

*Avista's 2009 Electric Integrated Resource Plan*  
**Technical Advisory Committee Meeting No. 6 Agenda**  
**June 24, 2009**

	<b>Topic</b>	<b>Time</b>	<b>Staff</b>
1.	Introductions	10:00	Storro
2.	IRP Section Highlights	10:05	Kalich
3.	Preferred Resource Strategy	10:30	Gall
4.	Lunch	11:30	
5.	Preferred Resource Strategy	12:30	Kalich/Gall
6.	IRP Action Items	1:30	Lyons
7.	Adjourn	2:00	

# Draft Chapter Highlights

## Loads & Resources

- Weak economic growth is expected until 2011 in the service territory.
- Historic conservation acquisitions are included in the load forecast; higher acquisition levels anticipated in this IRP reduce the load forecast further.
- Annual electricity sales growth from 2010-2020 averages 1.6 percent over the next decade (199 aMW) and 1.8 percent over the entire 20-year forecast.
- Peak loads are expected to grow at 1.6 percent annual rate over the next 10 years (312 MW) and also 1.6 percent over the entire 20-year forecast.
- Avista's resource deficits begin 2018; without conservation resources deficits would begin in 2016.
- Capacity deficiencies now are the predominate driver of resource need.

## Energy Efficiency

- Avista has offered conservation programs for over 30 years.
- The Company has acquired 138.5 aMW of electric-efficiency in the past three decades; an estimated 109 aMW is still in service, reducing overall load by approximately 10 percent.
- 20,000 additional customers heat their homes with natural gas today because of Avista's first fuel-switching program.
- The Company has developed and maintains the infrastructure necessary to respond quickly to an energy efficiency ramp-up if another energy crisis or opportunity occurs.
- Approximately 3,000 concepts were evaluated by Avista's demand-side management analysts for the 2009 IRP.
- 7 aMW of local and 2.9 aMW of regional conservation is expected in 2010
- Conservation additions provide 26 percent of new supplies through 2020.
- 2009 IRP includes 0.3 aMW (3.3%) more annual conservation acquisition than 2007 plan, building on a 50% increase in the 2005 and another 25% in the 2007 IRP.

## Transmission & Distribution

- Avista has completed a \$130 million transmission improvement project.
- Avista has over 2,200 miles of high voltage transmission.
- Avista remains actively involved in regional transmission planning efforts.
- The cost of selected new transmission lines and upgrades are included in the 2009 Preferred Resource Strategy.
- 2.7 aMW of distribution efficiencies are included in this IRP.

### **Generation Resource Options**

- Only resources with well known costs were considered in the PRS analysis, other resources were studied in sensitivities.
- Federal tax credits were extended to 1/1/2013 for wind and 1/1/2014 for non-wind renewables with a choice of the PTC (\$20/mwh or 30% ITC)
- Large hydro upgrades at Long Lake and Cabinet Gorge are not considered as new resources, but will be further studied for inclusion in the 2011 IRP analysis.
- Small hydro upgrades and wood fired upgrades were considered in this IRP.
- Solar is included as resource option for this first time.

### **Market Analysis**

- Mid-Columbia electric and Malin natural gas prices are 27 and 20 percent higher than the 2007 IRP, primarily due to carbon legislation impacts
- Mid-Columbia electric prices are expected to be \$79.56 per megawatt-hour over the next 20 years
- Malin natural gas prices are expected to be \$7.36 per decatherm over the next 20 years
- Gas-fired resources continue to serve most new loads and take the place of coal generation to reduce greenhouse gas emissions
- Future carbon credit prices will depend on reduction goals and the differential between natural gas and coal prices
- Carbon legislation increases total fuel expenses in the Western Interconnect by over 16 percent

### **Preferred Resource Strategy**

- Avista's physical energy needs begin in 2018; capacity needs begin in 2016.
- Near-term resource acquisitions are driven by pending environmental regulation and risk reduction.
- The first supply-side resource acquisitions are 150 MW of wind by 2012.
- Conservation additions provide 26 percent of new supplies through 2020.
- A 250 MW natural gas-fired combined cycle project is required by 2020.
- Large hydro upgrades have the potential to change the preferred resource mix.
- The 2020 CCCT acquisition could be moved forward to as soon as 2015 without a significant impact on the preferred resource strategy.

# Draft Action Items Highlights

## Resource Additions & Analysis

- Continue to explore the potential for wind and non-renewable resources.
- Issue an RFP for turbines at Reardan and up to 100 MW of wind or other renewables in 2009.
- Finish studies regarding the costs and environmental benefits of the large hydro upgrades at Cabinet Gorge, Long Lake, Post Falls, and Monroe Street.
- Study potential locations for the natural gas fired resource identified to be on-line between 2015 and 2020.

## Demand Side Management

- Pursue American Reinvestment and Recovery Act funding and its affect on the amount of low income weatherization.
- Analyze and report on the results of the July 2007 through December 2009 demand response pilot in Moscow and Sandpoint.

## Environmental Policy

- Continue to study the potential impact of state and federal climate change legislation.
- Continue and report on the work of Avista's Climate Change Committee.

## Modeling and Forecasting Enhancements

- Refine the stochastic model for cost driver relationships.
- Continue to refine the PRiSM model.
- Continue developing Loss of Load Probability and Sustained Peaking analysis for inclusion in the IRP process

