

# Financial Analysis of Generation Task Force Report and Resolution 20140828-157

September 24, 2014





# Introduction

Larry Weis  
General Manager

A photograph of several wind turbines silhouetted against a sunset sky with orange and blue hues. The image is partially obscured by a large blue wave graphic that sweeps across the bottom half of the slide.

# Cheryl Mele Chief Operating Officer



# 2010 Austin Energy Resource Planning Goals

- 2010 Austin Energy Resource Plan
  - 35% renewables by 2020
  - 800 MW energy efficiency by 2020
  - 200 MW solar by 2020
  - 20% reduction in CO<sub>2</sub> emissions by 2020
  - Affordability
    - 2% limit
    - Lower 50th percentile statewide
- Accomplishments
  - 49% of generation non-carbon producing
  - 35% renewables: 4 years early
  - Energy Efficiency: on track
  - CO<sub>2</sub> reductions: on track
  - Solar: on track
  - Affordability: on track

# Resolution 20140828-157: Austin Energy's New Challenge



- Key considerations:
  - Balance among potentially conflicting goals:
    - Carbon reduction
    - Specific technology/timing targets
    - Affordability
  - Cost-effectiveness for customers
    - Resource planning tools can evaluate alternative paths to achieve goals
    - Recommendations on continued study to identify most cost-effective path

The background of the slide is a photograph of a wind farm at sunset. Several wind turbines are silhouetted against a bright orange and yellow sky. To the left, a large electrical transmission tower is also visible. The bottom half of the slide is covered by a solid blue wave-shaped graphic.

# Khalil Shalabi

## Vice President, Energy Market Operations and Resource Planning



# Austin Energy Methodology

- UPLAN production cost model
  - 200 scenarios
  - Numerous inputs: Cost of gas, coal, nuclear, oil, carbon, cost of new build of various technologies, fixed and variable O&M of every plant in ERCOT
  - Calculates both the cost and revenues of every asset in ERCOT and pricing at each node – 6,600 data output points
  - Results modeled for rate impact and financial metrics
- Task Force calculation
  - Considered costs, but not revenues from power production
  - Uses the average values of two inputs: energy and solar prices





# An Outside View

- Brattle Group:
  - Established consultancy in business over 20 years with 76 full-time energy sector consultants
  - Practice covers the full scope of energy market issues with clients in all sectors
  - Extensive engagements related to the Texas power market, including work for the Public Utility Commission, ERCOT and Texas Clean Energy Coalition
- Task:
  - Review Austin Energy and Task Force analytic approaches for reasonableness and consistency with industry norms
  - Brattle reviewed:
    - Austin Energy data: performance statistics, planning studies, modeling results, topical reports, financial statements, and consulting studies from past 2-3 years
    - Task Force Report and publicly posted inputs to it from various stakeholder groups
    - Personnel: Extensive interviews with planning personnel to probe how assumptions were made or supported and how modeling tools were applied
    - Industry and market reports prepared by Brattle or others

