

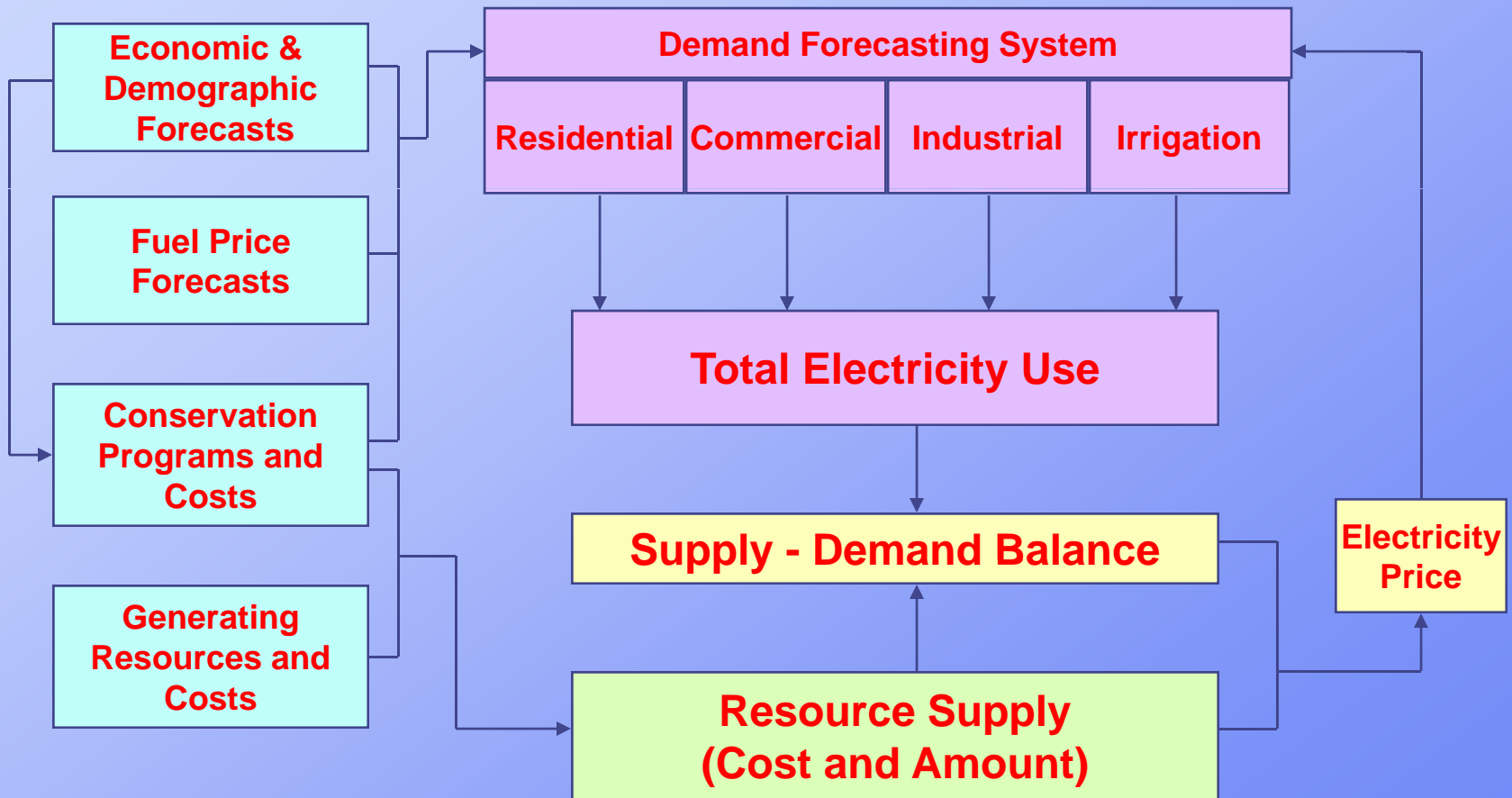
**First Meeting of
Demand Forecast Advisory Committee
in Preparation of 7th Plan Load Forecast
(Economic Drivers)**

May 23, 2013

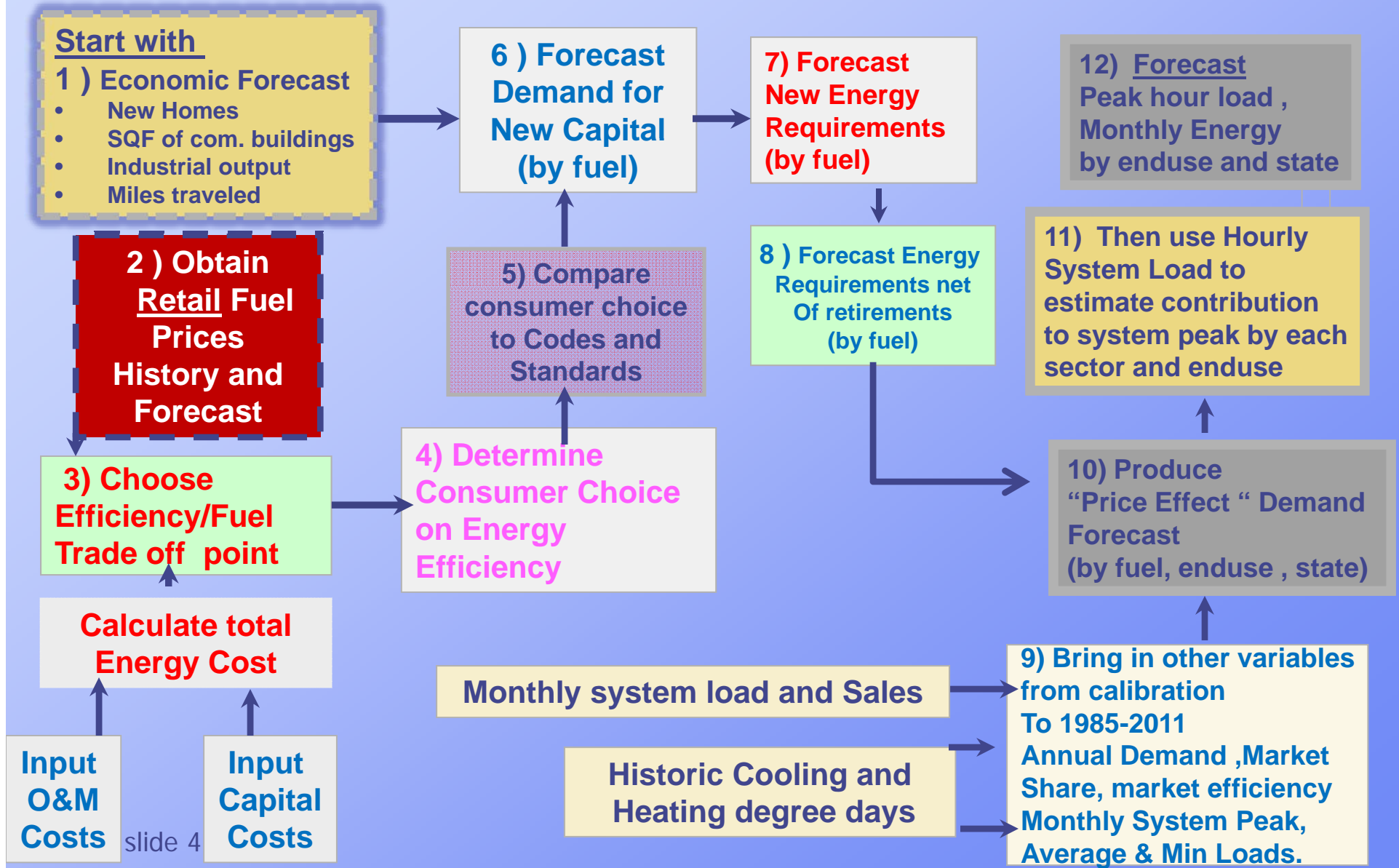
Draft Agenda

- Review of agenda
- Discussion of Council's planning process
- A brief over-view of Council's long-term Demand model
- Discussion of Economic Drivers
 - Residential, Commercial, Industrial, Agriculture, Transportation, data centers
- Lunch break
- Retail price of natural gas and electricity
- Electricity Forecast from Mid-Term Assessment
- Interaction of load forecast and conservation
- Next steps:

Council's Power Planning Process



Demand Forecast Overview Consumer Perspective

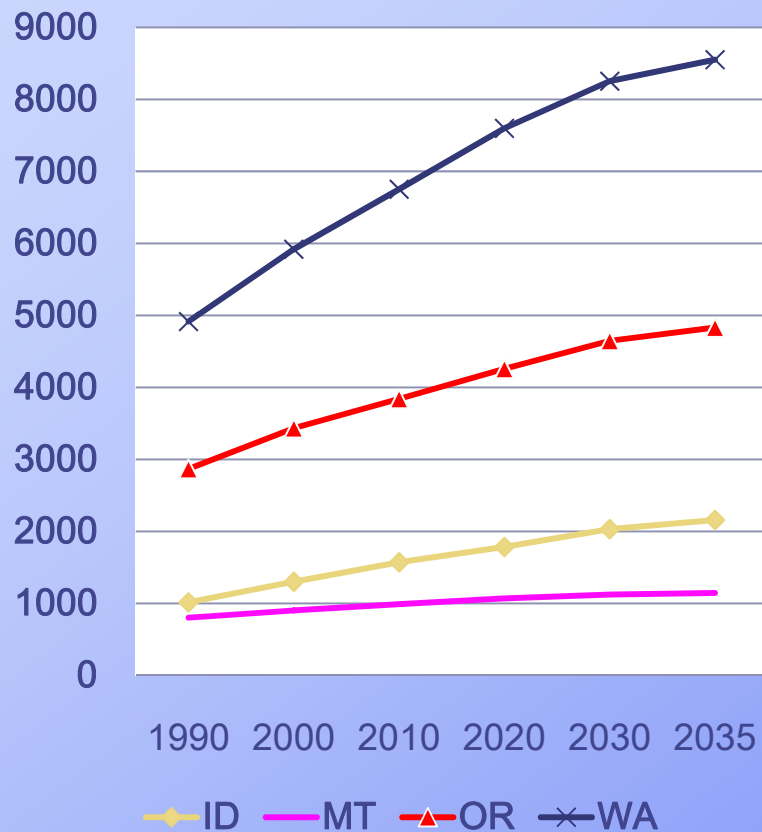


Economic Drivers

- Number of Existing home
 - Number of New Homes (Single, Multi, Manuf.)
 - Stock of Square footage of existing 17 commercial building types across the years.
 - Square footage requirements of new commercial buildings
 - Level of production from industrial, agricultural and mining firms
 - Income of residential sector
- Source of information: (Global Insight and in-house analysis)
- Vintage: Q1 2013 and Q4 2012

Regional Population

Regional Population



Population	1985-2015	2015-2035
ID	1.7%	1.3%
MT	0.8%	0.5%
WA	1.6%	0.9%
OR	1.4%	0.9%
4 States	1.5%	0.9%
USA	1.03%	0.9%

Average Annual Addition to Population (1000)	1985-2015	2015-2035
ID	21	33
MT	7	7
WA	89	86
OR	44	50
4 States	132	136

Overall regional population growth projected to slow down.

Population in Idaho is expected to increase faster than other states.

Northwest population remains about 4% of national population.

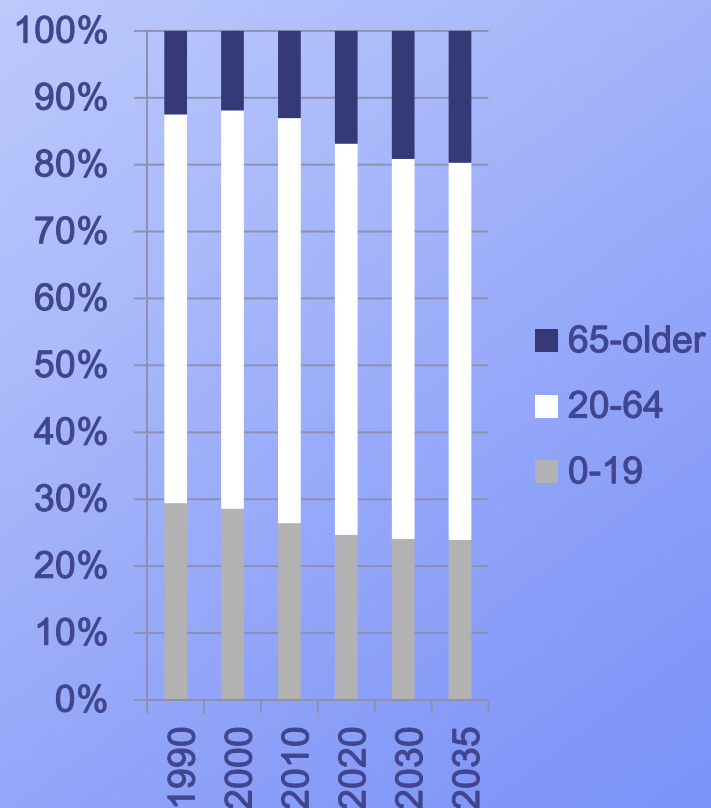
What is the impact of declining working age adults?

Population (1000)	1990	2000	2010	2020	2030	2035
ID	1,017	1,302	1,572	1,785	2,033	2,160
MT	802	904	992	1,070	1,124	1,146
WA	4,916	5,921	6,754	7,599	8,254	8,554
OR	2,869	3,435	3,842	4,260	4,648	4,832
Regional Pop	7,785	9,355	10,596	11,859	12,902	13,386

Births (1000)	1990	2000	2010	2020	2030	2035
WA	79	81	87	96	101	104
ID	16	20	23	28	30	31
MT	12	11	12	14	15	16
OR	43	46	46	50	52	53
4 States	150	158	167	187	198	204

Deaths (Thous.)	1990	2000	2010	2020	2030	2035
ID	7	10	12	12	15	16
MT	7	8	9	10	12	12
OR	25	30	31	40	49	54
WA	38	44	47	63	79	85
4 States	77	92	98	125	154	168

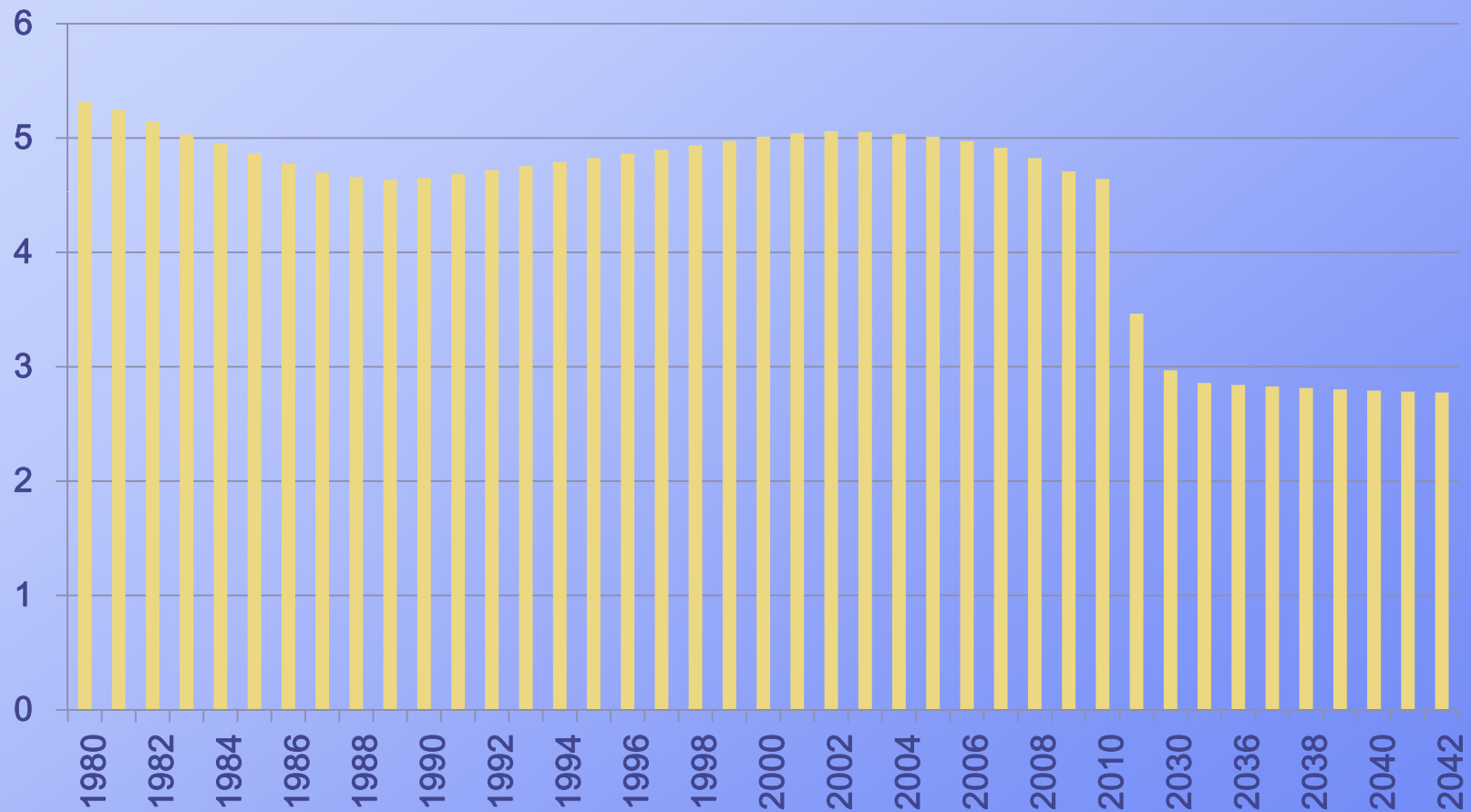
Net Migration	1990	2000	2010	2020	2030	2035
ID	14	11	2	10	10	11
MT	0	2	3	3	1	0
OR	51	21	15	35	34	36
WA	98	34	38	45	39	41
4 States	164	67	59	93	84	88



Growth in elder population continues.
While younger population growth declines.

