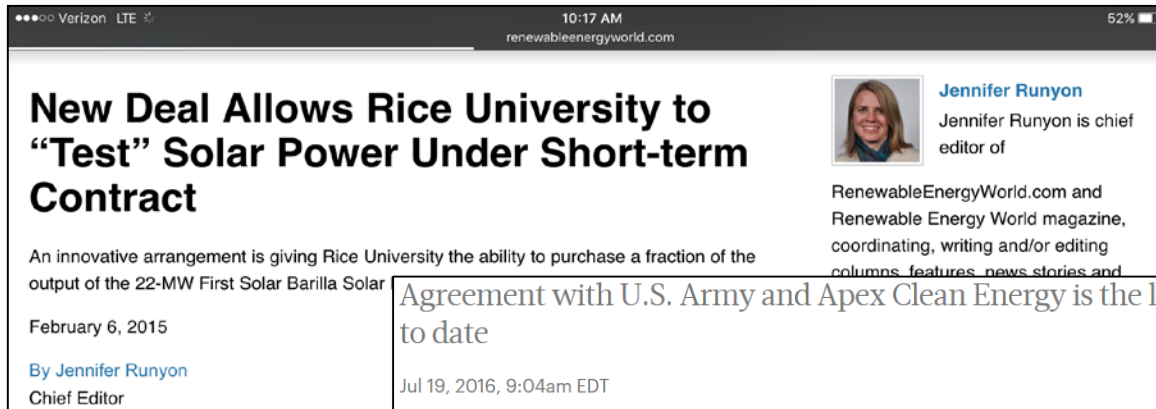
MARKET EFFICIENCIES & CUSTOMER BENEFITS

CUSTOMER CHOICE → VALUE → INNOVATIVE TECHNOLOGY & RETAIL PRODUCTS

1. Retail Supplier Rate & Product Innovation
2. Experience & Technology Innovation

Retail Supplier Rate & Product Innovation

Loads have more control over HOW their power is supplied...
Renewables are more easily accessed, independent of regulatory mandates or approval requirements




Verizon LTE 10:17 AM 52%
renewableenergyworld.com

New Deal Allows Rice University to “Test” Solar Power Under Short-term Contract

An innovative arrangement is giving Rice University the ability to purchase a fraction of the output of the 22-MW First Solar Barilla Solar

February 6, 2015

By Jennifer Runyon
Chief Editor




















 **Jennifer Runyon**
Jennifer Runyon is chief editor of
RenewableEnergyWorld.com and Renewable Energy World magazine, coordinating, writing and/or editing columns, features, news stories and

Agreement with U.S. Army and Apex Clean Energy is the largest military renewable energy project to date

Jul 19, 2016, 9:04am EDT

HOUSTON, July 19, 2016 /PRNewswire/ -- Houston-based MP2 Energy, a top-tier power company that integrates capabilities across its core services from power plant development to retail electric supply to the end-use customer, announced today that it has been chosen to partner with Apex Clean Energy (Apex) to supply both renewable energy and traditional electricity to Fort Hood, a 340 square mile base outside of Killeen, Texas that serves 218,000 military and family. Apex and MP2 will provide 100 percent of Fort Hood's electricity through a combination of renewable solar and wind energy and traditional grid power from ERCOT.

Retail Supplier Rate & Product Innovation

	Final Grade	 Clean Energy Index	 Renewable Gas	 Coal	 Nuclear	Energy Transparency	Renewable Energy Commitment & Siting Policy	Energy Efficiency & Mitigation	Renewable Procurement	Advocacy
	B	23%	37%	23%	11%	B	A	B	B	A
	D	24%	3%	67%	3%	F	F	C	F	D
	C	17%	24%	30%	26%	F	D	C	C	B
	A	83%	4%	5%	5%	A	A	A	A	B
	F	24%	3%	67%	3%	F	F	D	F	F
	A	67%	7%	15%	9%	A	A	A	A	B
	A	56%	14%	15%	10%	B	A	A	A	A
	C	50%	17%	27%	5%	D	B	C	B	C
	C	29%	29%	27%	15%	C	B	C	C	F
	B	32%	23%	31%	10%	B	B	C	B	B
	C	2%	19%	39%	31%	B	B	B	D	D
	D	8%	26%	36%	25%	D	D	F	D	F
	B	43%	12%	16%	15%	B	A	C	B	B
	D	11%	19%	29%	31%	C	D	C	D	C
	F	24%	3%	67%	3%	F	F	D	F	F

Businesses make major decisions based on power supply options

← Example: Clicking Clean Report, 2017
<http://www.clickclean.org/usa/en/>

Retail Supplier Rate & Product Innovation

Regulated Rates (eg NEM) in Restructured Markets are surfacing in order to facilitate new technology deployment, too



