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December 4, 2018

MEMORANDUM

TO: Council Members

FROM: Massoud Jourabchi

SUBJECT: State of regional economy and electric utilities

BACKGROUND:

Presenter: Massoud Jourabchi

Summary: 2017 was a year that state economy continued to grow. Employment levels increased to almost 6.9 million, above 500,000 more jobs than 2008. Housing sector recovering with multifamily new construction far exceeding their historic levels. Colder than normal winter and hotter summer in 2017 pushed sales to almost highest levels since 2005. 2017 sales were higher by 740 aMW from 2016. Revenues from retail sales increased by over \$800 million dollars, rising from \$13.05 billion dollars in 2016 to \$13.85 billion dollars in 2017. Regional load increased by about 858 aMW in 2017. Winter of 2017 was an extremely cold which resulted in increase in peak loads by 6,000 MW, compared to weather normalized winter peak. 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 while Time-of-Use rates are stagnating.

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

Work plan: On-going activity in preparation of mid-term review and next plan.

Background: NA

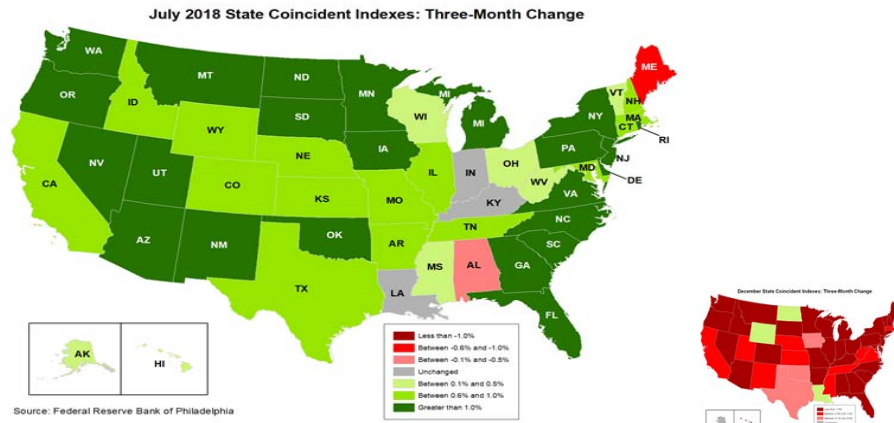
2017 State of Economy & Electric Utilities in the Northwest

