



# SYSTEM LOAD FORECAST OVERVIEW

City Light Review Panel Meeting

January 5, 2016



# AGENDA

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- Why Forecast Load?
- Forecast Preparation & Assumptions
- 2015 Load Forecast
- Load Forecast Trends
- What About the Future?

# WHY FORECAST LOAD?

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- Portfolio Management
  - Long term Resource & Conservation Acquisition
  - Contractual Requirements - BPA obligation
- Rate Setting / Finance
  - Retail Projections / Revenue Requirements
- Reliability / Infrastructure
  - Distribution System Design & Adequacy
  - WECC Planning
- Regulatory Reporting

# TYPES OF LOAD FORECASTS

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- Energy Consumption
  - Resource Planning / Energy Conservation
  - Revenue Projection
  - Regulatory Reporting
- Peak Usage
  - Reliability
  - Resource Planning / Demand Conservation
  - Revenue Projection
  - Regulatory Reporting

# TYPES OF LOAD FORECASTS

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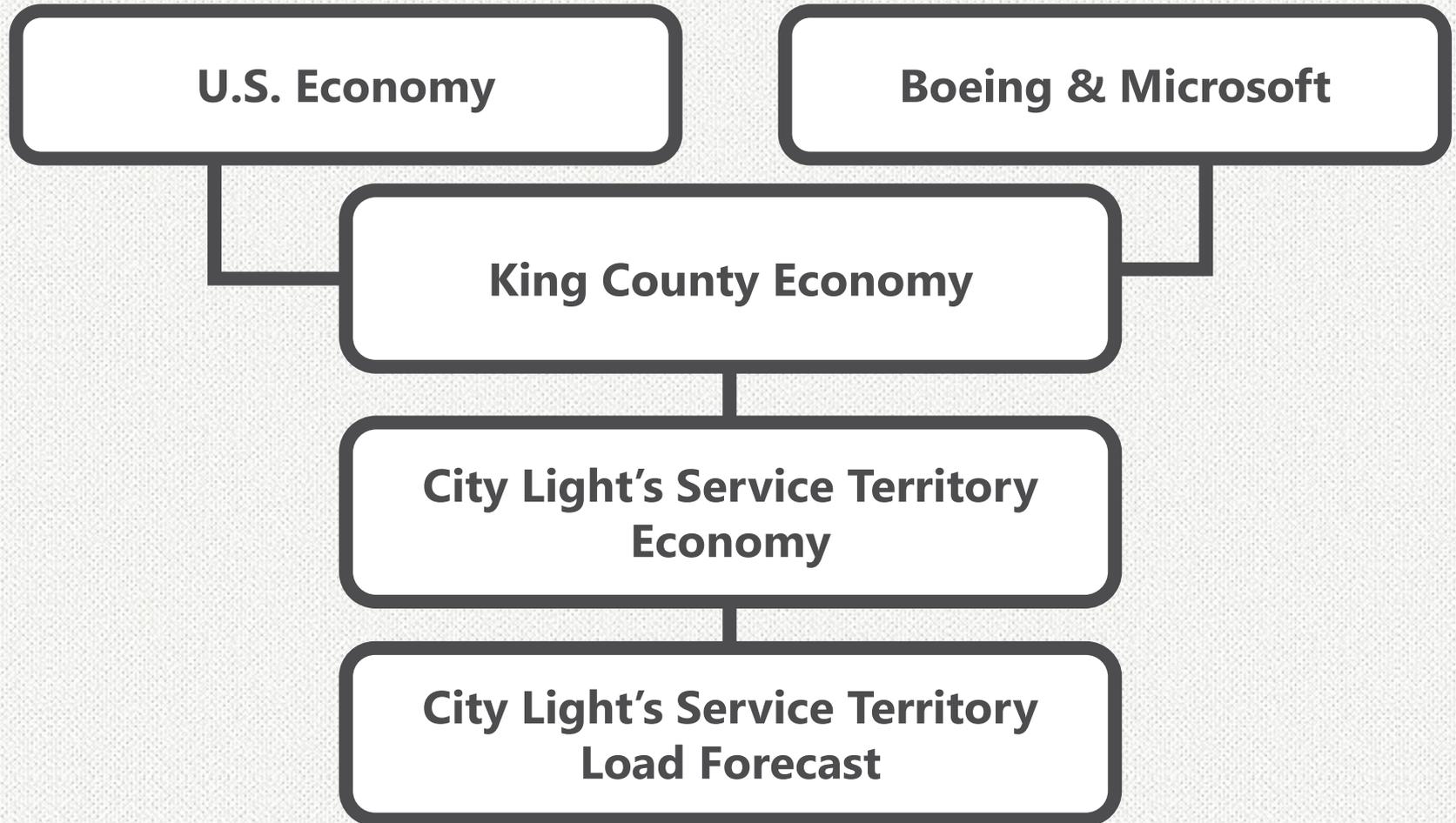
- Geographic Usage
  - Targeted Conservation
  - Distribution Planning / Reliability

