Northwest **Power** and **Conservation** Council

December 6, 2016

MEMORANDUM

TO: **Council members**

FROM: **Massoud Jourabchi**

SUBJECT: **State of Electric Industry in 2015**

BACKGROUND:

Presenter: Massoud Jourabchi

Summary: In 2015 while the regional population, employment, income and economic output continue to grow, electric utility loads continue to be flat. Electric revenues, along with average rates increased. The warmer than normal temperatures in 2015 contributed significantly to keeping sales down and difference between winter and summer peak loads was smallest of the past 20 years.

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

Work plan: A.3.2 Continue Monitoring of regional sales, loads, temperatures, and economic state of the region

Background: N/A

More Info: N/A

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State of Electric Utilities in 2015

Massoud Jourabchi

December 13, 2016

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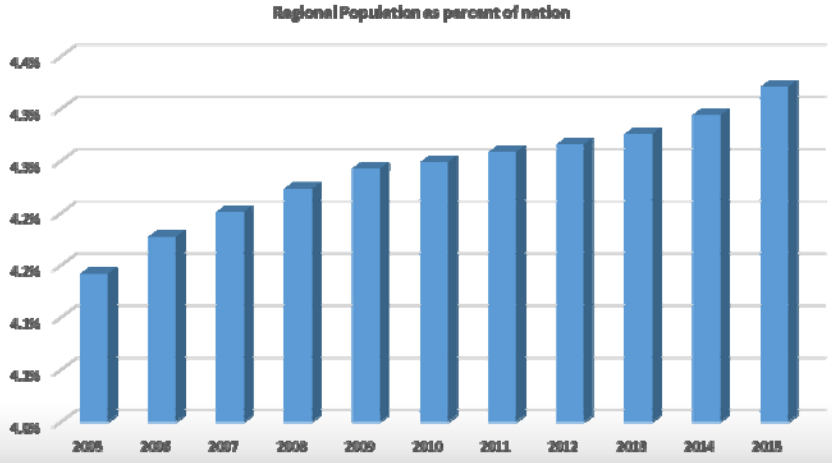
In Today's Presentation

- Population and Economy of States
  - Gross state product
  - Employment
  - Income
- Electric Sales, Revenues and loads
- Impact of weather on loads
- Doing more with less electricity

Regional population is growing from 12.3 in 2005 to 13.9 million in 2015

(Region's share of national population increasing)



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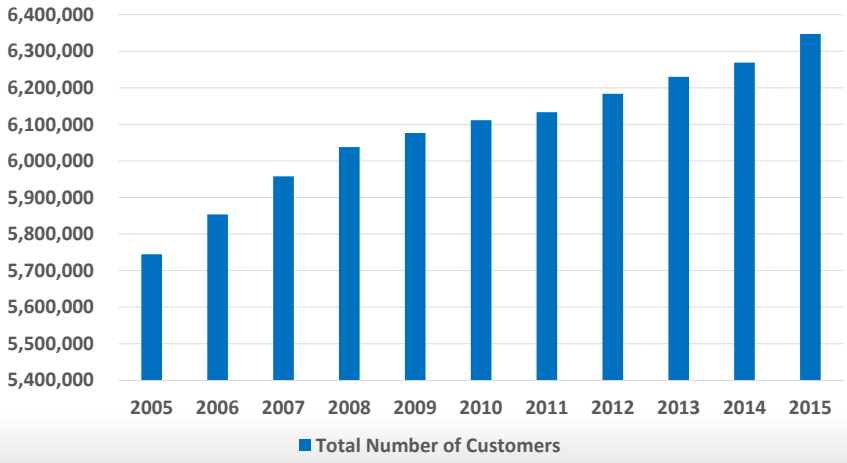
Number of Electric Customers growing at 1% annually in the past decade



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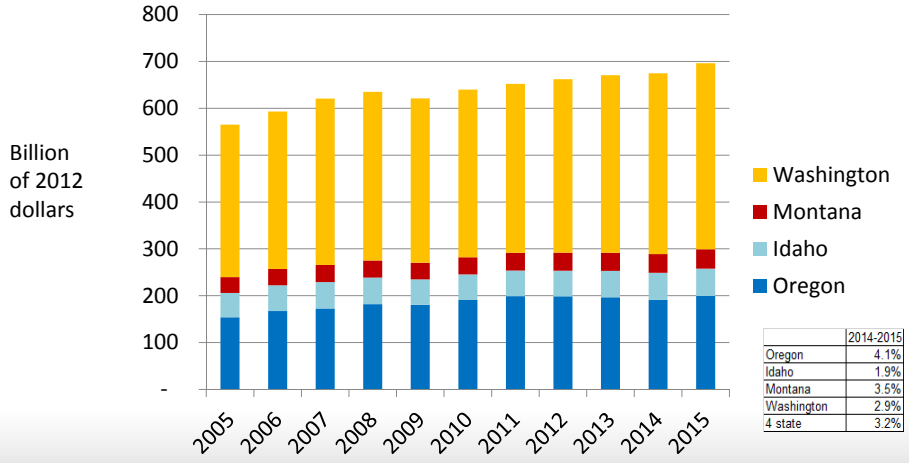
Economy of region measured in Gross State Product is growing faster than nation