December 2018
Massoud Jourabchi

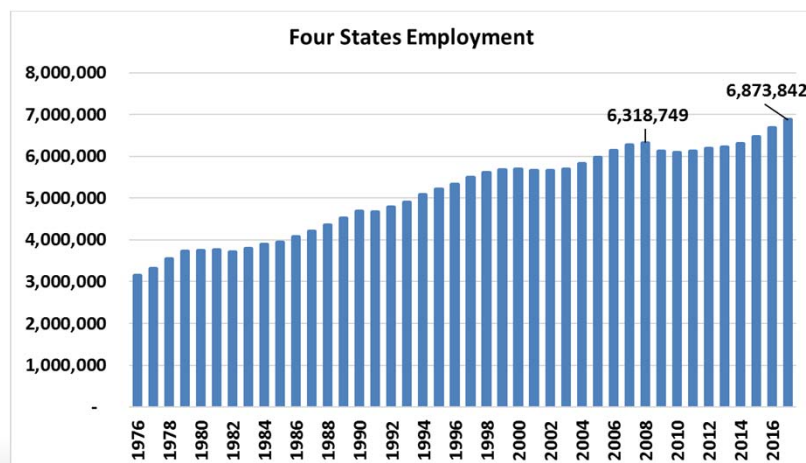
In this presentation

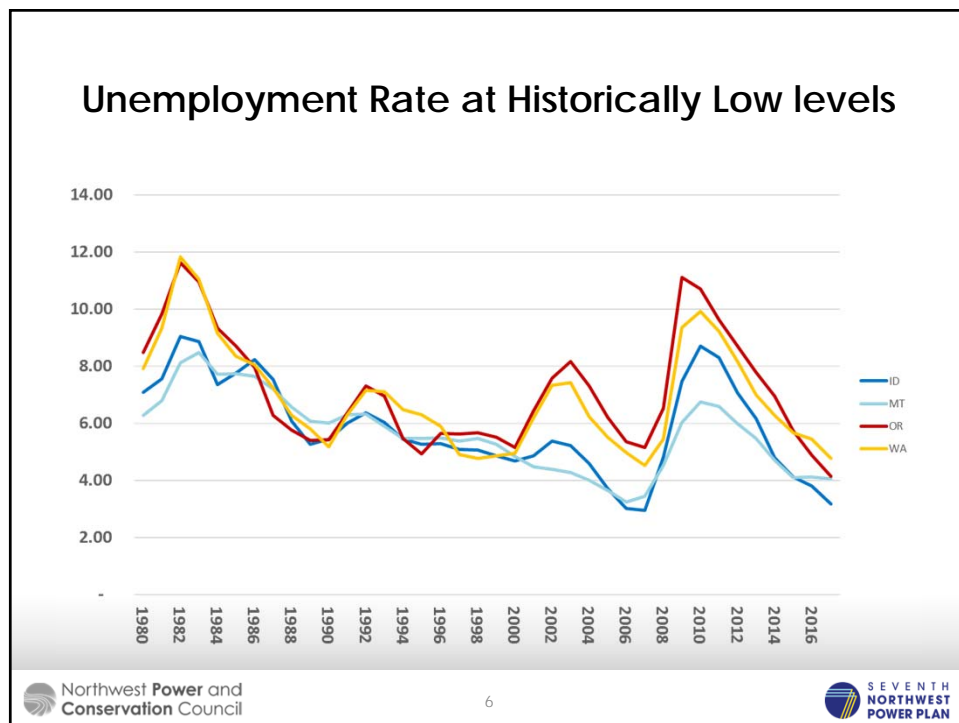
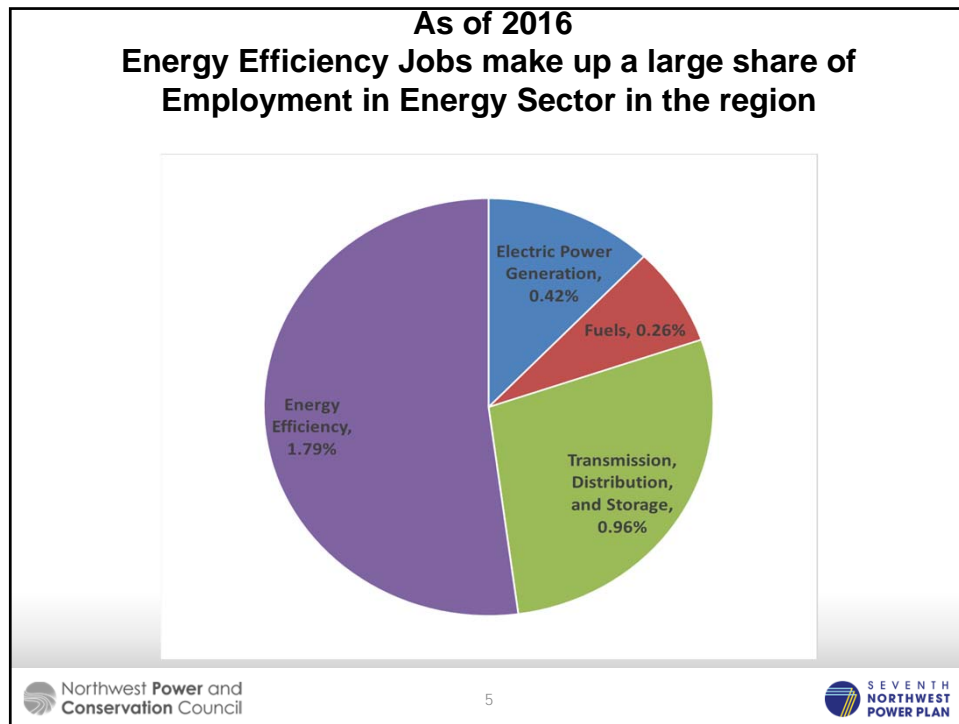
- **State of Economy**
 - Jobs, output, population and housing
- **Weather and impact on loads**
- **State of electric utilities**
 - Sales, Revenues, Rates
 - Average and Peak Loads 1995-2017
- **Load growth at BA level**

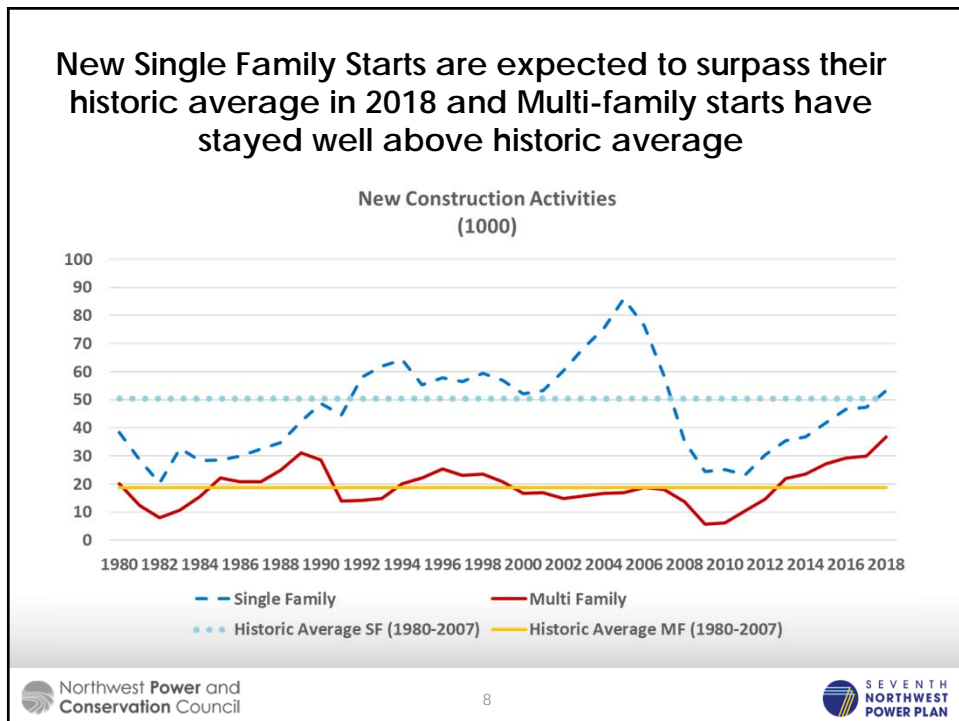
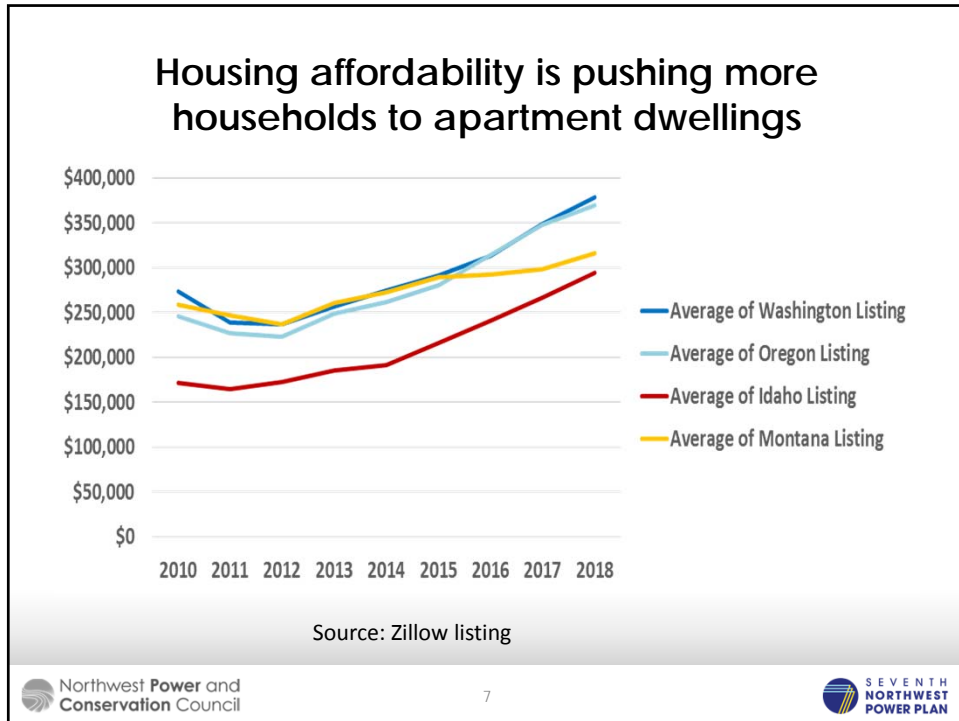
Overall economy is improving as can be seen from the state coincident indexes
Idaho at a slower pace

