



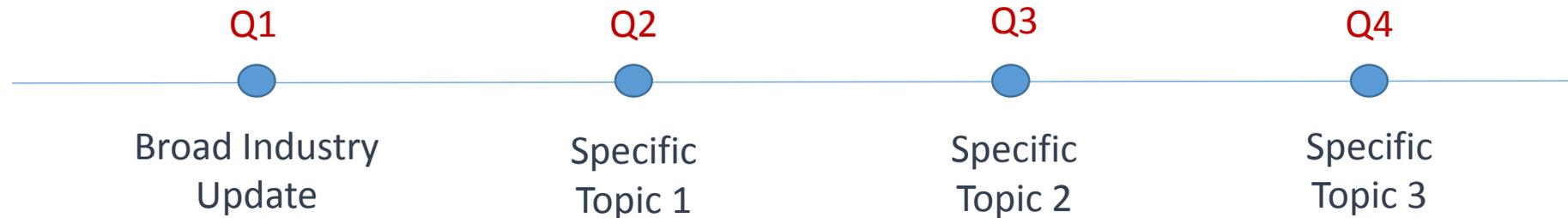
**NY Power  
Authority**

# **NYPA Business Intelligence Program**

## **Q1 2016 Energy Industry Update**

## Introduction and objectives

This is the first in a new series of quarterly industry updates that will be provided to the board and senior staff on an ongoing basis...



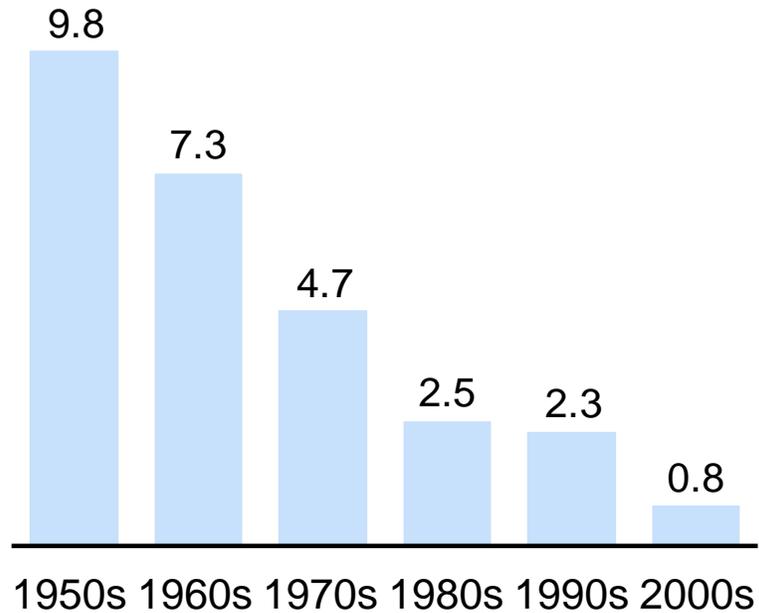
### Objectives of Today's Session

- Kick-off quarterly strategy industry updates
- Review material from prior session
- Explain the implications of the trends on NYPA's business strategy
- Summarize key messages

