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December 8, 2020

MEMORANDUM

TO: Power Committee

FROM: Massoud Jourabchi, Manager Economic Analysis

SUBJECT: 2019 State of regional economy and electric utilities

BACKGROUND:

Presenter: Massoud Jourabchi

Summary: 2019 was a year that state economy continued to grow at a faster rate than nation. Population of the region grew by 200,000 to over 14.7 million. Regional share of national population and income continued to grow. Employment levels increased by about 150,000 for a total of over seven million. Regional unemployment rates continued to decline to some of the lowest historical levels. Warmer than normal winter in 2019 pushed sales down, however, overall sales increased by 200 aMW. Revenues from retail sales increase by about 300 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: On-going activity in preparation of the 2021 plan.

2019 State of Electric Industry- Economy, Temperatures, Sales, Loads, Revenues and Rates

Massoud Jourabchi

December 15, 2020

Power Committee Webinar



**THE 2021
NORTHWEST
POWER PLAN**

FOR A SECURE & AFFORDABLE
ENERGY FUTURE

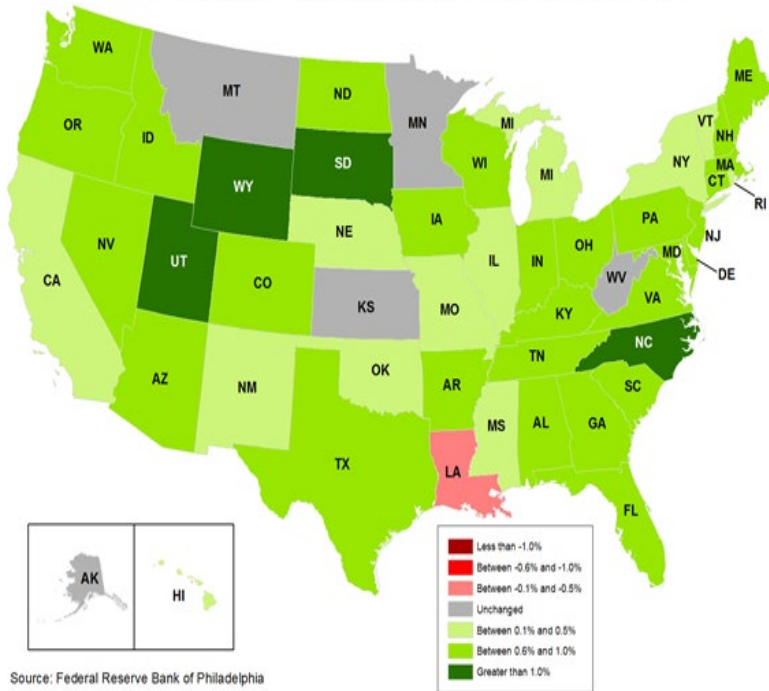
In this presentation

- Snapshots of Regional Economic Conditions
 - Population
 - Economic output
 - Employment
- Temperature Conditions
 - Summer
 - Winter
- Demand for Electricity and Natural Gas
- Energy and Peak Loads
- Revenues and Rates
- Total Energy Expenditure
- Behind-the-Meter Solar, Demand Response and T.O.U rates

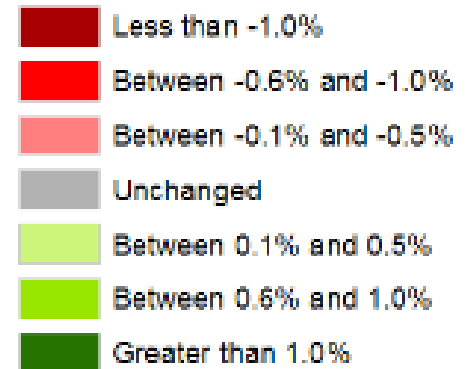
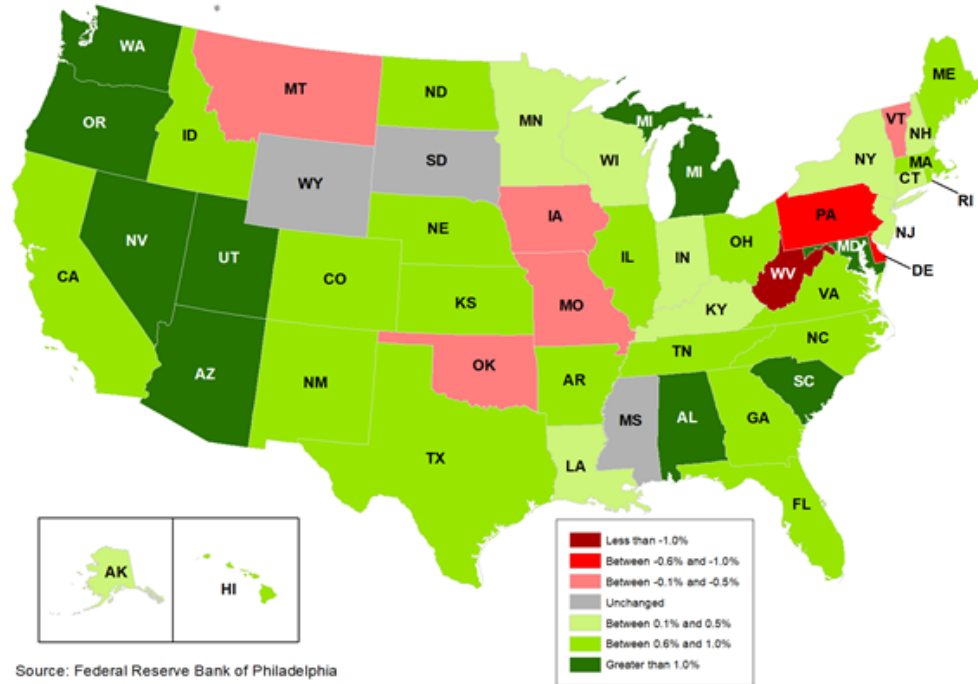