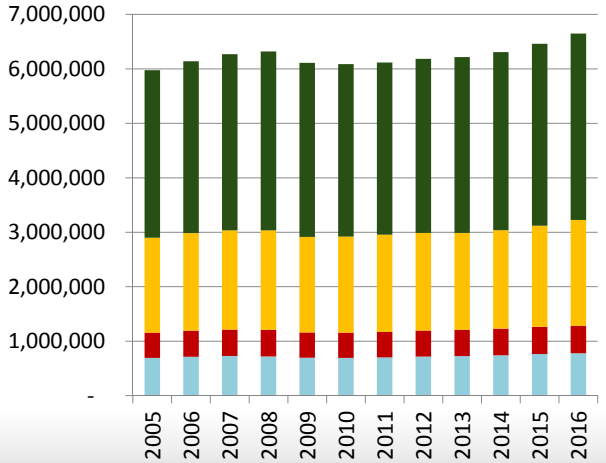


	2014-2015
Oregon	4.1%
Idaho	1.9%
Montana	3.5%
Washington	2.9%
4 state	3.2%

2015 is subject to change

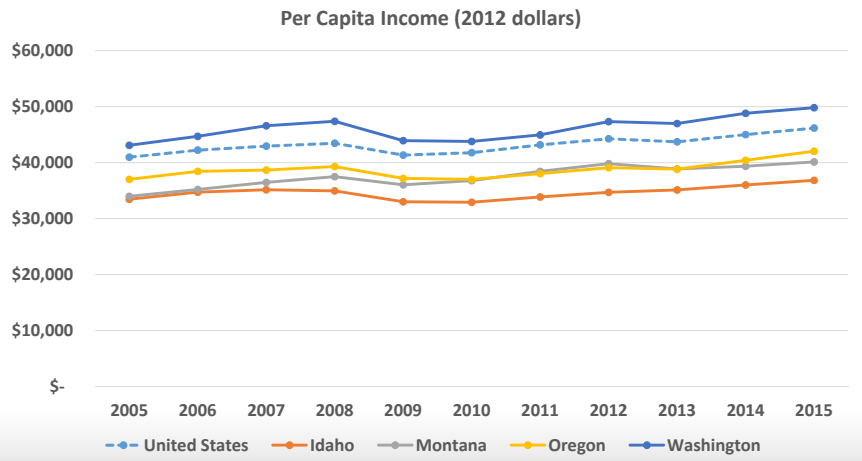
Employment Picture Improving

(Since 2010 employment has increased by over 560,000 and unemployment rates are very low)



	ID	MT	OR	WA
2010	8.7	6.7	10.7	9.9
2011	8.3	6.6	9.6	9.2
2012	7.1	6.0	8.7	8.2
2013	6.2	5.5	7.8	7.0
2014	4.8	4.7	7.0	6.3
2015	4.1	4.1	5.7	5.7
2016	3.8	4.2	5.0	5.7

Regional income improving



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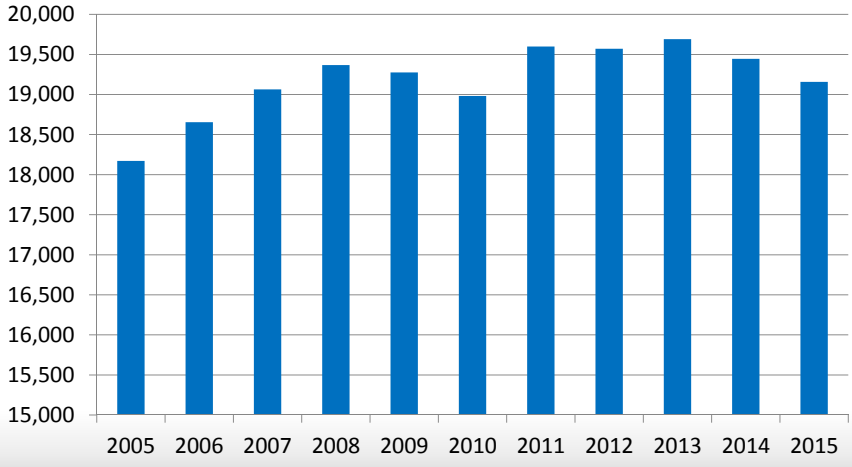
2015 regional electricity Sales were lower than 2014 by 287 aMW



