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February 2, 2020

MEMORANDUM

TO: Council Members

FROM: Massoud Jourabchi, Manager Economic Analysis

SUBJECT: State of the Utilities Report and Update on 2020 Loads and Covid-19 Impacts

BACKGROUND:

Presenter: Massoud Jourabchi

Summary: In last December, staff reported that 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.

Then came Covid-19 pandemic. During this natural disaster, region lost was over 300,000 jobs. In December 2020 alone, region lost over 900,000 jobs compared to December 2019. Concerns for safety, caused massive reduction for demand and increase in layoffs in Travel industry, Hotels, Restaurants, and Public Entertainment. Employment in manufacturing industries such as food processing, slaughterhouses and auto industry were not spared from cuts. The disaster relief funds helped employment and income to some degree.

Although average employment and income levels remained relatively stable. These averages are misleading as high levels of unemployment

translated to increased number of families in distress in housing, food, health care.

In 2019 and 2020 Climatic warming trends continued. Reducing winter heating requirements by 2% in 2019 and 7% in 2020 (compared to historic average). While, summer cooling requirement increased by 25% in 2019 and 27% in 2020.

For the electric utilities, preliminary comparison of first 10 months of 2020 and with first 10 months of 2019 show electrical demand were reduced marginally, about 536 aMW (0.4 percent). Sales to residential customers increased slightly while commercial and industrial customer demand declined.

Warmer than normal winter temperatures 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%.

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.

2019-2020 State of Electric Industry- Economy, Temperatures, Sales, Loads, Revenues and Rates

Massoud Jourabchi
February 10, 2021
Full Council Webinar



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ENERGY FUTURE

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In this presentation

- Determinants of Demand for Energy
- 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



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Determinants of Demand

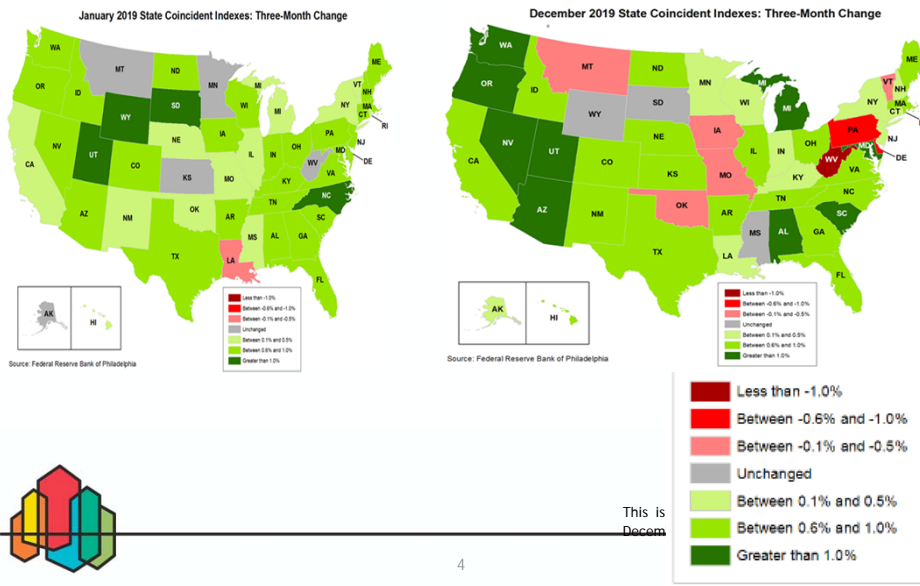
- Demand for Energy is Driven by Demand for Goods and Services in homes, buildings and transportation.
- Factors impacting demand for Electricity are
 - Long-term Trends Impacting Energy
 - Demographic Conditions
 - Economic Conditions
 - Inter-fuel Competition
 - Building Codes and Appliance Standards
 - Climate (weather)
 - State and Federal Policies on electrification of transportation
 - Short-term Trends Impacting Peaks
 - Change in regional daily and hourly temperatures



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Regional Economy Continued Growth in 2019

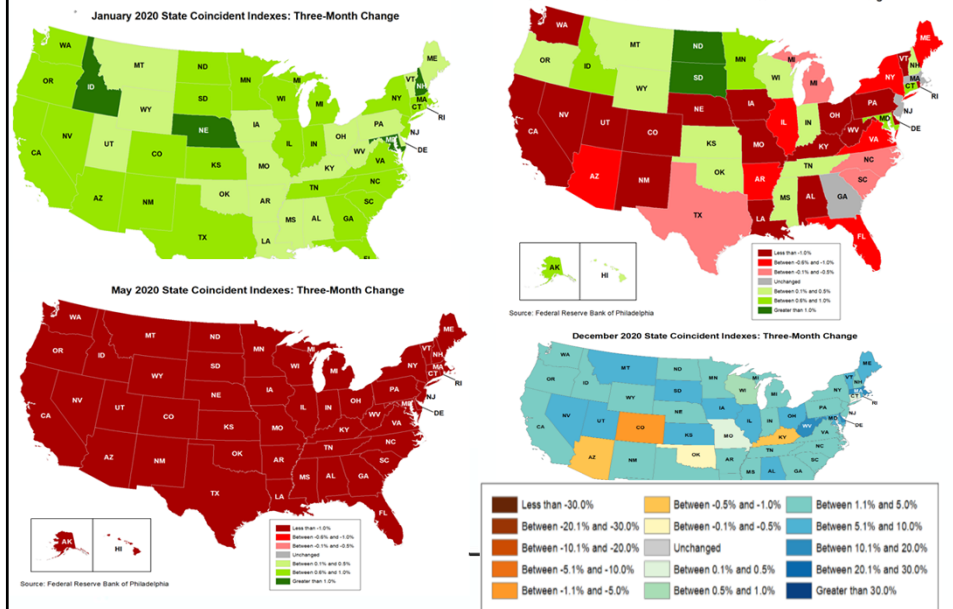


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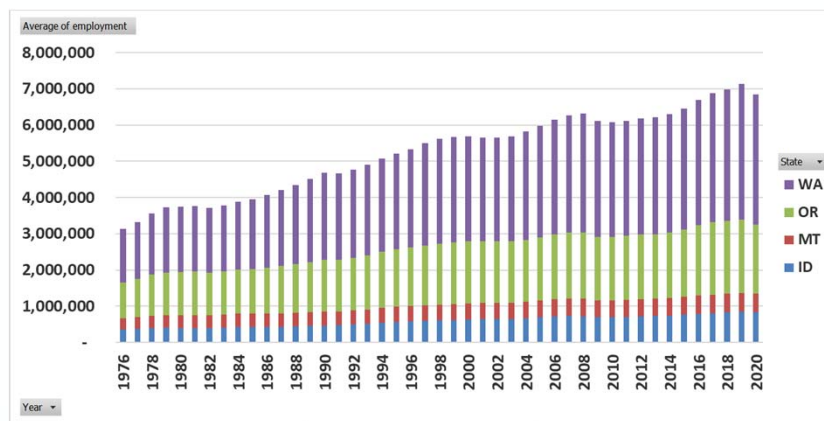
This is
December

And then 2020 Natural Disaster Happened



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Regional Employment that was Expanding in 2019 in 2020 Declined by almost 300,000 Jobs

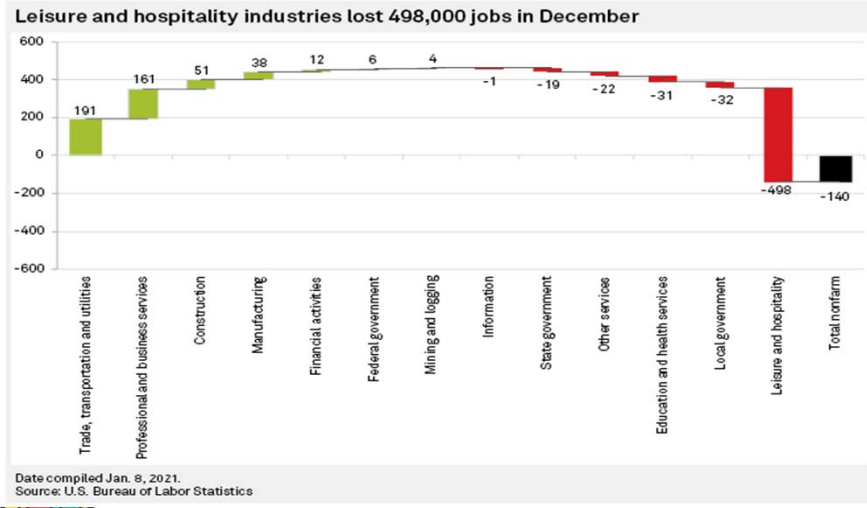


State	March 2019 average weekly wages
Idaho	\$829
Montana	\$843
Oregon	\$1,059
Washington	\$1,362

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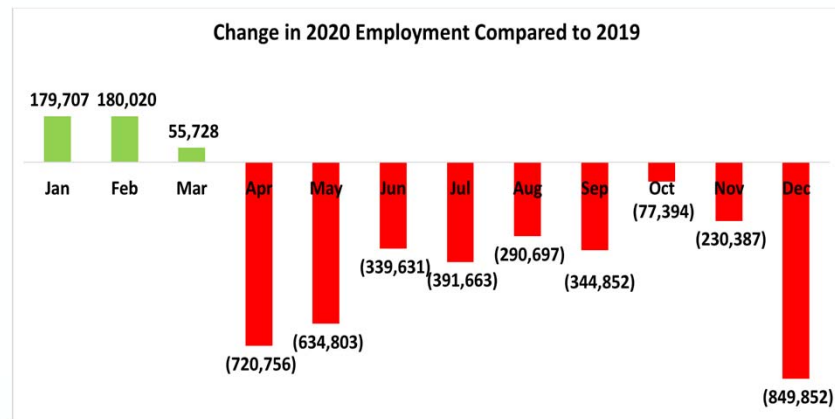
In Dec. 2020 Nationwide almost half a million jobs in leisure and hospitality industry were lost



