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December 3, 2019

### MEMORANDUM

**TO: Council Members**

**FROM: Massoud Jourabchi**

**SUBJECT: 2018 State of regional economy and electric utilities**

### **BACKGROUND:**

**Presenter:** Massoud Jourabchi

**Summary:** 2018 was a year that state economy continued to grow at a faster rate than nation. Population of the region grew to over 14.5 million. Regional share of national population and income continued to grow. Over the past 10 years Gross State Product increased at a faster rate than Nation. Employment levels increased to over seven million. Regional unemployment rates declined to lowest historical levels. Warmer than normal winter in 2018 pushed sales down. 2018 sales were lower by 900 aMW from 2017. Revenues from retail sales decreased by over 400 million dollars. On a long-term basis annual growth rate in summer peak continues to outperform winter peak and annual energy. Behind the meter solar installations continue to grow at an annual rate of over 30%. Time-of-Use rates are saw additional decline in participation.

**Relevance:** Continued monitoring of the energy markets in the region is critical for load forecasting.

**Work plan:** B.3.1. Continued monitoring of regional sales, loads and temperatures  
B.3.2. Continued monitoring of economic picture of the region

**Background:** NA

**2018-2019**

# **State of Electric Industry- Economy, Temperature, Sales, Loads and Revenues**

Massoud Jourabchi

December 10, 2019

Power Committee Webinar



THE 2021  
NORTHWEST  
POWER PLAN

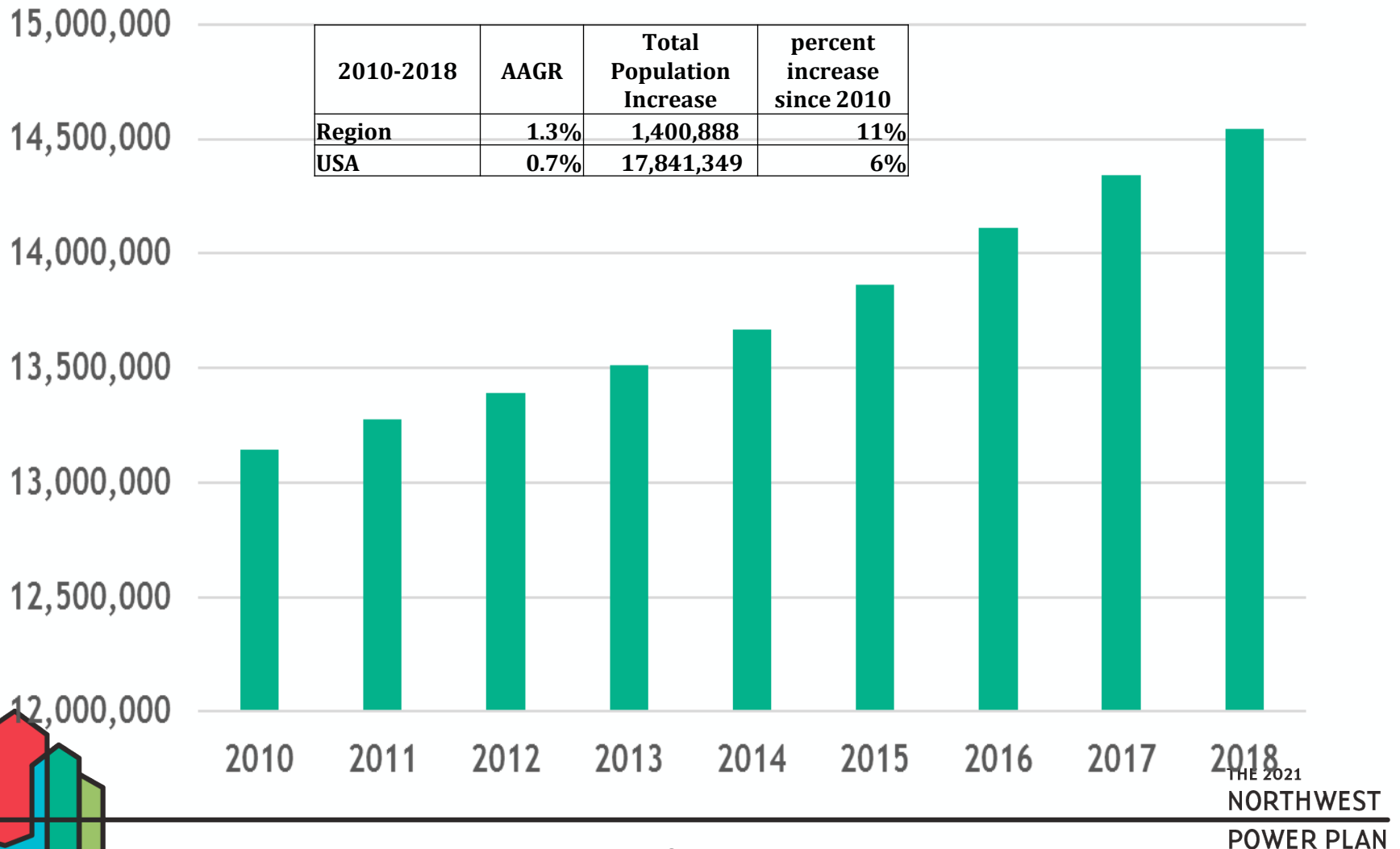
FOR A SECURE & AFFORDABLE  
ENERGY FUTURE

# In this presentation

- Snapshots of Regional Economic Conditions
  - Population
  - Economic output
  - Employment
  - Productivity
  - Income
- Temperature Conditions
  - Summer
  - Winter
- Sales
- Energy and Peak Loads
- Revenues and Prices

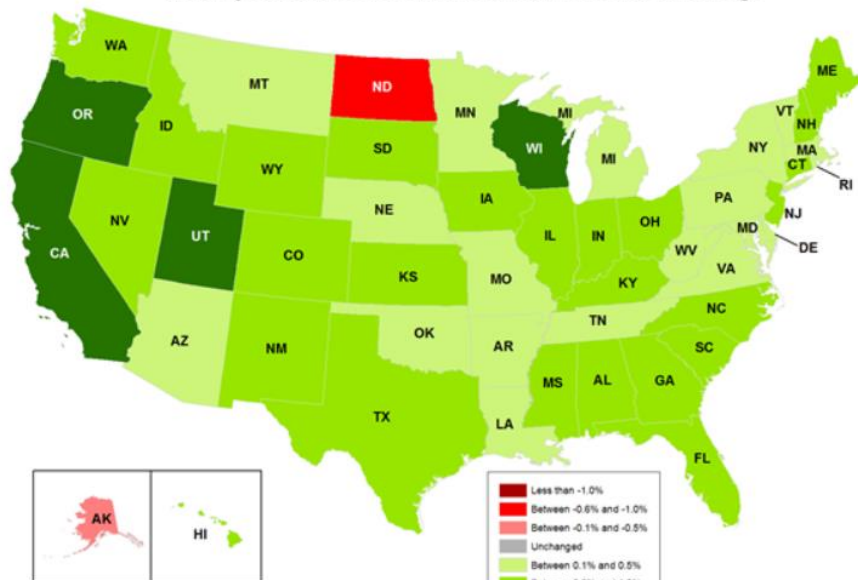


## Regional Population in 2010-2018 Grew at almost twice the National Average



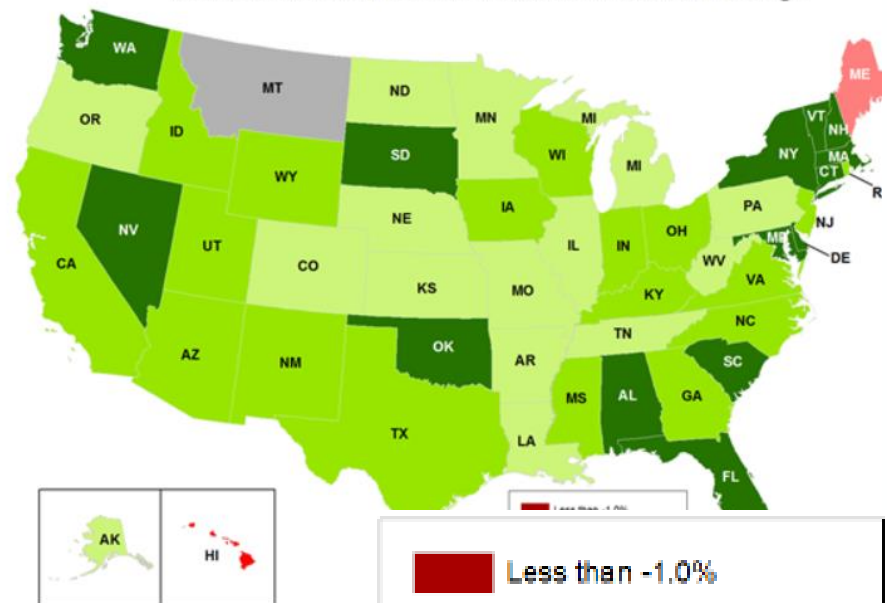
# Regional Economy Continued Growth in 2018

January 2018 State Coincident Indexes: Three-Month Change



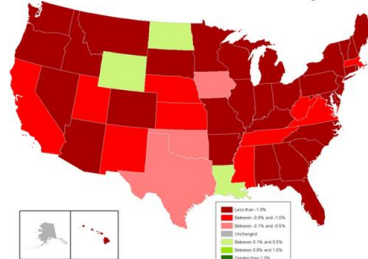
Source: Federal Reserve Bank of Philadelphia

December 2018 State Coincident Indexes: Three-Month Change



Source: Federal Reserve Bank of Philadelphia

December State Coincident Indexes: Three-Month Change



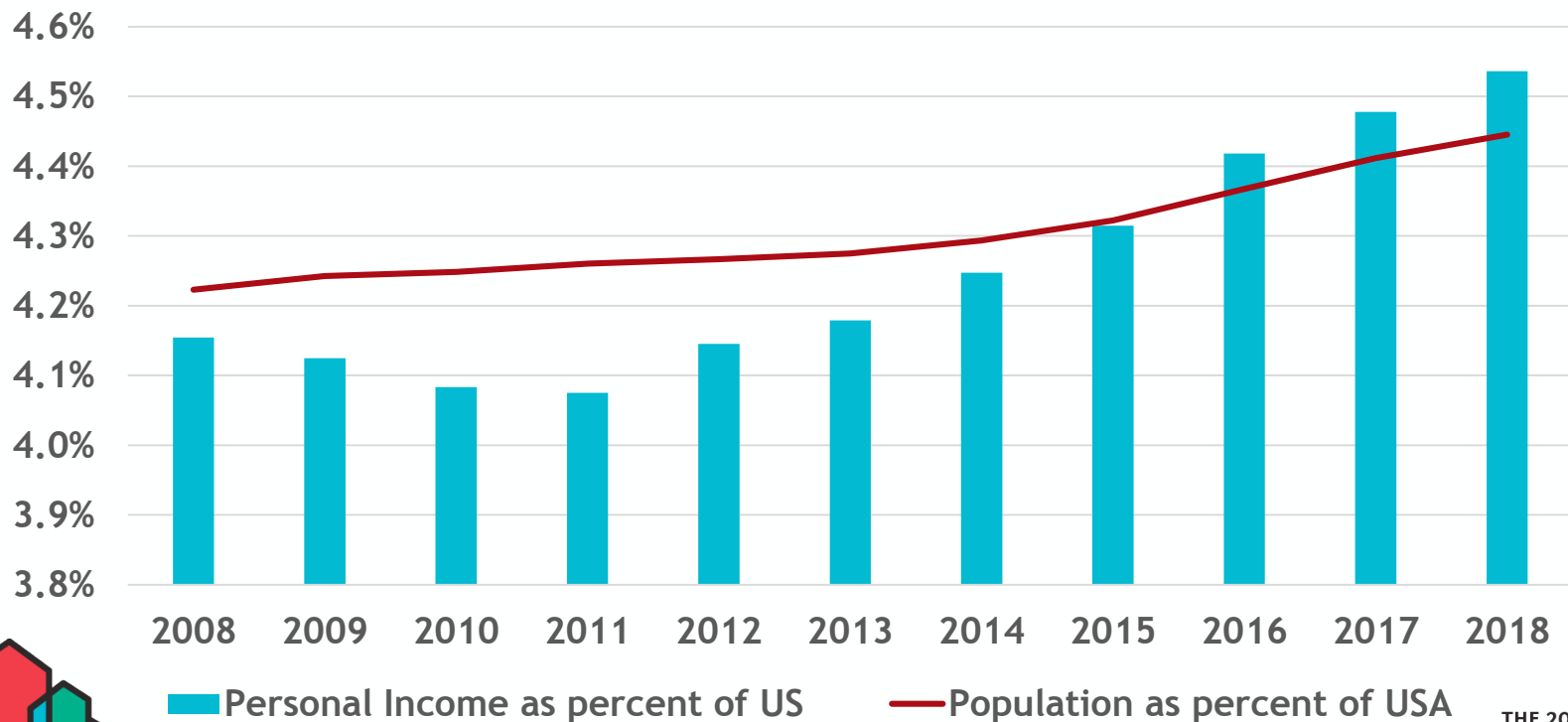
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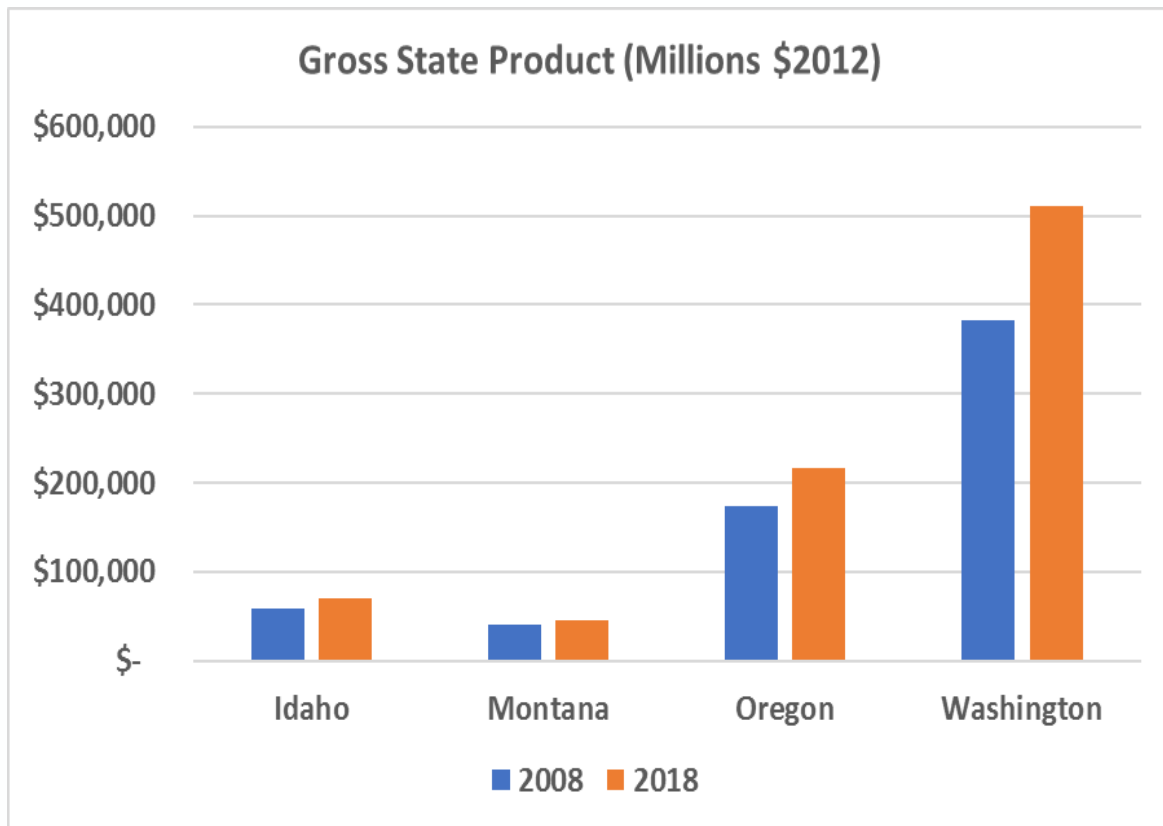