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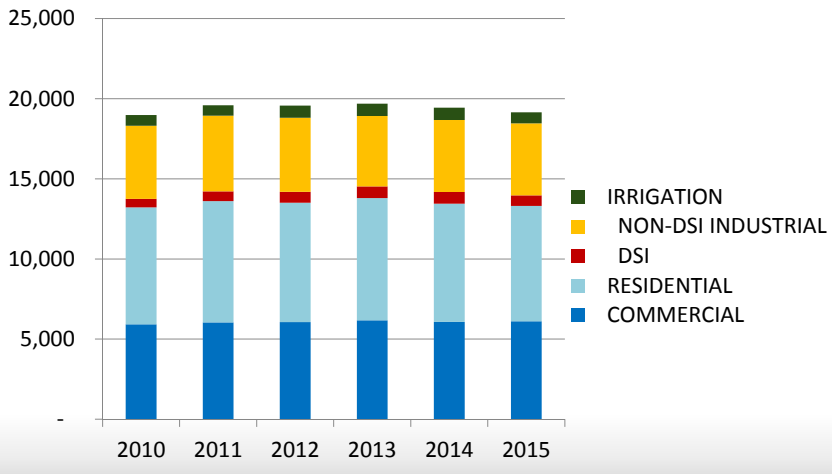
Historic Sales by class of Customer (aMW)



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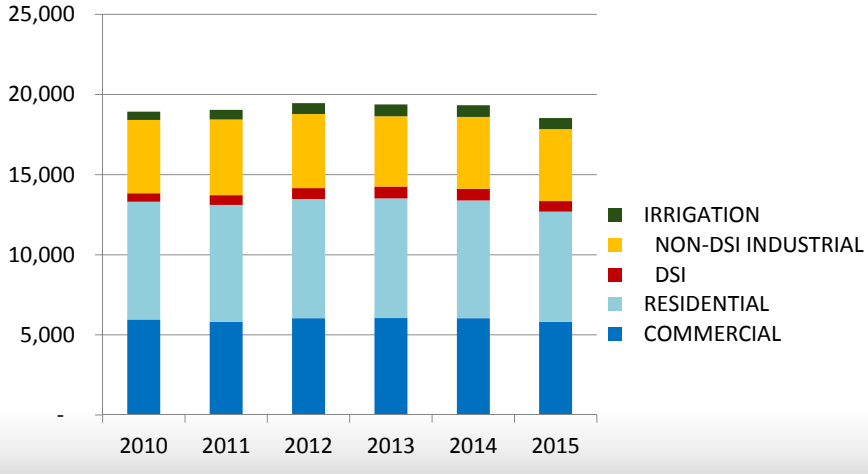
Historic Sales (aMW) by class adjusted for weather



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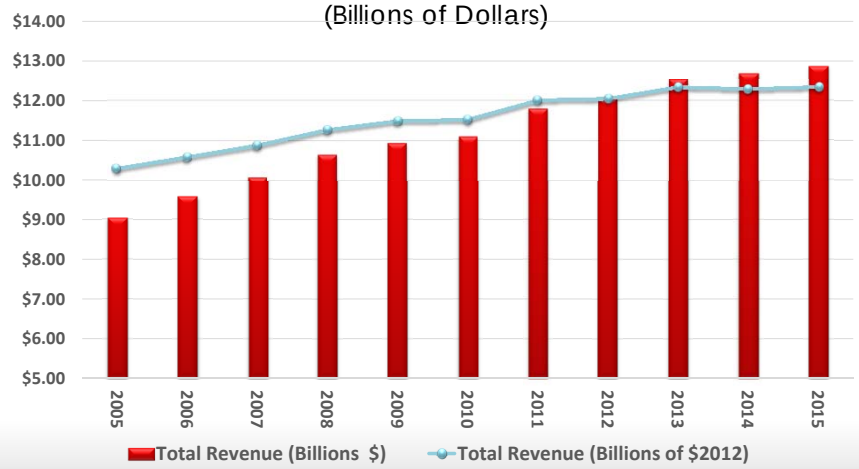
Electric Utility Revenues up 3.6%

Growing at 1.8% per year once adjusted for inflation



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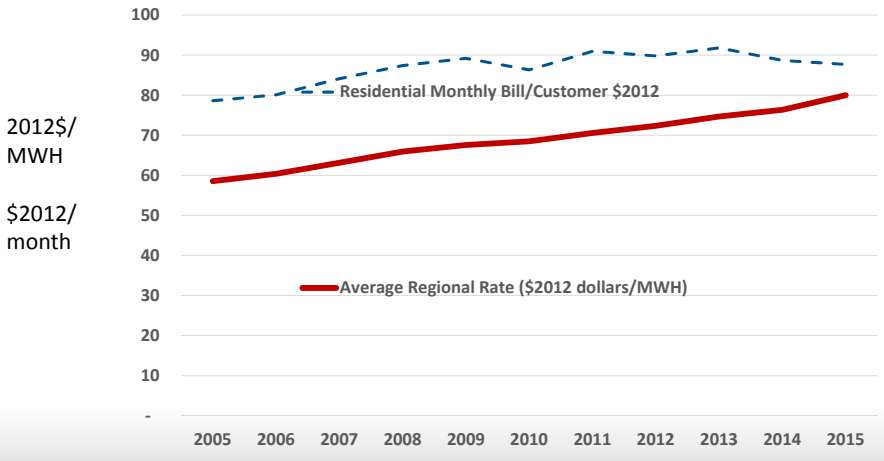
Average rates growing at 3% annually while average residential bill growing at 1% ($2012 dollars)



