2017 RETAIL SALES FORECAST
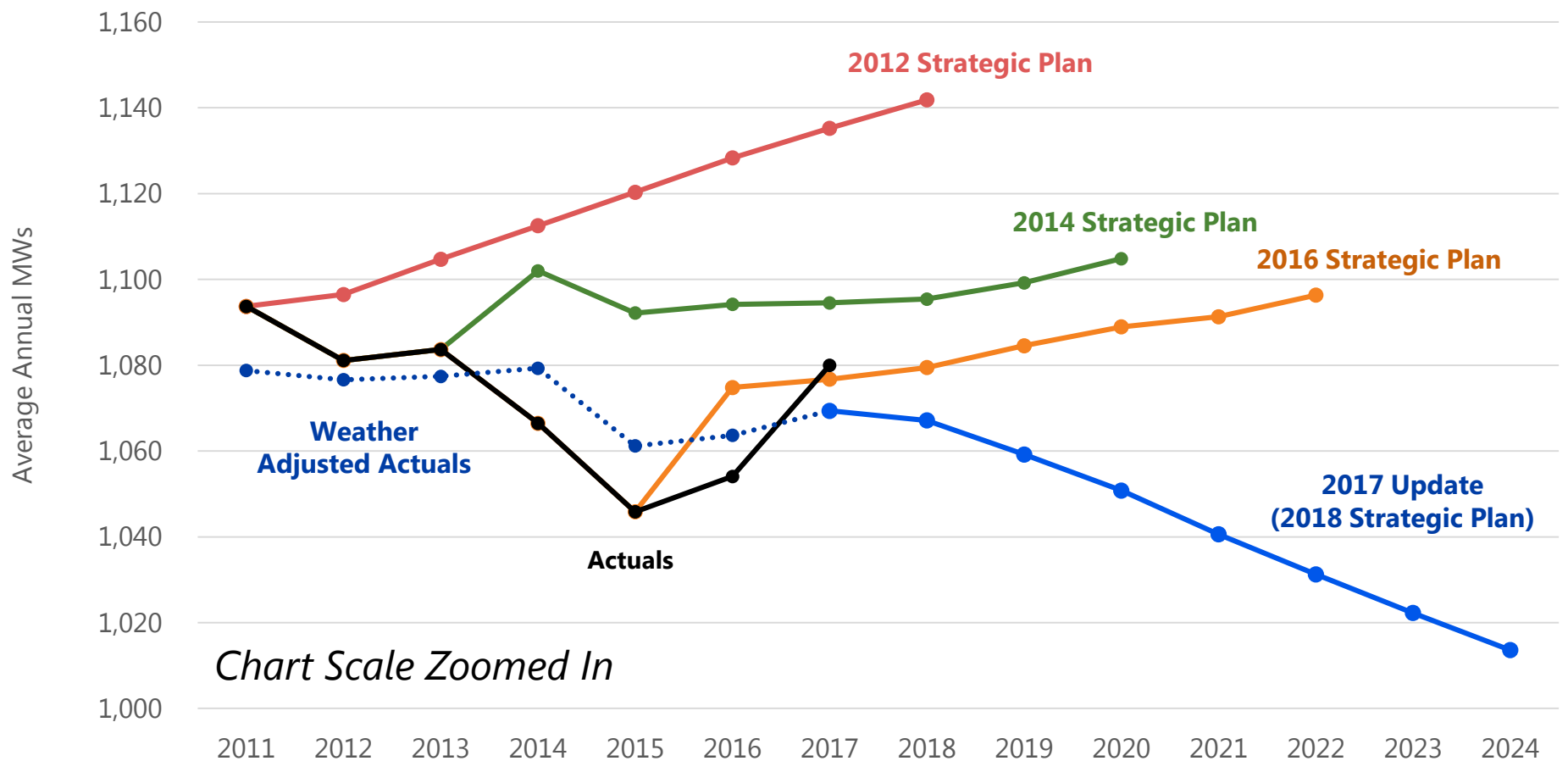
City Light Review Panel

John Rudolph and Carsten Croff

January 8th 2018
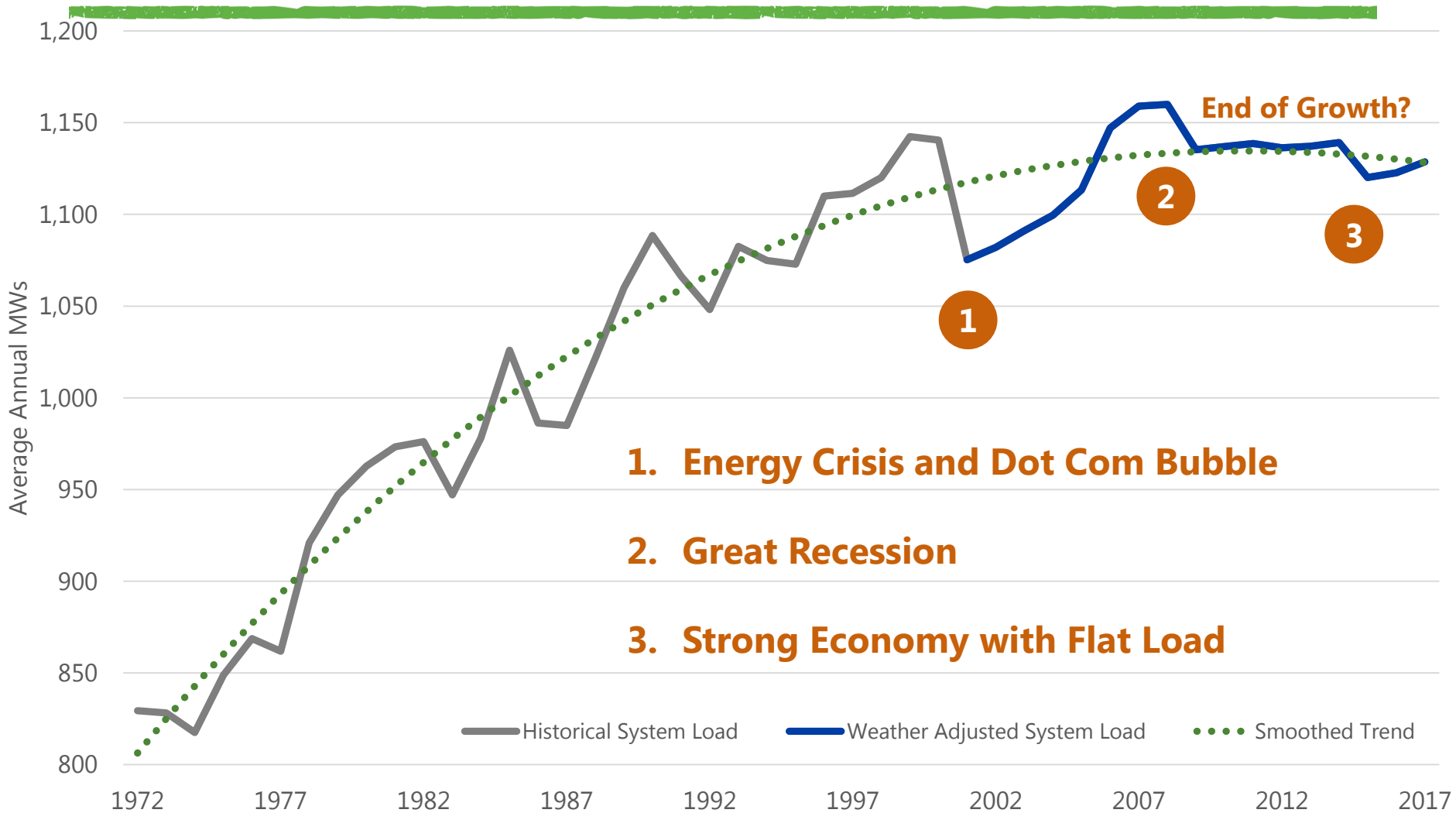
CITY LIGHT RETAIL SALES FORECASTS

2012 Strategic Plan

2014 Strategic Plan

2016 Strategic Plan

Weather Adjusted Actuals

2017 Update (2018 Strategic Plan)

Actuals

Chart Scale Zoomed In

Average Annual MWs

*2017 based on actual sales through September

SYSTEM LOAD HISTORY

End of Growth?

1. **Energy Crisis and Dot Com Bubble**

2. **Great Recession**

3. **Strong Economy with Flat Load**

Average Annual MWs (y-axis): 800, 850, 900, 950, 1,000, 1,050, 1,100, 1,150, 1,200