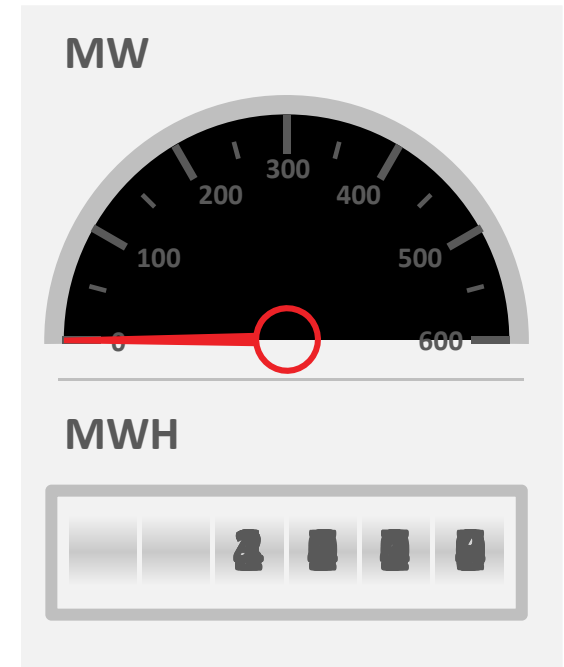
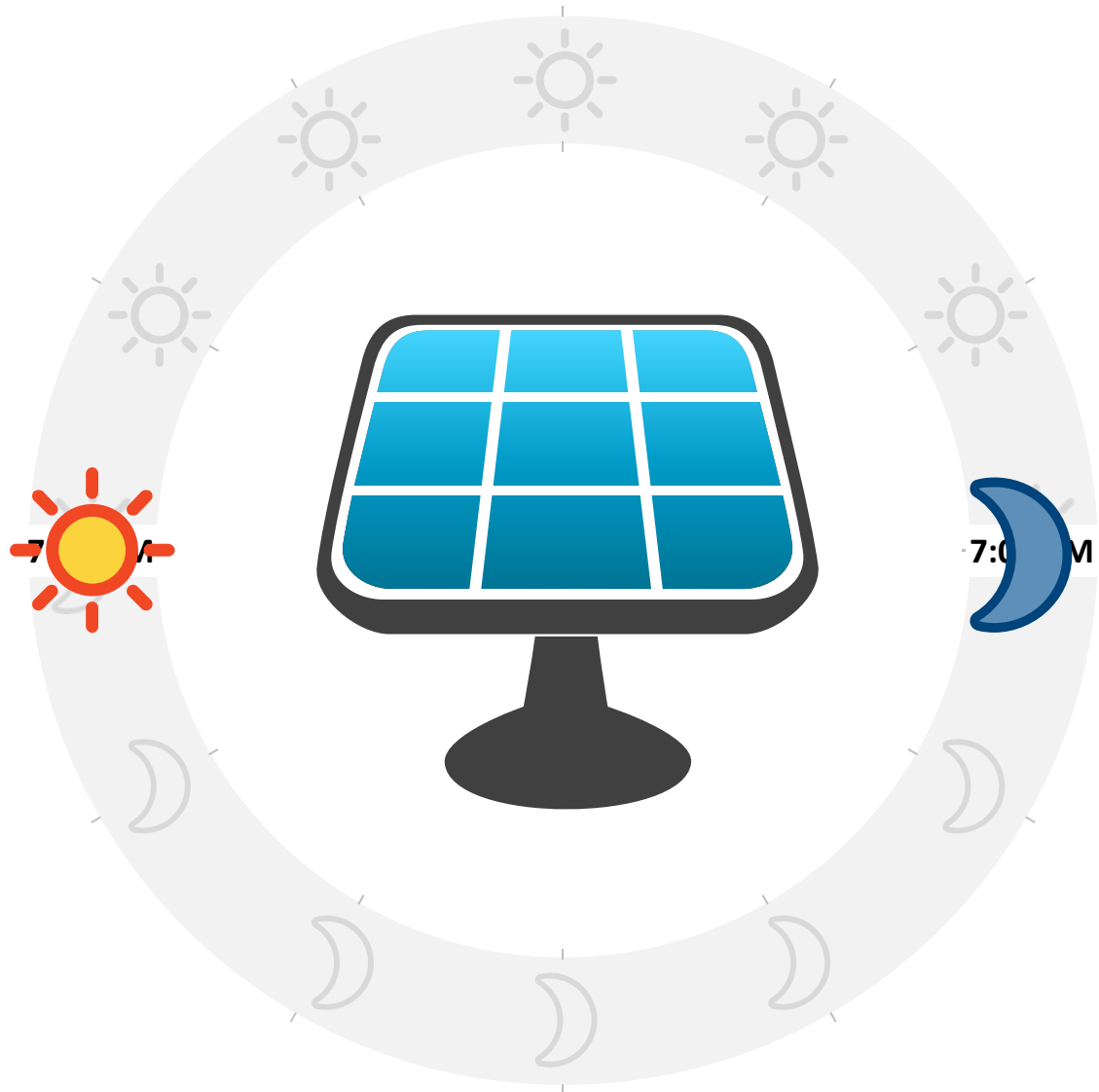




# An Outside View

- Findings:
  - ‘AE’s resource planning methods and tools are careful and consistent with good industry practices, with a range of input assumptions and possible resource plans that are reasonable.’
  - Task Force:
    - ‘The Task Force plan is plausible but ambitious, and it may be less economical than similar alternatives with different types and timing of resources’
    - ‘Cost comparisons by themselves do not give a complete and accurate picture of the attractiveness of generation alternatives’
    - ‘No formal system modeling behind Task Force recommendations’
- Additional:
  - Brattle representative is present for questions
  - Full report will be available at [AustinEnergy.com](http://AustinEnergy.com)