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Availability of Advance Metering

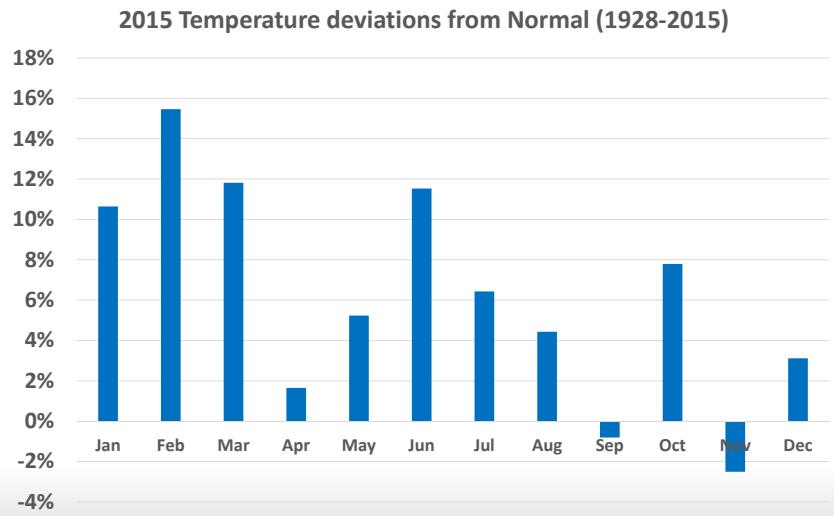
Regional Picture as of 2015	Residential	Commercial	Industrial	Total
Total Number of meters	5,501,114	737,938	79,202	6,318,347
With AMR	30%	32%	41%	31%
With AMI	34%	36%	30%	34%
With Daily digital Access	13%	14%	30%	13%
With Direct Control	1%	0.01%	3%	0.5%
Energy Served by advanced metering	31%	32%	34%	32%

Regional DR Availability and Use

	Residential	Commercial	Industrial	Total
Number of Customers Enrolled	30,626	162	2,458	33,246
Energy Savings MWH	261	118	690	1,069
Potential Peak Savings MW	41	35	479	555
Actual Peak Savings MW	34	10	194	238
Customer Incentives ($000)	502	499	10,187	11,188
Total Other Costs ($000)	1,148	846	1,467	3,461

Impact of Weather

2015 was warner than Normal



2015 ranked first as warmest year in the past 88 years

	Average Annual Temperature	Ranking		December and January	Min of AVE. TMP	Ranking		July and August	Max of AVE. TMP	Ranking
2015	54.7	1		1950	3.3	1		2009	82.8	1
1934	54.4	2		1935	7.1	2		2006	82.5	2
1958	53.8	3		1943	9.9	3		1941	81.5	3
1992	53.8	4		1957	10.2	4		1998	81.5	4
2014	53.4	5		1930	10.8	5		2015	80.5	5
1940	53.4	6		1963	10.9	6		1956	80.4	6
2003	53.3	7		1968	11.0	7		1935	80.1	7
1941	53.1	8		1937	11.8	8		2004	79.9	8
1998	53.0	9		1979	11.8	9		1977	79.8	9
1995	53.0	10		1982	12.4	10		1994	79.8	10
2006	53.0	11		1929	12.9	11		1992	79.7	11
1987	53.0	12		2004	13.4	12		1972	79.7	12
1967	52.9	13		1964	13.8	13		1981	79.6	13
1994	52.8	14		1983	14.0	14		1958	79.4	14
2005	52.6	15		1962	14.2	15		1991	79.4	15
1938	52.3	16		1952	14.3	16		1961	79.4	16
1986	52.3	17		1990	14.3	17		1971	79.3	17
1983	52.2	18		1974	14.3	18		2007	79.3	18
2012	52.2	19		1972	14.5	19		2014	79.2	19
1931	52.2	20		1959	14.5	20		2003	79.2	20

