



# GENERATION

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CHRIS MOSER

ANALYST DAY 2018

# KEY TAKEAWAYS



ANALYST DAY 2018

1

**Streamlined and strengthened  
Generation business**

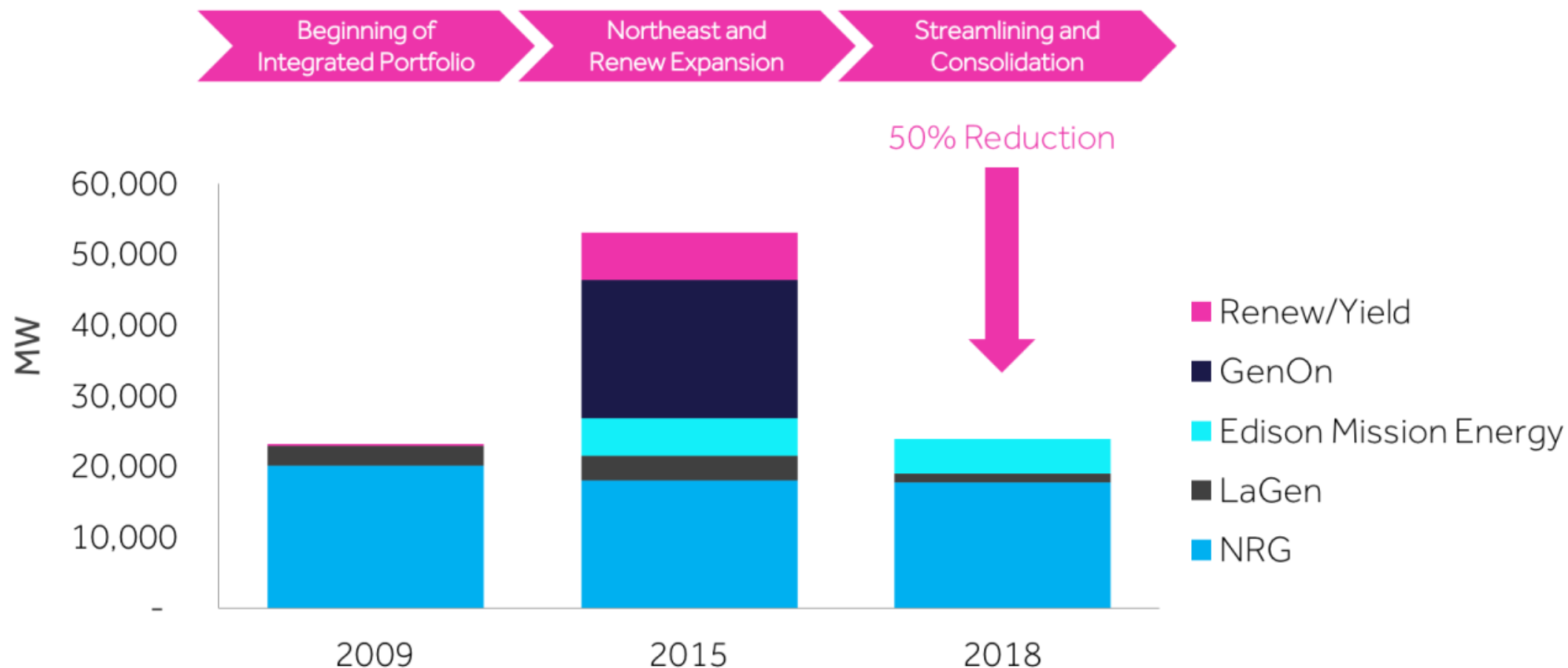
2

**Market trends are mixed**

3

**Demonstrating benefits of an  
integrated platform**

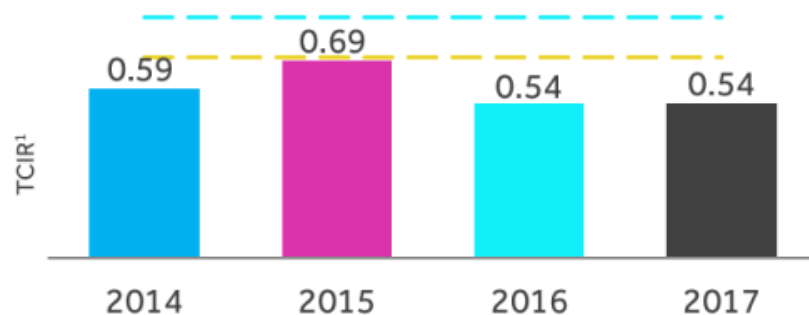
# STREAMLINED AND STRENGTHENED



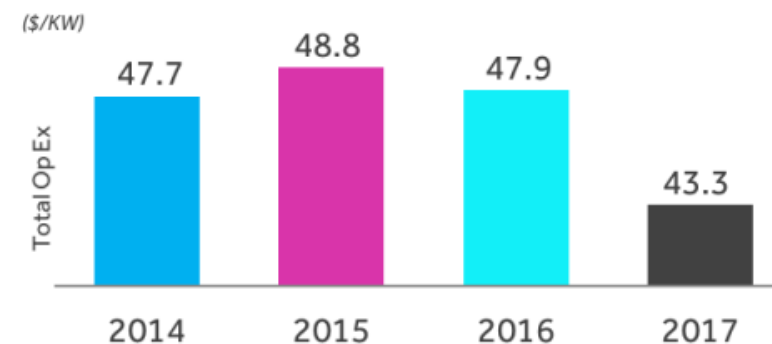
...STREAMLINED AND STRENGTHENED

# CONTINUED FOCUS ON BEST IN CLASS OPERATIONAL PERFORMANCE...

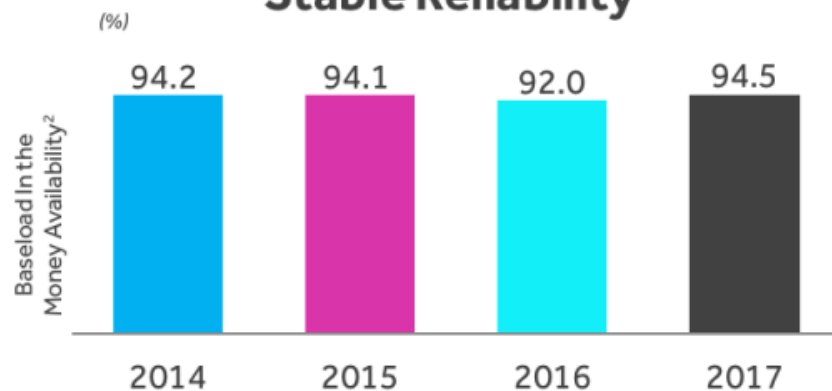
## Strong Safety Record



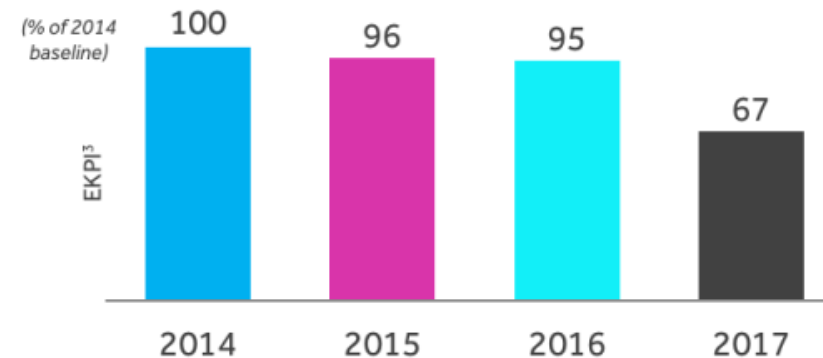