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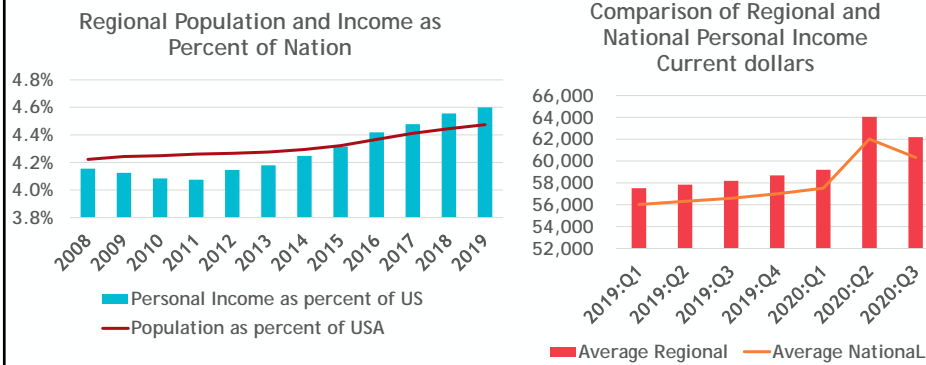
Compared to 2019, In the first Quarter of 2020, employment was on an expansionary path, But in the next three quarters it has been contracting



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Population and Income continued to increase in 2019 and 2020



	2019:Q1	2019:Q2	2019:Q3	2019:Q4	2020:Q1	2020:Q2	2020:Q3
Region	841	848	856	866	876	950	926
USA	18,357	18,471	18,590	18,751	18,941	20,445	19,913
Regional Share	4.58%	4.59%	4.60%	4.62%	4.62%	4.65%	4.65%

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On Average Rate of Increase in Income Has been Higher than Rate of Increase in Expenditure

Per capita Personal Expenditures \$2016	2008	2019	Average Annual growth Rate
Housing and Utilities	6,596	7,553	1.2%
Transportation	4,191	3,840	-0.8%
Health Care	5,456	7,206	2.6%
Food and Clothing	6,489	6,935	0.6%
Recreation	2,905	3,576	1.9%
Furnishing Household items	4,166	4,461	0.6%
Other Misc.	5,470	6,316	1.3%

Per Capita Personal Expenditure and Income (\$2016)	Average Annual growth Rate 2008-2019
Expenditures	1.2%
Income	1.7%

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Un-Even Impact of Covid-19 on Communities Example for Oregon

- Oregon's unemployment rate increased from 3.5% in February 2020 to 8% in September 2020 (Lehner 2020)
- the number of jobs that pay \$40,000 or less per year decreased by 12% during the same time period (Lehner 2020).
- Pandemic-related school closures increased food insecurity for families with currently low incomes (Romero 2020)
- As of December 2020, more than 1400 Oregonians had died from the coronavirus (OHA 2020a).
- In September, 2020, the per capita infection rate per 100,000 for Black people was 3208, compared to 1294 for White people (OHA2020a)
- Latinos represent 13% of Oregon's population but in September, 2020, accounted for almost 30% of COVID-19 cases (OHA 2020a).
- Native Americans had infection rates 400% that of White population (McPhillips 2020)
- Native Americans accounted for 8% of COVID-related hospitalizations despite representing 1% of Oregon's population (OHA 2020a).



Source: Fifth Oregon Climate Assessment - January 2021 Page 174-175
Oregon Climate Change Research Institute

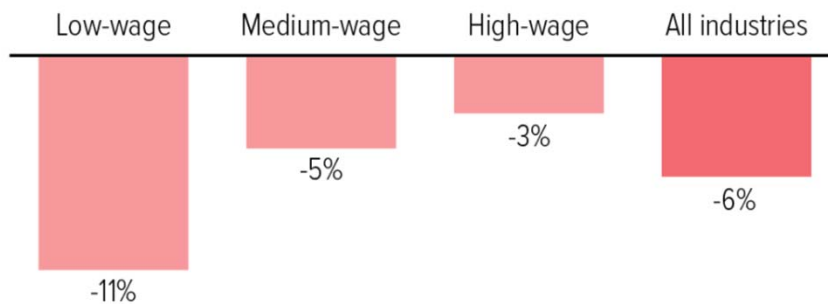
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Job Losses Largest in Low-Wage Industries

Percent change in number of jobs, February to December 2020



Note: Industries were ranked by average wages in February and divided into three groups containing roughly the same number of jobs.

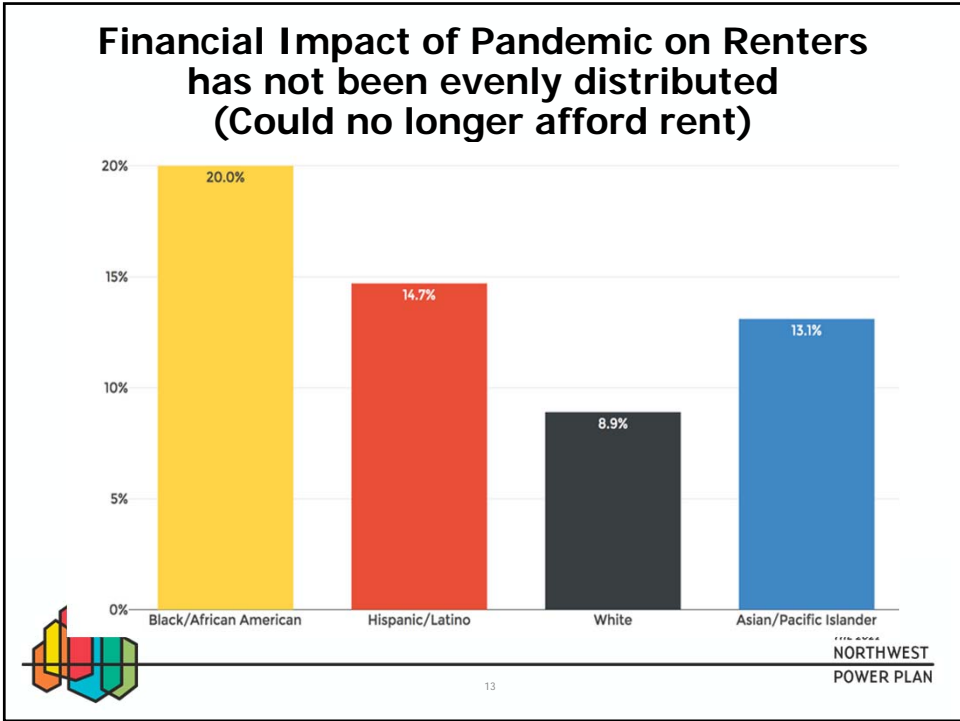
Source: CBPP calculations of Bureau of Labor Statistics data