Winter of 2015 ranked 32 warmest winter, and 5th warmest Summer

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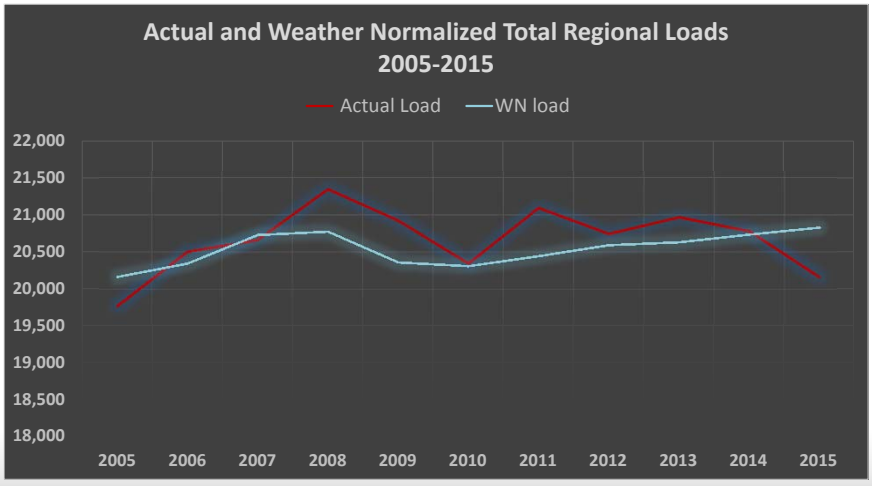
Warm weather conditions in 2015 lowered loads by 670* aMW (3% of load)



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18 *Estimated using daily weather normalization.

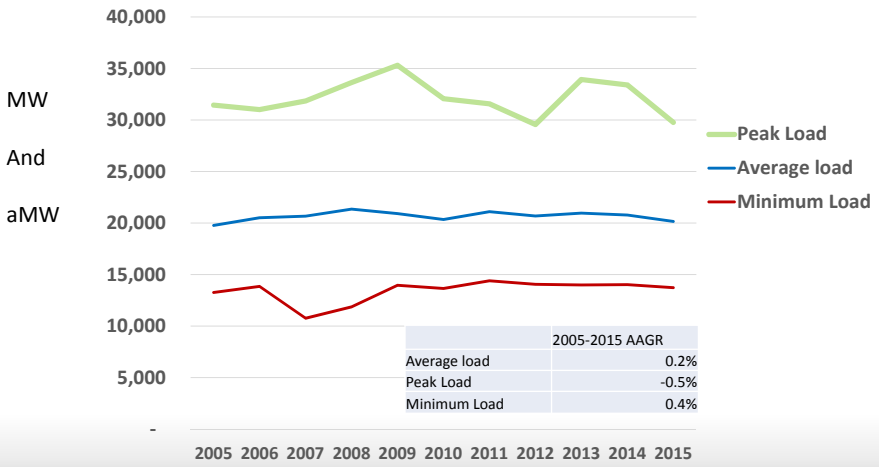
Impact of the weather (aMW)

	Actual Load	WN load	Impact of weather	as Percent of Actual Load
2005	19,774	20,168	394	2.0%
2006	20,507	20,349	-158	-0.8%
2007	20,666	20,733	67	0.3%
2008	21,350	20,777	-573	-2.7%
2009	20,925	20,363	-562	-2.7%
2010	20,348	20,313	-35	-0.2%
2011	21,096	20,449	-647	-3.1%
2012	20,747	20,595	-152	-0.7%
2013	20,971	20,635	-336	-1.6%
2014	20,782	20,740	-42	-0.2%
2015	20,161	20,833	672	3.3%
2005-2015	0.19%	0.32%		
2010-2015	-0.18%	0.51%		
	loads shown include DSI			

2015 Peak loads

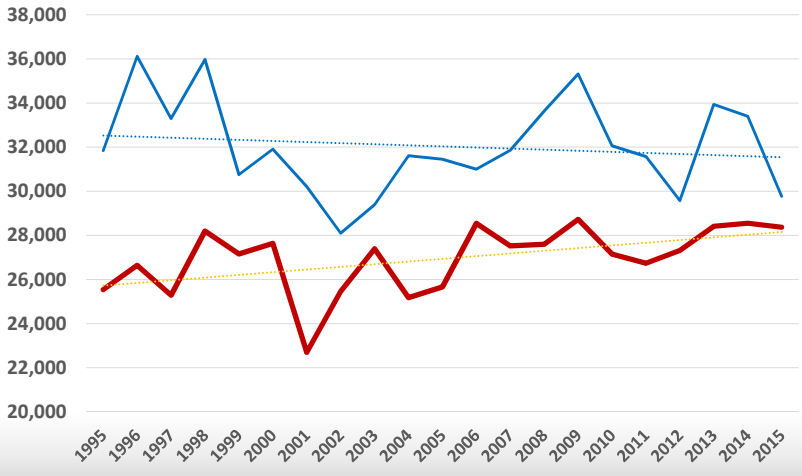
- Winter peak load of 29,120 MW occurred in November 30th 2015.
- The winter peak had the typical double hump.
- Morning peak load occurred at 8 AM and afternoon peak at 6 PM.
- Summer peak load of 27,487 MW occurred on July 2, 2015 at 5 PM.