## Transmission Planning

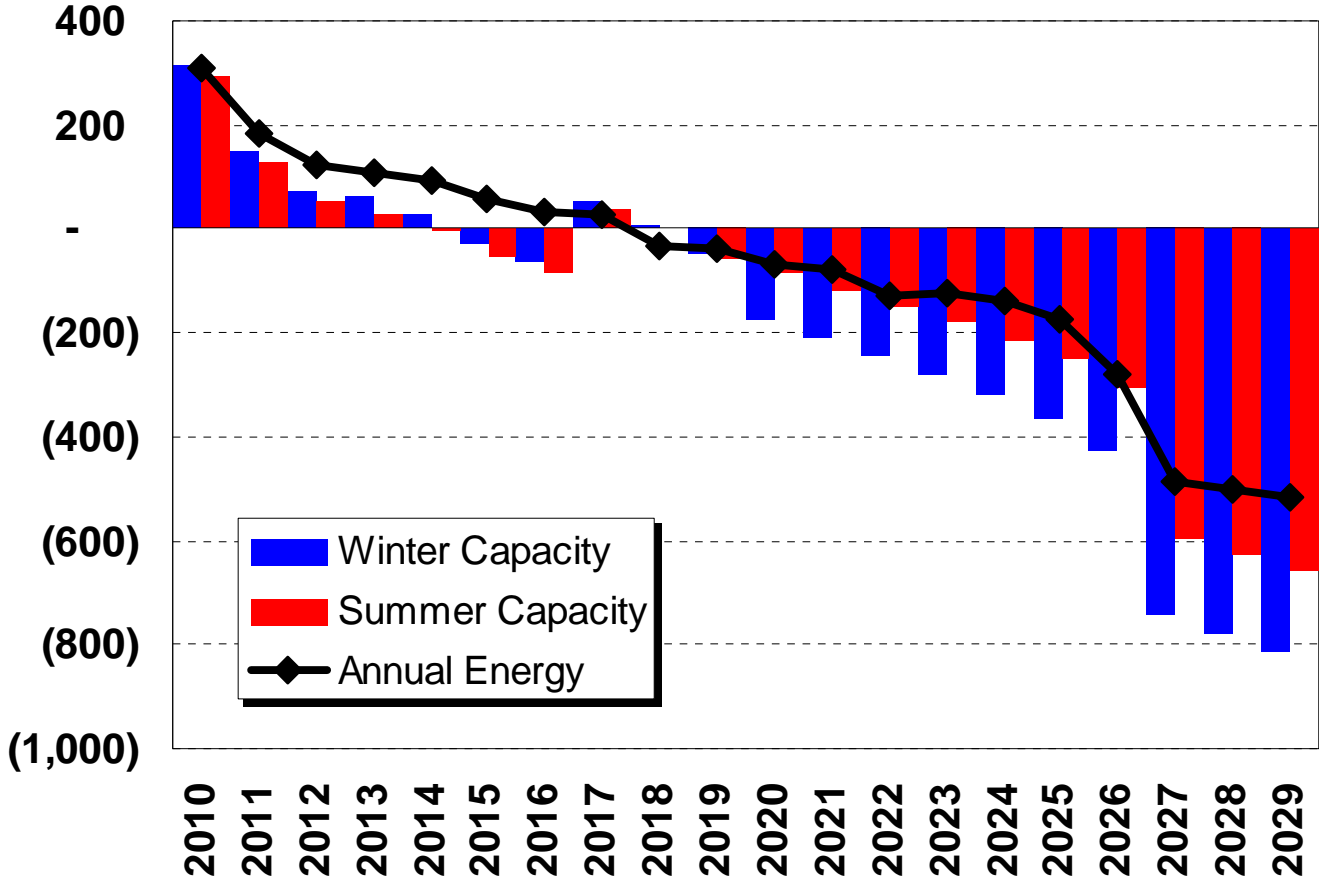
- Work to maintain/retain existing transmission rights on the Company's transmission system, under applicable FERC policies, for transmission service to bundled retail native load.
- Continue involvement in BPA transmission practice processes and rate proceedings to minimize costs of integrating existing resources outside of the company's service area.
- Continue participation in regional and sub-regional efforts to establish new regional transmission structures (ColumbiaGrid and other forums) to facilitate long-term expansion of the regional transmission system.
- Evaluate costs to integrate new resources across Avista's service territory and from regions outside of the Northwest.
- Further study and implement distribution feeder rebuild projects to reduce system losses.
- Study transmission re-configurations to economical reduce system losses.

# 2009 IRP Preferred Resource Strategy

2009 Electric Integrated Resource Plan  
Sixth Technical Advisory Committee Meeting  
June 24, 2009



# L&R Balances



*Load is net 2007 Conservation Levels*

# Preferred Resource Strategy Approach

Least Cost Strategy that meets

1. Capacity Needs
2. Energy Needs
3. RPS Requirements
4. Conservation Requirements
5. Emissions Regulation
6. Actionable

# Flexible Strategy

Preferred Resource Strategy

But, what if?