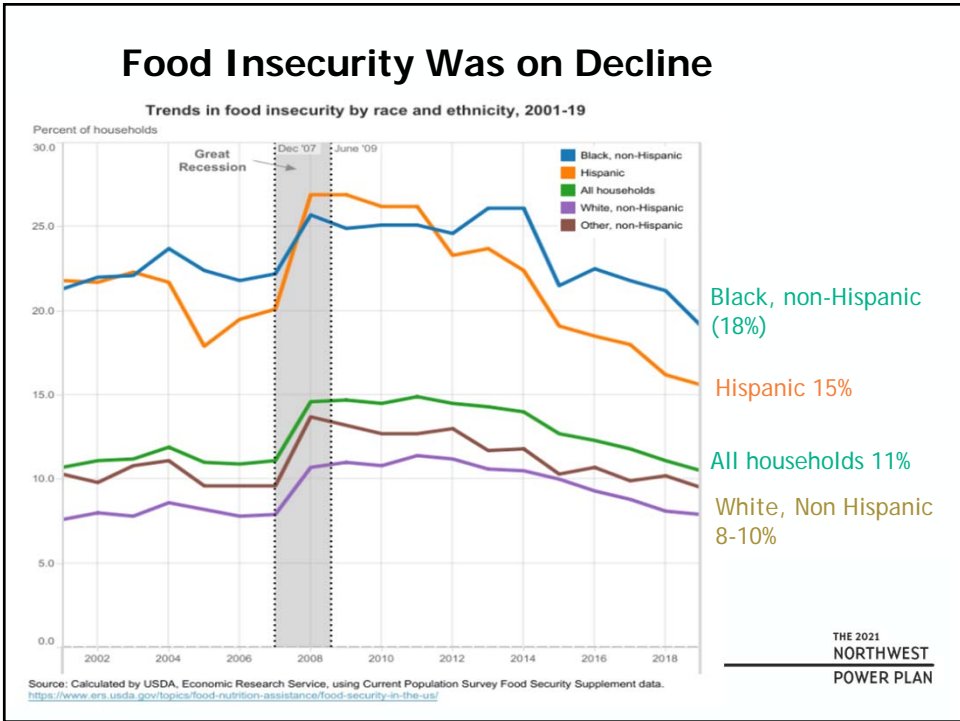
CENTER ON BUDGET AND POLICY PRIORITIES | CBPP.ORG
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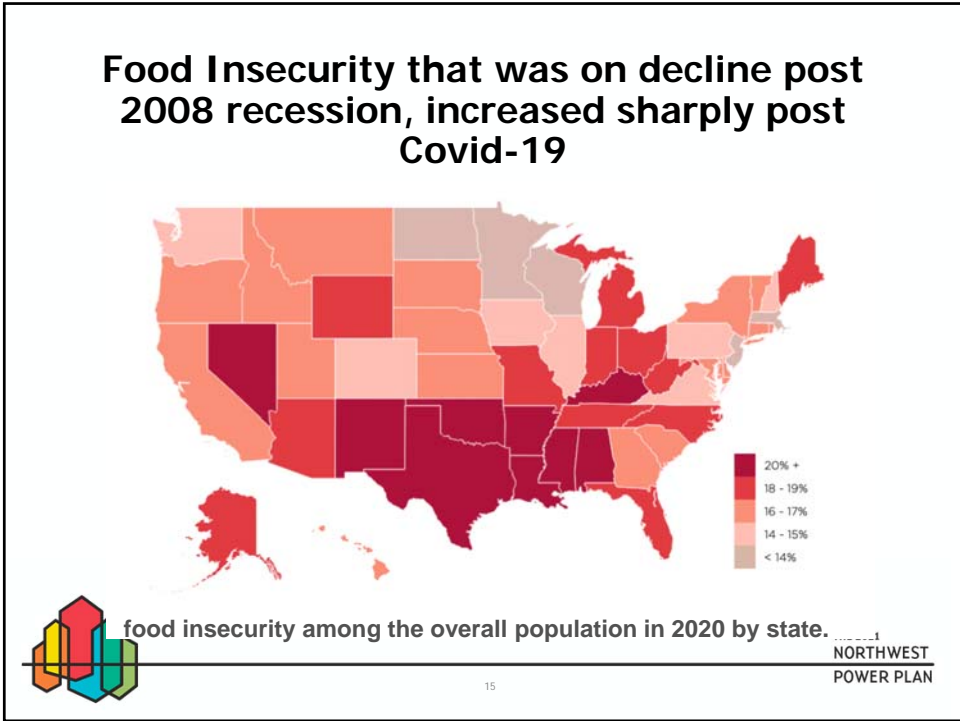
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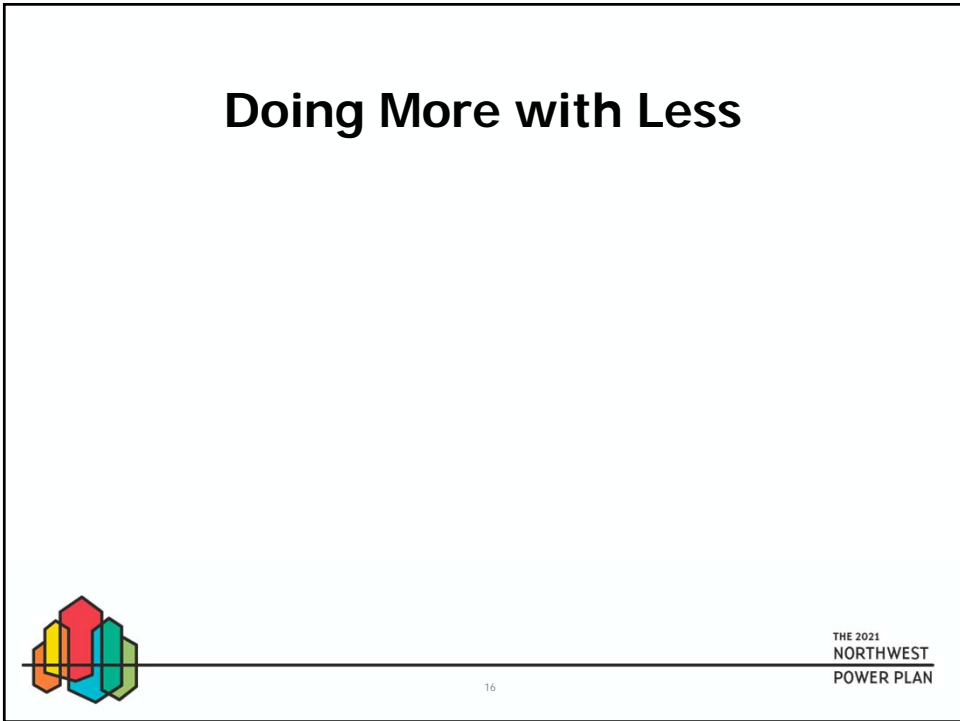
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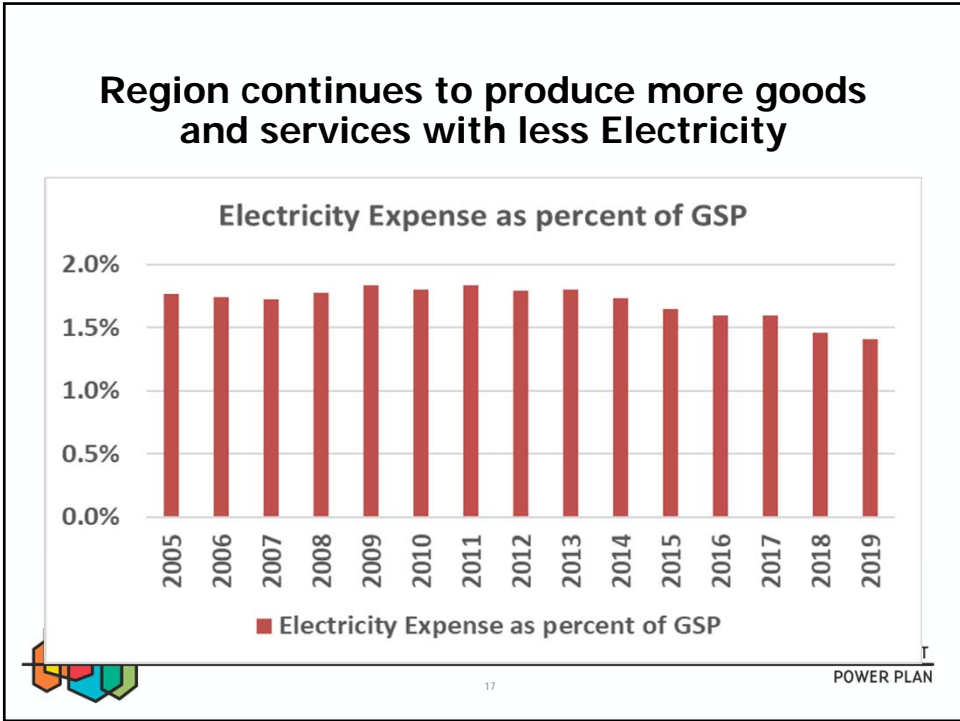
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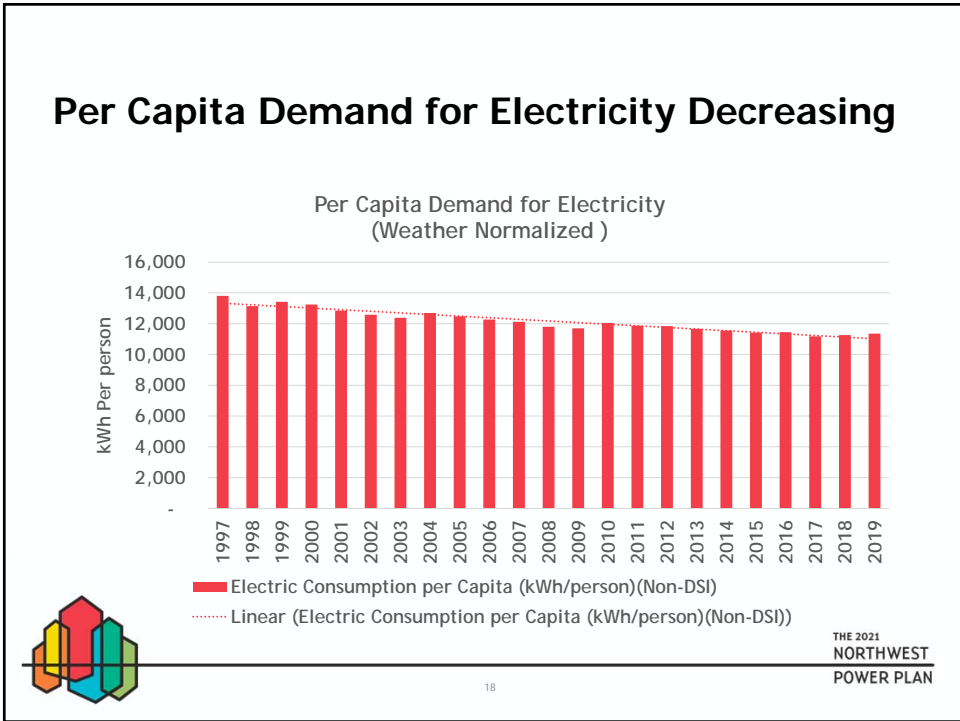
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Transportation Electrification

- Sea level change in EV markets
- Major automakers increased commitment to going electric
- Globally EV Sales grow from 0.2% market share in 2013 to over 4.2% by 2020
- Global Plug-in Vehicle Sales Reached over 3.2 Million in 2020
- Europe Surpassed China in new Electric Vehicle New Sales in 2020
- In US 2020 Sales were up 19% compared to 2019
- Regional Sales data for 2019 and 2020 are not available at this time

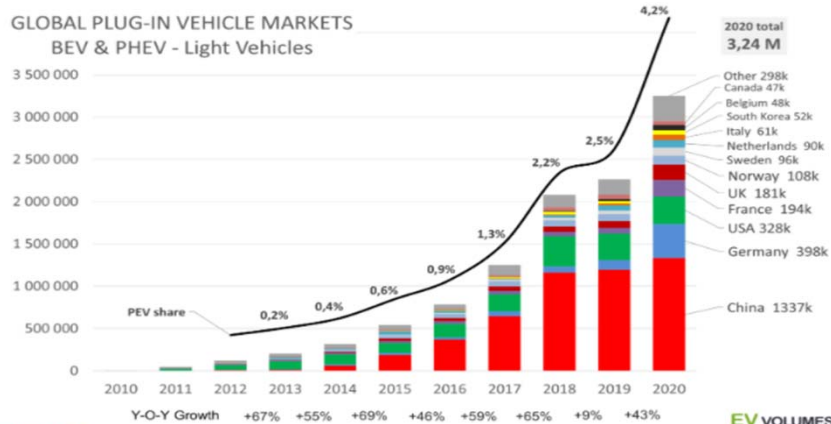


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Globally Electric Vehicles Sales grown from 0.2% market share in 2013 to over 4.2% by 2020



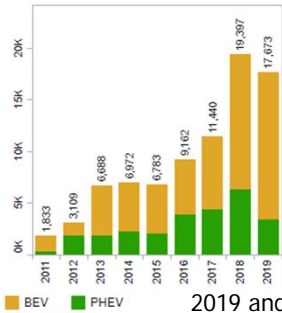
EV VOLUMES
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Electric Passenger Vehicle in the four NW states

EV sales Global Sales estimated at 17,000 in 2010 reached 2.1 million by 2019.
 EV's on the road (stock) in 2019: 7.2 millions.
 In US 2020 Sales were up 19% compared to 2019.