Regional Load Growth in the past decade continues to be flat

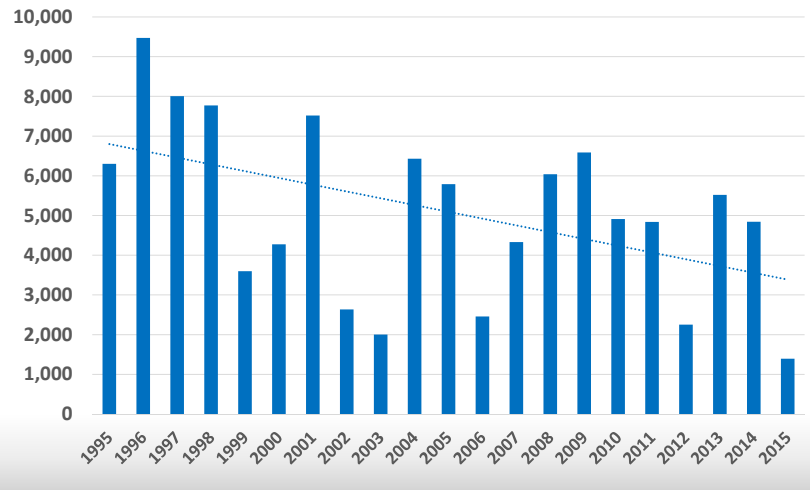


	2005-2015 AAGR
Average load	0.2%
Peak Load	-0.5%
Minimum Load	0.4%

Difference between Winter and Summer Peak loads is Shrinking



Although there are large annual fluctuations, Difference between Winter and Summer Peaks are Shrinking



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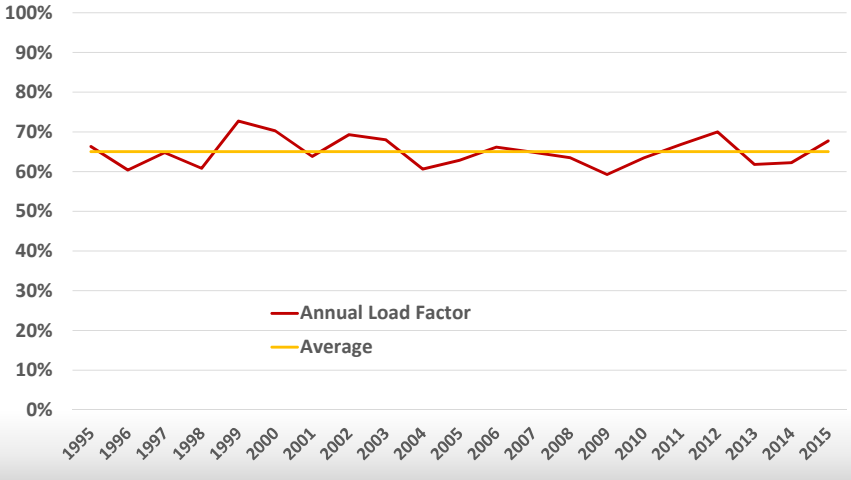
Regional Load Factor has remained fairly flat



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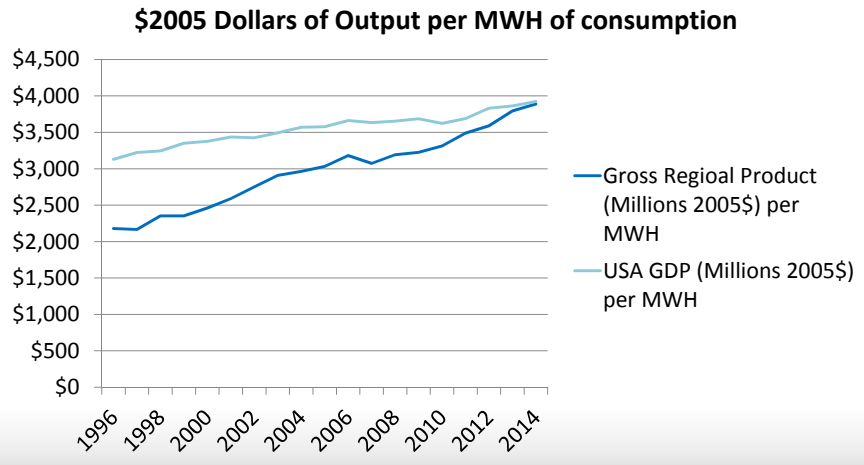
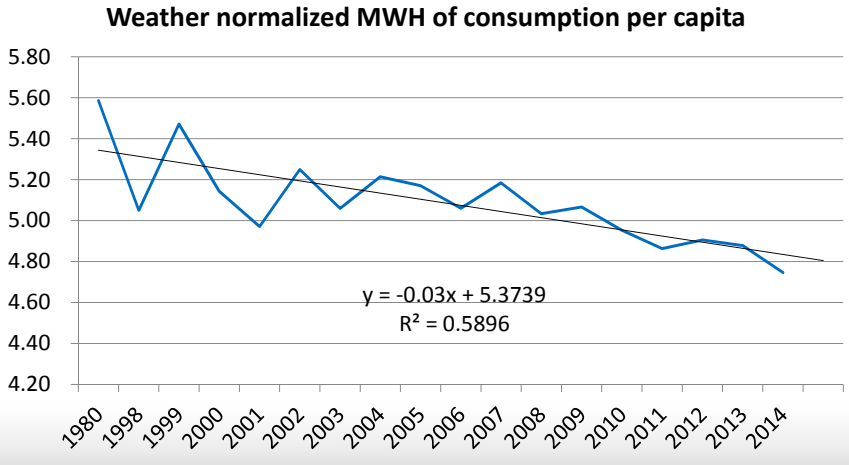
Doing More with Less Electricity