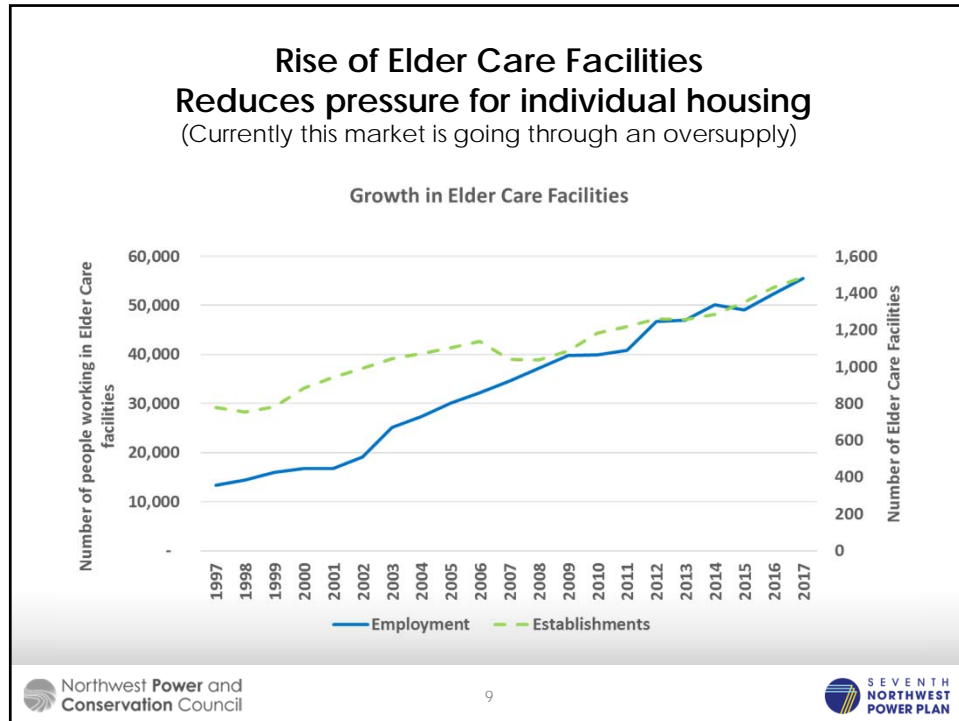


Region has added more than half a million jobs since 2008







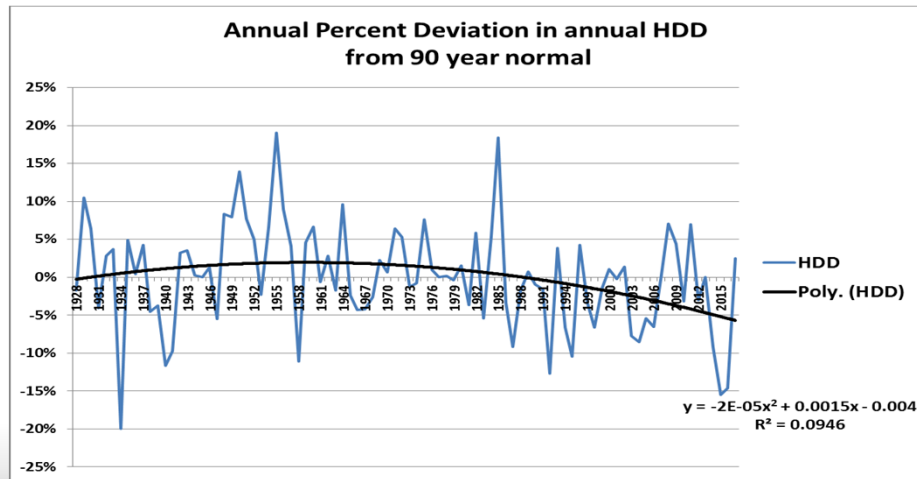


Impact of Weather on Sales and Loads

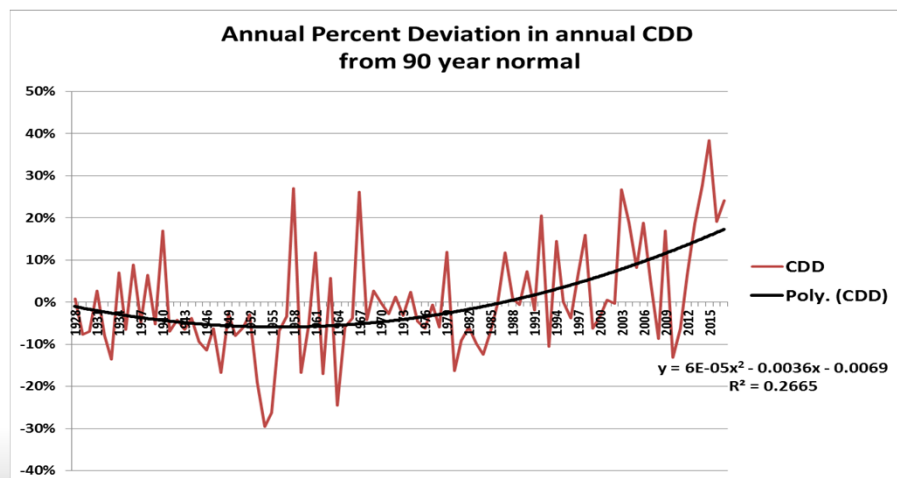
- **Winter of 2017 was among the top 5 coldest winters experienced in the region**
(1929, 1937, 1949, 1950, 1985)
- **Average regional temperatures dropped to 19.6 degrees on January 6th 2017**