Regional Economy Continued Growth in 2019

January 2019 State Coincident Indexes: Three-Month Change



December 2019 State Coincident Indexes: Three-Month Change

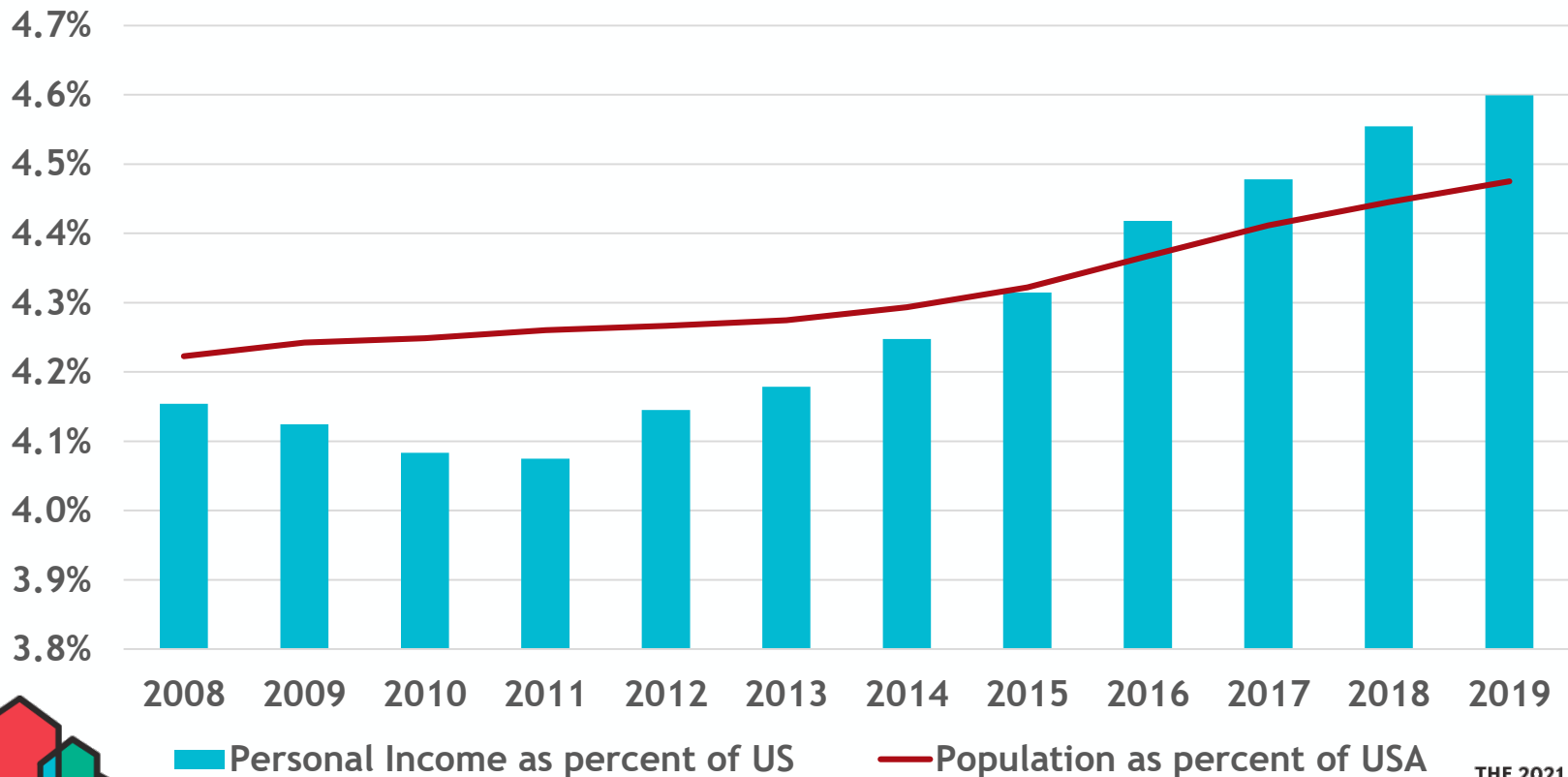


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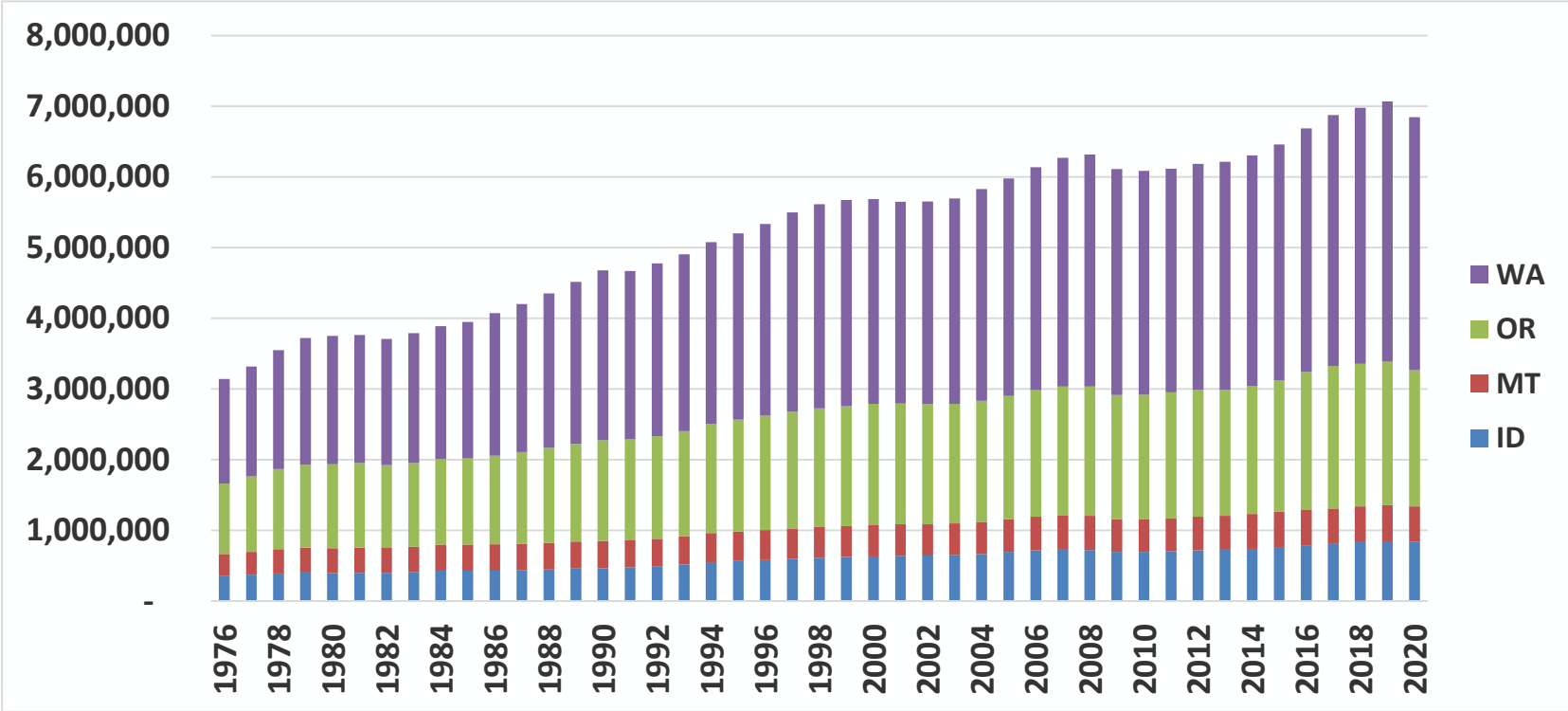
Regional Share of Population and Income continue to increase

Regional Population and Income as Percent of Nation



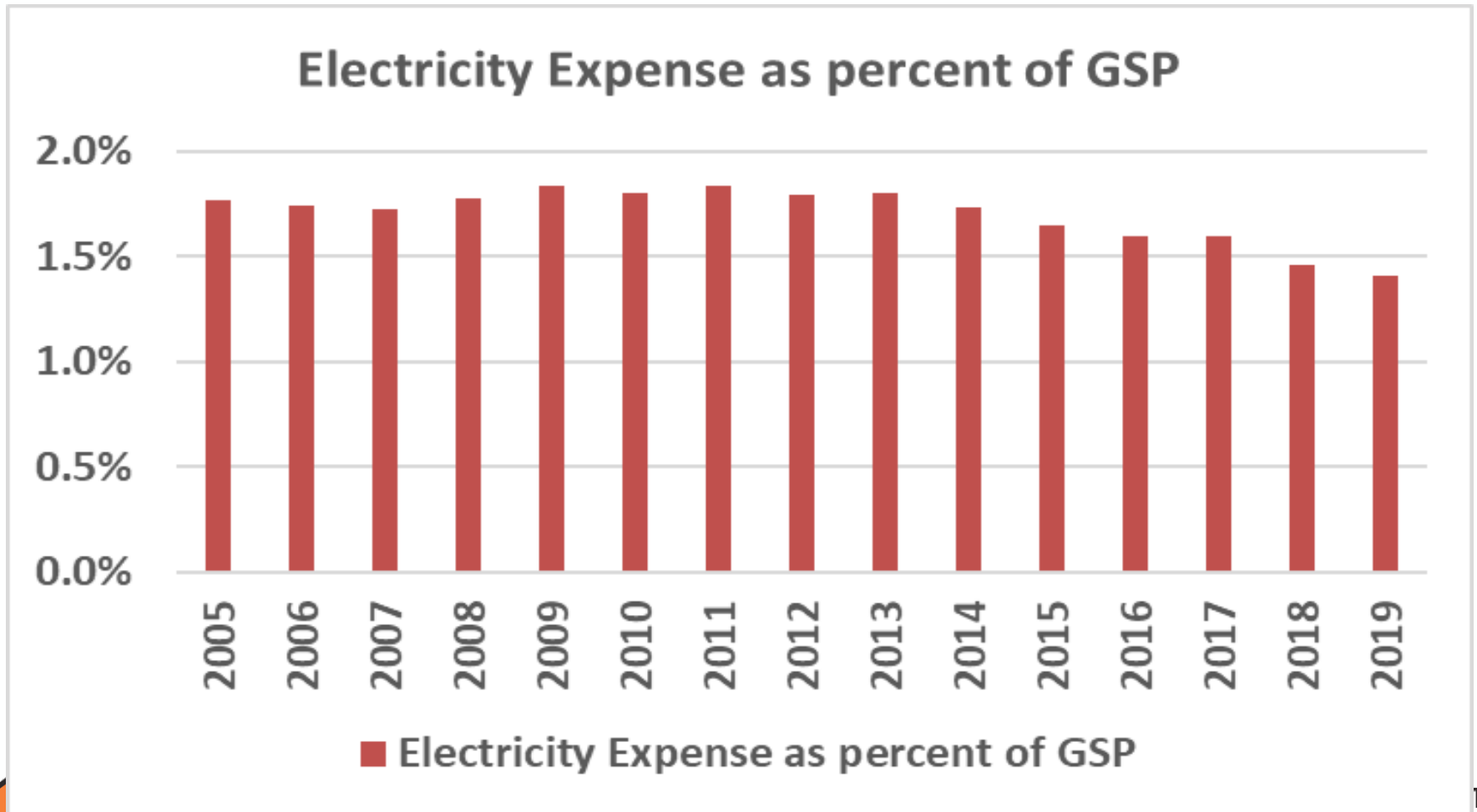
Regional Employment Continues to Expand in 2019 at a slower pace.

(First 8 months of 2020 saw significant drop)



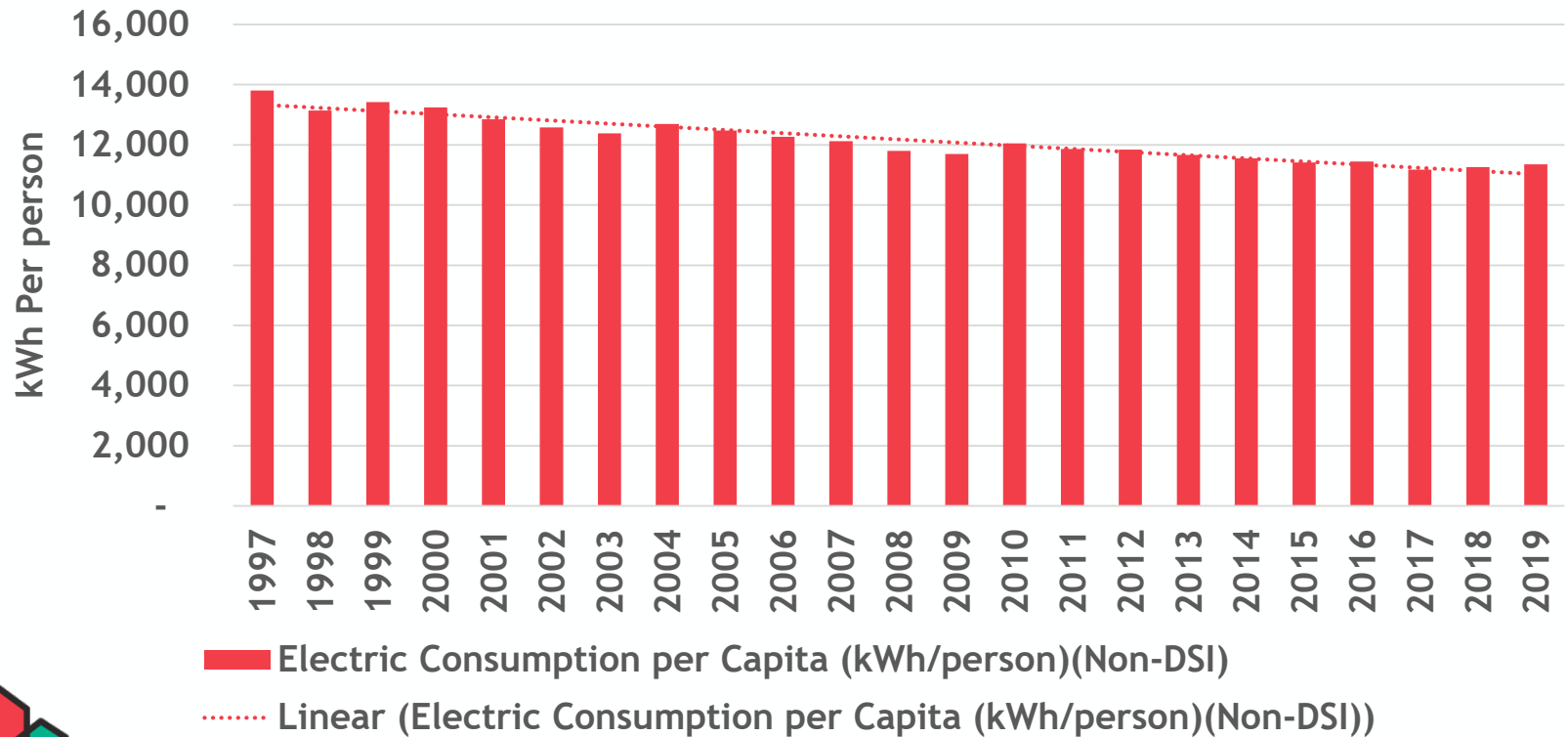
State	March 2019 average weekly wages
Idaho	\$829
Montana	\$843
Oregon	\$1,059
Washington	\$1,362

Region continues to produce more goods and services with less Electricity



Per Capita Demand for Electricity Decreasing

Per Capita Demand for Electricity
(Weather Normalized)