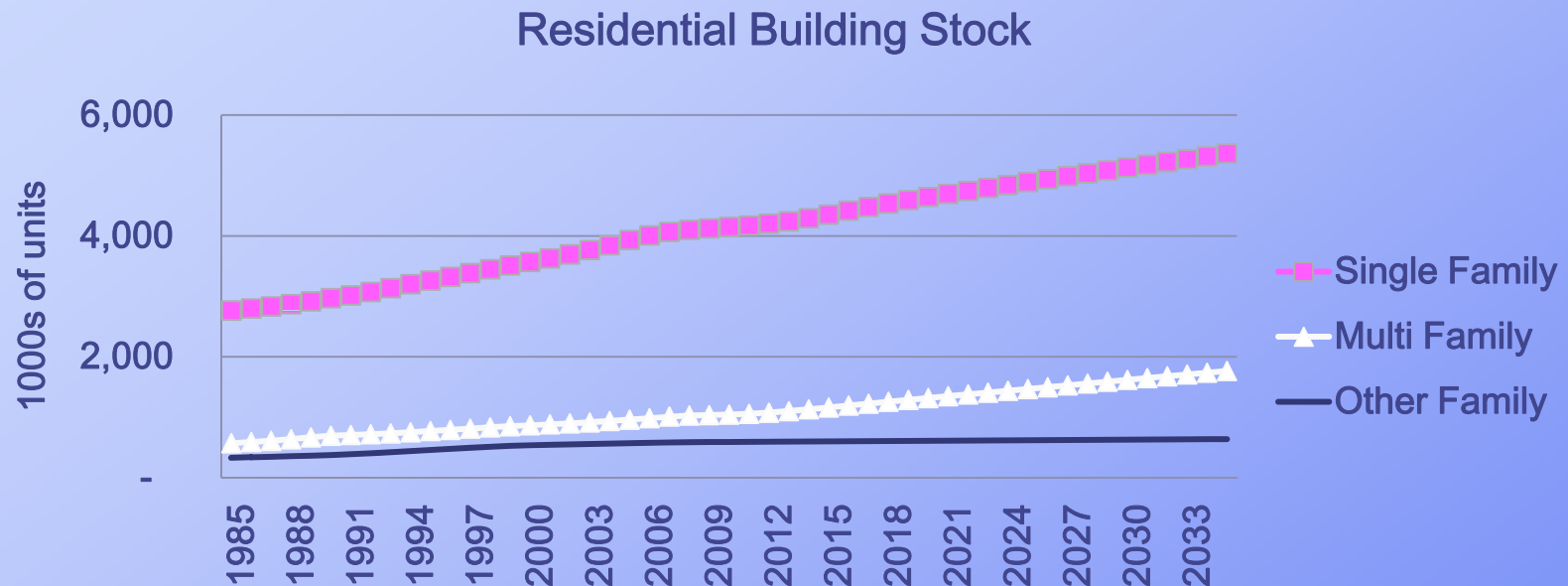
Ratio of workforce to Elderly Population

20-64 (Workforce)
> 65 (Elderly)



- What is impact of high retirement on loads?
- As workforce shrinks, would we see greater energy for labor substitution?
- Can climate change bring more population to the NW?
-

Regional Growth in Residential Building Stock



	Oregon		Washington		Idaho		Montana		Region	
Building type	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035
Single Family	1.7%	1.5%	1.5%	0.7%	2.2%	1.6%	0.9%	0.8%	1.6%	1.1%
Multi Family	2.2%	2.1%	2.5%	2.1%	2.5%	2.9%	1.6%	3.4%	2.4%	2.3%
Other Family	2.6%	0.3%	2.3%	0.3%	2.1%	0.3%	1.7%	0.5%	2.3%	0.3%

Other Family is referring to Manufactured housing

Average Annual Addition to New Residential Units

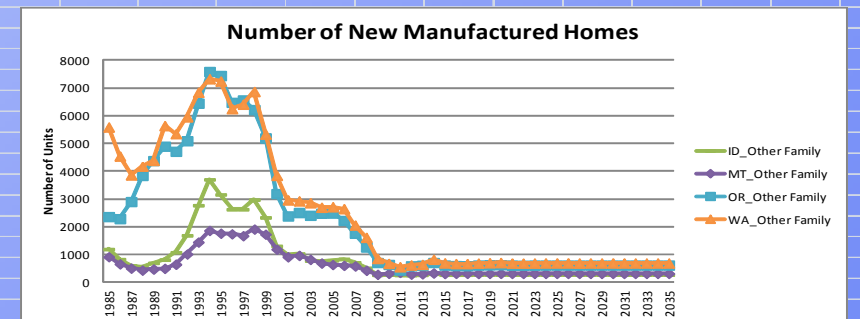
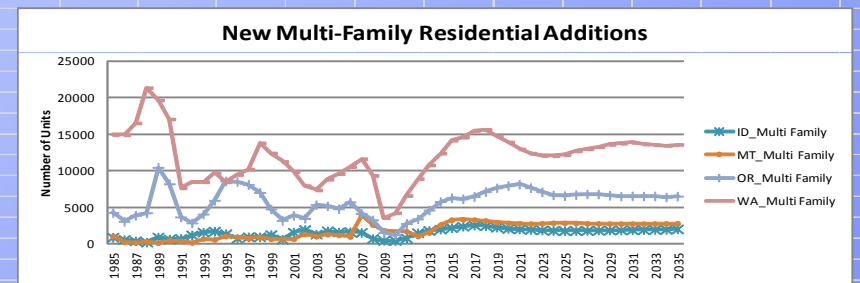
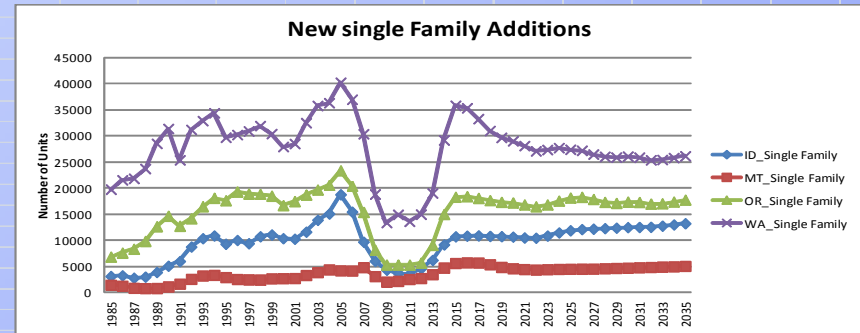
	1985-2001	2002-2007	2008-2011	2012-2035
ID-SNGL	7,560	14,063	4,166	9,447
MT-SNGL	2,070	3,650	2,594	2,636
OR-SNGL	14,459	27,149	23,336	23,375
WA-SNGL	28,237	22,992	13,390	14,179
ID-MULT	901	1,960	2,308	2,500
MT-MULT	551	1,067	2,462	2,630
OR-MULT	5,660	5,398	7,841	8,101
WA-MULT	12,762	11,660	15,127	16,291
ID-MOBL	1,818	811	279	280
MT-MOBL	1,161	713	324	322
OR-MOBL	4,983	2,199	618	625
WA-MOBL	5,609	2,567	689	697

MOBL is referring to Manufactured housing

Residential New Additions

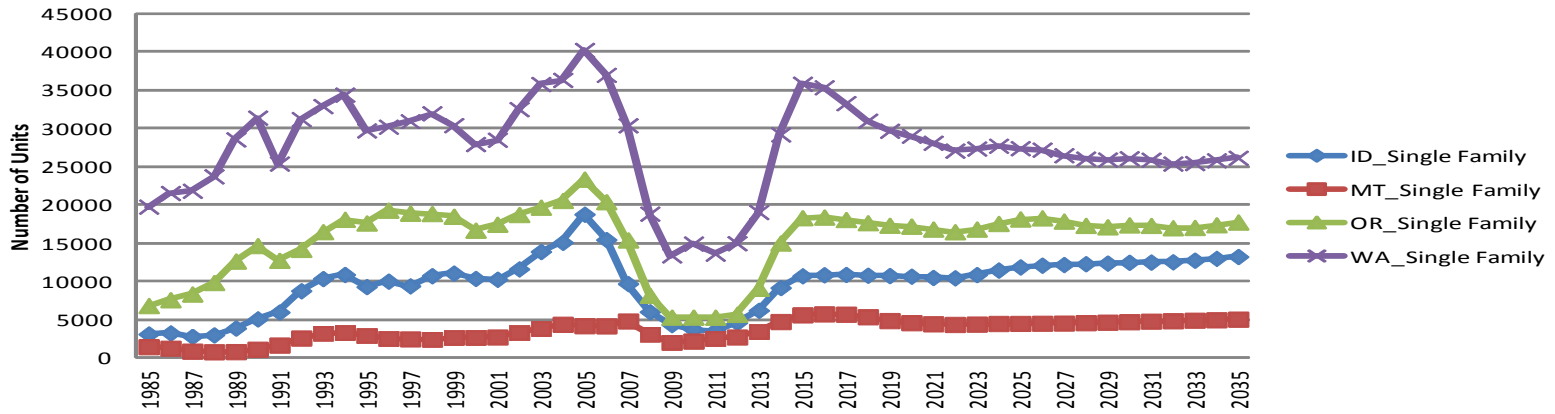
Average Annual Additions

	1985-2001	2002-2007	2008-2011	2012-2035
ID-SNGL	7,560	14,093	4,428	11,067
MT-SNGL	2,070	3,838	4,432	4,707
OR-SNGL	14,459	17,970	15,296	16,544
WA-SNGL	28,237	32,443	26,444	27,310
ID-MULT	901	1,492	1,852	1,976
MT-MULT	551	1,613	2,628	2,734
OR-MULT	5,660	4,460	6,133	6,552
WA-MULT	12,762	9,375	12,338	13,181
ID-MOBL	1,818	811	279	280
MT-MOBL	1,161	713	324	322
OR-MOBL	4,983	2,199	618	625
WA-MOBL	5,609	2,567	689	697

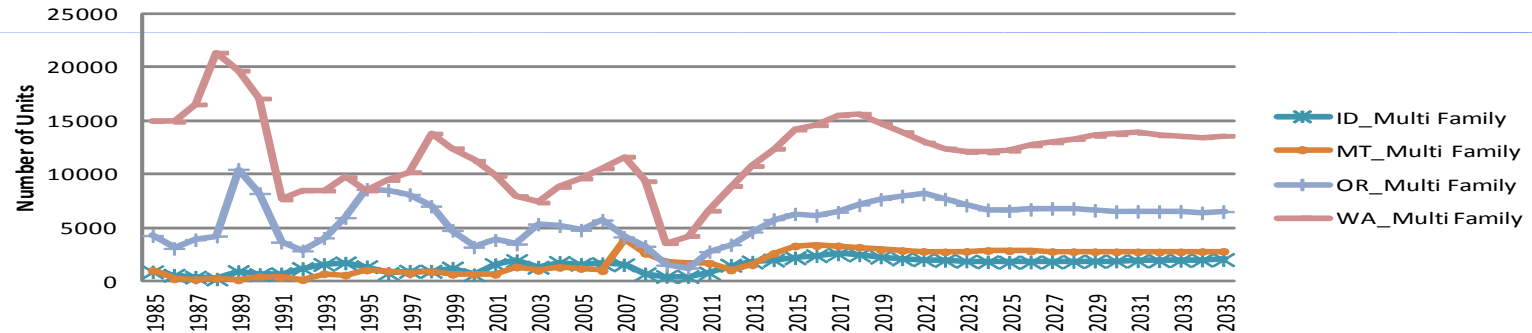


- For single family, housing market returning to historic levels.
- Multi family additions seems to continue for a while with dip in post 2020.
- Manufactured homes exhibit flat projections.

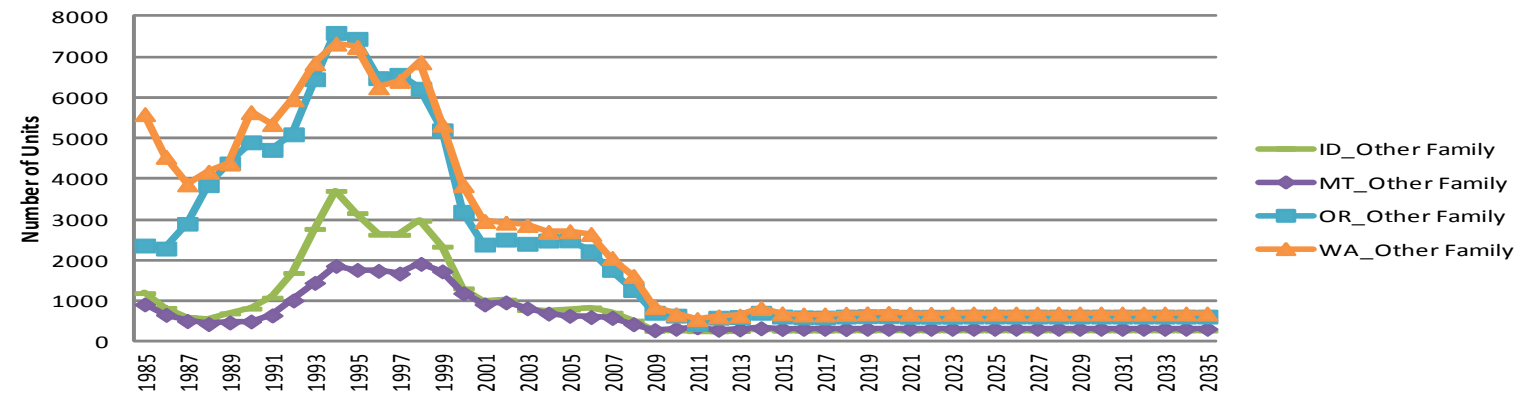
New single Family Additions



New Multi-Family Residential Additions

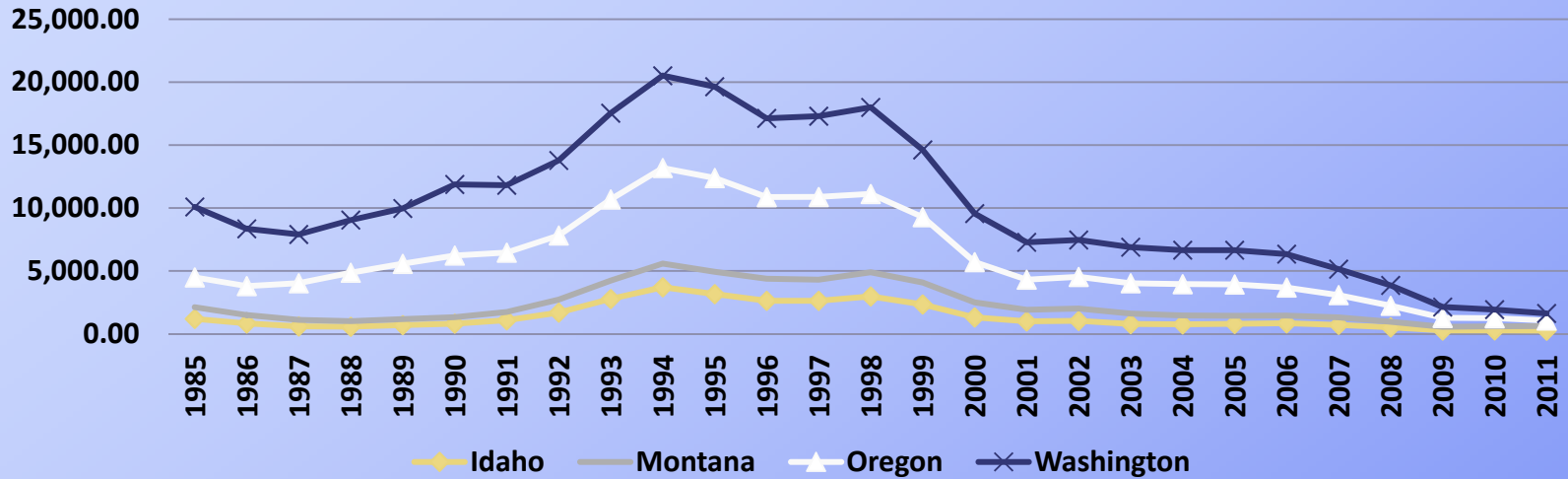


Number of New Manufactured Homes

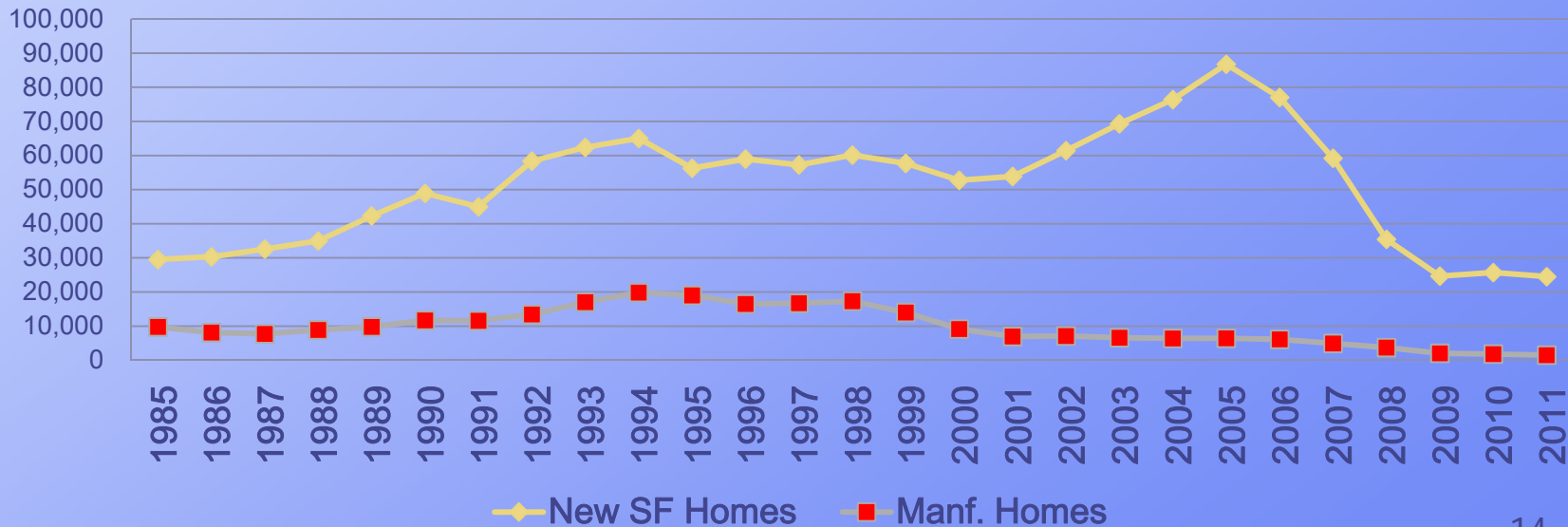


Why Manufactured Housing is not growing ?