- **In the past 90 years region had experienced only 190 winter days colder than January 6th.**
- **Summer of 2017 was warmest in the past 90 years except for 2015.**

Northwest Power and Conservation Council 10 SEVENTH NORTHWEST POWER PLAN

Trends in Temperatures Heating



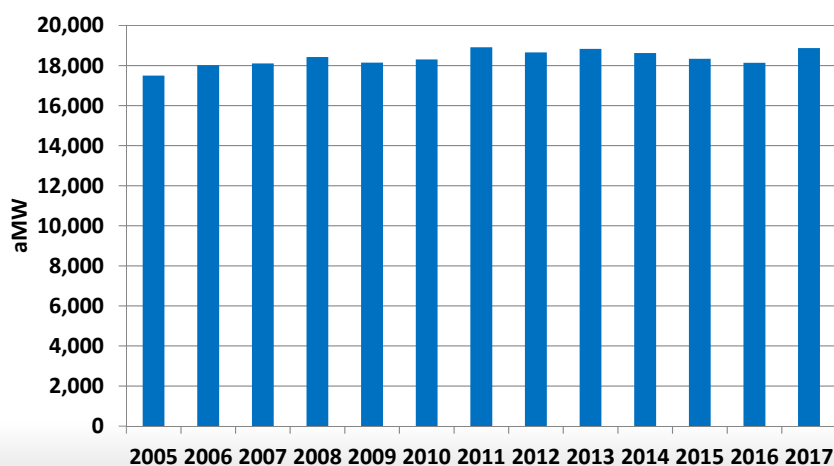
Trends in Temperatures Cooling

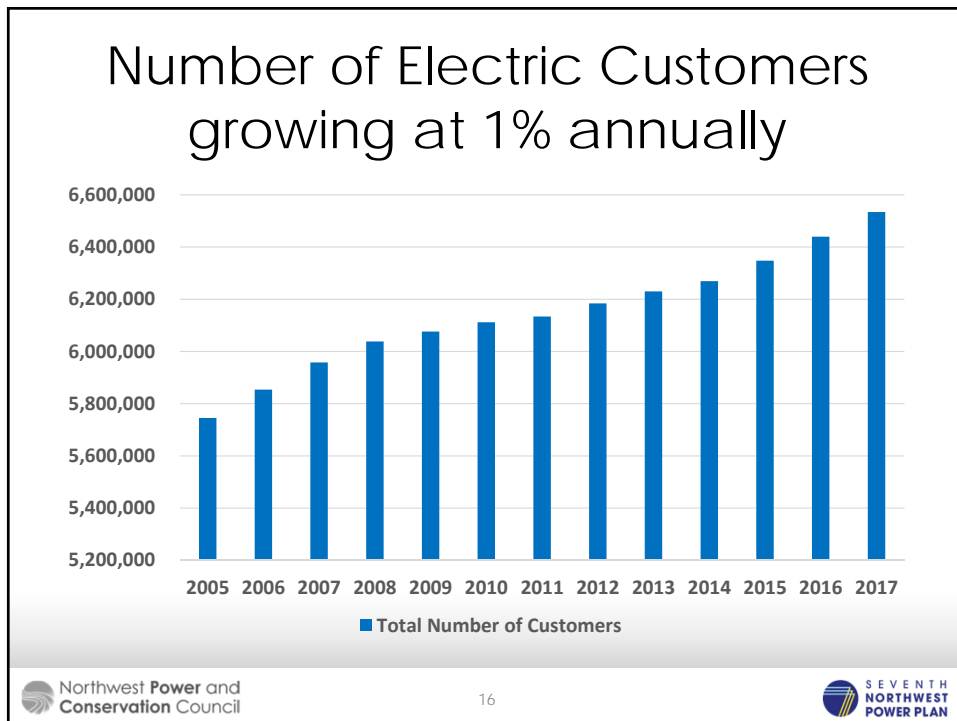
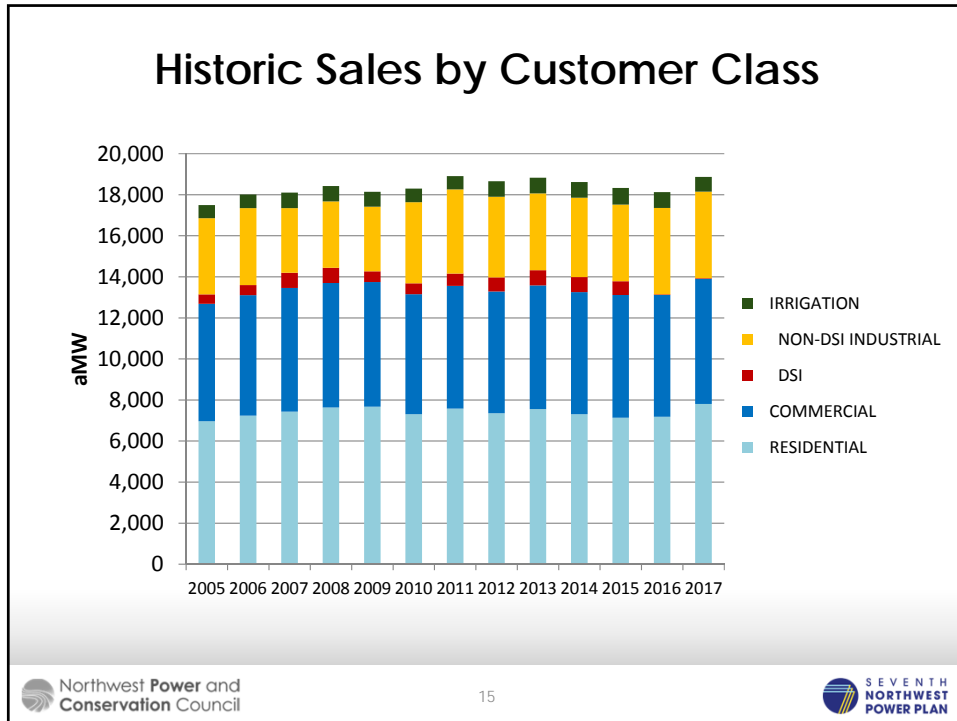