Years (x-axis): 1972, 1977, 1982, 1987, 1992, 1997, 2002, 2007, 2012, 2017

Legend: —— Historical System Load —— Weather Adjusted System Load ····· Smoothed Trend

BACKGROUND AND FORECAST GOALS

- 3rd party methodology review
  - Completed in March 2017
  - Conclusion: New methodology needed to account for changing environment (Multi-year effort)
- Goals for 2017 forecast (rebuilding year)
  - Leverage Conservation Potential Assessment for changes in end uses
  - Develop robust weather normalization model
  - Account for new customers being more efficient
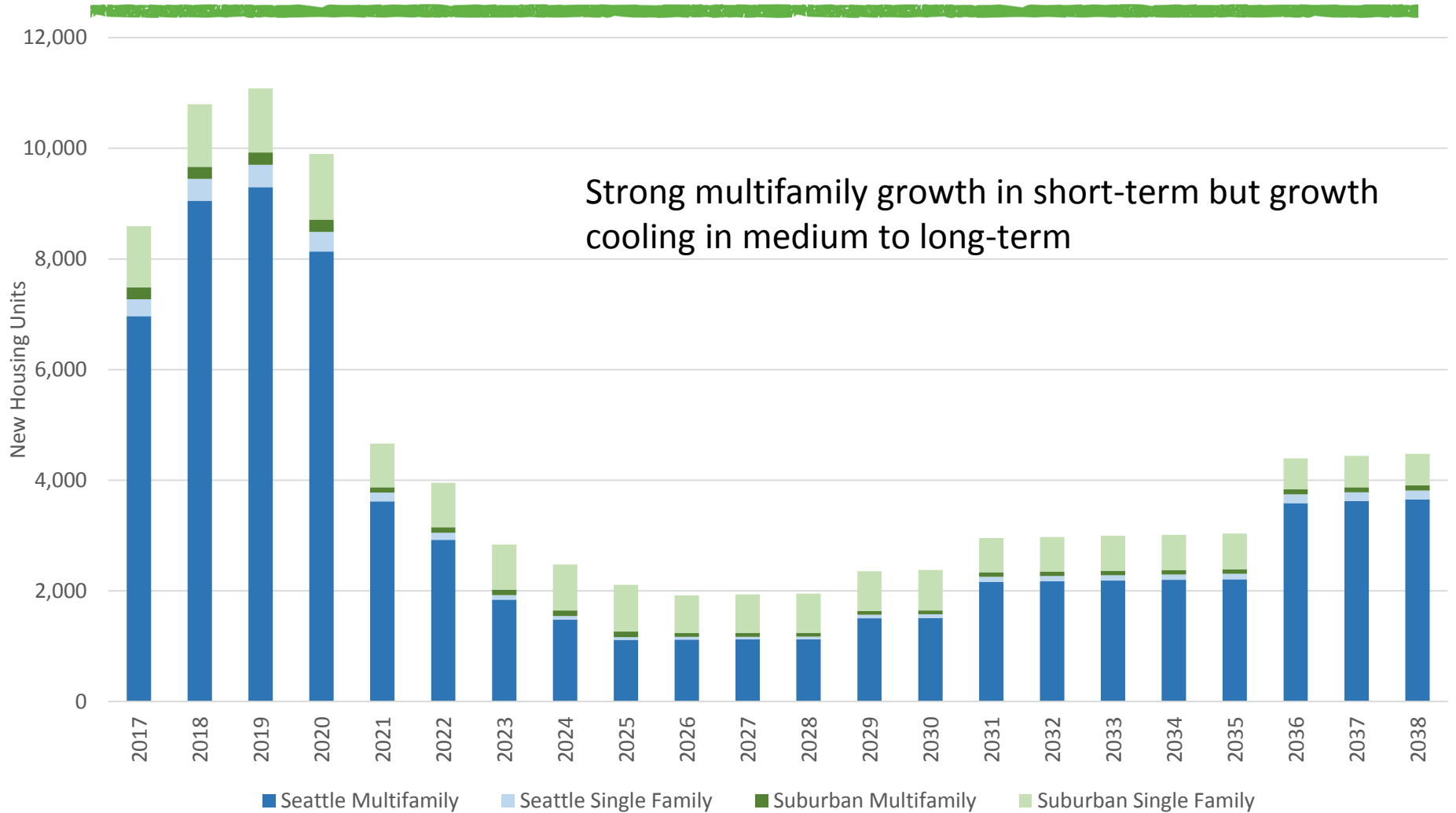 - Develop a technical work team from across the utility