# of EV & PHEV	2018	Market share of new	Year-over-year Increase
Washington	12,650	4.28%	70%
Oregon	5,976	3.4%	45%
Idaho	497	0.77%	88%
Montana	274	0.47	67%
USA	328,118	1.96%	63%

2019 and 2020 values not ready



<https://autoalliance.org/energy-environment/advanced-technology-vehicle-sales-dashboard/>

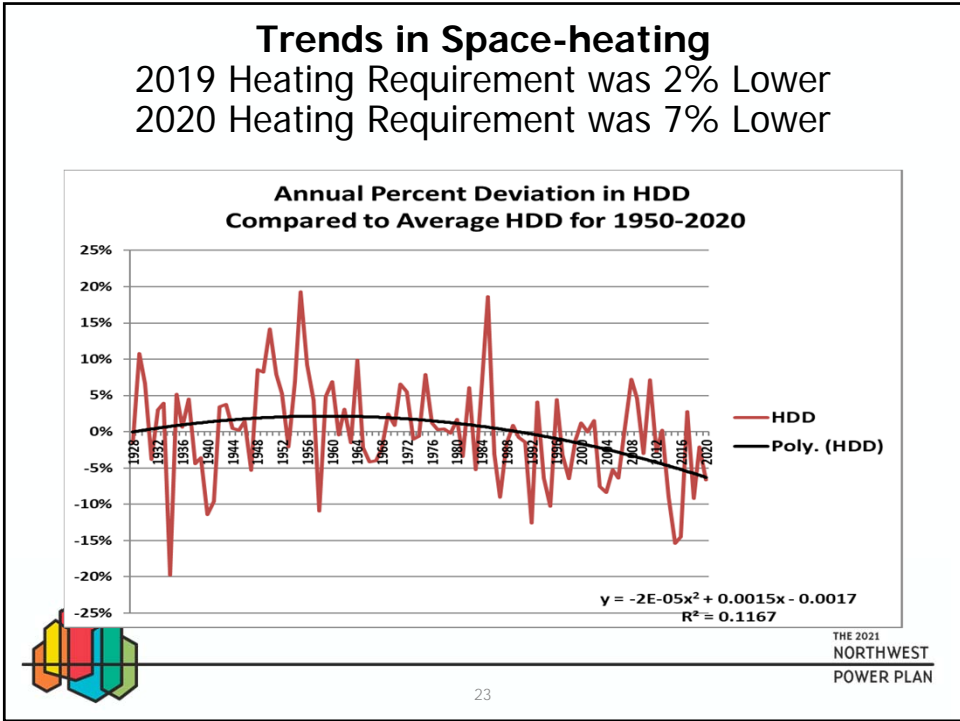
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Impact of Temperature on Loads

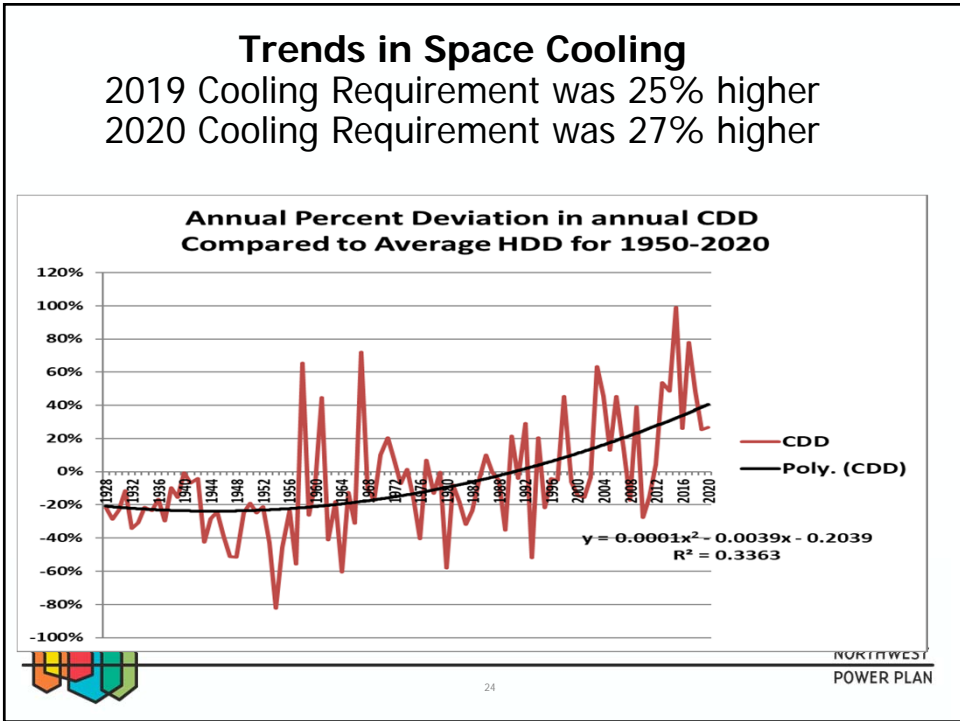
- Heating and Cooling Requirements represent about 30% of total load.
- 2019 Winter heating requirements decreased by 2%
- 2020 Winter heating requirements decreased by 7%
- 2019 Summer cooling requirements increased by 25%
- 2020 Summer cooling requirements increased by 27%



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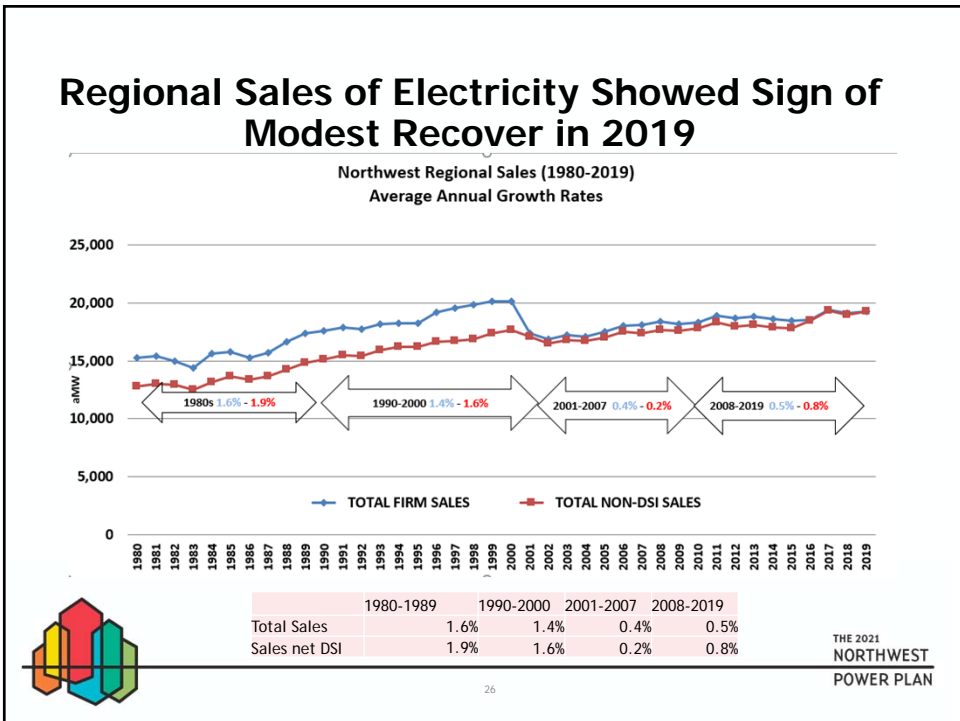
Regional Electricity and Natural Gas Sales



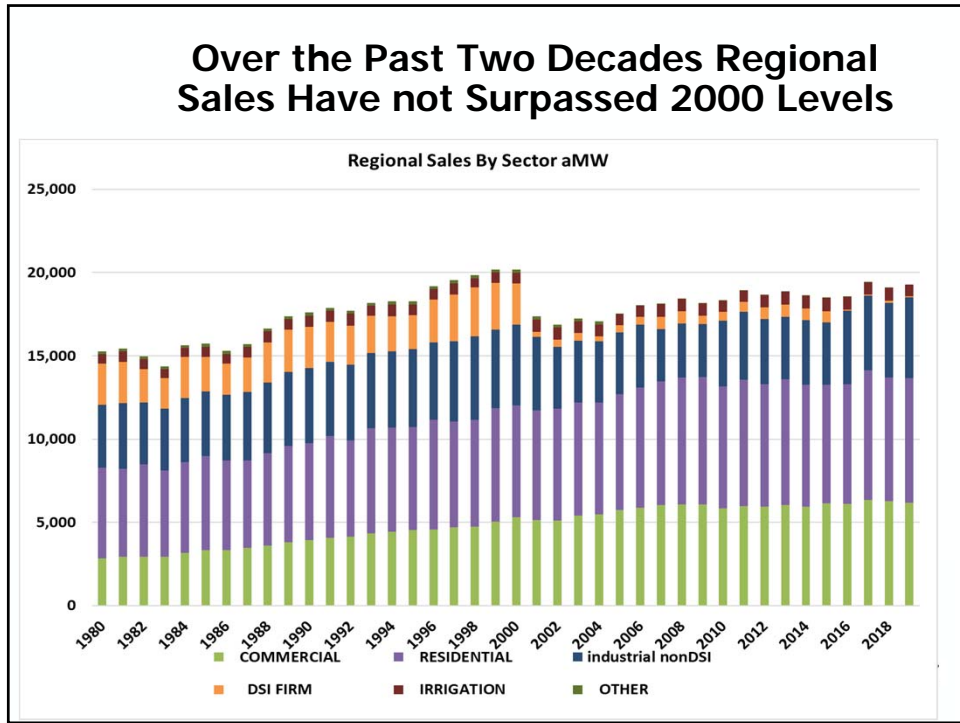
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in 2019 Regional Demand Increased by 200 aMW

