



Item 5

Austin Energy Utility Oversight Committee

April 23, 2015

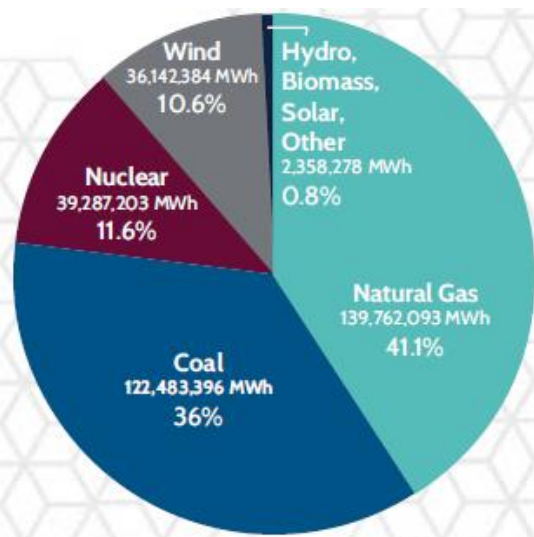
Energy Markets & Resource Plan Overview



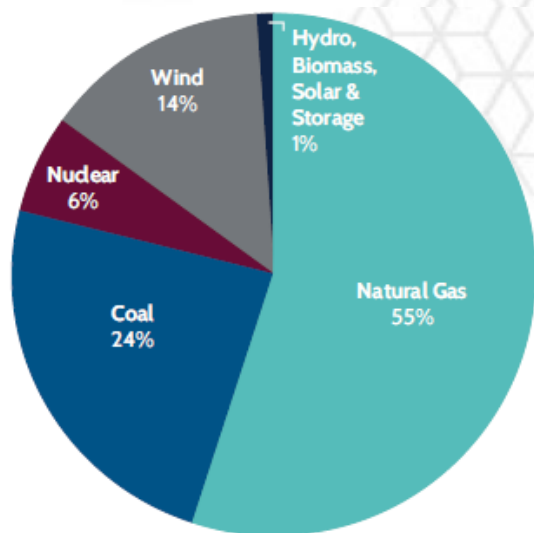
Outline

- Energy Market Fundamentals
- 2025 Resource Plan

The ERCOT System



Energy Use 2014
340,033,353 MWh



2014 Generation Capacity
effective December 2014

At a glance

- About 90% of Texas load
- 24 million consumers
- Competitive-choice customers: 75% of load
 - More than 7 million electric-service ID's (premises)
- More than 43,000 circuit miles of high-voltage transmission
- 550 generating units
- More than 74,000 megawatts (MW) capacity for peak demand
 - One megawatt of electricity can power about 200 Texas homes during periods of peak demand.
- Record peak demand: 68,305 MW (Aug. 3, 2011)
- Energy used in 2014: 340 billion kilowatt-hours
 - A 2.5 percent increase compared to 2013
- Market participants: More than 1,100 active entities that generate, move, buy, sell or use wholesale electricity

Solar and Wind Generation

- More than 12,000 MW of installed wind capacity
 - Most of any state in the nation
- Wind generation record: 11,154 MW (February 19, 2015)
 - 34 percent of the load at the time
- Wind penetration record: 40.58 percent (March 29, 2015)
- 184 MW of installed solar capacity

ERCOT Nodal Energy Market

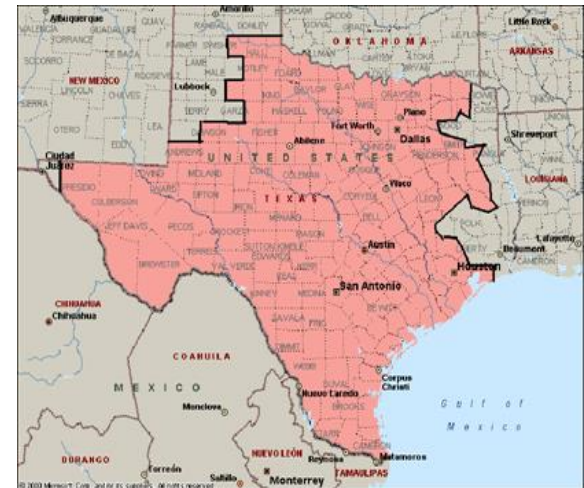


■ Before 2010 – Traditional Utility Model

- AE was required to provide enough generation to meet forecasted peak demand plus a reserve to ensure the lights stayed on (reliability)
- Generation was built or acquired to fill the projected need
- AE generation was dispatched to meet AE demand (load)

■ After December 2010 - Nodal Market

- Reliability is managed by ERCOT, the grid operator
- AE's demand is supplied (bought) from the market
- AE's generators provide (sell) to the market

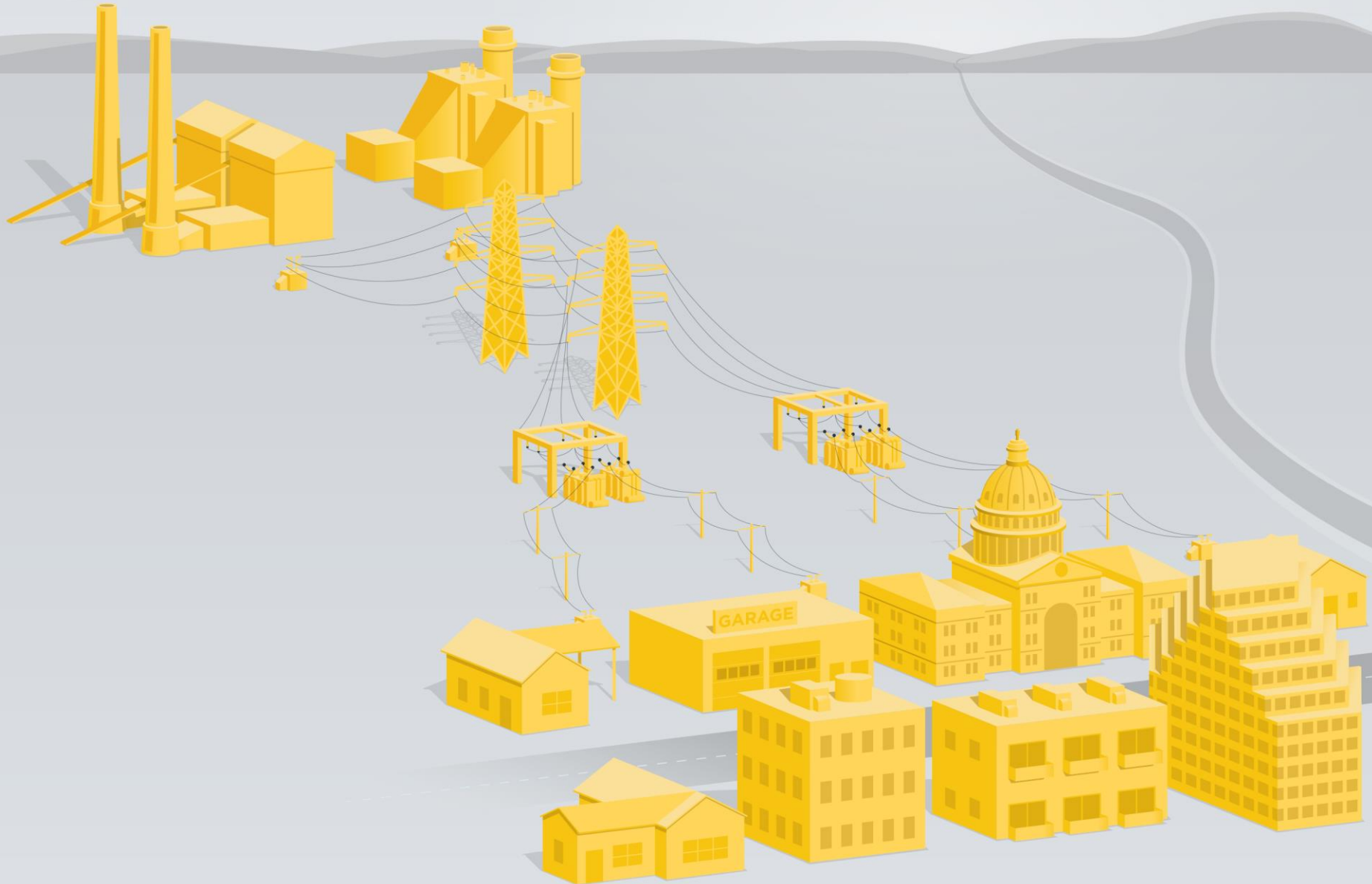


■ What the changes mean

- AE is no longer required to build or dispatch generation to meet its demand (load)
- Resource decisions are financial or goal driven – the market is the alternative
- The generation owner retains the benefits of ownership and risk of operation