New Manufactured Homes Regional Shipments

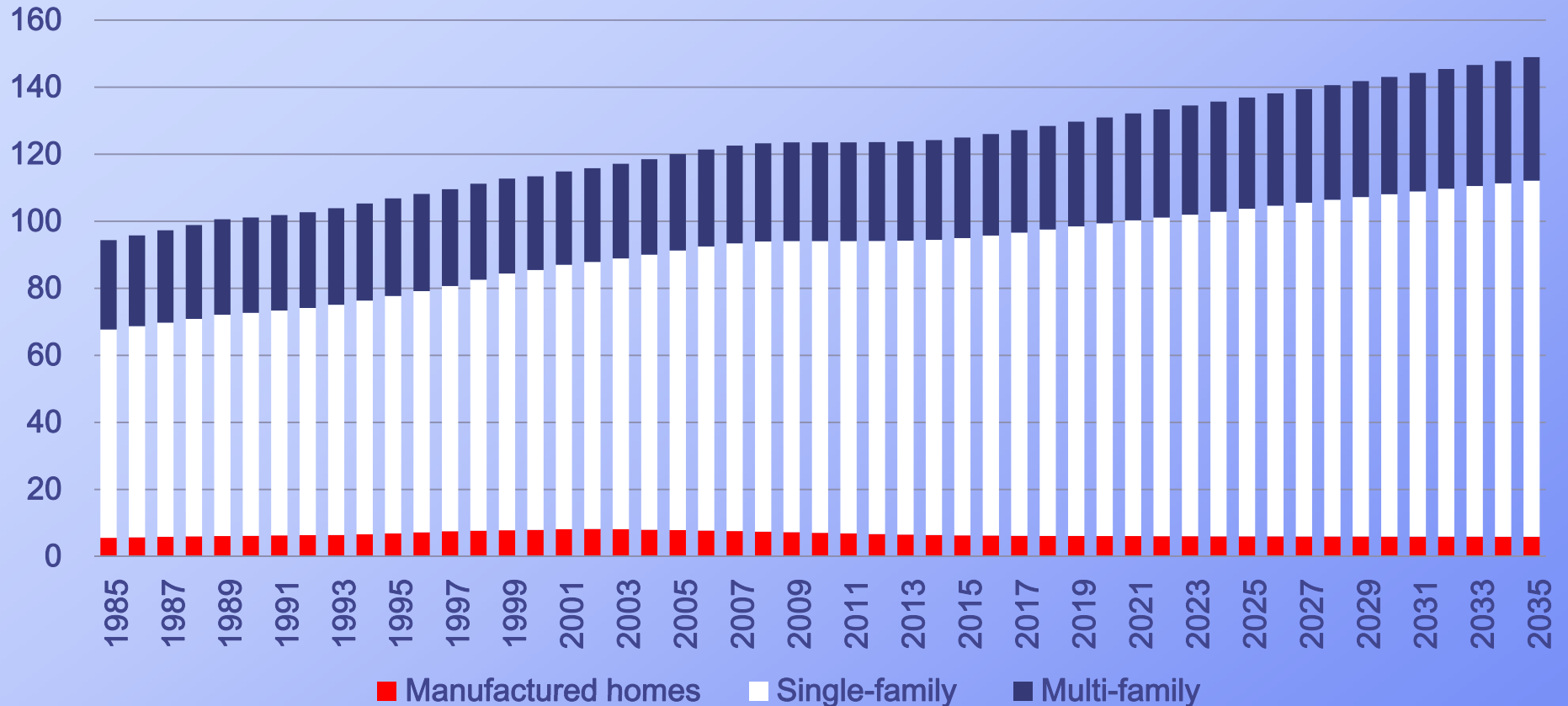


Comparison of Regional New Single Family and Manufactured Homes



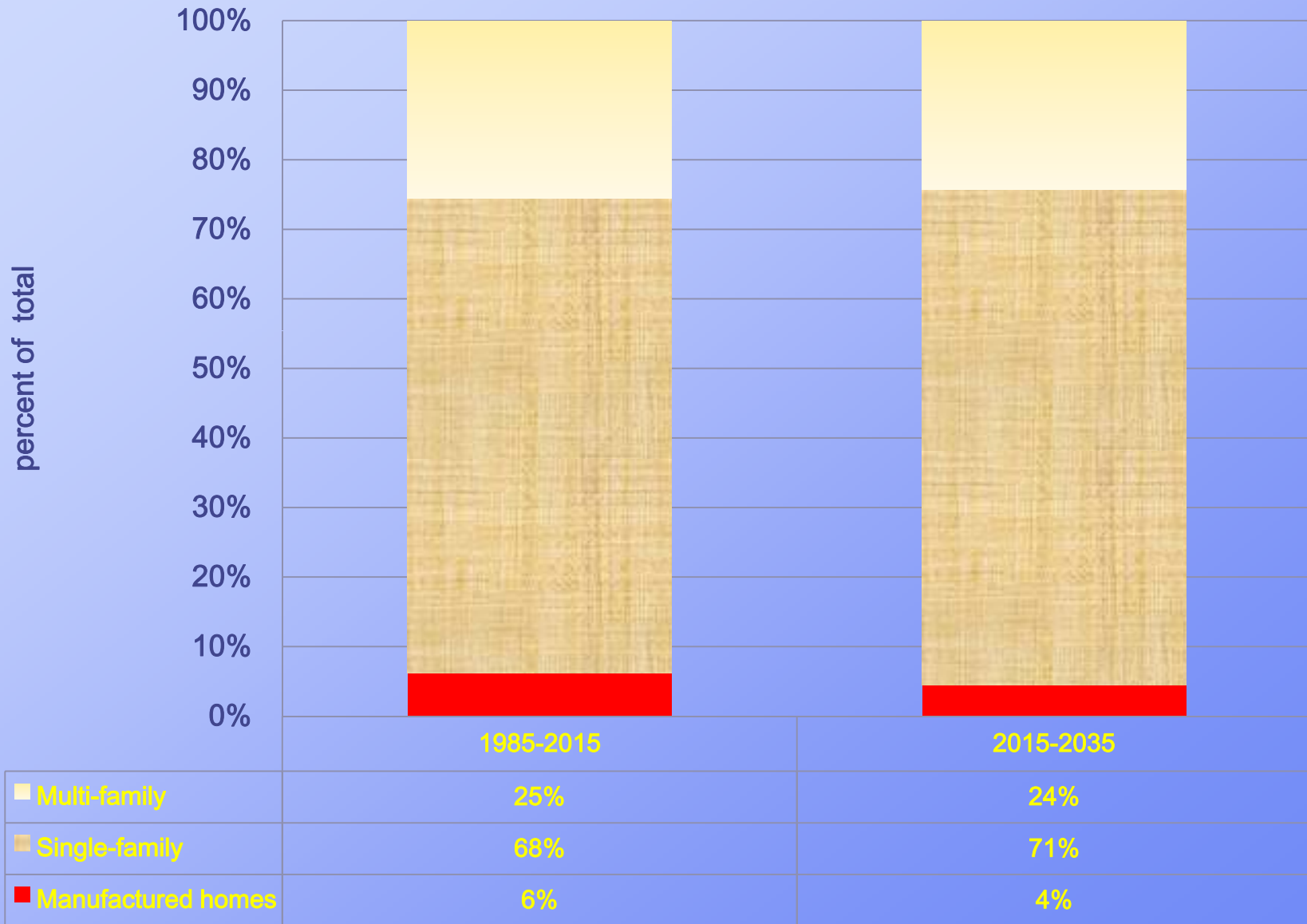
National Composition of Housing Stock

(Millions)



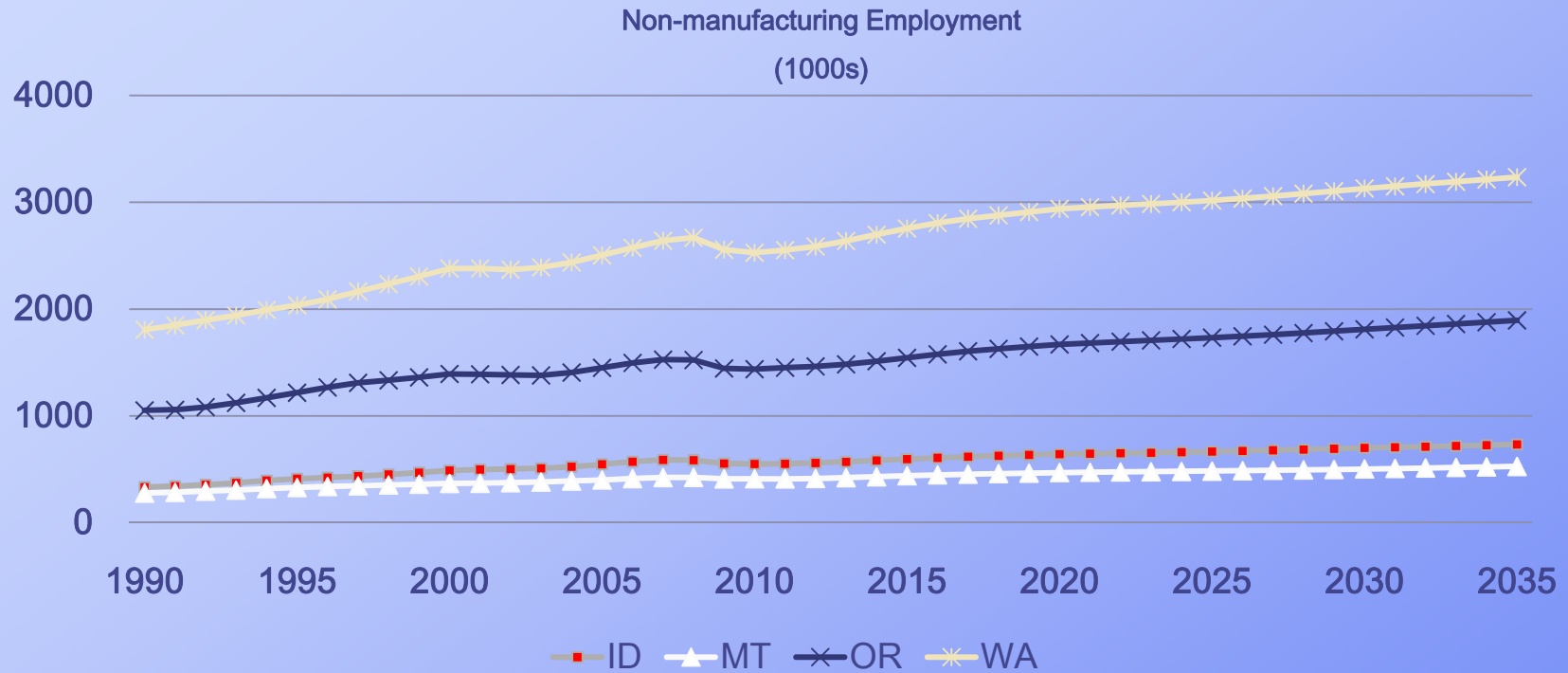
Annual Growth Rate	Trend	Trend	Trend	Trend
	All Housing	Manufactured homes	Single-family	Multi-family
1985-2015	0.94%	0.42%	1.19%	0.39%
2015-2035	0.88%	-0.34%	0.91%	1.03%

Composition of National Housing Stock



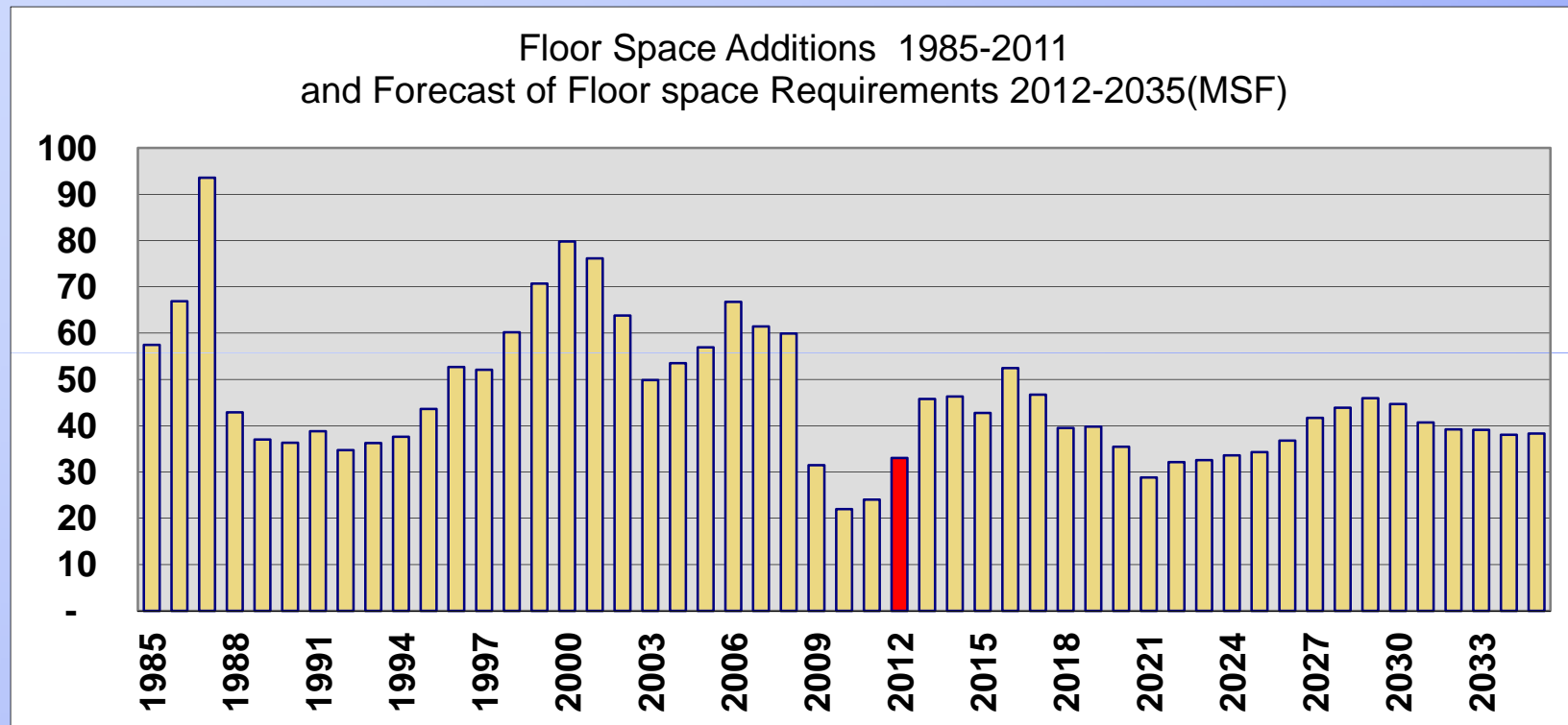
- Have you seen a shift from single family to multi-family in your area?
- Do you see increase in high-rise residential units ?
- How are you planning to incorporate findings from Residential Building Stock Assessment in your work?

Is Commercial Sector Slowing Down ?



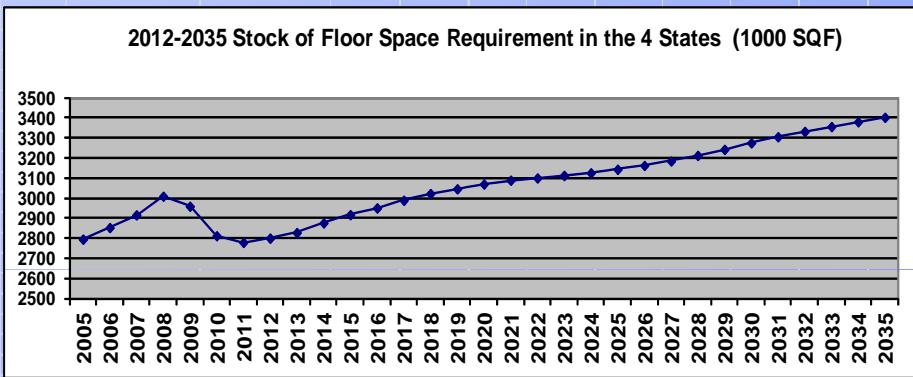
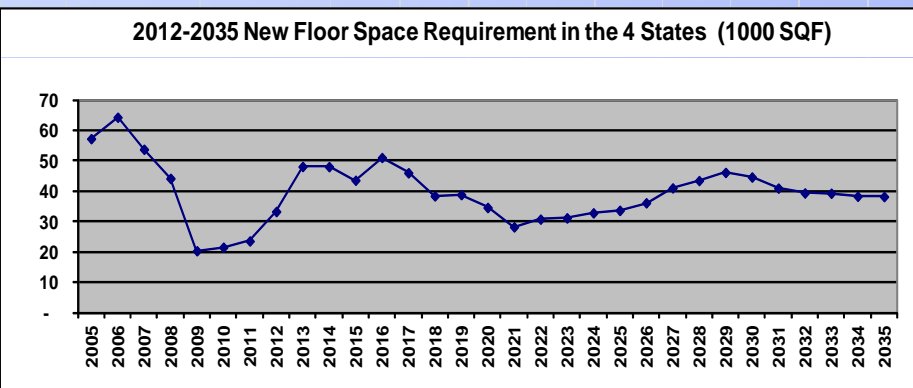
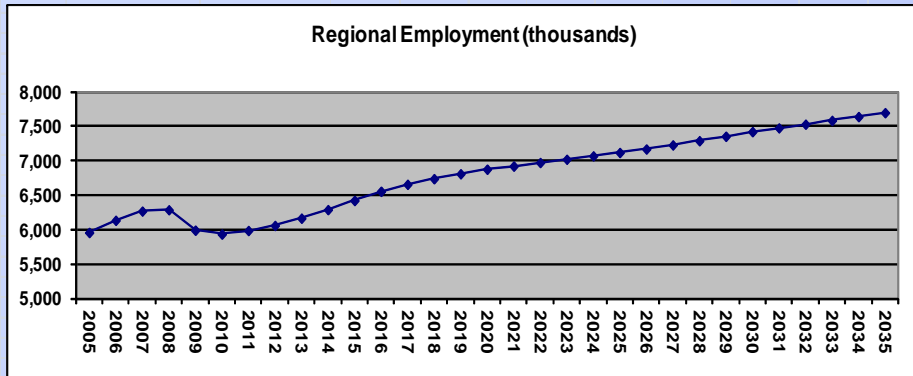
Employment (Non-Manufacturing)	1990-2015	2015-2035
ID	2.36%	1.04%
MT	1.86%	0.91%
OR	1.55%	1.03%
WA	1.70%	0.81%
4 States	1.74%	0.91%

Our current forecast suggest



	Floor Space Additions (Millions of S.Q.F)	
	Cumulative	Annual Average
1985-2011	1,406	52
2015-2035	951	40

Commercial Sector Drivers



	Annual Growth Rate		
	2005-2011	2011-2020	2020-2035
Floor Space Stock Req.	0.4%	1.0%	0.5%
New SQF Req.	-2.7%	3.9%	0.5%
Employment	0.8%	1.4%	0.6%

Floor space Additions (M SQF)

	Cumulative	Annual Average
1985-2011 Addition	1,406	52
2015-2035 Requirement	951	40

Growth in non-farm employment is projected to slowdown after initial recovery from recession.