	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 aMW	19,087	19,287	200	0.25%

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




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IOU's Demand increase More than POU's

Public Utilities	2018	2019	Year-over-year change
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 SALES	9,539	9,586	47
IOUs			
	2018	2019	Year-over-year change
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 Sales	9,548	9,701	153



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Compared to first 10 months of 2019 in 2020 Regional Sales Declined by 536 aMW or about 0.4% *

Public Utility Decline was significantly higher than IOUS


aMW	Residential	Commercial	Industrial	Total
Total	37	(348)	(225)	(536)
Publics Utilities	12	(106)	(254)	(348)
IOUs	25	(242)	29	(189)

Residential sector increased minimally

Commercial sector declined significantly

Industrial Sector demand declined less than Commercial sector.

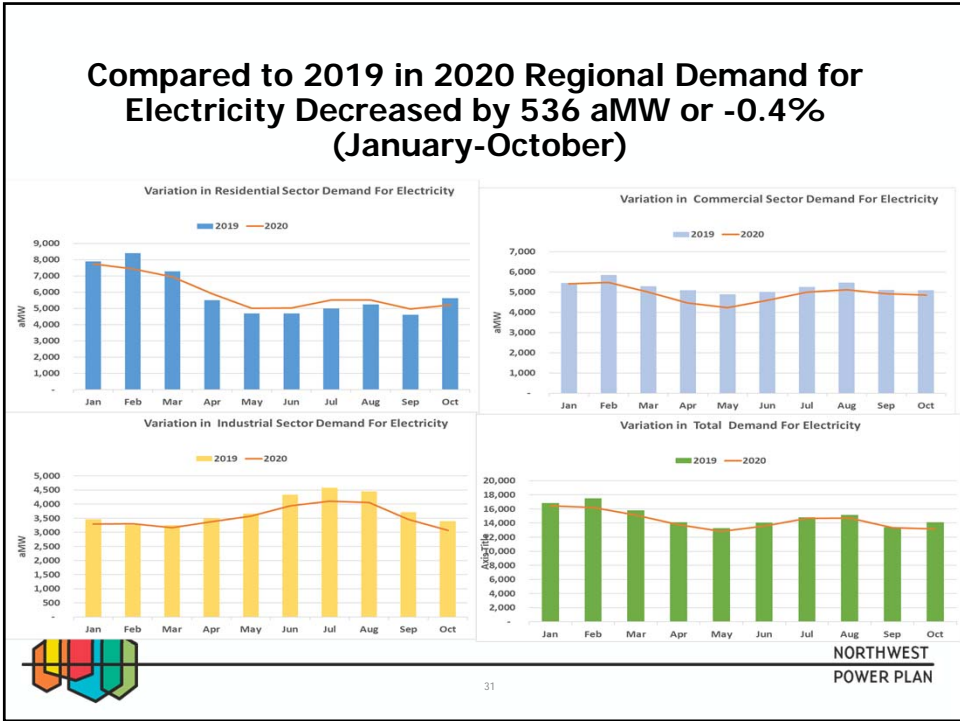
IOU industrial demand up slightly



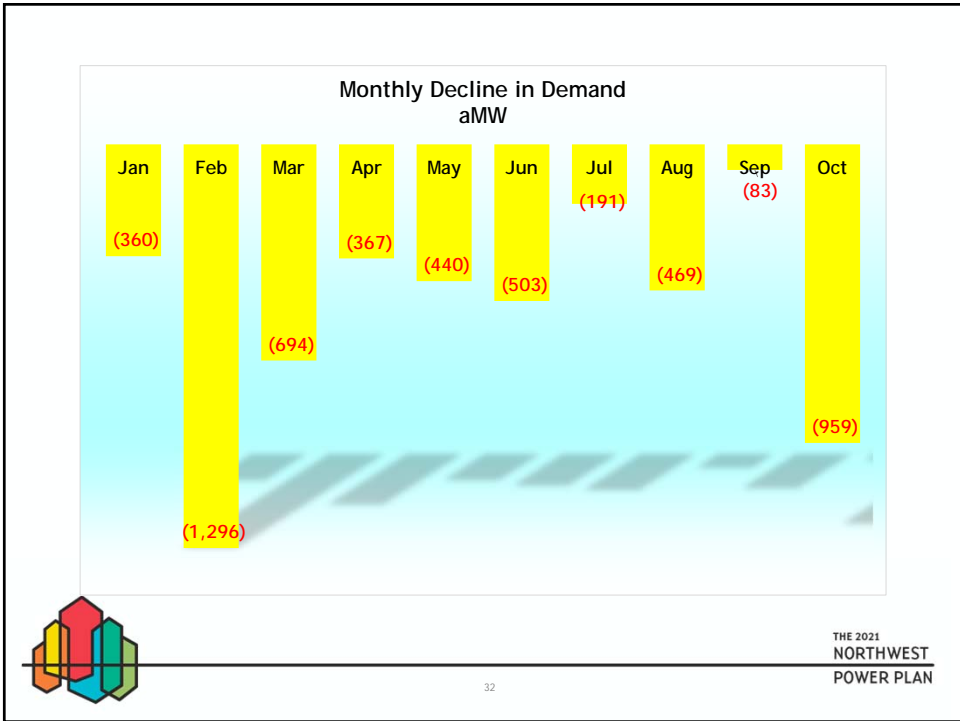
EIA 861m -monthly survey of utilities Jan-Oct data. Not full year
*- preliminary subject to change