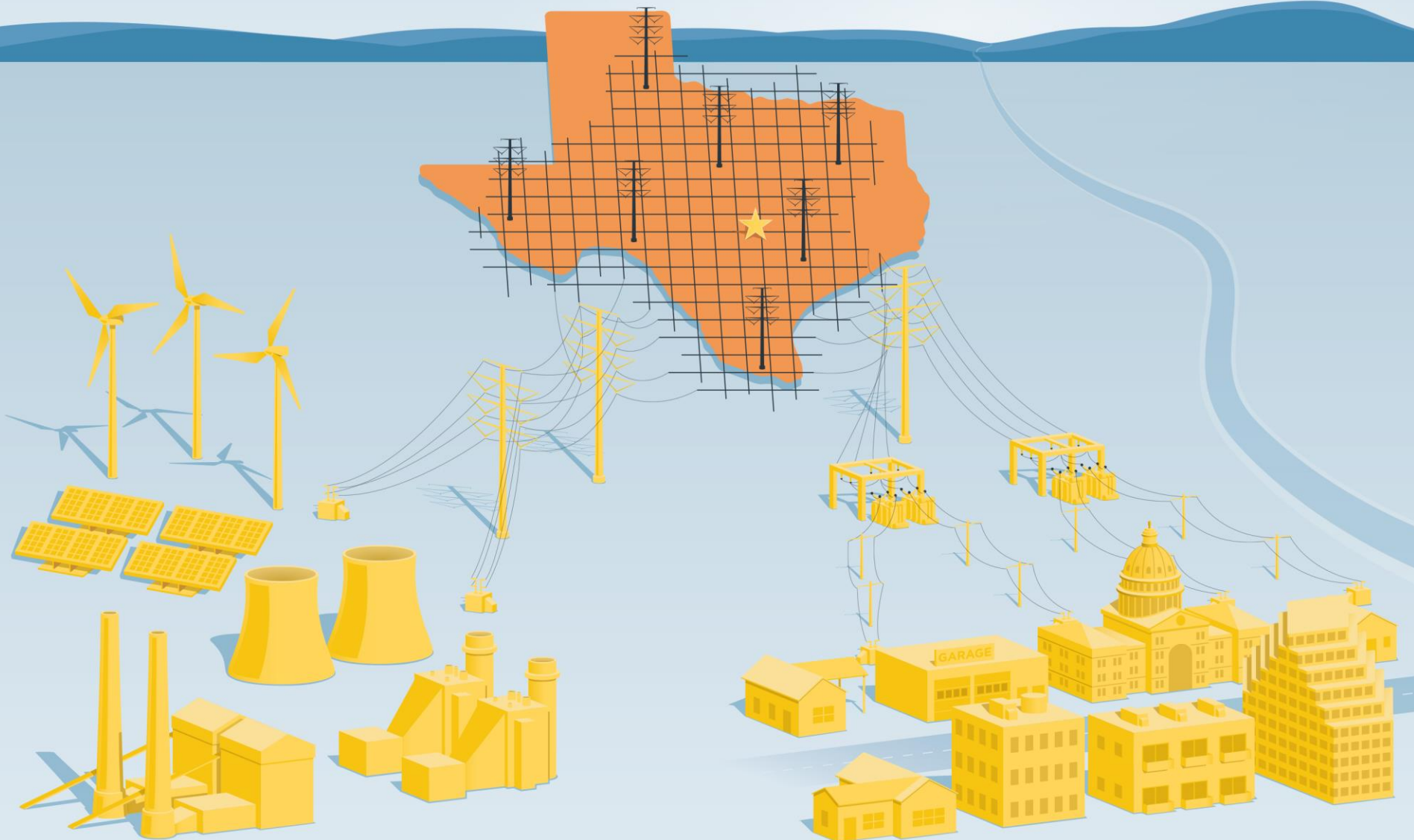
HOW IT IS ALL CONNECTED: THE OLD WAY

Austin Energy Powers the Community



HOW IT IS ALL CONNECTED: THE NEW WAY

Austin Energy Powers the Community





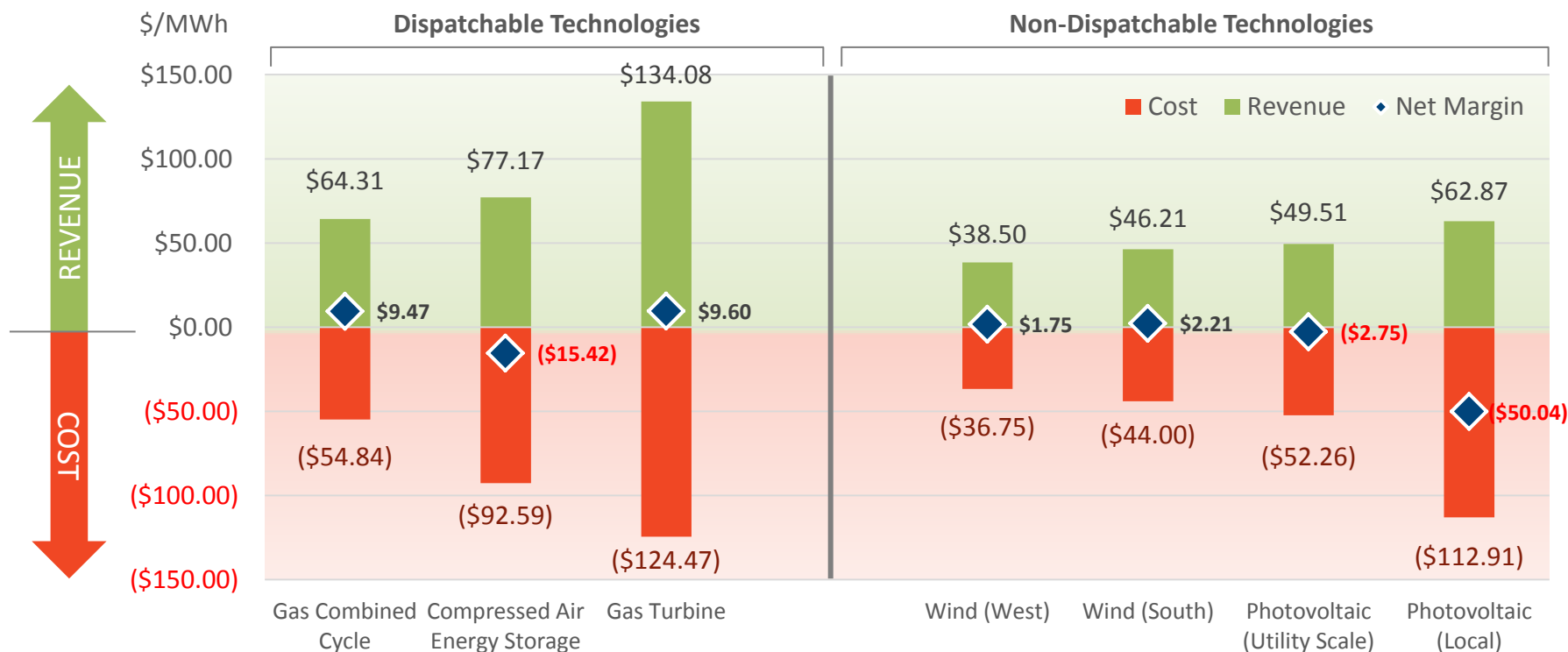
How does the market drive our business?

- Generation is a Financial decision to make money and control local prices
 - *Cost and Revenue*
 - *Rent vs Own*
 - *Location matters (load zone)*
 - *A generator's capabilities impact its value*
 - *Controllable vs. Intermittent*
- Measures such as levelized cost show only one side of the equation – it doesn't capture revenue.
 - This measure is common in regulated markets, not as relevant to ERCOT today
 - It remains an indicator but only tells part of the story.

Estimated Levelized Cost/Revenue



Estimated Levelized (Expected) Cost, Revenue , Net Margin , 2015 \$/MWh
Austin Energy Considered Resources Cost of Capital @ 5%

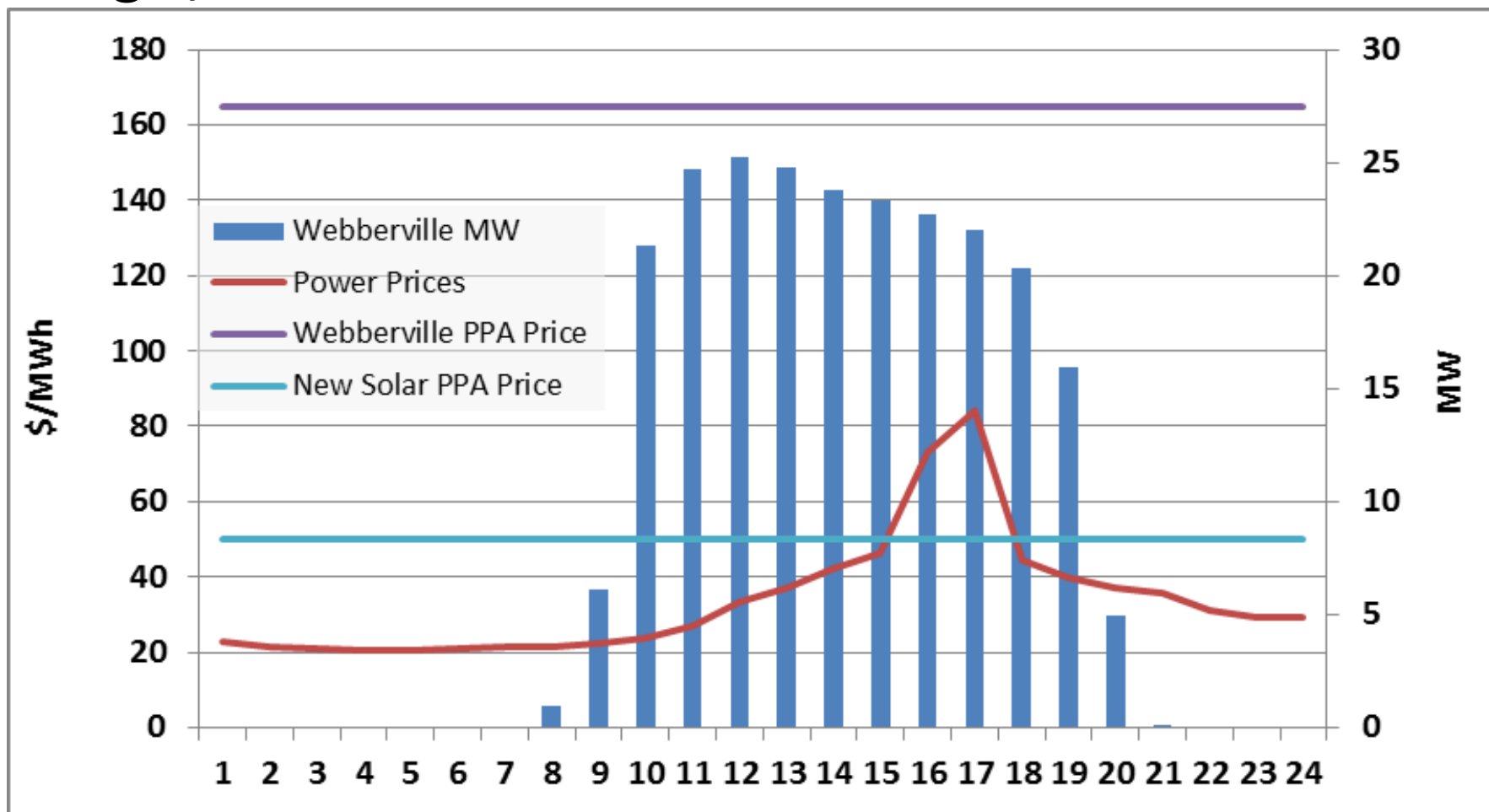


Note:

- Cost includes Capital, O & M and Fuel
- Levelized cost/revenue assumes 30 year book life
- The cost assumptions are based upon the 2014 resource planning
- The revenue for the local solar is consistent with the Value of Solar Methodology excluding transmission & environmental savings

Webberville Production on AE 2013 Summer Peak

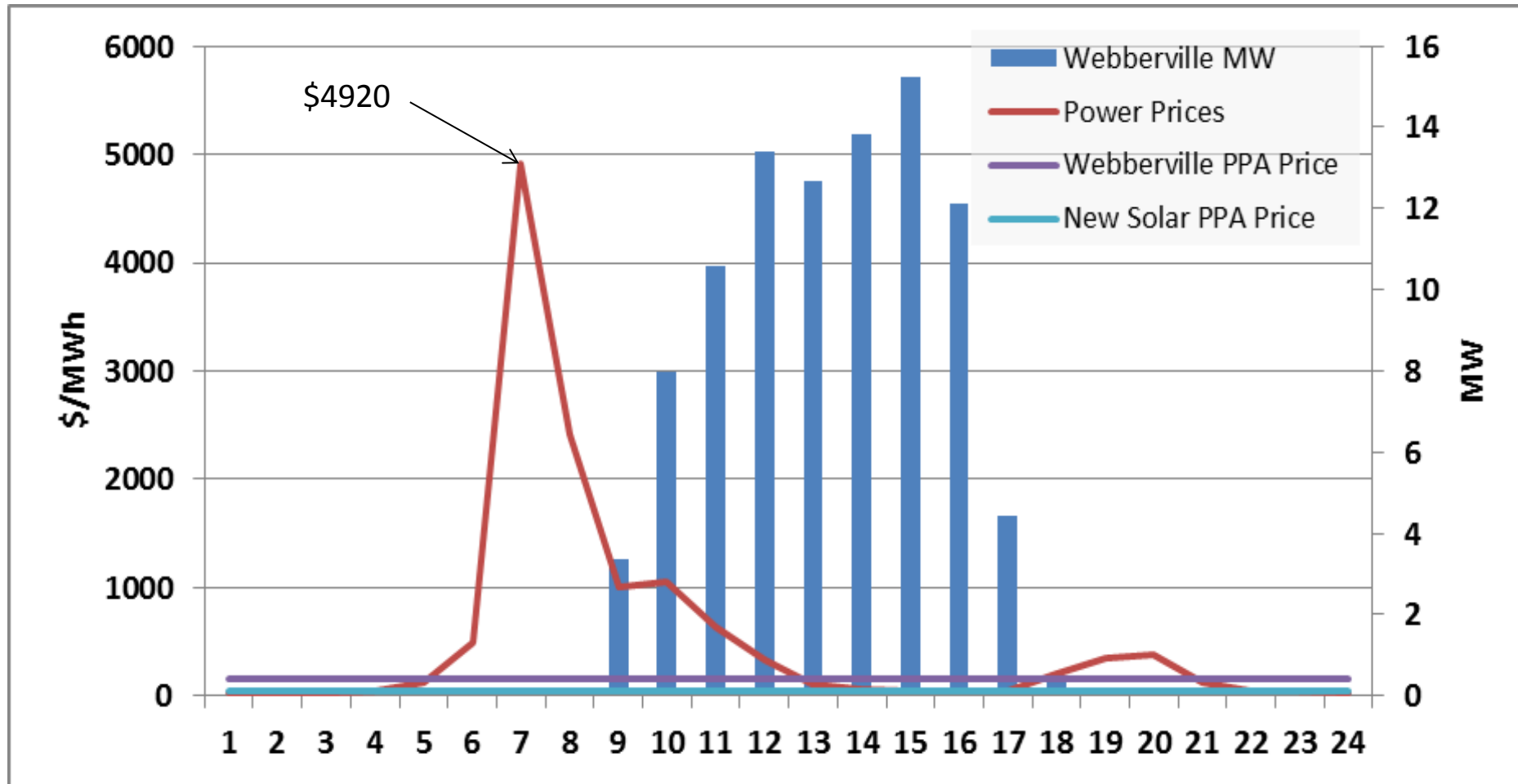
- Aug 7, 2013



Note:

\$100/MWh = 10 Cents/kWh

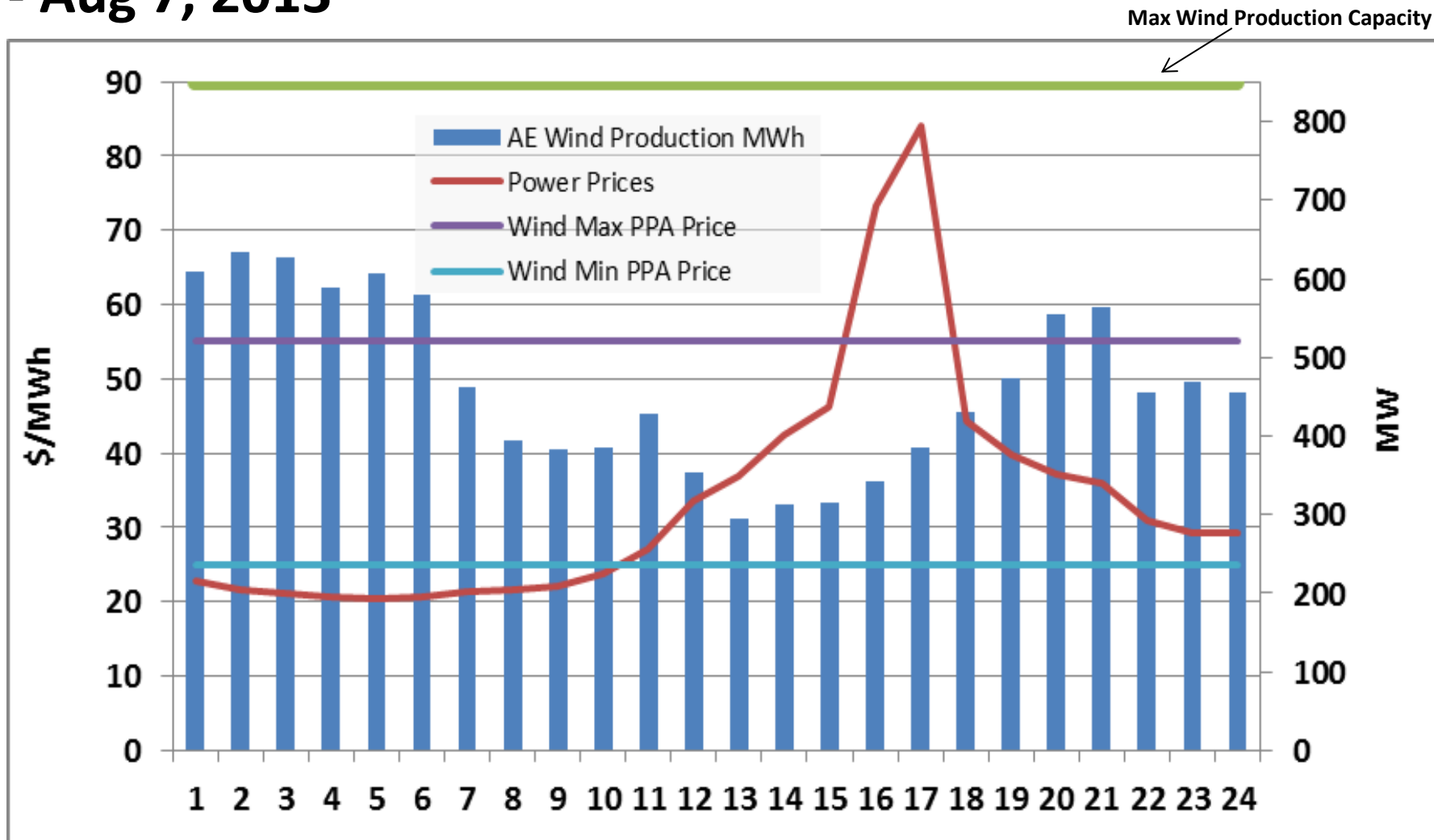
Webberville Production on a new ERCOT Winter Peak - Jan 6, 2014