# Regional Share of Population and Income is increasing

Regional Population and Income as Percent of Nation



# Regional Gross State Product has been growing significantly Faster than Nation

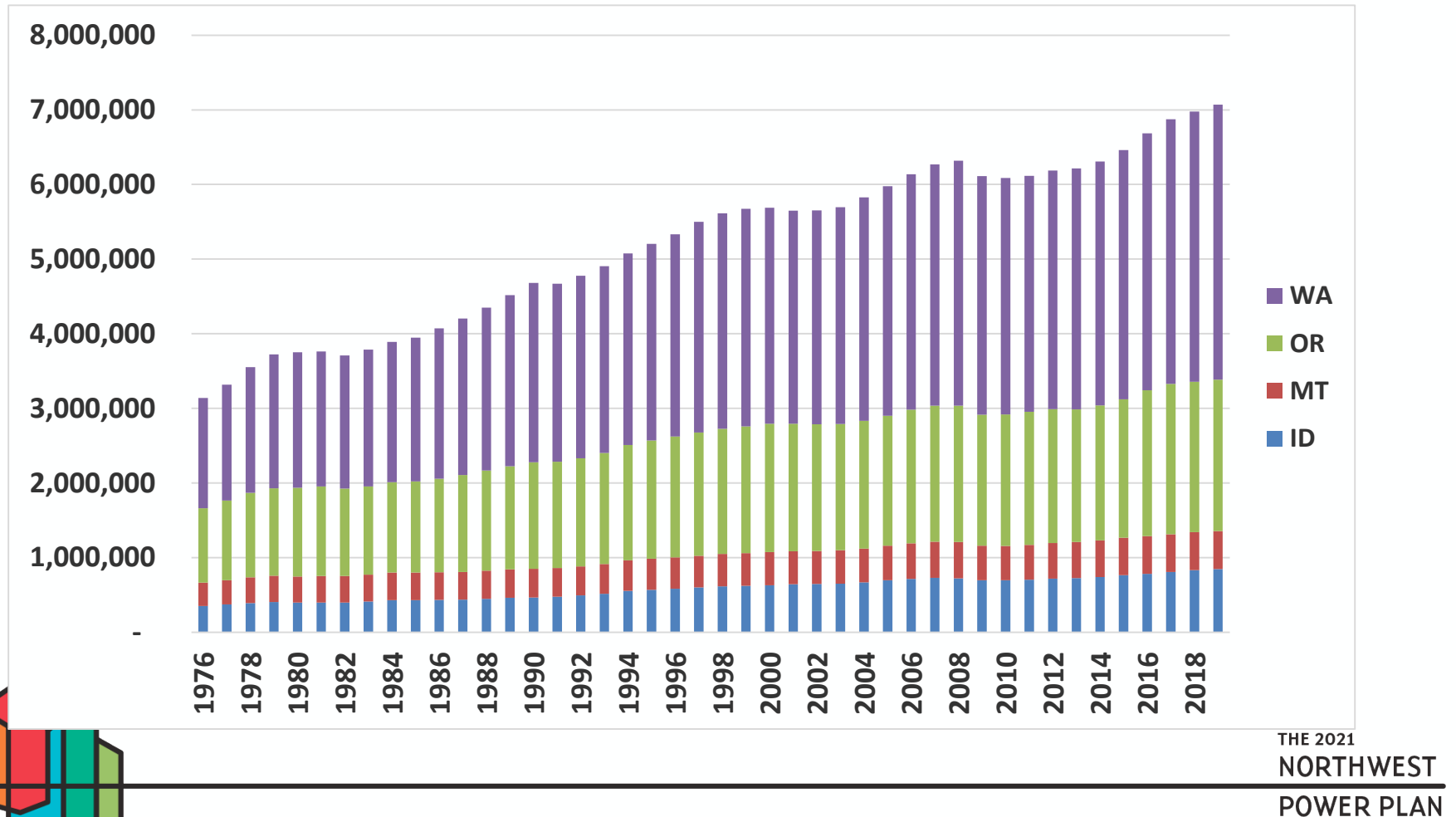


	Annual Growth Rate Past 10 years
United States	1.8%
Idaho	1.7%
Montana	1.4%
Oregon	2.2%
Washington	3.0%
Region	2.6%



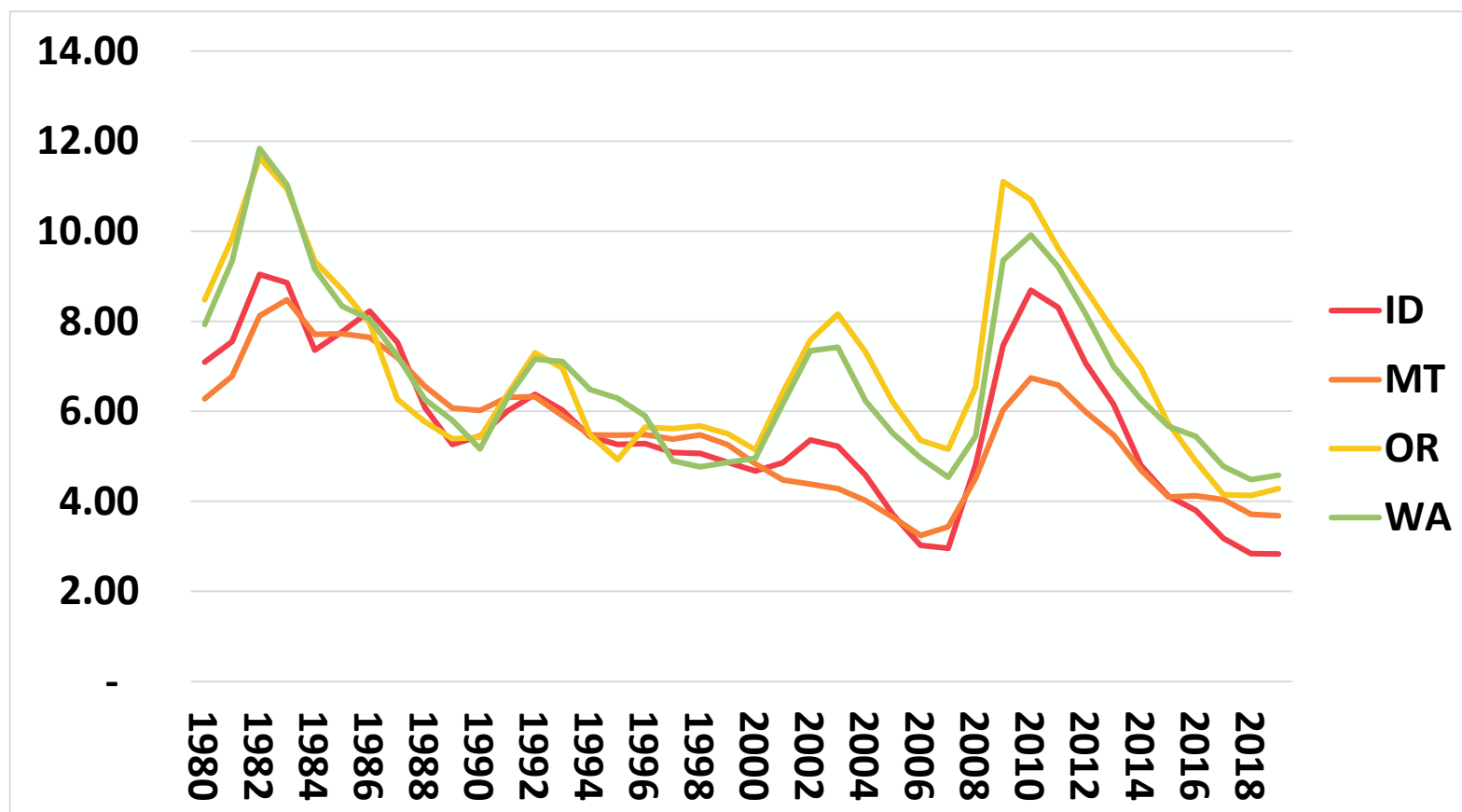
# Regional Employment Continues to Expand