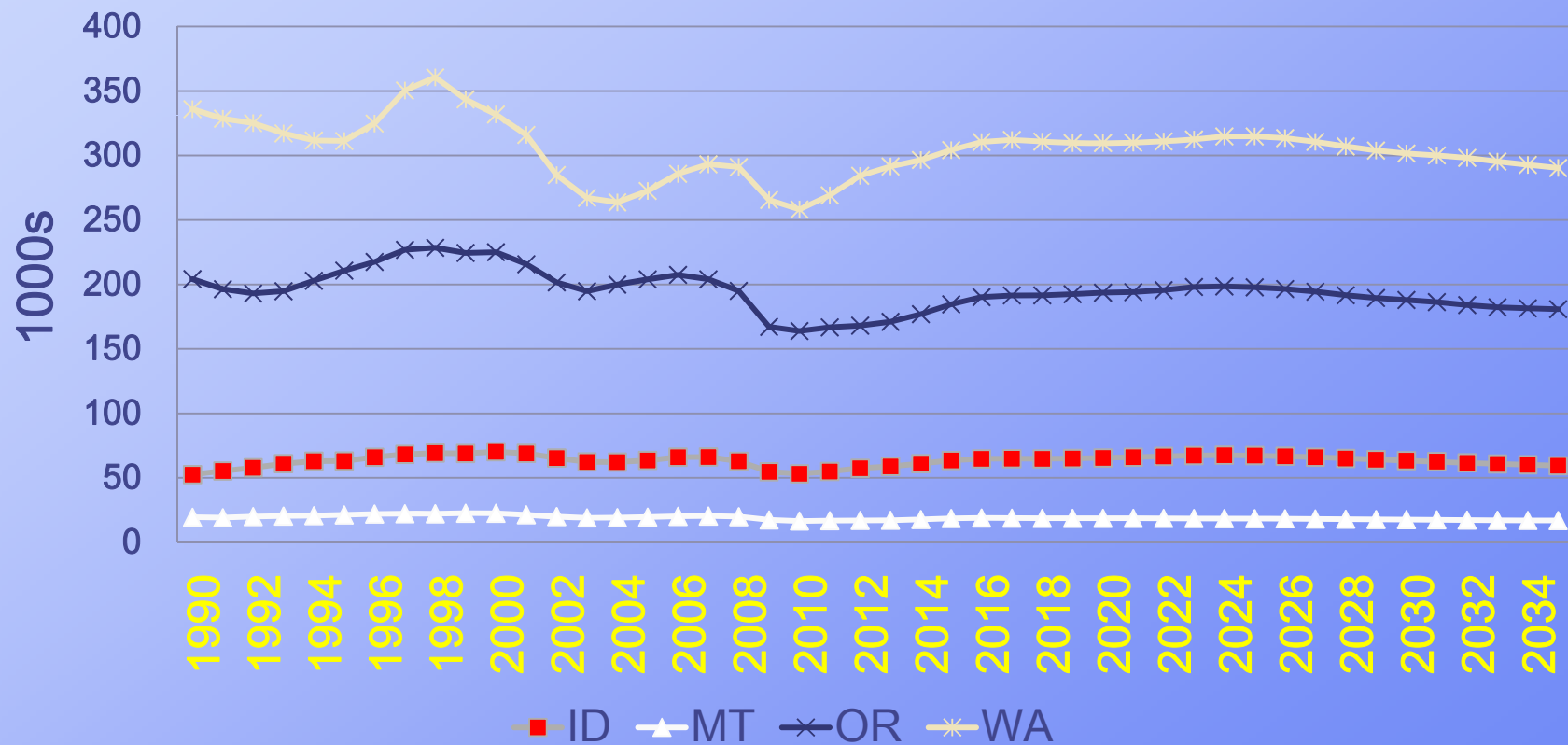
Is there a slow down in rate of growth for commercial sector space requirements?

	Oregon		Washington		Idaho		Montana		Region	
Business/Building type	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035
Large Office	1.7%	1.5%	1.2%	1.6%	4.6%	1.9%	0.5%	2.5%	1.4%	1.6%
Medium Office	3.9%	1.5%	3.4%	1.6%	7.0%	1.9%	2.6%	2.5%	3.6%	1.6%
Small Office	2.2%	1.5%	1.6%	1.6%	5.1%	1.9%	0.9%	2.5%	1.8%	1.6%
Big Box-Retail	7.4%	1.2%	7.4%	0.7%	10.8%	1.0%	7.2%	0.8%	7.5%	0.9%
Small Box-Retail	1.0%	1.2%	1.3%	0.7%	3.7%	1.0%	1.0%	0.8%	1.3%	0.9%
High End-Retail	1.0%	1.2%	1.0%	0.7%	3.7%	1.0%	1.0%	0.8%	1.1%	0.9%
Anchor-Retail	0.5%	1.2%	0.5%	0.7%	3.5%	1.0%	0.4%	0.8%	0.6%	0.9%
K-12	3.0%	0.7%	1.6%	0.8%	2.5%	1.4%	1.1%	0.8%	1.8%	0.9%
University	3.3%	1.1%	1.5%	0.8%	2.8%	0.7%	1.5%	1.0%	1.9%	0.9%
Warehouse	2.2%	1.8%	3.8%	1.1%	3.6%	2.3%	1.3%	1.8%	2.9%	1.5%
Supermarket	0.7%	0.7%	1.0%	0.6%	3.1%	0.4%	1.2%	0.4%	1.2%	0.5%
Mini Mart	5.9%	1.9%	5.5%	1.0%	8.2%	0.8%	6.1%	0.7%	5.9%	1.1%
Restaurant	1.5%	1.2%	1.7%	1.2%	3.5%	1.5%	1.2%	1.0%	1.7%	1.2%
Lodging	1.6%	1.2%	1.9%	0.7%	2.2%	0.7%	0.9%	1.1%	1.6%	0.9%
Hospital	2.9%	1.2%	2.0%	1.9%	3.2%	2.1%	1.9%	1.4%	2.4%	1.7%
Other Health	3.3%	2.0%	2.0%	1.7%	2.2%	1.7%	2.8%	2.1%	2.4%	1.8%
Assembly	3.2%	1.0%	2.0%	1.2%	3.2%	2.5%	1.8%	1.2%	2.3%	1.3%
Other	3.1%	1.7%	1.8%	0.6%	3.2%	1.2%	1.4%	1.3%	2.1%	0.9%

- Have you seen a slow-down in commercial construction activities in your area?
- Do you think it will continue into the future?
- Have you seen a shift in commercial building mix from retail stores to warehouse?

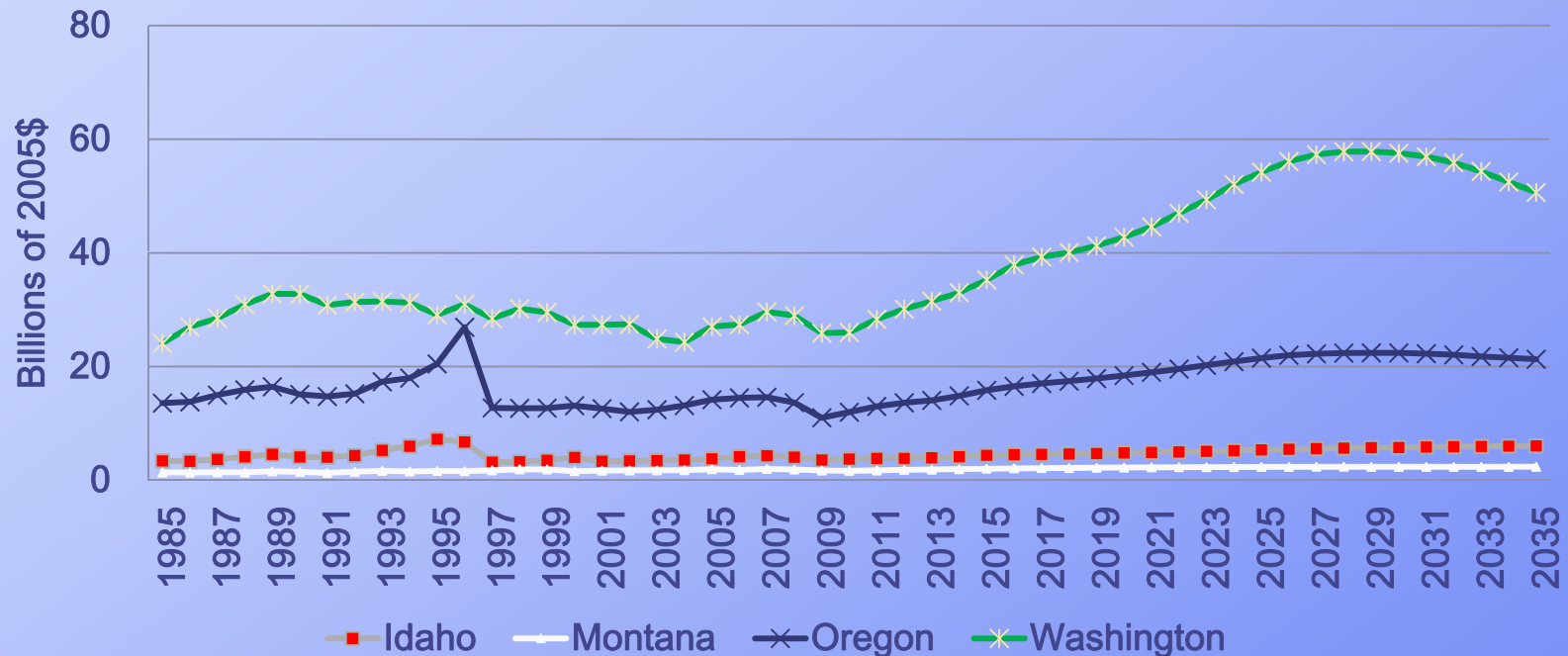
Manufacturing Employment is recovering but does not regain 1990s high level

Manufacturing Employment



Industrial Sector Output Recovering

Industrial Output (Billions of \$2005)



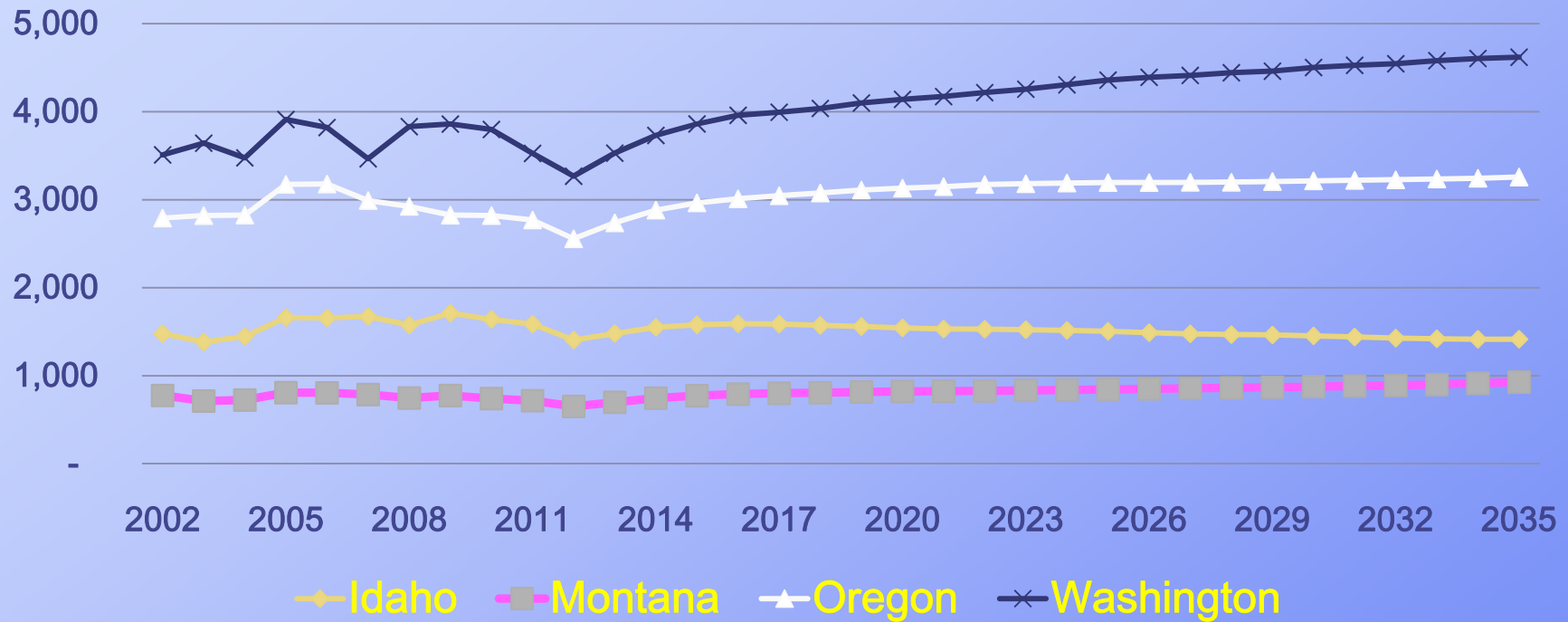
Industrial	1985-2011	2015-2035
Idaho	0.5%	1.6%
Montana	1.0%	0.7%
Oregon	-0.2%	1.5%
Washington	0.6%	1.8%

Annual Growth Rates for Economic Drivers in the 7th Plan (Draft) April 2013 Version

Industry	Oregon		Washington		Idaho		Montana		Region	
	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035
Food & Tobacco	2.0%	3.2%	2.0%	2.7%	2.1%	2.6%	2.8%	2.5%	2.0%	2.8%
Textiles	-3.0%	3.8%	7.3%	1.0%	9.4%	5.2%	NA	1.7%	4.5%	1.7%
Apparel	-2.1%	-0.1%	-4.3%	-1.0%	-3.7%	3.0%	-5.8%	1.7%	-3.7%	-0.3%
Lumber	-3.9%	-0.1%	-3.4%	-0.1%	-2.8%	-1.7%	-3.7%	-3.7%	-3.6%	-0.4%
Furniture	4.1%	7.9%	3.4%	8.5%	5.8%	6.2%	3.4%	4.3%	3.9%	8.0%
Paper	-1.2%	3.2%	0.4%	2.2%	2.1%	1.9%	-9.4%	2.8%	-0.2%	2.5%
Printing	-2.8%	1.5%	-4.8%	-1.0%	-5.0%	1.9%	-5.9%	-0.3%	-4.1%	0.6%
Chemicals	10.1%	4.7%	5.3%	5.9%	NA	3.9%	-1.9%	3.6%	5.5%	5.3%
Petroleum Products	-6.0%	1.4%	2.6%	2.3%	-14.8%	5.4%	12.4%	1.5%	2.2%	2.1%
Rubber	4.3%	3.3%	4.6%	3.5%	-1.7%	4.4%	5.5%	4.0%	3.3%	3.6%
Leather	2.5%	-1.7%	-1.3%	-3.4%	-0.5%	1.8%	1.5%	-3.2%	1.1%	-1.7%
Stone, Clay, etc.	3.6%	5.4%	2.6%	4.1%	0.3%	4.0%	-1.2%	1.9%	2.5%	4.5%
Aluminum	-2.2%	-3.7%	-3.2%	-3.6%	NA	NA	-8.5%	-11.4%	-3.3%	-3.7%
Other Primary Metals	1.3%	-0.7%	3.2%	-3.7%	10.6%	-4.3%	1.8%	-6.1%	2.1%	-2.0%
Fabricated Metals	2.6%	-2.6%	3.4%	-2.0%	3.9%	-2.8%	5.5%	-5.7%	3.1%	-2.4%
Machines & Computer	0.3%	-1.0%	-0.2%	-0.4%	-1.0%	-3.2%	-0.6%	-15.2%	-0.2%	-1.0%
Electric Equipment	-3.1%	1.0%	-3.7%	0.8%	3.1%	-0.4%	3.3%	5.5%	-3.2%	0.9%
Transport Equipment	2.7%	-0.4%	0.3%	1.4%	8.7%	-15.4%	4.3%	NA	0.5%	1.2%
Other Manufacturing	4.6%	8.7%	4.5%	9.6%	9.0%	7.8%	6.7%	5.4%	4.9%	9.0%

- Have you seen re-shoring/resurgence of industrial sector in your area?
- How has industrial sector mix changed in your state?
- Is the growth in large data centers going to continue in the NW?