Note:

\$100/MWh = 10 Cents/kWh

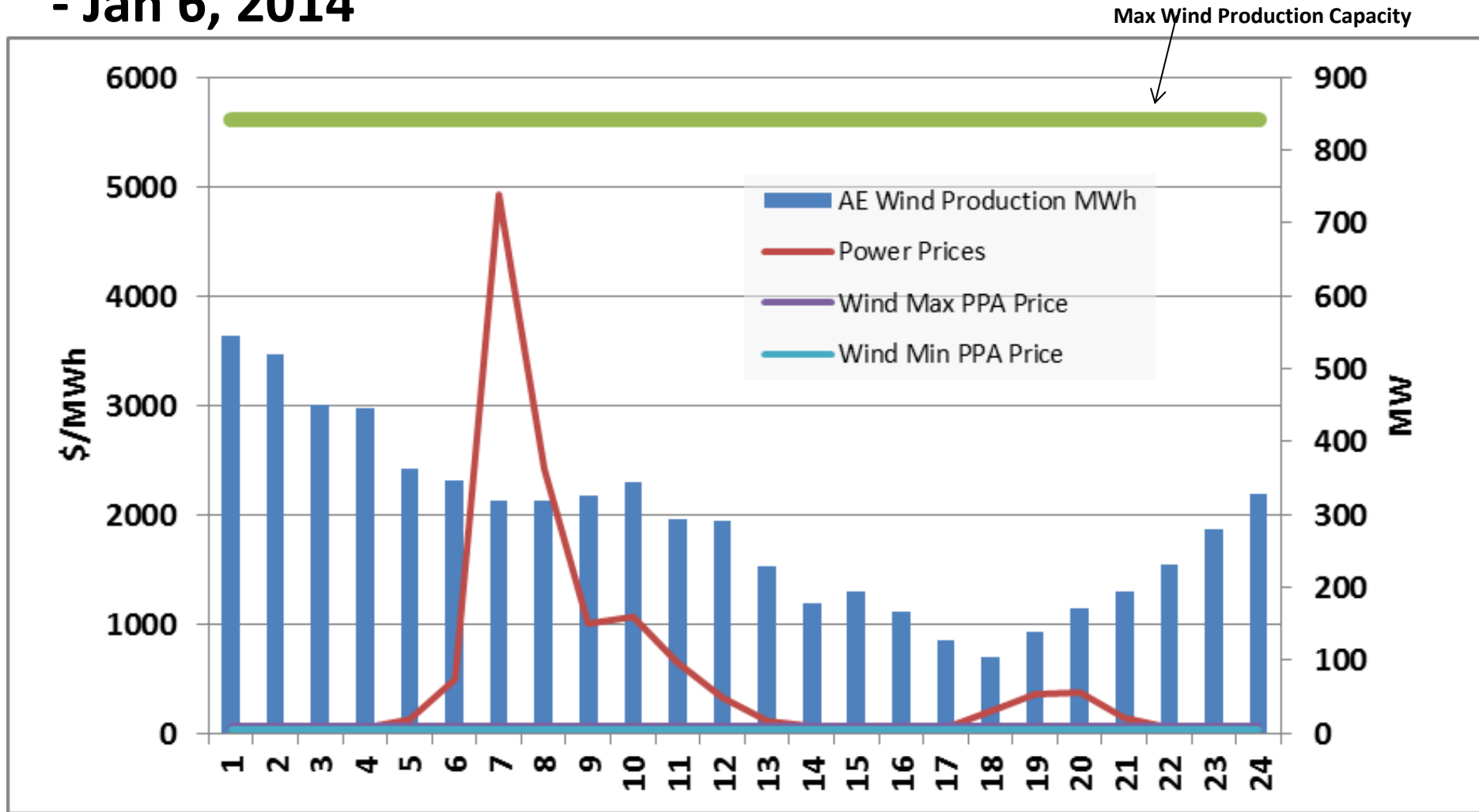
Wind Production on AE 2013 Summer Peak - Aug 7, 2013



Note:

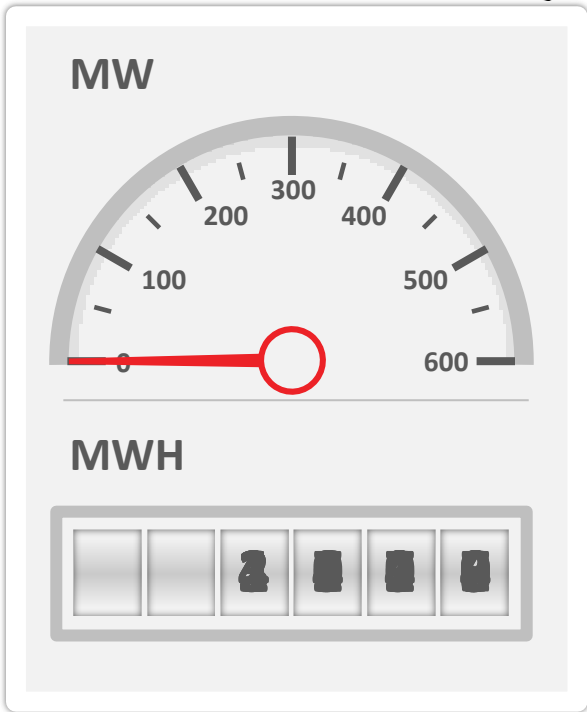
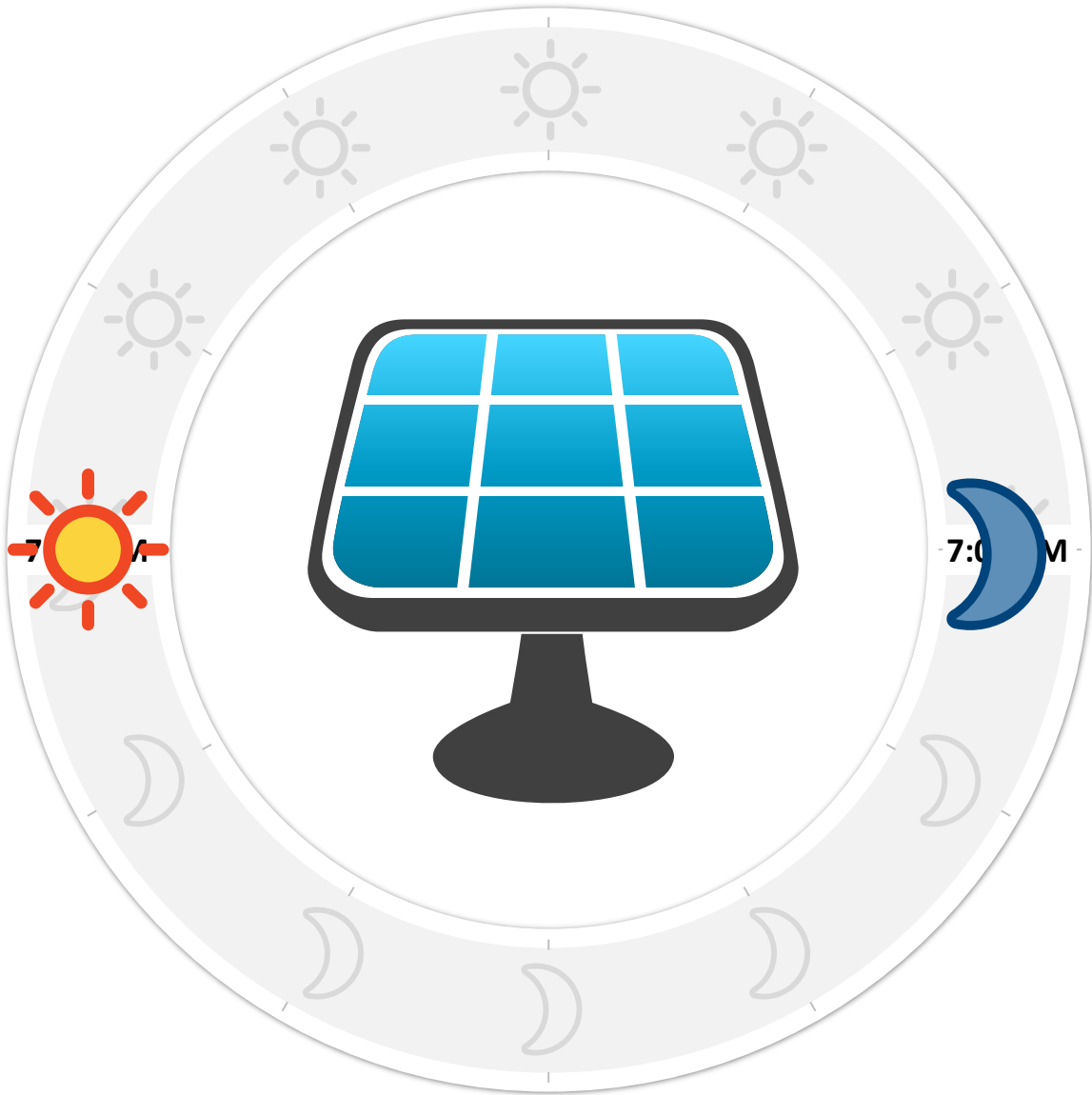
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Wind Production on a new ERCOT Winter Peak - Jan 6, 2014



Note:
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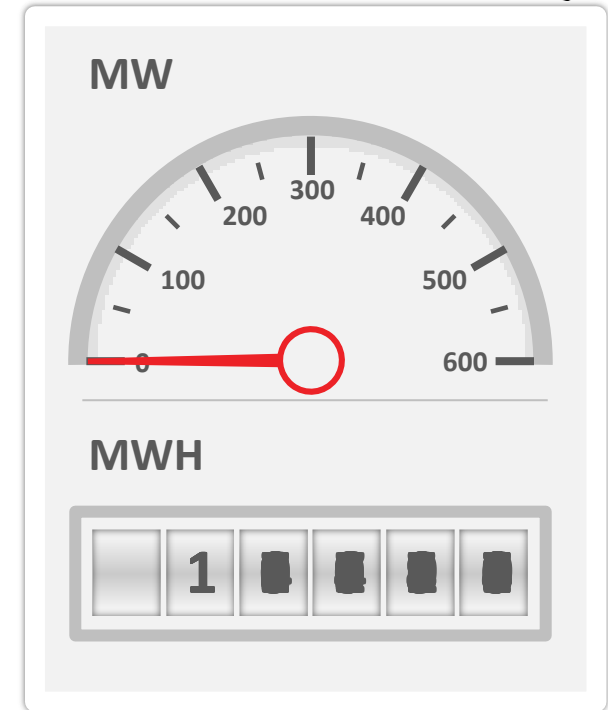
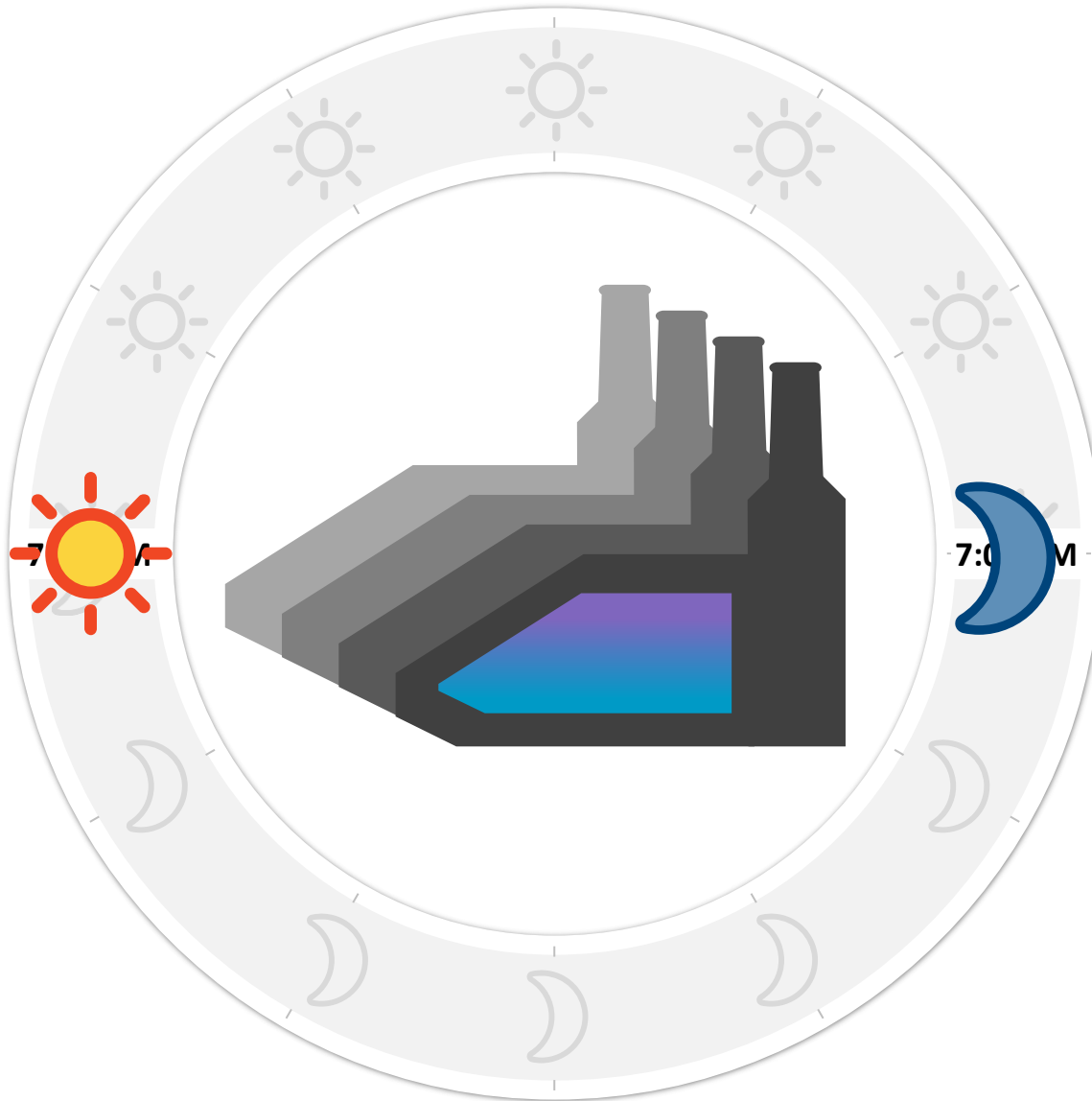
600 MW Solar Plant