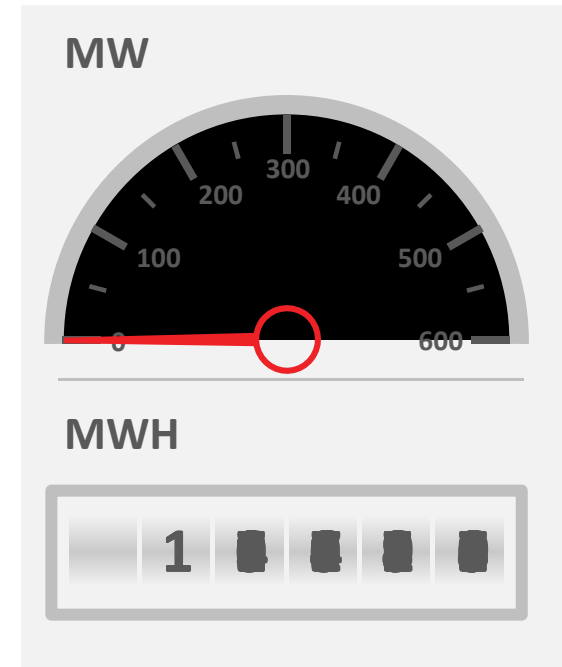
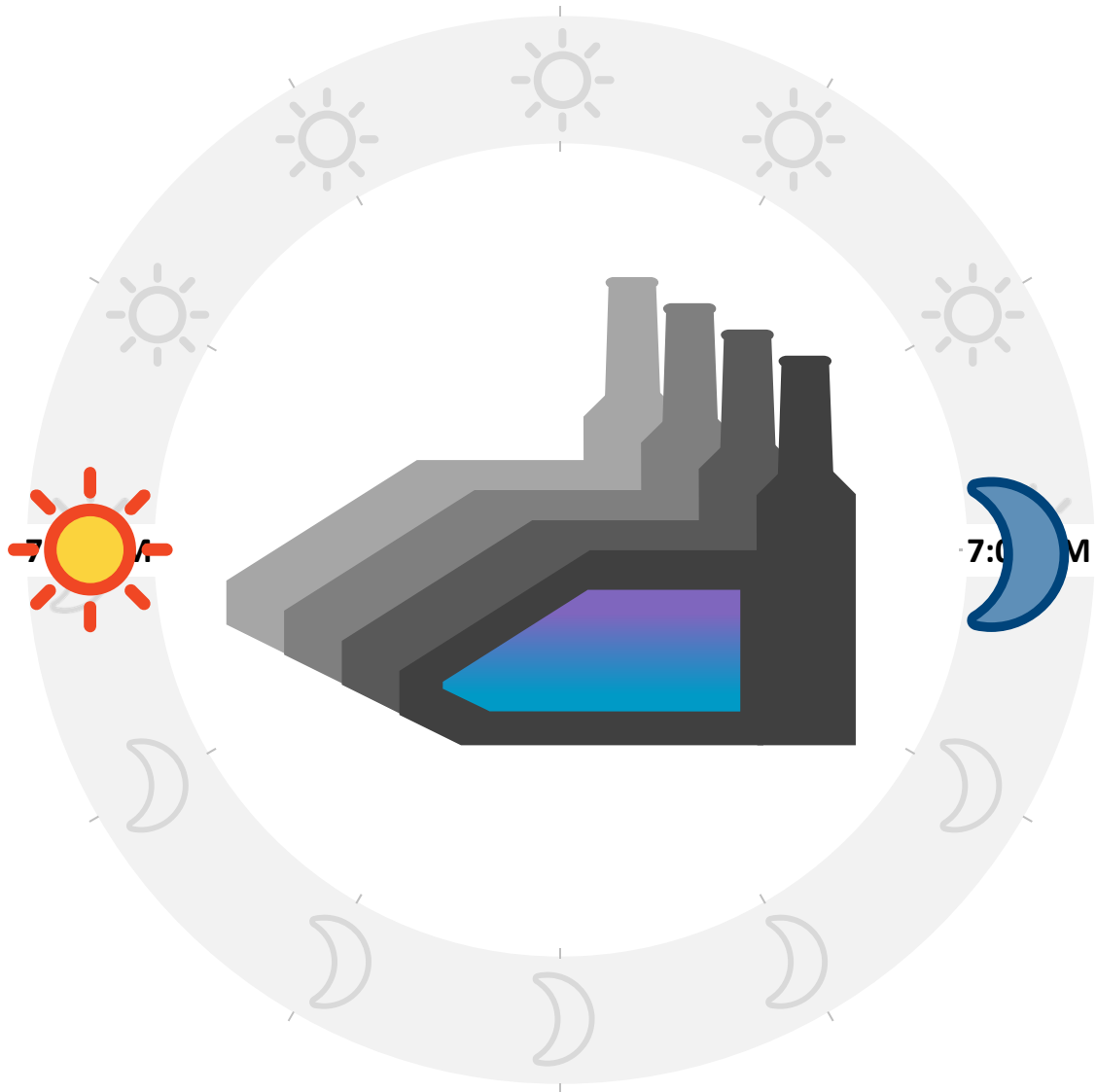
# 600 MW Solar Plant