*(but 2019 rates suggest a slowdown (based on first 6 months of 2019))*



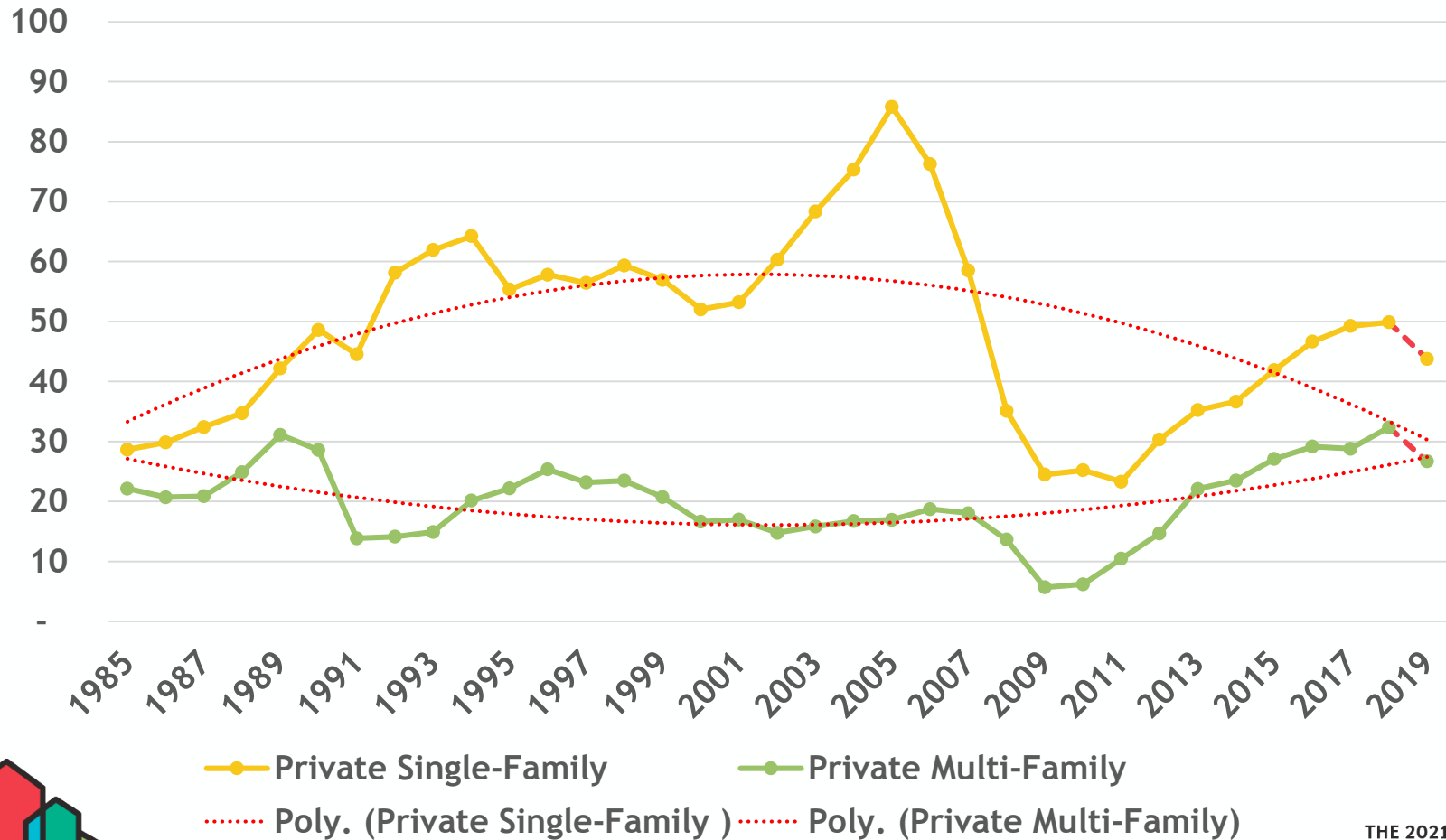


# Regional Unemployment Rate were at Historical Low levels (*But seem to be leveling off*)



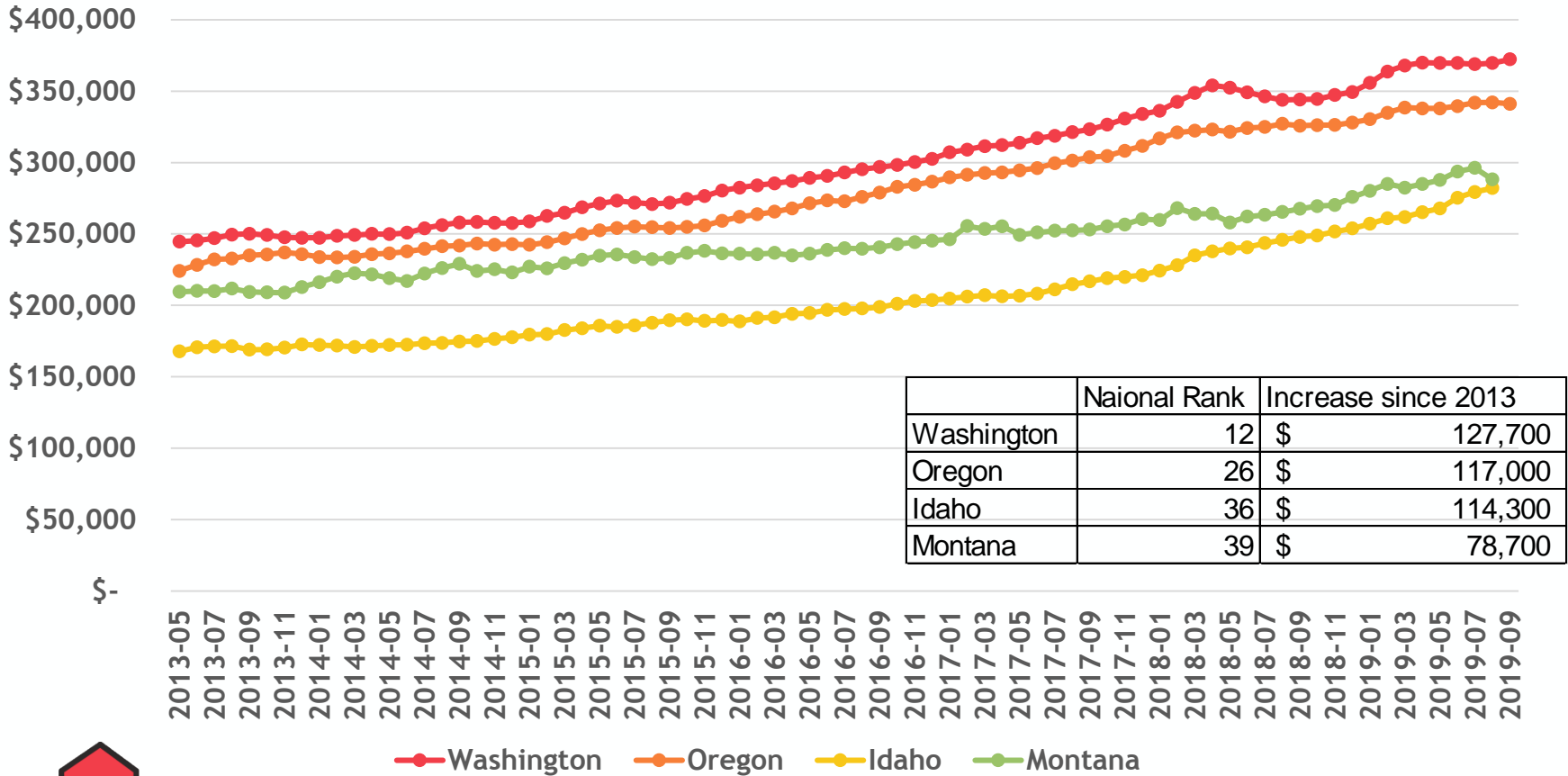
# Housing Starts are on the decline after their rapid recovery post 2011

Regional Housing Starts 1985-2019 (1000)



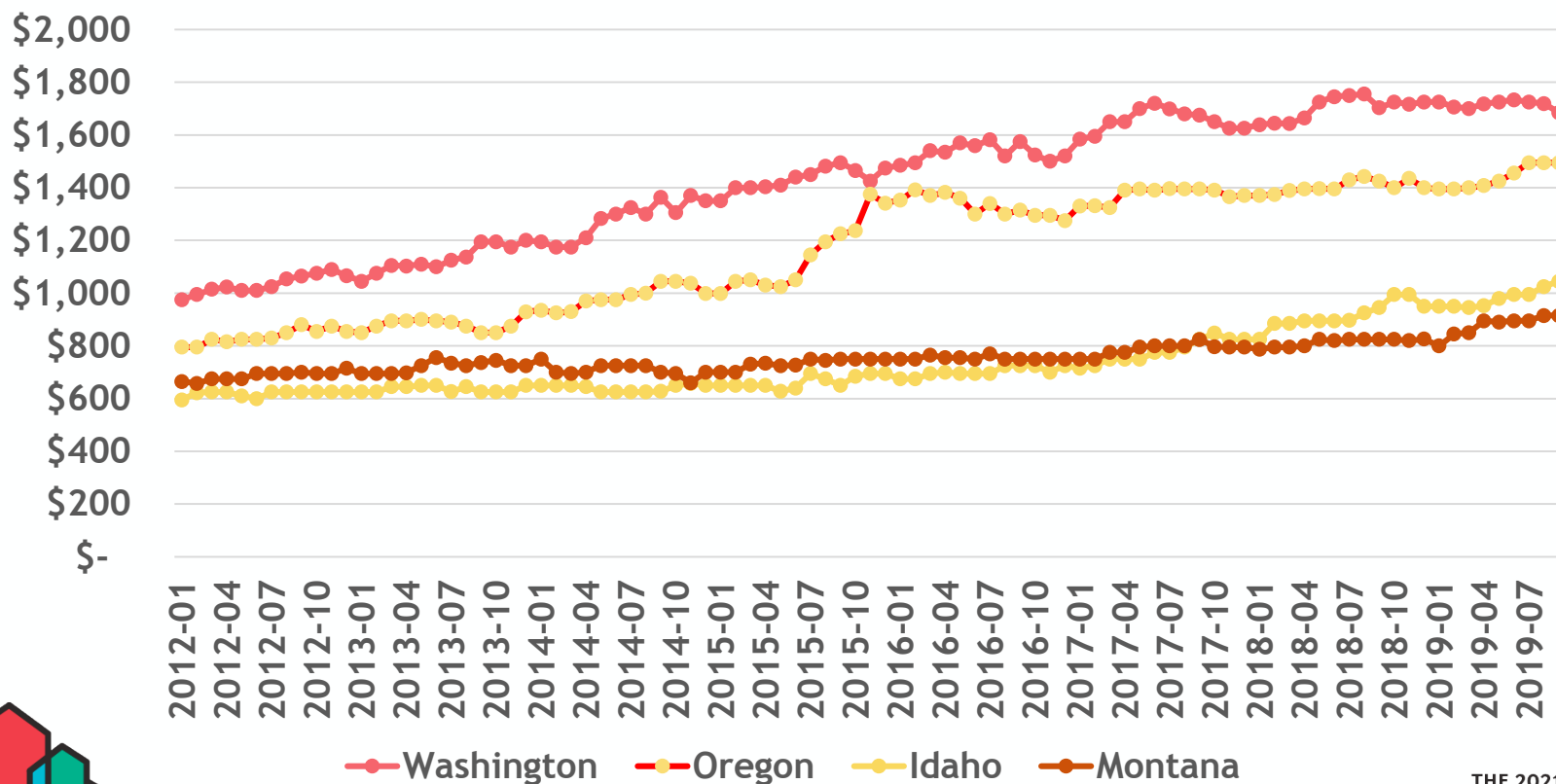
# Housing Prices seem to be leveling off in Washington and Oregon

Rise in Single Family Housing Price Continues



# Median Rental prices seem to have stabilized in Oregon and Washington but increasing in Idaho and Oregon

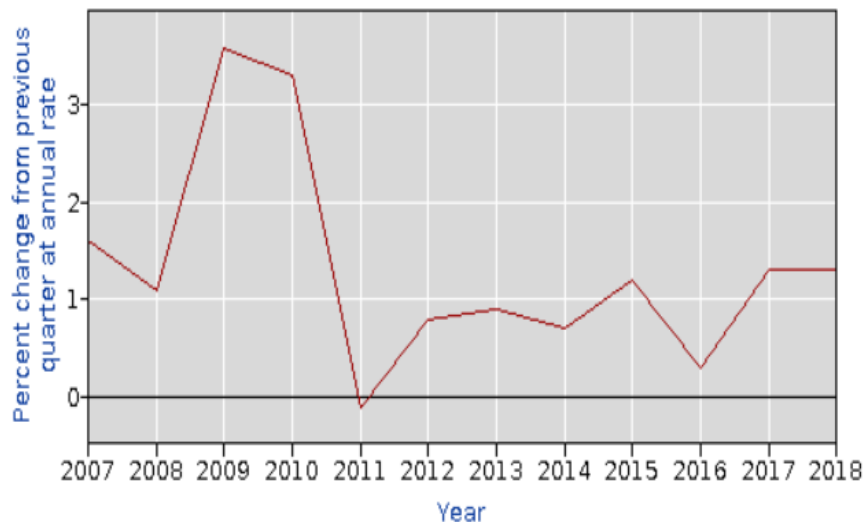
Median Rental Price (Multi-family)



# National Labor Productivity Declining compared to pre-recessionary period

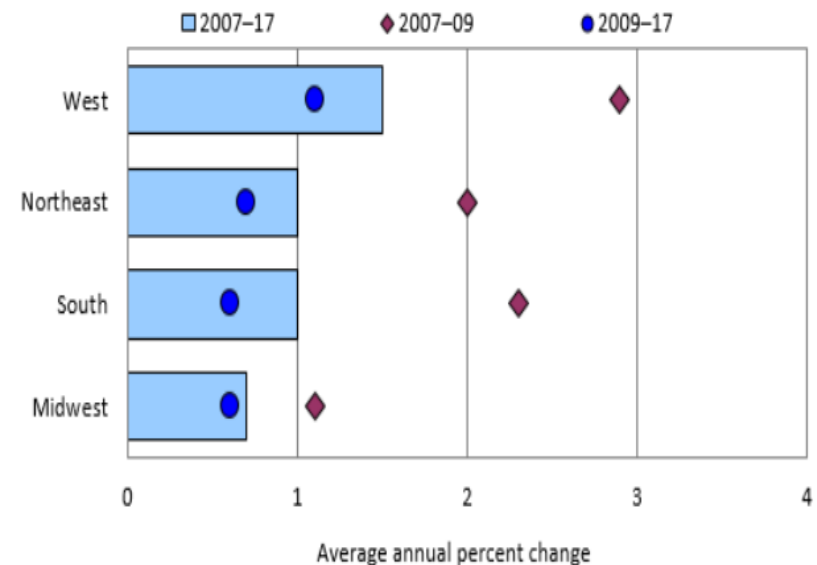
## Major Sector Productivity and Costs

Series Id: PR884006092  
 Sector: Business  
 Measure: Labor productivity (output per hour)  
 Duration: Percent change from previous quarter at annual rate  
 Base Year: -



- Over the last decade Labor productivity in Western US far exceeds Southern and Midwest regions

Figure 4. Labor productivity, by Census region, average annual percent change, 2007–17



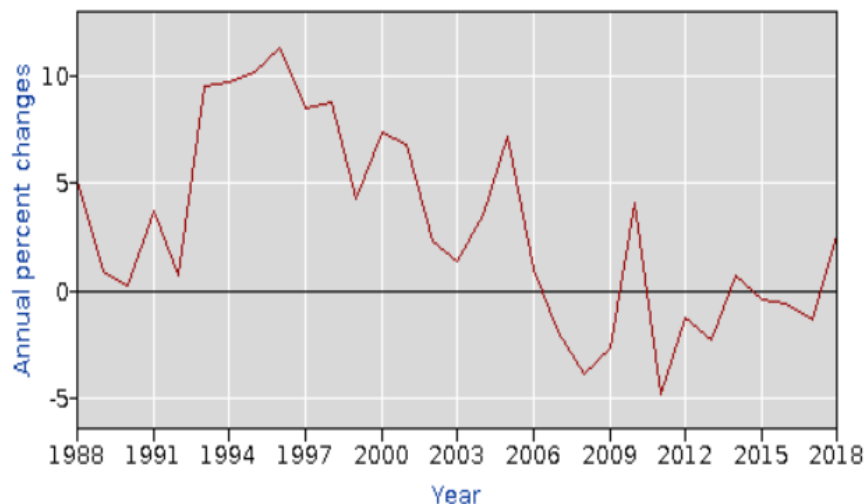
Source: U.S. Bureau of Labor Statistics.