SOLAR

PRODUCES 14,583 MWH DURING THE DAY

600 MW Combined Cycle Natural Gas Plant



COMBINED CYCLE
PLANT DELIVERS

DAILY NET REVENUE
24/7
\$115,875

Net Revenue Comparison of 600 MW Solar & Gas plants using 2011-2014 market and performance data

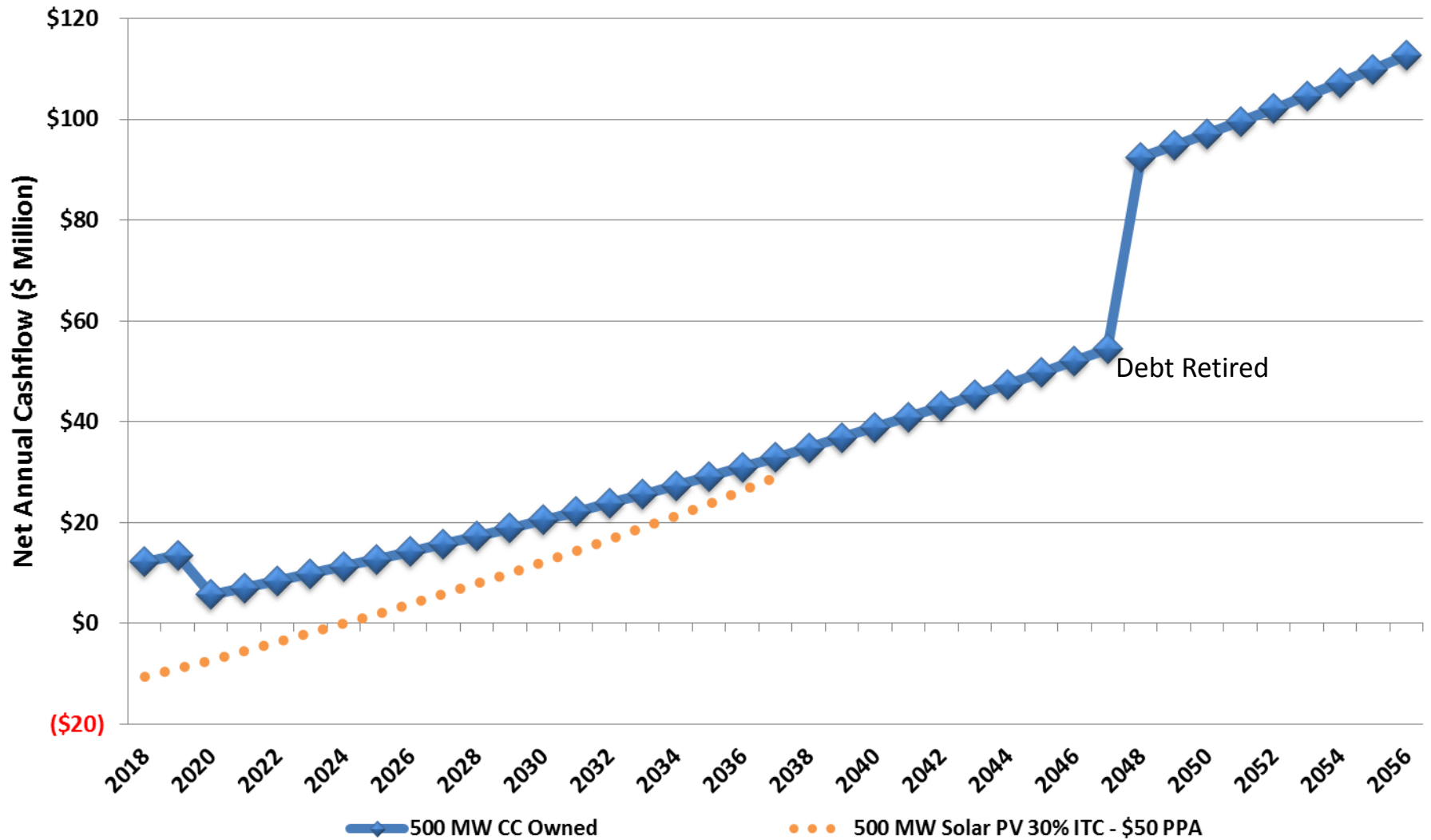


			Solar		Gas Combine Cycle	
	GAS Price (\$/MBTU)	Power Price (\$/MWH)	Net Operating Revenue (\$ Million)	Debt Service / O & M (\$ Million)	Net Operating Revenue (\$ Million)	Debt Service / O & M (\$ Million)
2011	3.98	51.01	\$64	\$0	\$132	\$42
2012	2.75	25.20	-\$23	\$0	\$20	\$42
2013	3.73	32.31	-\$14	\$0	\$27	\$42
2014*	4.35	39.11	-\$8	\$0	\$27	\$21
Total	3.70	36.90	\$19	\$0	\$206	\$148
Net Revenue Including 2011 (\$ Million)			\$19		\$58	
Net Revenue Excluding 2011 (\$ Million)			-\$45		-\$32	

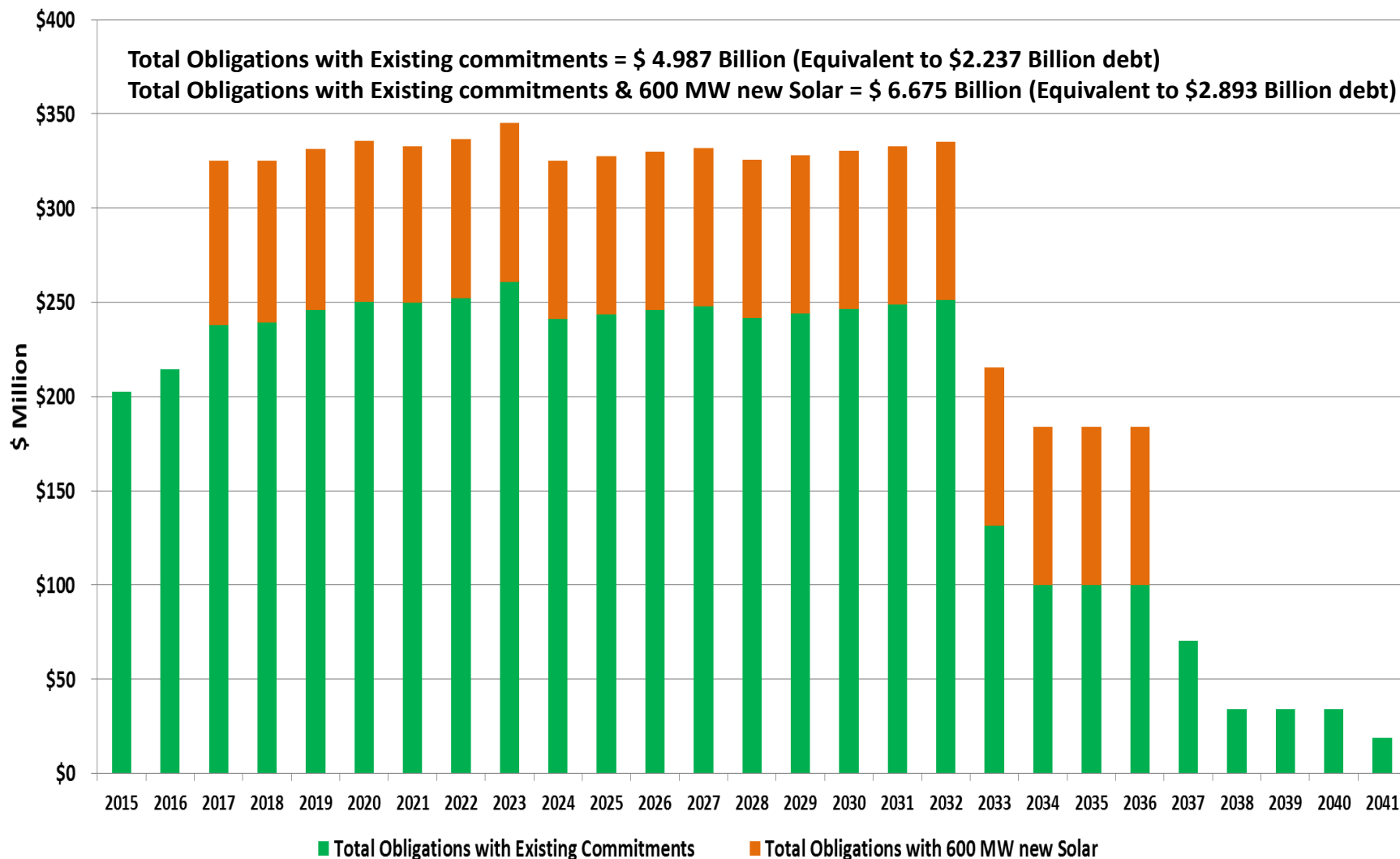
Notes:

- Both solar and gas plants are 600 MW
- Based upon actual historical dispatch using Webberville and Sand Hill Combined Cycle as proxy, but adjusted to 600 MW
- Market pricing is based upon historical prices and adjusted to reflect ERCOT's \$9,000/MWH offer cap
- Assume solar price at \$52/MWH
- 2014 covers partial year
- Short term view does not show long term value of ownership

Net Cashflow – Owning vs. Renting (PPAs)



PPA Commitments with 600 MW Solar Addition



- AE Total debt is \$1.253 Billion, AE's total valuation is ~\$ 3Billion

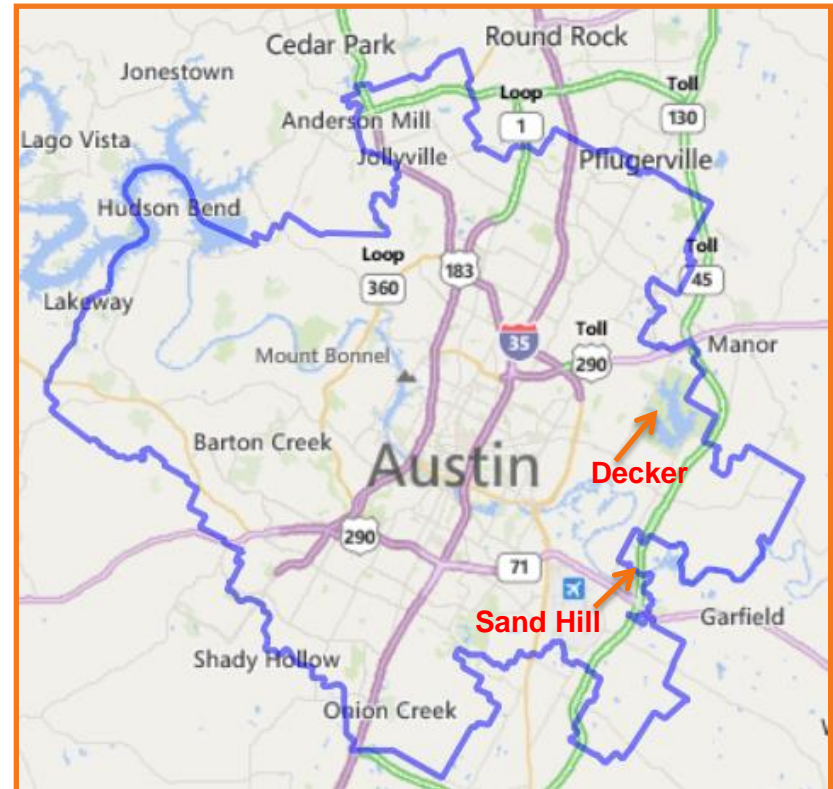
Why is Proximity to Austin Important?

- The AE Load Zone is defined by Austin Energy's service area
- It is the metered demand of AE customer load
- Power generation especially dispatchable within or in close proximity to Austin minimizes congestion risk and helps lower the price of energy in the load zone

WHY?