Agriculture and Forestry Output (Billions of 2005\$)



Oregon		Washington		Idaho		Montana		Region	
1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035
0.9%	0.7%	-0.2%	1.2%	-0.4%	-0.5%	1.1%	1.1%	0.2%	0.8%

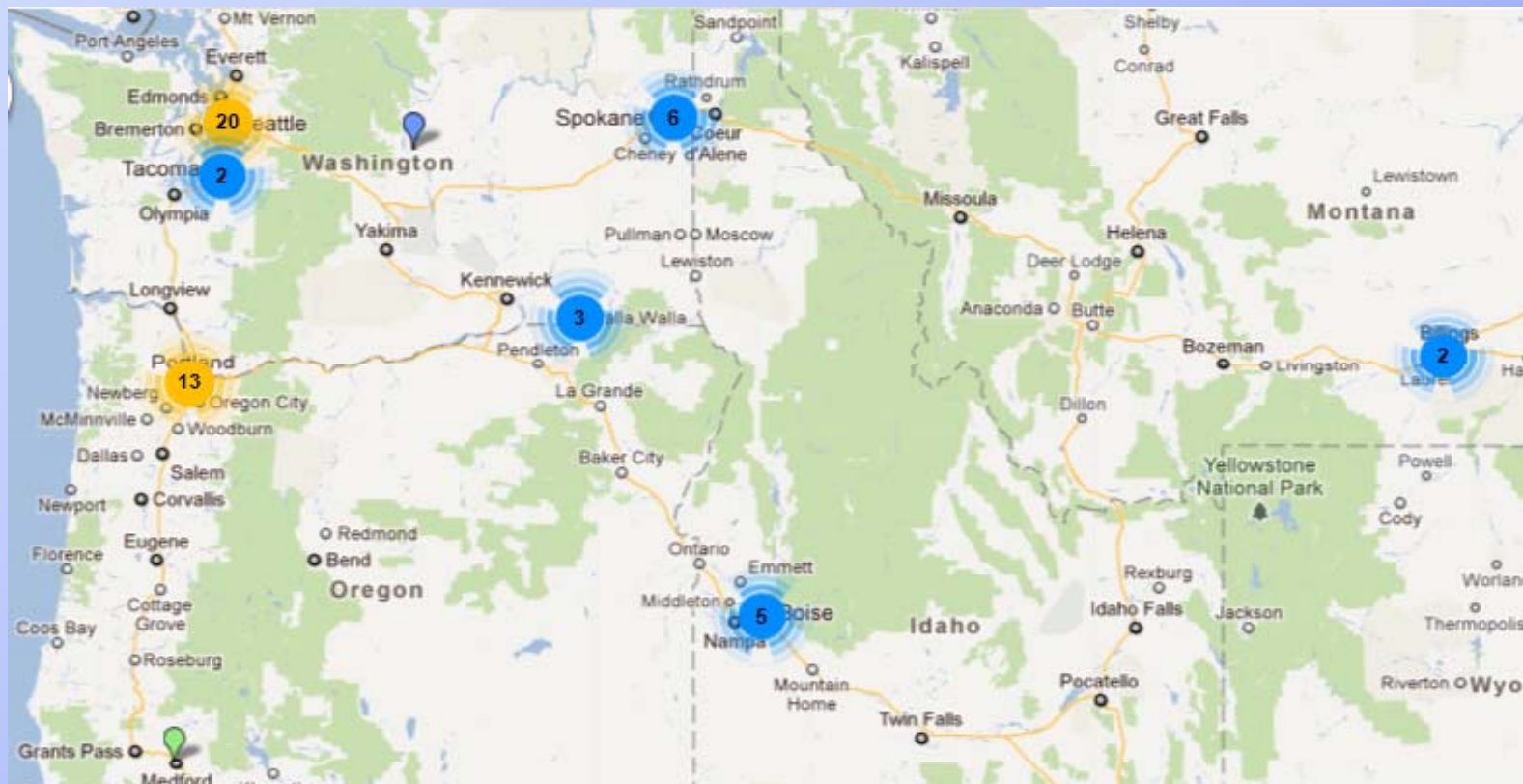
Data Centers

- Hidden Data centers
 - Server closets, rooms
 - Enterprise data centers
 - Co-Located Server Hosting facilities
- Custom Data centers
 - Yahoo
 - Google

Not all Data Centers Are Created Equal.

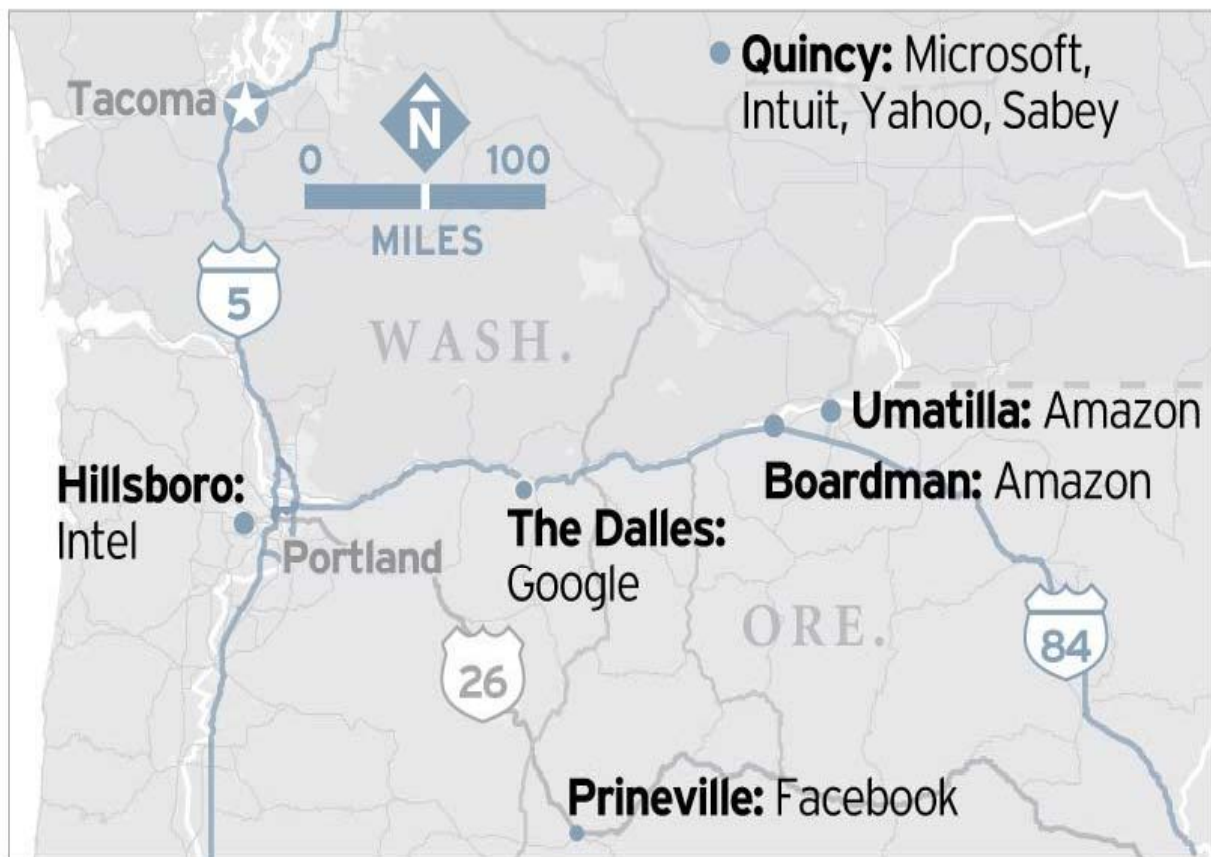
	Example	Approximate Energy Consumption	% of Data Centers in the US	% of Servers in the US	Typical Location	Some of Barriers to Utility Energy Efficiency programs	Opportunity for Energy Efficiency
Enterprise-class/hyper Data Centers	Google, Facebook, Amazon	10-100+ MW	0.3%	28%	non-metro area	secrecy, rapid market change, split incentives, identifying key player, baseline	comprehensive customized offerings/ requires long-term relationship, market movers
Mid-Tire Data Center	Colocators, EasyStreet	10 MW or less	0.4%	15%	Metro area	less secrecy, capital constrained, split incentives, baseline and incentive	comprehensive and customized/ requires long-term relationship
Localized Data Center	Hopsital, financial institutions, Government	10-500 KW	2.5%	16%	Metro area	Harder to locate, split incentives	Customized/Prescriptive, Training and information on energy efficiency options, long-term relationship
Server closets/Rooms	Small to Mid-size Company	5-10 KW	96%	~40%	business dependent	hard to locate, Small IT resources doing many tasks, IT not core business	Perscriptive program offering

Northwest has a disproportionate share of data centers



The Northwest is a prime site for data centers because of: cost, availability, and reliability of power, good reliable transmission system, generous tax policies, educated workforce, good economic development incentive, and wonderful weather.

Some large Northwest data centers



Pending:

Hillsboro:

Adobe Systems

Digital Realty

Trust/NetApp

Fortune Data
Centers

Quincy:

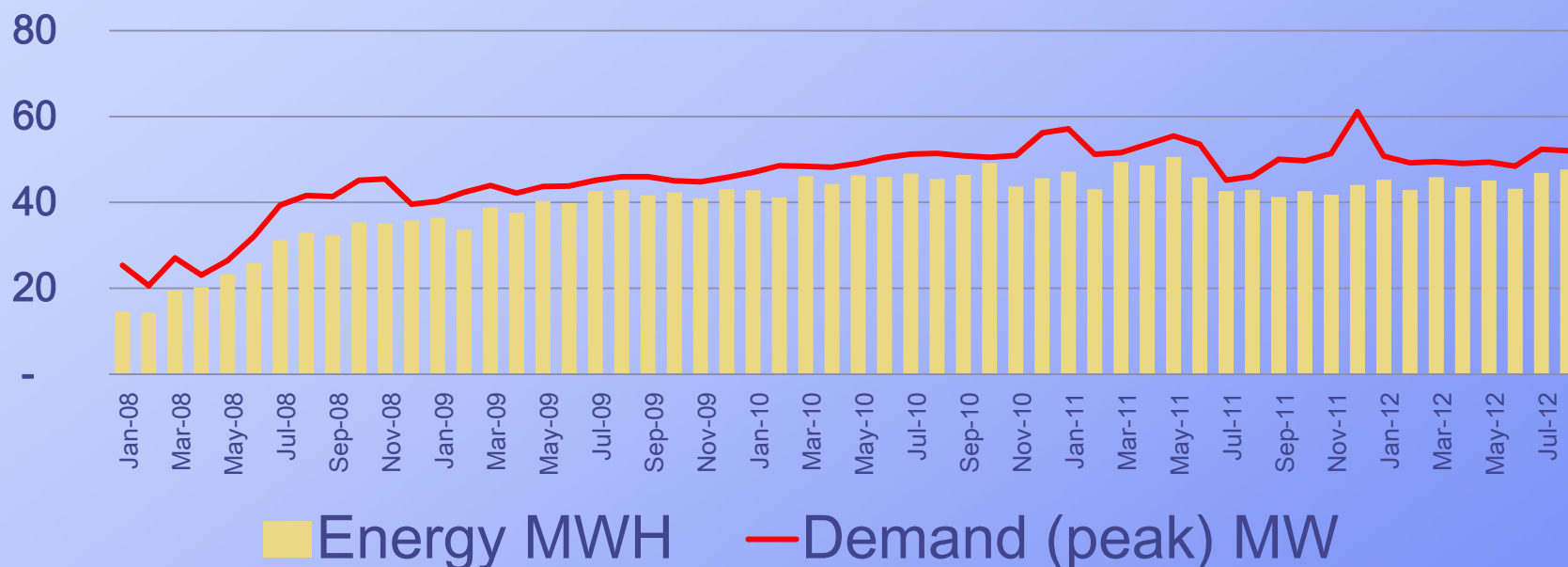
Vantage Data
Centers

Dell

DAN AGUAYO/THE OREGONIAN

Large Data Centers provide large flat loads

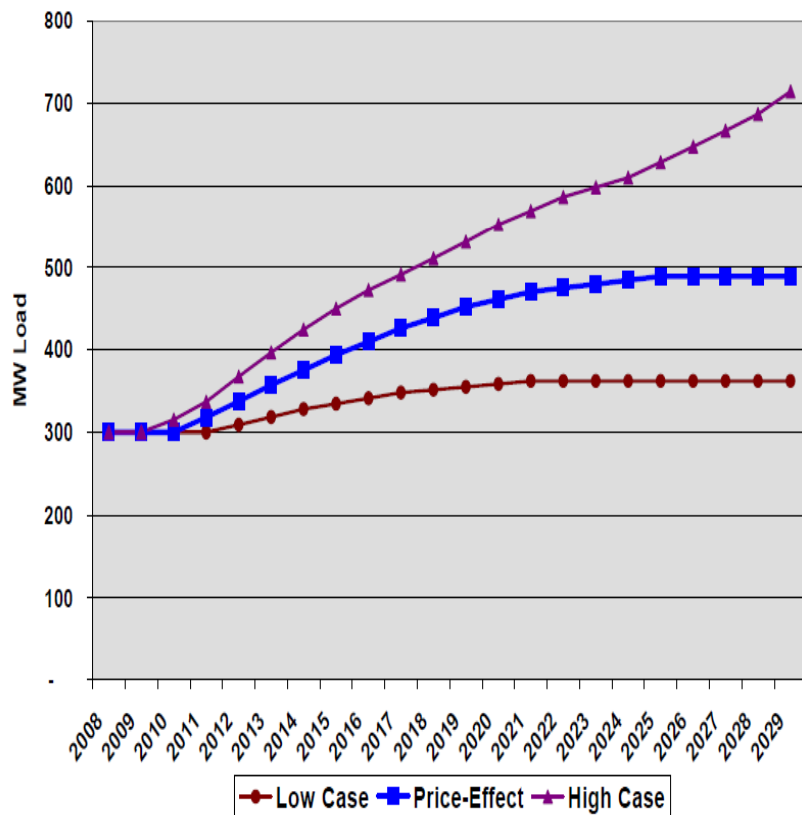
Monthly Average & Peak Demand for Power from six large Data Centers in the NW
(MWh and MW)



- Between 2008 and 2011 these Data Center loads grow from 15 MWh of energy / 25 MW of peak demand to 51 MWh of energy and 61 MW of peak demand
- Roughly 6% of total sales and 10% of industrial sales were from data centers
- Measured energy and peak demand indicates an average 83% Load Factor for these facilities
- Load Factor increased overtime.

Is our expectation for Custom Data Center reasonable

Figure C-21: Projected Load (MW) from Custom Data Centers



For Council's 6th power plan, forecast was for between 350-700 MWa for large data centers.

How future unfolds depends on demand and supply trends.

- Demand for net services, is expected to grow 30% annually.
- Processing efficiency is expected to follow its historic trend ~ roughly 100 times improvement every 10 years.

- Are you tracking Data Center loads in your area?
- Can you share the aggregate Data Center load information (Annual Energy, Peak, Load shapes) with Council (subject to NDA) ?

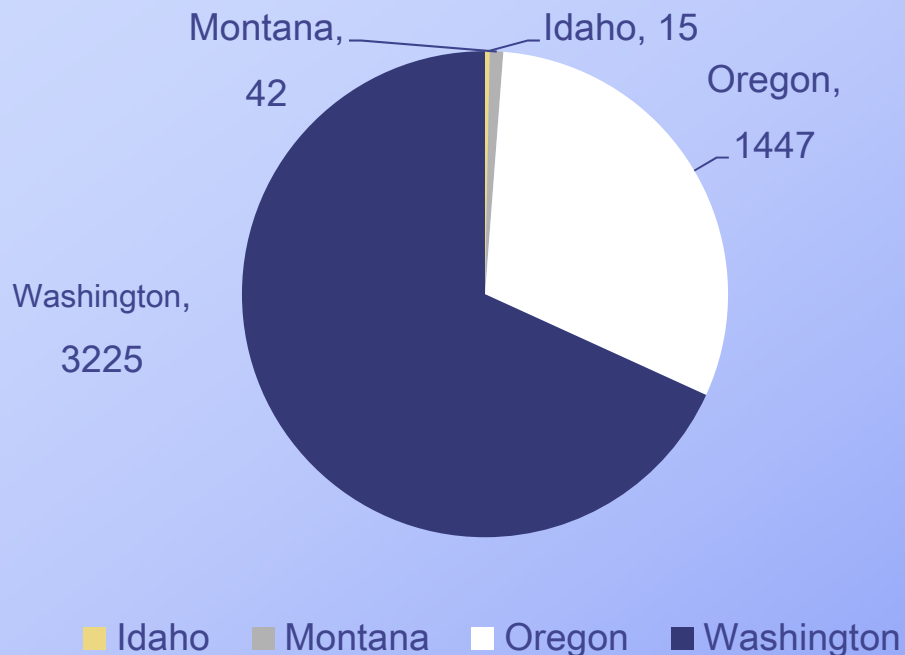
Transportation

	Oregon		Washington		Idaho		Montana		Region	
	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035	1985-2011	2012-2035
Passenger	3.0%	3.0%	3.5%	2.7%	2.1%	3.0%	2.6%	2.7%	3.3%	2.8%
Freight	2.4%	2.8%	3.0%	2.7%	1.6%	2.6%	2.2%	2.3%	2.8%	2.7%
Air Passenger	3.3%	2.8%	3.7%	2.9%	4.9%	5.7%	2.7%	2.4%	3.7%	3.5%
Air Freight	3.3%	3.8%	3.4%	3.5%	2.8%	3.1%	2.5%	3.0%	3.3%	3.5%
Off Road	0.9%	2.1%	1.6%	1.9%	-0.5%	0.5%	1.0%	1.9%	1.8%	1.3%

Transportation sector drivers are:

- Residential income
- Commercial, industrial and agricultural output.

Number of Electric Vehicles



As of Jan 2013, there were about 4700 registered electric vehicles registered with DMVs.

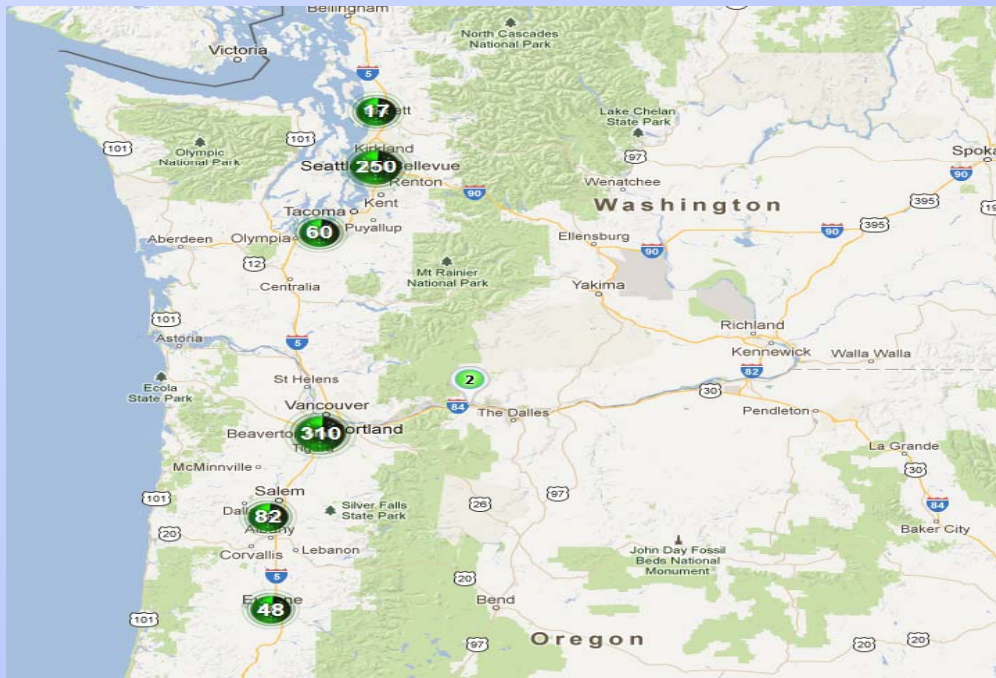
Majority of these vehicles are in Oregon and Washington.