RESIDENTIAL SALES
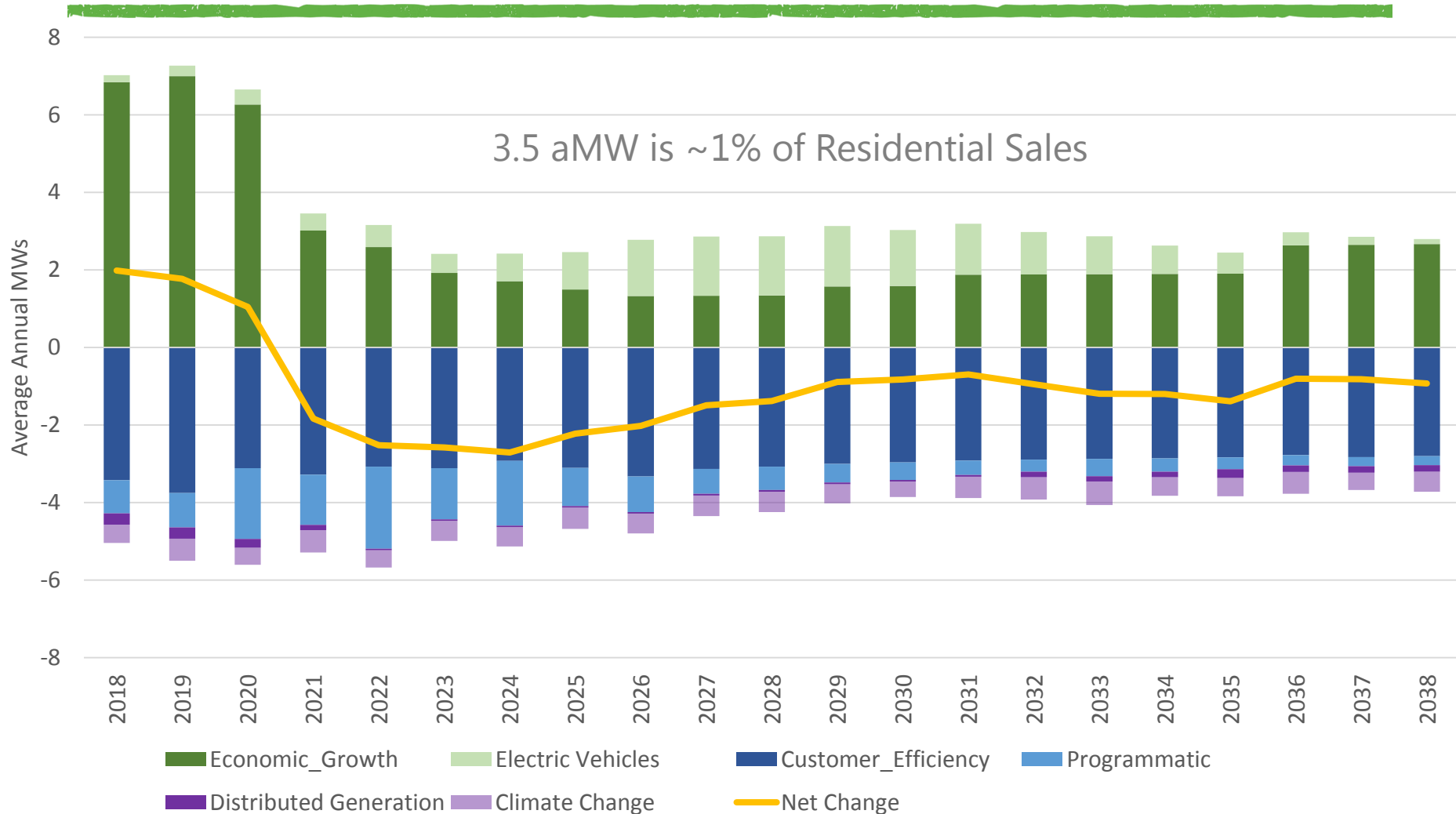
HOUSING STOCK

Strong multifamily growth in short-term but growth cooling in medium to long-term

Chart: New Housing Units by year (2017–2038), stacked bar chart with categories: Seattle Multifamily, Seattle Single Family, Suburban Multifamily, Suburban Single Family. Y-axis "New Housing Units" ranging 0 to 12,000.