## ASSUMPTIONS OVERVIEW

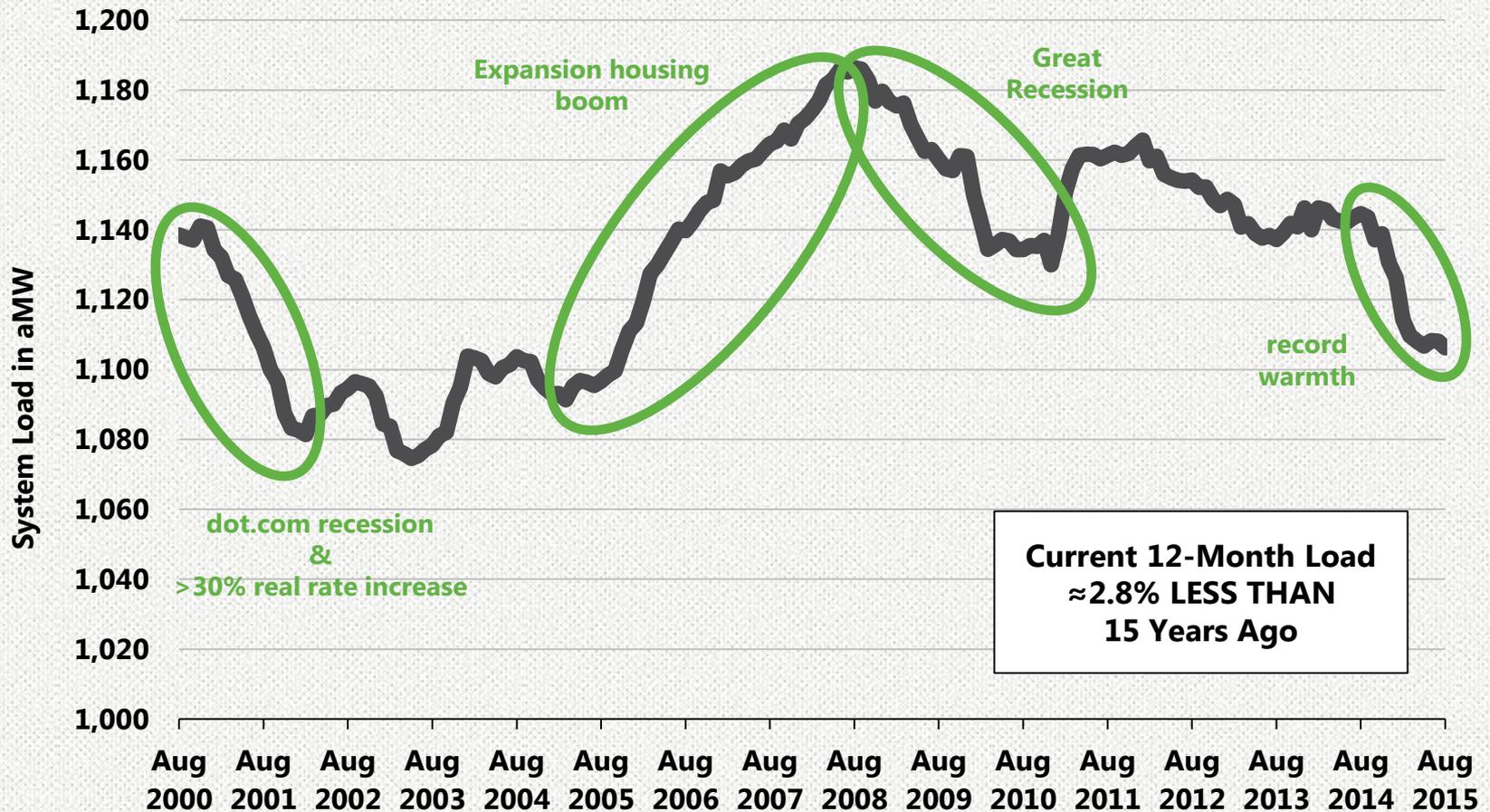
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- Economic outlook includes inputs on U.S. growth in GDP, industrial production, employment, income, CPI, housing starts & population
- Forecast based on “normal weather”
- Load forecast assumes historic **achieved** conservation continues into the future
- Forecast of tunnel boring machine not included