	2012	2011	Growth
TOTAL U.S. CAR	7,473,850	6,339,884	18%
Chevy Volt	23,461	7,671	206%
Nissan Leaf	9,819	9,674	1%

EV Project is providing good information

- From Q4 2012 EV project report
- By the end of 2012 – Nationwide
 - Nearly 60 million miles recorded
 - Over 14,100 MWH
 - 7379 Nissan Leafs, Chevy Volts & smart ForTwo vehicles
 - Over 1.9 million gallons of gasoline avoided.
 - 6694 Residential, 2583 Public, 56 fast Chargers installed.
 - Daily Travel (Leaf ~30 miles, Volt ~40 miles)

Although number of Charging Stations on the rise, so far

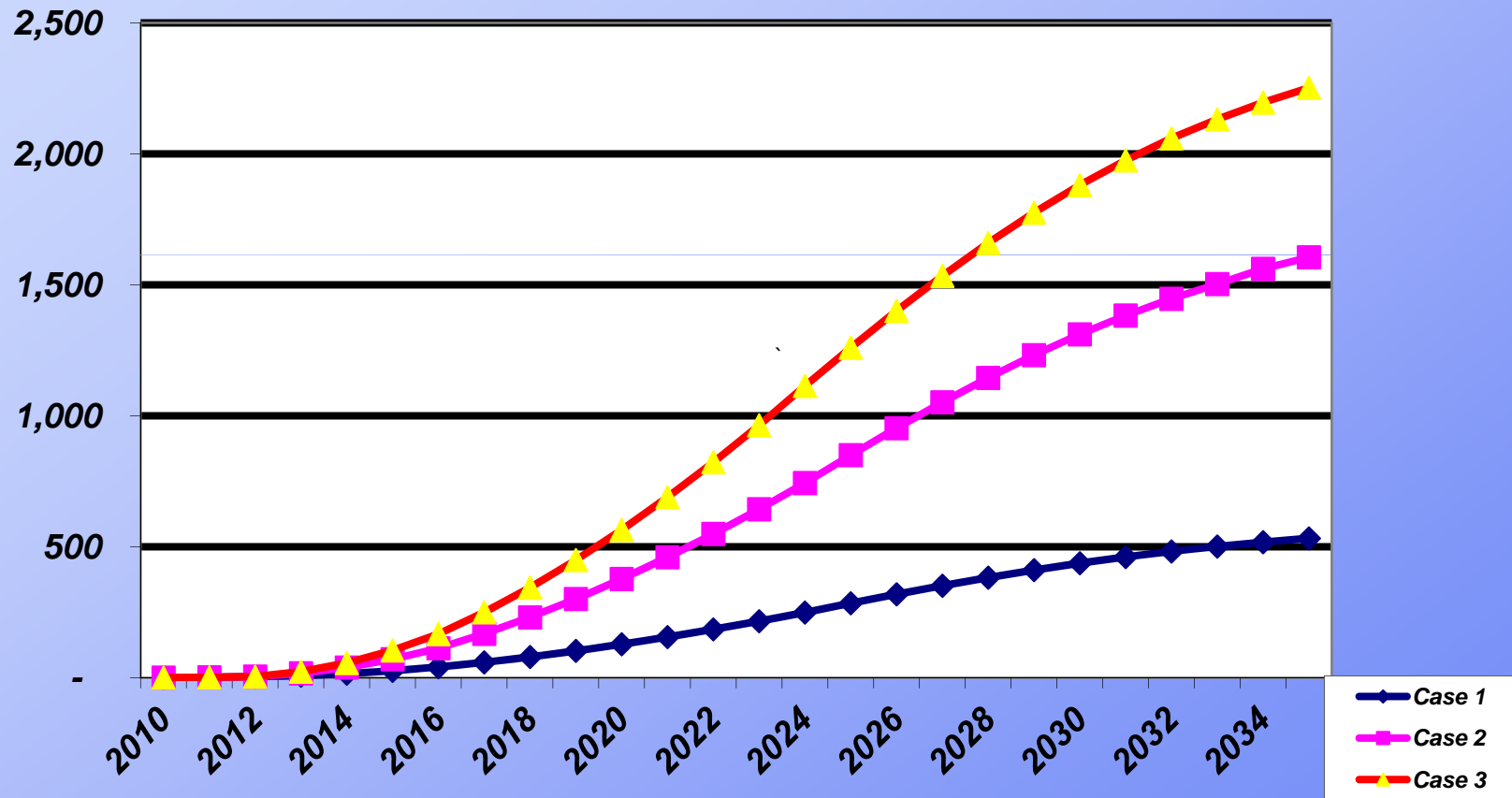


Majority of charging events and energy, (86%-92%) occurs at home.
EV increase resident's electricity consumption by about 22%

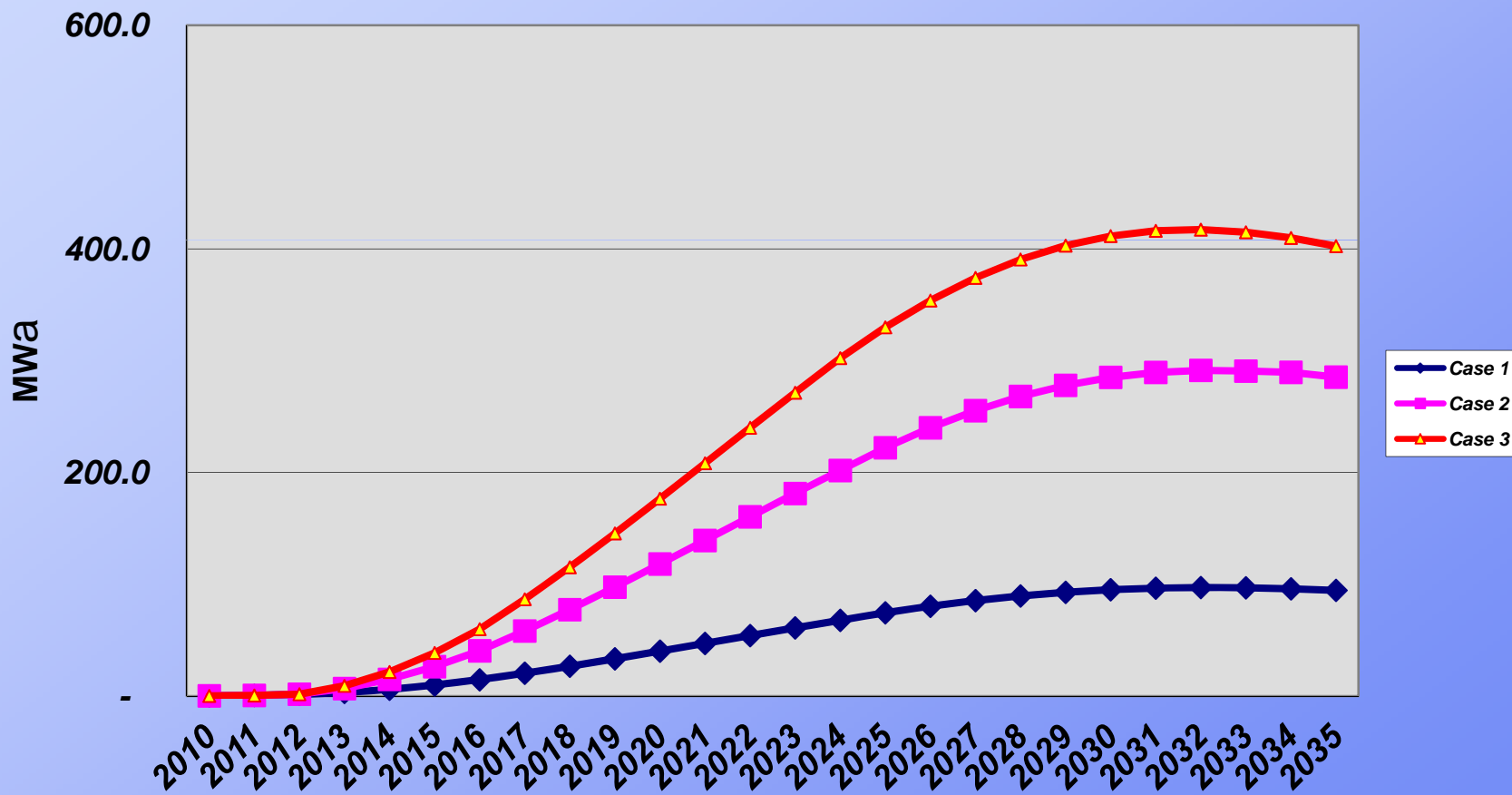
MWH/ Household/year	Oregon	Washington
Average Consumption	12	13
EV consumption	2.9	2.8

EV project participants as of end of 2012	Oregon	Washington
Number of Nissan Leafs	549	893
Number of Chevy Volts	94	98
Distance Driven (Million Miles)	5.5	8.5
Electricity Consumed (AC GWH)	1.4	2.1

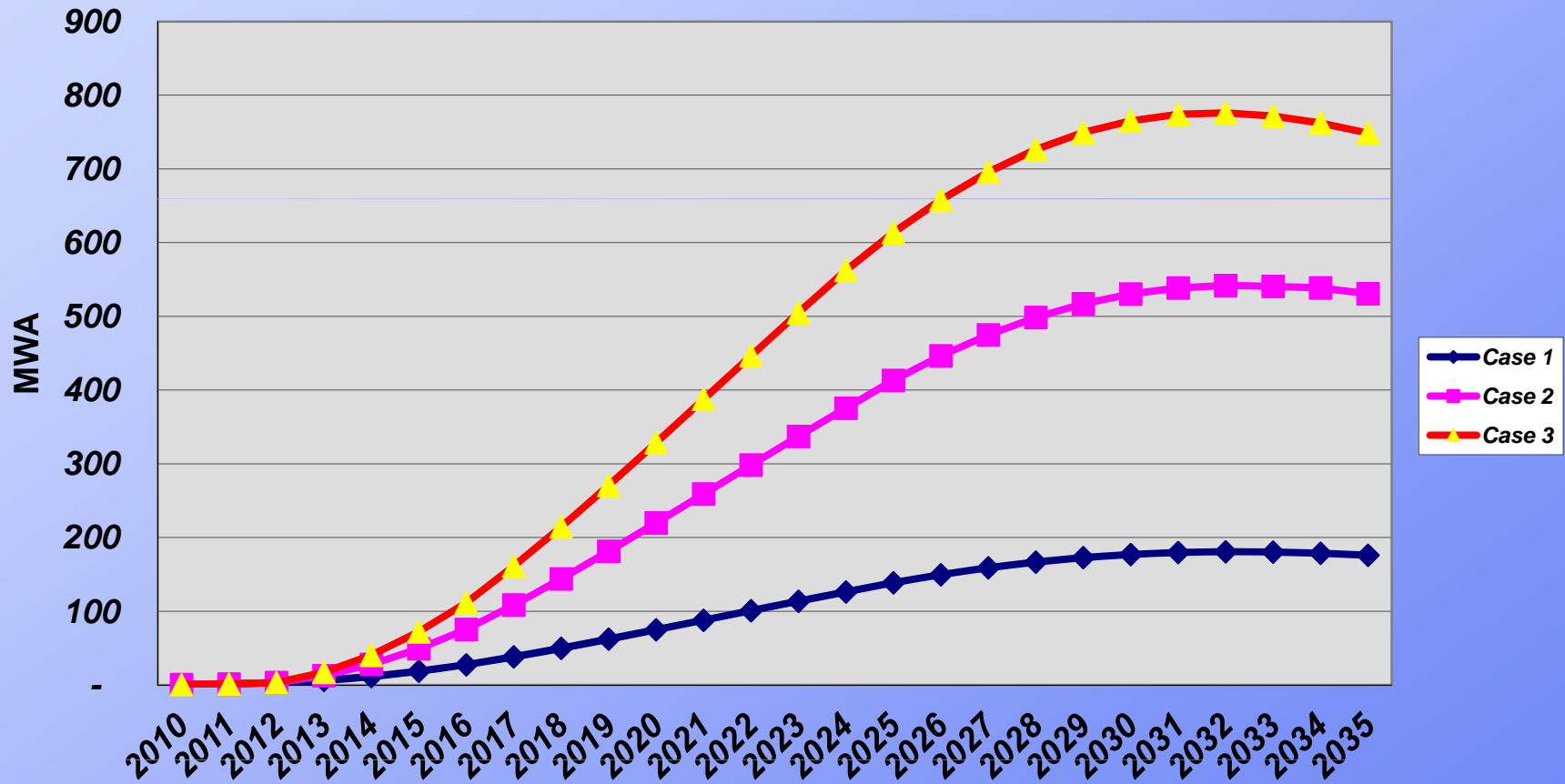
Plug-in Vehicles on the Road (1000s)



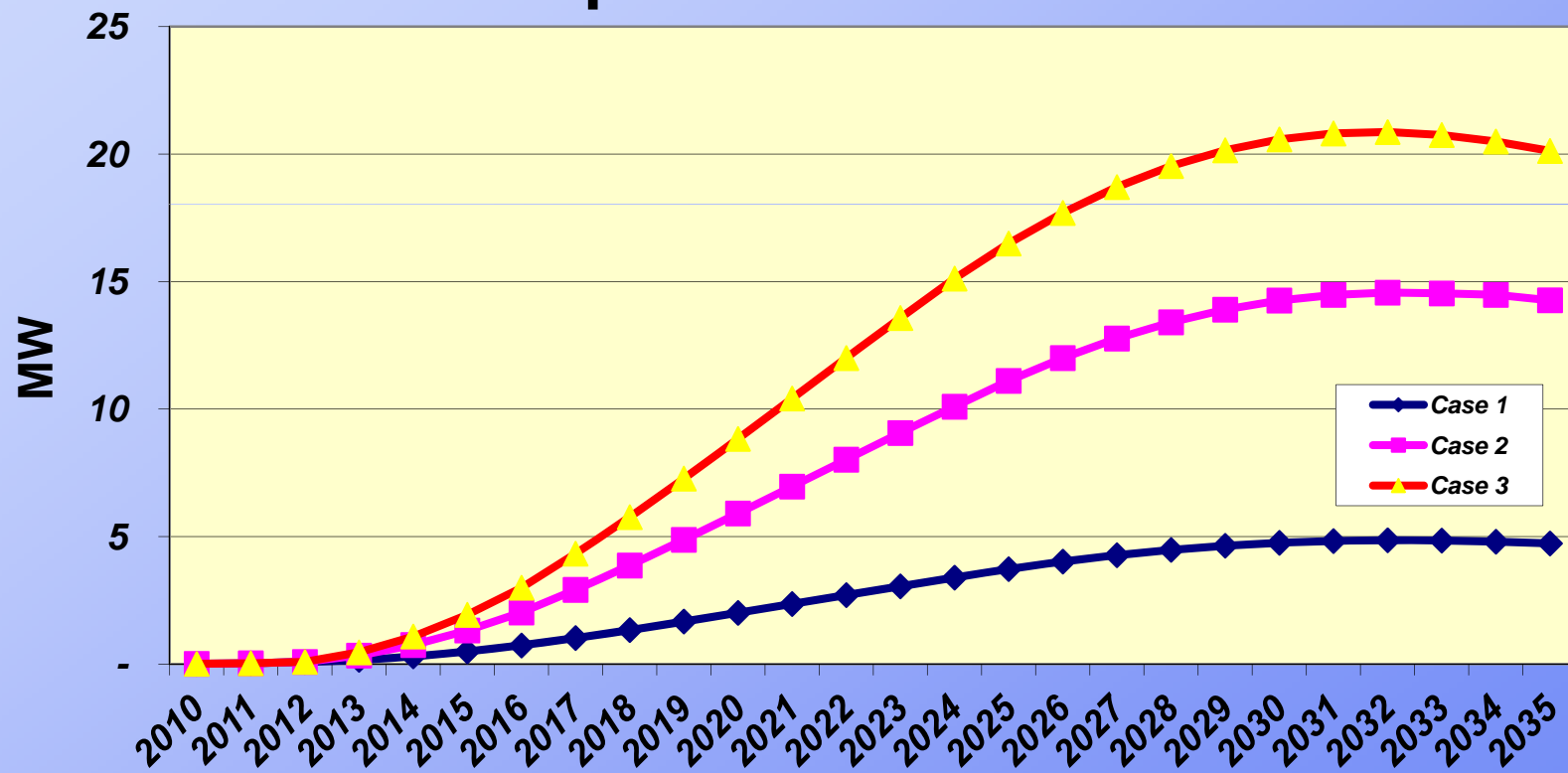
Impact on Annual Load (MWA)



Impact on Off Peak Loads MWA



Impact on Peak Load



Transportation

- Do you see growth in electric vehicles continuing?
- Do you think natural gas vehicles going to take-off?

Lunch Break

Wholesale and Retail Fuel Price Forecasts

To develop forecast of wholesale price of electricity, Council uses Aurora model.