Impact of Temperature on Loads

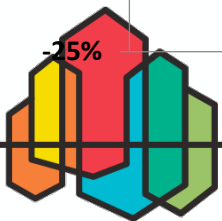
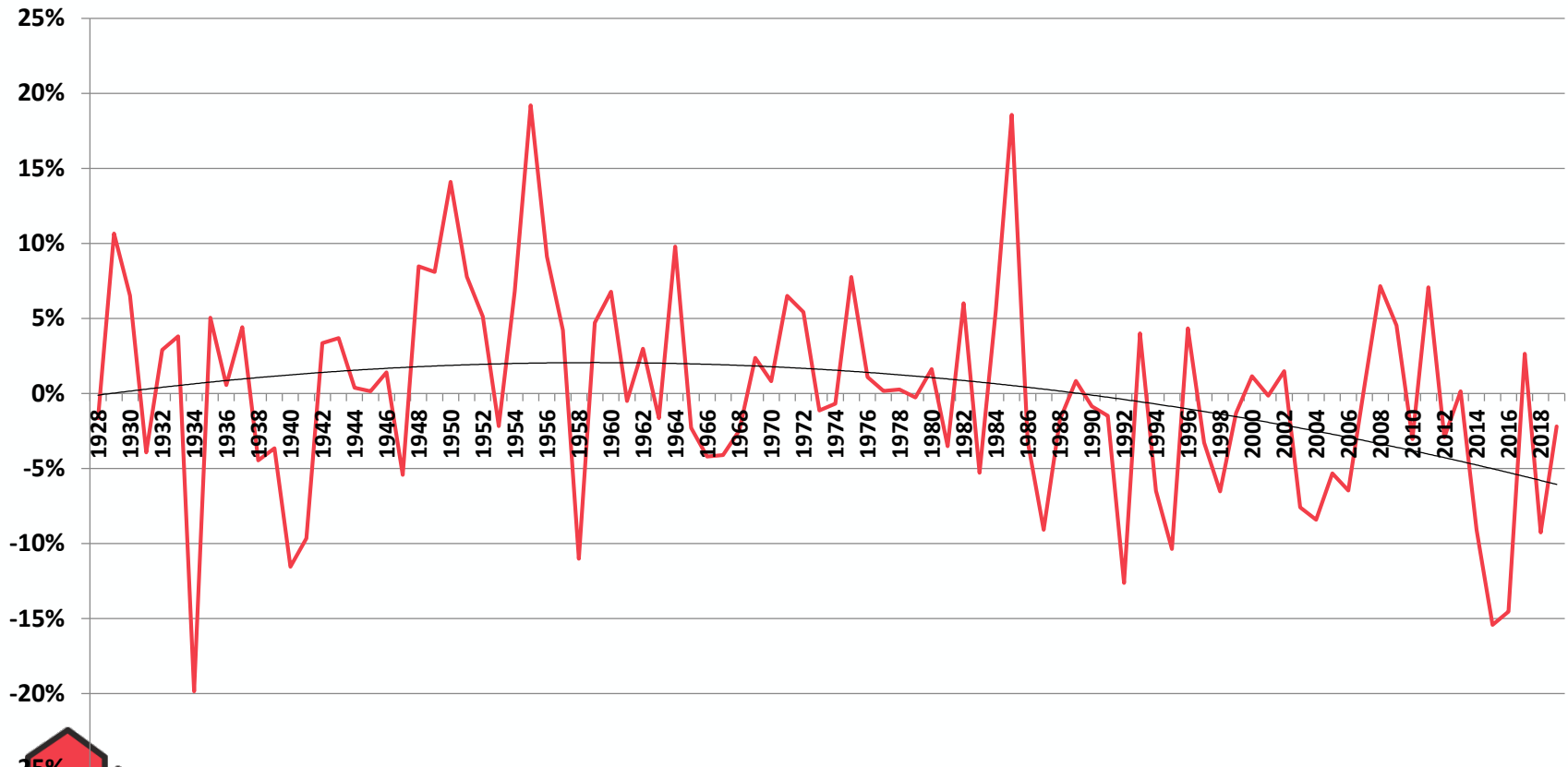
- Heating and Cooling Requirements represent about 30% of total load.
- 2019 Winter heating requirements decreased by 2%
- 2019 Summer cooling requirements increased by 26%



Trends in Temperatures

2019 Heating Requirement was 2% lower

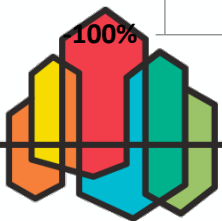
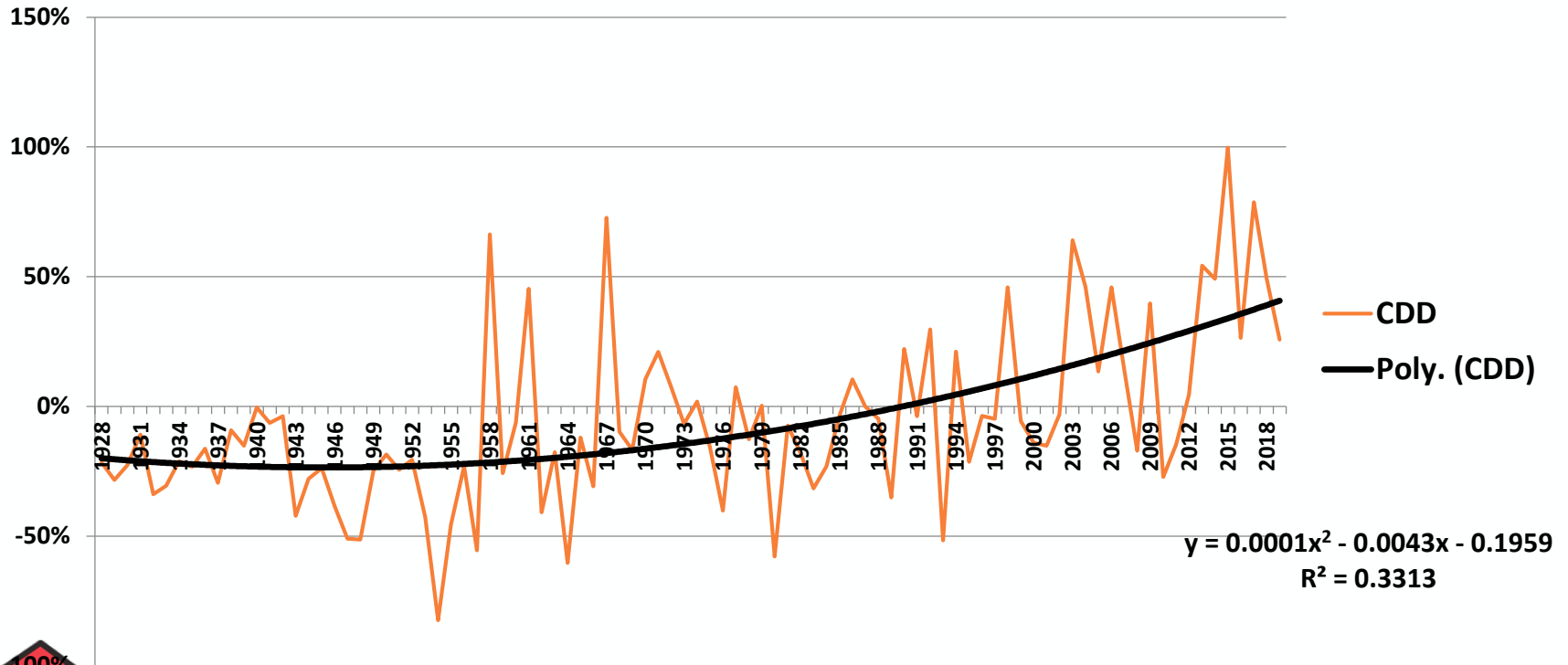
Annual Percent Deviation in annual HDD
Compared to Average HDD for 1950-2020