**SOLAR**

PRODUCES  
DURING THE DAY

# 600 MW Combined Cycle Natural Gas Plant



COMBINED CYCLE  
PLANT DELIVERS

24/7  
DAILY NET REVENUE  
\$145,875

# Revenue Comparison 2011-2014



	REVENUE AFTER FUEL COST	
	SOLAR	GAS
<b>2011</b>	\$63,773,193	\$131,838,742
<b>2012</b>	-\$22,589,092	\$19,985,395
<b>2013</b>	-\$14,405,648	\$26,909,755
<b>2014</b>	-\$7,993,800	\$27,002,410
<b>Total</b>	<b>\$18,784,654</b>	<b>\$205,736,303</b>
<b>Debt Service O&amp;M (3.5 Years)</b>	\$0	-\$147,616,812
<b>Net Revenue</b>	\$18,784,654	\$58,119,491
<b>Difference</b>		\$39,334,837

- Both solar and gas plants are 600 MW
- Based upon actual historical dispatch using Webberville and Sand Hill 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





## Actions Required to Accomplish Resolution 20140828-157

- Eliminate CO<sub>2</sub> from Austin Energy generation sources by 2030
  - Retirement of Decker Power Plant in 2017
  - Retirement of Fayette Power Plant in 2025
  - Retirement of Sand Hill Power Plant in 2030
- Construct transmission for alternative power support
  - \$370 million in capital
- Renewable targets and specific solar additions
  - Additional 600 MWs of utility-scale solar by 2017 by purchase power agreement
  - Additional 100 MWs local solar by 2020 (requires \$32 million in distribution upgrades)
  - Double renewable energy from 25% today to 50% by 2020 by purchase power agreement
  - Further increase to 65% by 2025 by purchase power agreement
    - Requires additional 825 MW of wind by 2025