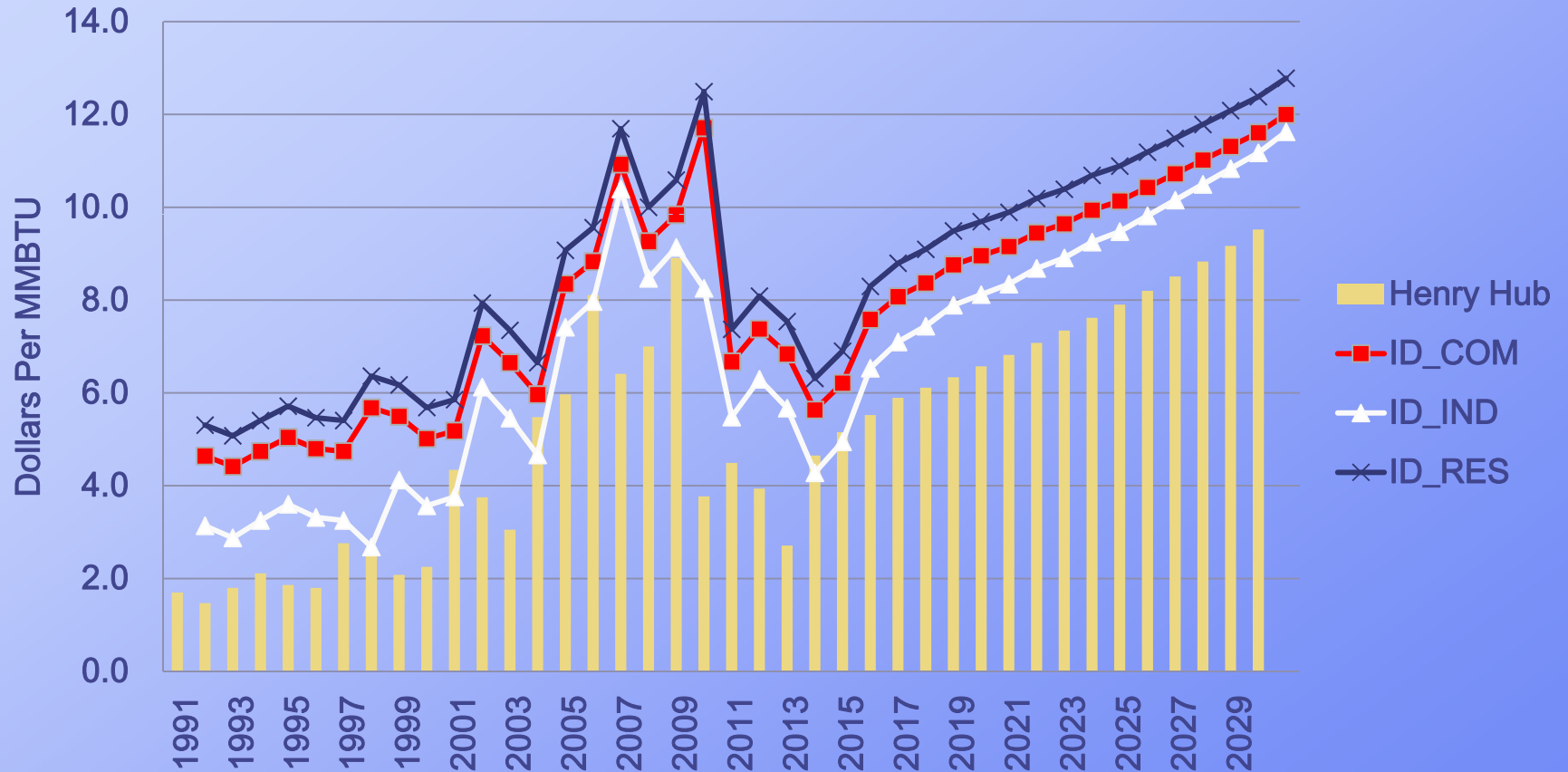
Aurora model is provided with burner-tip prices for natural gas and other fuels.

Wellhead price of natural gas is produced through in-house analysis and Natural Gas Advisory Committee.

Retail price of electricity needs further analysis.

Is Estimating Retail Natural Gas Price using historic relationship reasonable?

Relationship between Retail Natural Gas Prices and Henry Hub Prices



Henry Hub price forecast shown here is for example, Council's natural gas price projections will be updated later this year.

Average Retail Price of Electricity

➤ Method 1:

1. Start with 2012 retail rates by sector and state
2. Subtract 2012 average annual wholesale electric price at Mid C, to calculate a residual that would cover T&D charges and some of the generation costs.
3. For forecast of rates, take forecast of wholesale market prices at Mid C, and add the residual amount from step 2. Then add in forecast of above market cost of RPS

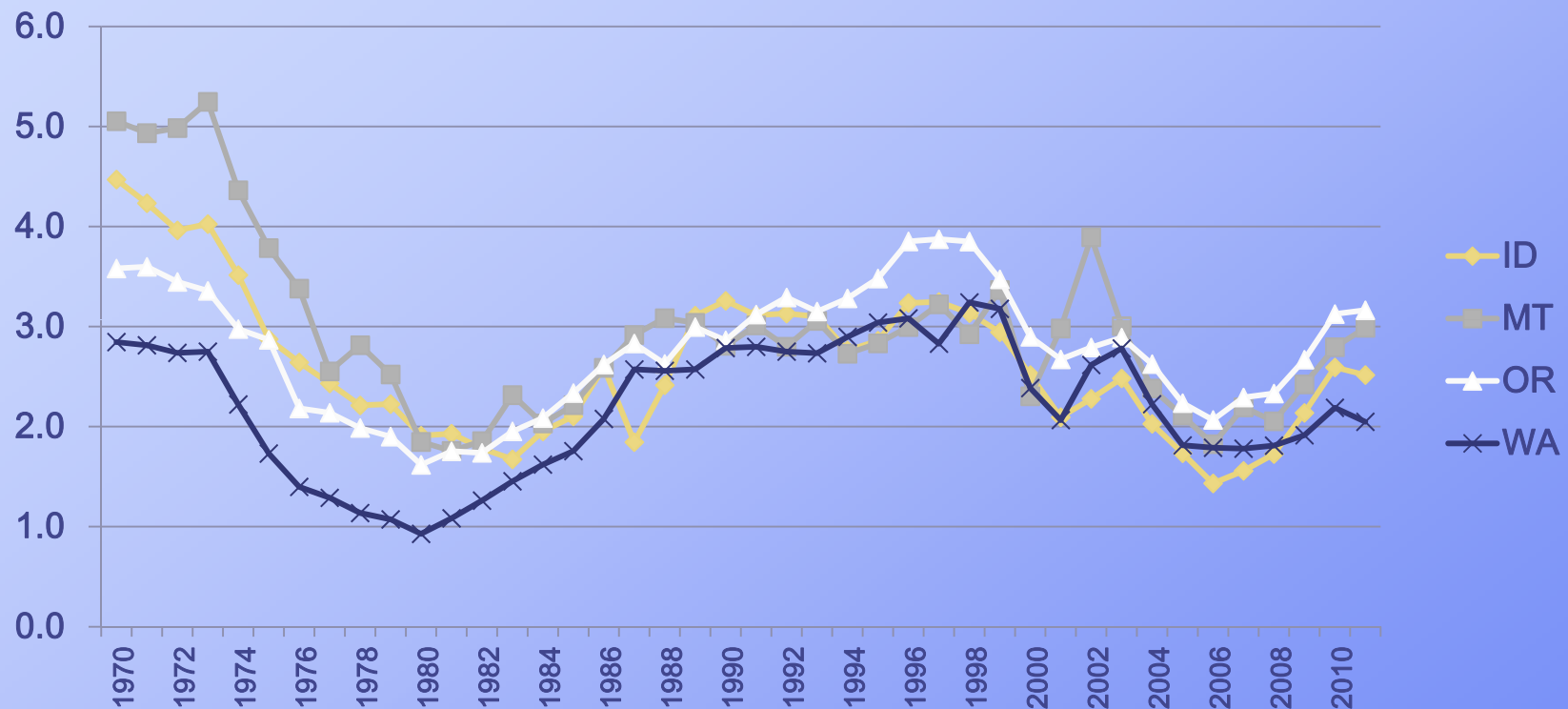
Average Retail Price of Electricity

- Method 2: Use RPM model results from 6th Plan
- Apply the growth rate in average revenue requirement per MWH from RPM to the latest year of actual rates.
- The RPM model analysis (no conservation case) projected an expected average annual increase of 1.5%.
- In nominal terms over 3.2% per year.

Average Retail Price of Electricity

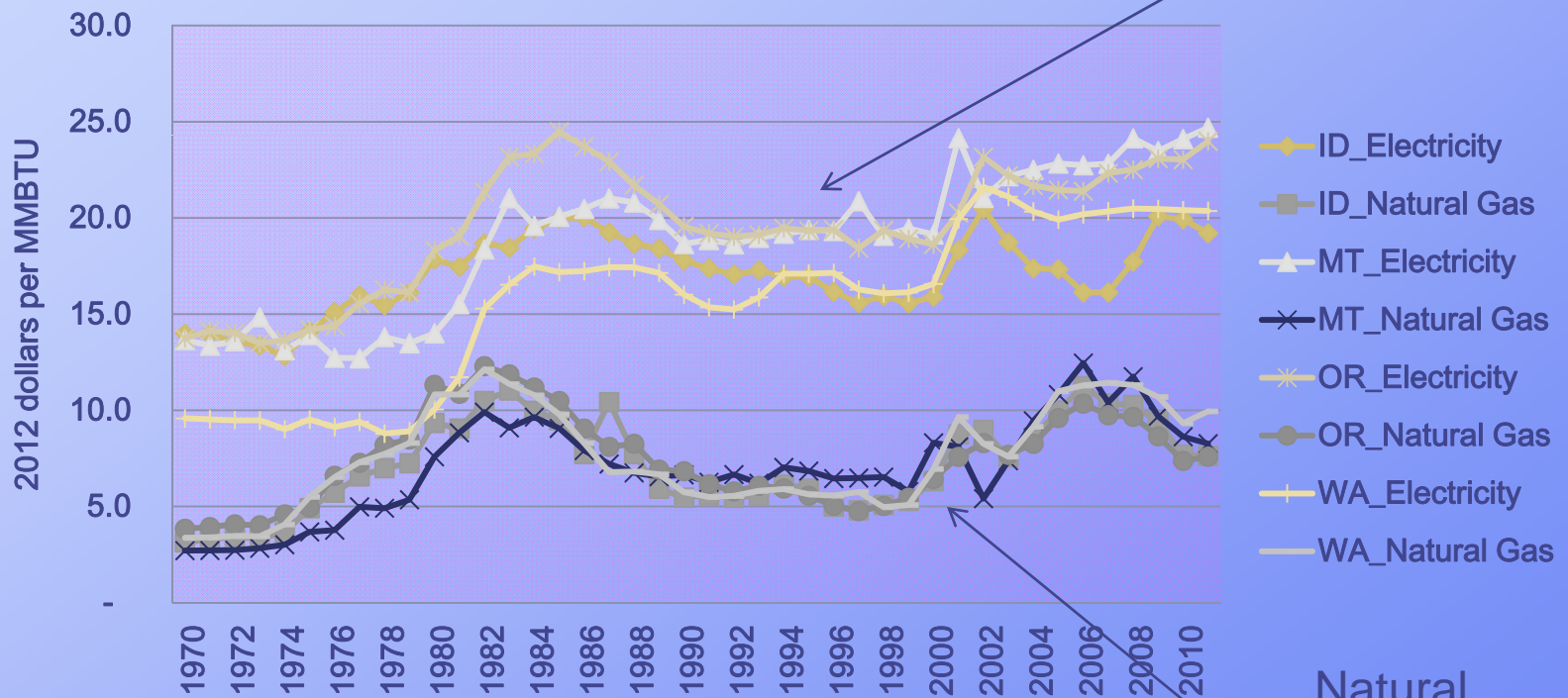
- Method 3:
- Use the competitive relationship of natural gas and electricity to forecast retail rates.
- Forecast wholesale Price of natural gas
- Establish the relationship to retail price of natural gas.
- Establish the relationship between retail gas and retail electricity price.

Ratio of Retail Electricity to Natural Gas Price



	Ratio of Electricity Retail Rates to Natural Gas Retail Rates			
	1970-1980	1980-1990	1990-2000	2000-2011
ID	3.1	2.2	3.0	2.1
MT	3.8	2.4	2.9	2.6
OR	2.7	2.3	3.4	2.6
WA	1.9	1.9	2.9	2.1
Average	2.9	2.2	3.1	2.4

Comparison of Electricity and Natural Gas Retail Rates
 1970-2011
 in Constant 2012 dollars/MMBTU



Electricity
Prices

Natural
Gas
Prices

Retail Price of Electricity has been growing faster than Natural Gas

(in constant 2012\$)

Sector	State	Annual Growth Rate		Average Price 2012\$/MMBTU	
		2000-2011 Electricity	2000-2011 Natural Gas	2000-2011 Electricity	2000-2011 Natural Gas
Residential	ID	1.4%	1.0%	22.2	10.4
Commercial	ID	1.7%	1.5%	18.6	8.1
Industrial	ID	2.5%	2.2%	14	9.6
Residential	MT	1.6%	1.4%	27.2	9.7
Commercial	MT	3.2%	1.5%	24.7	6.8
Industrial	MT	0.4%	-1.5%	16.6	8.5
Residential	OR	2.4%	1.4%	25.5	13.3
Commercial	OR	2.2%	1.6%	22.5	10.9
Industrial	OR	1.9%	0.9%	16.1	8.2
Residential	WA	2.4%	3.1%	22.7	12.4
Commercial	WA	2.3%	3.2%	21.2	10.9
Industrial	WA	-0.3%	6.5%	14.7	9

Do we know why natural gas prices in Washington grow faster than other states?

Retail Prices

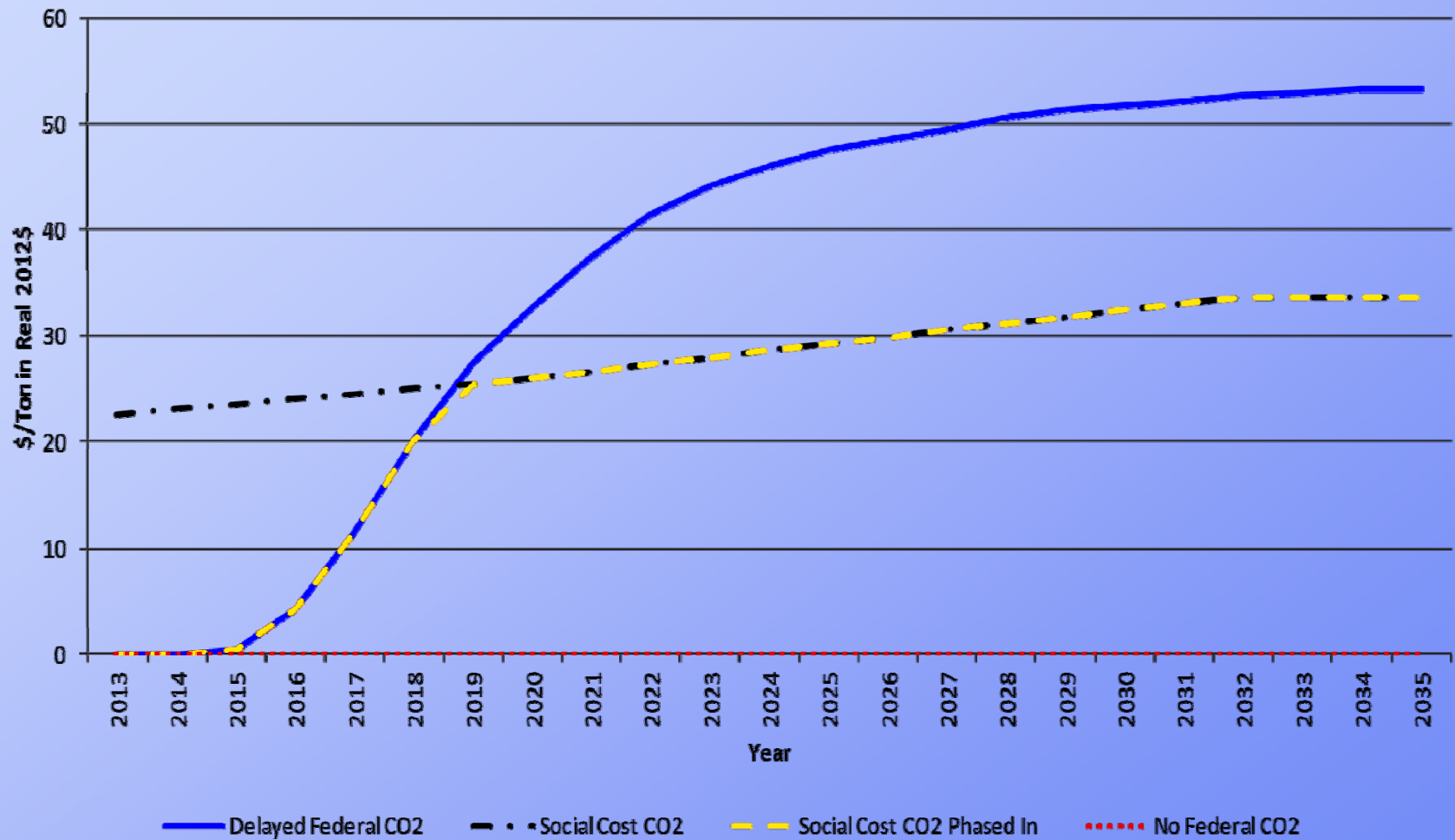
- Do you think the historic relationship between electric and natural gas retail prices is going to be stable?
- Can one use these relationships to estimate retail electricity prices?
- What method do you currently use for forecasting retail electricity prices?