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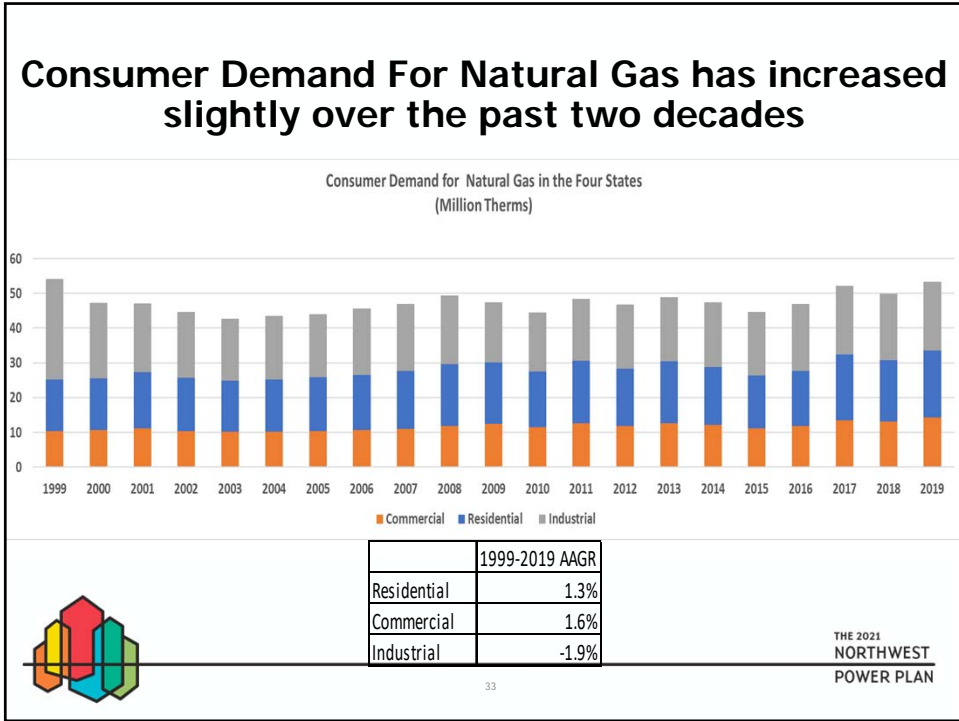
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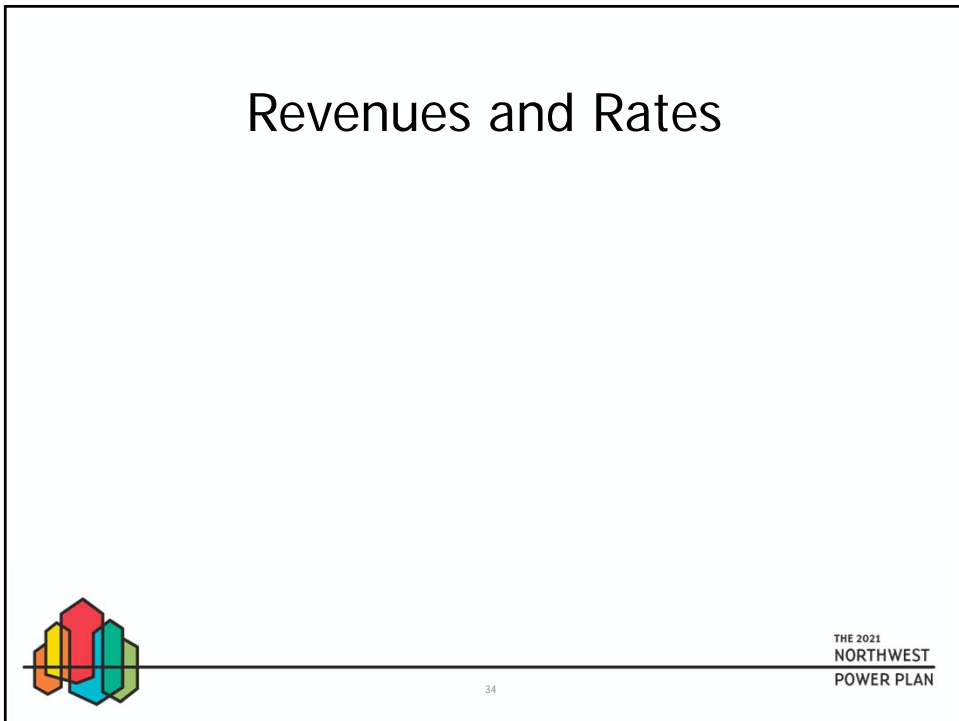
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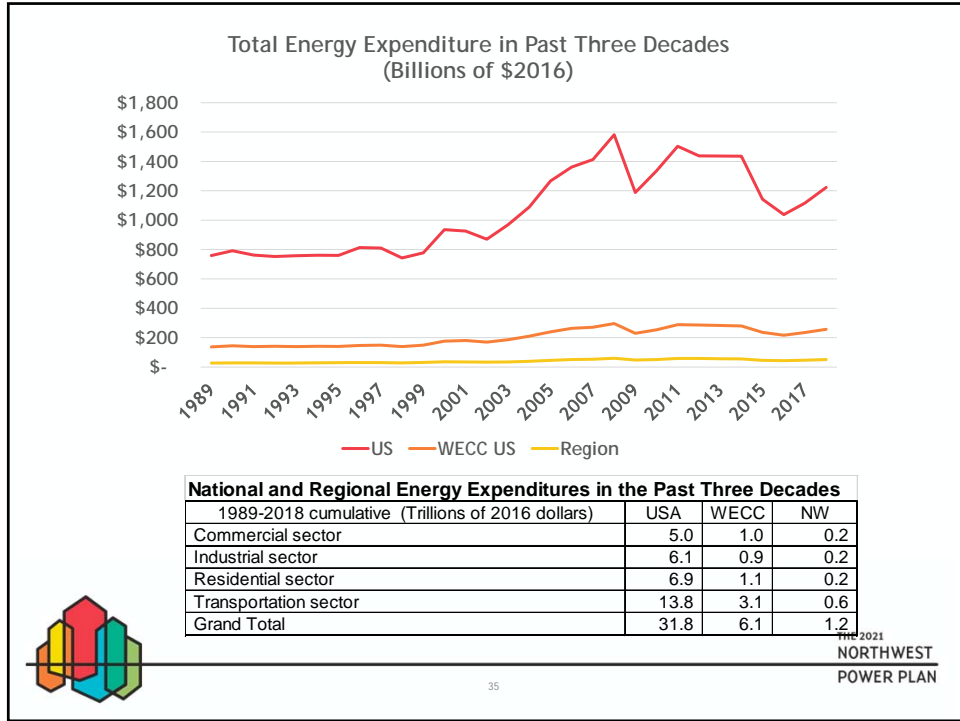
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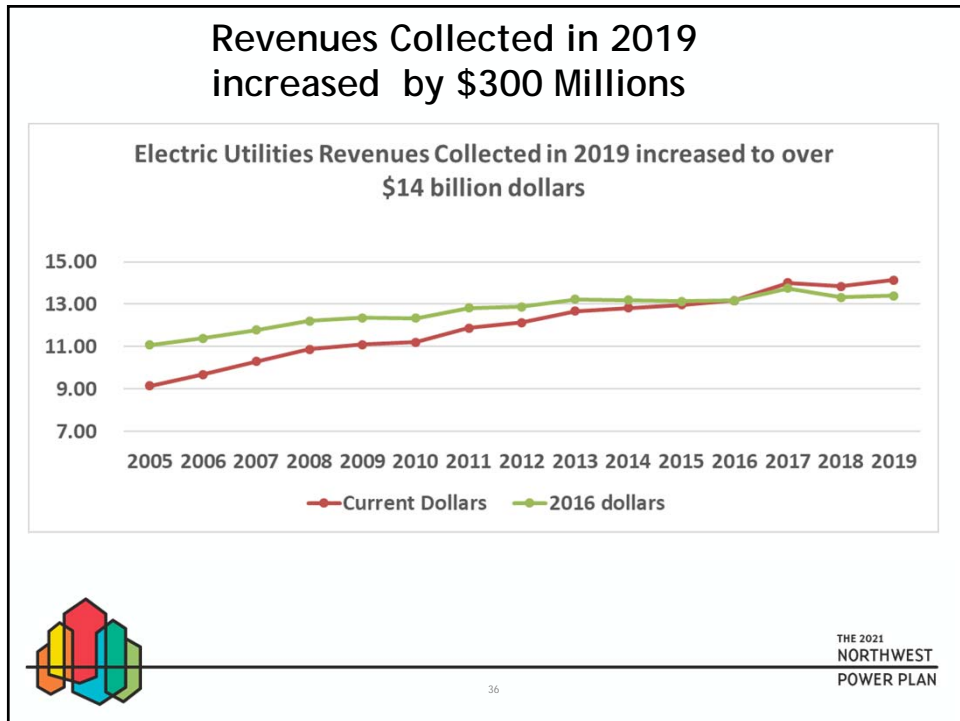
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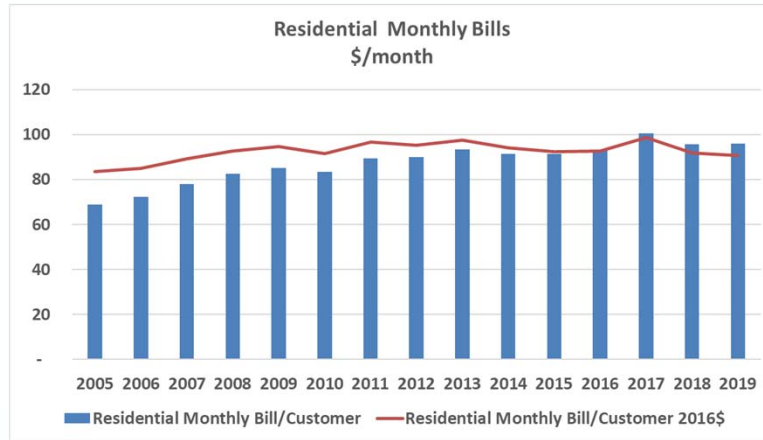


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Residential Monthly Bills Declined Slightly



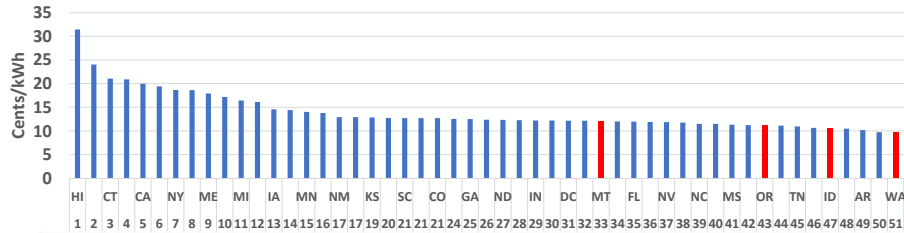
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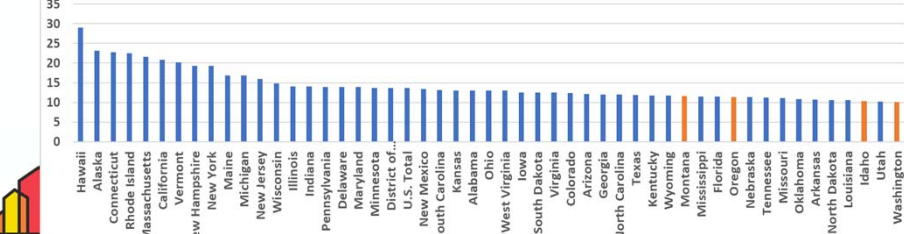
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Regional Electricity Rates Continue to Represent Some of the Lowest in the Nation

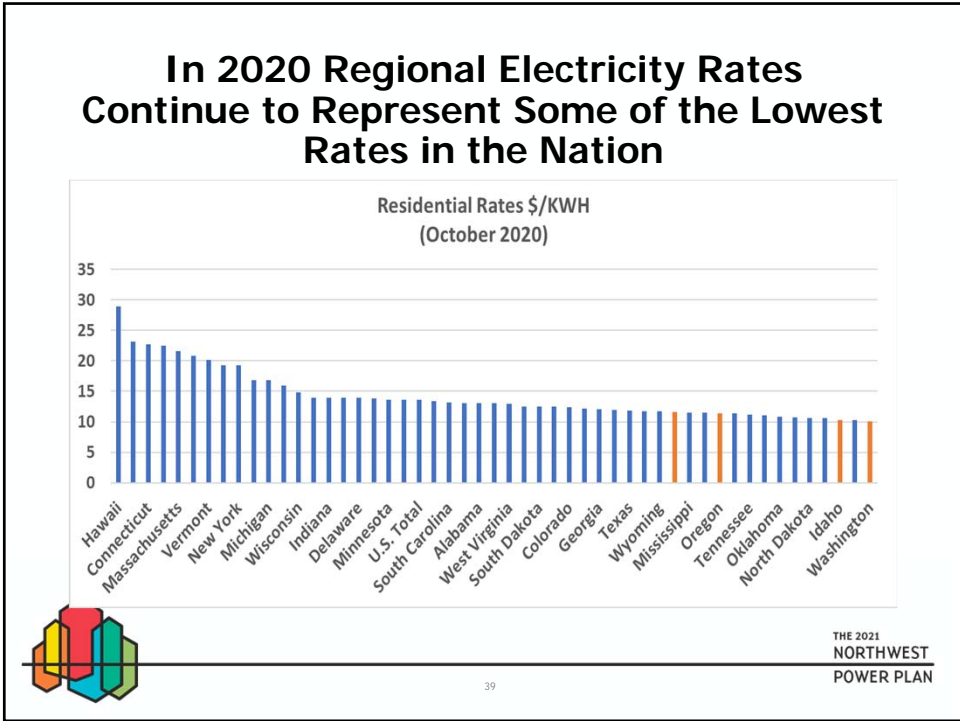
State Ranking of Residential Rates July 2019