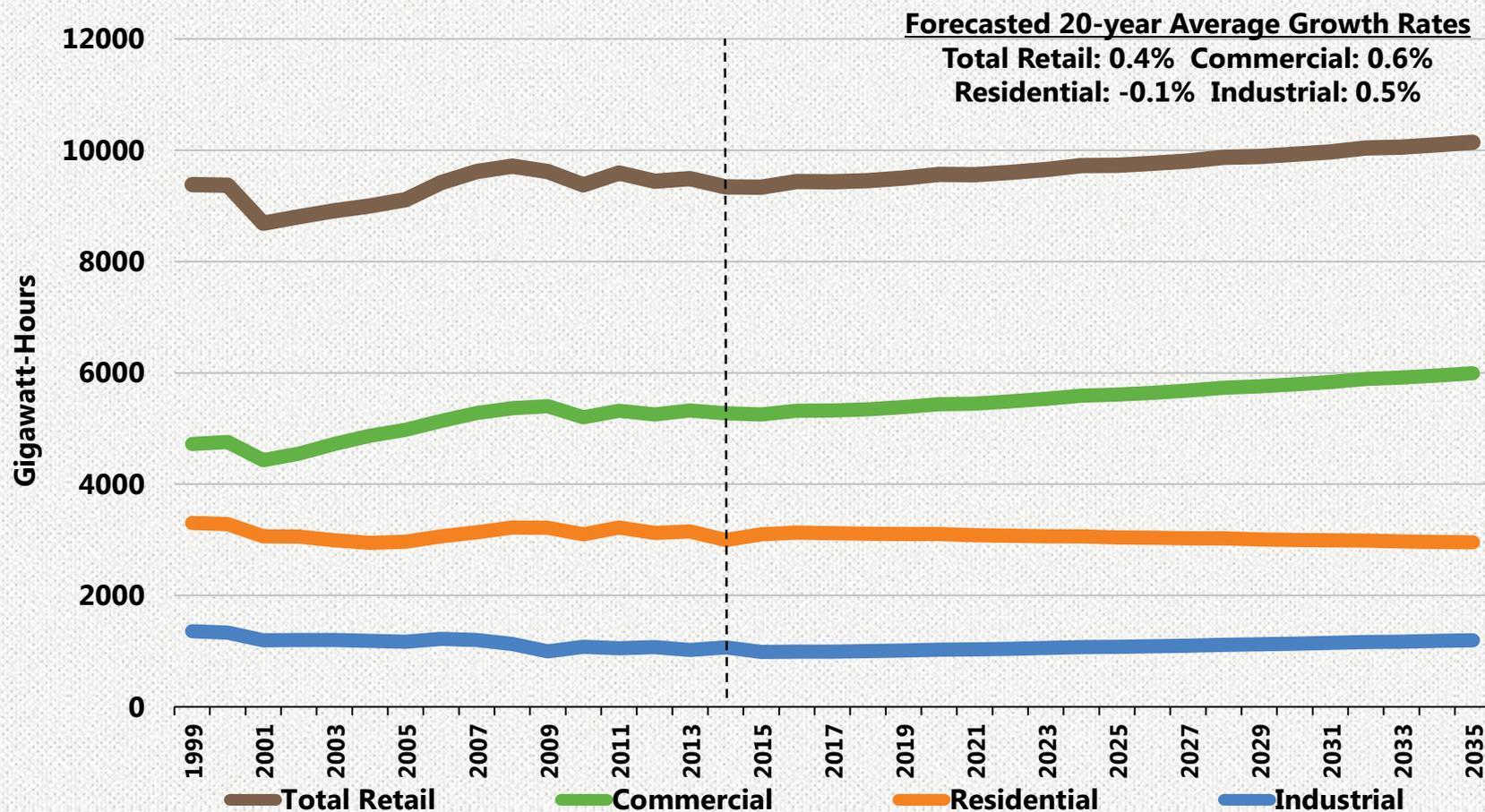
# LOAD FORECAST MODEL STRUCTURE



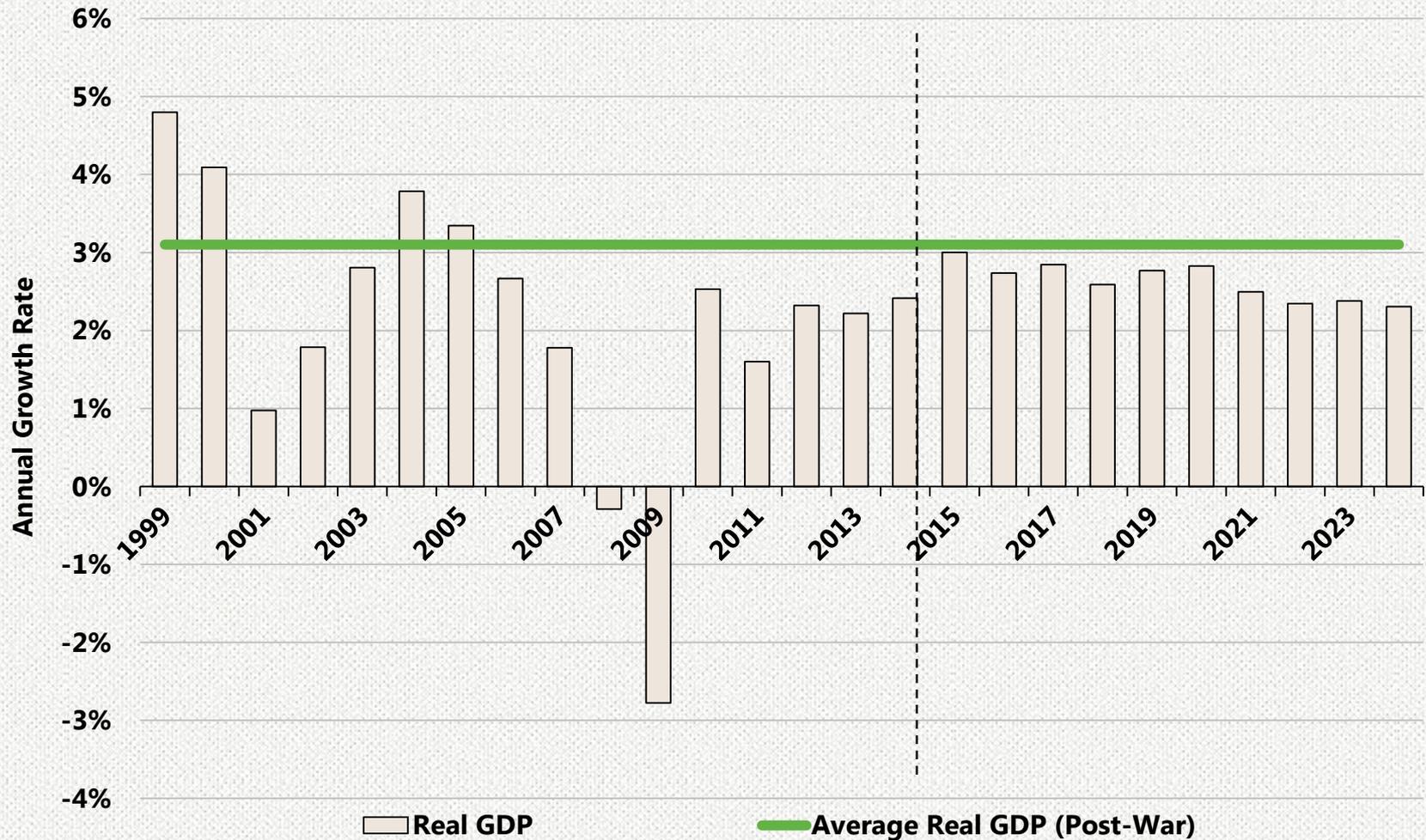
# CITY LIGHT LOAD HISTORY – ROLLING 12 MONTH