Cost of Carbon

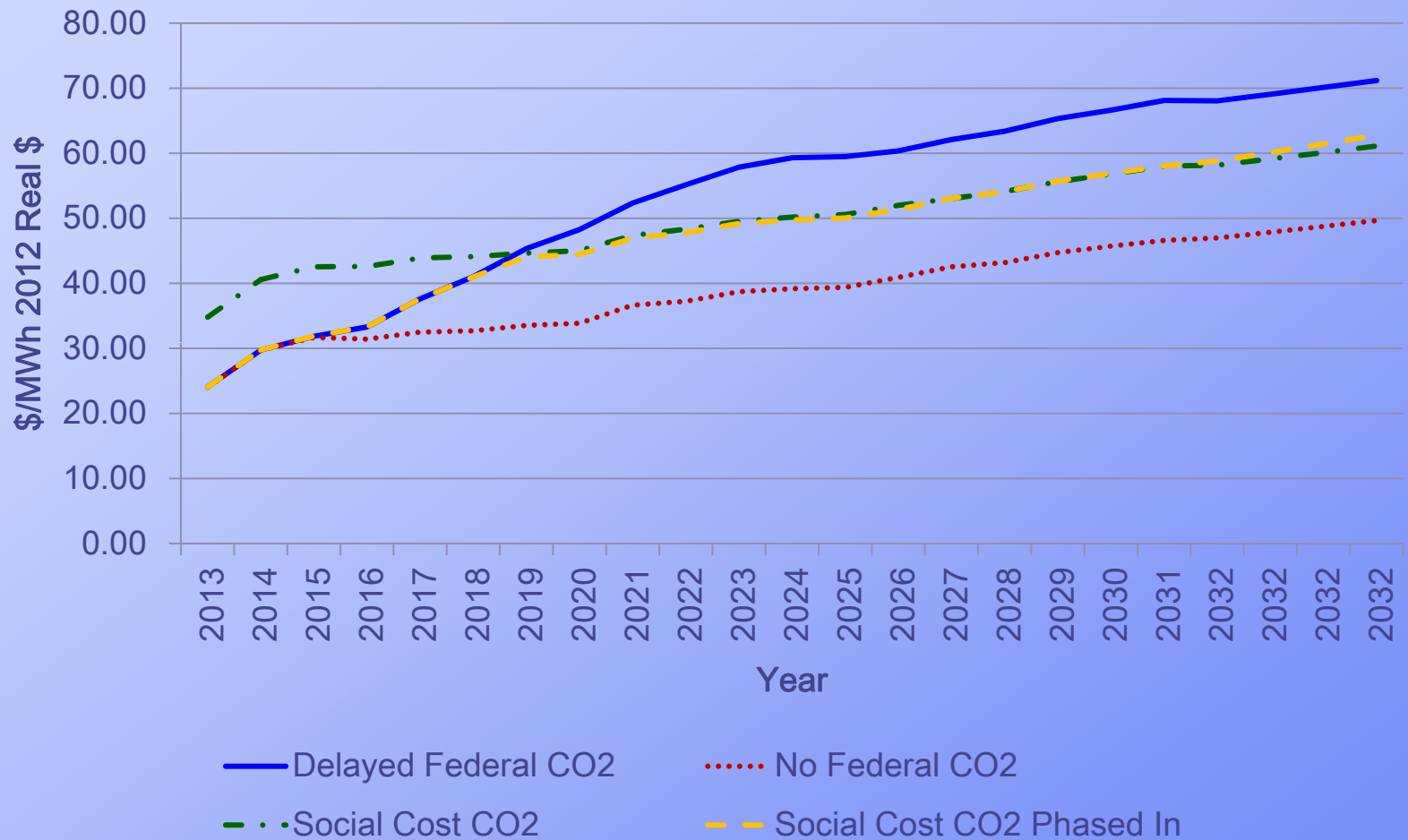
- Currently there are four approaches to incorporating cost of carbon.
 1. Delayed Federal CO₂ tax
 2. Social cost of CO₂
 3. Social cost of CO₂ Phased in
 4. No. Federal CO₂ tax

Current Assumptions (subject to change)

Cost of CO2 Emission - \$/Ton



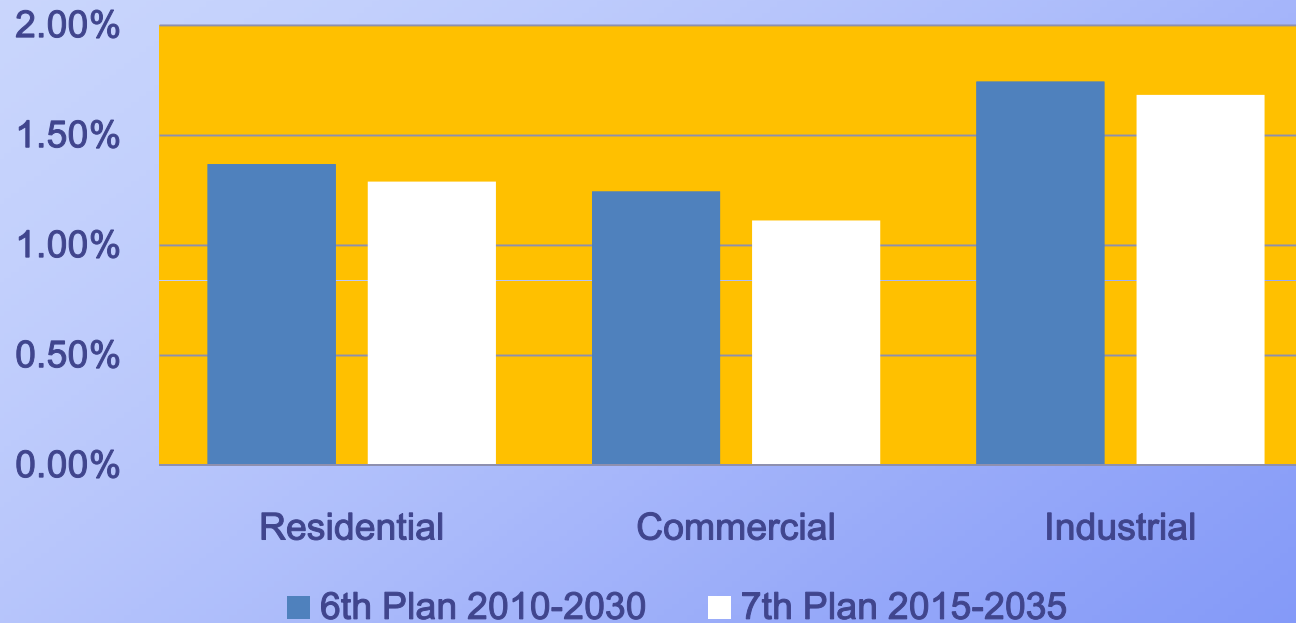
Wholesale Price Forecast at Mid C



- Do you include a projection of CO2 tax in your plans?
- What is your organizations projections on CO2 tax?

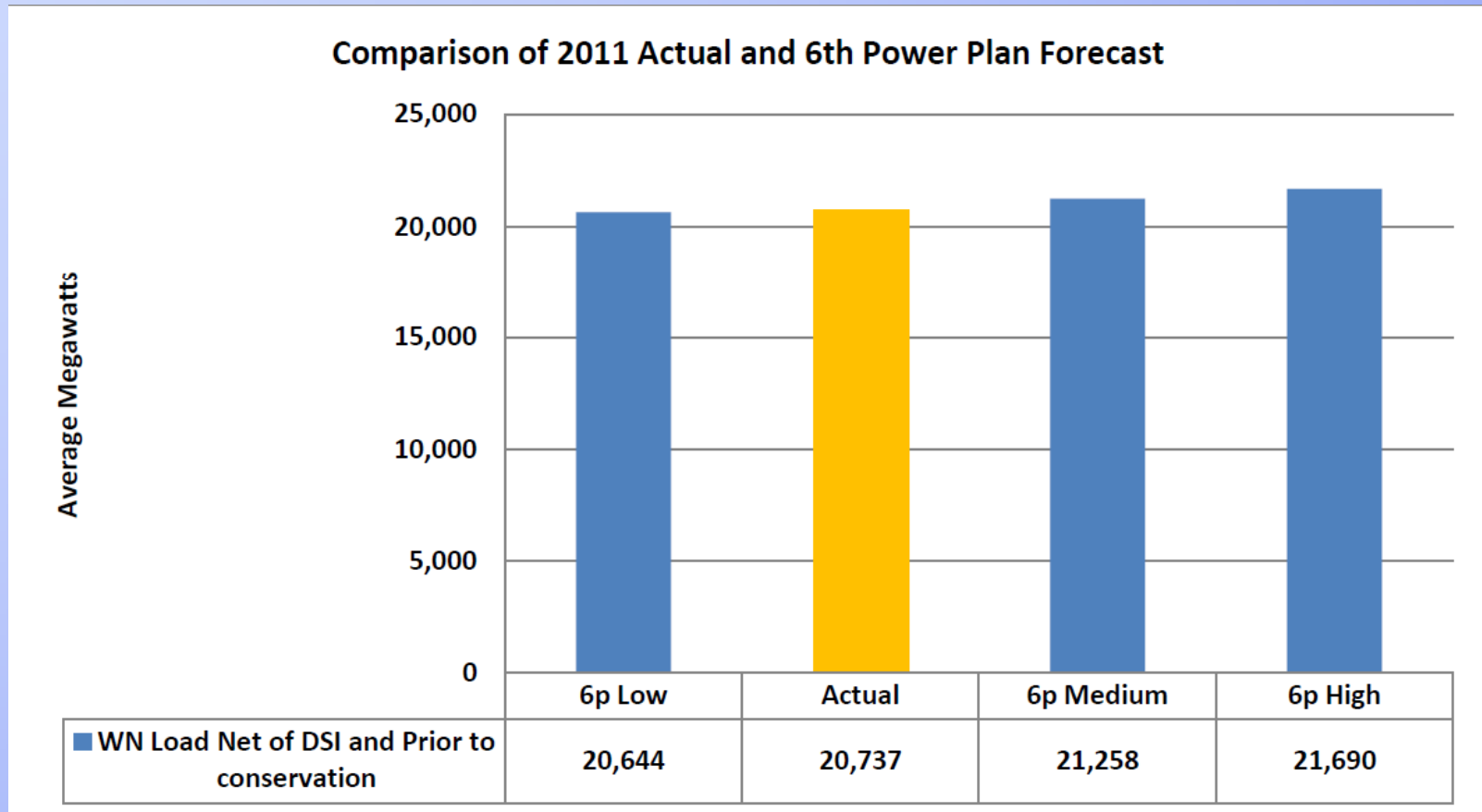
In summary current expectations are for slower overall growth in economic drivers

Comparison of Expected Growth Rates by Sector

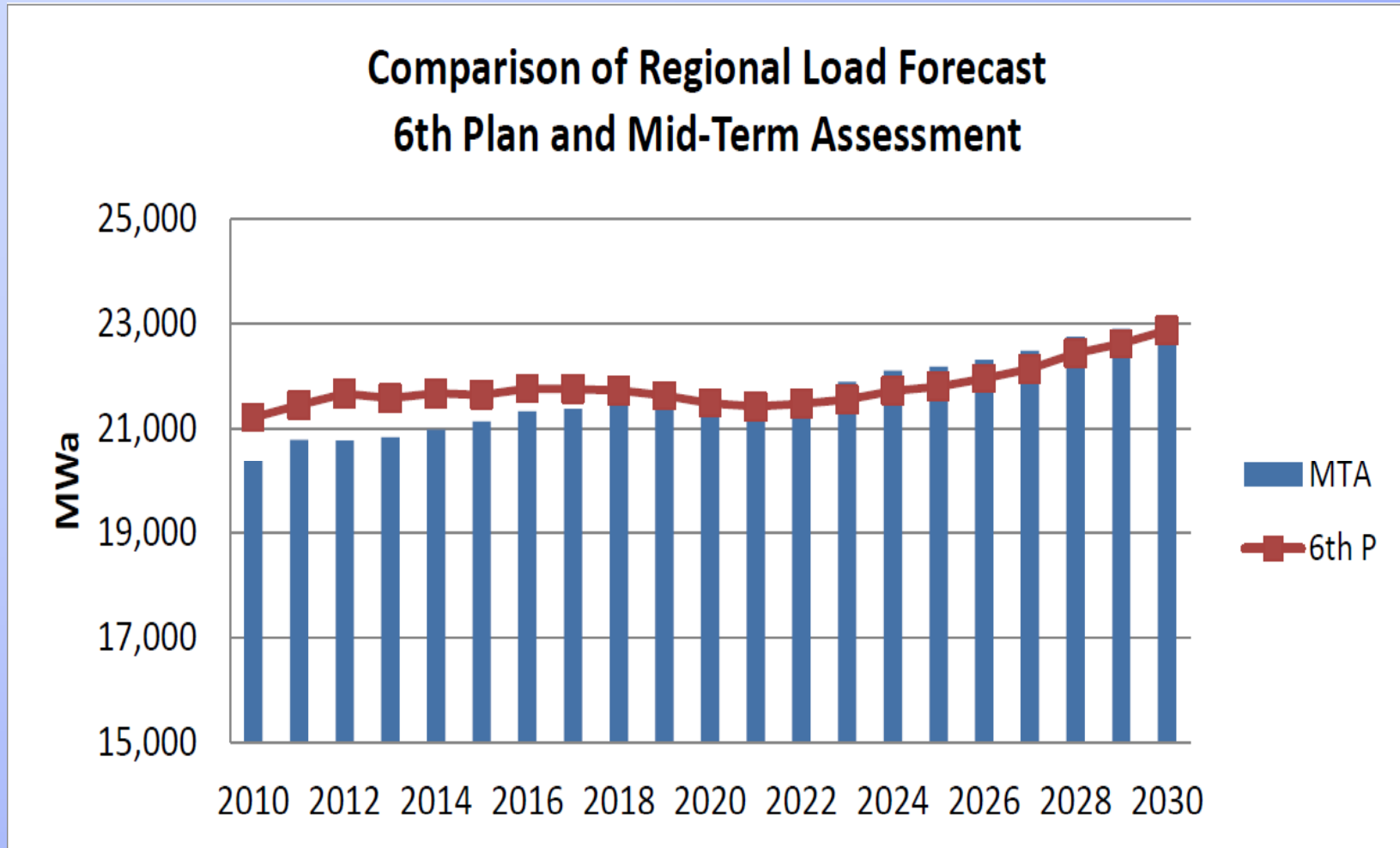


	6th Plan	7th Plan Draft
	2010-2030	2015-2035
Residential	1.37%	1.29%
Commercial	1.25%	1.11%
Industrial	1.74%	1.68%
Agriculture	2.78%	0.54%

2011 load data indicates low Growth trajectory



Mid-Term Assessment Forecast Suggests Load Recovery by 2020



Weather normalized net of conservation targets of the 6th plan..

Range of Economic Drivers

2015-2035 Annual Growth rate	Reference	Optimistic	Pessimistic
Residential Units	1.20%	2.1%	0.12%
Commercial Floor space	1.11%	1.3%	0.97%
Industrial output	1.68%	1.8%	1.58%
Agricultural output	0.54%	0.9%	0.49%

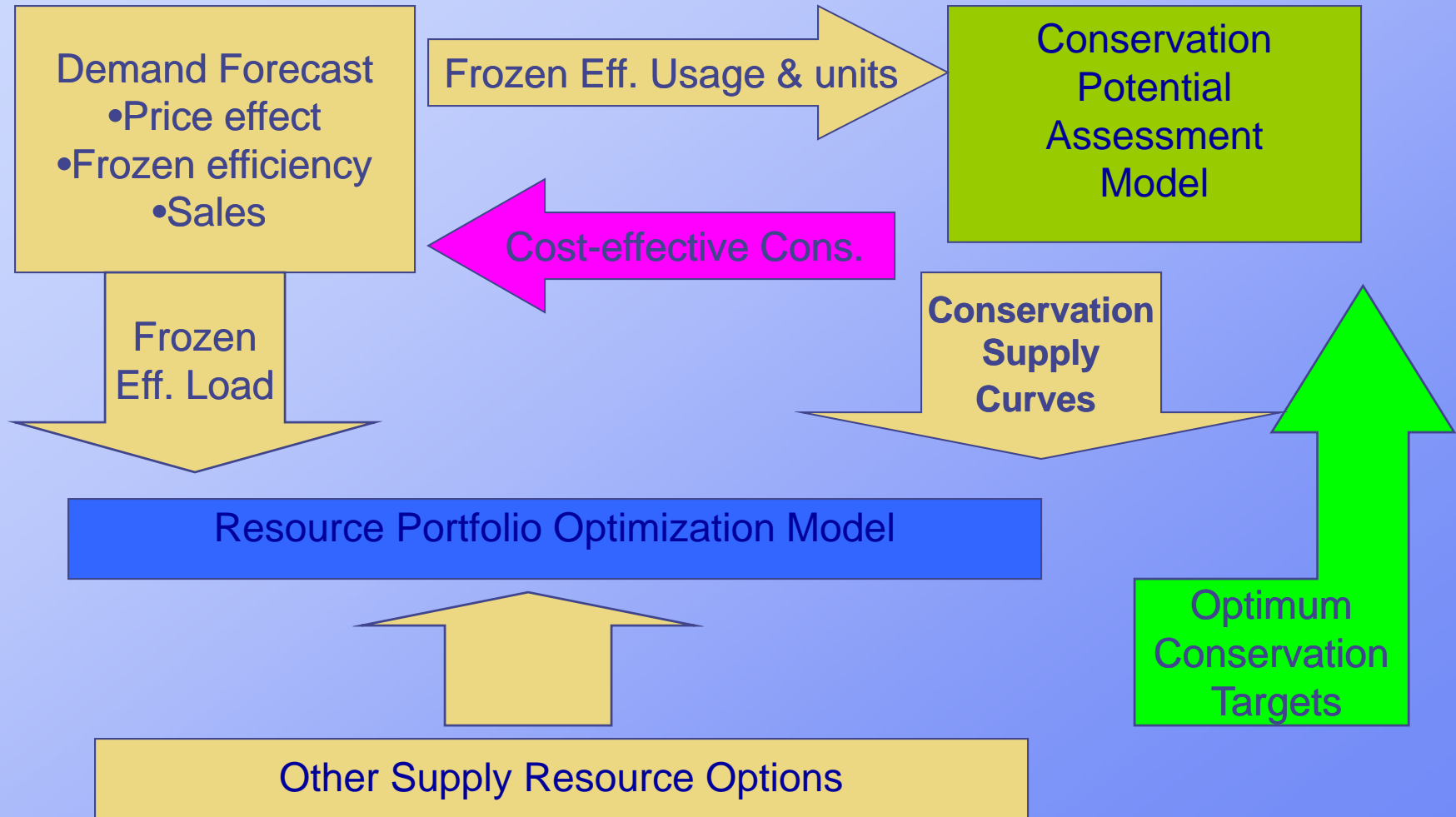
	Reference	Optimistic	Pessimistic
Residential Units Stock additions by 2035 (1000 of units)	7,768	11,653	4,959
Commercial Floor space stock by 2035 (millions SQF)	3,944	4,096	3,794
Industrial output by 2035 (billions \$2005)	80	84	78
Agricultural output (billions \$2005)	10.2	11.1	9.9

Range of Financial Assumption

- Compared to the Reference case
 - Optimistic case, inflation is lower, risk is low, financial costs are lower.
 - Pessimistic case, inflation is higher, financial costs are higher.

	Reference	Pessimistic	Optimistic
Global Insight Forecast Q4-2012	Action plan period	Action plan period	Action plan period
	2015-2019	2015-2019	2015-2019
CPI	1.93	3.10	1.64
GDP Deflator	1.64	2.89	1.30
Yield On 30-Year Treasury Bonds	5.20	7.06	4.77
Rate On Aaa-Rated Municipal Bonds	5.24	7.13	4.93
Rate On Aa-Rated Public Utility Bonds	6.71	9.34	5.76
Yield On Aaa-Rated Corporate Bonds	6.09	8.65	5.28
Yield On Baa-Rated Corporate Bonds	7.28	10.24	6.21

Demand forecast and Conservation Interface



- Demand Forecast and Conservation Resource estimates have common baseline for:
 - Number of new units added and retired
 - Enduse Characteristics
 - Efficiency, life of equipment,
 - Building codes and standards
 - Load shapes
- Changes in Demand forecast changes conservation resource potential.

Tentative Timeline of the 7th Plan

- Finalize Economic forecast (for draft report) ...June 2013
- Load Forecast for draft report... ..October 2013
- Final Economic Forecast...June 2014 (Tentative)
- Final Load Forecast.....Q3 2014 (Tentative)

- Draft 7th Plan... Q1 2015 (Tentative)
- Final 7th Plan... Q3 2015 (Tentative)

Next meeting of DFAC

- Tentative Agenda
 - Impact of federal appliance standards
 - Roof-top solar
 - Draft Load forecasts

- September 2013 (Tentative)
- Preference for date and format?

Thank
you