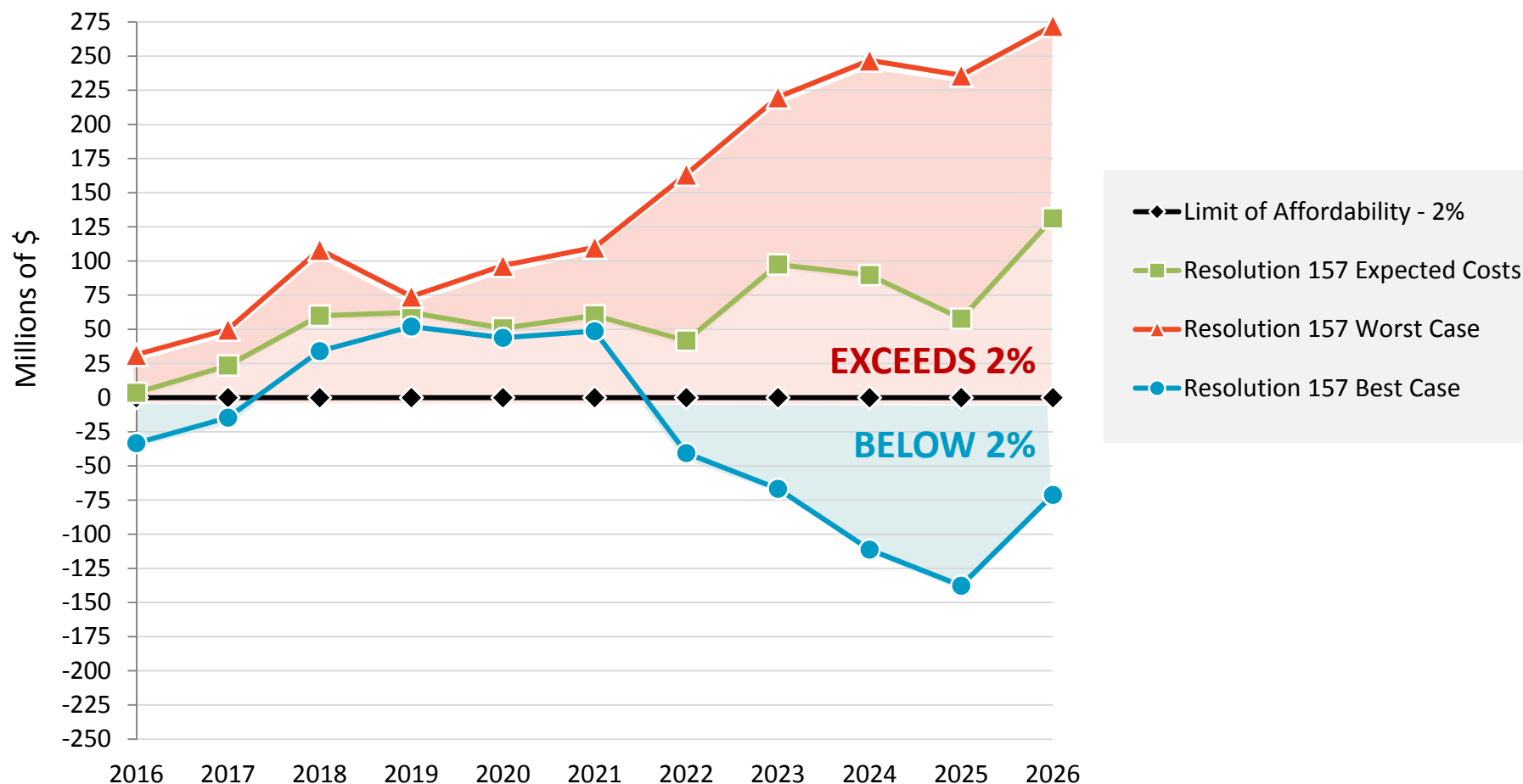


## Actions Required to Accomplish Resolution 20140828-157

- Add 200 MWs of storage by 2024
  - 150 MWs of compressed air storage
  - 50 MWs of grid-level batteries (requires \$78 million in capital)
- Revise local solar tariff and solar business model