# Labor productivity in Electric Utility Segment shows some improvement in 2018

## Industry Productivity and Costs

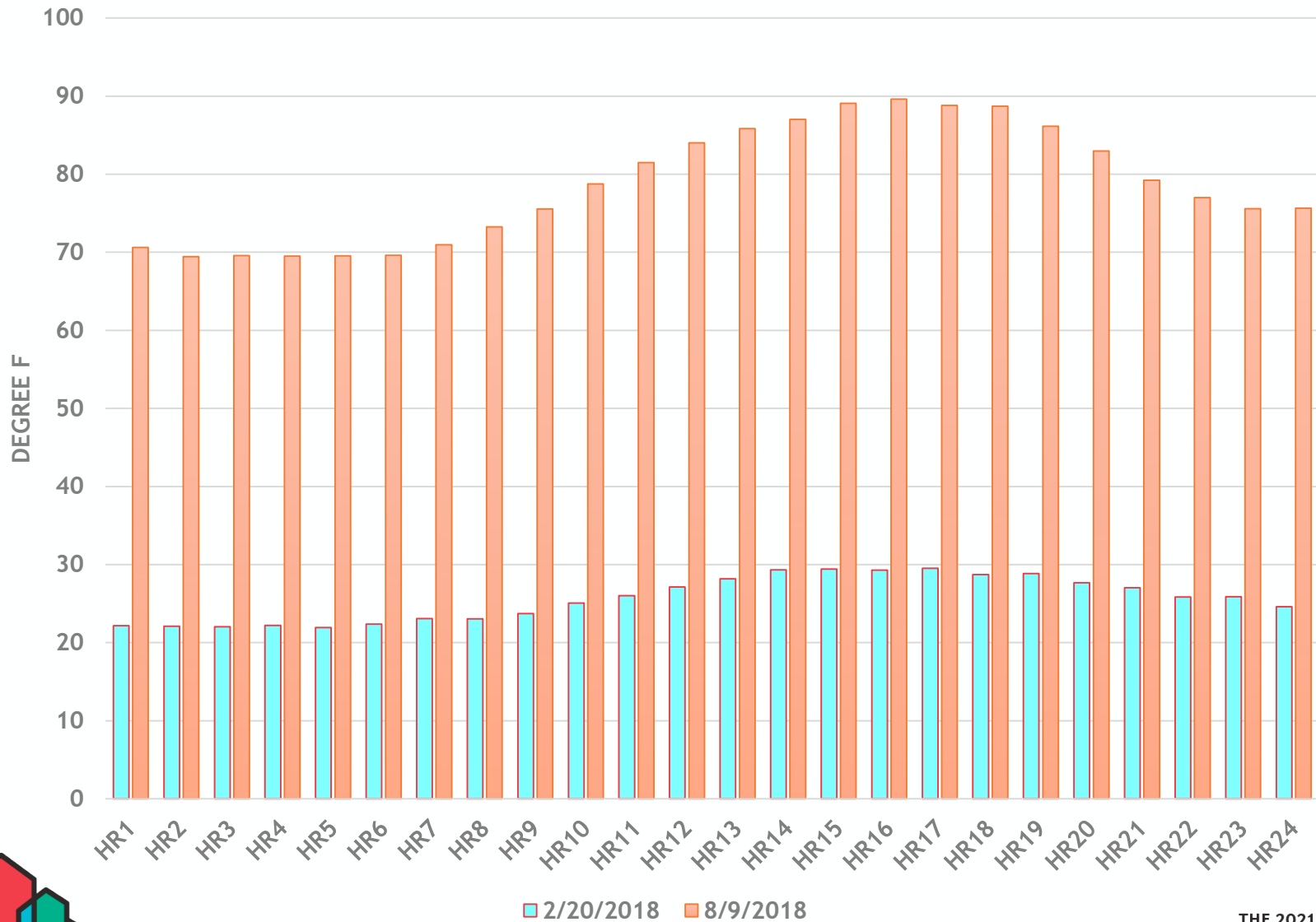
Series Id: IPUCN2211\_L001  
Series Title: Annual percent change of labor productivity for NAICS 2211, electric power generation, transmission and distribution  
Sector: Utilities  
Industry: Electric power generation, transmission and distribution  
NAICS Code: 2211  
Measure: Labor productivity (2007=100)  
Duration: Annual percent changes  
Base Year: -



# Impact of Temperature on Loads



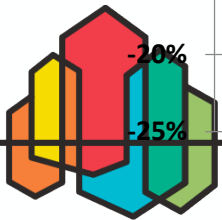
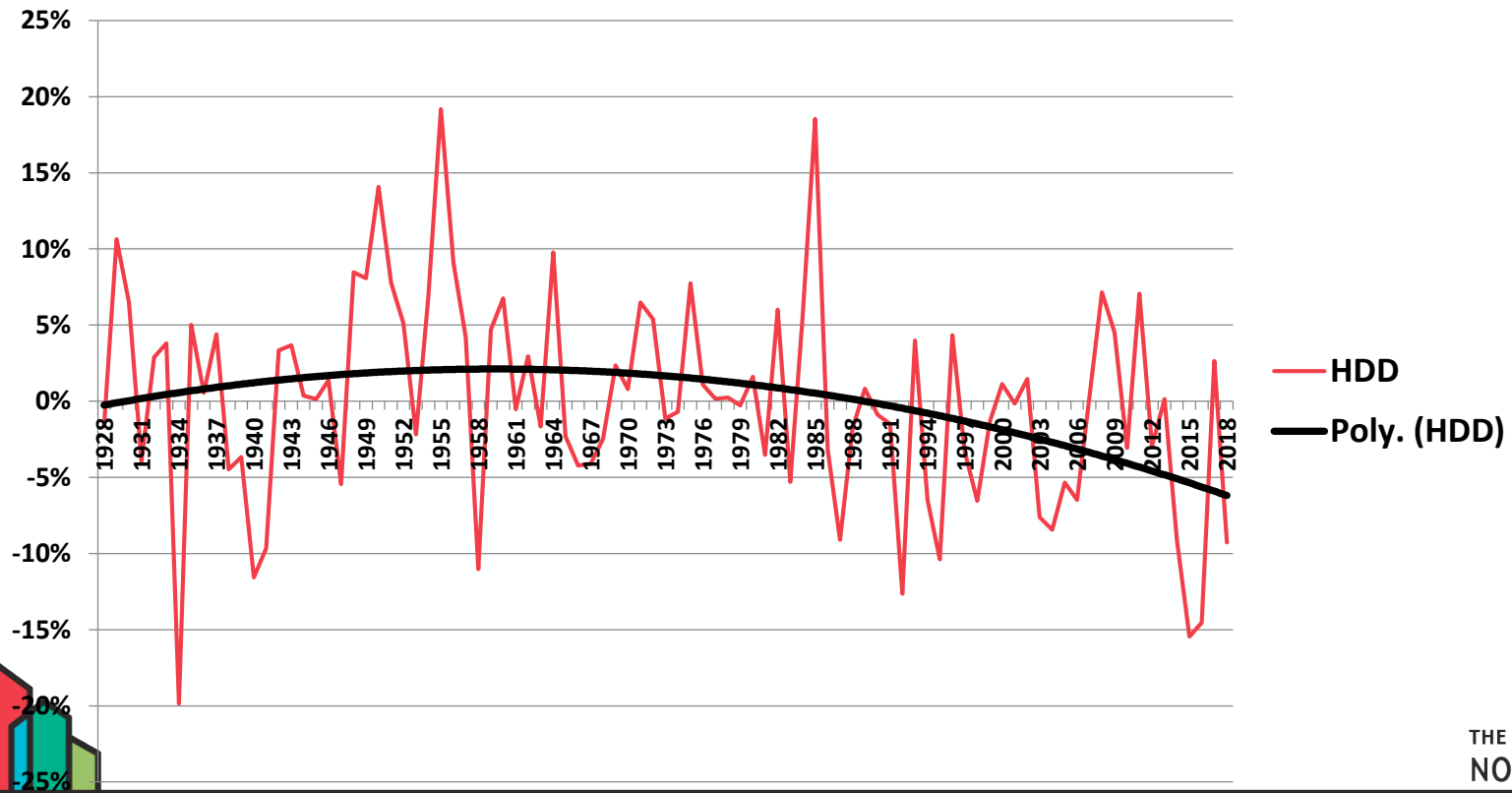
## Lowest and Highest Regional Temperature in 2018



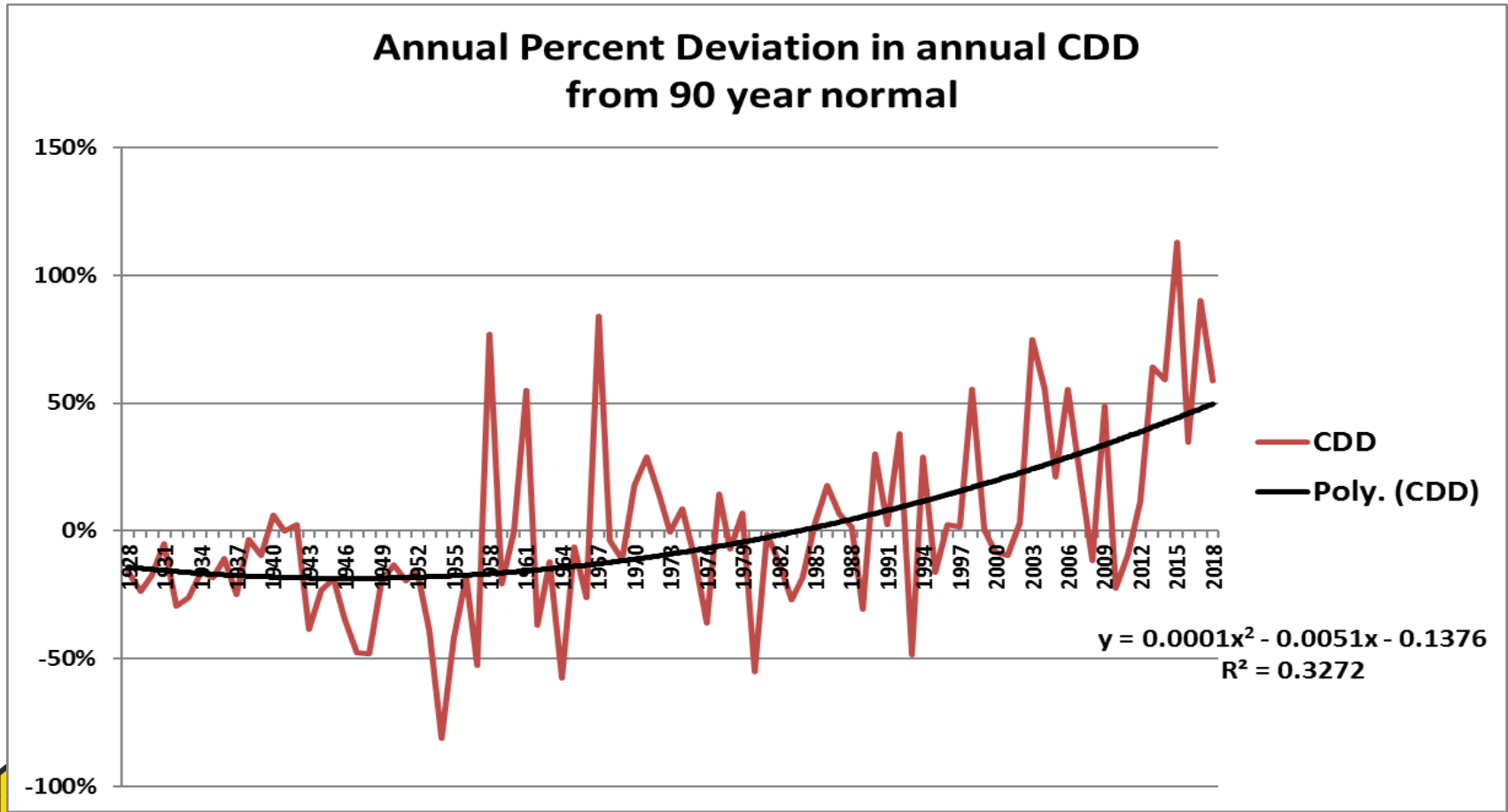


# Trends in Temperatures Heating

Annual Percent Deviation in annual HDD  
from 90 year normal



# Trends in Temperatures Cooling



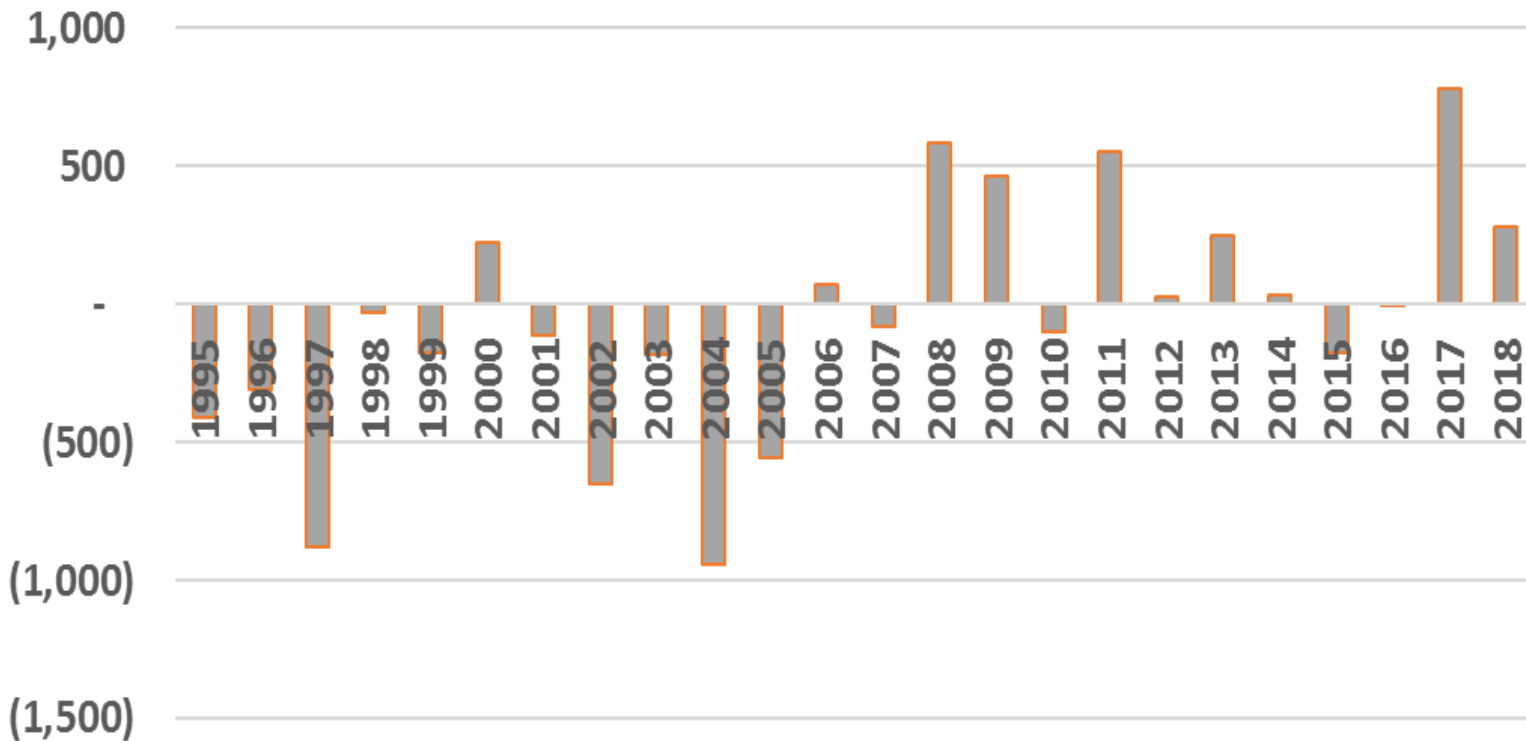
# Impact of Weather on Sales and Loads

- Winter of 2018 was warmer than average of past 91 years experienced in the region
- Heating requirements decreased by 9%
- Summer cooling requirements increased by 23%