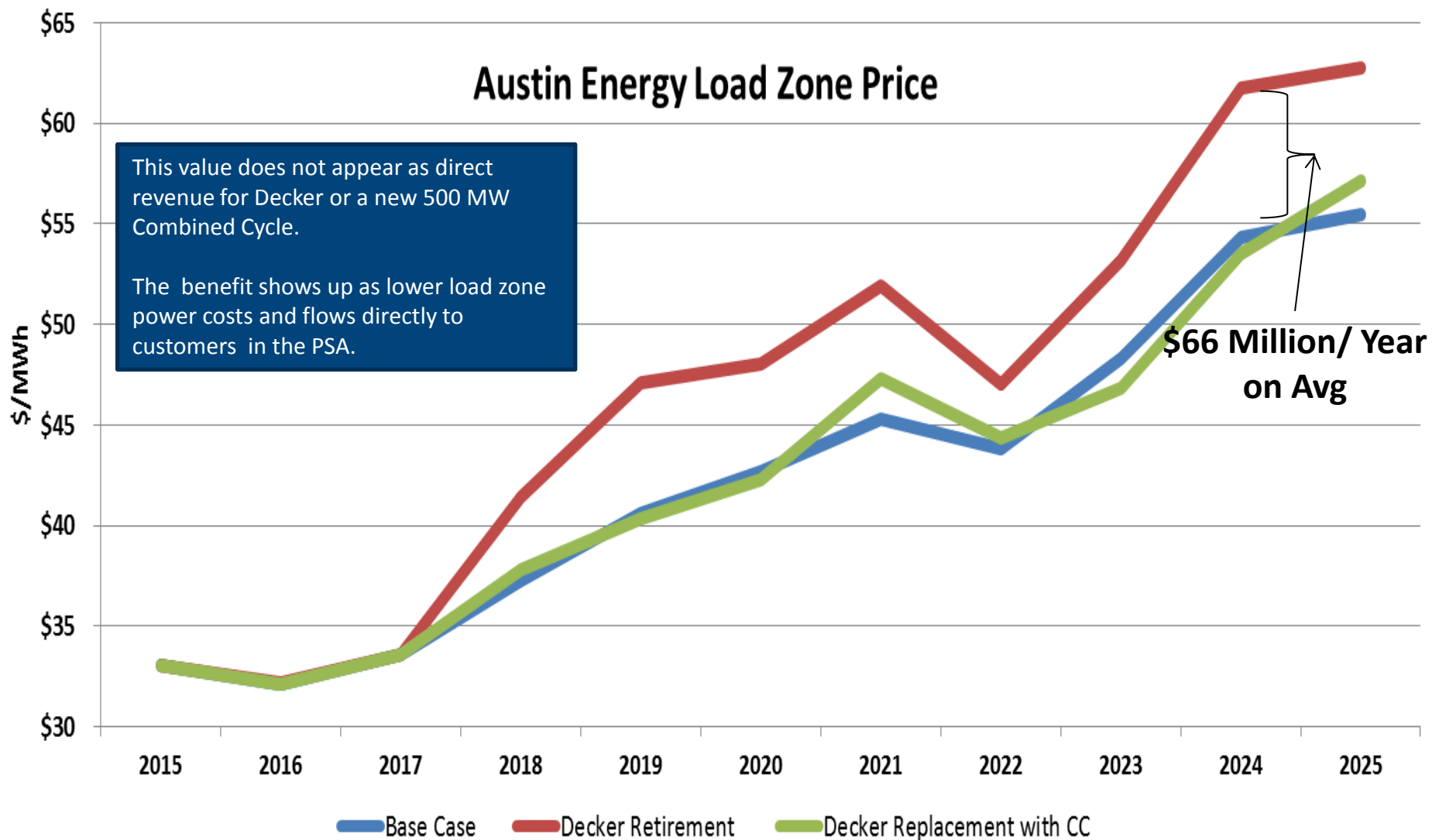
Basic Economics

Increased Local Supply vs. Local Demand
Helps Lower Prices



AE Service Area

Hidden Value of Municipal Utility



Note: Decker retirement scenario includes transmission upgrades necessary for reliability

Managing Risk helps Maintain Affordability

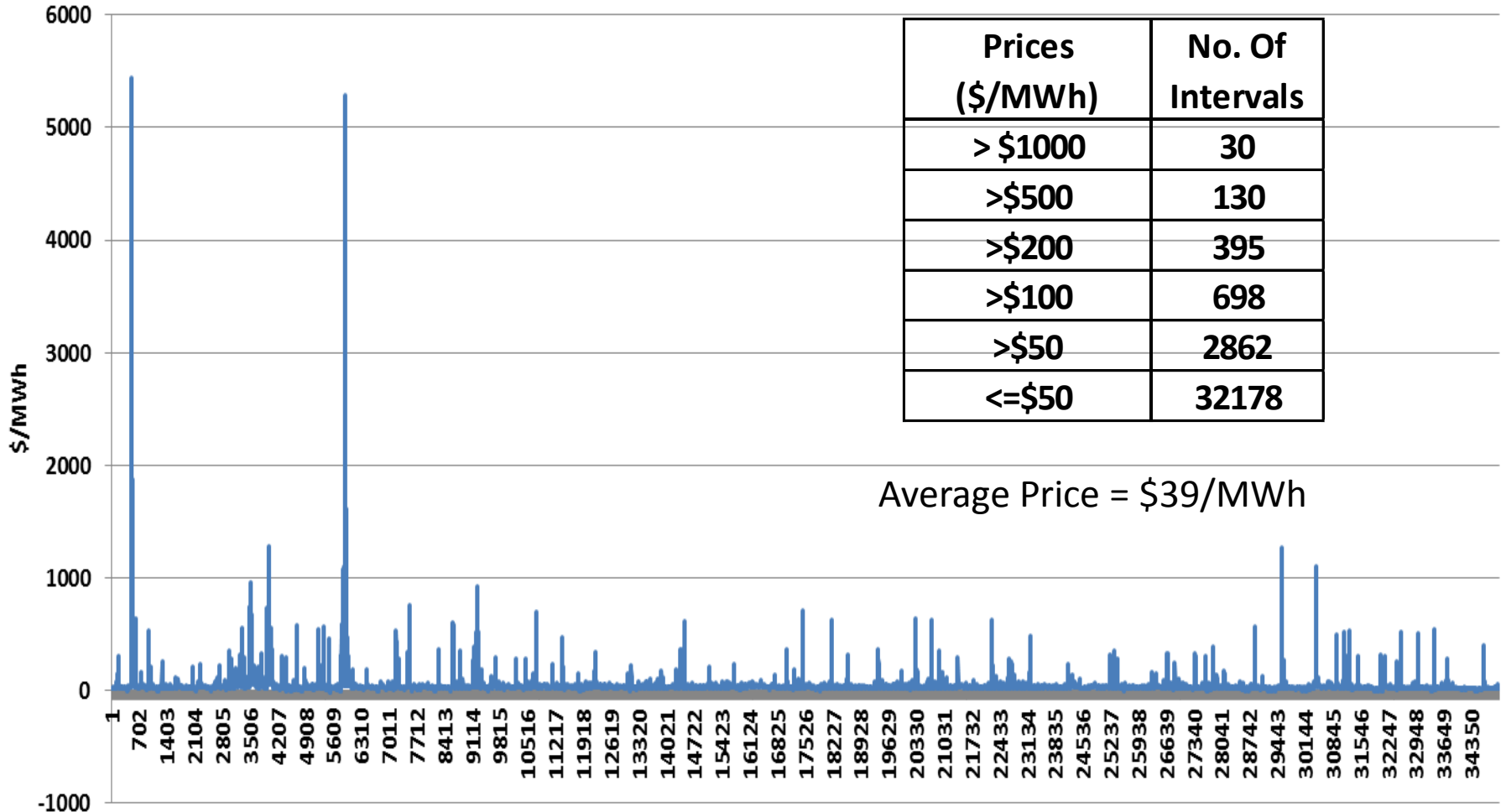


- Portfolio diversity – a tried and true risk management strategy – at any point in time higher performers offset lower performers
- Graduated commitments – risk of buying too much at one time (Solar was \$165/MWh in 2009 and \$50/MWh in 2014)
- Ownership offers a long-term value – continues to provide revenue after debt is paid (Decker)
 - Federal tax benefits favor PPA's for renewables now but this changes when they expire or decline
- Local utility scale and distributed generation moderate prices
- Demand side and storage technologies continue to evolve