# Growth in electricity sales has been shrinking for decades and is now showing signs of flattening

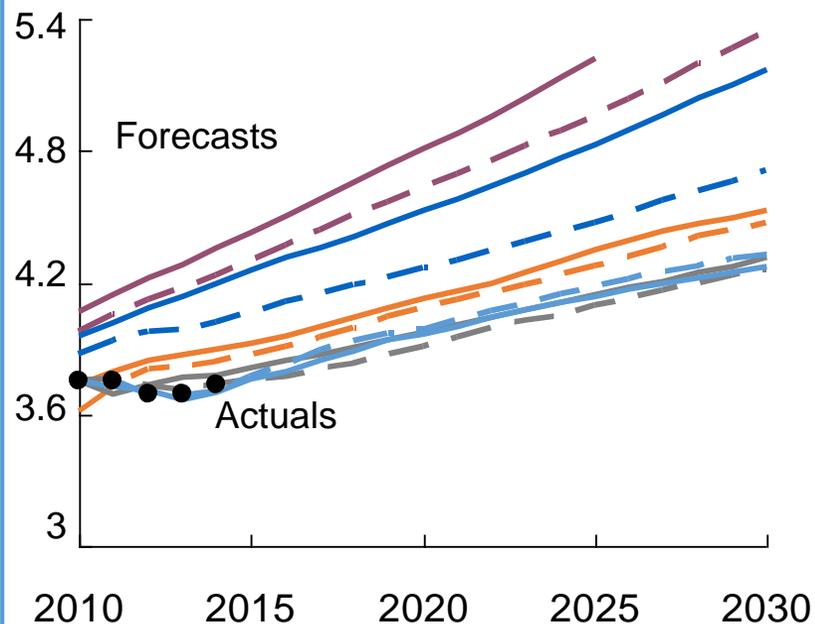
## US Central Power Generation Growth

Percent, ten-year CAGRs



## US Electric Sales Forecasts for 2010-2030

TWh

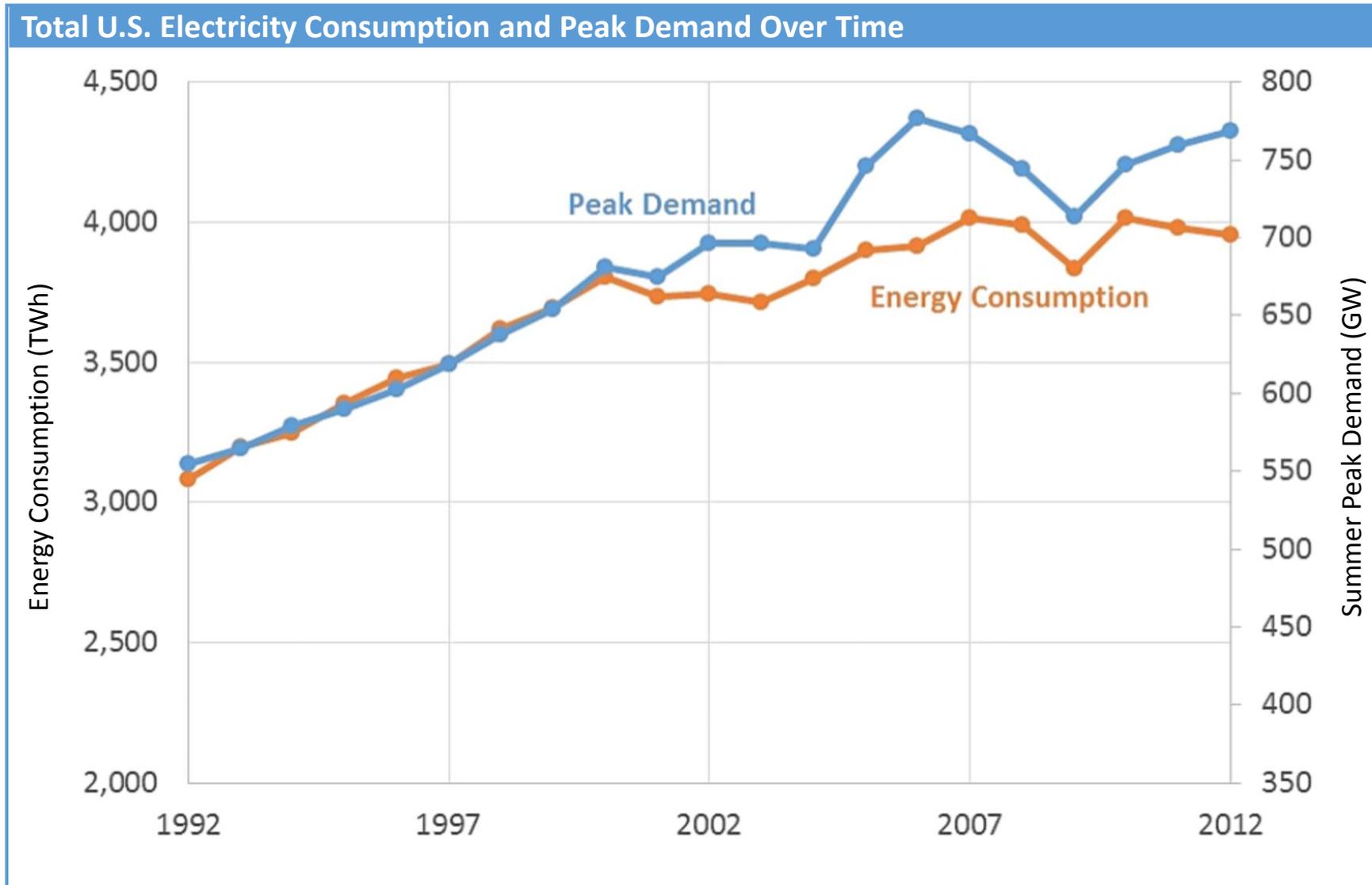


Forecasts by year



- Growth in central power generation has been dropping for decades
- Analysts still expect sales growth, but have revised forecasts downward