INCREMENTAL CHANGE IN RESIDENTIAL SALES

3.5 aMW is ~1% of Residential Sales

Chart: Average Annual MWs, 2018–2038, with series Economic_Growth, Electric Vehicles, Customer_Efficiency, Programmatic, Distributed Generation, Climate Change, and Net Change.

RESIDENTIAL ENERGY INTENSITY

Residential kWh per meter

weather adjusted
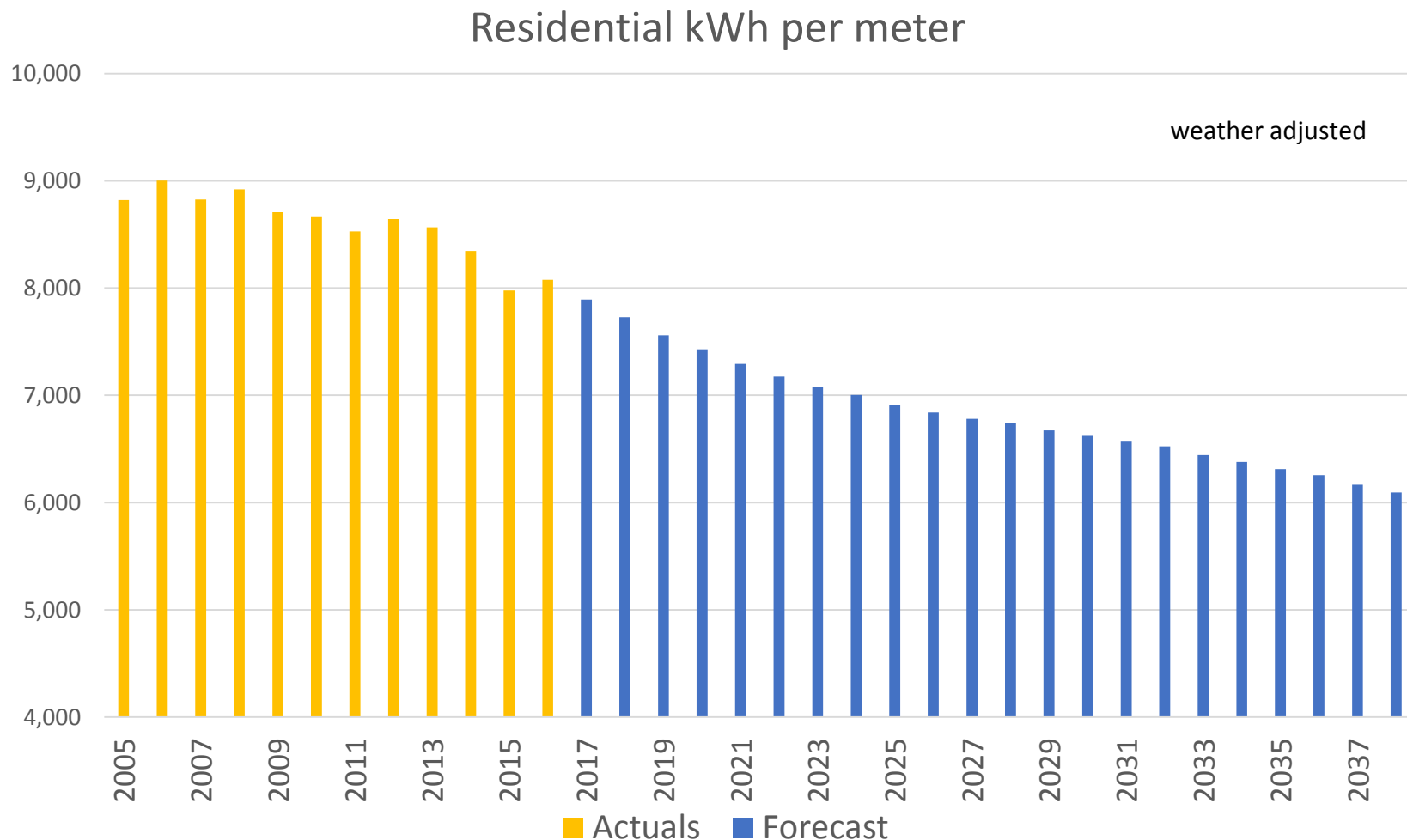
Legend: ■ Actuals ■ Forecast