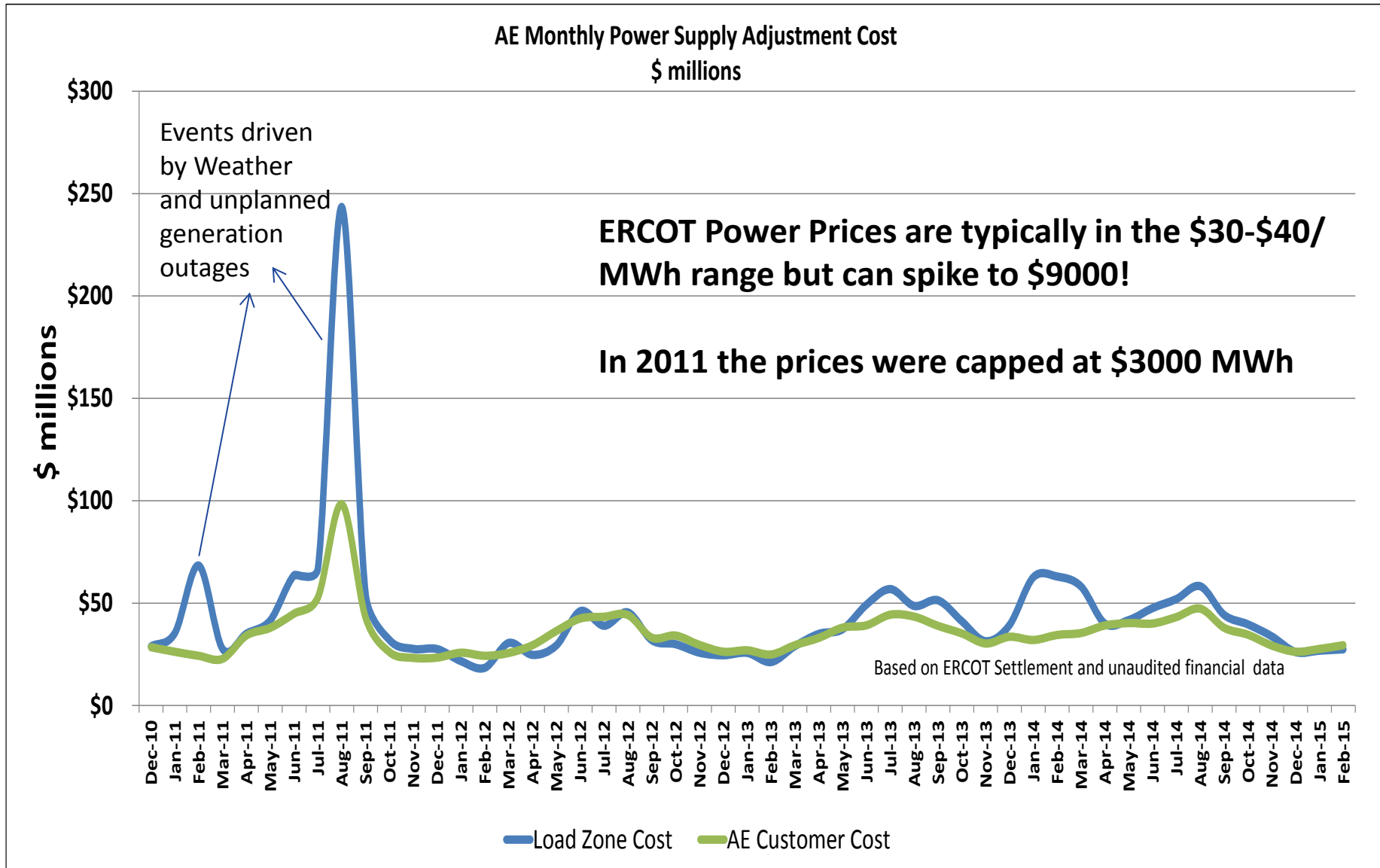
2014 Market Power Prices



2014 Real Time (15 Minute) Power Prices



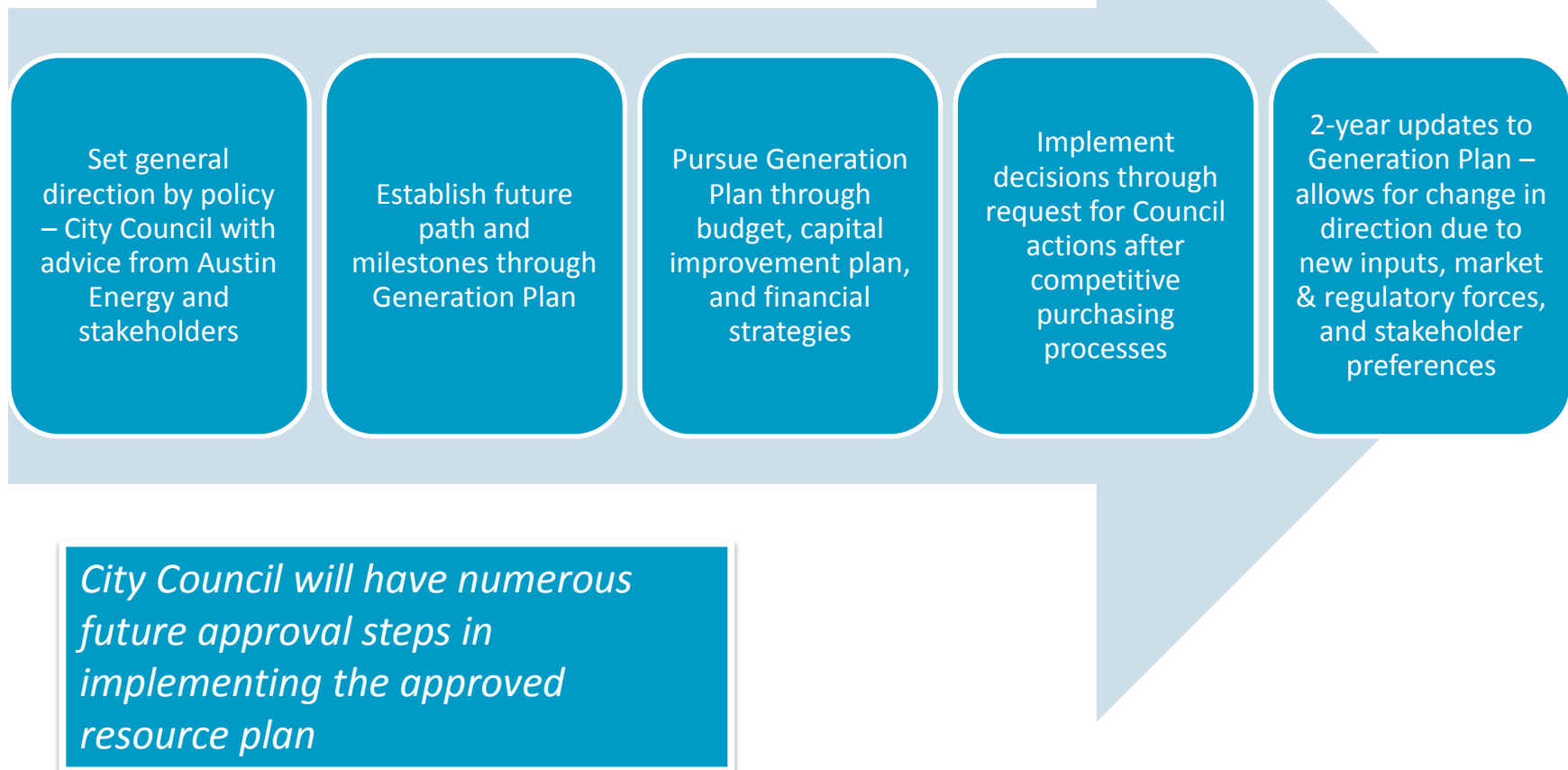
Benefits of a Diverse Portfolio in this Market



2025 Resource Plan



- The result of a multifaceted process that includes a measured system of choices and milestones over time



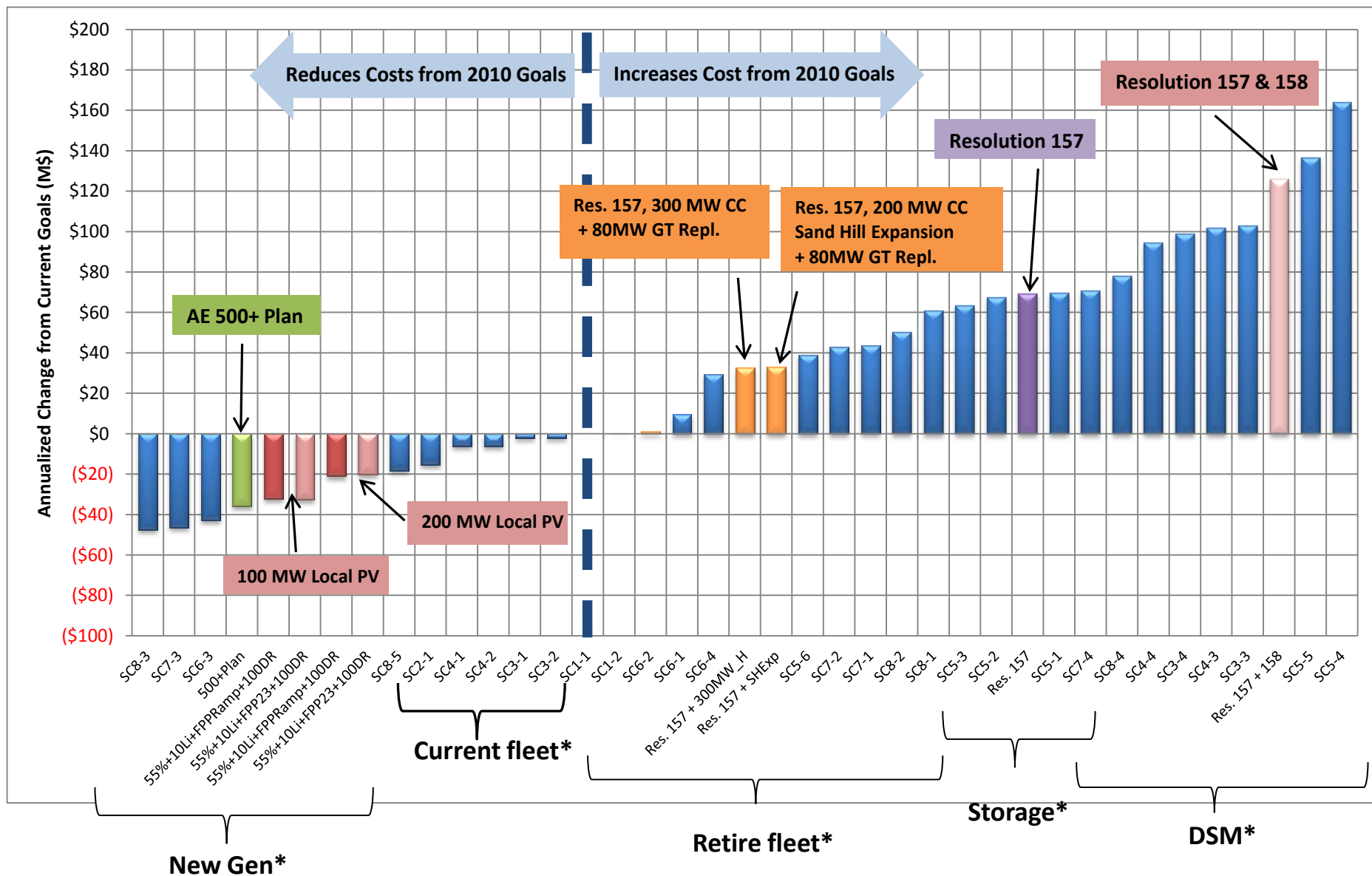


The Resource, Generation & Climate Protection Plan update was based on a comprehensive analysis:

Eight Broad Scenarios (30 plans, 210+ Sensitivities)

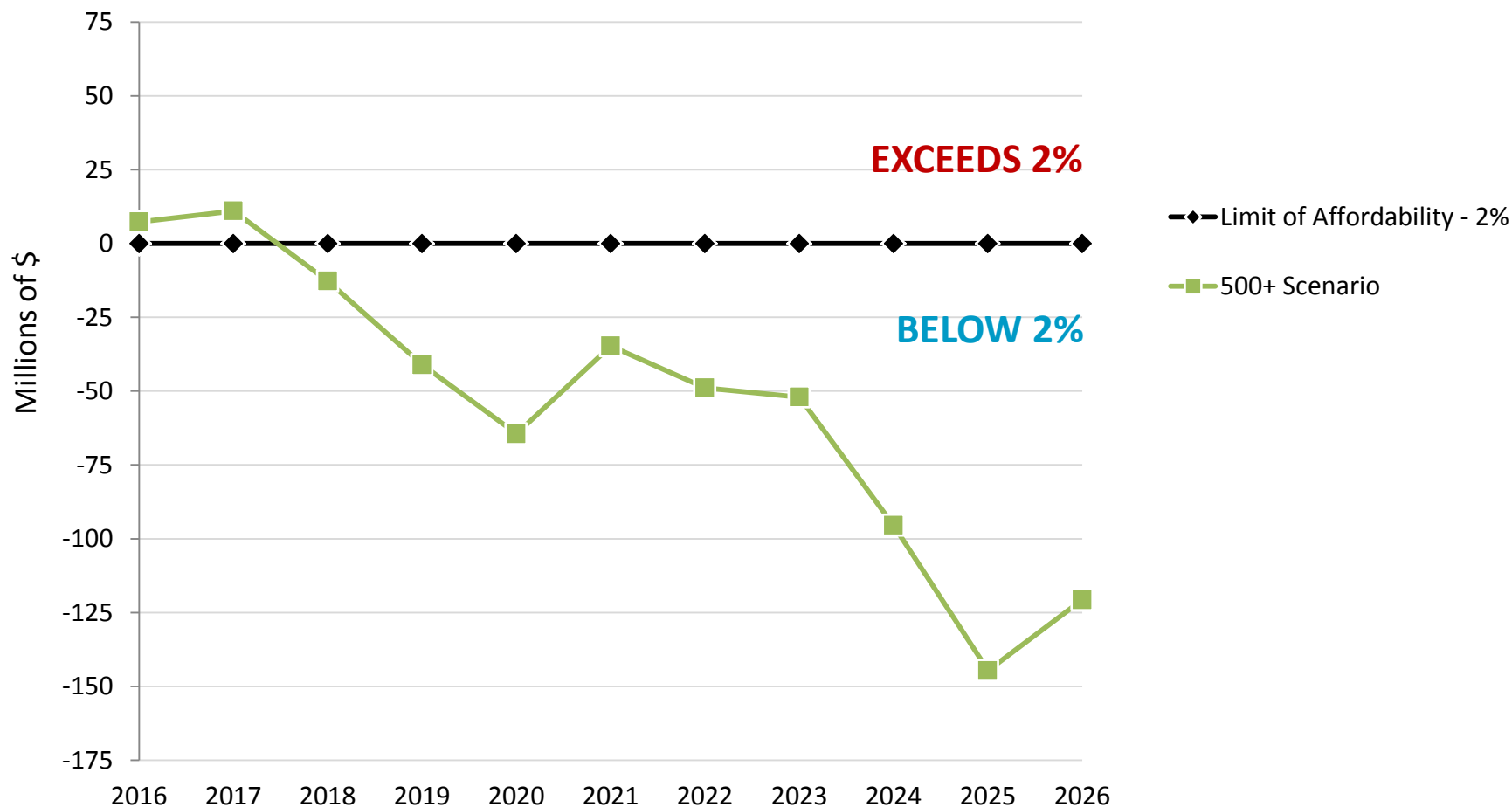
1. Meeting 2010 Council Goals
2. Do Nothing or No Additional Generation
Includes current 800 MW DSM goal
3. Increase Renewables & DSM (40% Renewables/1,000 MW DSM/2020)
4. Increase Renewables & DSM More (50% Renewables/1,200 MW DSM/2025)
5. Increase Renewables & Carbon Free Strategies
(Retire all fossil /40% /50% /1,000 MW/1,200 MW DSM/Res 157)
6. Retire & Replace FPP (~58% Renewables/317 MW CAES)
7. Retire & Replace Decker Plant (~38% Renewables/317 MW CAES)
8. Retire & Replace both Decker & FPP (~65% Renewables/317 MW CAES /500+)

Yearly Change from 2010 Goals in \$Millions per year



* - Major drivers

Austin Energy 500+ Scenario Affordability Chart



Resource, Generation & Climate Protection Plan to 2025 Continues Austin's Leadership



Plan Attribute	2020 Plan	2025 Plan	Improvement	Leadership
% Renewable	35%	55%	71% increase	Exceeds leading state goals (Hawaii 40%) and top European goals (Germany/Sweden 50%)
Solar	200 MWs	950 MWs	375% increase	If Austin were a state it would rank second behind CA
Wind	1200	1575	31% increase	Austin will have 14% share of Texas wind, 3.5x its load share
DSM	800	900	12% increase	Covers 3 years of peak demand growth
Fossil Fuel	Fleet as is	Retire FPP coal & Decker gas, add 500MW gas CC	36% decrease	Nearly 80% carbon free
Storage	NA	30 MWs	NA	Nearly equal to ERCOT's current installed battery storage (34 MW)

Resource, Generation & Climate Protection Plan to 2025 Summary



Year	Coal	Nuclear	Gas	Local Storage	Demand Response	Demand Side Management	Biomass	Solar	Local Solar	Wind	% Renewables
2015	602	436	1,497				112		63.0 ⁵	1041	28%
2016								200 ⁴	13.0 ⁶	754 ⁷	51%
2017				1				150	6.0 ⁶	(91.5) ⁸	54%
2018			(235) ³	1					7.0 ⁶	(34.5) ⁸	53%
2019				1					9.0 ⁶		53%
2020	(235) ¹			1	100 (cumulative)	700 (cumulative)		200 ⁴	12.0 ⁶		57%
2021				1	20				14.0 ⁶		56%
2022				1	20				16.0 ⁶		55%
2023	(367) ²			1	20				18.0 ⁶	(165.6) ⁸	56%
2024				1	20				20.0 ⁶		52%
2025				2	20			200 ⁴	22.0 ⁶		56%
Total Resources	0	436	1262	10	200	700	112	750	200⁹	1503	

Note:

- 1) Equivalent MW reduction of AE's share of Fayette to achieve 20% below 2005 CO₂ levels
- 2) Retirement of AE's share of Fayette at the end of 2023
- 3) Net of Retirement of Decker Steam Units and addition of 500 MW Combined Cycle
- 4) New utility scale solar additions
- 5) Existing and new local solar additions
- 6) Total local solar additions including community solar
- 7) Net of committed wind and new additional wind
- 8) Expirations of existing wind contracts
- 9) Additional 90 MWs of Local Solar by 2025 contingent upon affordability evaluation