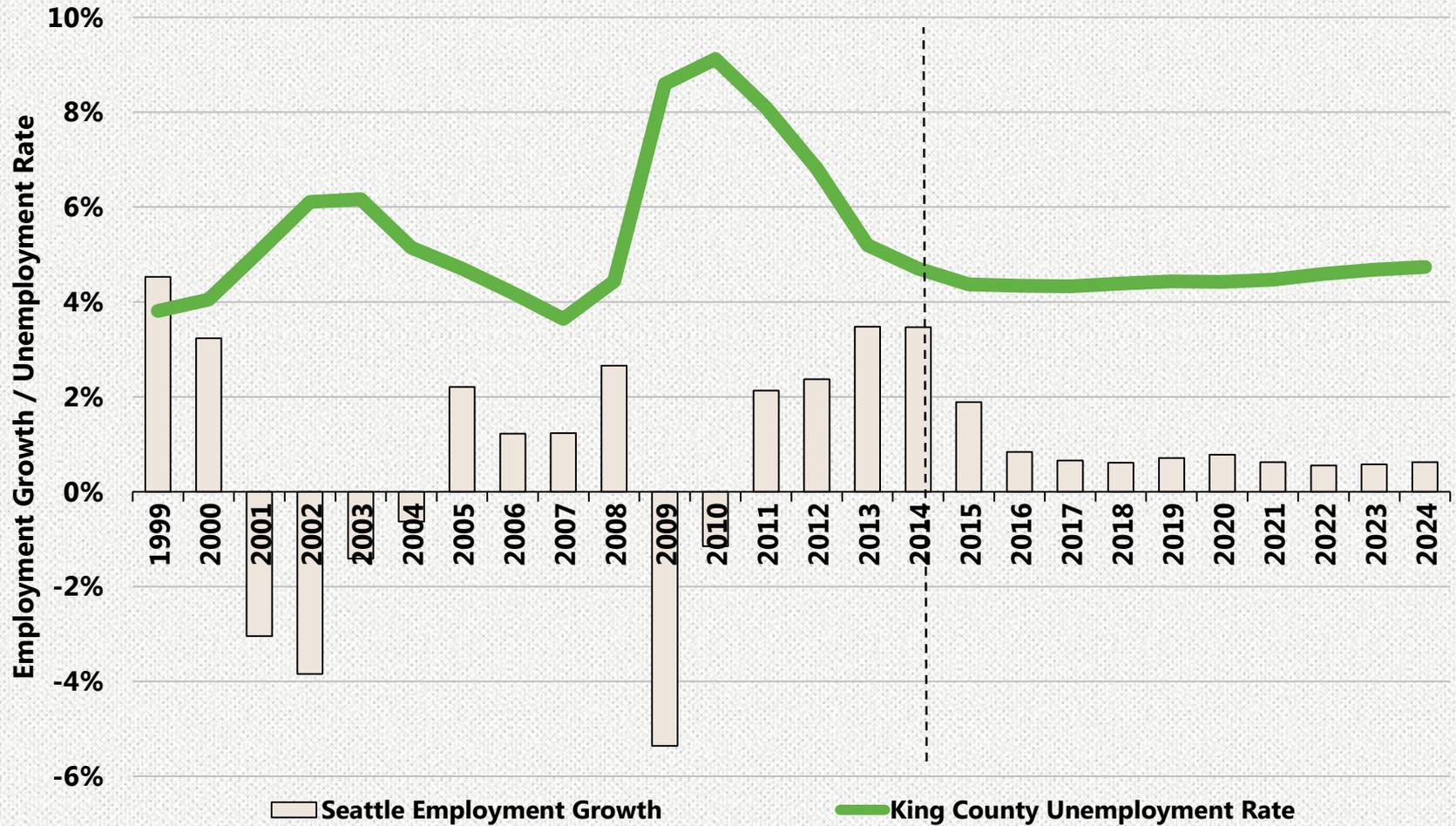
# LOAD HISTORY & FORECAST BY CUSTOMER CLASS



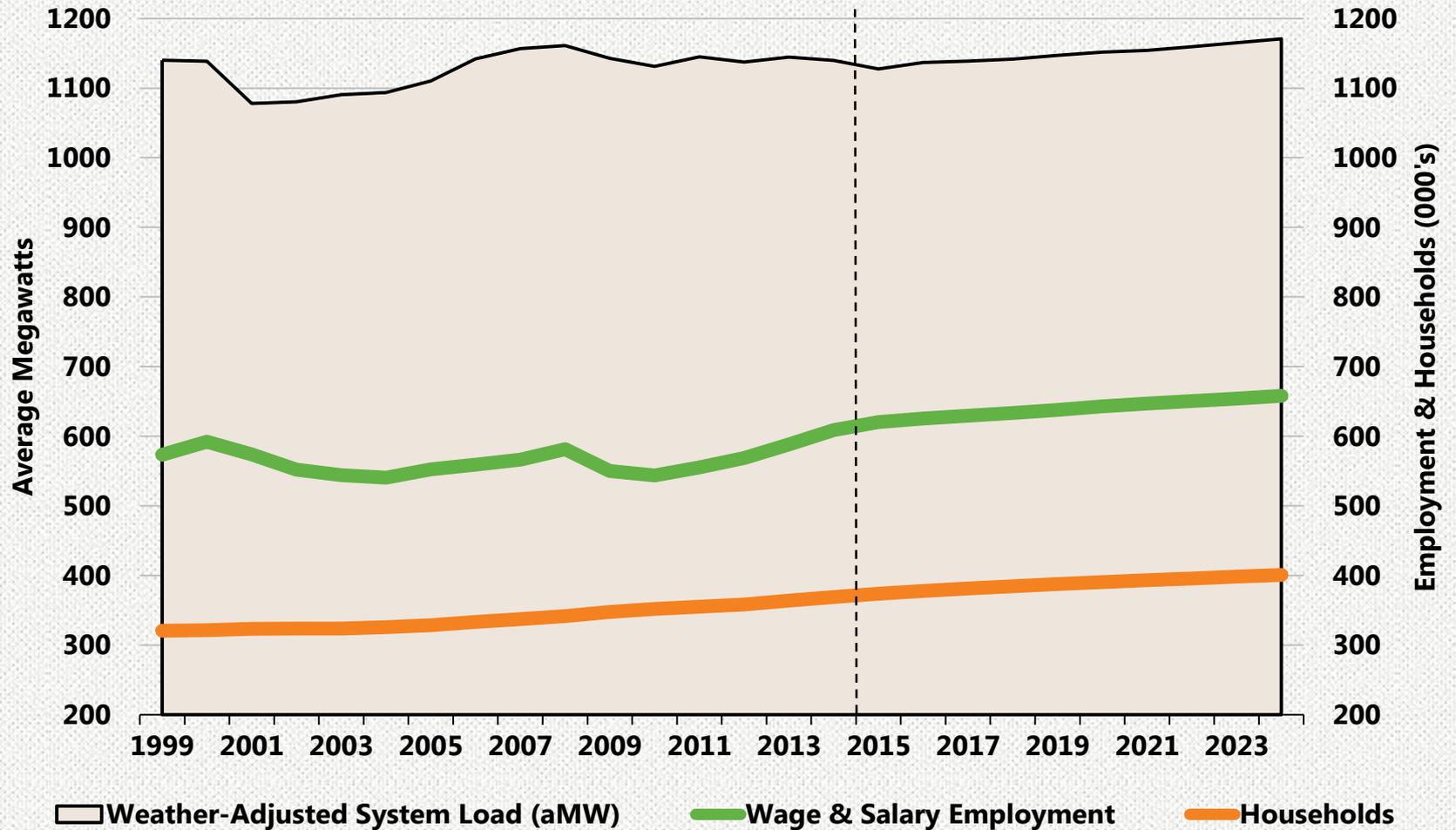
# "NEW NORMAL" OF ECONOMIC GROWTH?