Capital Costs Change

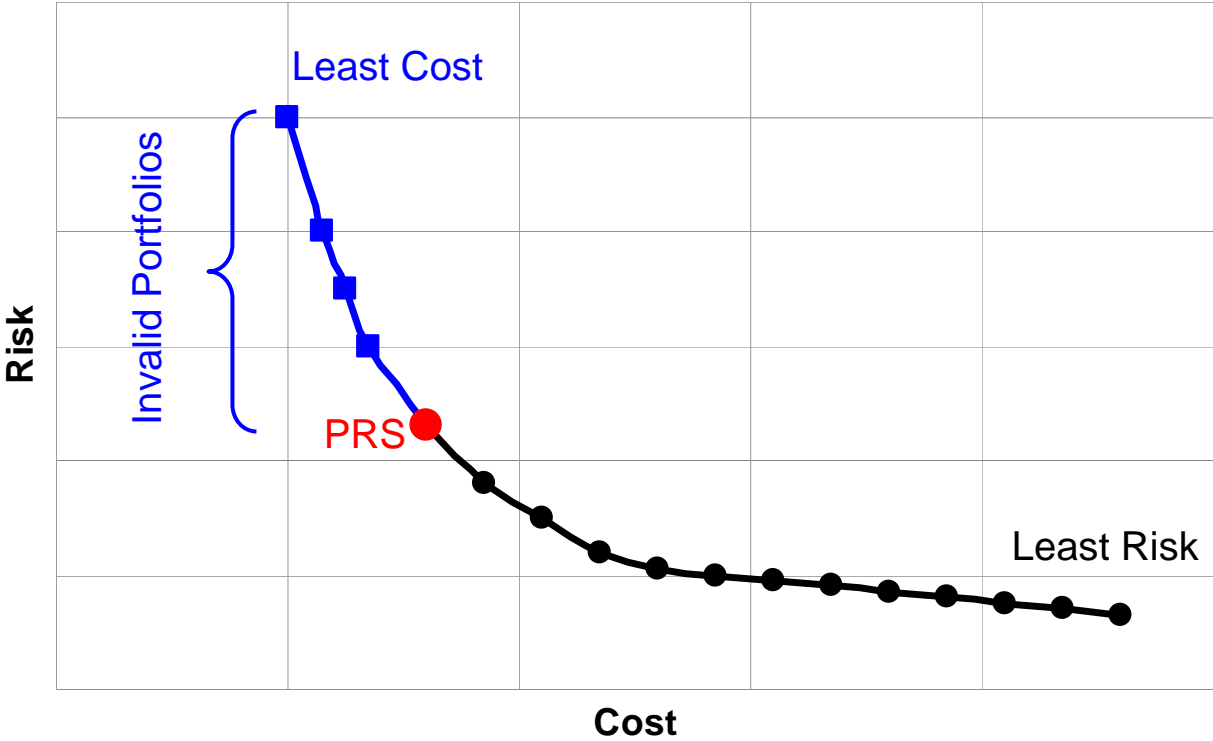
Load Growth Rate Changes

Large Hydro Upgrades  
Are Cost Effective

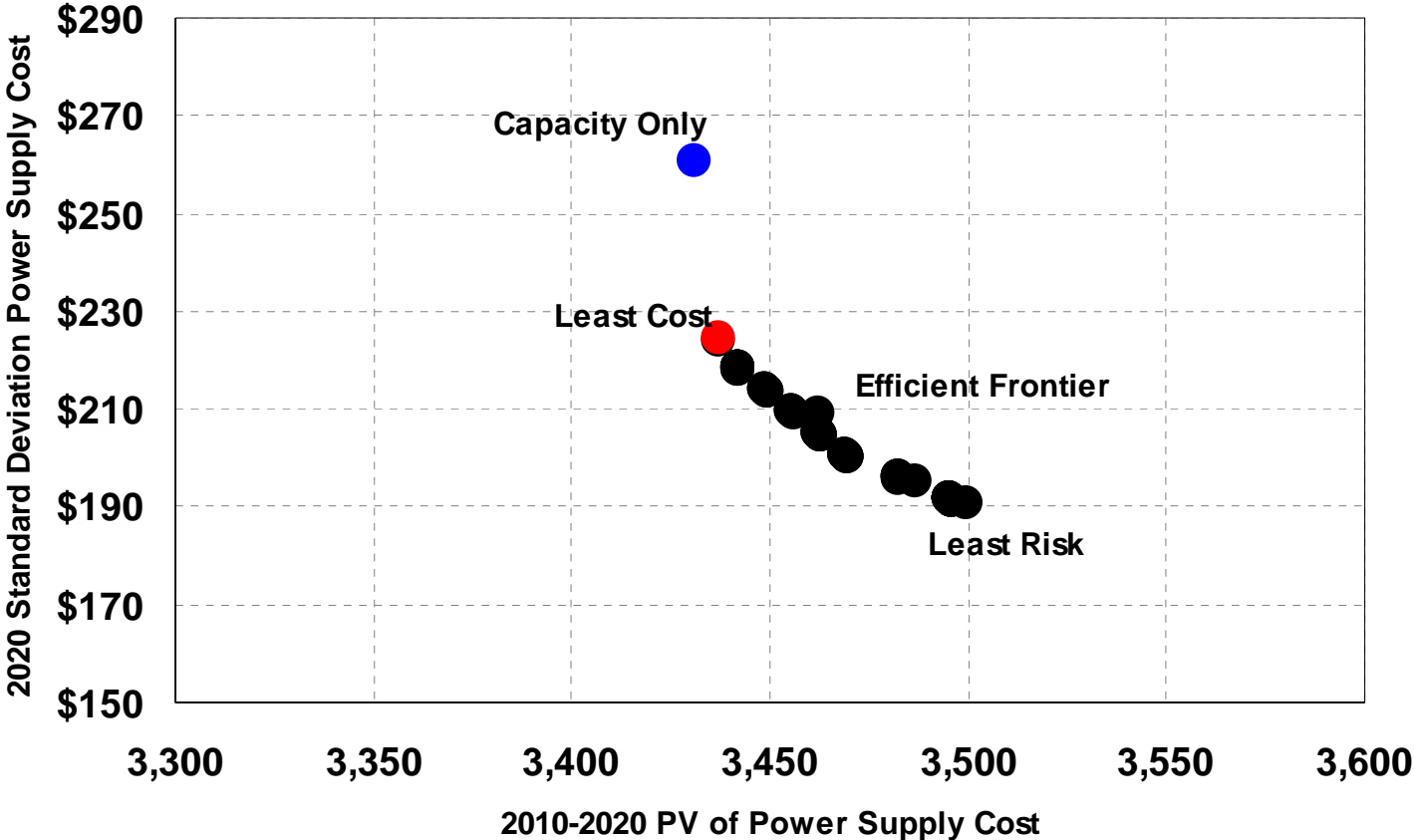
Non-Wind Renewables  
Become Abundant

Is Nuclear a Solution

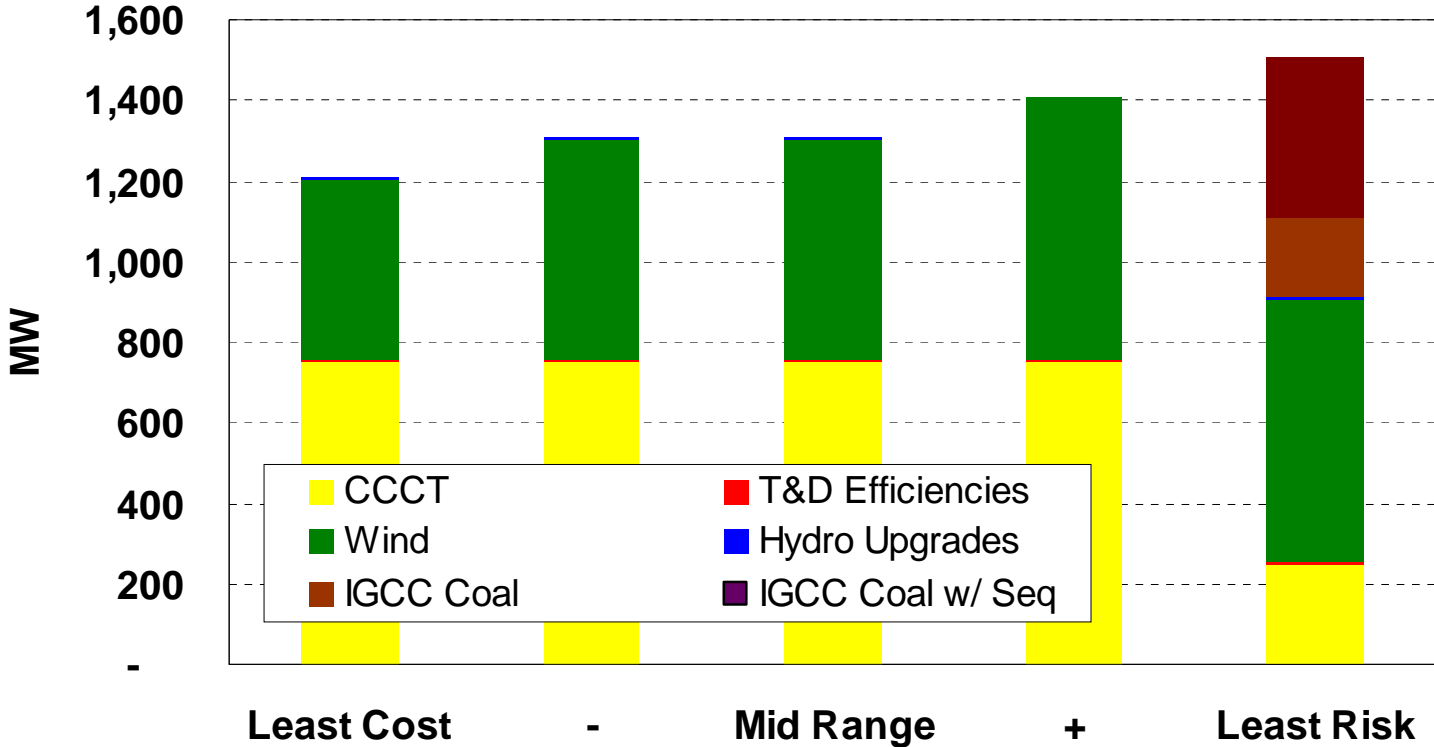
# Conceptual Efficient Frontier



# Efficient Frontier



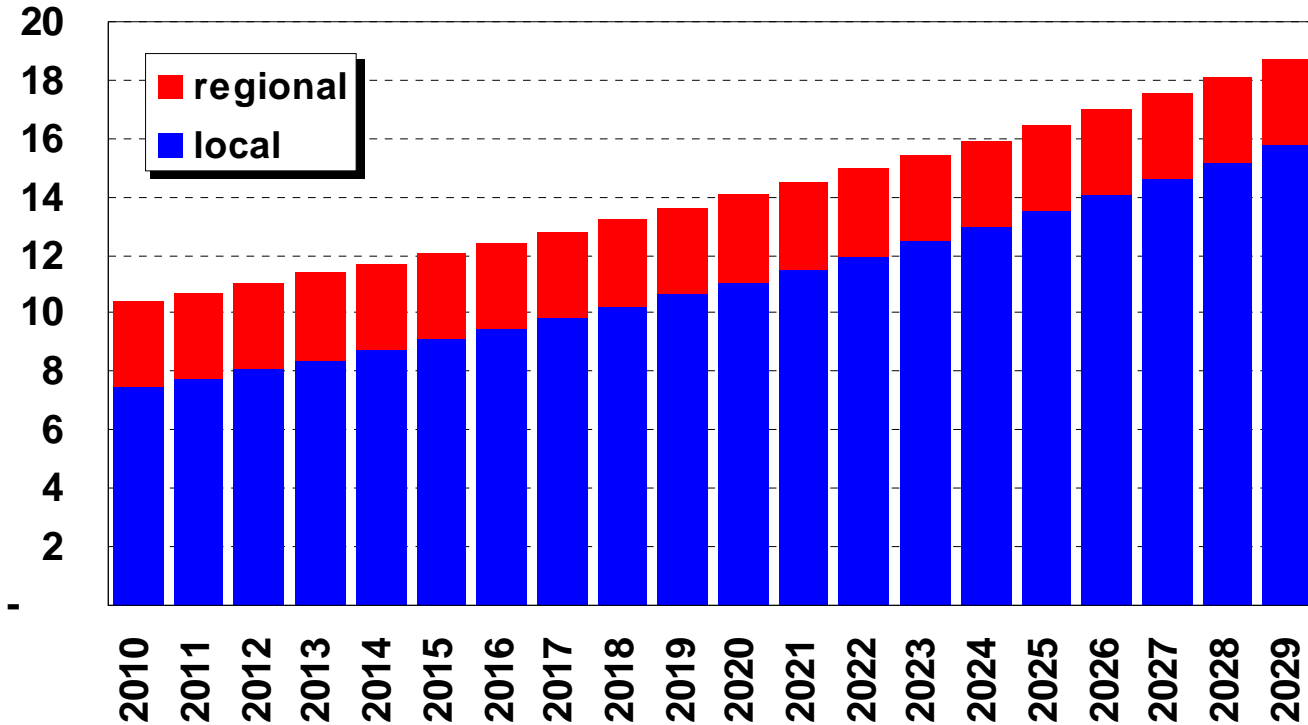
# Efficient Frontier Portfolios



# 2009 Preferred Resource Strategy

Resource	By the End of Year	Nameplate (MW)	Energy (aMW)
NW Wind	2012	150.0	50.0
Distribution Efficiencies	2010-2015	5.0	2.0
Little Falls 1	2013	1.0	0.3
Little Falls 2	2014	1.0	0.3
Little Falls 4	2016	1.0	0.3
NW Wind	2019	150.0	50.0
CCCT	2019	250.0	225.0
Upper Falls	2020	2.0	1.0
NW Wind	2022	50.0	17.0
CCCT	2024	250.0	225.0
CCCT	2027	250.0	225.0
Conservation	All Years	339.0	226.0
<b>Total</b>		<b>1,449.0</b>	<b>1,019.9</b>

# Annual Conservation Acquisition



Local

90 aMW over first 10 years  
226 aMW over 20 years

Regional

29 aMW over first 10 years  
59 aMW over 20 years

# Local Energy Efficiency Targets

Portfolio	2010 Target	2011 Target
Limited Income Residential	1,977,099	2,056,183
Residential	20,518,584	21,339,327
Prescriptive Non-Residential	18,211,396	18,939,852
Site-Specific Non-Residential	24,936,765	25,934,236
<b>Total Local Acquisition (kWh)</b>	<b>65,643,844</b>	<b>68,269,598</b>
Local	7.5	7.8
Regional	2.9	2.9
<b>Total Acquisition (aMW)</b>	<b>10.4</b>	<b>10.7</b>
Draft NPCC 6 <sup>th</sup> Plan Goal	11.2	12.4