- NYPA's power is among the cleanest and cheapest in NY, providing cover in any future demand scenario
- Significant revenue growth is unlikely to come from power sales in the foreseeable future
- *Impacts of this trend on revenue growth opportunities for NYPA will be addressed during our annual 2016 offsite*

# Peak demand is rising while energy consumption is relatively flat



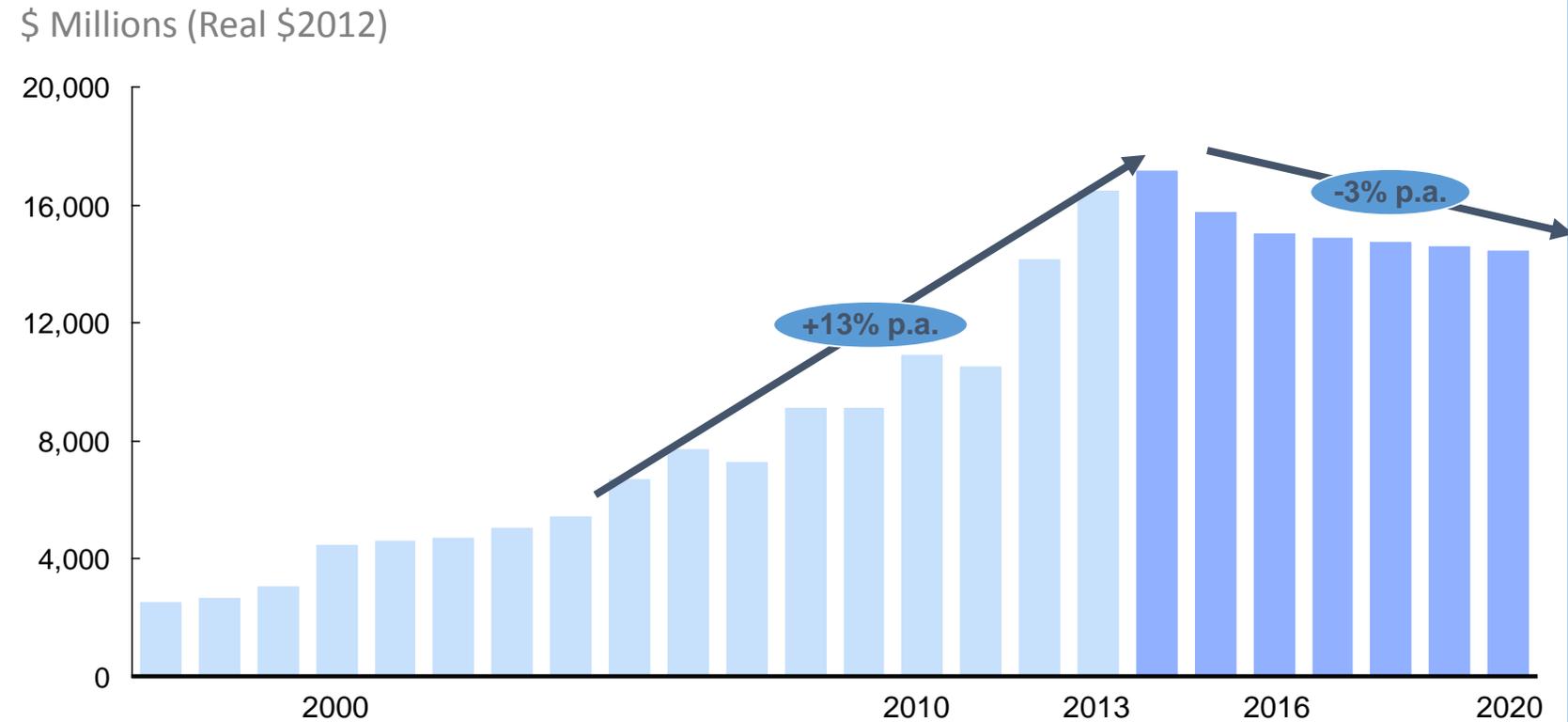
- Since 2000, peak demand has grown three times as much as energy consumption<sup>1</sup>
- This delinking means that peak demand is significantly higher than average demand
- The mismatch of peak and average demand reduces grid utilization and causes affordability and reliability challenges
- *NYPA's Customer Energy Services group is in a strong position to investigate approaches to addressing peak demand*