## Driving Down Costs



## Stable Reliability



## Improved Environmental Performance



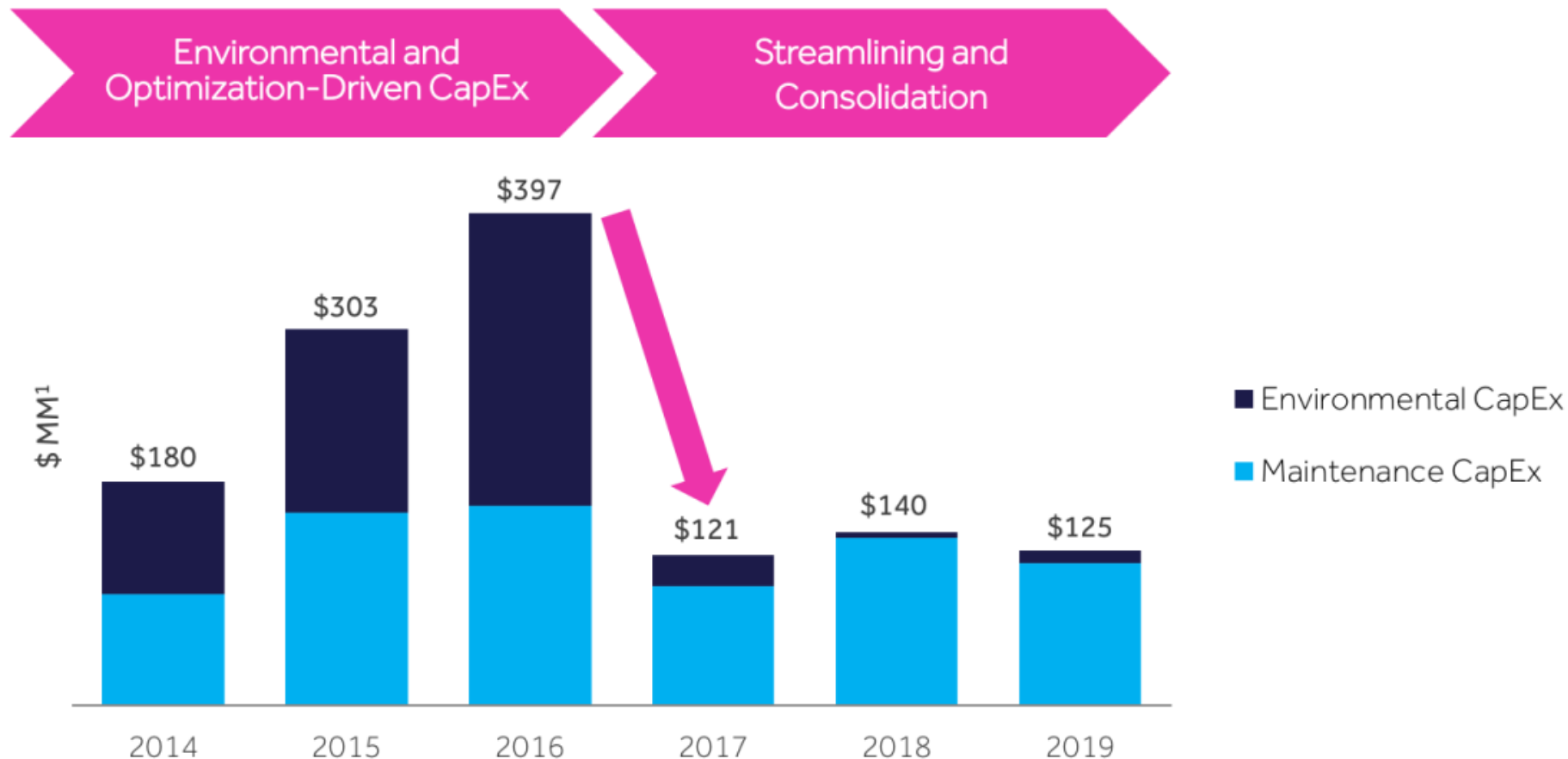
...RESULTING IN STRONG RELIABILITY WHILE BECOMING LEANER

<sup>1</sup> Excludes planned asset divestitures; excludes Goal Zero, NRG Home Services and NRG Home Solar; top decile and top quartile based on Edison Electric Institute 2015 Total Company Survey results; TCIR = Total Case Incident Rate;

<sup>2</sup> Includes Big Cajun 2; <sup>3</sup> EKPI consists of notices of violation (NOV's), reportable spills, noncompliance events, overdue administrative tasks; excludes planned asset divestitures



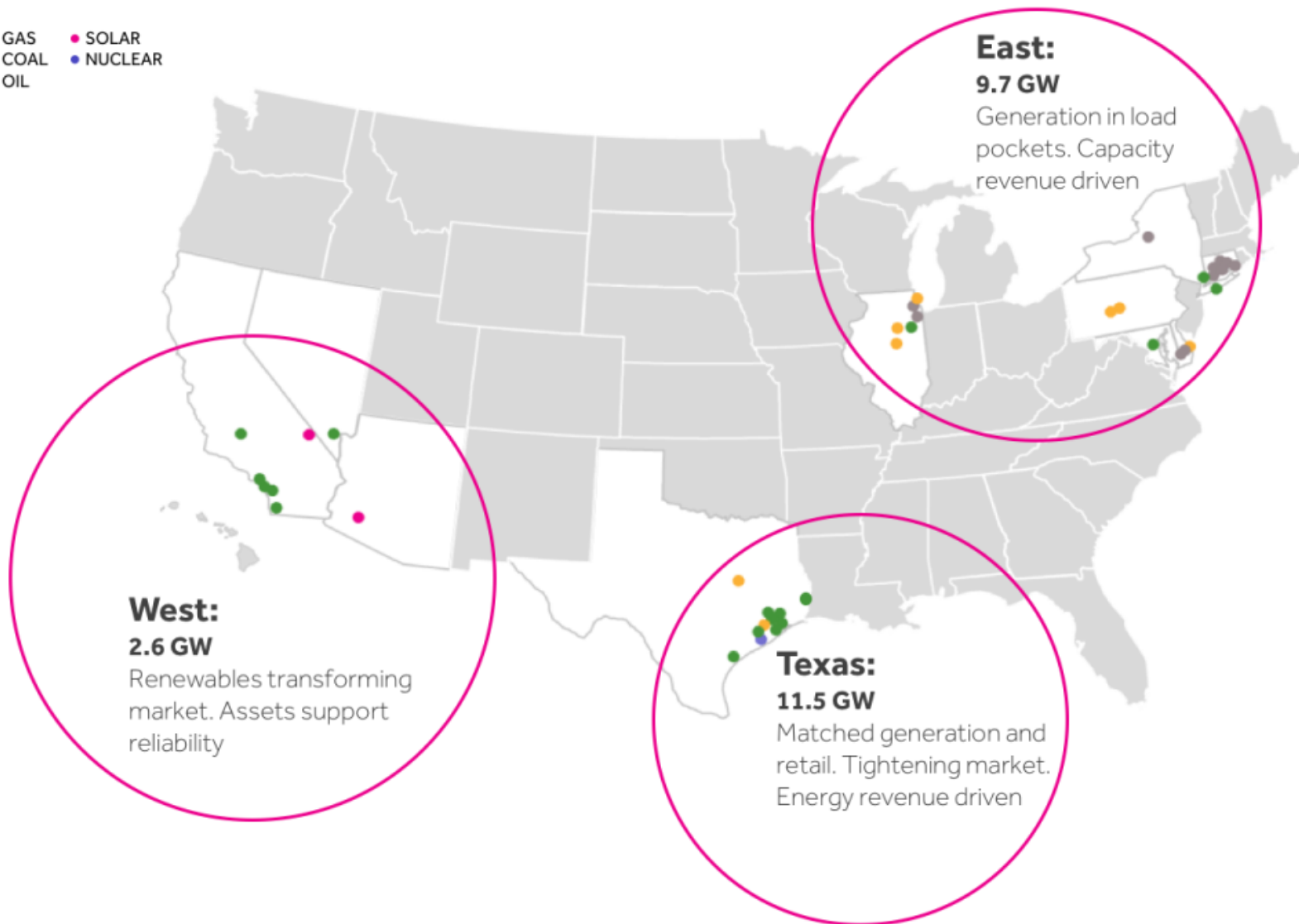
# FORWARD ENVIRONMENTAL CAPEX MUCH LOWER...