2017 Sales were higher than 2016 by about 740 aMW

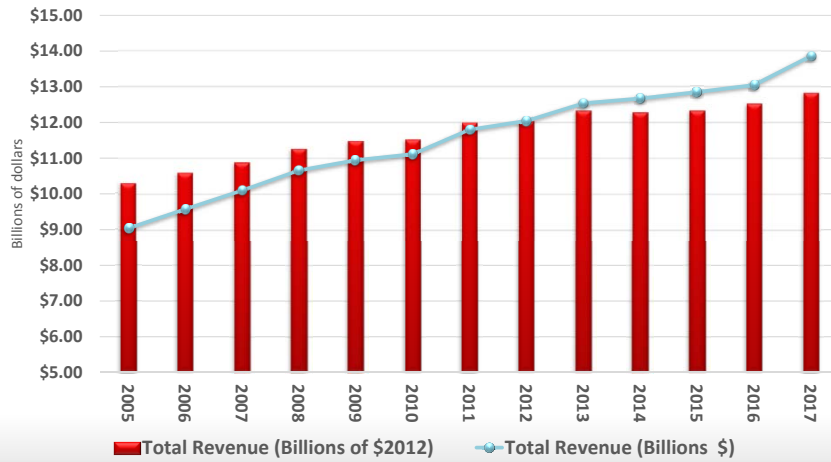
- This was in large part due to colder winter and hotter summer in 2017 compared to 2016
 - Residential sector sales increased by 620 aMW
 - Commercial sector sales increased by 165 aMW
 - Industrial increased by 14 aMW
 - DSI increased by 2 aMW
 - Irrigation declined by 61 aMW
 - Transportation increased by 1 aMW