Trends in Temperatures

2019 Cooling Requirement was 26% higher

Annual Percent Deviation in annual CDD
Compared to Average HDD for 1950-2020

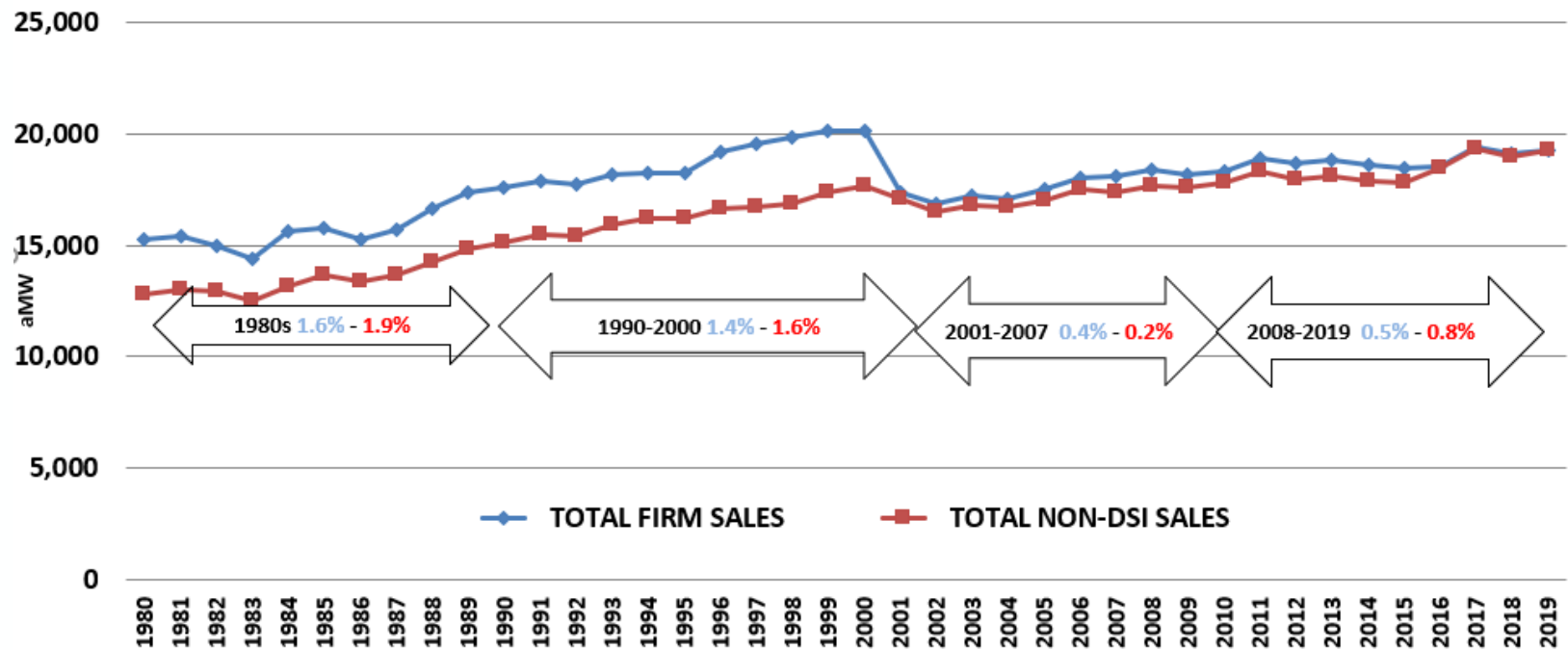


Regional Sales



Regional Sales of Electricity Showed Sign of Modest Recover in 2019

Northwest Regional Sales (1980-2019)
Average Annual Growth Rates

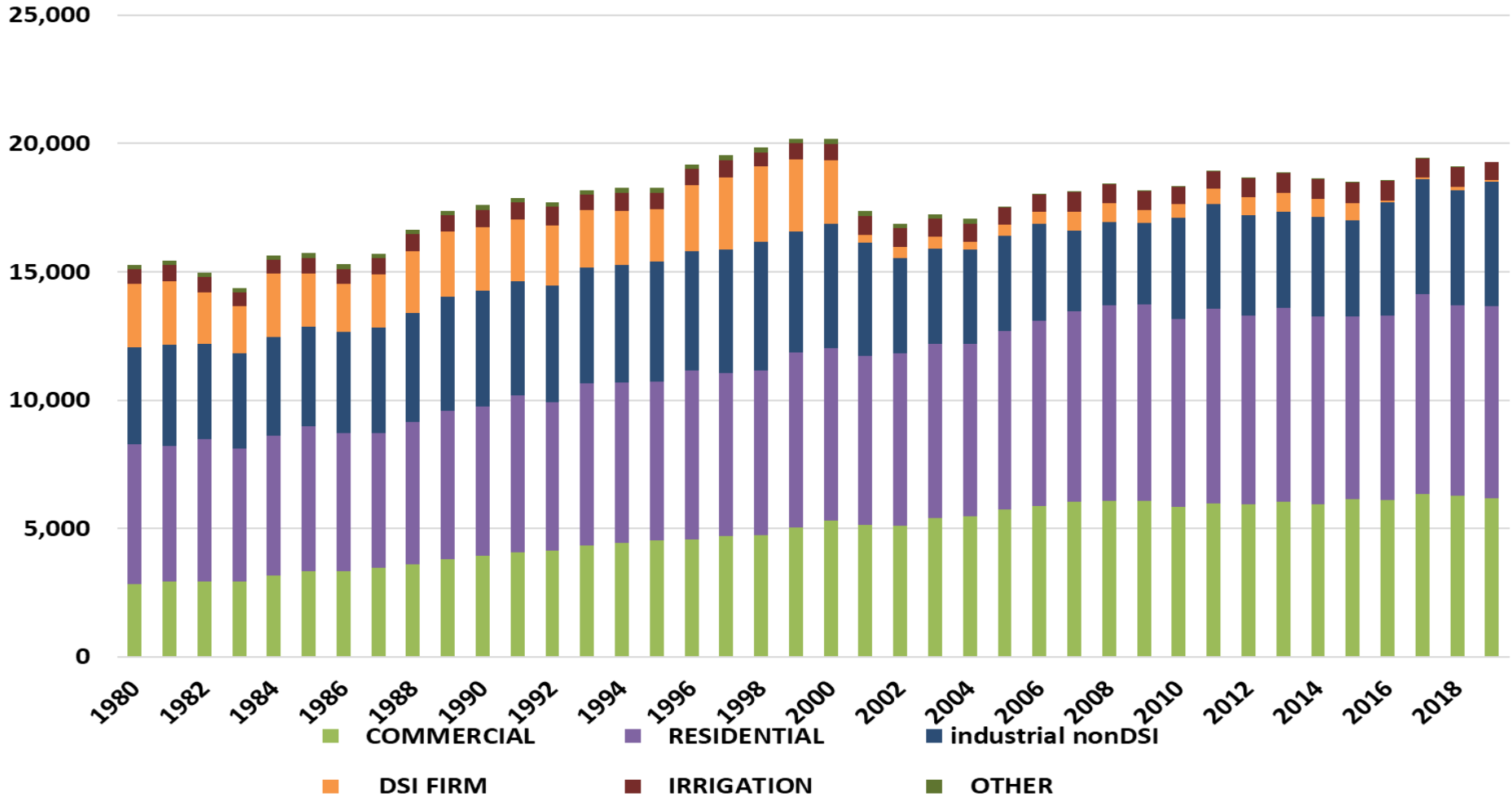


	1980-1989	1990-2000	2001-2007	2008-2019
Total Sales	1.6%	1.4%	0.4%	0.5%
Sales net DSI	1.9%	1.6%	0.2%	0.8%



Over the Past Two Decades Regional Sales Have not Surpassed 2000 Levels

Regional Sales By Sector aMW



Regional Demand Increased by 200 aMW

	2018	2019	Year-over-year change	AAGR 2011-2019
COMMERCIAL	6,268	6,167	-100	0.39%
RESIDENTIAL	7,417	7,492	74	-0.14%
INDUSTRIAL FIRM	4,620	4,922	302	0.57%
DSI FIRM	130	60	-70	-25.12%
NON-DSI FIRM	4,490	4,862	372	2.17%
IRRIGATION	778	681	-97	0.57%
Transportation	4	25	21	
TOTAL FIRM SALES	19,087	19,287	200	0.25%

Biggest increase was in Industrial segment, followed by residential and transportation



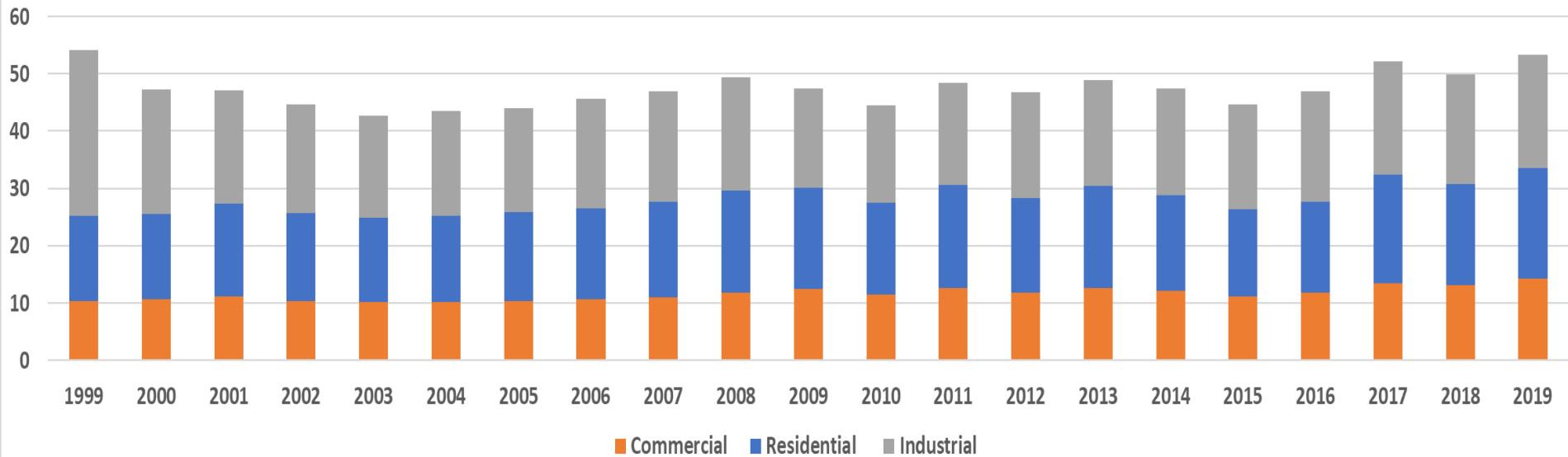
IOU's Demand increase More than POU's

	2018	2019	Year-over-year change
Public Utilities			
COMMERCIAL	2,656	2,614	-42
RESIDENTIAL	3,398	3,378	-19
INDUSTRIAL FIRM	3,092	3,241	149
DSI FIRM	130	60	-70
NON-DSI FIRM	2,962	3,181	219
IRRIGATION	393	332	-61
Transportation	0	21	21
TOTAL FIRM SALES	9,539	9,586	47
IOUs			
COMMERCIAL	3,612	3,553	-58
RESIDENTIAL	4,020	4,113	94
INDUSTRIAL FIRM	1,527	1,681	154
IRRIGATION	386	350	-36
Transportation	4	4	
Total Firm Sales	9,548	9,701	153



Consumer Demand For Natural Gas has increased slightly over the past two decades

Consumer Demand for Natural Gas in the Four States
(Million Therms)



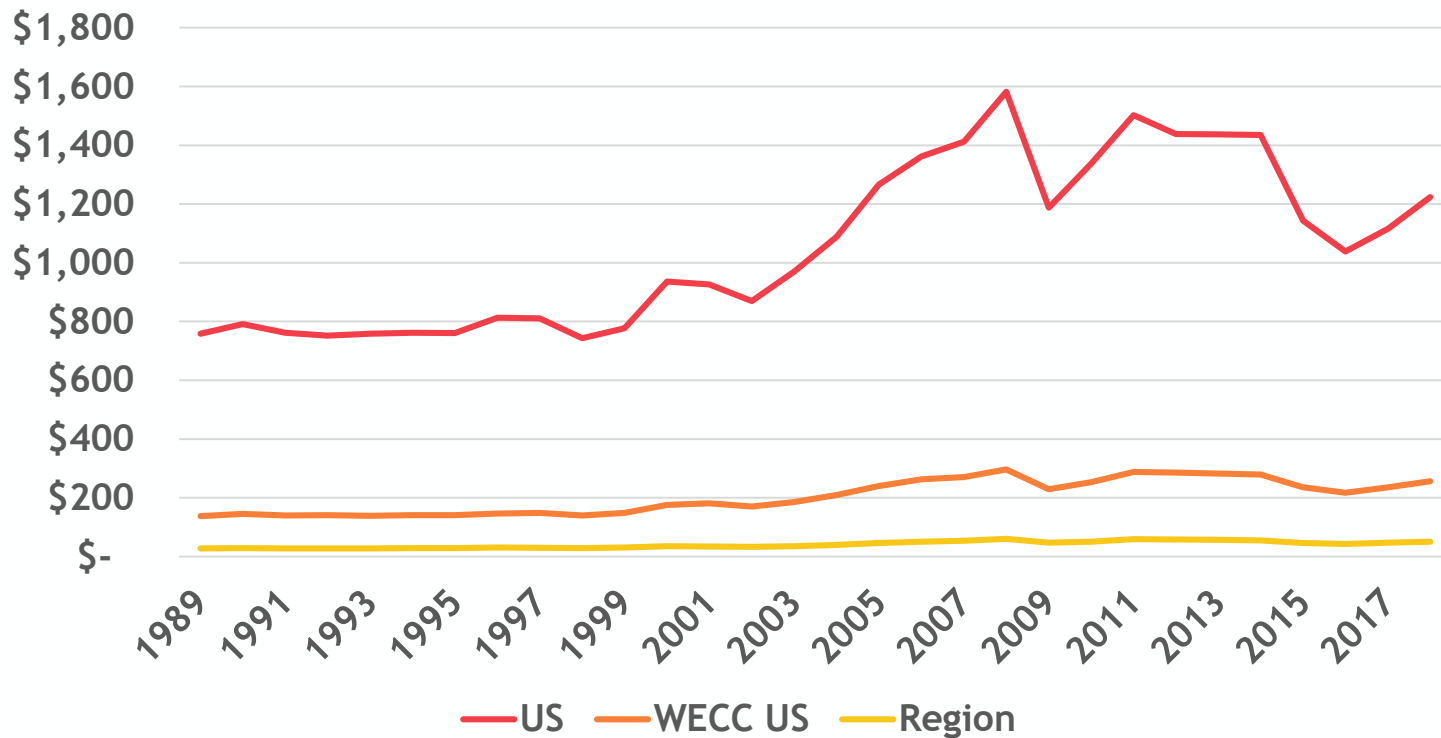
	1999-2019 AAGR
Residential	1.3%
Commercial	1.6%
Industrial	-1.9%