Summary

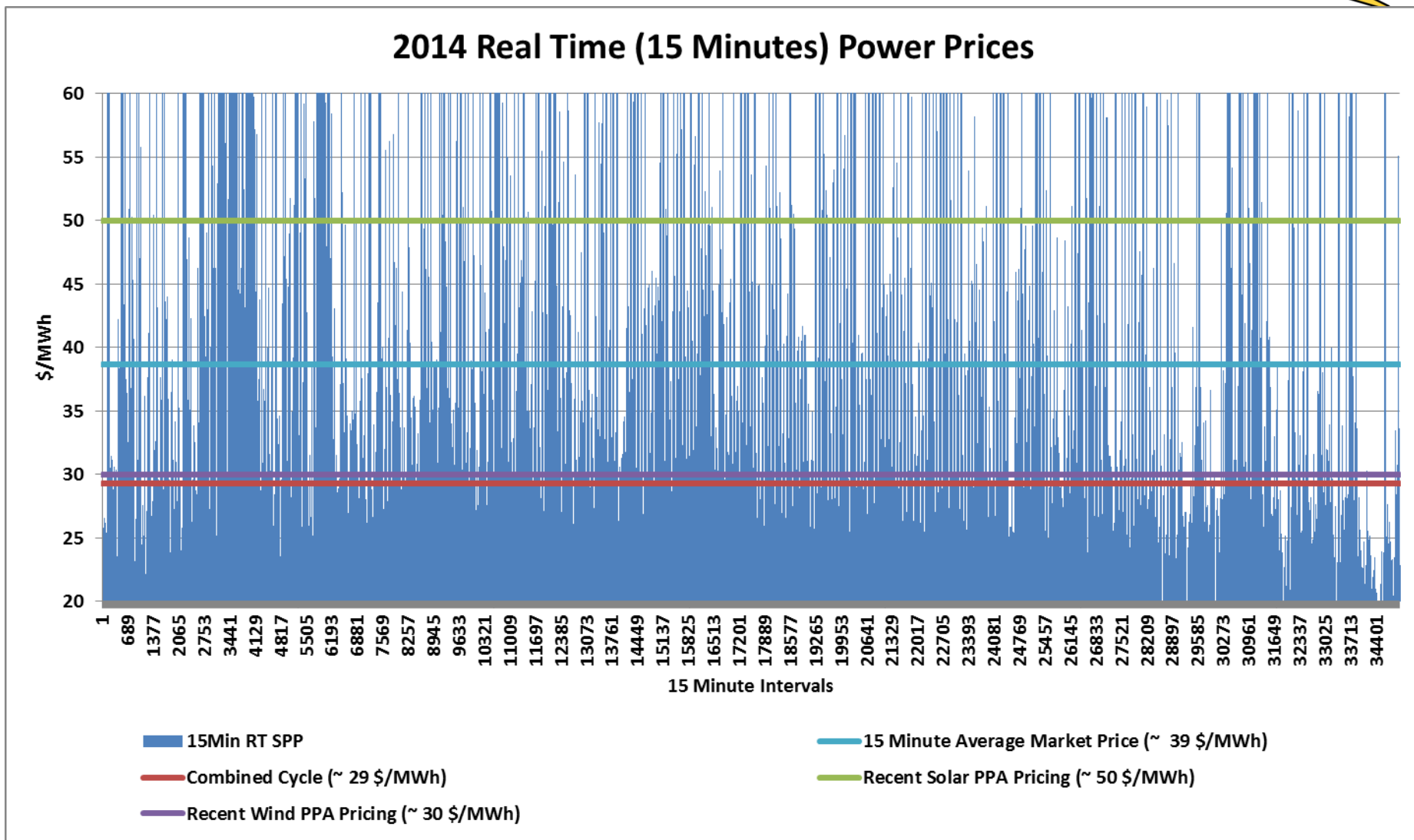


- The Texas energy market is dynamic and competitive:
 - Value is determined by capability and cost
- The 2025 Resource Plan balances risk:
 - Portfolio diversity
 - PPAs or Ownership when and where appropriate
 - Graduated commitments
 - Flexible and adaptable
 - Uses revenue from sales to support goals
- Solar and gas are complimentary, not mutually exclusive
 - Solar is good and getting better
 - Add in steps as pricing continues to improve
 - Gas is a market driver and will remain so for some time come
 - 55% of the ERCOT market
 - New AE unit would be among the most efficient / competitive
- Demand side and storage strategies are a key element
- Plan balances risk, competitiveness and affordability



Appendix

2014 Power Market Prices with Average Gas, Solar & Wind

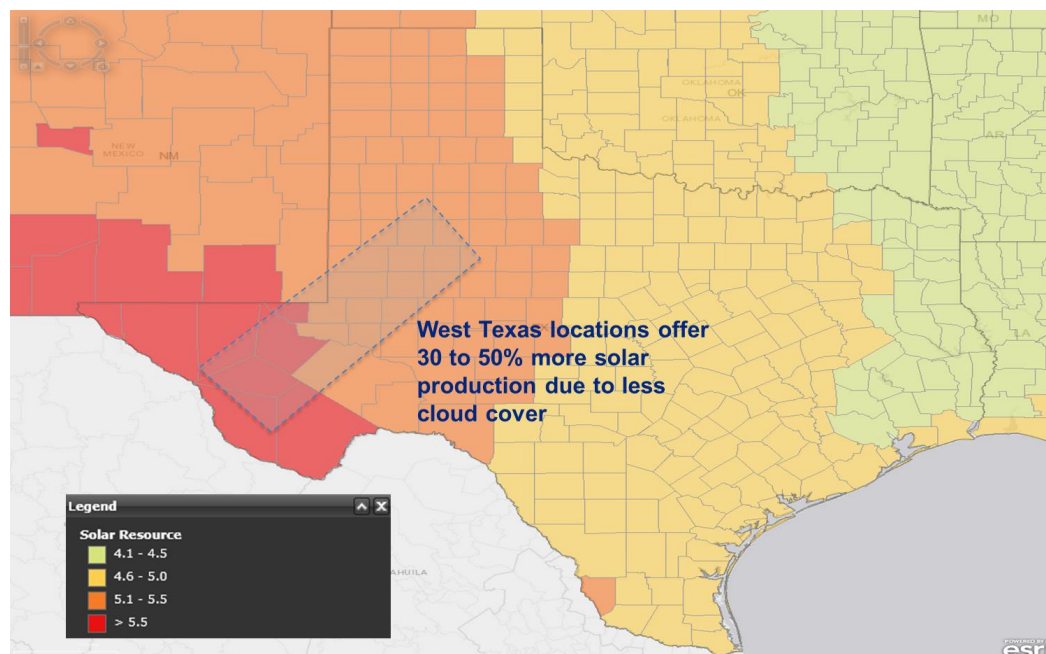


- Both Solar and Wind pricing is based on recent contracts
- Combined Cycle cost is based upon an efficient combined cycle at the average 2014 \$4.37 gas price

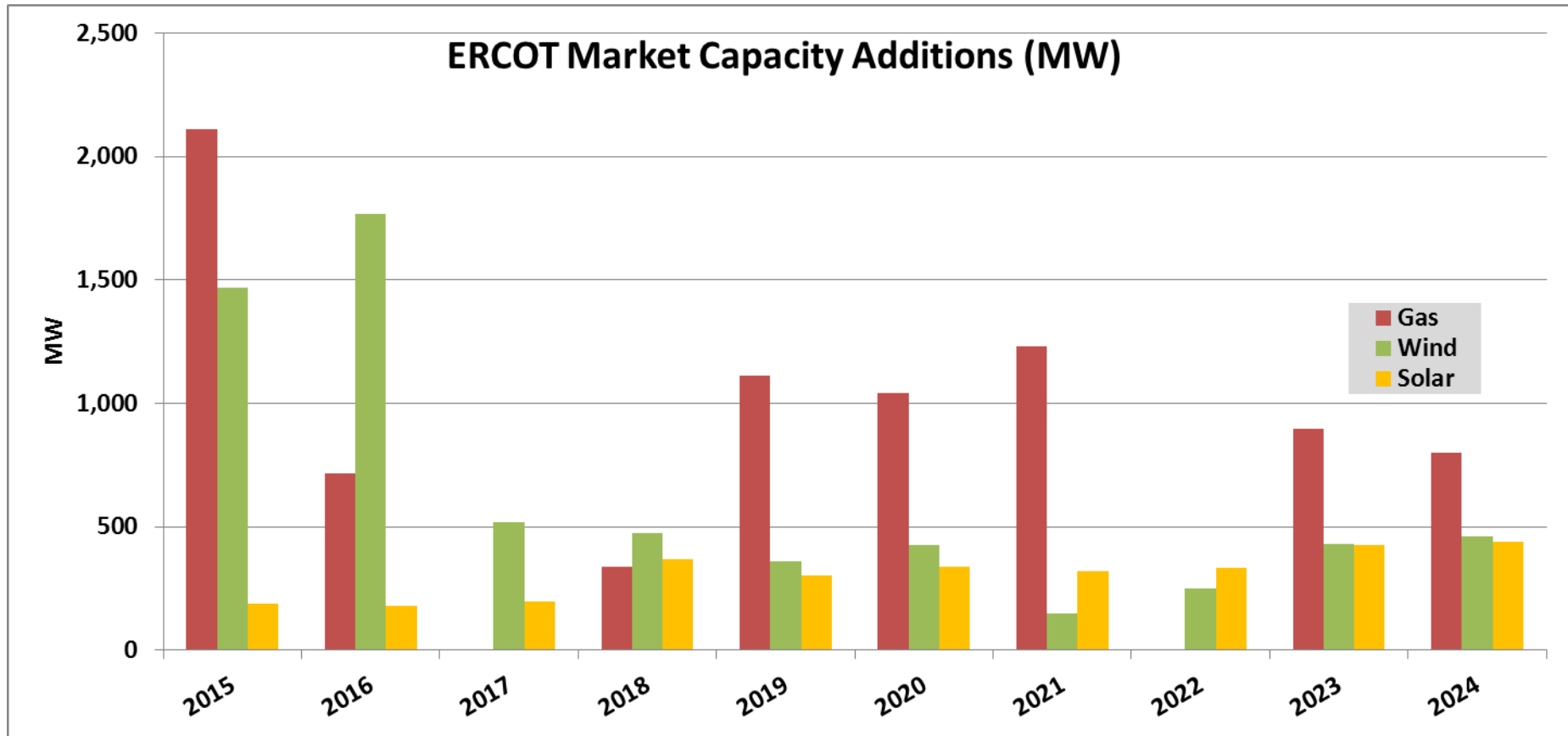
Cost of Local Solar versus Utility Scale Solar

- While distributed solar can reduce transmission costs and provide local economic development benefits, the cost per kW, and per kWh, is significantly higher than utility-scale solar
 - Utility-scale solar is less expensive due to economies of scale, and ability to locate in areas with better solar resource, such as West Texas
 - Customer-sited solar has a higher installed cost, and receives substantial subsidies from Austin Energy ratepayers, along with Value of Solar payments

	Rooftop Solar (residential)	Utility Scale (W. Texas)
Installed cost	\$3.00-\$4.25/W	\$1.75-\$2.25/W
Cost to utility	\$0.107/kWh	\$0.05/kWh
Additional rebate	\$1.10/W = ~3.5 cents/kWh over 25 yrs	-



Assumed Generation Additions for ERCOT

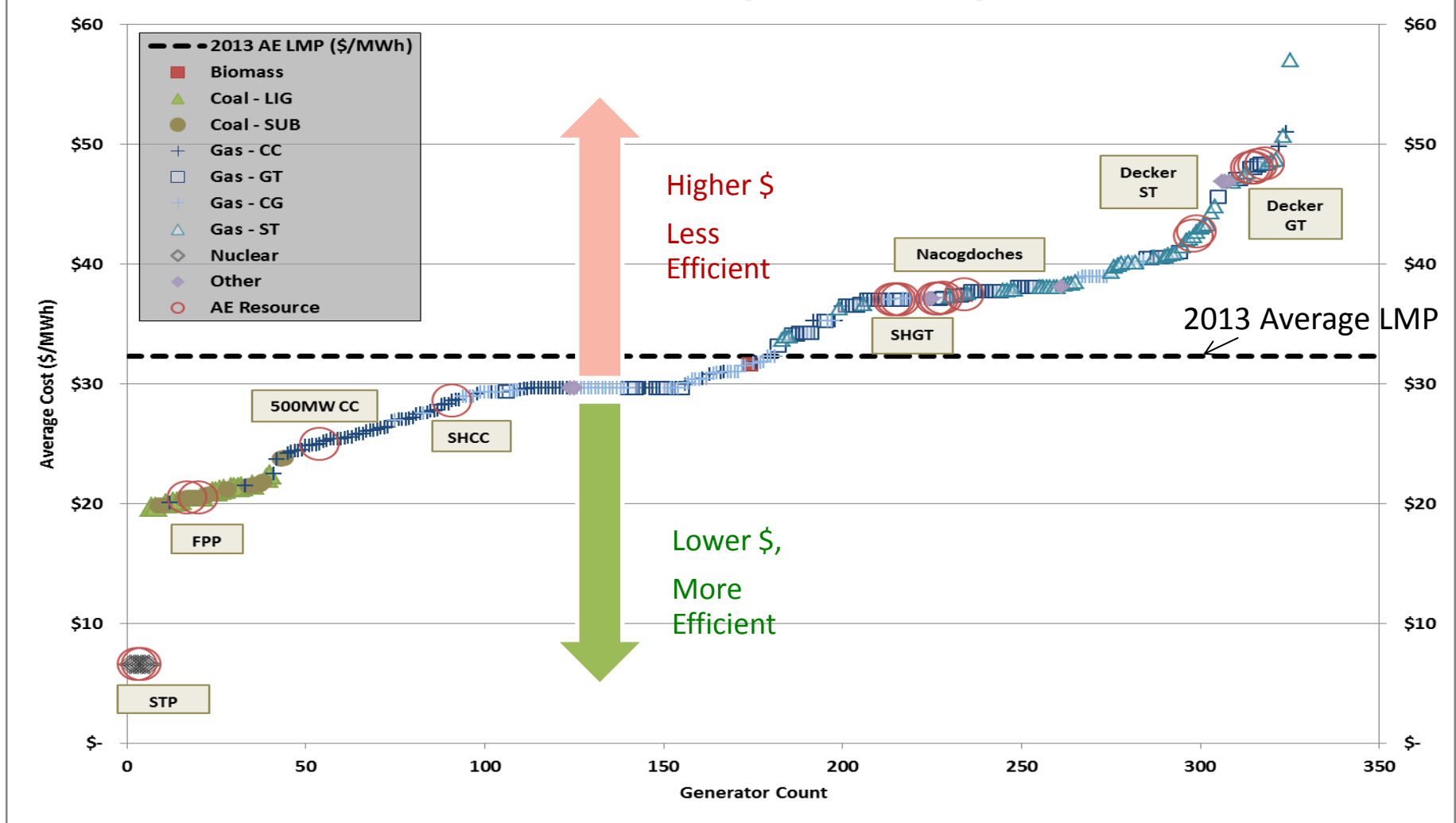


- Gas & Wind additions are based on ERCOT CDR
 - The timing of additions adjusted to reflect more realistic expectations
- Solar additions are based on ERCOT CDR and AE projections