2017 Electricity Sales were 740 aMW higher than 2016 Sales

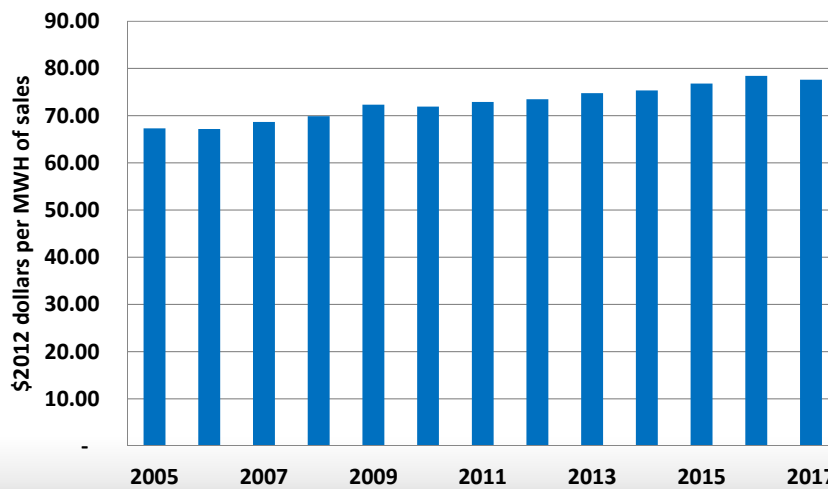




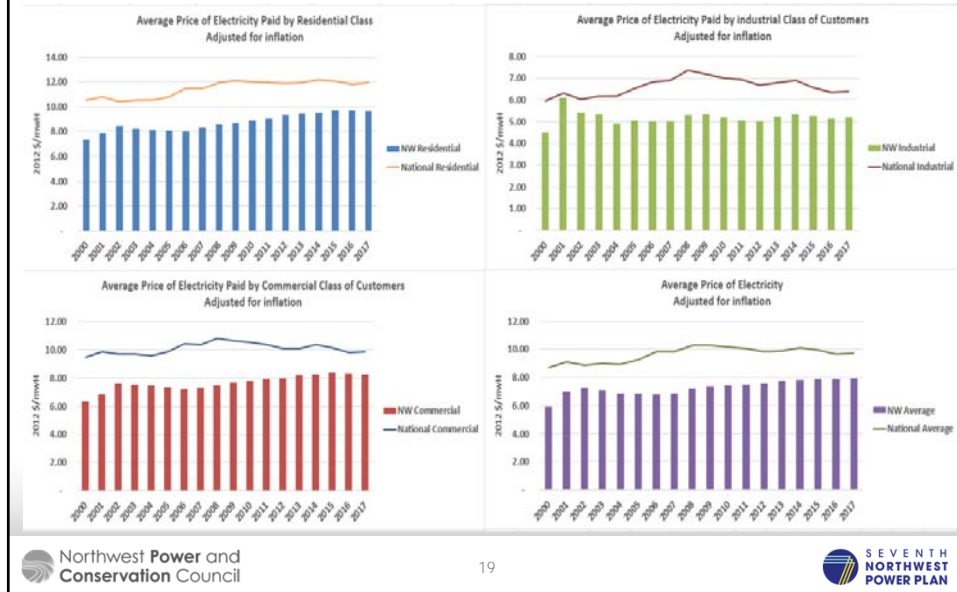
Electric Utility Retail Sales Revenues Increased by 800 million dollars in 2017



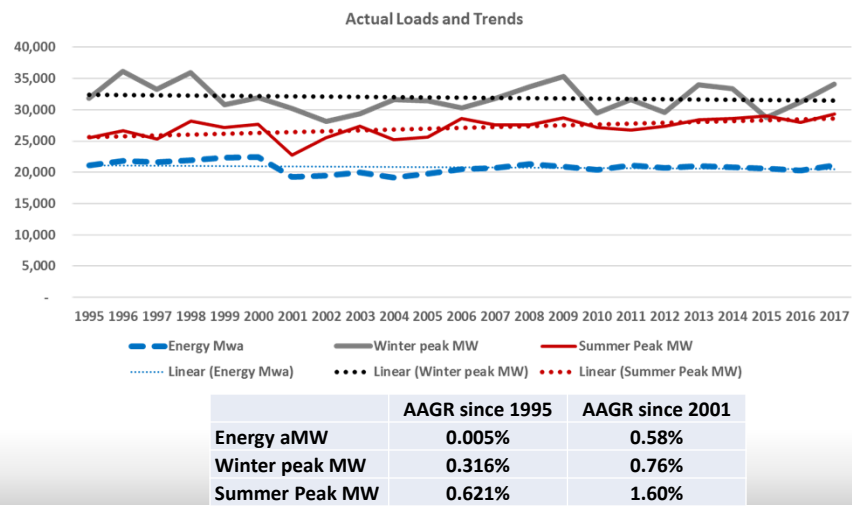
Since 2012 Average Regional Electricity prices have been increasing at 1% per year



Regional Electricity Prices in 2017 Were 23% Below National Average

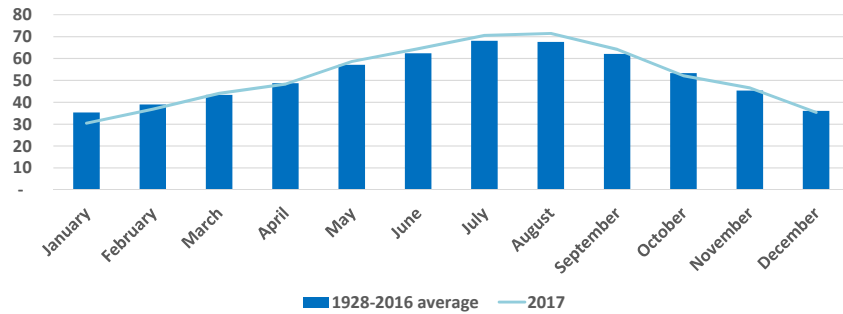


Long-term Trends in Regional load growth shows rather flat growth rate Except for Summer peaks



Average Daily Temperature in 2017 was 14% colder in month of January and 6% hotter in month of August

2017 Average Monthly Temperatures Compared to Historic Average

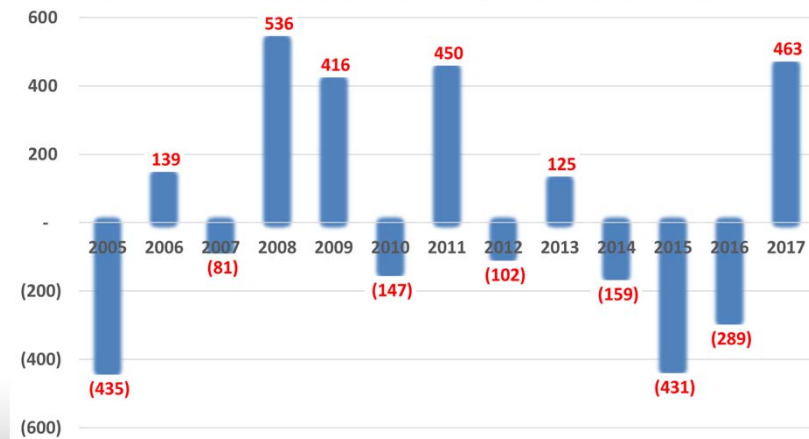


	January	February	March	April	May	June	July	August	September	October	November	December
1928-2016 average	35	39	43	49	57	62	68	68	62	53	45	36
2017	30	37	44	48	59	64	71	71	64	52	47	35
Percent Difference from Historic Average	-14%	-5%	2%	-1%	3%	3%	4%	6%	3%	-2%	3%	-2%