# Resolution 157 Affordability Chart





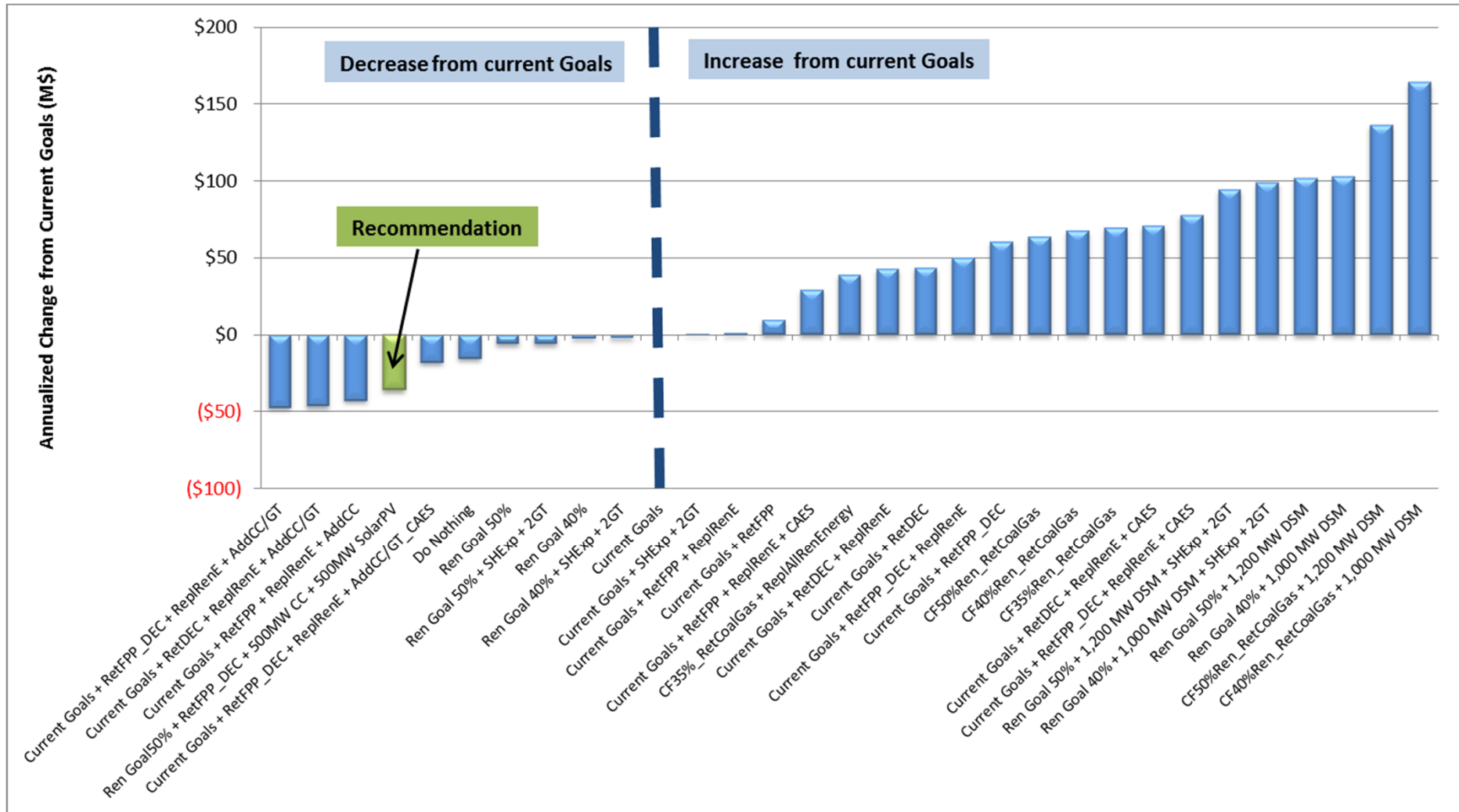
# Resolution 157 and Affordability

Year	2% Increase (millions) <sup>1</sup>	Resolution 157 Costs (millions)	Shortfall (millions)	Cumulative shortfall (millions)
2016	\$26.1	\$29.64	(\$3.52)	(\$3.5)
2017	\$26.6	\$50.14	(\$23.50)	(\$27.0)
2018	\$27.2	\$87.22	(\$60.04)	(\$87.1)
2019	\$27.7	\$90.02	(\$62.30)	(\$149.4)
2020	\$28.3	\$79.01	(\$50.74)	(\$200.1)
2021	\$28.8	\$89.01	(\$60.17)	(\$260.3)
2022	\$29.4	\$71.12	(\$41.71)	(\$302.0)
2023	\$30.0	\$127.49	(\$97.49)	(\$399.5)
2024	\$30.6	\$120.27	(\$89.67)	(\$489.1)
2025	\$31.2	\$89.05	(\$57.84)	(\$547.0)
2026	\$31.8	\$163.06	(\$131.23)	(\$678.2)

<sup>1</sup>Based on 2015 projected sales, unchanged over time



# New 500+ Scenario from Resource Plan



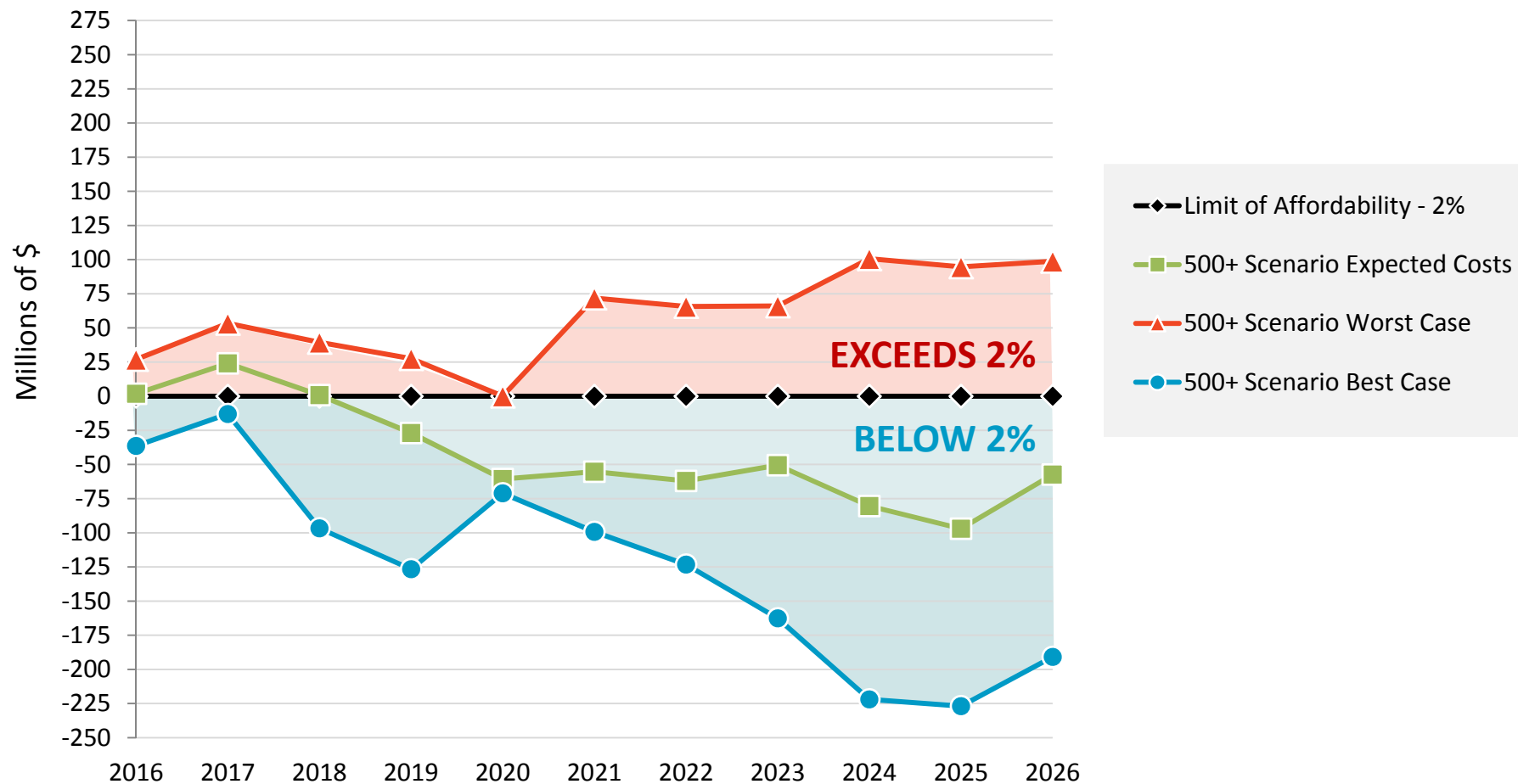


# Austin Energy 500+ Scenario

- 500+ Scenario:
  - Acquire 500 MW of solar, a 250% increase
  - Add 375 MW of wind to achieve 50% renewables by 2025
  - Add 500 MW highly efficient gas plant at Decker
    - Retire decker by 2019
    - Retire FPP by 2025
    - Retire Sand Hill when economical
  - No expansion at Sand Hill
  - Keep carbon-neutral deadline of 2050 vs 2030
  - Add grid-scale storage as technology and prices improve