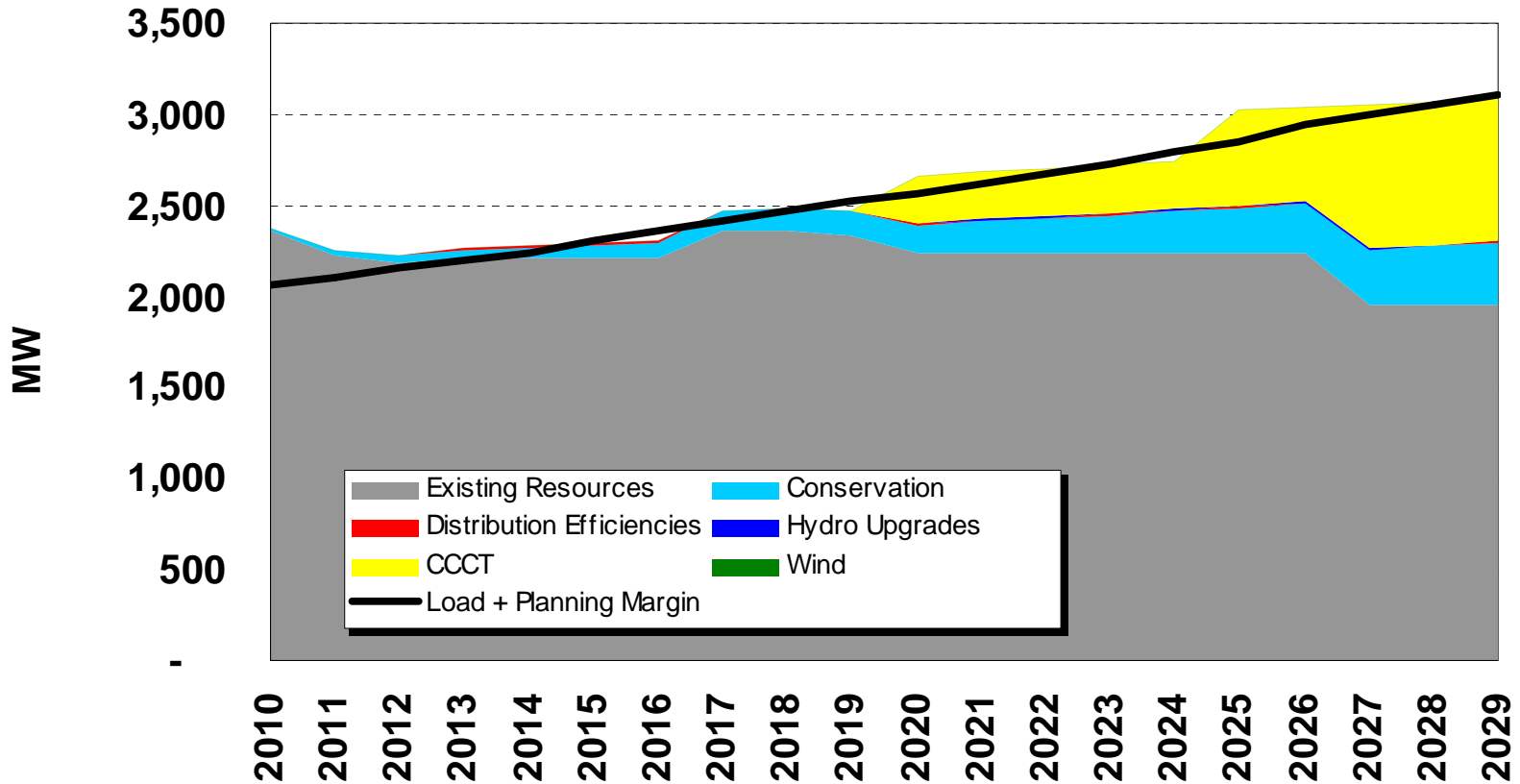
# Rate Base Additions for Capital Expenditures (Millions)

Year	Investment	Year	Investment
2010	4.9	2020	942.1
2011	5.0	2021	10.6
2012	5.1	2022	0.0
2013	278.1	2023	163.3
2014	7.7	2024	0.0
2015	2.3	2025	542.0
2016	0.0	2026	0.0
2017	1.7	2027	0.0
2018	0.0	2028	571.6
2019	0.0	2029	0.0

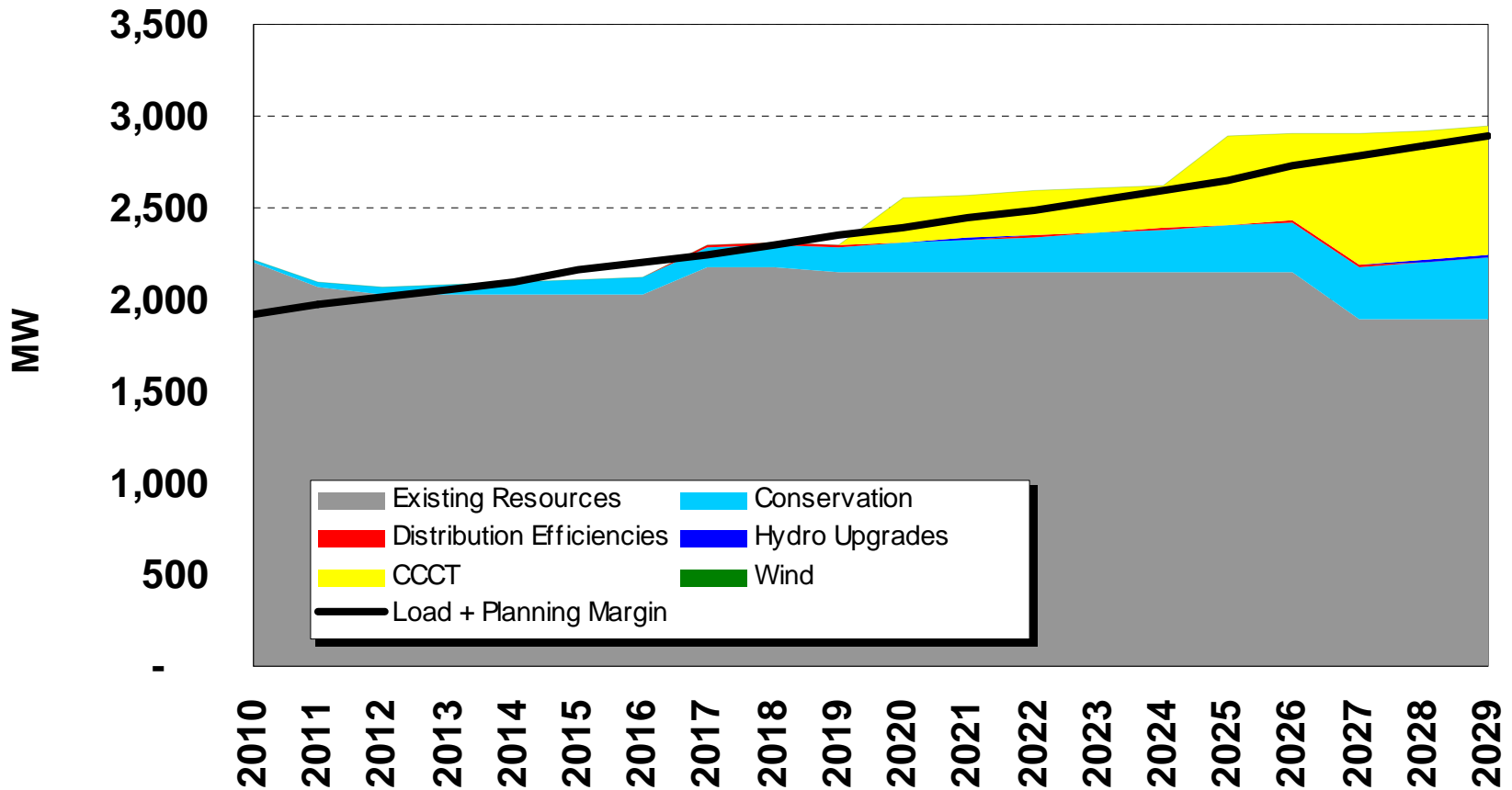
**Totals \***  
**\$0.3 billion thru 2019**  
**\$2.5 billion thru 2029 \*\***