1 As measured by percentage change

## The transmission system requires investment, but timing and economics are currently uncertain

- Cheap gas-fired electricity and the Clean Power Plan's call for renewables mean that the need for transmission is not going away
- NYISO forecasts the need for ~\$25B in transmission investment across NYS by 2045
- Private markets are not addressing this need, creating a potential opportunity for NYPA
- NYPA is subject to the same regulatory and business uncertainties holding back private investment
- *Our Smart G&T and Asset Management initiatives are putting in place the tools and skills required to support future investment in the state's transmission grid*

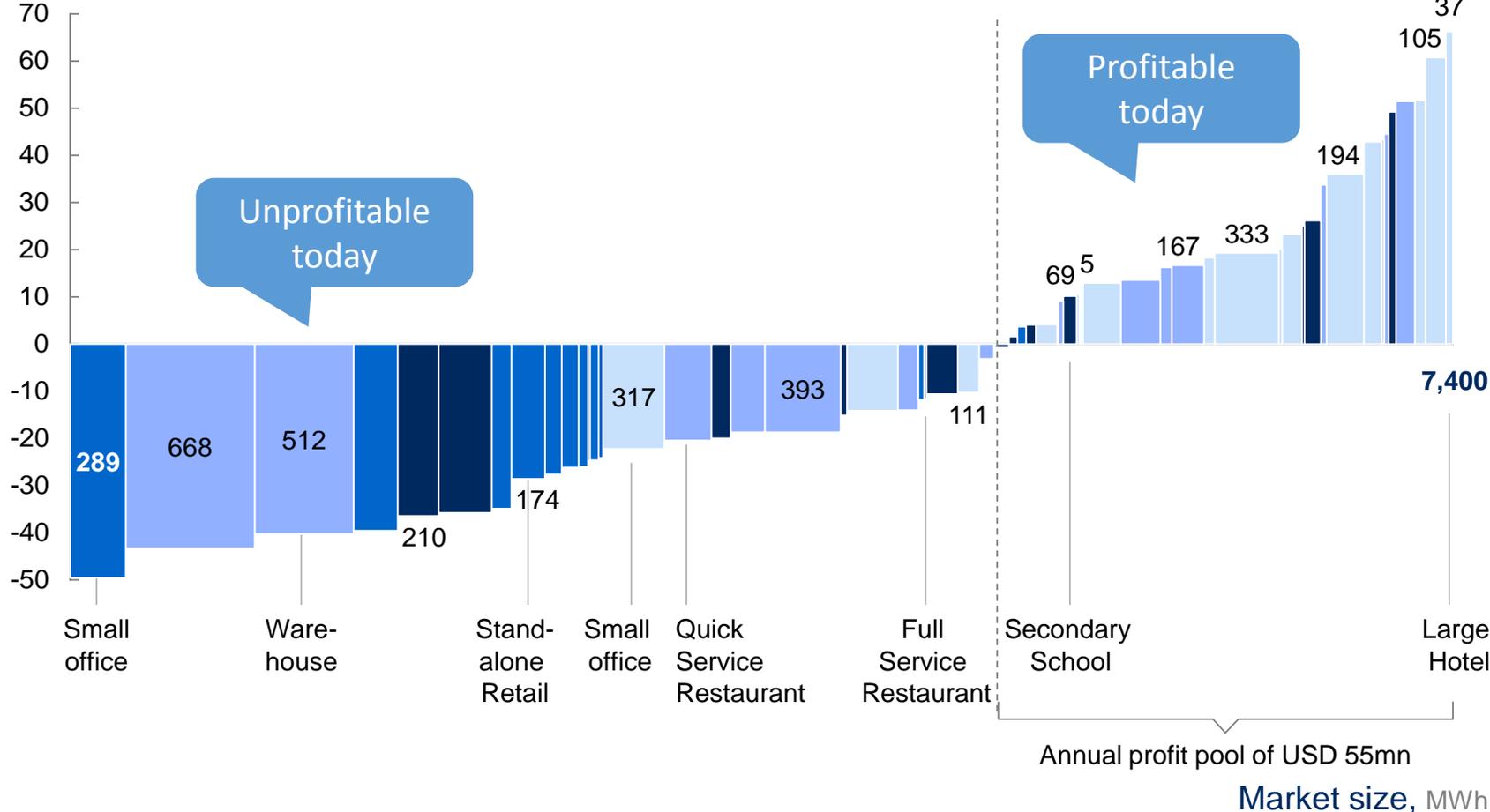
Historical and forecasted transmission capex from Investor-owned utilities (1990-2016)