COMMERCIAL SALES

SERVICE SECTOR EMPLOYMENT

Service Sector Employment Growth

Job growth remains strong in short-term returning to more modest levels in medium to long-term
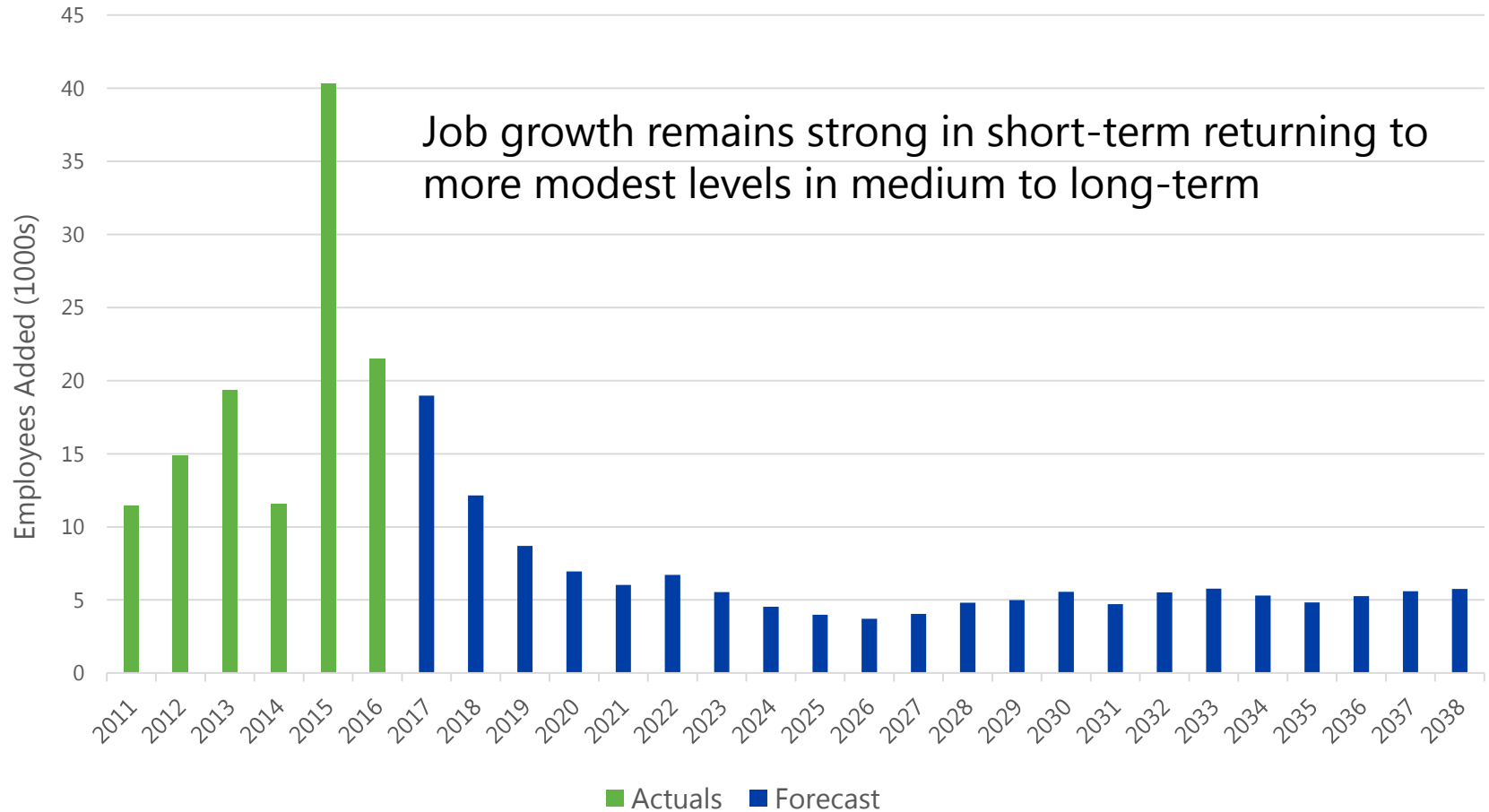
Seattle City Light

INCREMENTAL CHANGE IN COMMERCIAL SALES

6 aMW is ~1% of Commercial Sales

Legend: Economic_Growth, Electric Vehicles, Customer_Efficiency, Programmatic, Distributed Generation, Climate Change, Net Change

Y-axis: Average Annual MWs
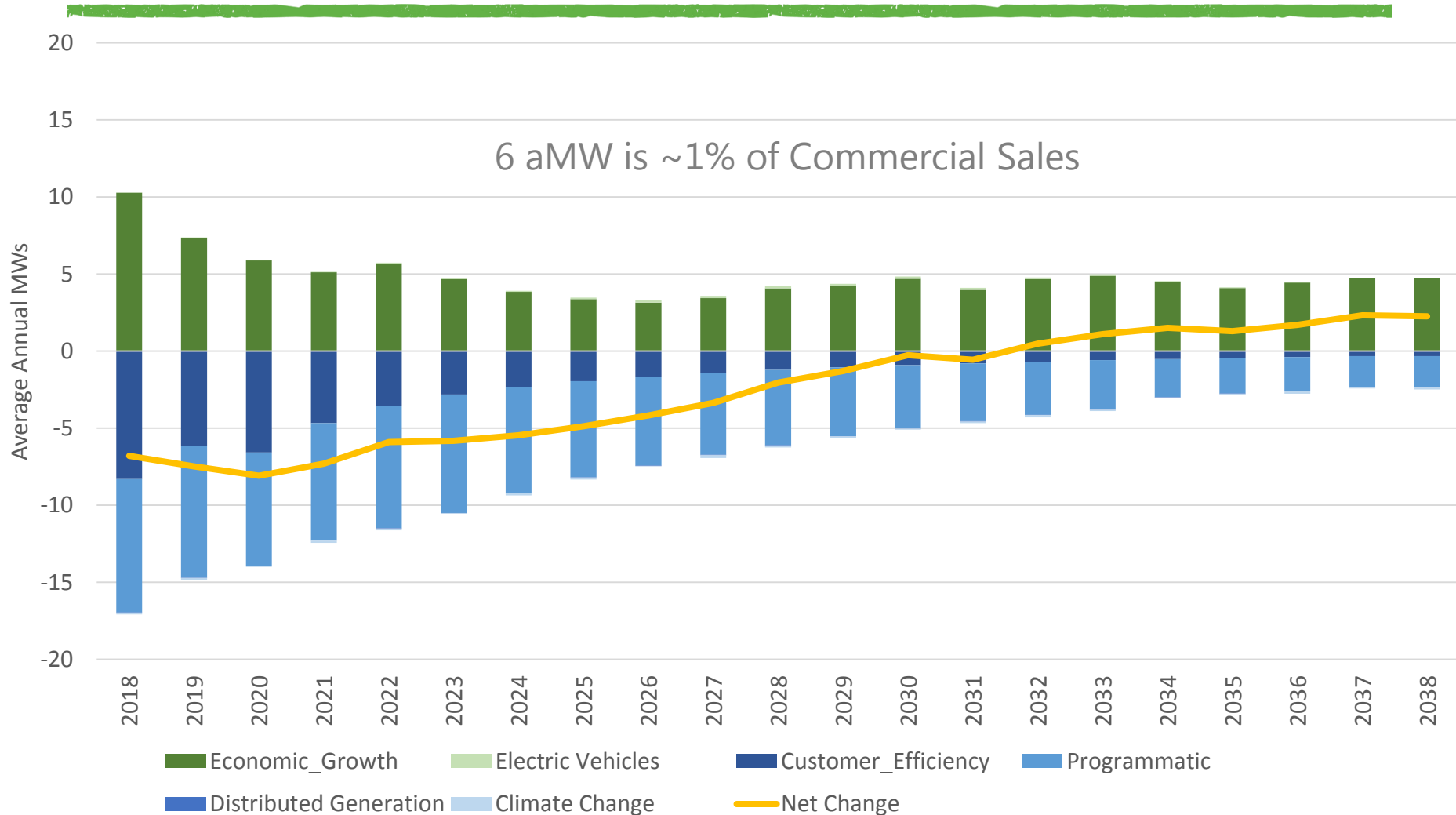
COMMERCIAL ENERGY INTENSITY