\* Excludes conservation funding  
 \*\* \$1.0 billion NPV @ 8% discount rate

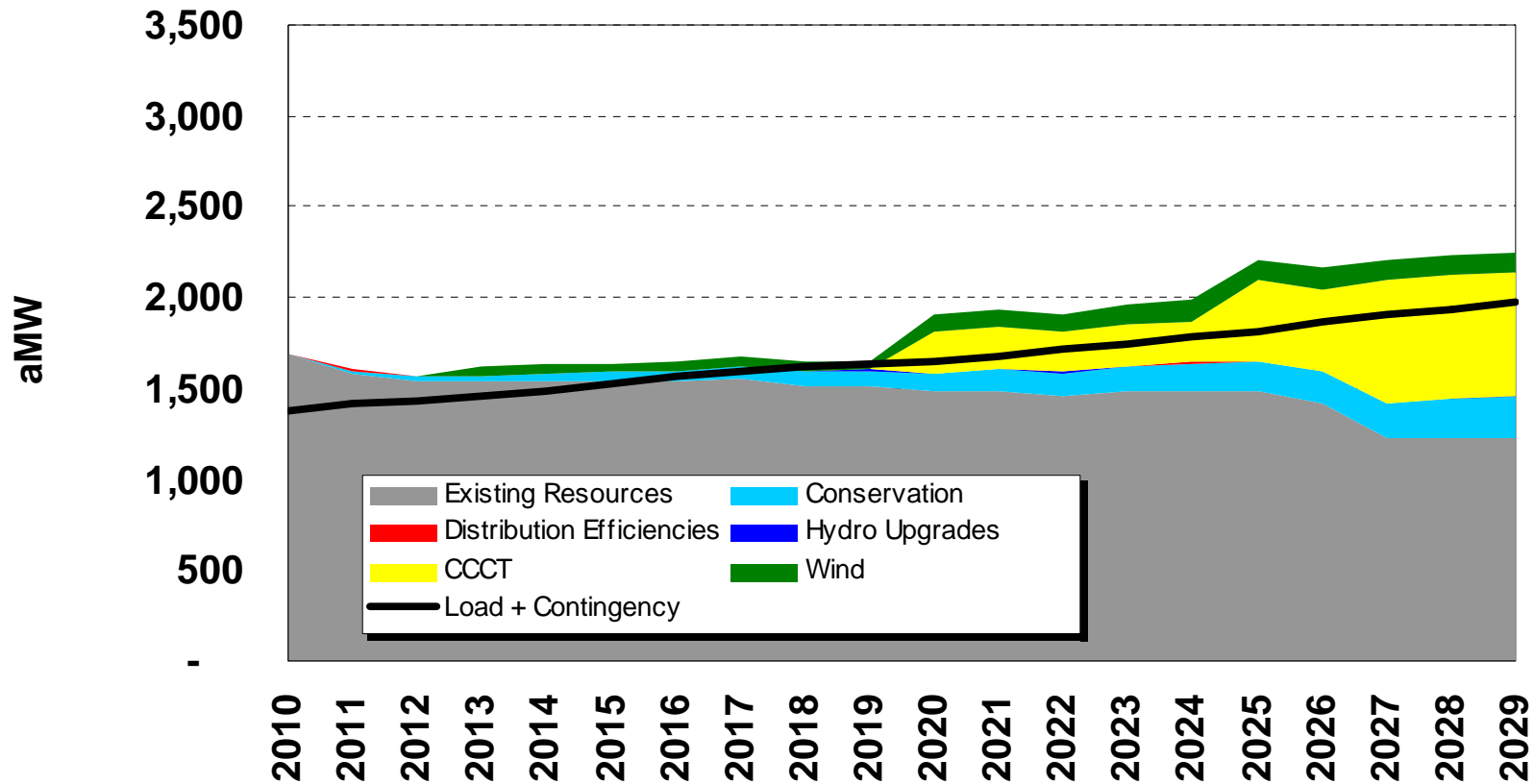
# January Capacity L&R w/ New Resources