Revenues and Rates



Total Energy Expenditure in Past Three Decades (Billions of \$2016)

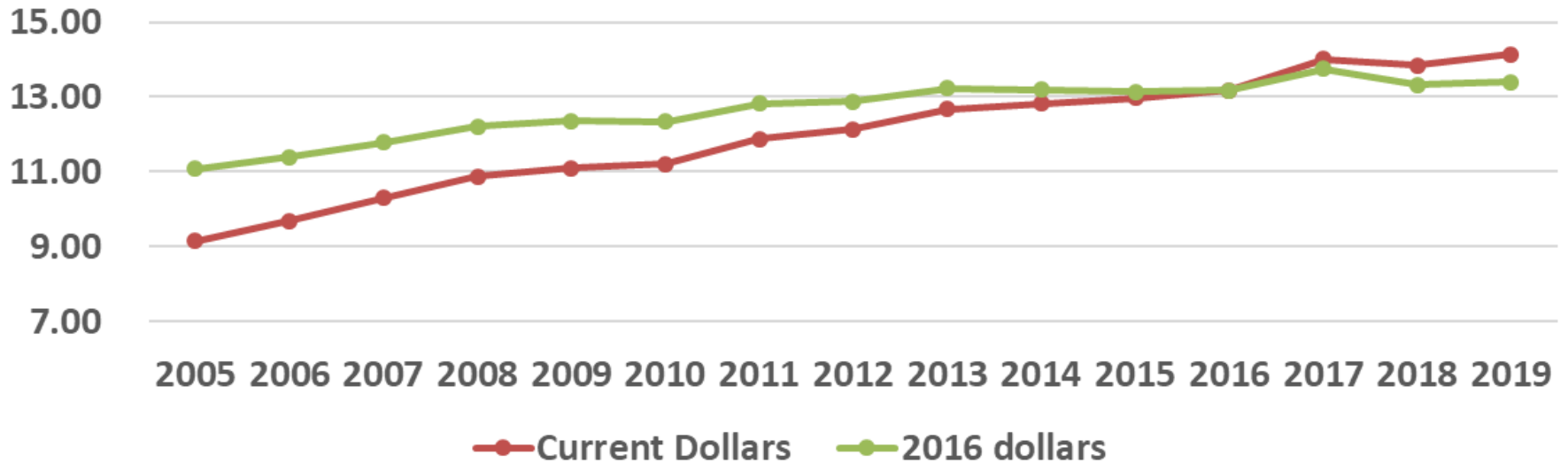


National and Regional Energy Expenditures in the Past Three Decades			
1989-2018 cumulative (Trillions of 2016 dollars)	USA	WECC	NW
Commercial sector	5.0	1.0	0.2
Industrial sector	6.1	0.9	0.2
Residential sector	6.9	1.1	0.2
Transportation sector	13.8	3.1	0.6
Grand Total	31.8	6.1	1.2

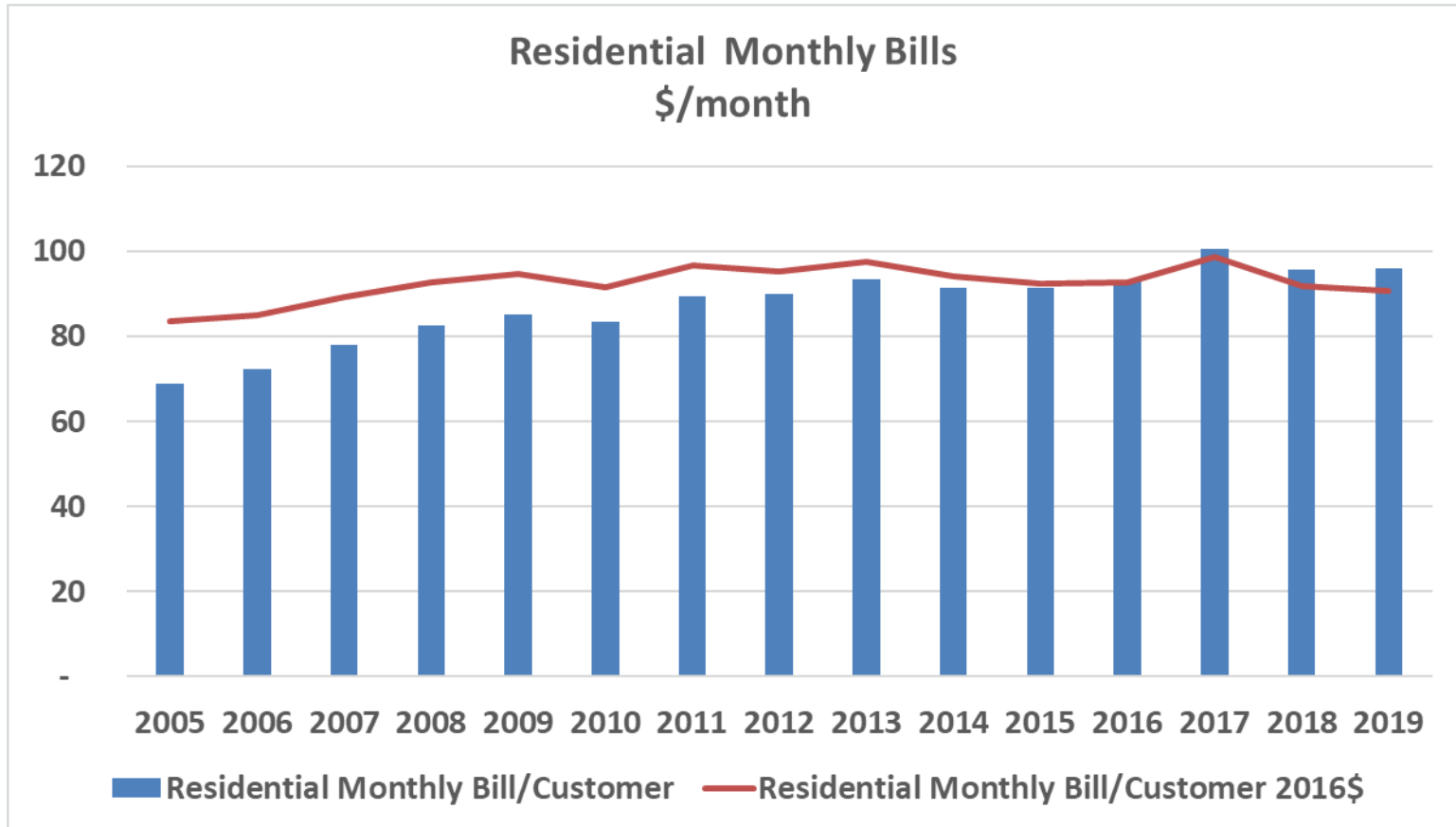


Revenues Collected in 2019 increased by \$300 Millions

Electric Utilities Revenues Collected in 2019 increased to over \$14 billion dollars