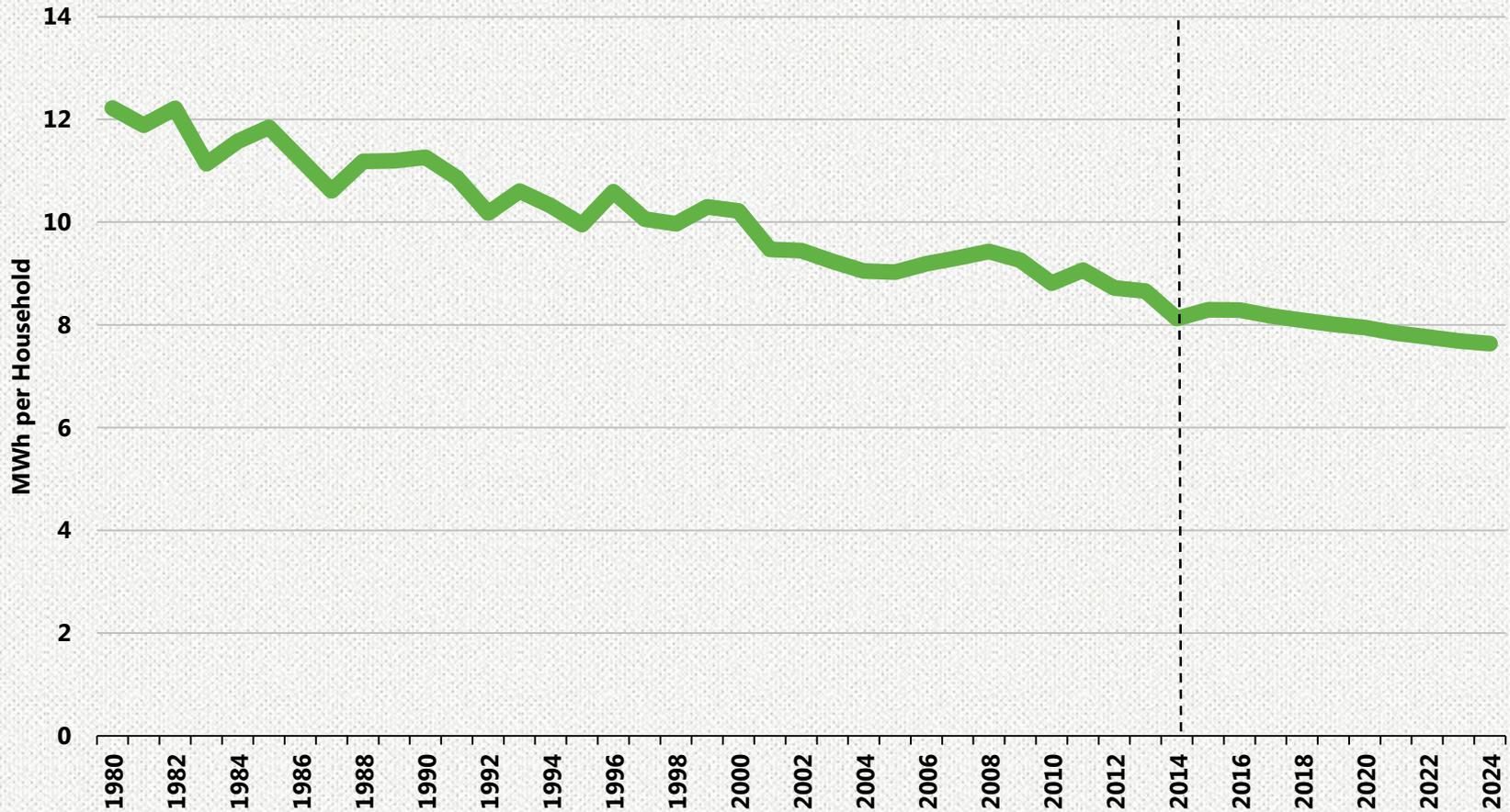
# LOCAL LABOR MARKETS



# LOAD, EMPLOYMENT, AND HOUSEHOLDS



# ENERGY EFFICIENCY, CODES, & FUEL SWITCHING.... RESIDENTIAL MWH PER HOUSEHOLD

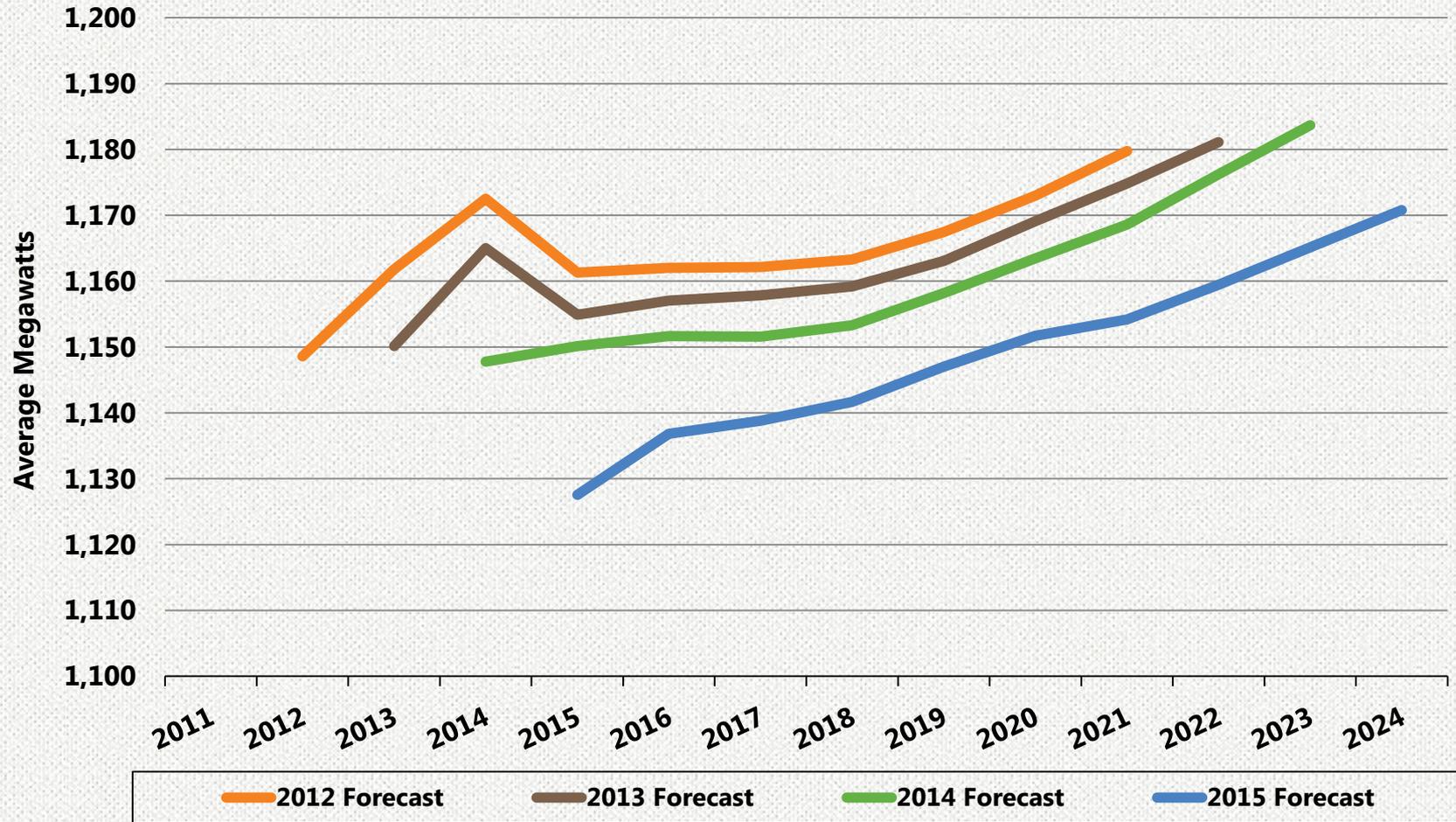


## 2015 SUMMARY

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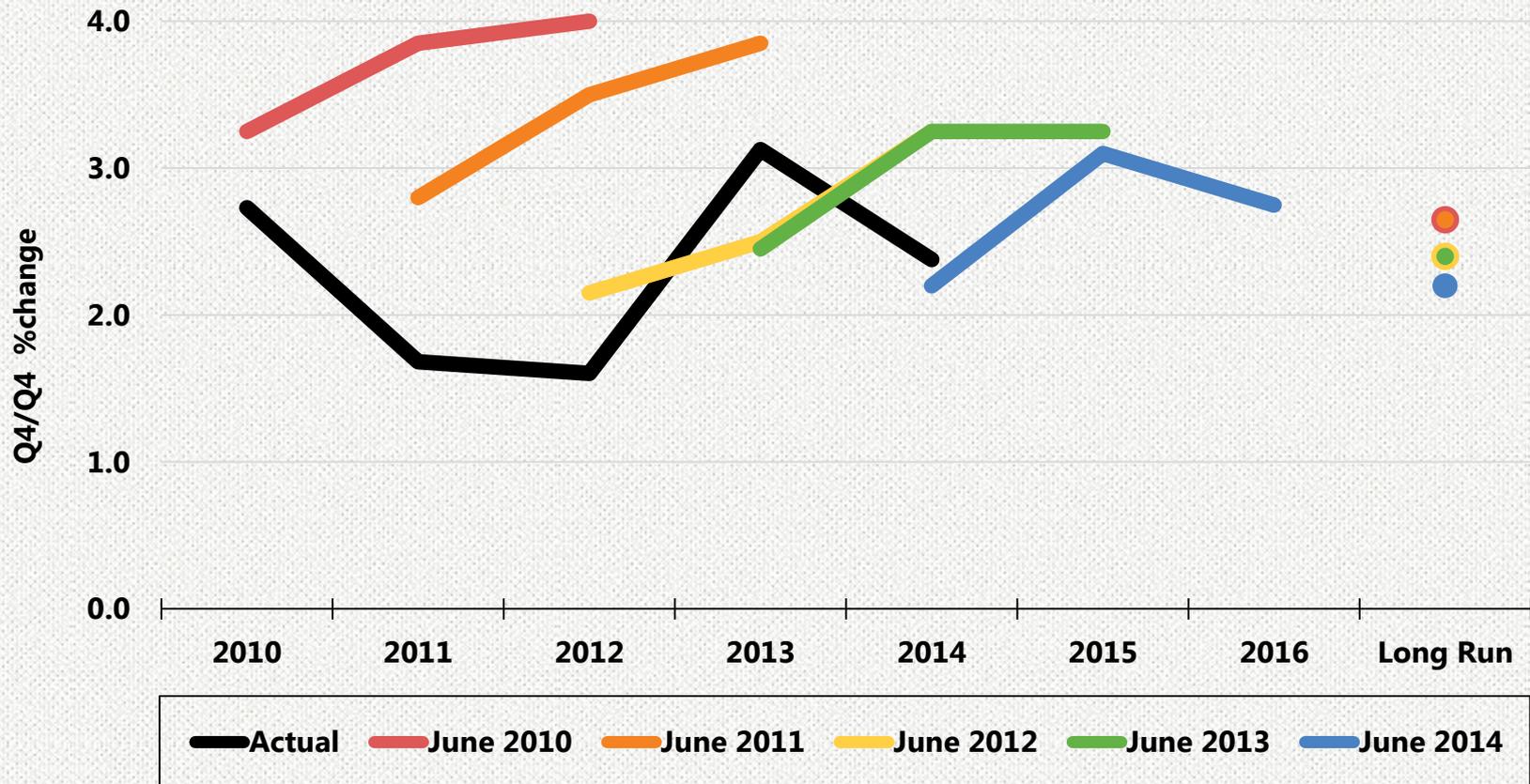
- Economic growth expected to continue, yet does so below historical trend
- Local labor markets expected to moderate after recovery from recent downturn
- Rapid growth in residential construction not expected to be sustainable in long-term
- Load demand growth expected to slow relative to historical trend due to numerous factors
- 20-year average annual growth rate  $\approx 0.4\%$