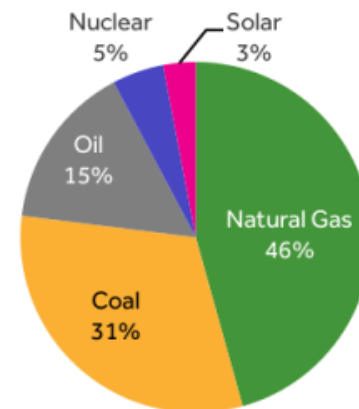
...FREEING UP SIGNIFICANT CASH

<sup>1</sup> 2014-2017 excludes planned asset divestitures

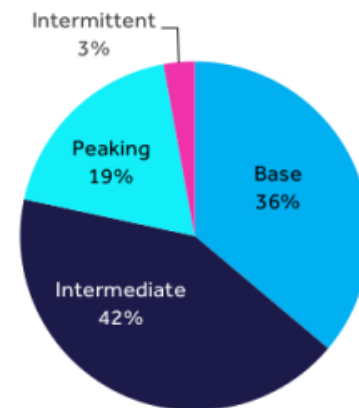
● GAS    ● SOLAR  
● COAL   ● NUCLEAR  
● OIL



## Fuel Type (GW)



## Merit Order (GW)

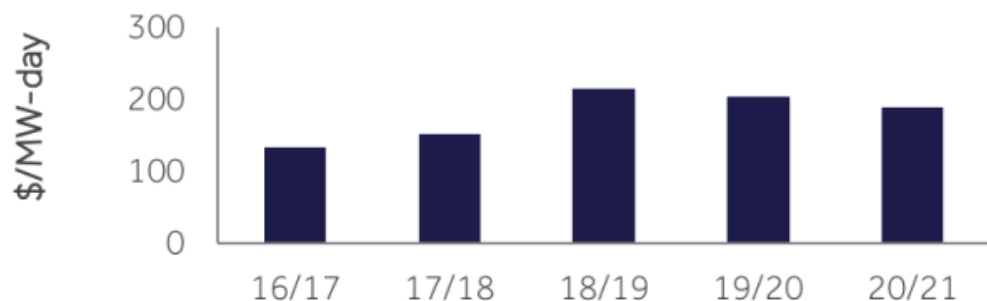
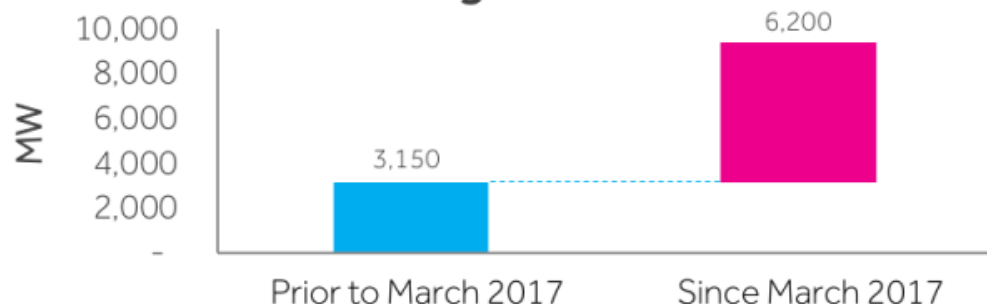


# MARKET TRENDS



**Trends**

- Asset retirements
- Market reforms
- Low natural gas prices
- Renewables build out
- New disruptive technologies (e.g. batteries)

**COMED is a Premium Capacity Market<sup>1</sup>****Mounting PJM Retirements<sup>2</sup>**

Deactivation Requests

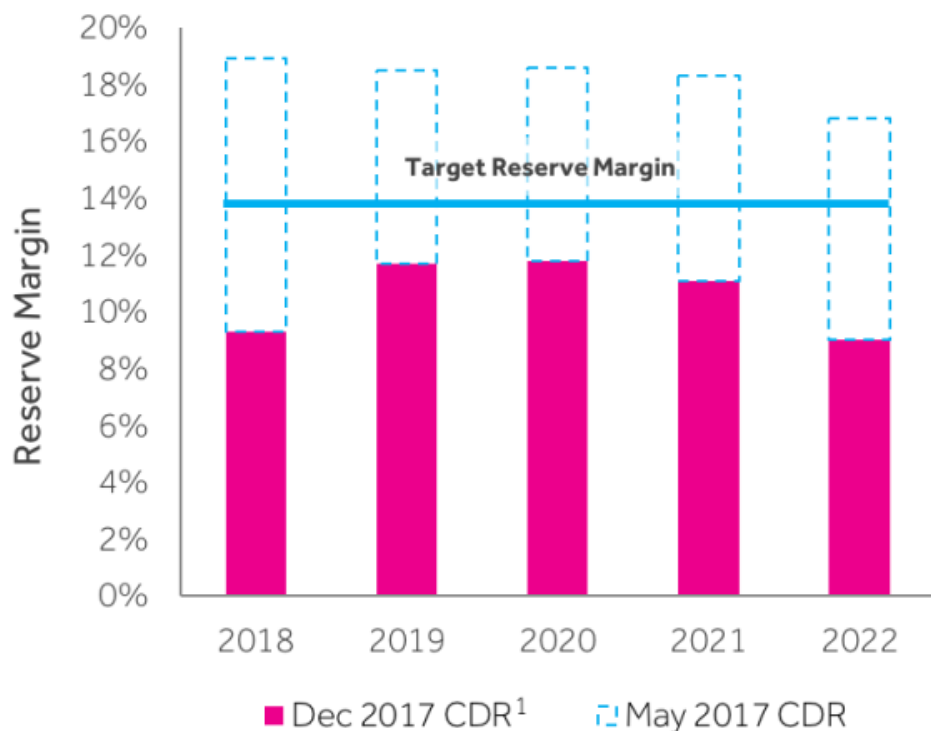
**Positive Regulatory Changes**

Type	Description
PJM Energy	<ul style="list-style-type: none"><li>Price formation reform would allow inflexible units to set price and could increase prices by \$3-\$4/MWh</li><li>Fast-Start proceeding</li></ul>
PJM Capacity	<ul style="list-style-type: none"><li>Expand Minimum Offer Price Rule (MOPR)</li><li>Two stage auction</li></ul>
FERC Resiliency	<ul style="list-style-type: none"><li>FERC begins proceeding to evaluate power system resilience</li><li>Assets with on-site fuel storage a focus</li></ul>