New Resources displace Higher Cost Gas Resources

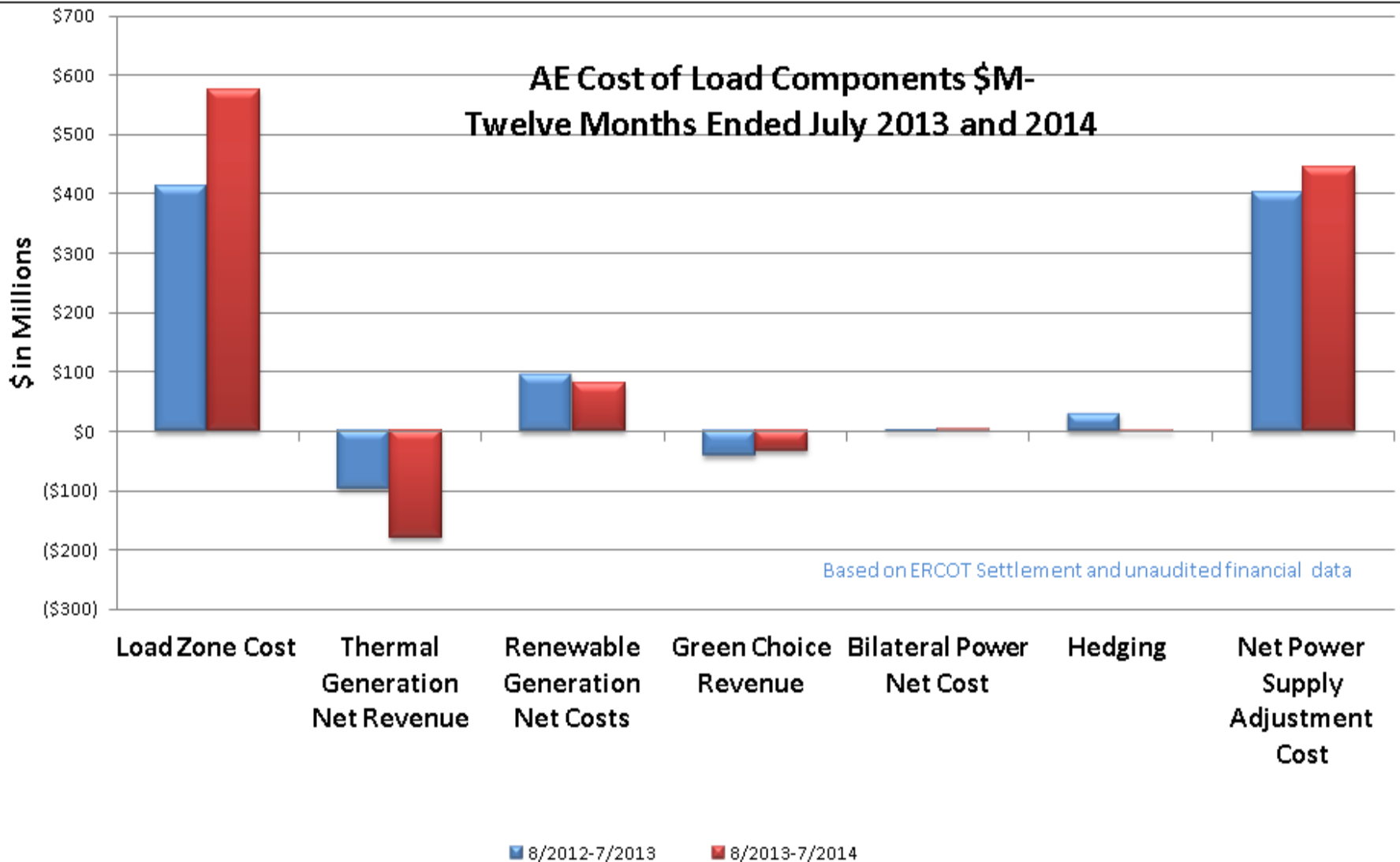


ERCOT Generator Average Cost Ranking - 2013

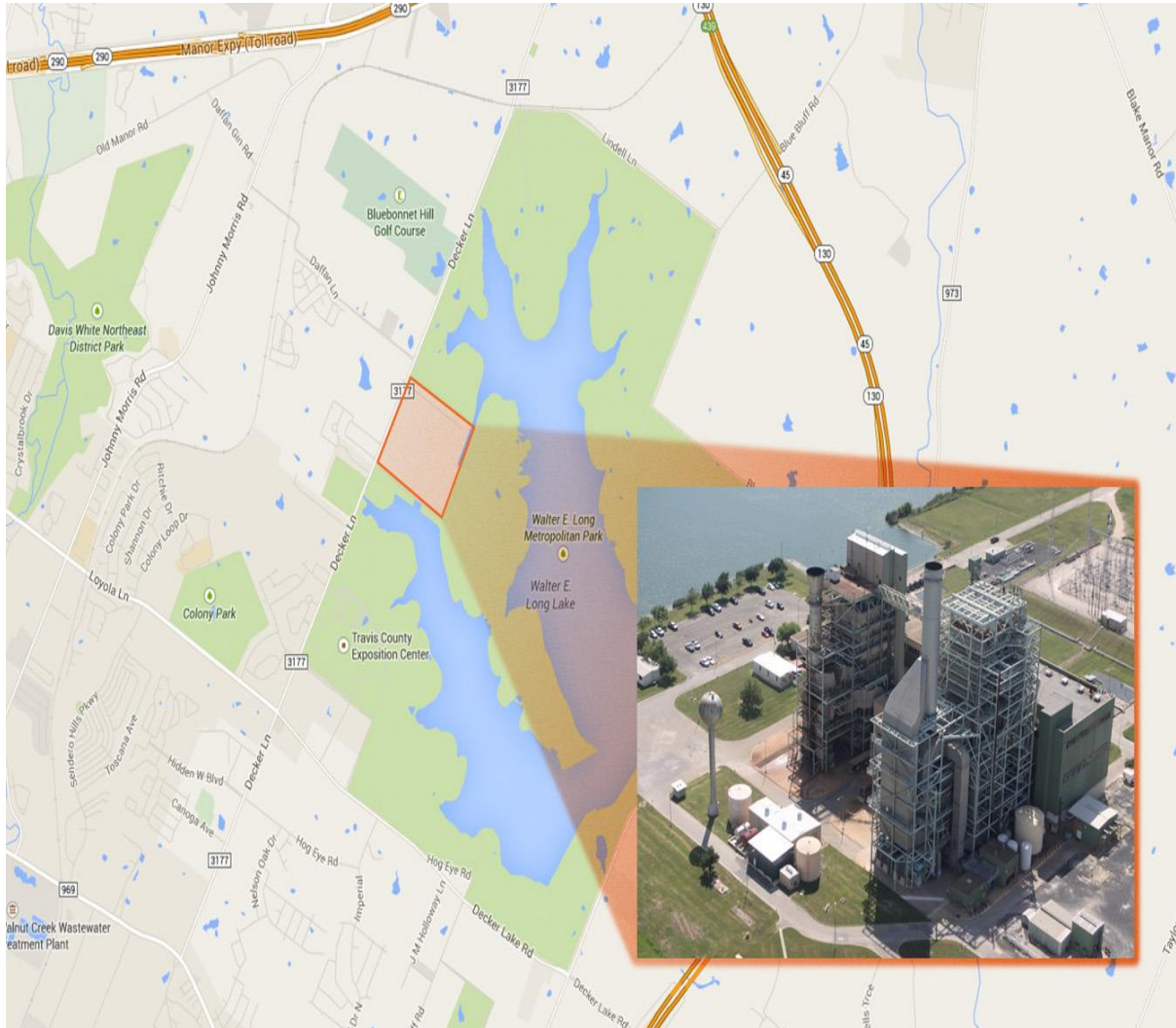


- Supports useful life of a new CCGT
- Having units in the most efficient position within ERCOT keeps energy prices low for AE customers

PSA COST COMPONENTS

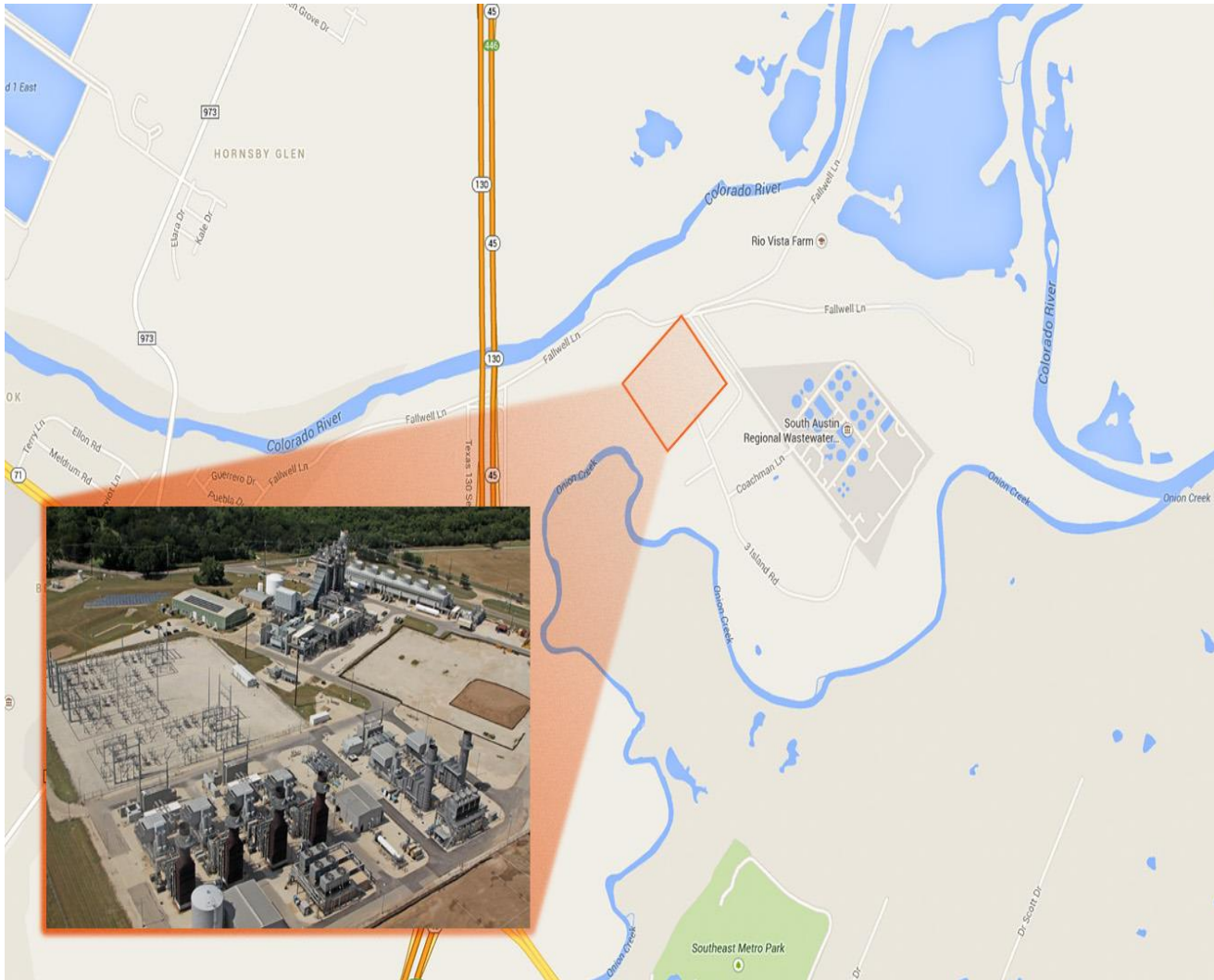


Decker Location



- Meets preferred characteristics
- Projections indicate Decker offers \$6M per year in savings over Sand Hill
 - Better transmission location
 - Subject to refinement after detailed transmission studies

Sand Hill Location



- Meets preferred characteristics
- Less favorable financially than Decker
 - Subject to refinement
- Expansion is required to use water from adjacent South Austin Regional Wastewater Plant