# Austin Energy 500+ Scenario Affordability Chart



# Austin Energy 500+ Scenario and Affordability



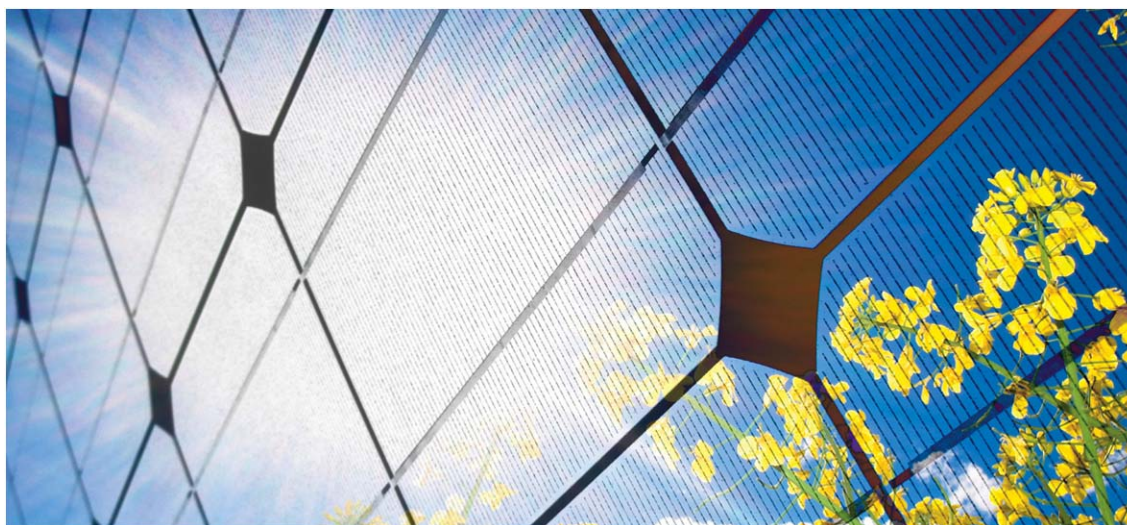
Year	2% Increase (millions)	500+ Scenario Costs (millions)	Difference	Cumulative Difference (millions)
2016	\$26.1	27.9	(\$1.8)	(\$1.8)
2017	\$26.6	50.6	(\$24.0)	(\$25.7)
2018	\$27.2	28.0	(\$0.8)	(\$26.6)
2019	\$27.7	0.8	\$ 26.9	\$0.3
2020	\$28.3	-32.4	\$ 60.6	\$60.9
2021	\$28.8	-26.4	\$ 55.3	\$116.2
2022	\$29.4	-32.5	\$ 62.0	\$178.2
2023	\$30.0	-20.5	\$ 50.5	\$228.6
2024	\$30.6	-49.8	\$80.4	\$309.0
2025	\$31.2	-65.7	\$ 97.0	\$405.9
2026	\$31.8	-25.6	\$ 57.4	\$463.4





## CO<sub>2</sub> and Financial Impacts of a New Gas Plant

- AE cannot affect market dynamics; if the market is favorable for Austin Energy to build a new plant, it is also favorable for other developers to build or ramp up underutilized gas or coal generation
- Total ERCOT CO<sub>2</sub> emissions are unchanged



21.1

MW LOCAL SOLAR

# Resource Comparison: Resolution 157 and Austin Energy 500+ Scenario



Resources	Today	2025	
		Resolution 157	AE Scenario
Wind	851 MW	1879 MW	1429 MW
West Texas Solar	0 MW	750 MW	650 MW
Customer/Community Solar	55 MW	200 MW	100 MW
Biomass	112 MW	112 MW	112 MW
Storage	0 MW	200 MW	0 MW
Renewable Targets	25%	65%	50%
Coal	607 MW	0	0
Gas	1500 MW	570 MW	1260 MW

# Summary: Resolution 157 and Austin Energy 500+ Scenario



Parameter	Resolution 157	Austin Energy 500+
Years meets 2% goal	0 of 10	7 of 10 years. Within 5 years Austin Energy will be well below the affordability limit
Cost in excess of affordability goal	\$678 million in excess of goal	\$463 million under goal
ERCOT (million metric tons/year of CO <sub>2</sub> )	213.7	213.9