Commercial kWh per employee

weather adjusted
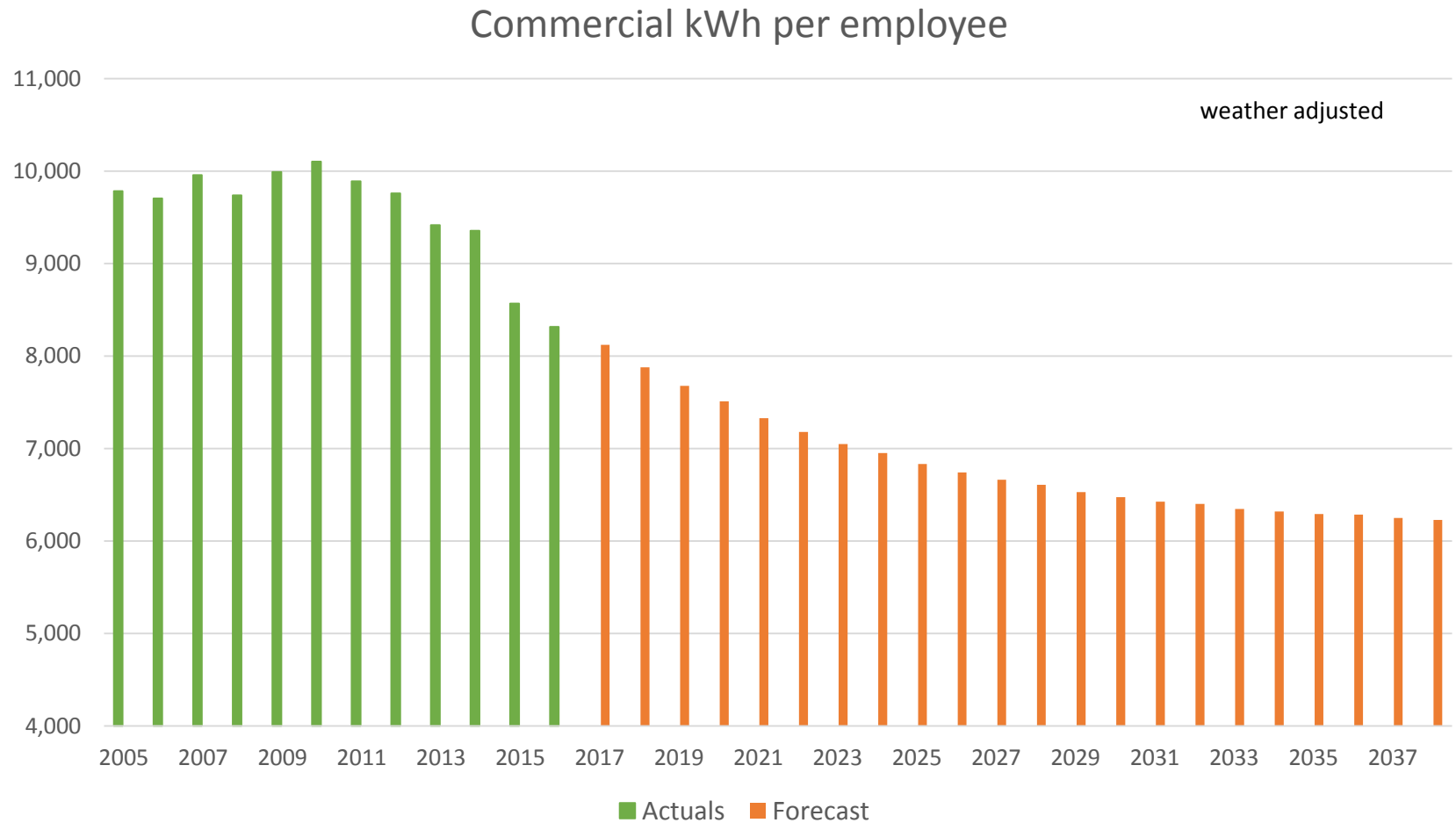
Legend: ■ Actuals ■ Forecast