CleanTechnica
news & analysis

About Electric Car Reviews Exclusives **Power**

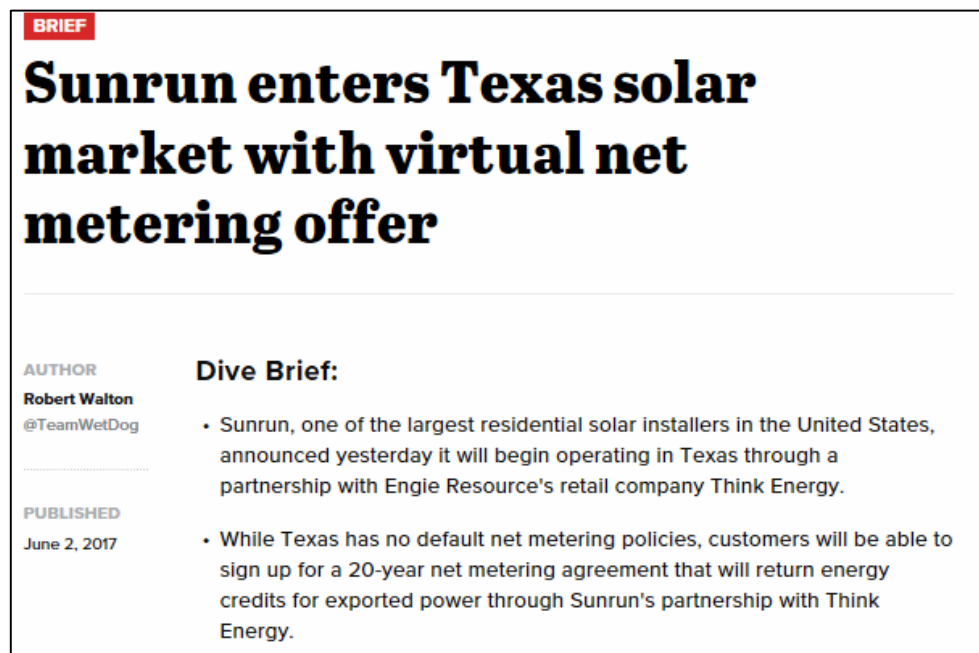
SolarCity Bringing “Full Net Metering” To Texas (This Is Big)

March 11th, 2015 by [James Ayre](#)

[f](#) [t](#) [G+](#) [in](#)

The prominent solar leasing company [SolarCity](#) is partnering with the utility company MP2 Energy to bring “full” net metering to the Dallas–Fort Worth region of Texas — thereby putting solar energy in a very competitive position with utility power — according to recent reports.

<https://cleantechnica.com/2015/03/11/solarcity-partnering-mp2-energy-bring-full-net-metering-texas/>



BRIEF

Sunrun enters Texas solar market with virtual net metering offer

AUTHOR
Robert Walton
[@TeamWetDog](#)

PUBLISHED
June 2, 2017

Dive Brief:

- Sunrun, one of the largest residential solar installers in the United States, announced yesterday it will begin operating in Texas through a partnership with Engie Resource's retail company Think Energy.
- While Texas has no default net metering policies, customers will be able to sign up for a 20-year net metering agreement that will return energy credits for exported power through Sunrun's partnership with Think Energy.

<http://www.utilitydive.com/news/sunrun-enters-texas-solar-market-with-virtual-net-metering-offer/444076/>

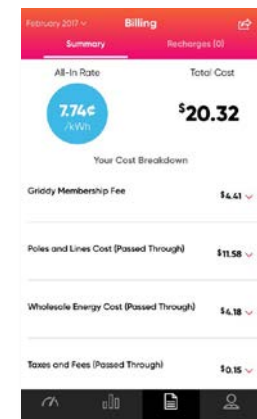
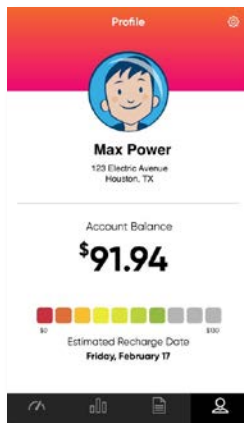
Experience & Technology Innovation

Customers want to be more engaged in their electricity consumption



For only \$9.99 a month, they give Customers direct access to real-time electricity prices, so Customers pay the same price that the REPs pay for electricity real-time

They've engineered smart energy tools that connect to the house smart meter, providing Customers with real-time electricity prices and forecasts of future prices to help know how much they're using and saving. Pay-as-you-go billing allows anyone to use Griddy. Simply establish a minimum account balance of \$49 at sign-up to enroll.





Restructured Market: Summary Thoughts

RISK & CUSTOMER CHOICE → *drive*

VALUE PROPOSITION & TRANSPARENT COMPETITIVE PRICING → *creating*

INNOVATIVE PRODUCTS, TECHNOLOGIES, & EXPERIENCES → *leading to*

ECONOMIC DEVELOPMENT & HAPPY CONSTITUENTS 😊



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