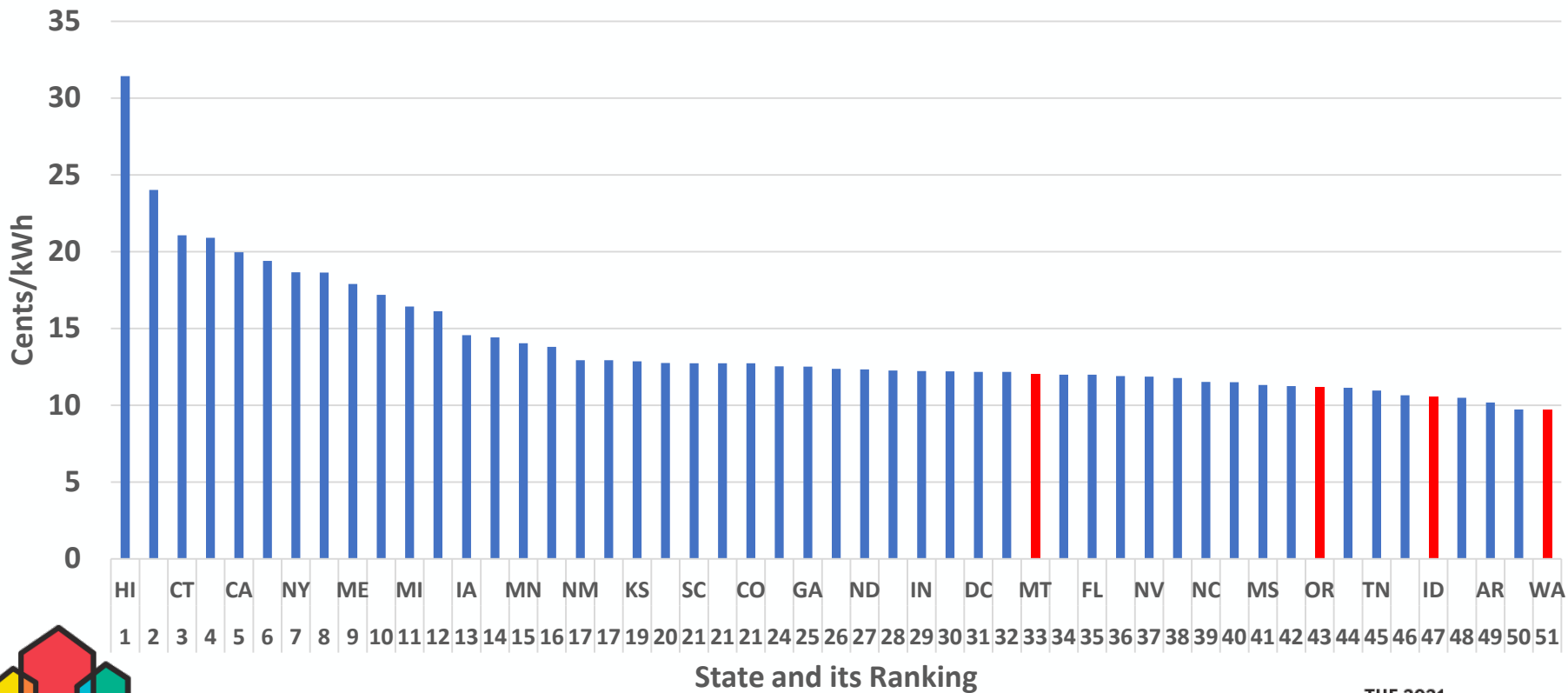


Residential Monthly Bills Declined Slightly



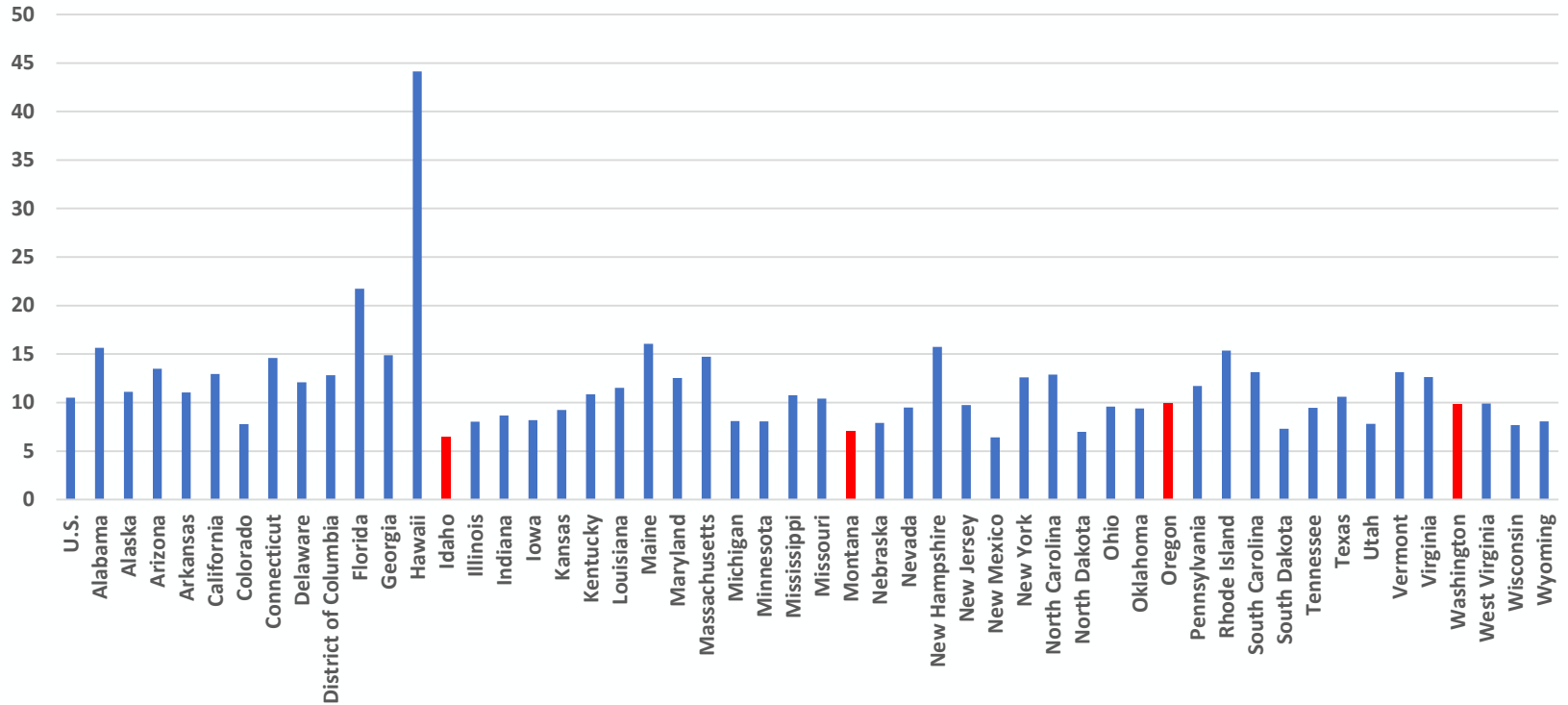
Regional Electricity Rates Continue to Represent Some of the Lowest in the Nation

State Ranking of Residential Rates
July 2019



2019 Natural Gas Prices in the NW

1990 Price of Natural Gas Delivered to Residential Consumer
\$/1000 CF



2019 Residential Price of Natural Gas In the Region		
	National Ranking	2019 \$/1000 CF
Idaho	50	6.5
Montana	48	7.09
Washington	30	9.82
Oregon	28	9.97



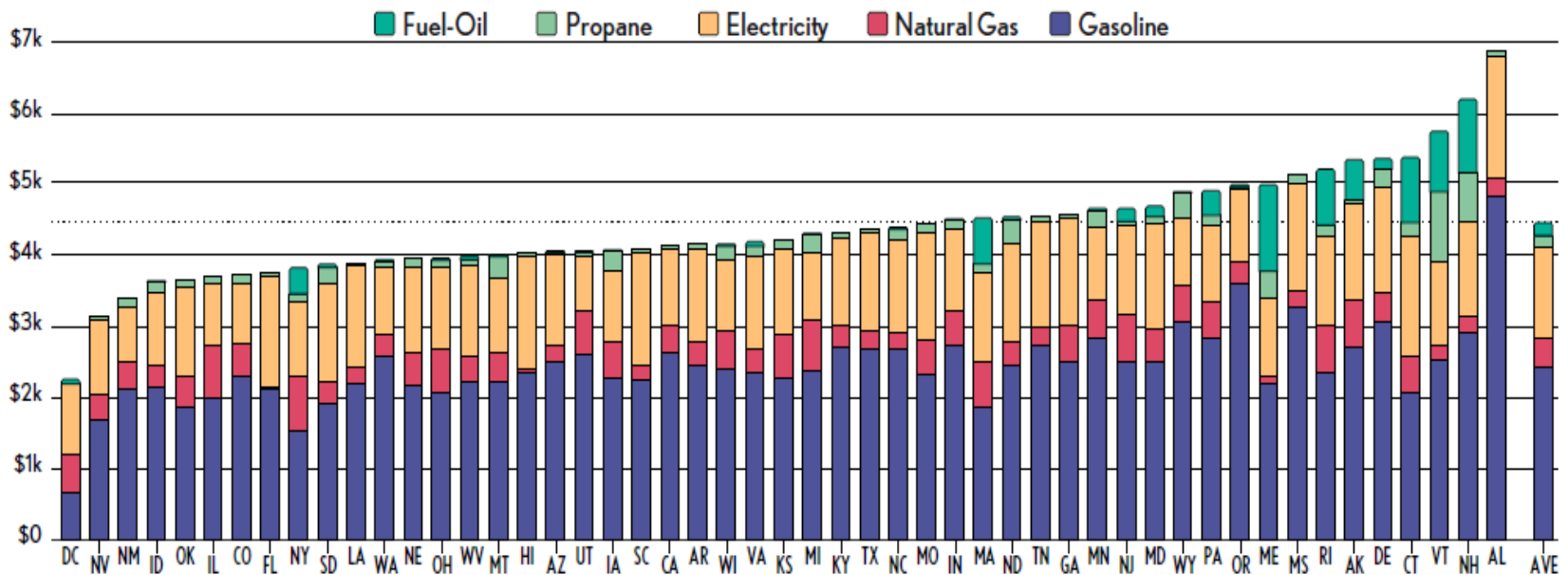
About half of Residential Customers have access to Natural Gas

# of Residential Accounts in 2019	Natural Gas	Electric	Customers with Access to Natural Gas
Washington	1,220,197	3,147,947	39%
Oregon	763,989	1,760,260	43%
Montana	281,112	505,658	56%
Idaho	415,106	773,659	54%
total 4 states	2,680,404	5,947,815	45%