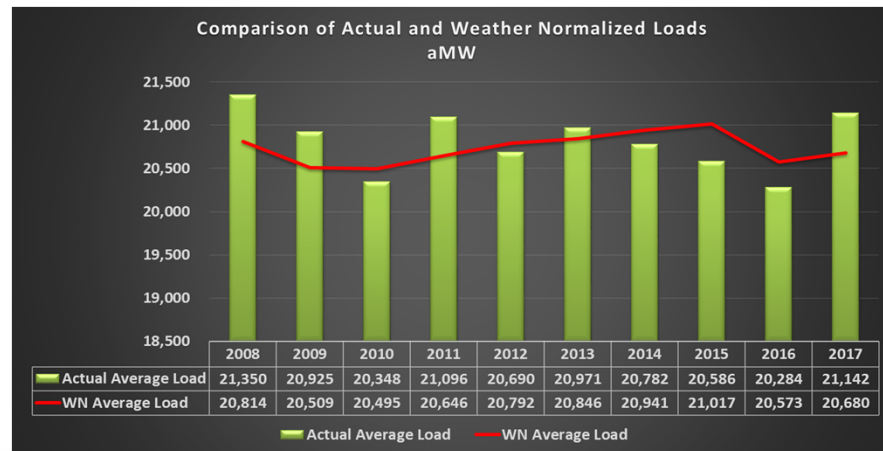
This colder winter and hotter summer pushed annual average loads up by about 500 aMW

Impact of Weather on Regional Loads

Positive Values indicate that actual loads were higher than under normal weather

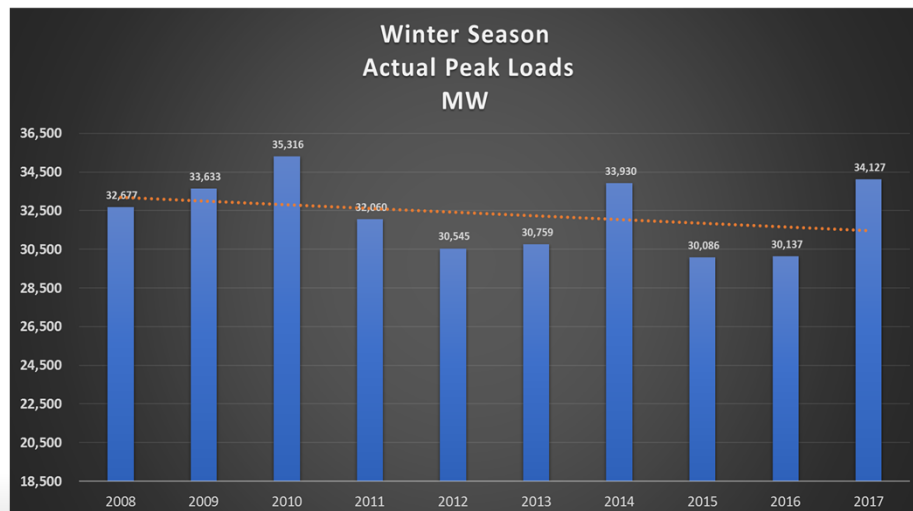


2017 loads were higher by about 500 aMW due to cold winter and Hot summer

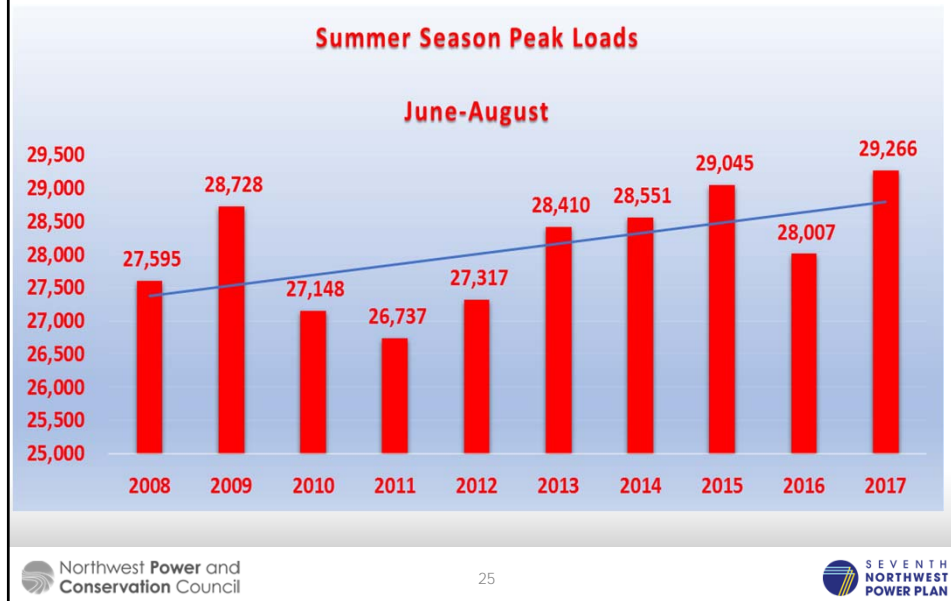


In the past 10 years, regional loads have declined at average annual rate of 0.1% per year.
After adjustment for impact of weather regional loads have declined at 0.07% per year