850

MW WIND



## Summary

- Specified actions and deadlines of the resolution result in rates that will be unaffordable under the 2% rule
- Total costs could cause Austin Energy to exceed the lower 50th percentile in rates
- While the generation Austin Energy owns becomes carbon-free, the carbon content of power sold and delivered to customers will be largely unchanged
- Austin Energy's resource planning analysis did identify an alternative scenario that costs less, improves its carbon footprint, retains flexibility, adds significantly more renewables, and remains affordable under the 2% rule





## Next Steps

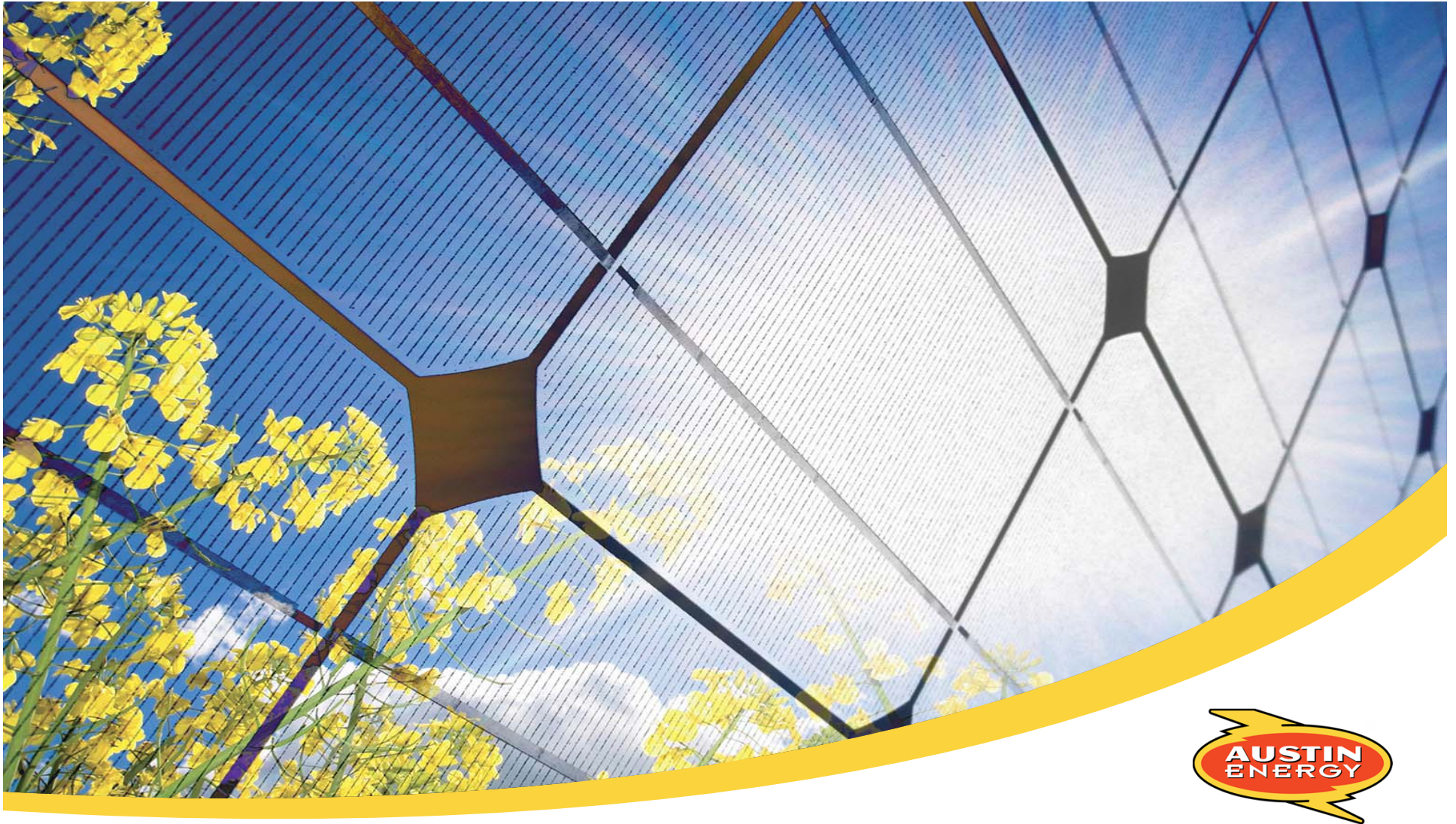
- Issue RFP for 600 MW of solar power
- Begin planning transmission system changes for Decker retirement
- Continue to investigate storage costs and modeling
- Present full Resource Plan to Council



49%

NON-CARBON





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