# Temperatures continue to dominate change in loads

Impact of Temperature on loads



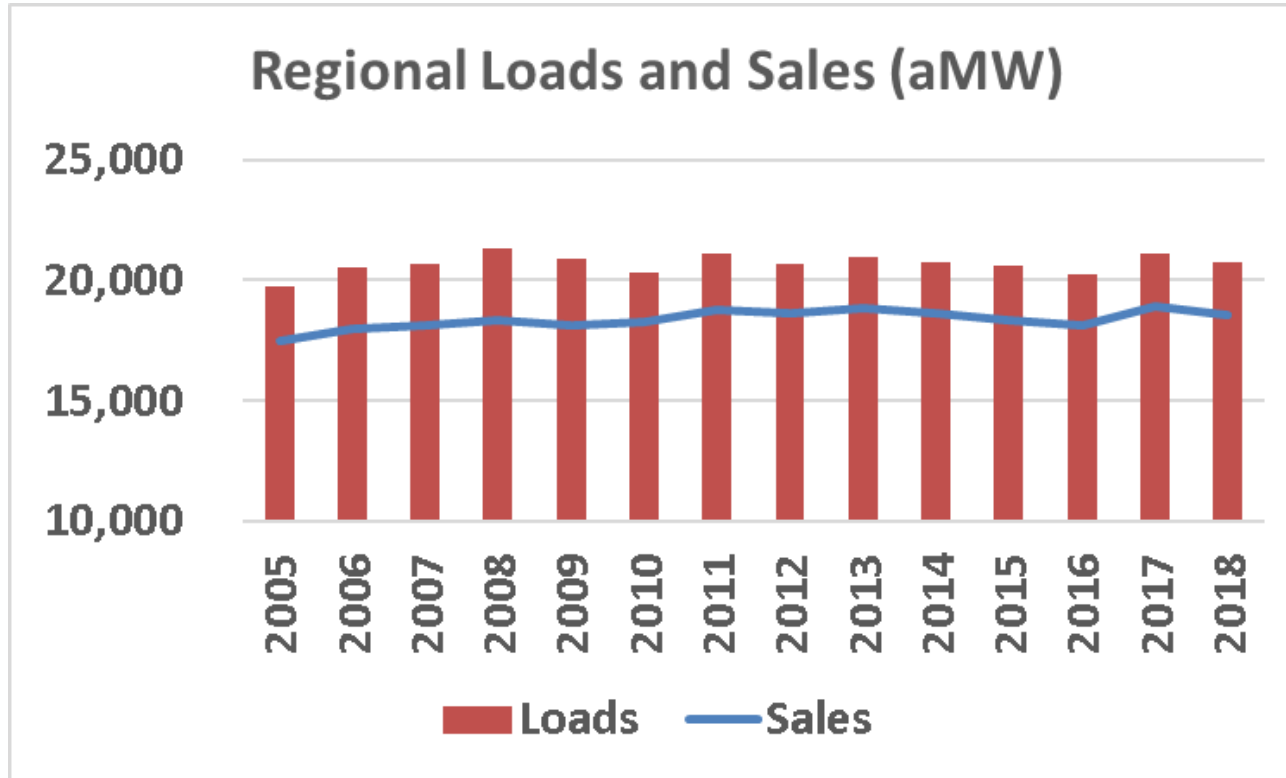
Increase  
in load  
due to  
higher  
than  
Normal

Decrease  
in load  
due to  
Lower  
than  
Normal



Sales figure  
for 2018 was  
updated

## Flat load Growth Continues



### Contributing Factors

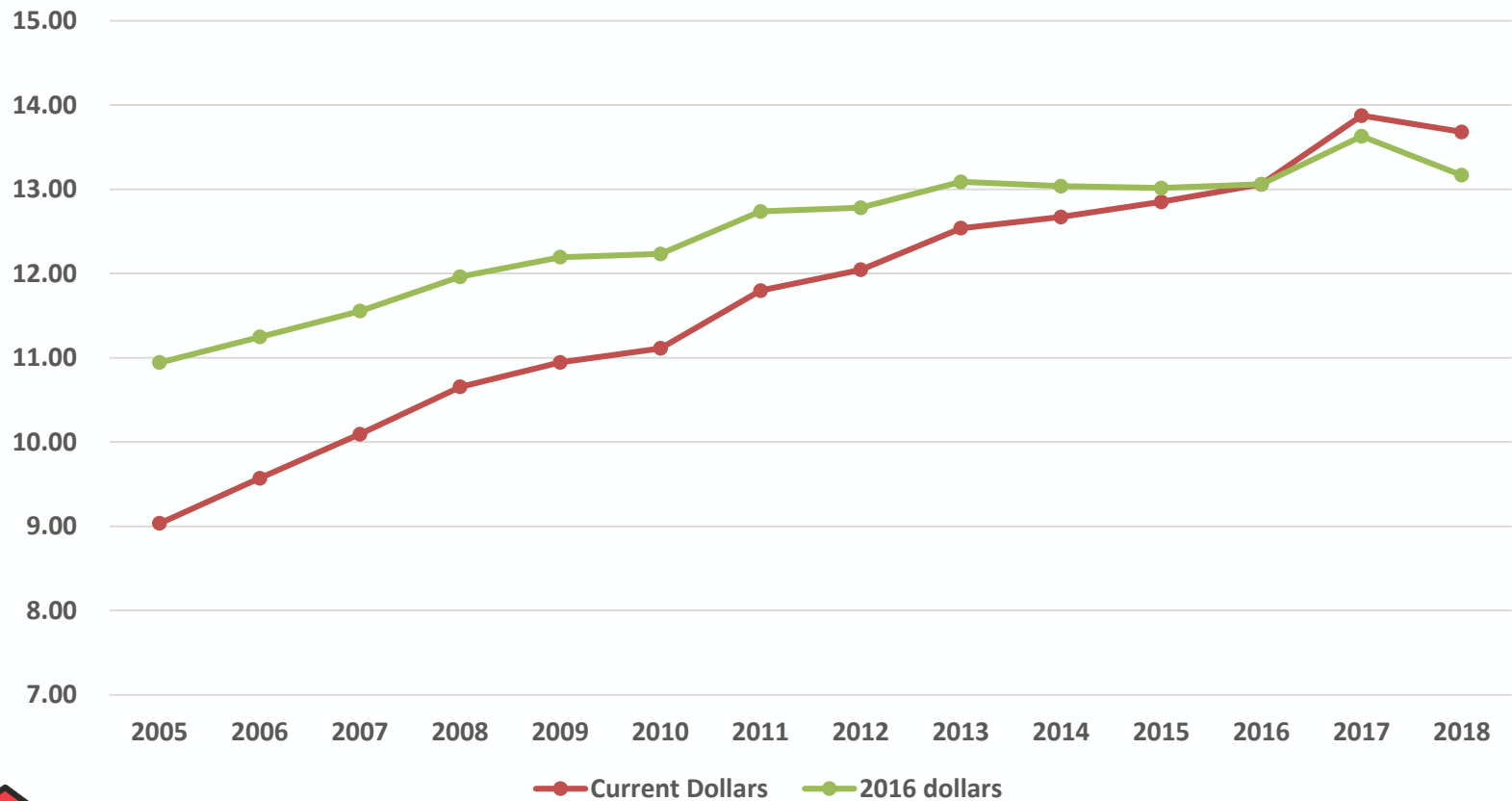
- Improved Technology
- Conservation
- acquisitions
- Higher Codes and Standards
- Shift in regional economic mix
- Doing more with less
- Warmer winters
- Behind-the-meter generation