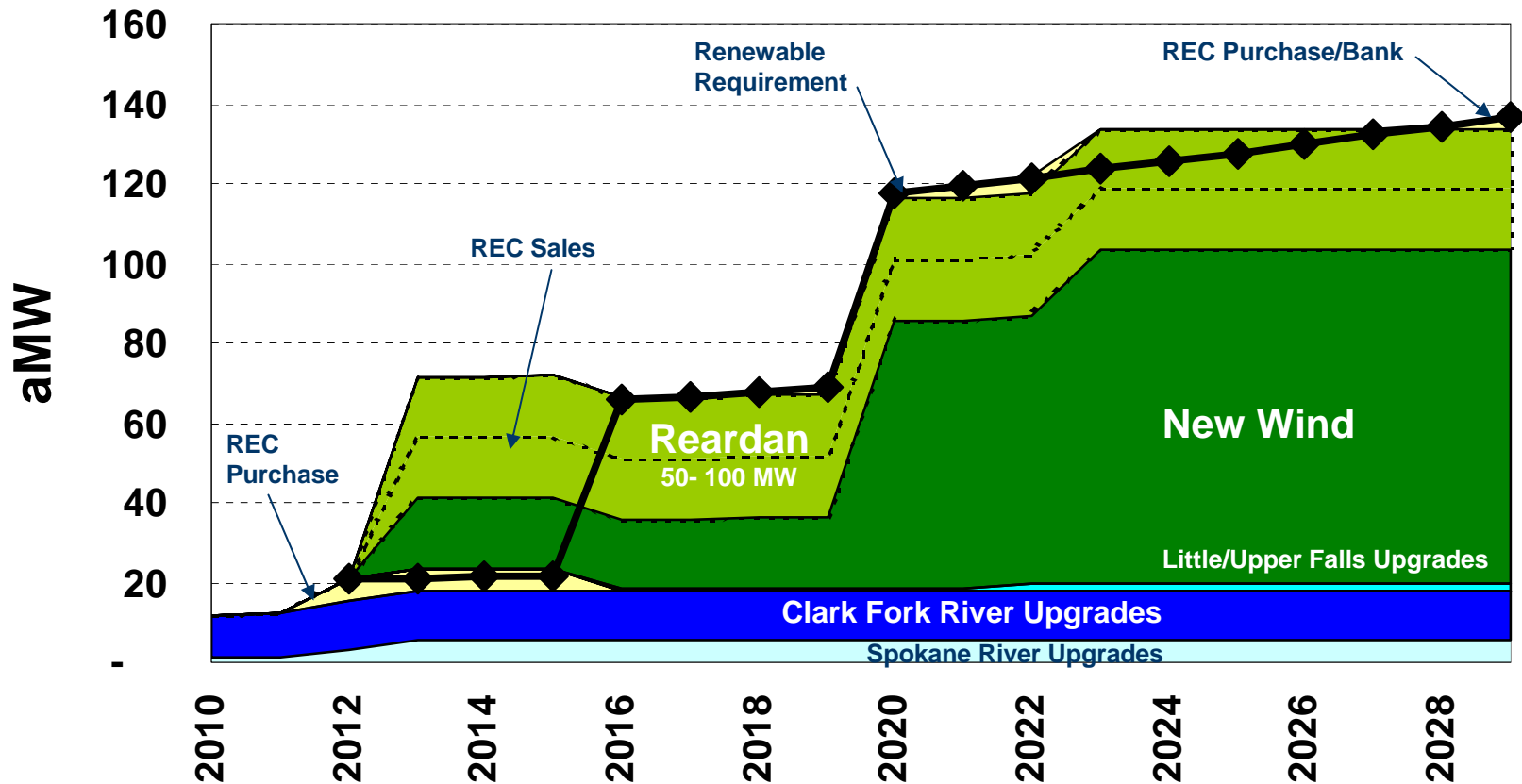
# August Capacity L&R w/ New Resources



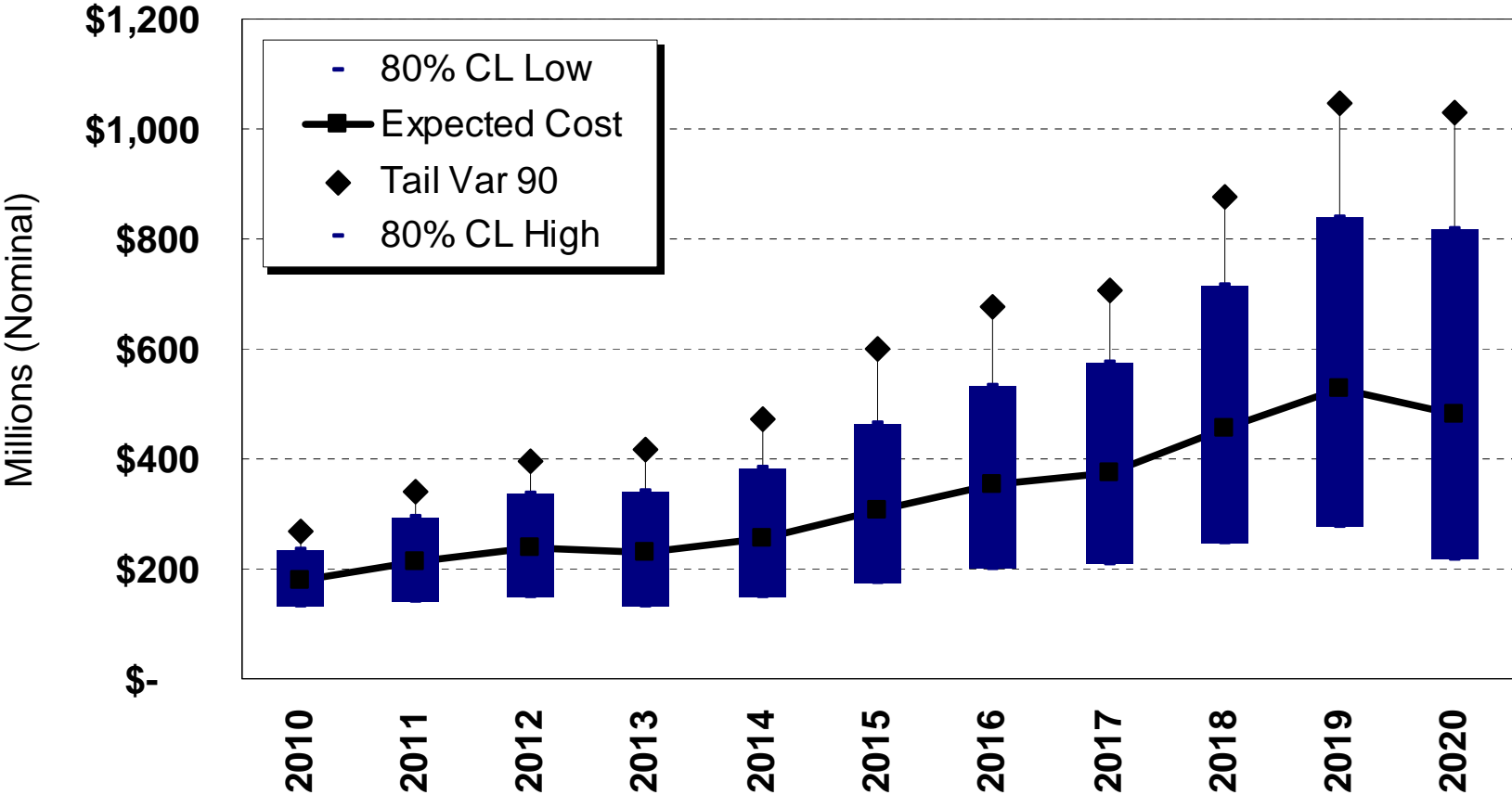
# Annual Energy L&R w/ New