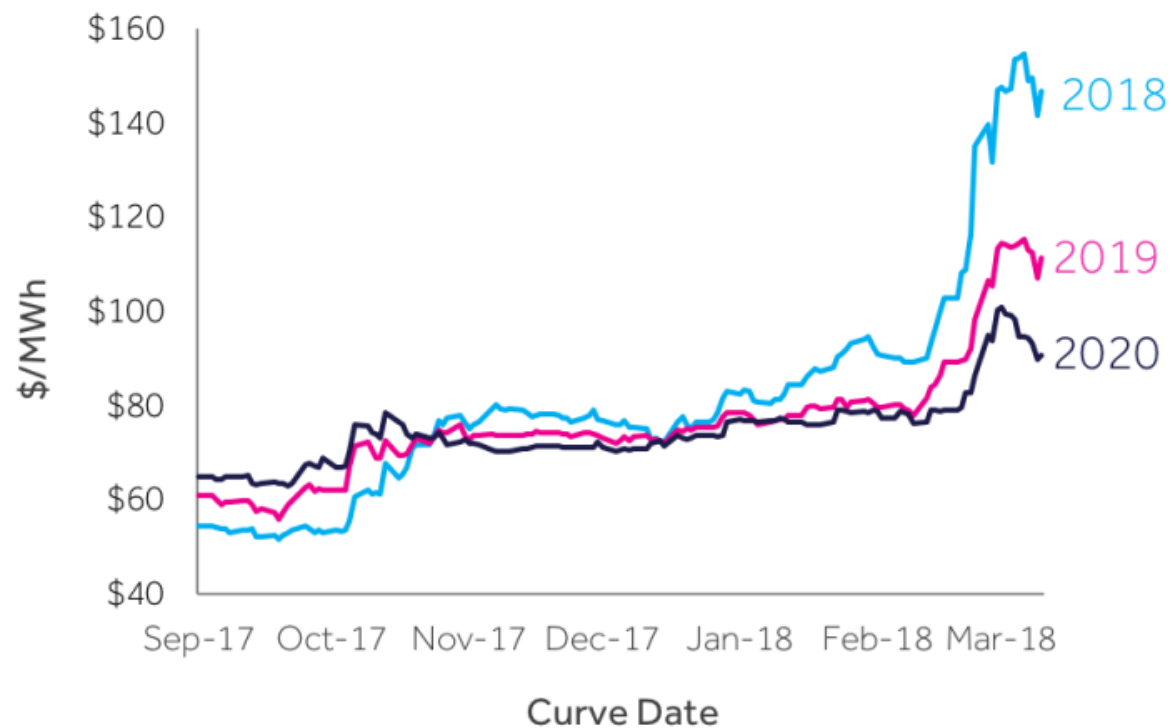
**... WITH POTENTIAL FOR SIGNIFICANT MARKET REFORMS**

<sup>1</sup> 16/17 & 17/18 prices from transitional auction for CP; <sup>2</sup> Sourced from PJM Future Deactivation Requests as of 3/14/2018; represents future deactivation; older deactivations are those deactivations where the Official Owner Request is prior to 3/17/2017