# Energy storage is rapidly becoming economically attractive

2015, no investment incentives

Storage normalized profitability  
USD/kWh<sup>1</sup>

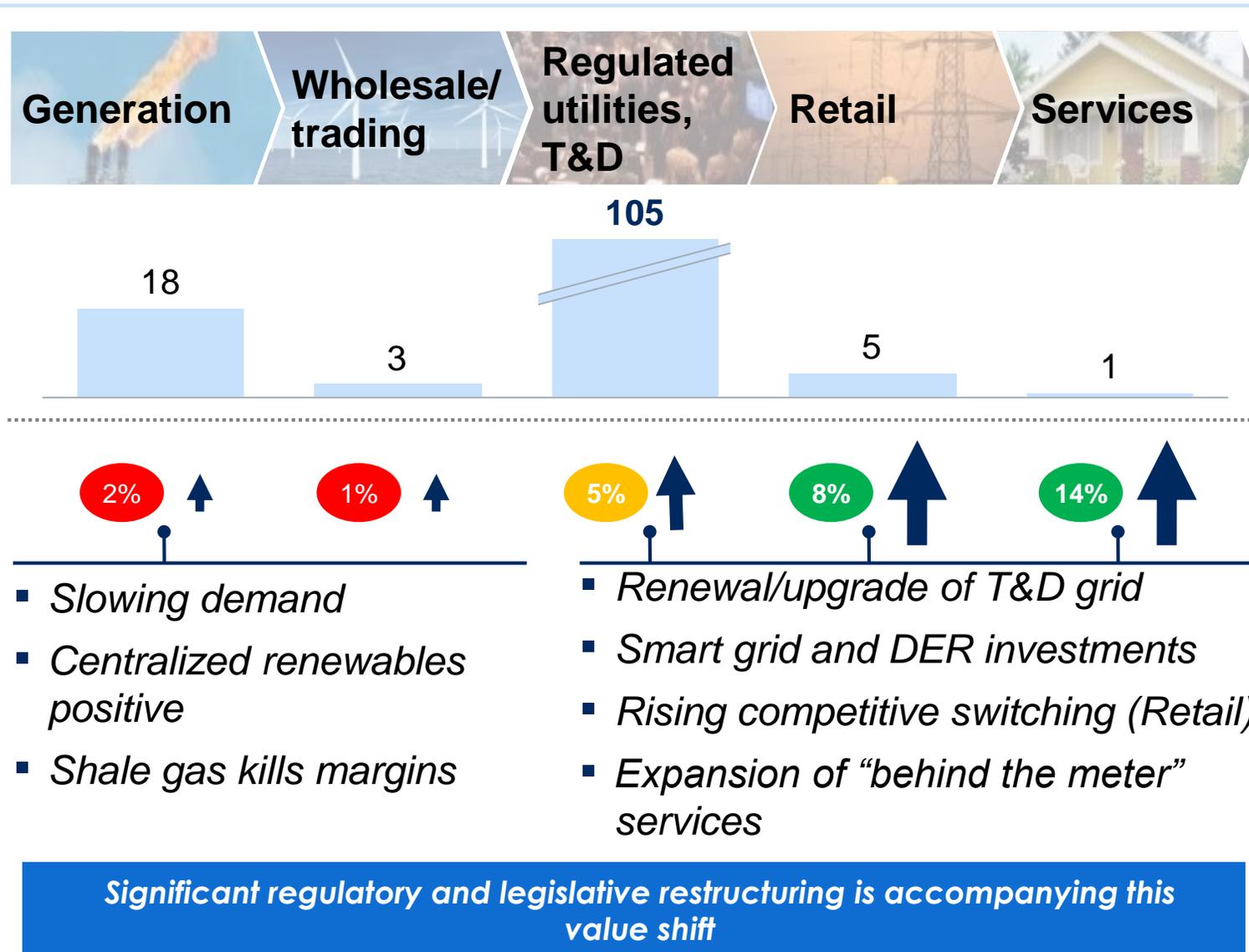


- Storage provides value by letting customers buy energy during low-cost periods, store it, and use it when energy prices rise later that day<sup>2</sup>
- In certain applications, investments in storage are profitable today
- Investors expect the cost of storage to drop by ~10-15% per year
- As storage penetrates the market, it may lower the value of NYPA's peaker plants<sup>3</sup>
- *NYPA will continue to evaluate opportunities to participate in the emerging storage economy, at both customer and grid scales*

1 Annual value created in USD/kWh\_installed Note: 4% WACC  
 2 Energy prices can rise during peak-demand periods (e.g., when people come home from work) and when time-of-use rates are present  
 3 Peaker Plants are central generation stations that can turn on and off quickly (minutes) to address fluctuations in demand



# Investment trends suggest strong future growth in downstream sectors



- Expect future growth to be focused downstream in retail and services
- NYPA is in a strong financial and operational position to manage the industry transition
- NYPA's downstream initiatives, such as the Customer Solutions group, are a strong base to build on
- NYPA will continue to evaluate opportunities in downstream areas while maintaining its core business

## In Summary

**NYPA is well positioned to navigate changes taking place in the market**

**Technologies that offer novel solutions to matching supply with demand present opportunities and risks**

**The team will provide an update on these opportunities and risks after the 2016 Strategy Offsite Session in March**