# COMPARISON OF RECENT LOAD FORECASTS

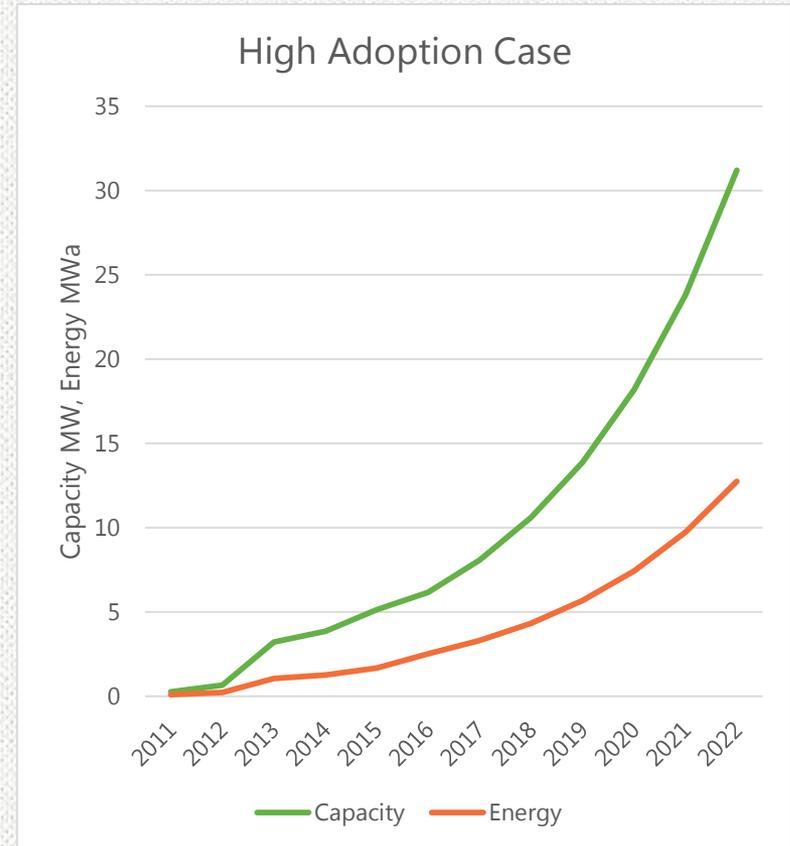
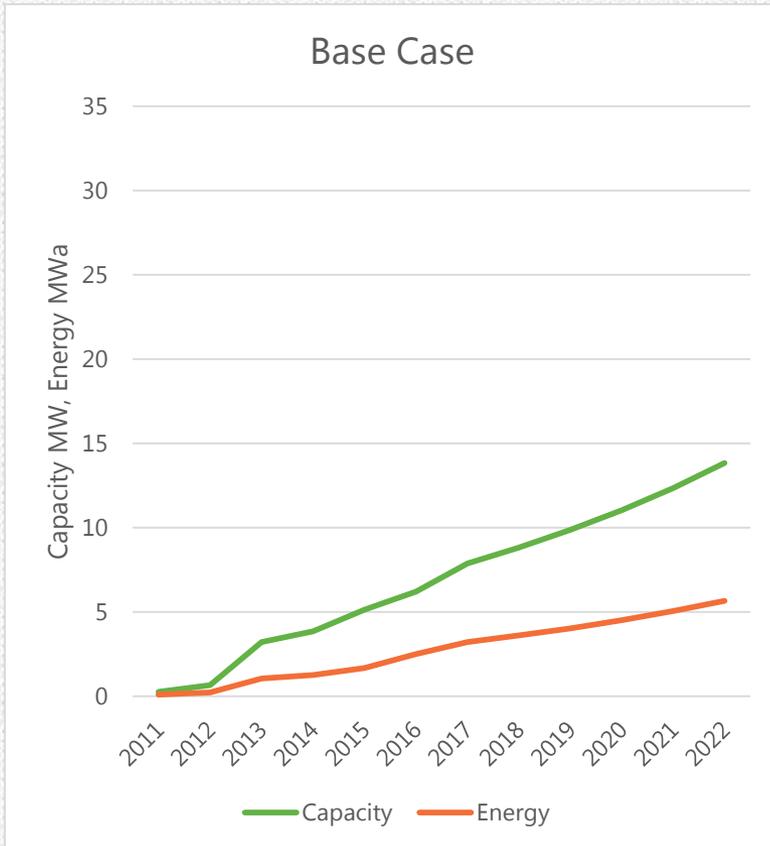