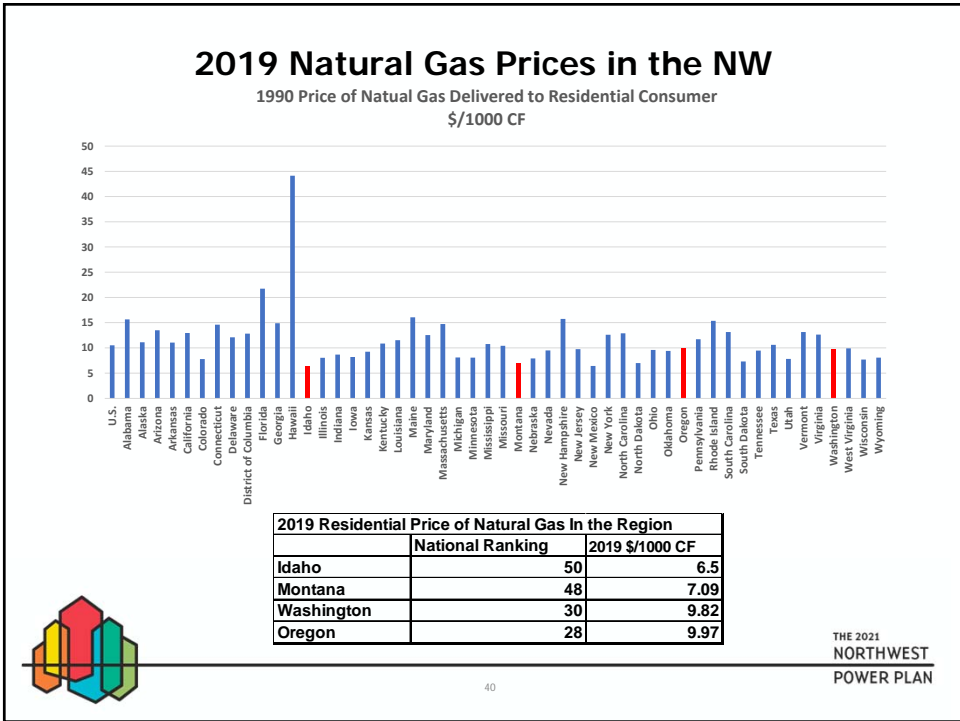
Residential Rates Cents/KWH
(October 2020)



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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%



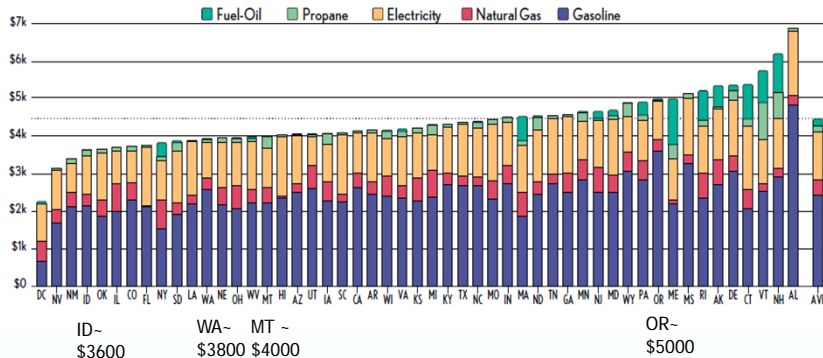
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Estimated Energy Expenditure including Transportation \$/year per household National Average ~ \$4200

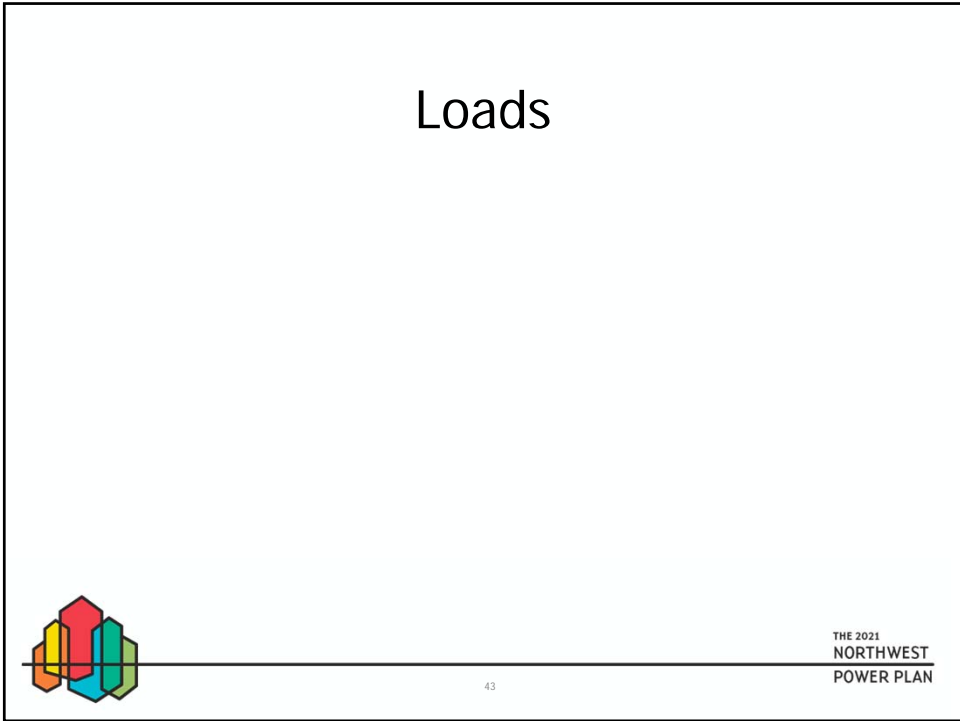
2019 Household energy expenditures, all fuels, by State.



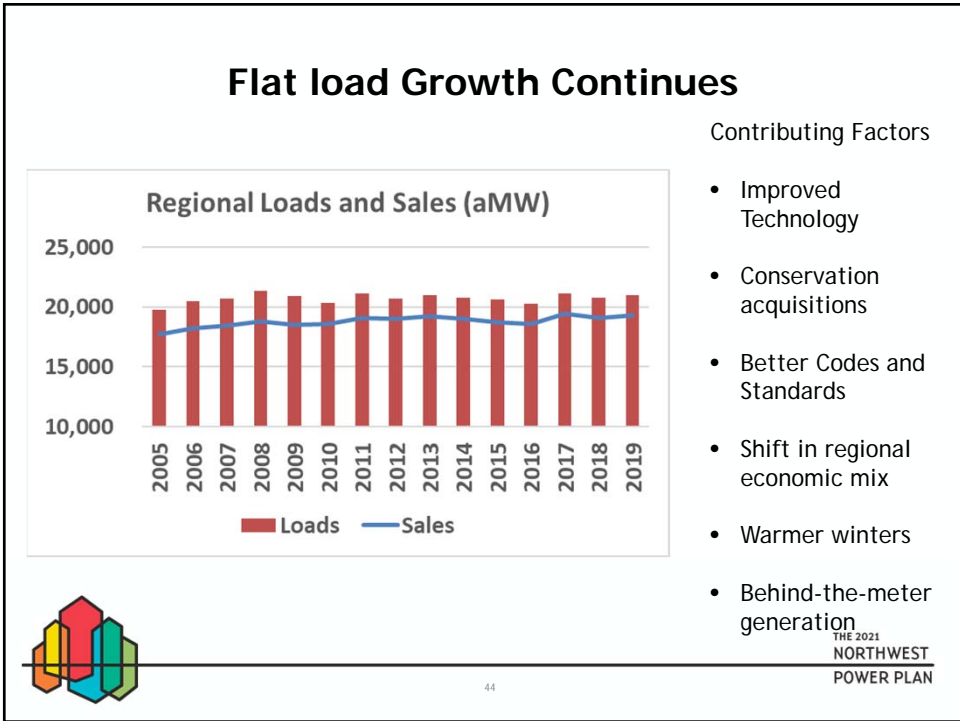
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SOURCE: <https://rewiring-america.netlify.app/>