Estimated Energy Expenditure \$/year per household National Average ~ \$4200

2019 Household energy expenditures, all fuels, by State.



ID~
\$3600

WA~ MT ~
\$3800 \$4000

OR~
\$5000

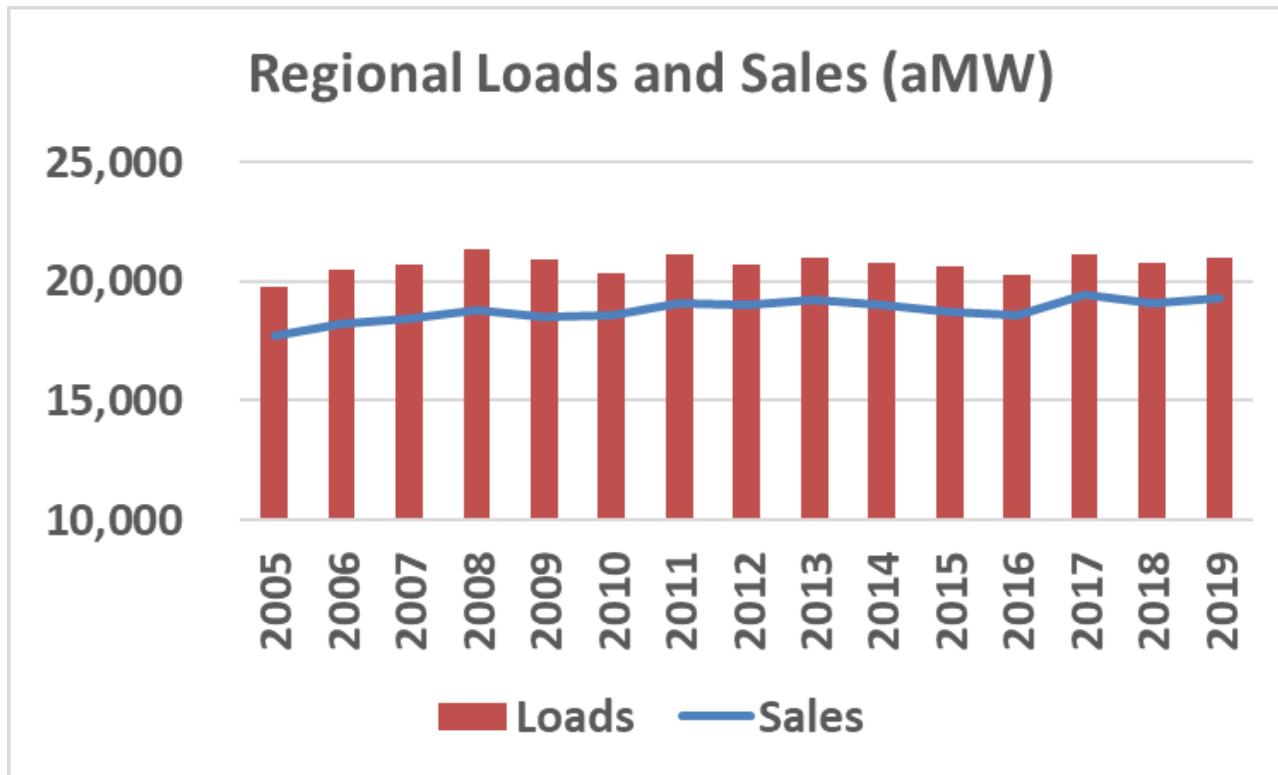


SOURCE: <https://rewiring-america.netlify.app/>

Loads



Flat load Growth Continues

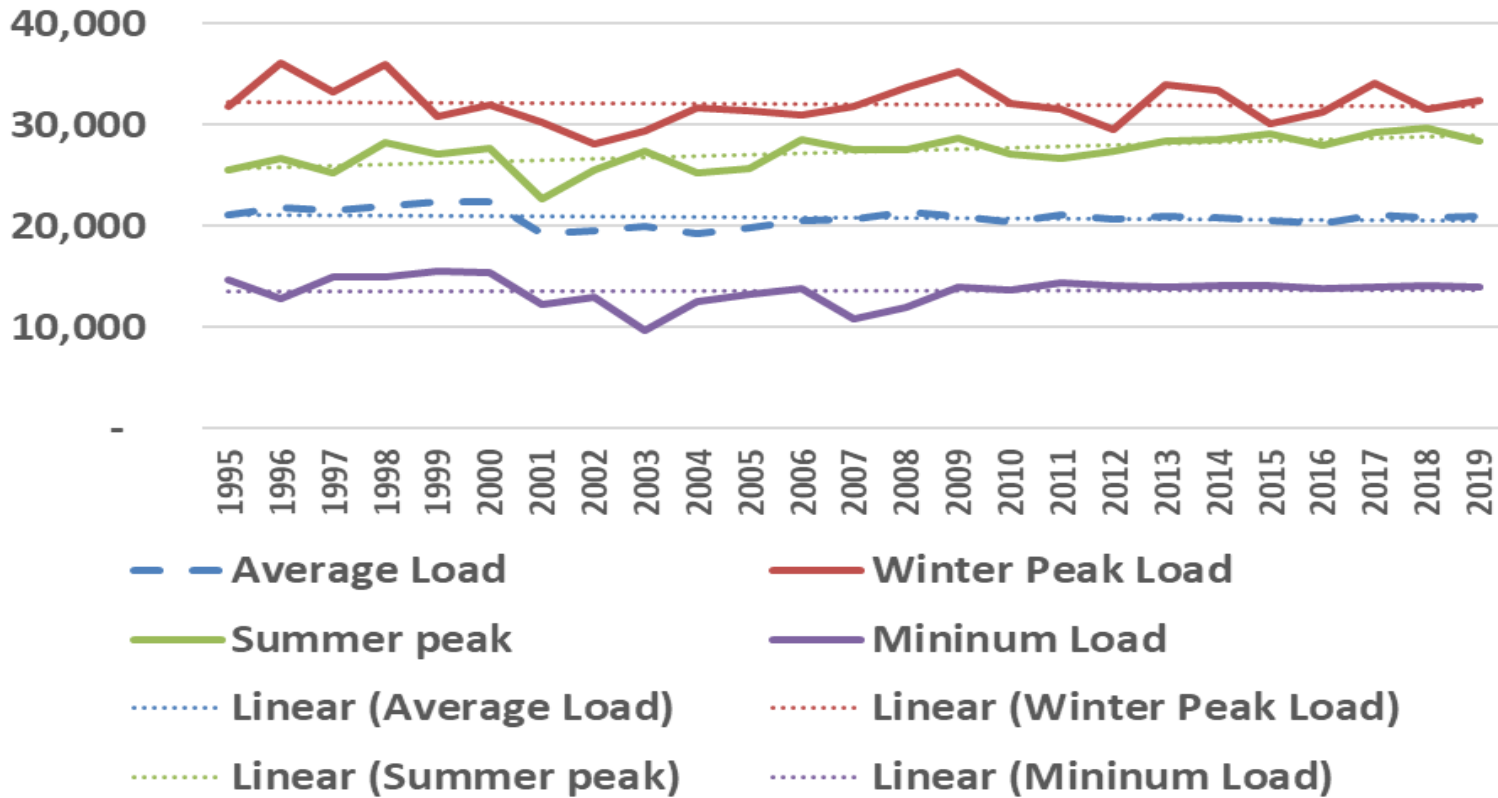


Contributing Factors

- Improved Technology
- Conservation acquisitions
- Better Codes and Standards
- Shift in regional economic mix
- Warmer winters
- Behind-the-meter generation