## Retirements Drive Lower Reserve Margins



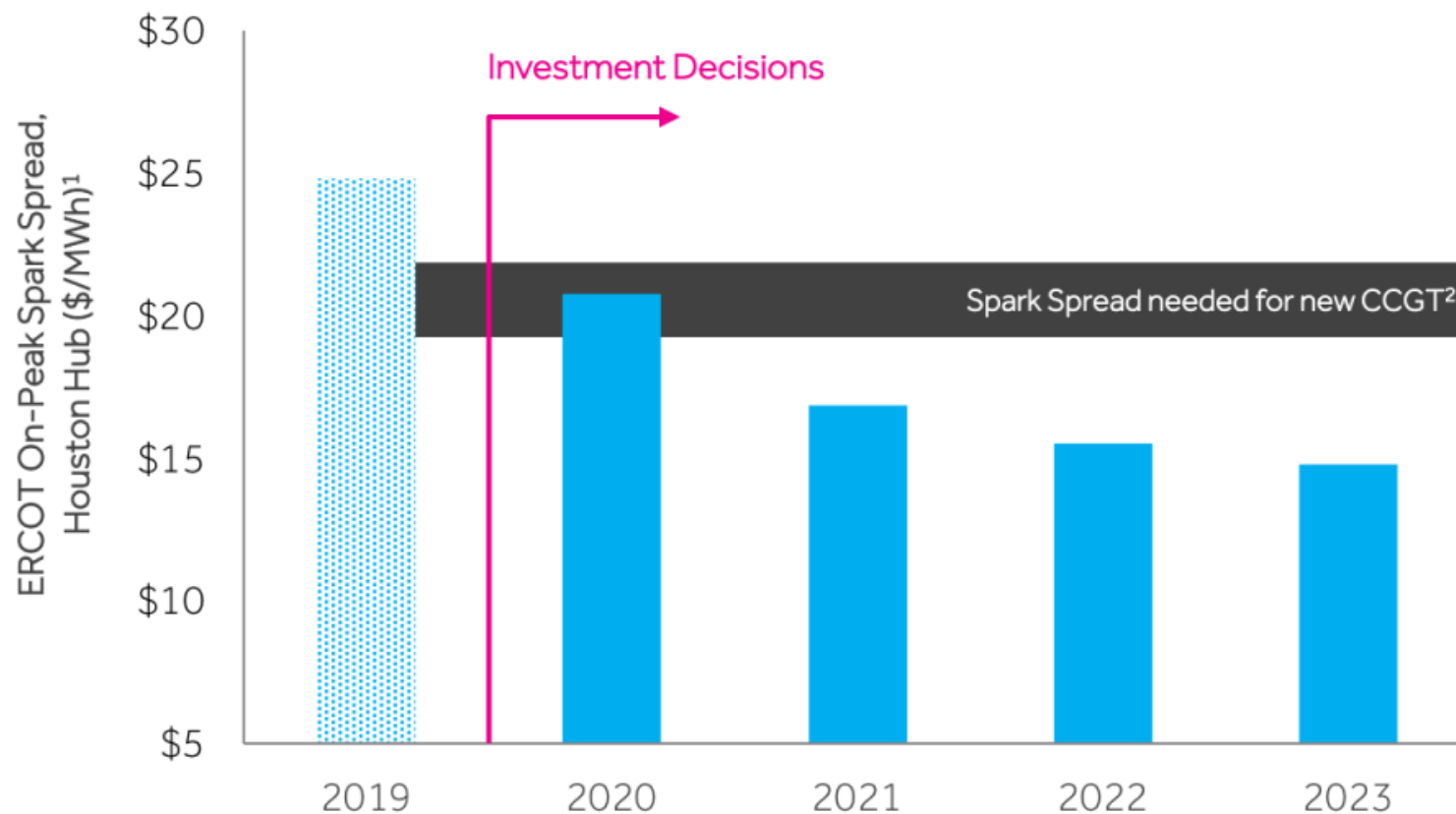
## Summer Prices Respond<sup>2</sup>



...DRIVING RESERVE MARGINS LOWER AND PRICES HIGHER

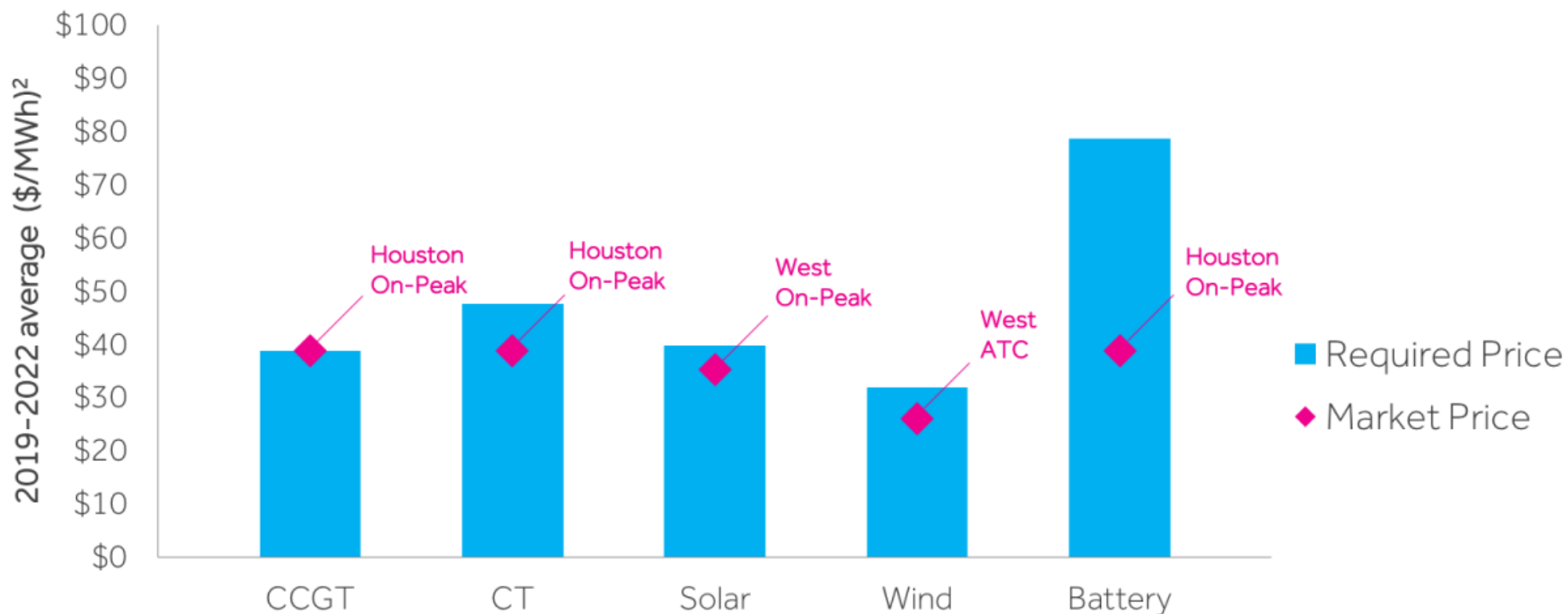
<sup>1</sup> Capacity, Demand, and Reserves report published by ERCOT; <sup>2</sup> Average Houston Hub July-August on-peak power

# ERCOT – CURRENT MARKET DOES NOT SUPPORT NEW BUILD



<sup>1</sup> Spark spreads based on forward on-peak power prices vs. 7 heat rate x Houston Ship Channel gas. Curve date = 3/14/2018; <sup>2</sup> CCGT CONE range calculated based on overnight capital cost of \$700/kW; spark spreads = On-peak power - 7 heat rate x Houston Ship Channel gas

## Market Power Price Compared to Required Power Price<sup>1</sup>



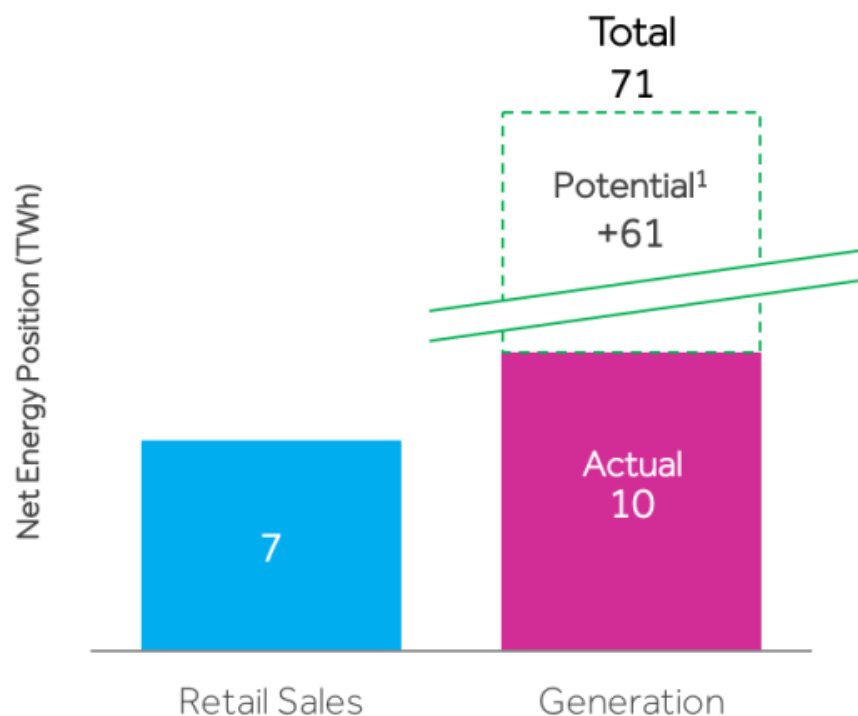
## ...PARTICULARLY FOR BATTERIES

<sup>1</sup> Required prices for CCGT and CT based on 7HA technology; required prices for solar and wind impacted by declining ITC/PTC benefits in later years; battery based on 4 hour on-peak/off-peak charge cycle; <sup>2</sup> Curve date = 3/14/2018