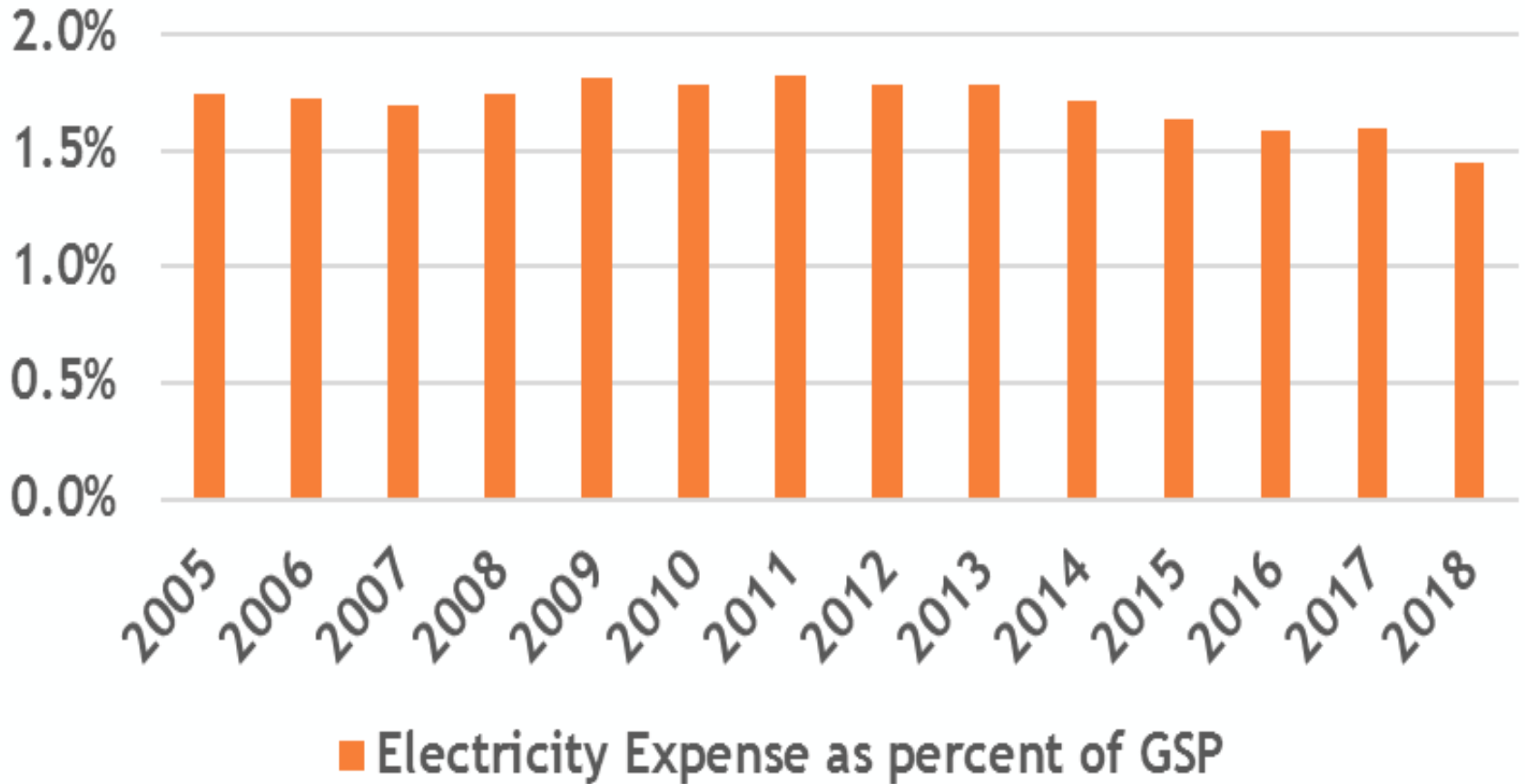
Revenue  
Figures were  
updated

# Revenues Collected in 2018 went down by \$200 M

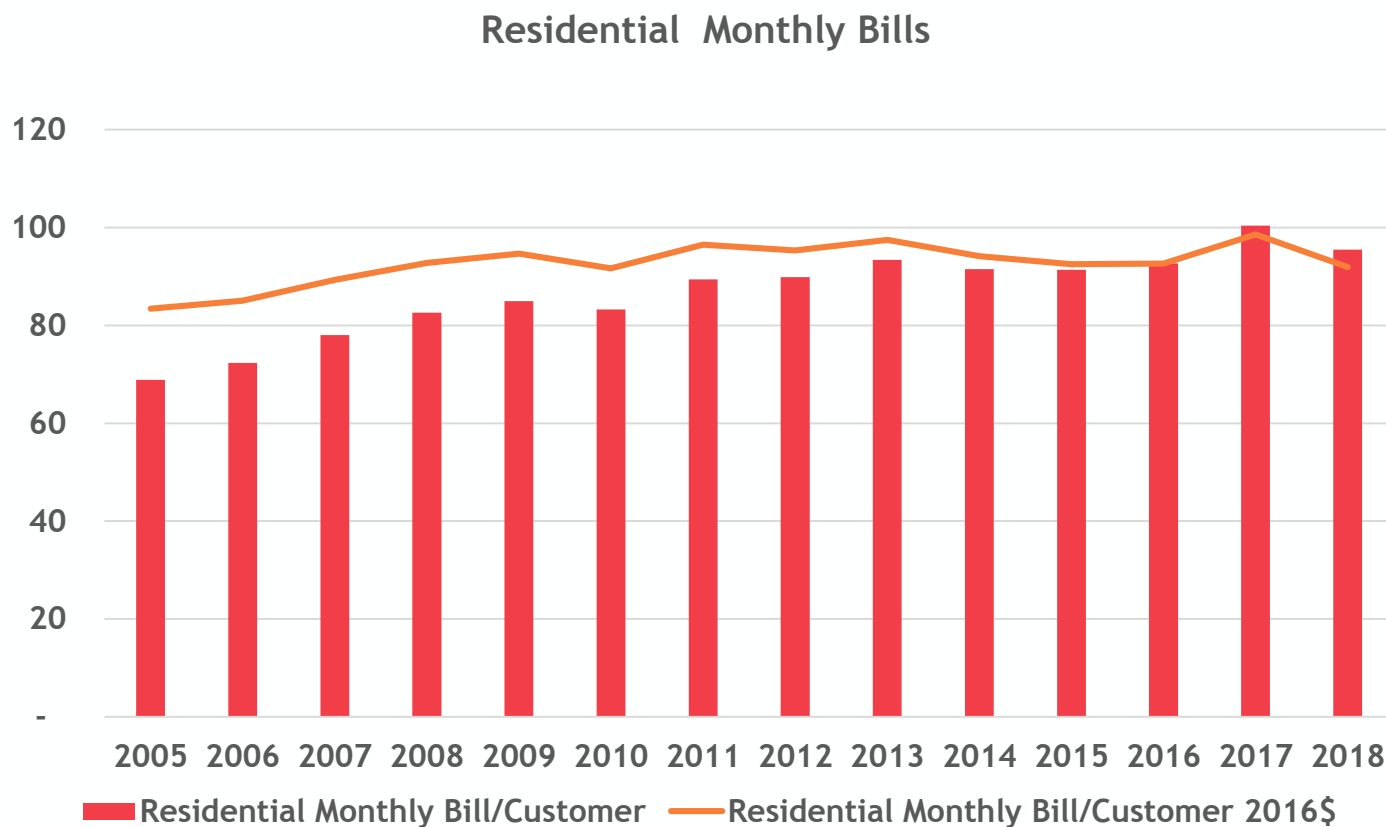
Electric Utilities Revenues Collected in 2018 went down (Billions of Dollars)



## Electricity Expense as percent of GSP



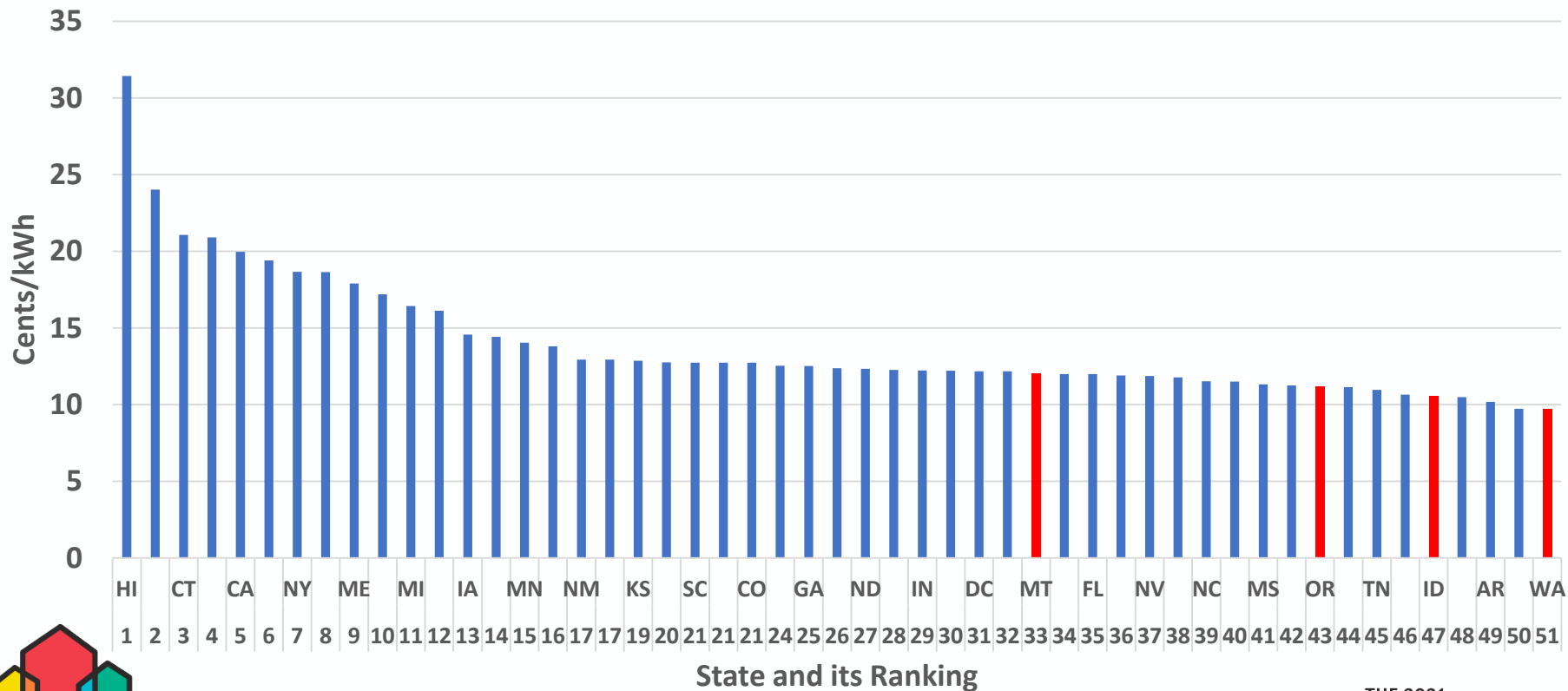
# Residential Monthly Bills Declined (in part due to warmer winter)



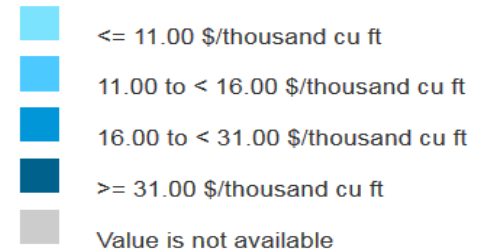
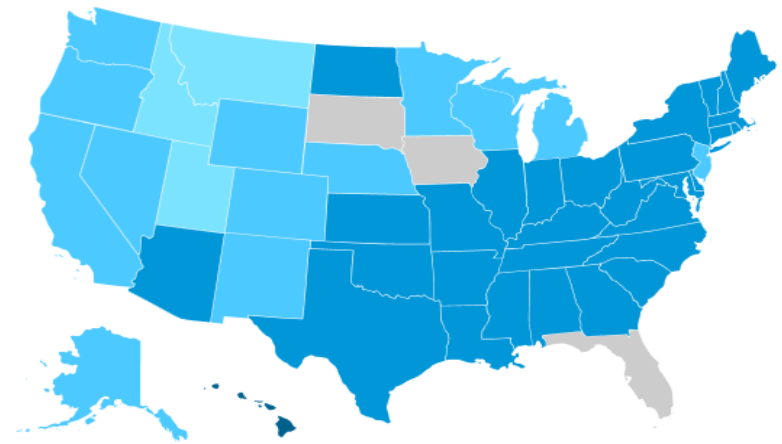
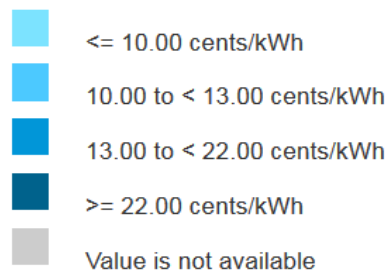
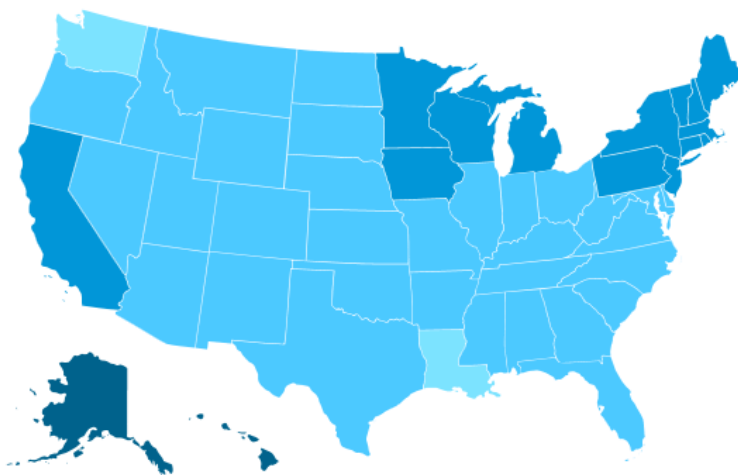


# Regional Electricity Rates Continue to be some of the Lowest in the Nation

State Ranking of Residential Rates  
July 2019



# Northwest Has Low Residential Electricity and Natural Gas Rates

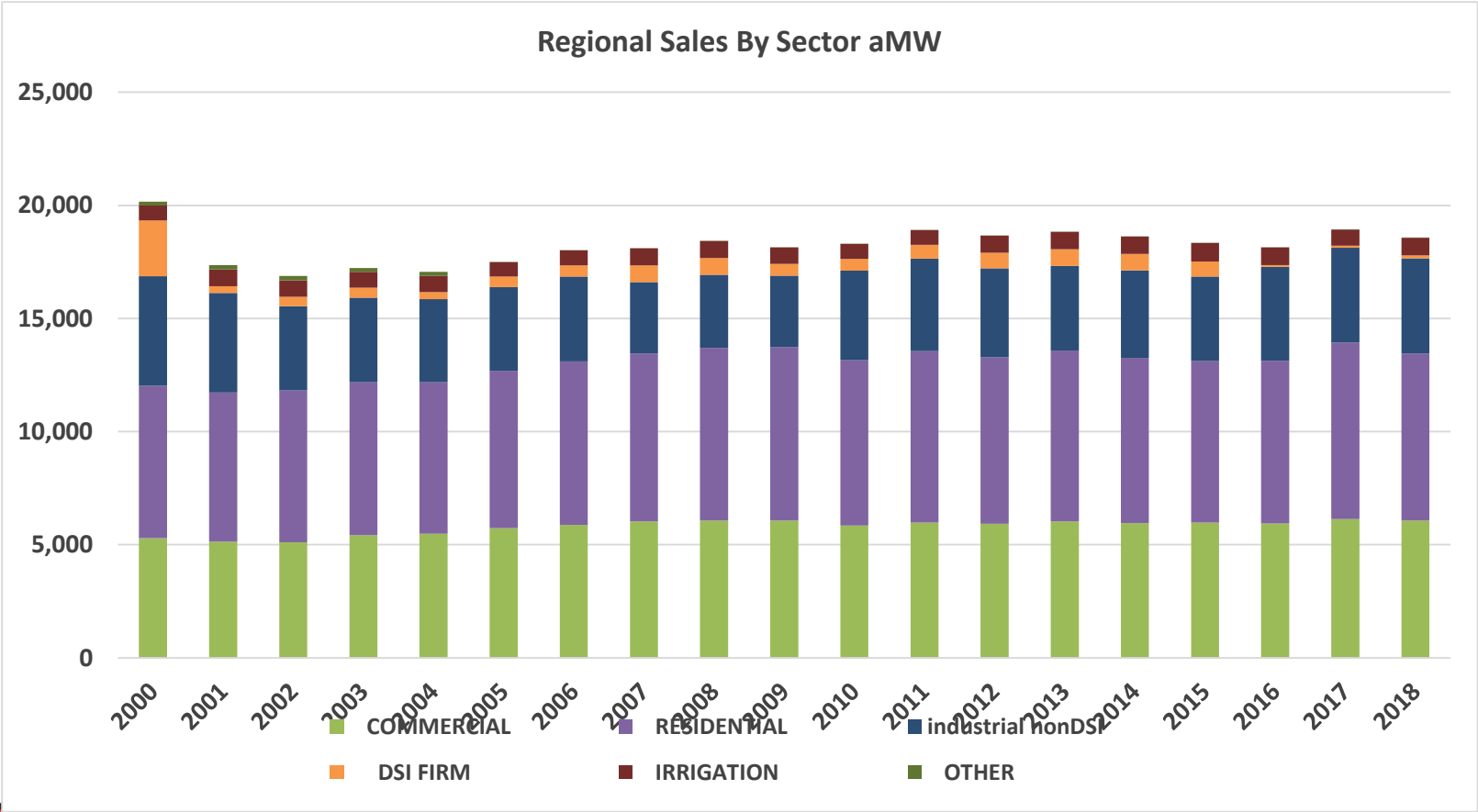


# Regional Sales and Loads



2018 sales  
figures  
were  
updated

# Regional Sales have not surpassed their year 2000 Levels



Sales figures  
were  
updated

## Regional Declined Over 350 aMW or 2%

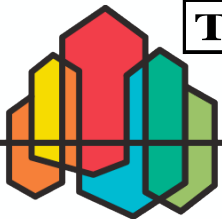
	2017	2018
COMMERCIAL	6,132	6,065
RESIDENTIAL	7,800	7,389
INDUSTRIAL FIRM	4,278	4,337
DSI FIRM	85	130
NON-DSI FIRM	4,193	4,207
IRRIGATION	715	778
TOTAL FIRM SALES	18,928	18,574