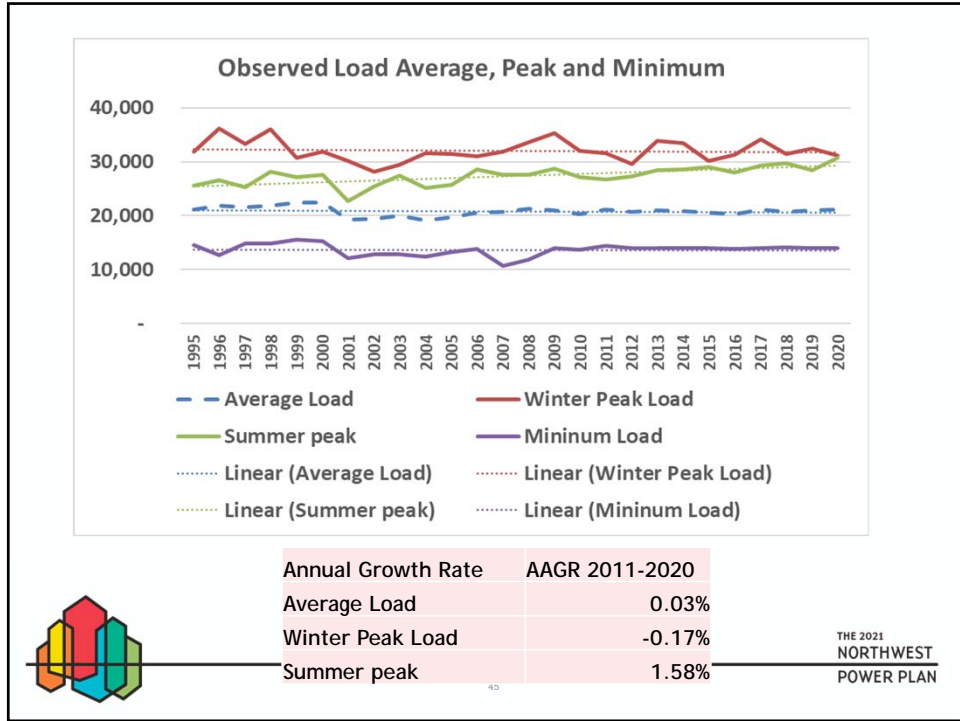
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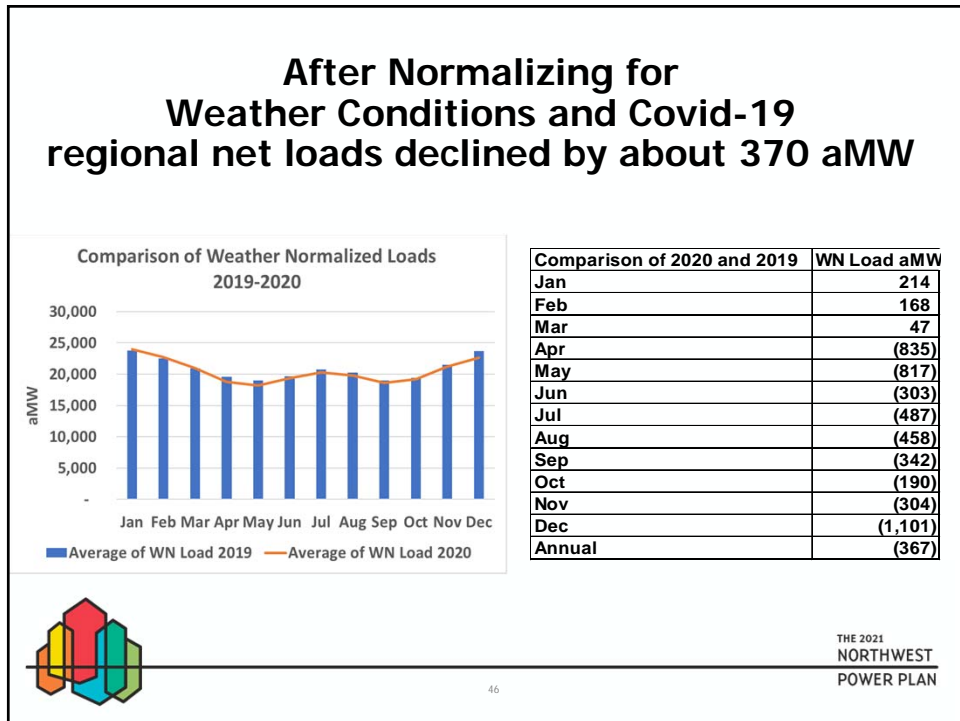
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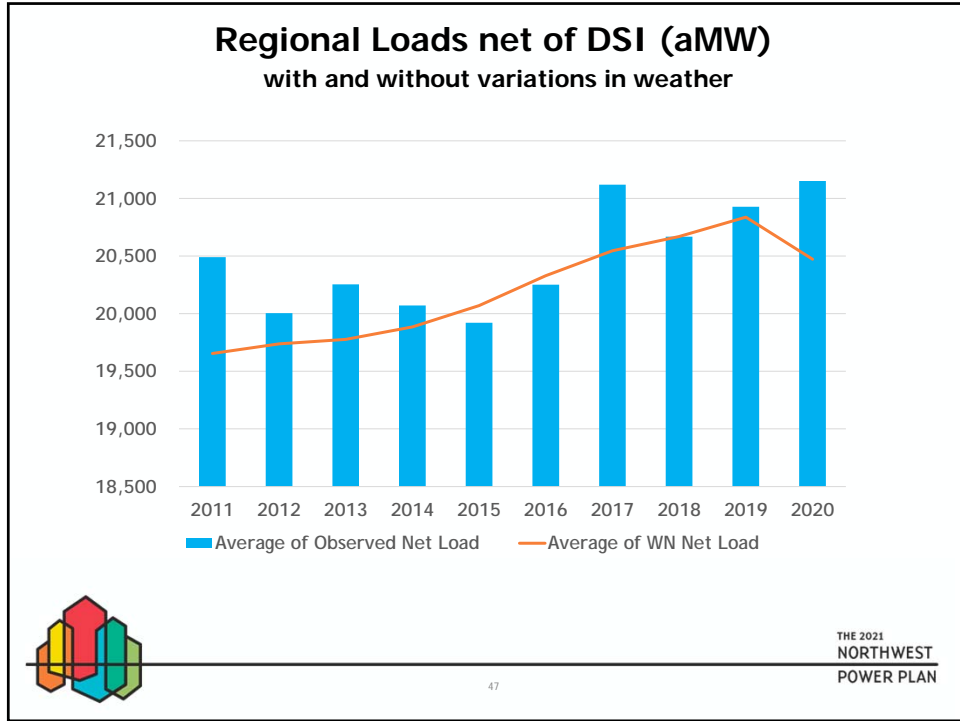
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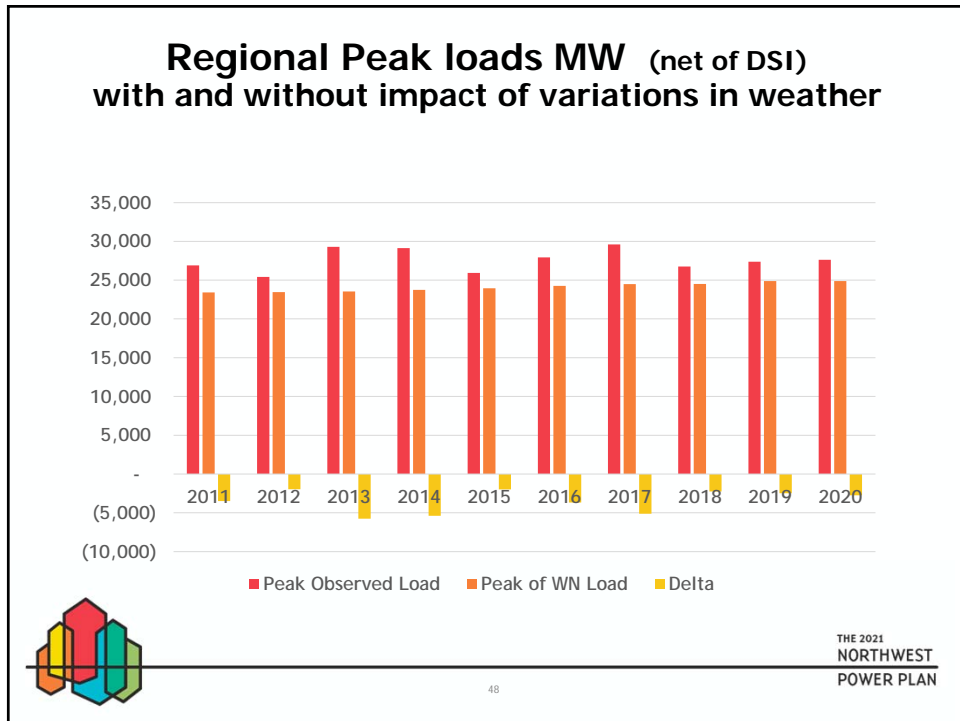
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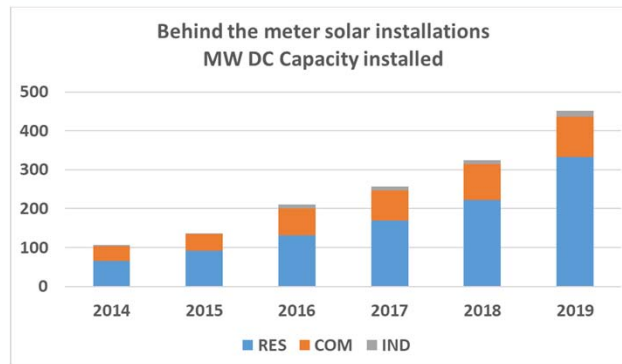
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Behind-the-meter

- Solar (energy and peak)
 - Demand Response (peak load)
 - Time-of-use Rates
- DR and TOU rates represent consumer options to reduce peak load.



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



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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

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Summary

- In 2019 and 2020, regional population growing faster than nation.
- On average regional economy and income continued to improve.
- Impact of Covid-19 was more sever on low income communities.
- Employment levels exceeded pre-recessionary levels, till Covid-19 created a job gap due to safety concerns.
- Regional electricity and natural gas rates continue to be below nation.
- In 2019 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 but decline by about 530 in 2020*.
- Loads adjusted for temperatures and Covid-19 show a decline of 367 aMW in 2020*
- in 2019 IOU sales increased by ~150 aMW compared to ~50 aMW for POU
- Sales in the first 10 months of 2020 compared for same period in 2019, IOU sales declined by about 200 aMW while POU show 350 aMW decline.



Questions