# ECONOMIC GROWTH PROJECTIONS FOR THE U.S.

## FOMC REAL GDP FORECAST

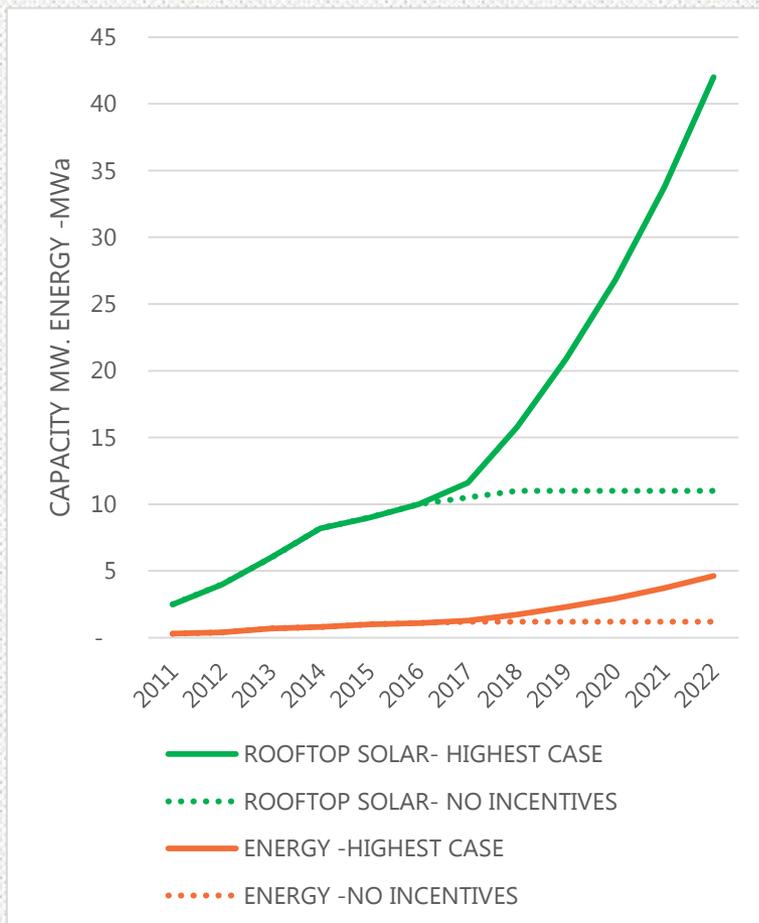


# ELECTRIC VEHICLES ENERGY AND CAPACITY



# DISTRIBUTED ROOFTOP SOLAR INSTALLATIONS

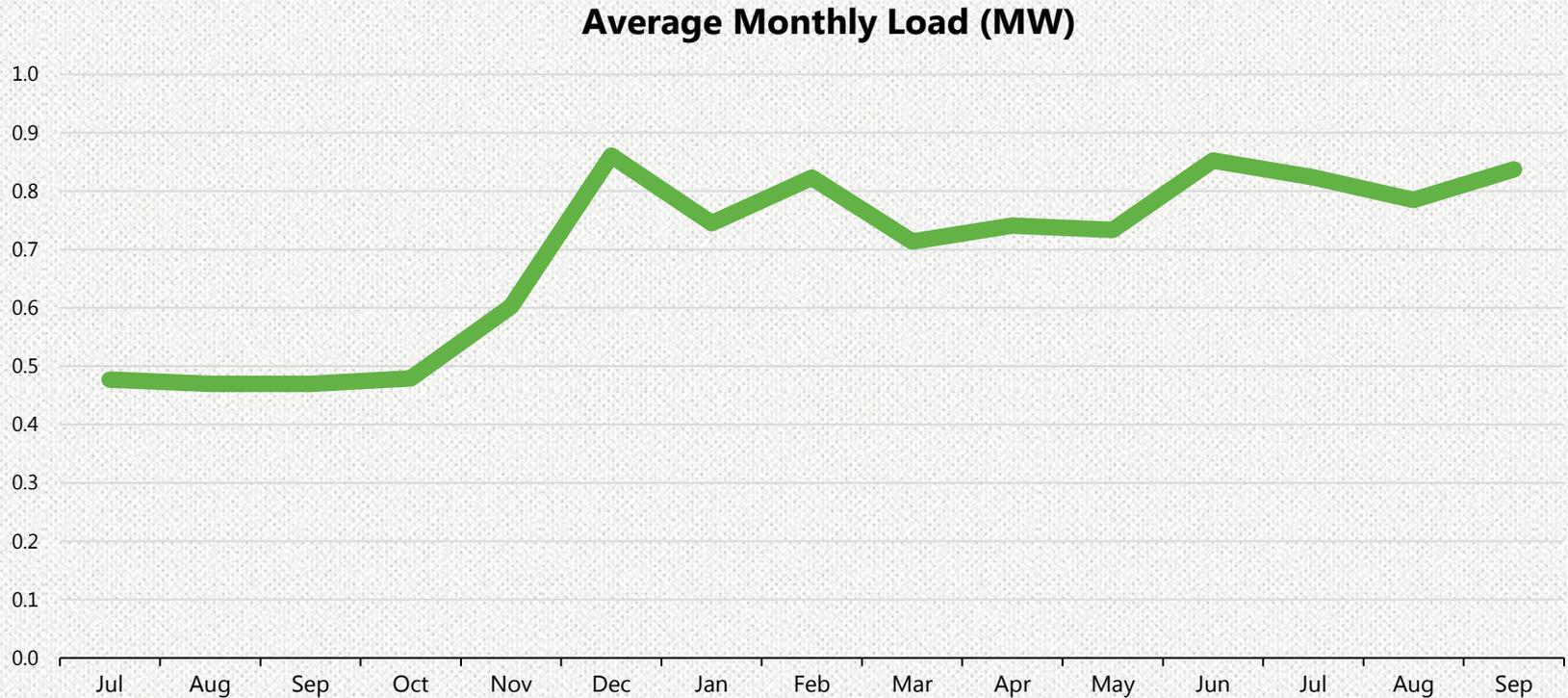
## CUMULATIVE TOTAL SYSTEM CAPACITY AND ENERGY



- Installations total approximately 0.08% of retail load
- Residential and community solar



# I-502 COMPLIANT CANNABIS PRODUCERS AVERAGE MONTHLY LOAD



- **Estimated 0.84MW from seventeen I-502 compliant cannabis producers in Seattle.**
- **Due to the infancy of this customer base, current data are very rough estimates.**

## WHERE IS LOAD GOING IN THE FUTURE?

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- City Light's customers are changing the way they use electricity
  - ▼ Customers have embraced conservation with large long lasting effects
  - ▼ Distributed generation is reducing load the utility is paid for (not consumption)
  - ▲ Plug loads are increasing significantly
  - ▲ Electric vehicles and battery storage will increase consumption

## WHAT'S NEXT?

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- A bottom up investigation will look at issues affecting load including:
  - Building code & appliance standards
  - Over-achievement of energy conservation
  - Reduced usage due to real rate increases
  - Appliance loss to natural gas fuel
  - While small so far effects of DG Solar, EV's, cannabis production, etc. need study

## WHAT'S NEXT?

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- Customer loads are changing – We need to understand why
- This is a regional problem and we are working with regional players to understand the causes
- Last end-use load study occurred before:
  - Personal computers were popular
  - Cable and satellite set top boxes were in common use
  - Most common plug loads were not yet invented



# CITY LIGHT

## OUR VISION

To set the standard—to deliver the best customer service experience of any utility in the nation.

## OUR MISSION

Seattle City Light is dedicated to exceeding our customers' expectations in producing and delivering environmentally responsible, safe, low-cost and reliable power.

## OUR VALUES

Excellence, Accountability, Trust and Stewardship.