INDUSTRIAL SALES

INDUSTRIAL

Assume Industrial will decline in-line with IHS long-term manufacturing employment forecast ~-0.2% per year and add new programmatic efficiencies

2017-2038 AAGR: -0.5%

Legend: Industrial_Actuals — Industrial_Before_Programmatic — Industrial_After_Programmatic
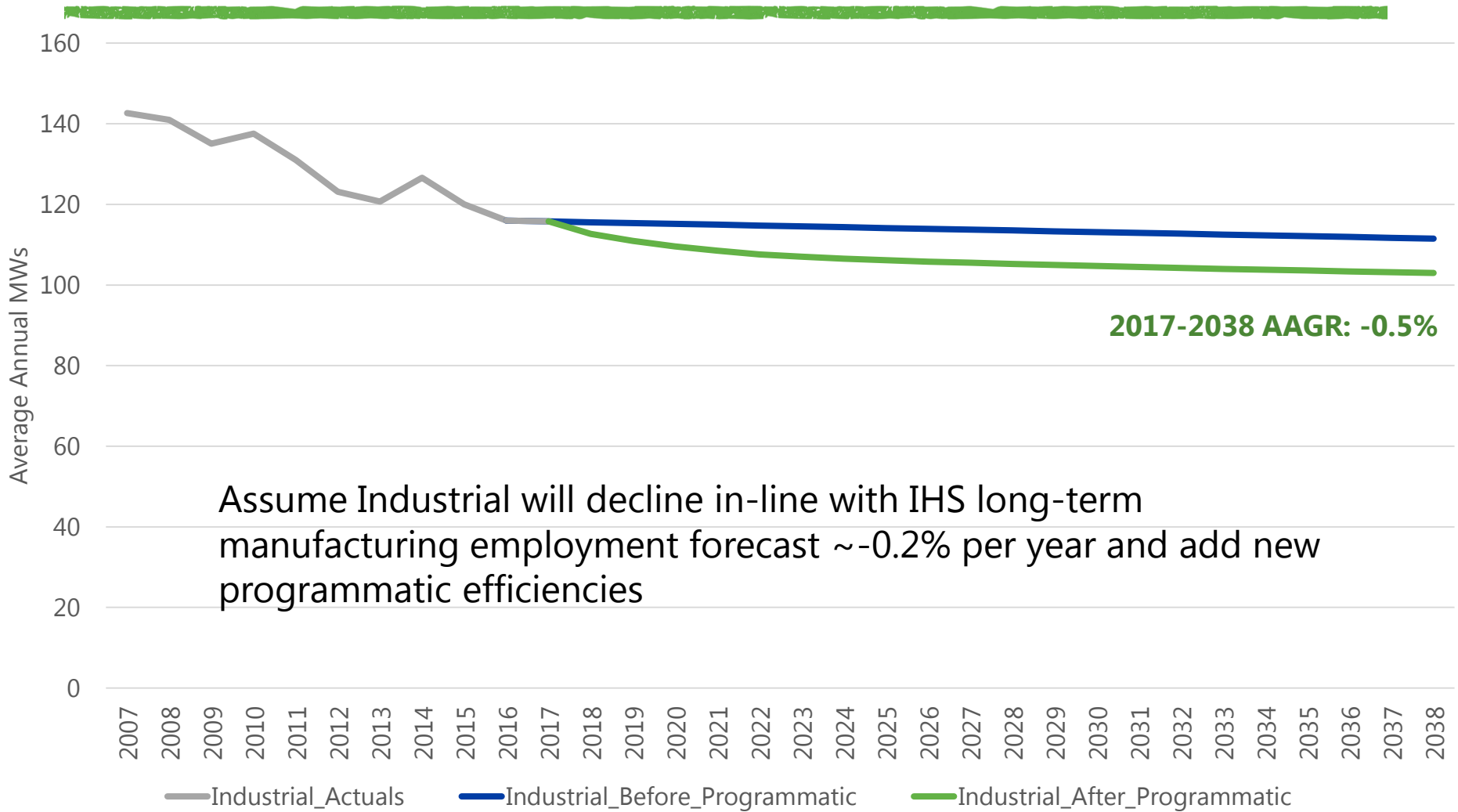
SUMMARY