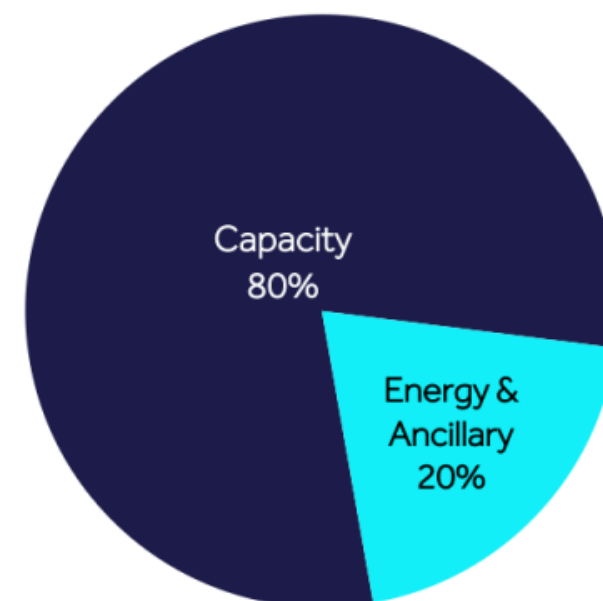
# BENEFITS OF AN INTEGRATED PLATFORM



## East Output Well Matched to Current Retail Sales



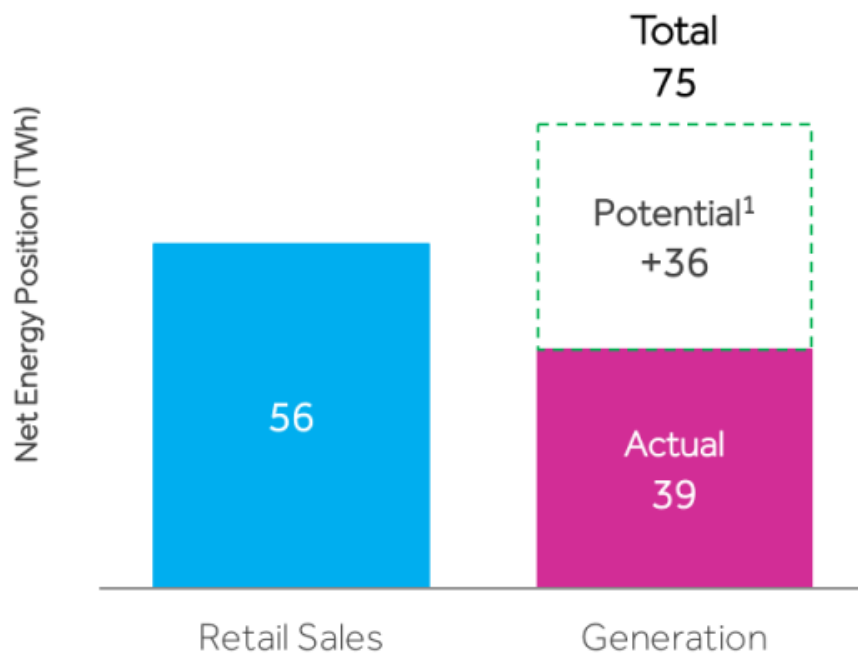
## East Gross Margin (2018-2022) Mainly Capacity



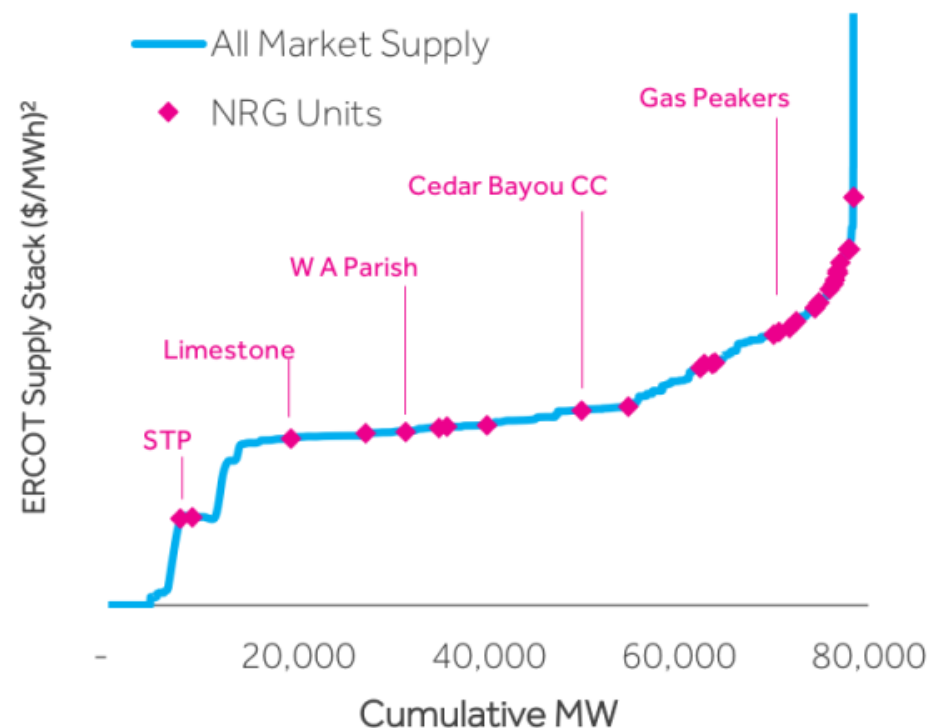
## EXCESS GENERATION RELATIVE TO OUR RETAIL PORTFOLIO

<sup>1</sup> Potential generation based on 85% capacity factor

## Fleet Short Against Energy, but Can Flex Up



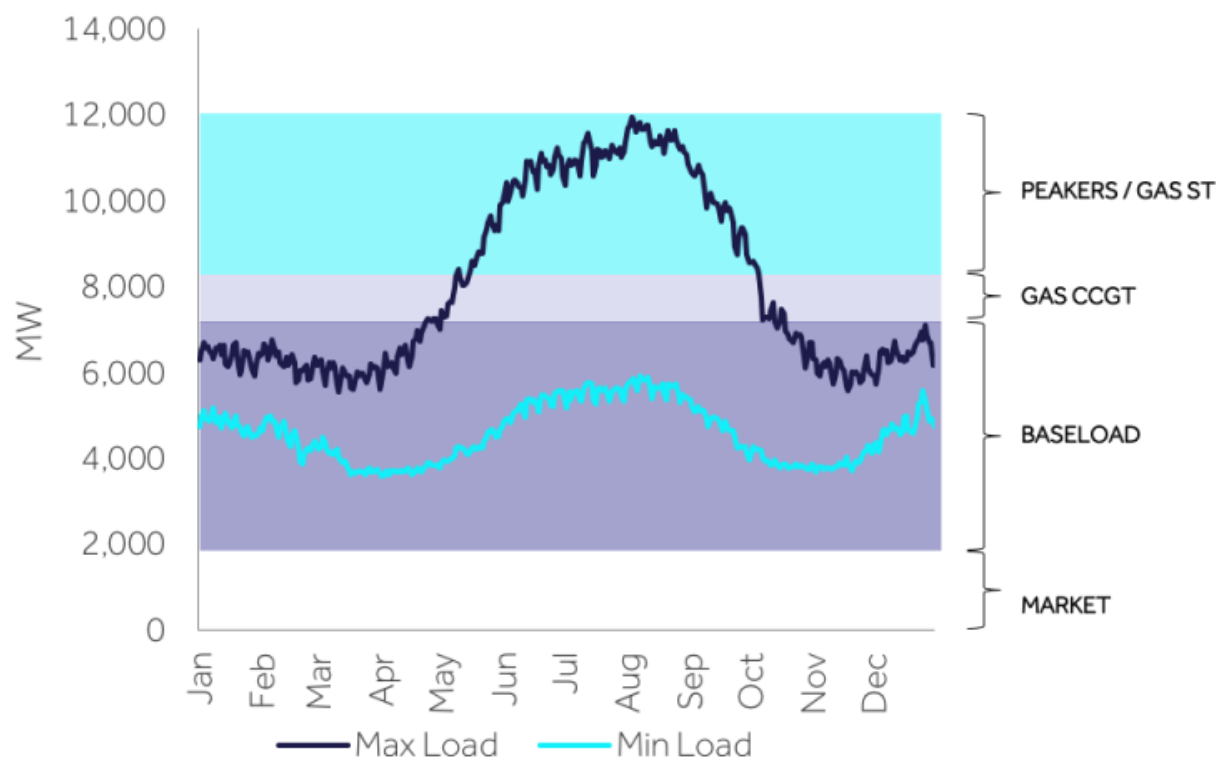
## Portfolio Spans Supply Stack



WELL-MATCHED AGAINST OUR RETAIL PORTFOLIO

<sup>1</sup> Potential generation based on 85% capacity factor; <sup>2</sup> Supply stack based on \$3/MMBtu natural gas price