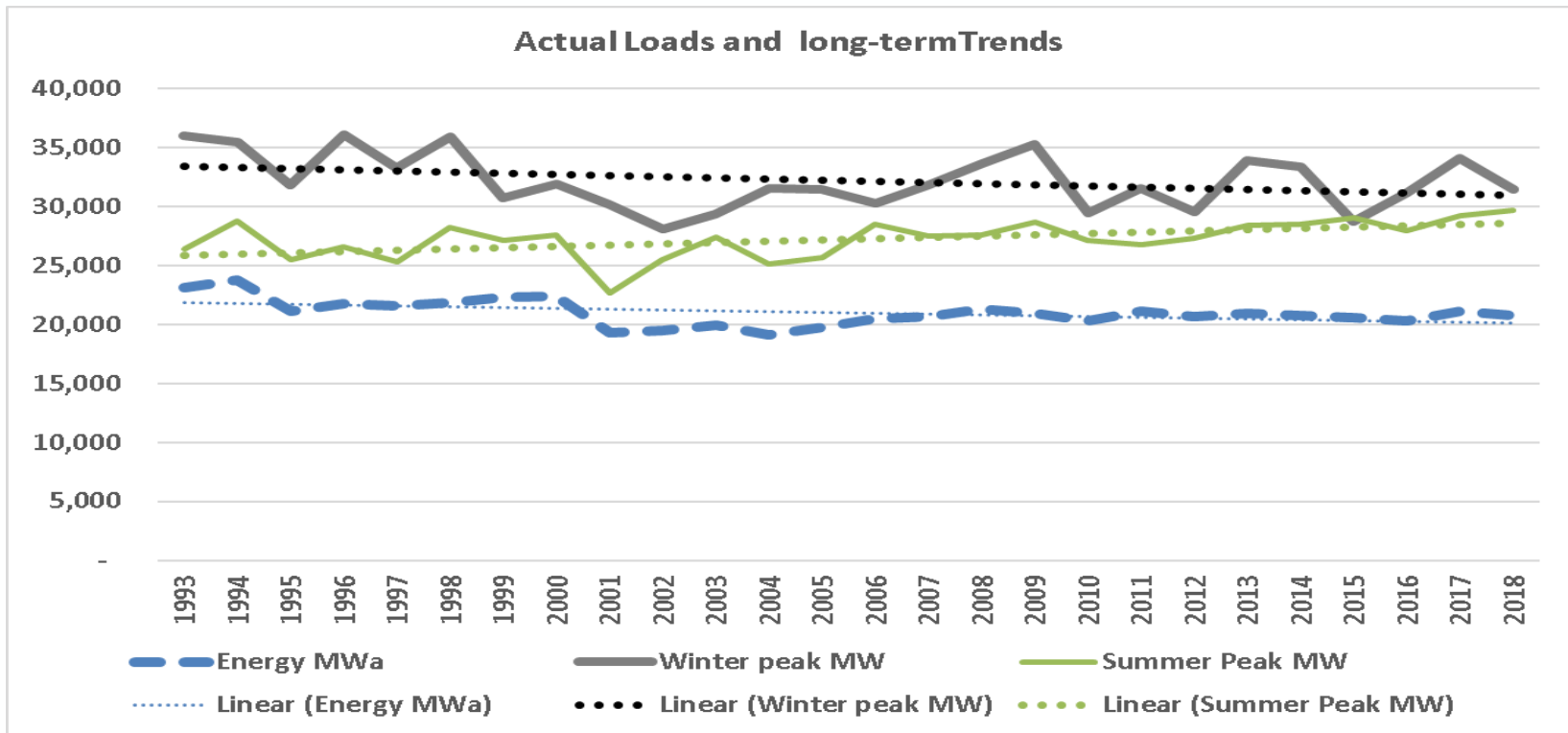
Sales figures  
were  
updated

# Public Utility Demand Declined More than IOUs

<b>Public Utilities</b>	<b>2017</b>	<b>2018</b>	<b>% CHANGE year-over-year</b>
<b>COMMERCIAL</b>	<b>2,504</b>	<b>2,454</b>	<b>-2%</b>
<b>RESIDENTIAL</b>	<b>3,589</b>	<b>3,370</b>	<b>-6%</b>
<b>INDUSTRIAL FIRM</b>	<b>2,699</b>	<b>2,809</b>	<b>4%</b>
<b>DSI FIRM</b>	<b>85</b>	<b>130</b>	<b>53%</b>
<b>NON-DSI FIRM</b>	<b>2,614</b>	<b>2,679</b>	<b>3%</b>
<b>IRRIGATION</b>	<b>357</b>	<b>393</b>	<b>10%</b>
<b>TOTAL FIRM SALES</b>	<b>9,148</b>	<b>9,026</b>	<b>-1%</b>
<b>IOUs</b>	<b>2017</b>	<b>2018</b>	<b>% CHANGE</b>
<b>COMMERCIAL</b>	<b>3,628</b>	<b>3,612</b>	<b>-0.5%</b>
<b>RESIDENTIAL</b>	<b>4,211</b>	<b>4,020</b>	<b>-5%</b>
<b>INDUSTRIAL FIRM</b>	<b>1,553</b>	<b>1,527</b>	<b>-2%</b>
<b>IRRIGATION</b>	<b>358</b>	<b>386</b>	<b>8%</b>
<b>Total Firm Sales</b>	<b>9,753</b>	<b>9,548</b>	<b>-2%</b>



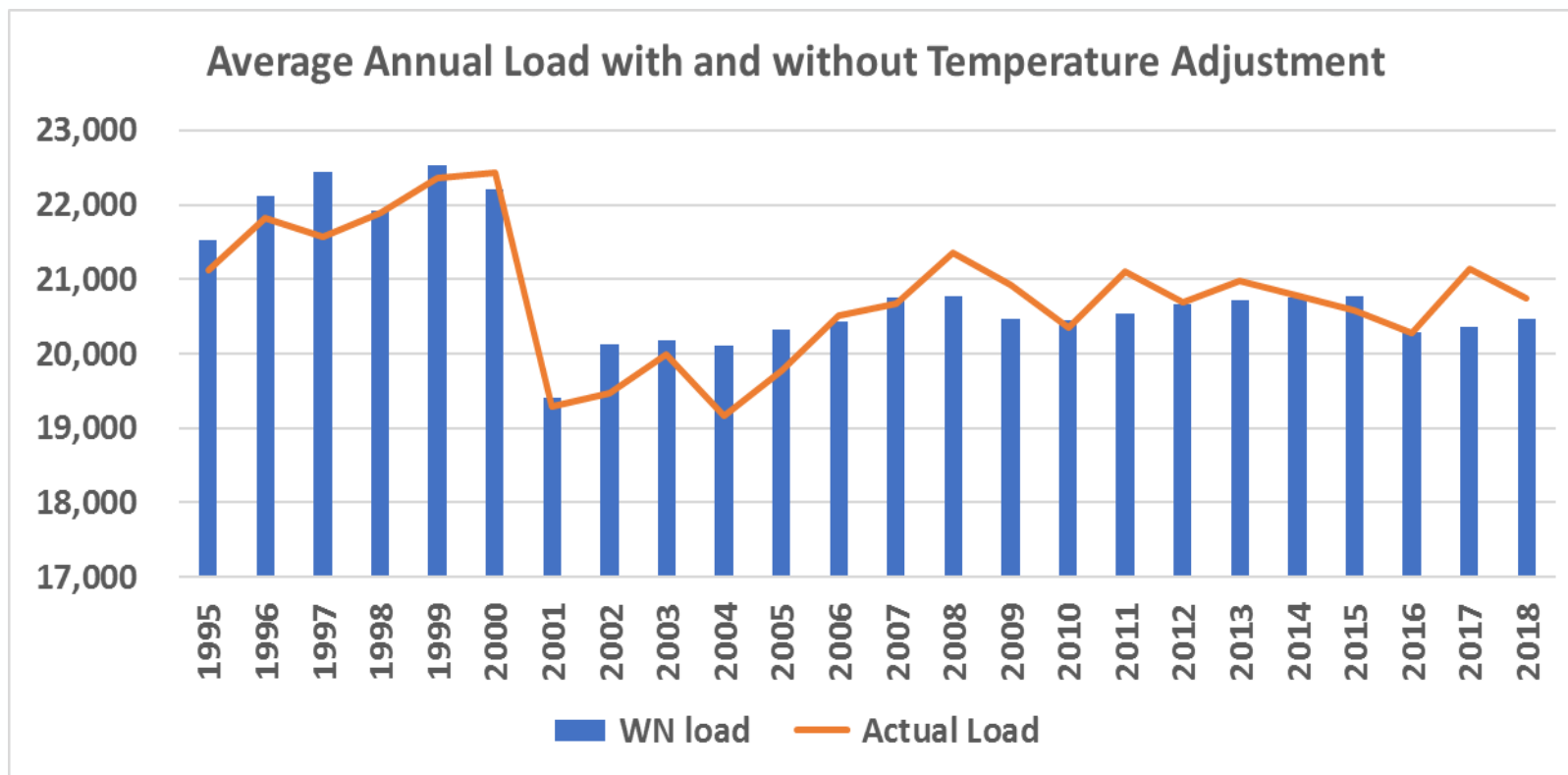
# Summer Peaks have been growing at 1.5% per year since end of last recession