2017 RETAIL SALES FORECAST

2017-2022 AAGR: -0.7%   **2017-2038 AAGR: -0.4%**

Weather Adjusted

AAGR = average annual growth rate

GWhs

12,000
10,000
8,000
6,000
4,000
2,000
0

2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038
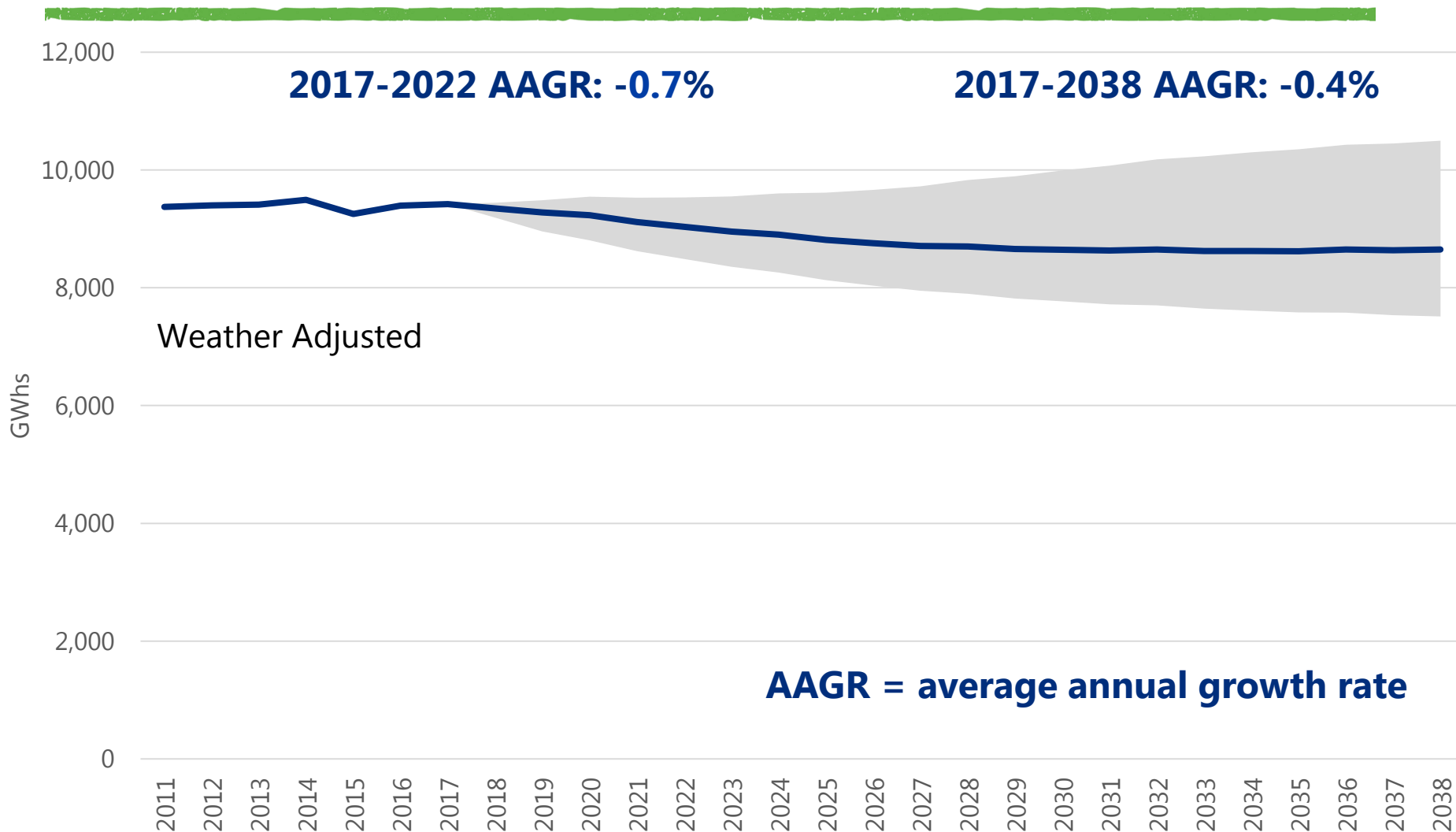
TAKEAWAYS

- Recent History
  - The past few years have experienced strong economic growth
  - However, weather adjusted retail sales have remained flat
  - Energy efficiency is offsetting economic growth
- Outlook for the future
  - Recent economic growth is expected to slow down
  - Robust EE will continue but at a gradually declining rate
  - Net impact is a small decrease in sales
  - Electric Vehicles are expected to have relatively small impact
- There is still lots of uncertainty
  - New methodology can help decrease uncertainty but can't eliminate it
  - Planning processes using retail sales forecast need to consider more than just a point forecast

SUPPLEMENTAL SLIDES

RELATIVE CHANGE BY CLASS: 2017-2025

	2017	2018	2019	2020	2021	2022	2023	2024	2025
Residential GWh	3,146	3,164	3,179	3,197	3,172	3,150	3,128	3,112	3,084
		0.6%	0.5%	0.6%	-0.8%	-0.7%	-0.7%	-0.5%	-0.9%
Commercial GWh	5,261	5,197	5,128	5,071	4,993	4,941	4,890	4,855	4,799
		-1.2%	-1.3%	-1.1%	-1.5%	-1.0%	-1.0%	-0.7%	-1.2%
Industrial GWh	1,014	987	972	963	951	943	937	936	930
		-2.7%	-1.6%	-1.0%	-1.3%	-0.8%	-0.6%	-0.2%	-0.6%
Total Gwh	9,421	9,348	9,279	9,230	9,116	9,034	8,955	8,903	8,814
		-0.8%	-0.7%	-0.5%	-1.2%	-0.9%	-0.9%	-0.6%	-1.0%

RELATIVE CHANGE BY CLASS: 2026-2038

	2026	2027	2028	2029	2030	2031	2032	2033	2034
Residential GWh	3,067	3,054	3,050	3,034	3,026	3,020	3,020	3,002	2,991
	-0.6%	-0.4%	-0.1%	-0.5%	-0.2%	-0.2%	0.0%	-0.6%	-0.4%
Commercial GWh	4,763	4,733	4,728	4,704	4,702	4,697	4,714	4,711	4,724
	-0.8%	-0.6%	-0.1%	-0.5%	-0.1%	-0.1%	0.4%	-0.1%	0.3%
Industrial GWh	927	924	924	919	917	915	916	911	909
	-0.3%	-0.3%	0.0%	-0.5%	-0.2%	-0.2%	0.0%	-0.5%	-0.2%
Total Gwh	8,756	8,711	8,702	8,657	8,645	8,632	8,650	8,623	8,624
	-0.7%	-0.5%	-0.1%	-0.5%	-0.1%	-0.2%	0.2%	-0.3%	0.0%