Regional Economy



NW Residential Sector



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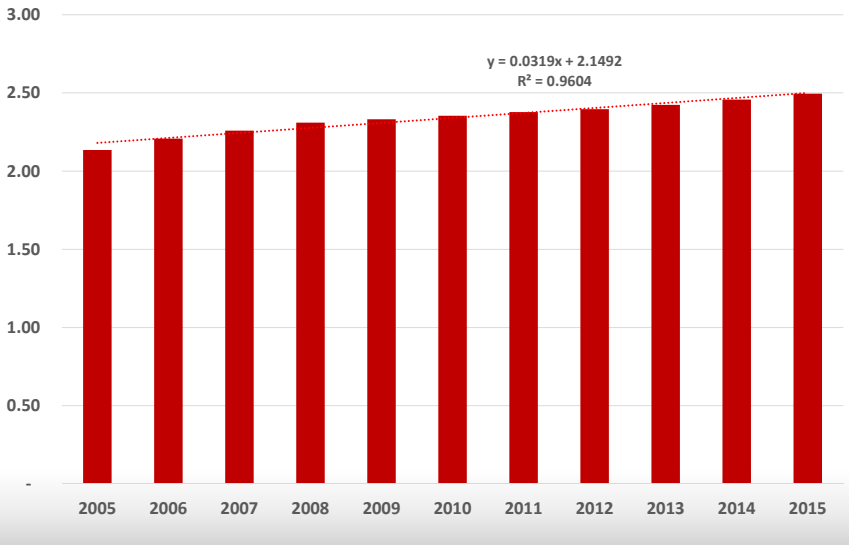

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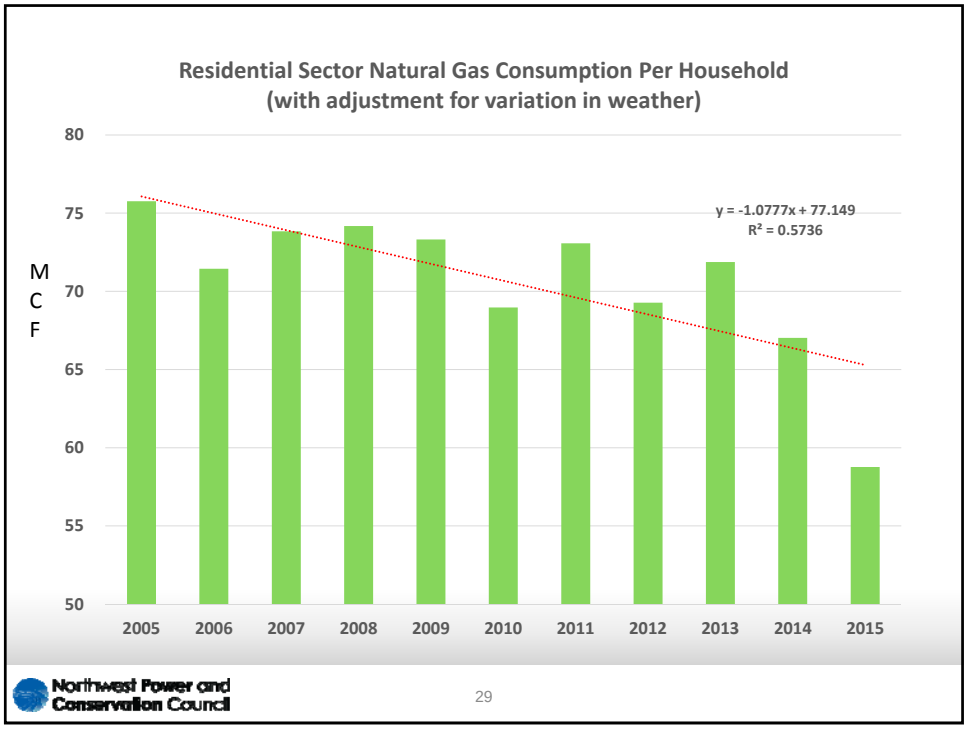
Annual Growth Rate 2%