Peak	AAGR 2011-2018
Winter	0.0%
Spring	-0.1%
Summer	1.5%
Fall	-0.6%

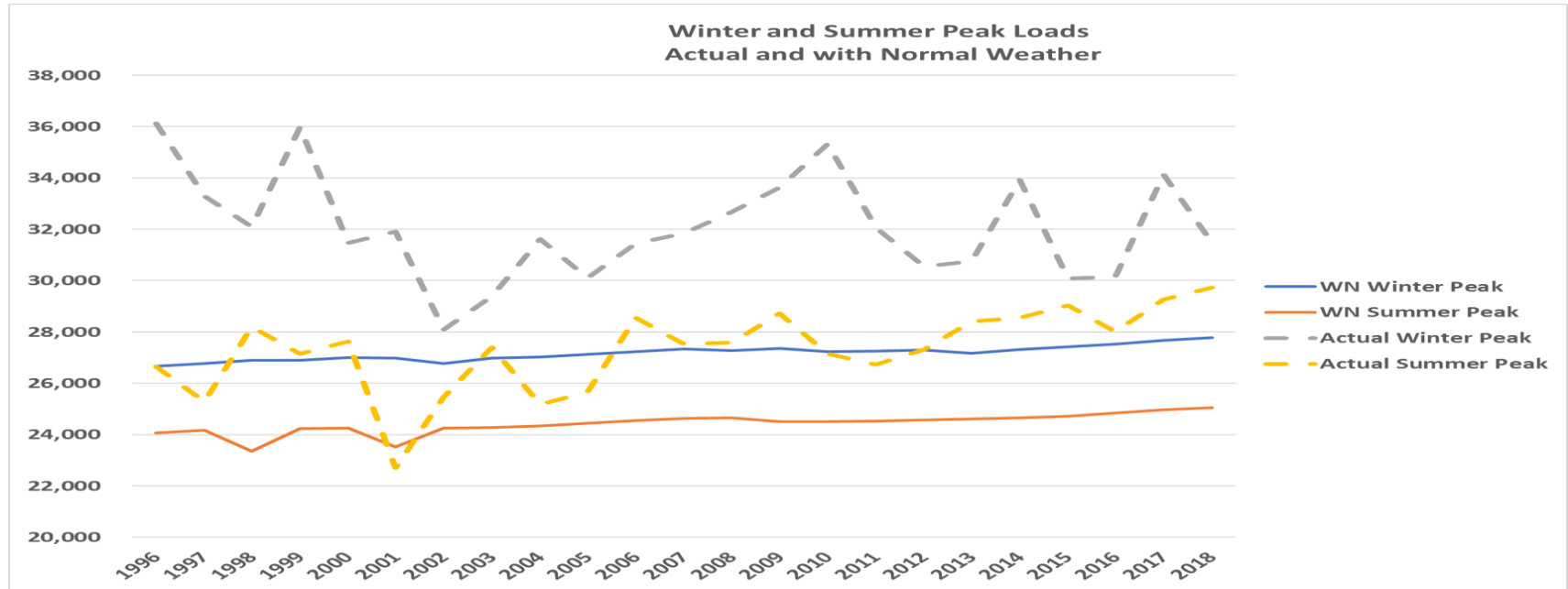


# Regional Loads (aMW) show small fluctuations since 2008





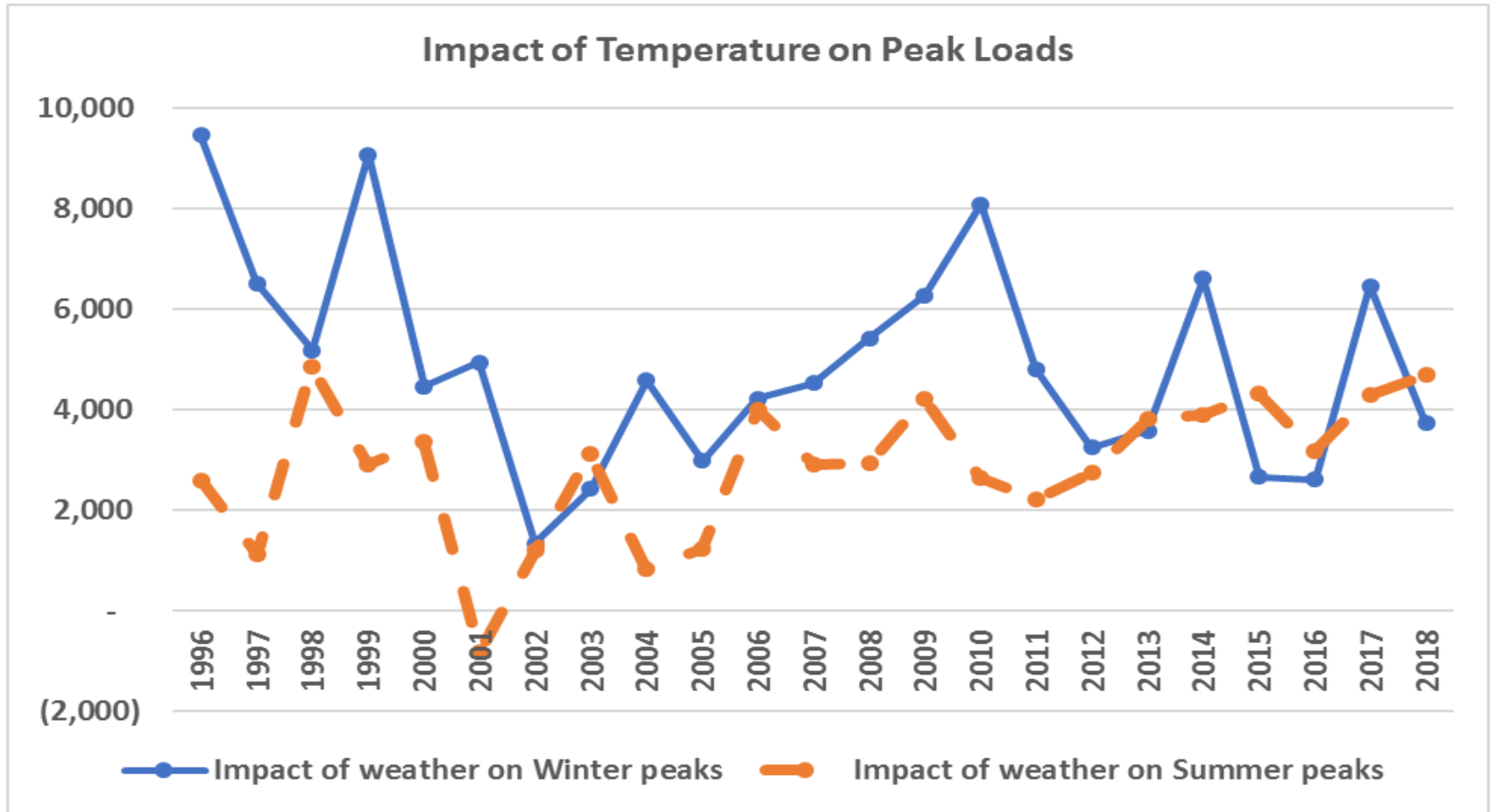
# Long-term Growth in load has been well below population and economic growth



	2010-2018	1995-2018
WN Winter Peak	0.25%	0.19%
WN Summer Peak	0.28%	0.18%
Actual Winter Peak	-1.42%	-0.62%
Actual Summer Peak	1.14%	0.50%

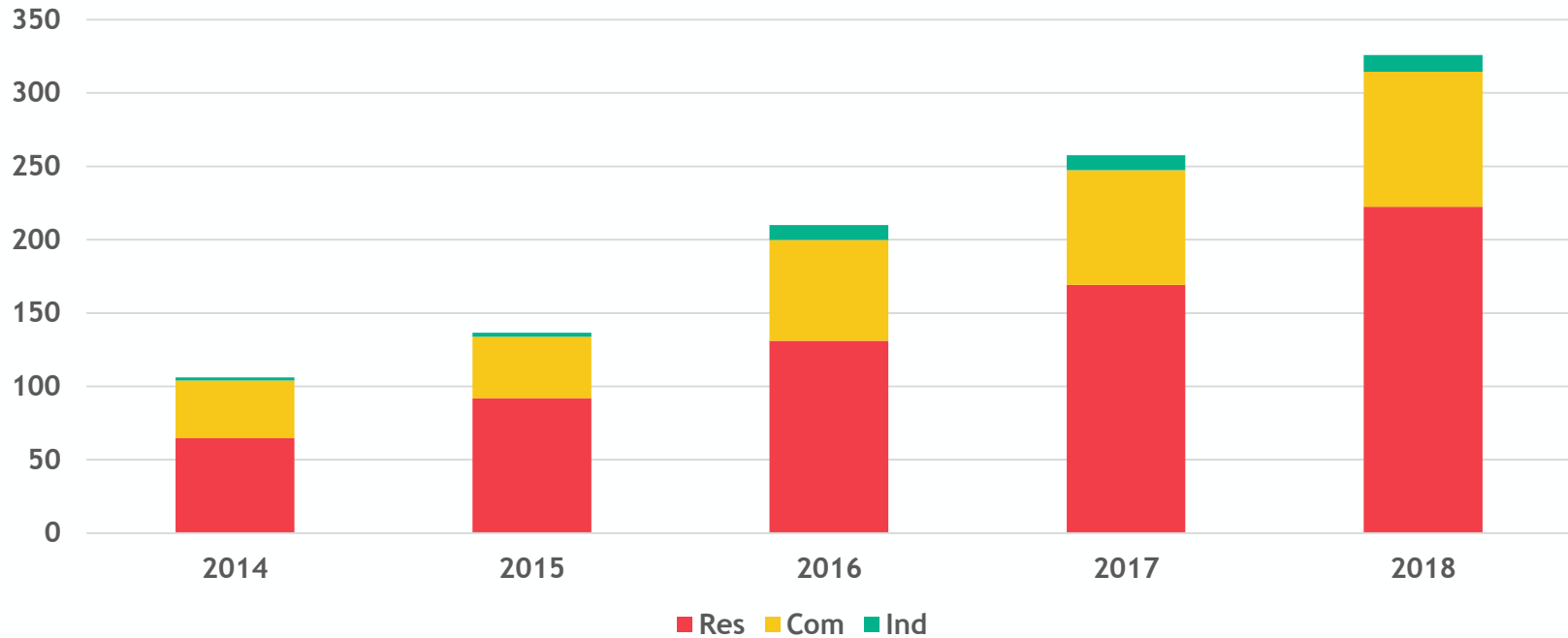


# Variations in Regional Temperatures Create Large Swings in Peak Loads



# BTM solar has been growing on average Annual Rate of 32% since 2014

Growth in Behind-the-Meter Solar Capacity Install (MW)



	Res	Com	Ind	Total
2014	65	39	2	106
2015	92	42	3	137
2016	131	69	10	210
2017	169	78	10	259
2018	222	92	11	326
AAGR	36%	24%	55%	32%

GWh energy	Res	Com	Ind	Total
2014	75	54	2	131
2015	102	56	4	162
2016	158	90	14	261
2017	205	98	15	318
2018	271	121	16	408
AAGR	38%	22%	60%	33%



# 2018 Time-of-Use Rate Schedules

- As of End of 2018 there were 12 TOU rate schedules offered in the region.
- Number of participating customers continues to go down.
- Idaho power, PacifiCorp, PGE had the largest number of customers on TOU.
- In total 2% of industrial, 0.1% of commercial and 0.3% of residential customers were on TOU rates.
- Majority of these were voluntary opt-in rates.
- None of the utilities offered peak pricing or real time pricing.

Number of Enrolled Customers	Residential	Commercial	Industrial	Total	Percent of Total Utility customers
2015	17,346	1,612	1,933	20,893	0.33%
2016	16,903	2,958	2,152	22,015	0.34%
2017	16,290	1,099	2,105	19,496	0.30%
2018	15,060	859	1,723	17,644	0.27%
% of customers	0.26%	0.11%	2.03%	0.27%	

Type of Dynamic Pricing Offered	
Time of Use Pricing	Yes
Real Time Pricing	None
Variable Peak Pricing	None
Critical Peak Pricing	None
Critical Peak Rebate	None



# Region Has Done More With Less Demand for Electricity

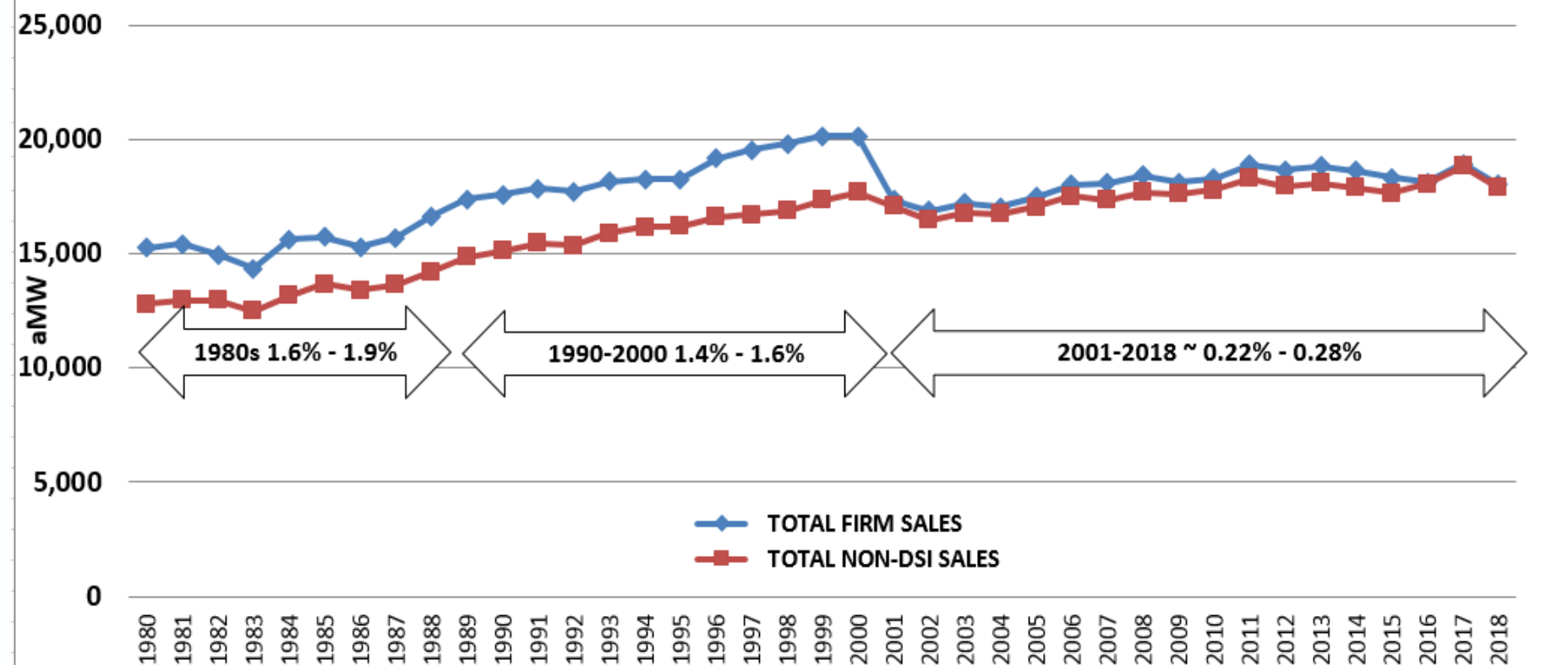
Average Annual Growth Rate	1995-2018	2010-2018
Population	1.4%	1.3%
Gross State Product	3.3%	3.2%
Energy	-0.1%	0.2%
Energy Net DSI	0.4%	0.5%
Actual Winter Peak	-0.6%	-1.4%
Actual Summer Peak	0.5%	1.1%
Energy under normal weather	-0.2%	0.01%
Winter Peak under normal weather	0.2%	0.2%
Summer Peak under normal weather	0.2%	0.3%



# Long-term regional Demand for Electricity over the past 40 years show continued decline

## Northwest Regional Sales (1980-2018)

Average Annual Growth Rates Shown:  
Total Sales (first value) and Sales Net of DSI (second value)



# How are 2019 Sales Shaping-Up?

- For the first 8 months of the 2019\* demand for electricity has gone down by about 1.3% compared to the first 8 months of 2018.
- This translated to 171 aMW lower demand compared to 2018.

<b>aMW of Sales Jan-Aug</b>	<b>2018</b>	<b>2019</b>	<b>Delta in Sales aMW</b>	<b>% change</b>
<b>ID</b>	<b>1,870</b>	<b>1,869</b>	<b>(2)</b>	<b>-0.1%</b>
<b>MT</b>	<b>1,129</b>	<b>1,150</b>	<b>22</b>	<b>1.9%</b>
<b>OR</b>	<b>3,779</b>	<b>3,643</b>	<b>(137)</b>	<b>-3.6%</b>
<b>WA</b>	<b>6,905</b>	<b>6,851</b>	<b>(55)</b>	<b>-0.8%</b>
<b>Four States</b>	<b>13,684</b>	<b>13,512</b>	<b>(171)</b>	<b>-1.3%</b>

\*- 2019 data comes from EIA 861m which are preliminary and survey based.



# Summary

- Regional population growing faster than nation.
- Regional economy is continuing to improve.
- Employment levels exceeded pre-recessionary levels.
- Regional electricity and natural gas rates continue to be below nation.
- Utility revenues declined.
- Winters and Summers temperatures continue to drive average and peak loads.
- POU sales declined faster than IOU sales.
- Regional T.O.U rates are available in very few utilities.
- Summer loads continue to grow faster than Winter.
- Electricity sales declined significantly in 2018.