## NRG Generation Capacity vs Retail Load

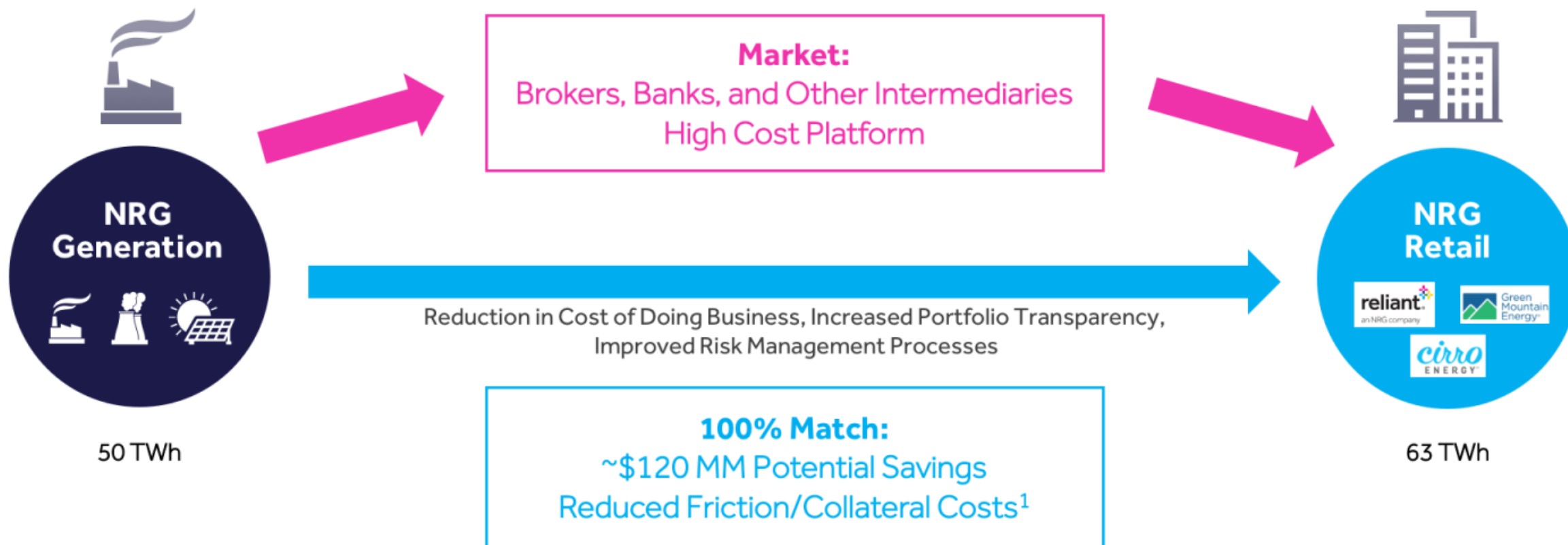


## Matching Retail

As Retail grows, the ERCOT portfolio may require additional capacity that is complementary to the retail load shape. Our options to match include:

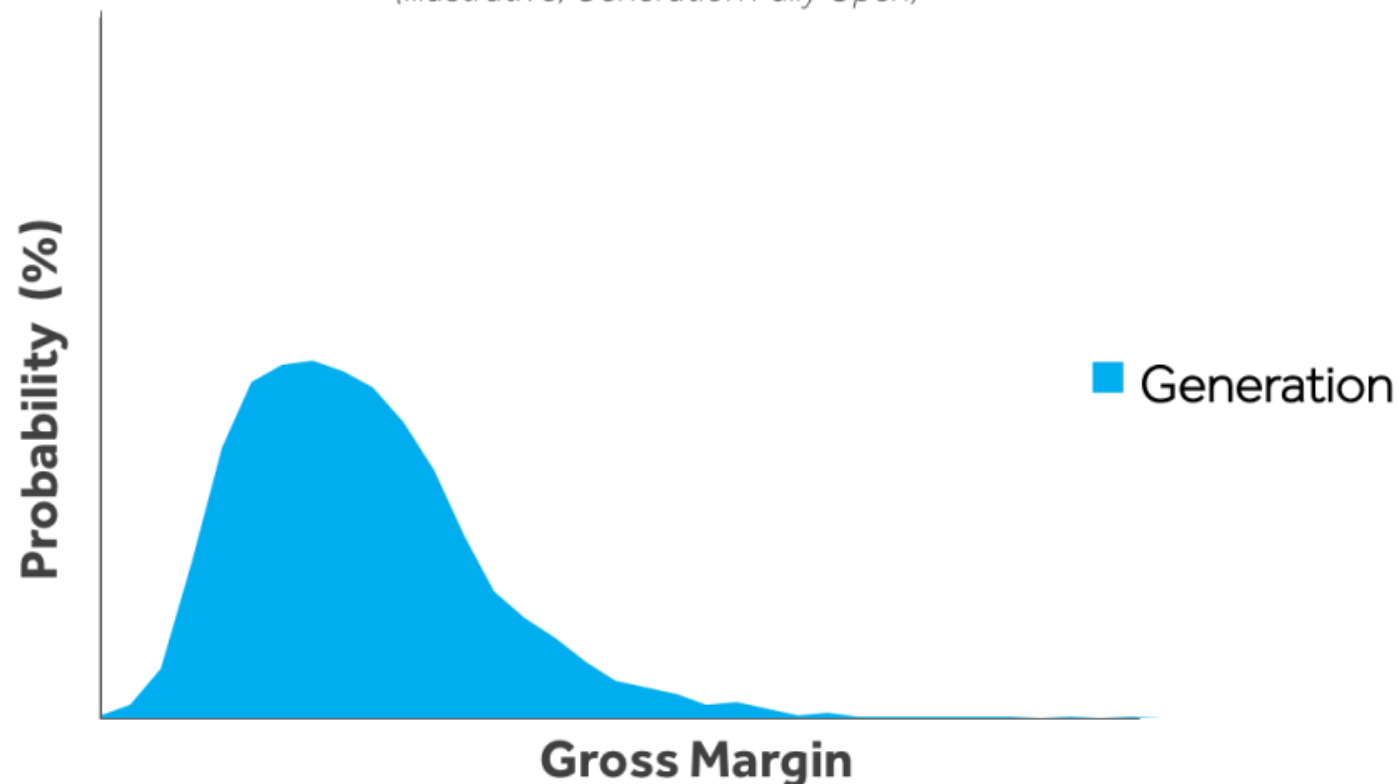
- 1 Purchase low cost fixed shape or block energy
- 2 Purchase high heat rate call options
- 3 Develop distributed behind the meter generation for C&I/Fortune 500 Companies
- 4 Toll existing units
- 5 Evaluate generation development