Residential Sector Natural Gas Consumption Per Household
(with adjustment for variation in weather)
MCF
80
75
70
65
60
55
50
y = -1.0777x + 77.149
R² = 0.5736
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
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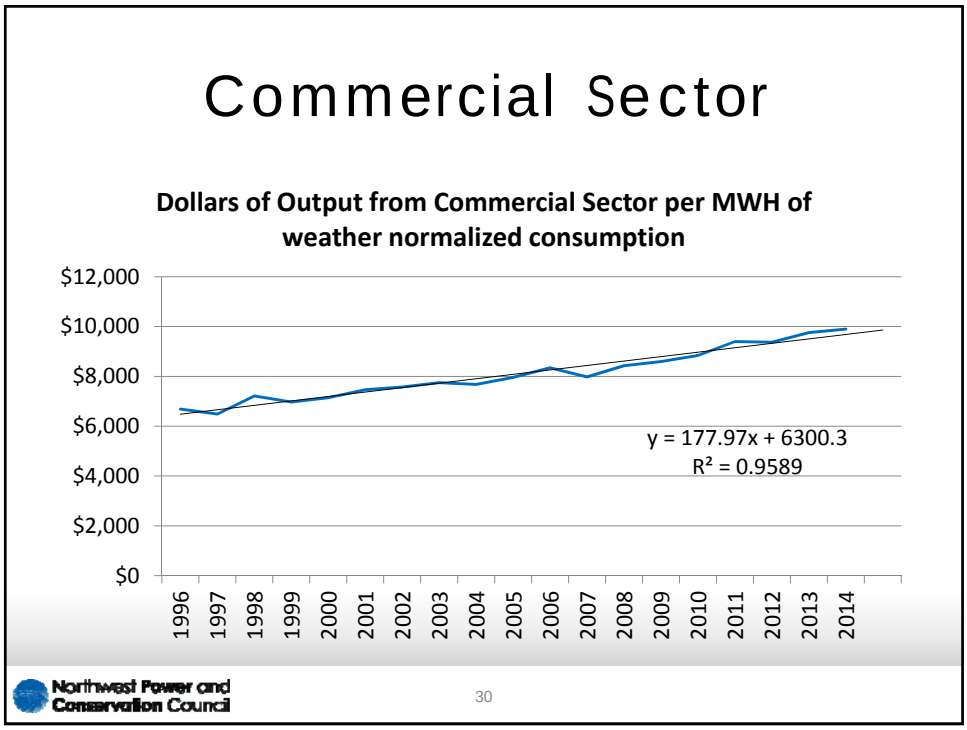
Commercial Sector
Dollars of Output from Commercial Sector per MWH of weather normalized consumption
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$0
y = 177.97x + 6300.3
R² = 0.9589
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
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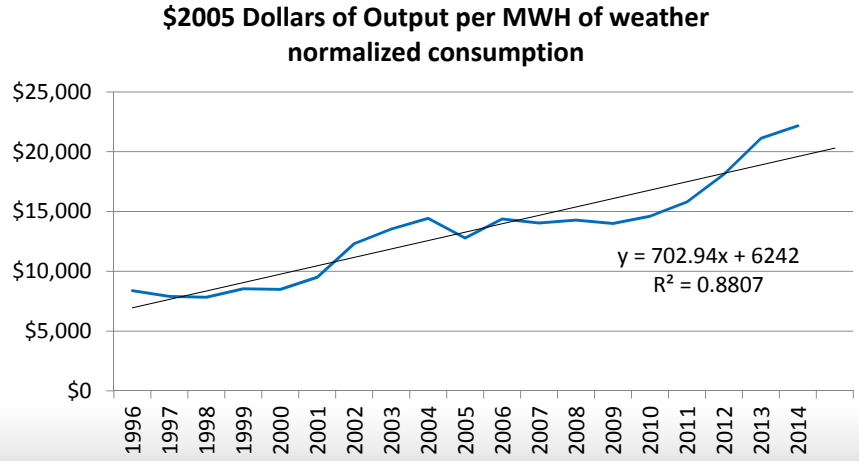
Non-DSI Manufacturing Sector



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Summary

- Regional population, and economy is growing faster than nation.
- Employment levels have returned and exceeded pre-recessionary levels.
- Incomes are growing.
- Electricity sales and loads are fairly flat.
- Difference in Summer and Winter peaks is narrowing.
- Utility revenues increasing.
- Electric bills growing slower than rates.
- 2015 was the warmest year in the past 88 years.
- Impact of weather on loads was more significant in 2015.
- Region continues to do more with less electricity.

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