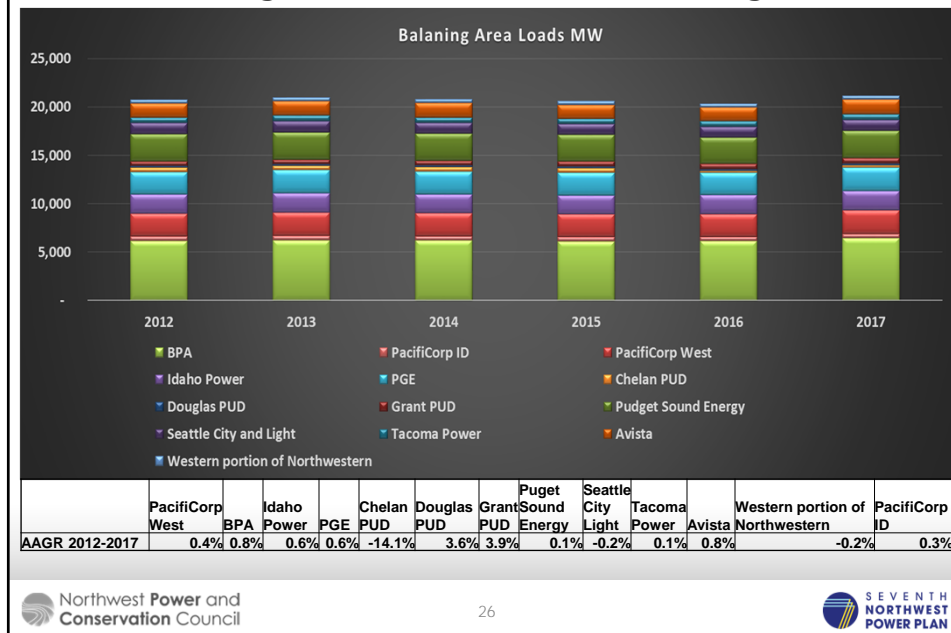
2017 peak loads were significantly higher



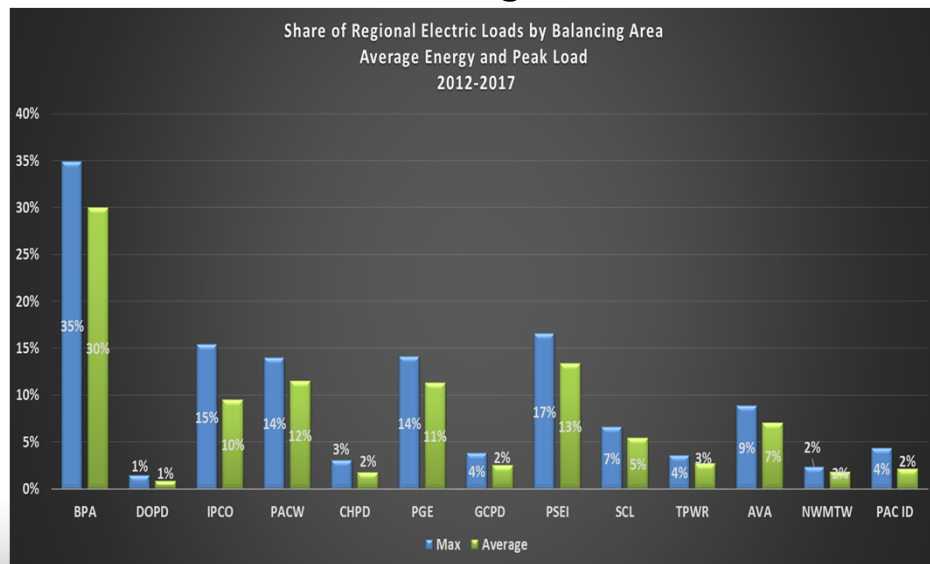
Summer Peaks continue to grow fast



Un-even growth across the Balancing Areas



BA's share of regional Load



Behind-the-meter solar installations continue to grow

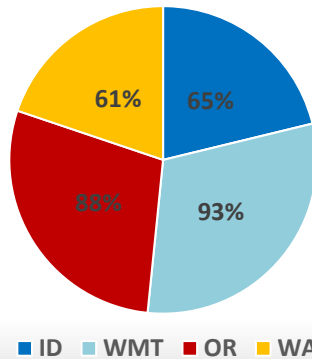
	2015	2016	2017
number of solar installations	23,374	28,202	36,674
capacity installed Cumulative (DC MW)	187	214	277
Energy sold back to the utility MWH	16,916	6,529	8,286

Compared to 2016

- Number of installations increased by 30%
- Capacity expended by 30%
- More energy was used on-site.
- Energy sold back was increased by 27%

Advance Metering Continues to Expand

Percent of Meters with AMI or AMR by State



Regionwide in 2017
6823 aMW
or about 36% of total sales
Had access to advanced metering

2017 Time-of-Use Rate Schedules in the Region

- There are 15 TOU rate schedules in the region. Compared to 2015 and 2016 number of customers on TOU has gone 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.

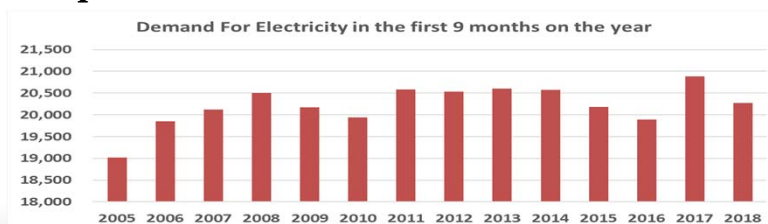
Number of Enrolled Customers	Residential	Commercial	Industrial	Transportation	Total	percent of total customers
2015	17,346	1,612	1,933	2	20,893	0.33%
2016	16,903	2,958	2,152	2	22,015	0.34%
2017	16,290	1,099	2,105	2	19,496	0.30%
Percent of customer class	0.3%	0.1%	2%		0.30%	

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

out of 147 utilities only 15 offer some form of TOU pricing

How has 2018 Electricity Demand been shaping up?

- For the first 9 months of the 2018 demand for electricity has been down by about 3% compared to the first 9 months of 2017. this translated to 612 aMW lower demand compared to 2017*.



* - 2018 data is preliminary and subject to change

Summary

- Regional economy is continuing to grow
- Employment levels have returned and exceeded pre-recessionary levels.
- Cold winters and hot summers continue to drive load and capacity needs
- Electricity sales increased significantly in 2017