AS RETAIL GROWS, GENERATION WILL PIVOT TO MATCH

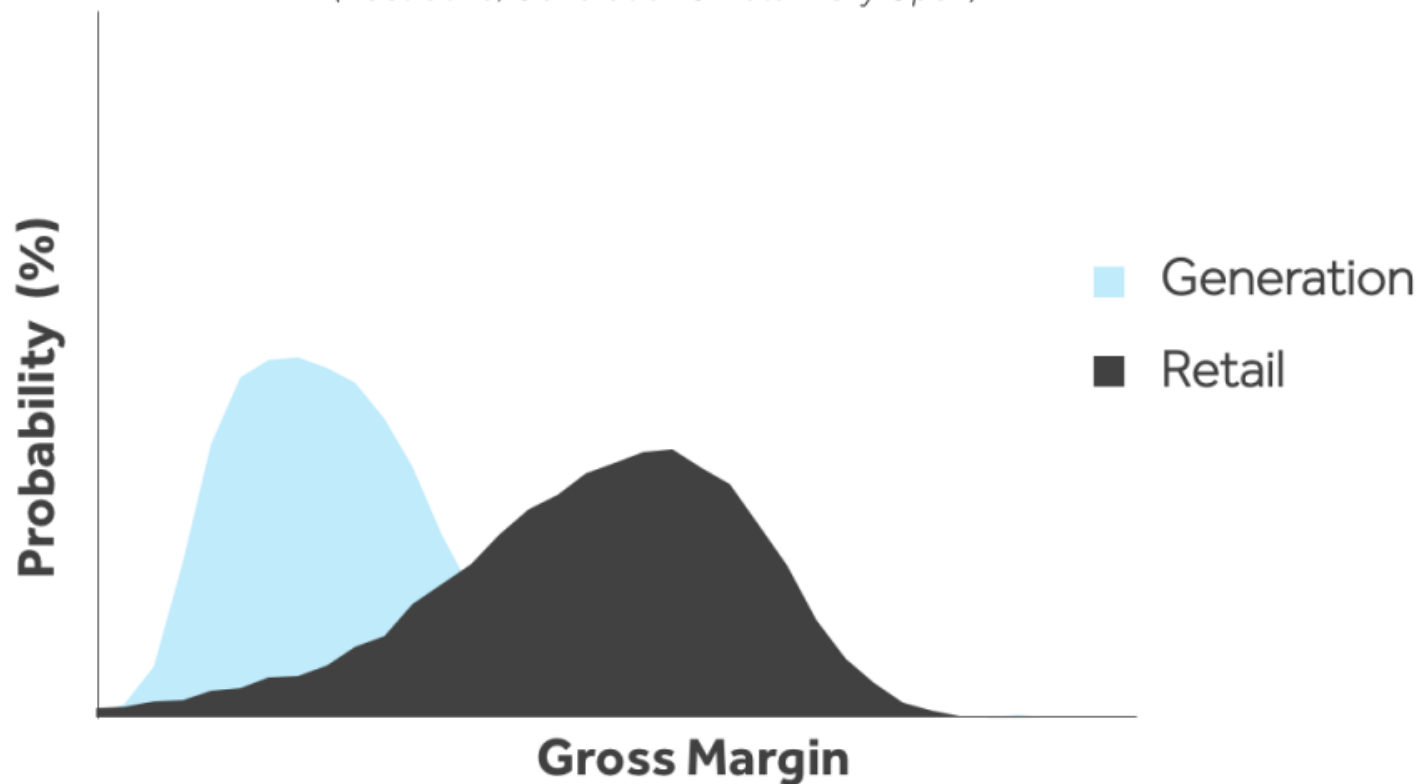


## ...REDUCING TRANSACTION AND COLLATERAL COSTS

<sup>1</sup> Assumes \$1.50/MWh bid/ask spread and adverse move of \$1.50/MMBtu

**Generation Gross Margin Distribution<sup>1</sup>***(Illustrative, Generation Fully Open)***...AT LOW END OF CYCLE, ASYMMETRIC UPSIDE**

<sup>1</sup> Based on 5,000 simulations of correlated power and fuel prices, compiled across 22 weather-driven load scenarios

**Retail Gross Margin Distribution<sup>1</sup>***(Illustrative, Generation & Retail Fully Open)*

...BROAD RANGE OF GROSS MARGIN OUTCOMES

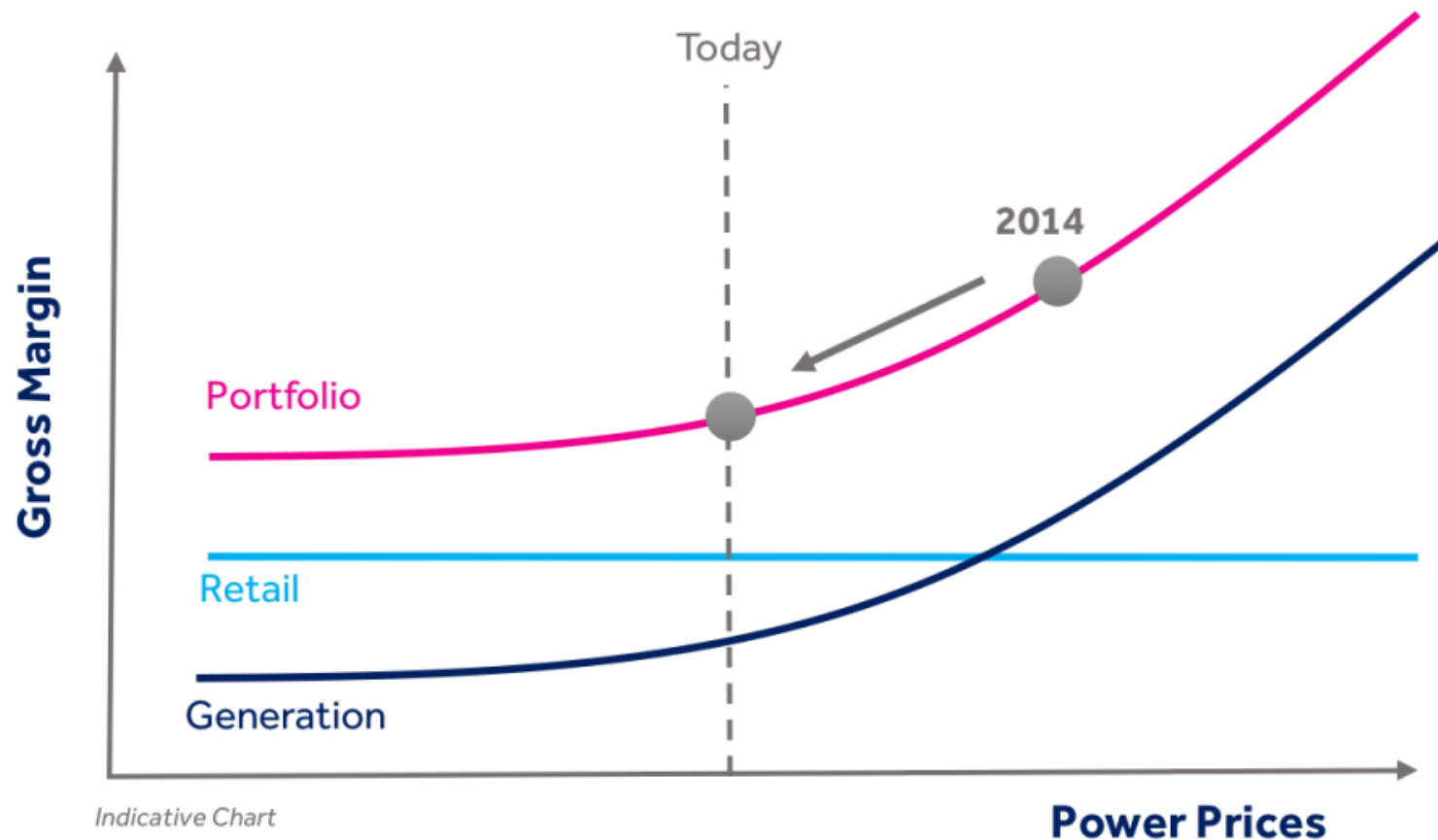
<sup>1</sup> Based on 5,000 simulations of correlated power and fuel prices, compiled across 22 weather-driven load scenarios



**Integrated Gross Margin Distribution<sup>1</sup>***(Illustrative, Generation & Retail Fully Open)*

...STANDARD DEVIATION OF THE COMBINED PORTFOLIO  
IS 25% OF STANDALONE BUSINESSES

<sup>1</sup> Based on 5,000 simulations of correlated power and fuel prices, compiled across 22 weather-driven load scenarios



...AND PROVIDE INCREASED STABILITY WITH  
ASYMMETRIC UPSIDE

- Streamlined and strengthened generation fleet

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- Well-positioned in strong markets

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- Integrated platform produces benefits such as risk reduction and earnings stability



THANK YOU

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