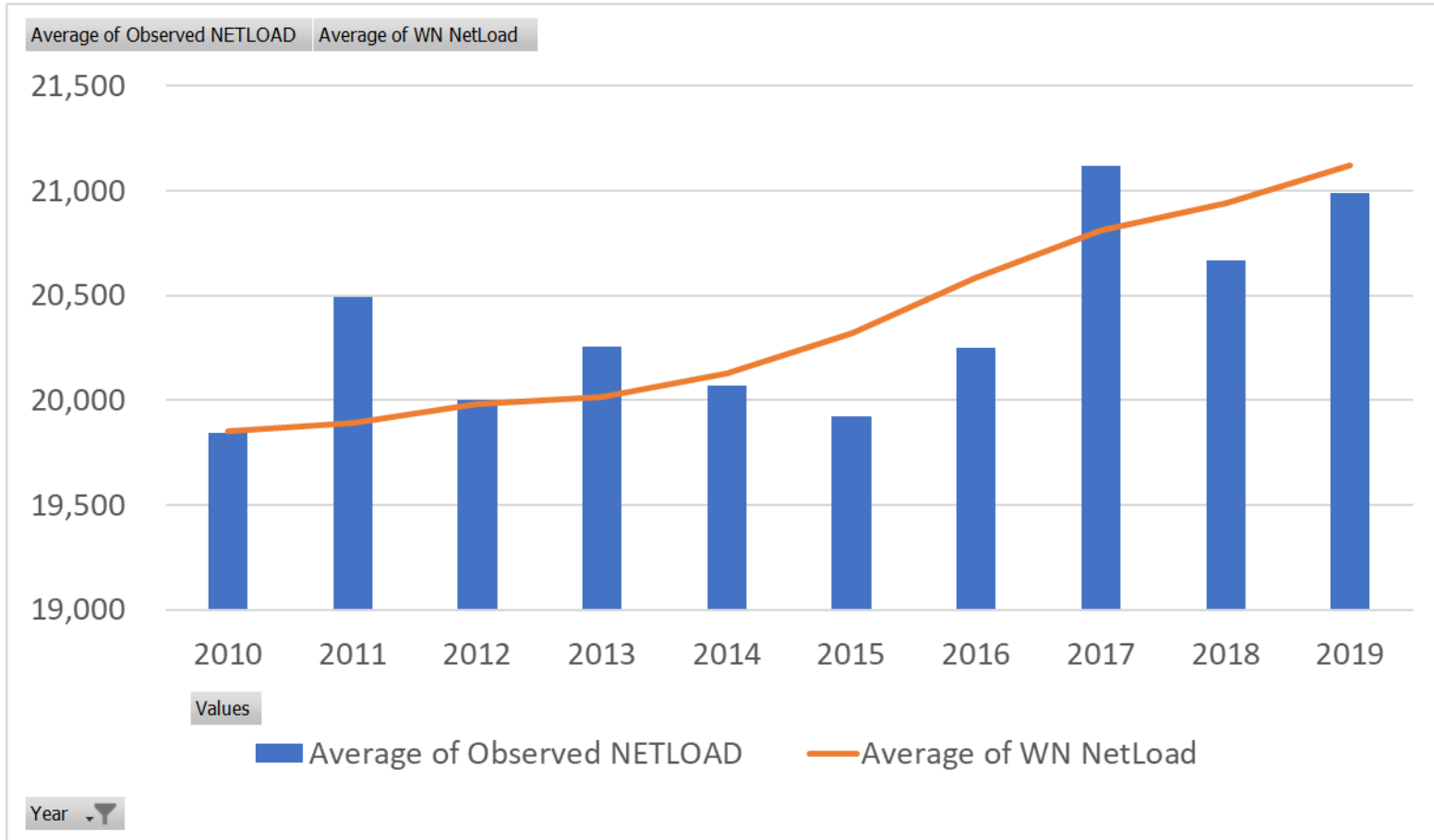
Observed Load Average, Peak and Minimum



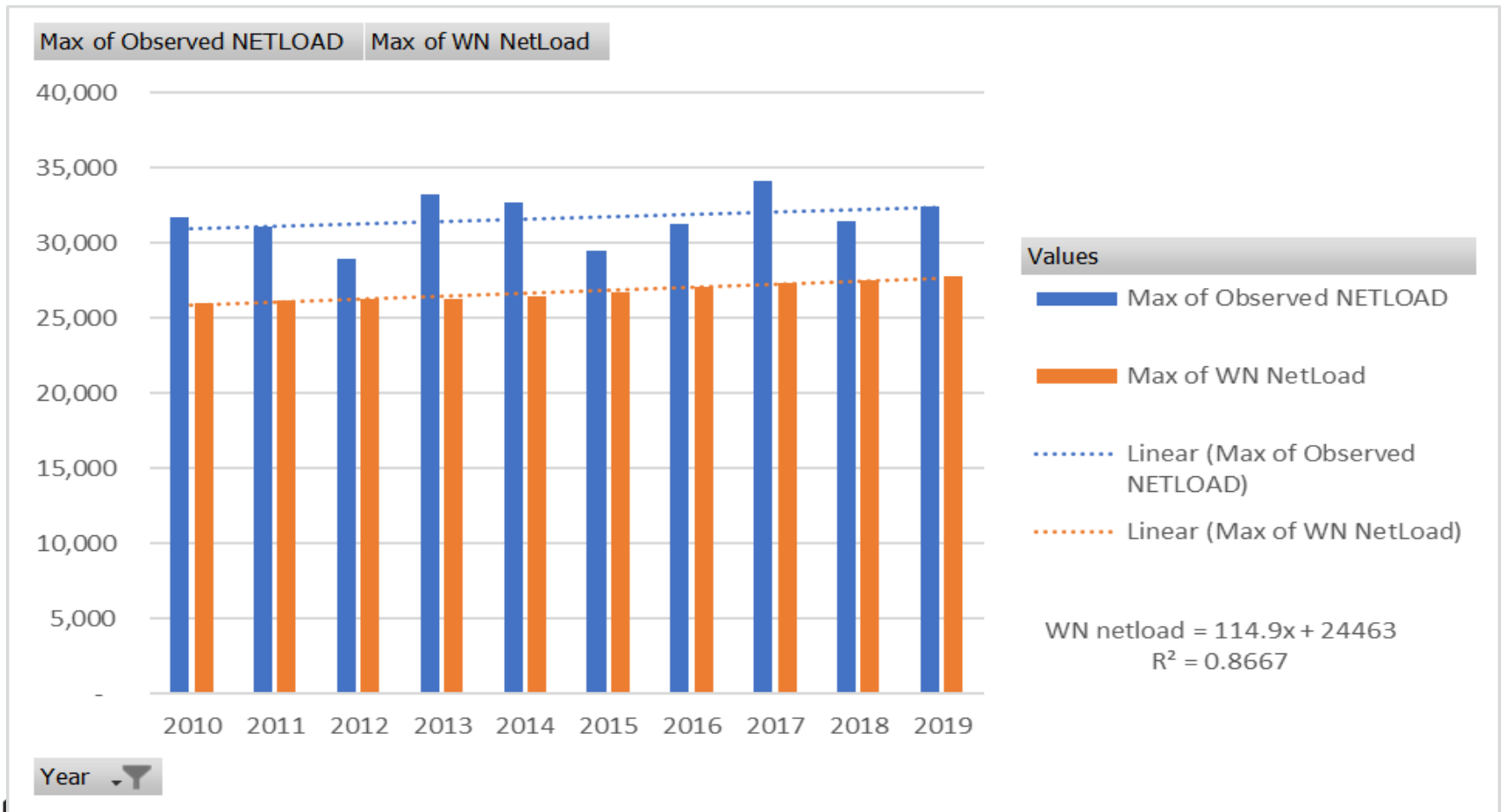
Annual Growth Rate	AAGR 2011-2019
Average Load	-0.1%
Winter Peak	0.3%
Spring Peak	-0.1%
Summer Peak	0.8%
Fall Peak	0.8%



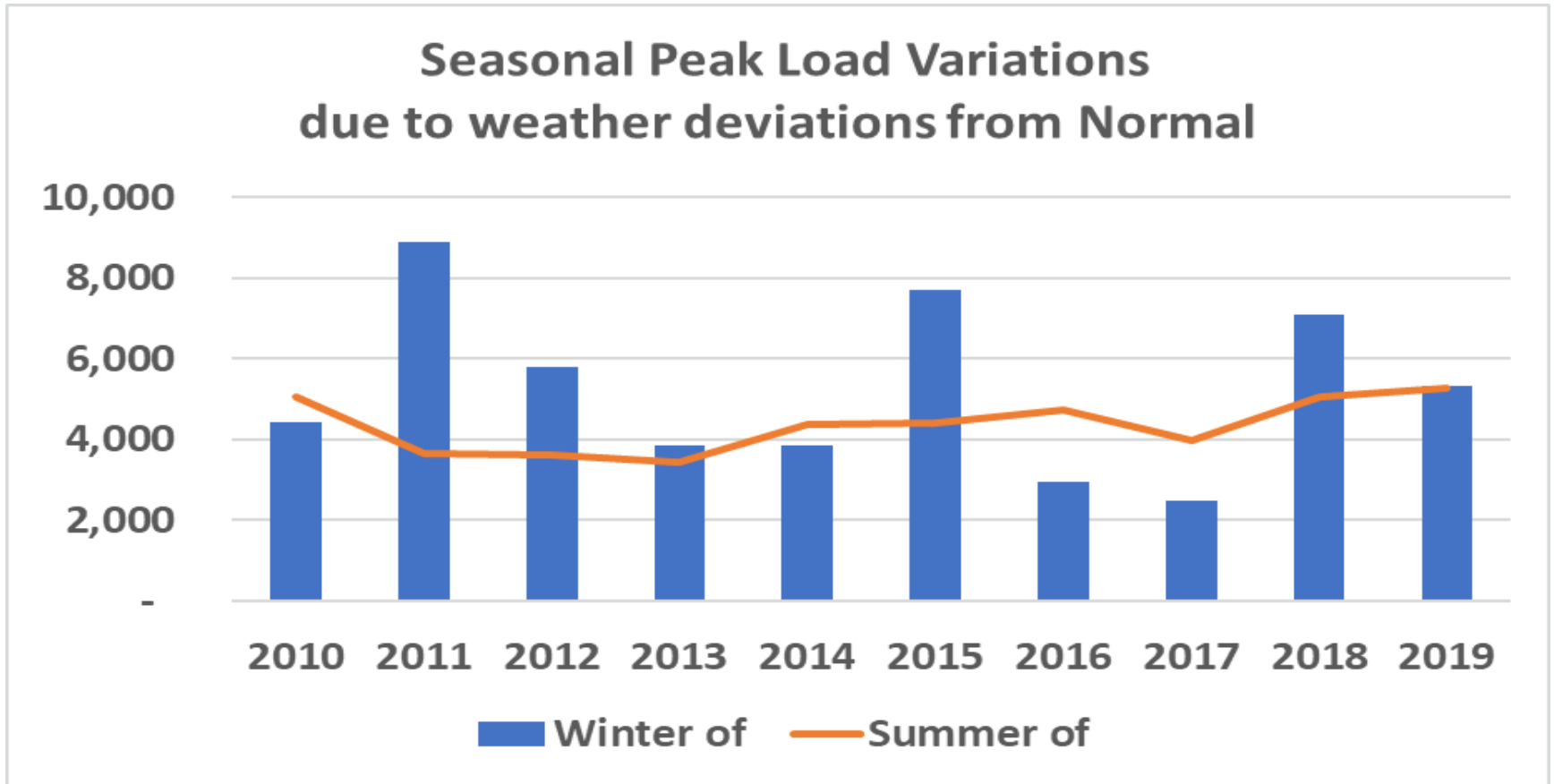
Regional Loads net of DSI (aMW) with and without variations in weather



Regional Peak loads MW (net of DSI) with and without impact of variations in weather



Variations in Regional Temperatures Create Large Swings in Peak Loads

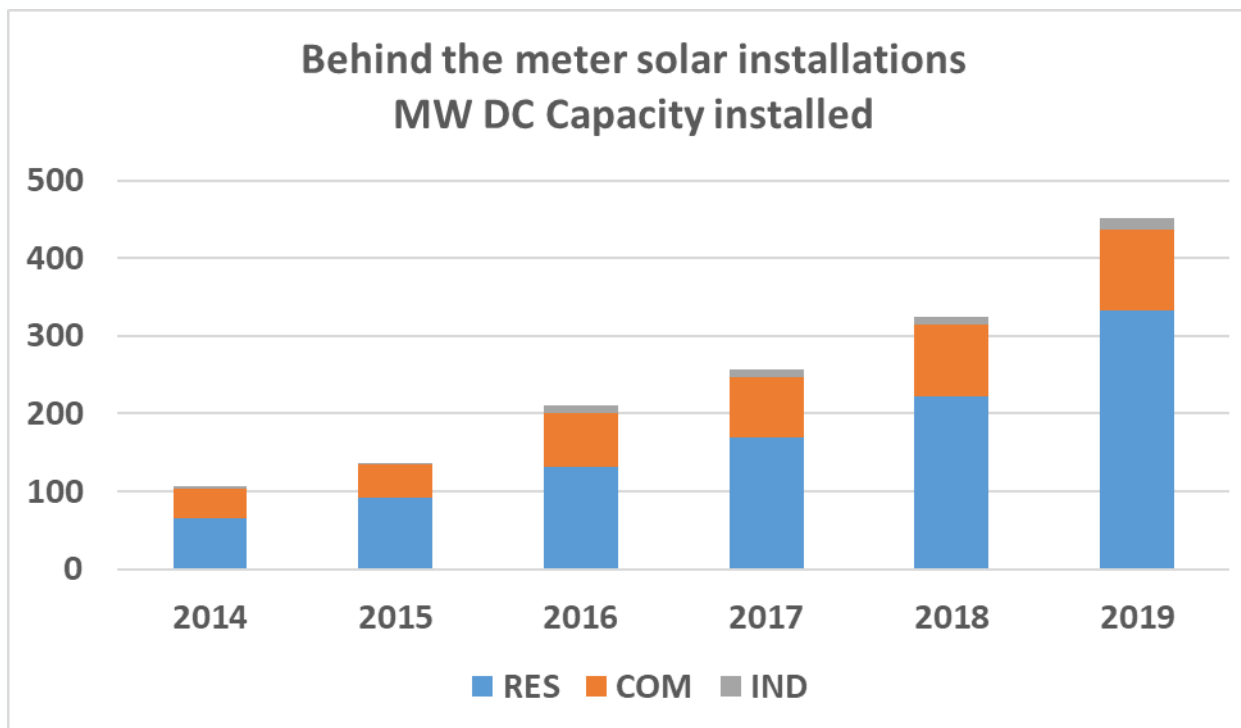


Behind-the-meter

- **Solar**
- **Demand Response**
- **Time-of-use Rates**



BTM solar continues growing at an average Annual Rate of 34% since 2014



	RES	COM	IND	TOTAL
2014	65	39	2	106
2015	92	42	3	137
2016	131	69	10	210
2017	169	78	10	257
2018	222	92	11	325
2019	333	104	15	452



2019 DR Programs Achievements as reported to EIA show long road ahead for Northwest

	Northwest
# DR customers	151,163
DR customers as percent total	2%
Energy Saving MWH	357
Potential Peak Savings MW	695
Actual Peak Savings MW	532
Customer Incentives (\$1000)	\$ 9,884
All other costs (\$1000)	\$ 15,283



2019 Time-of-Use Rate Schedules

- As of End of 2019 there were 13 TOU rate schedules offered in the region.
- Number of participating customers increased substantially.
- Idaho power, Flathead electric, PacifiCorp, PGE had the largest number of customers on TOU.
- Majority of these were voluntary opt-in rates.
- None of the utilities offered peak pricing.
- One small utility offered real time pricing.

Number of Enrolled Customers	Residential	Commercial	Industrial	Total	percent of total 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%
2019	72,616	1,209	2,088	75,913	1.10%
As percent of customers	1.24%	0.14%	1.187%	1.10%	

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



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 increased by about \$300 million dollars.
- Winters and Summers temperatures continue to drive average and peak loads.
- Regional T.O.U rates are available in very few utilities.
- Summer loads continue to grow faster than Winter.
- Electricity sales increased in 2019 by about 200 aMW.
- IOU sales increased by ~150 aMW compared to ~50 aMW for POU's



Questions