Resources



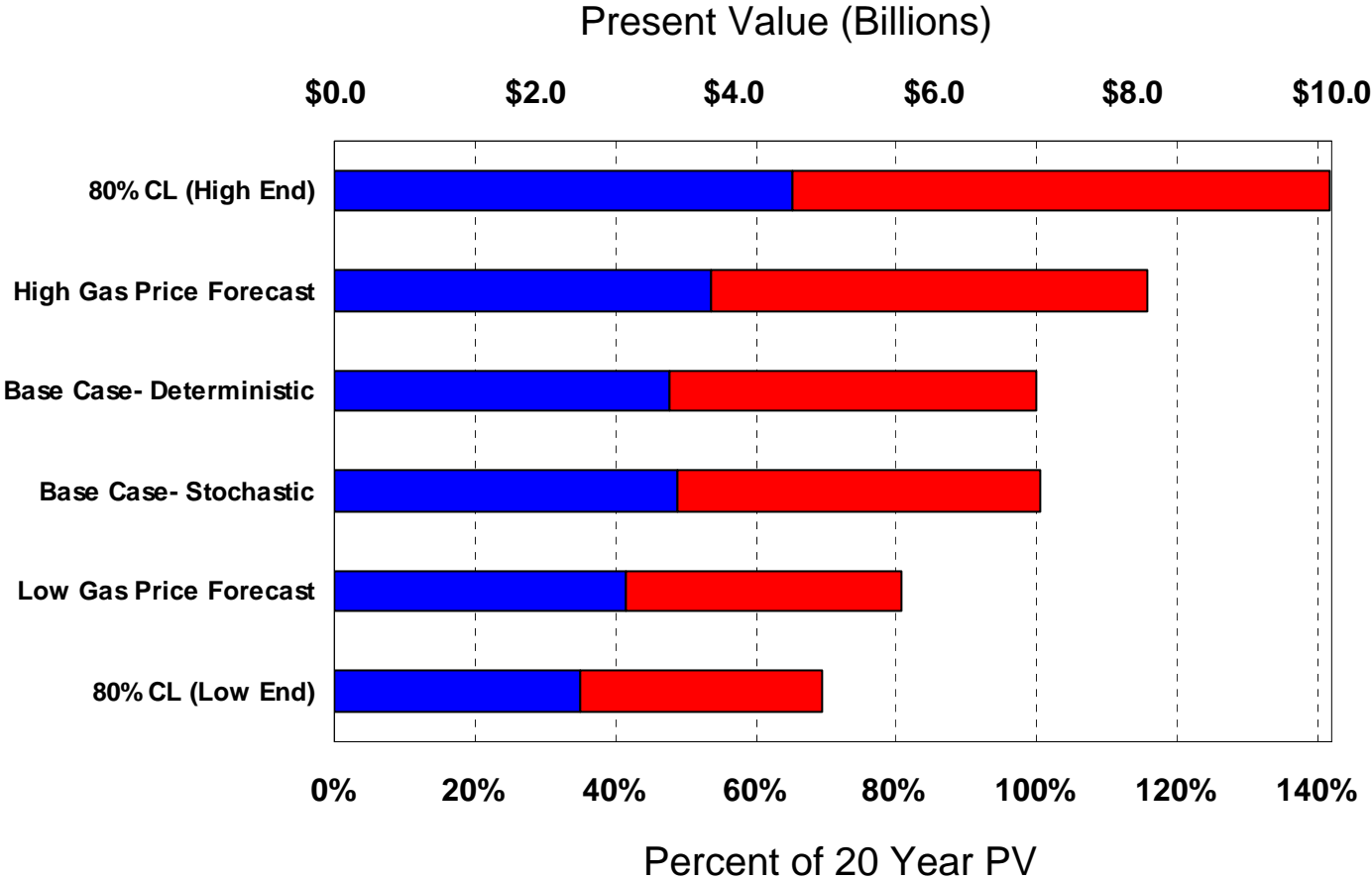
# Washington State RPS Compliance



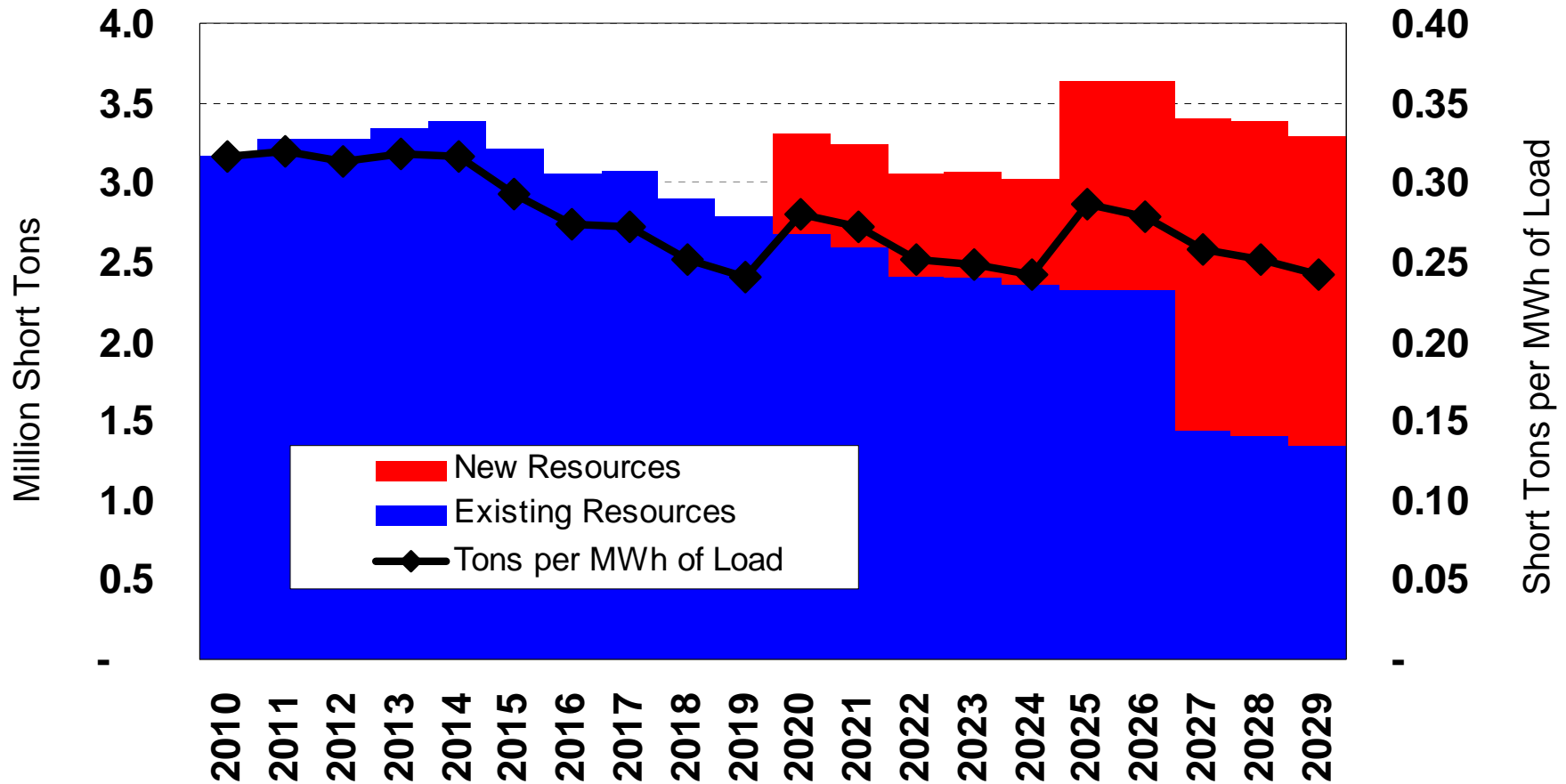
# Power Supply Cost Variation



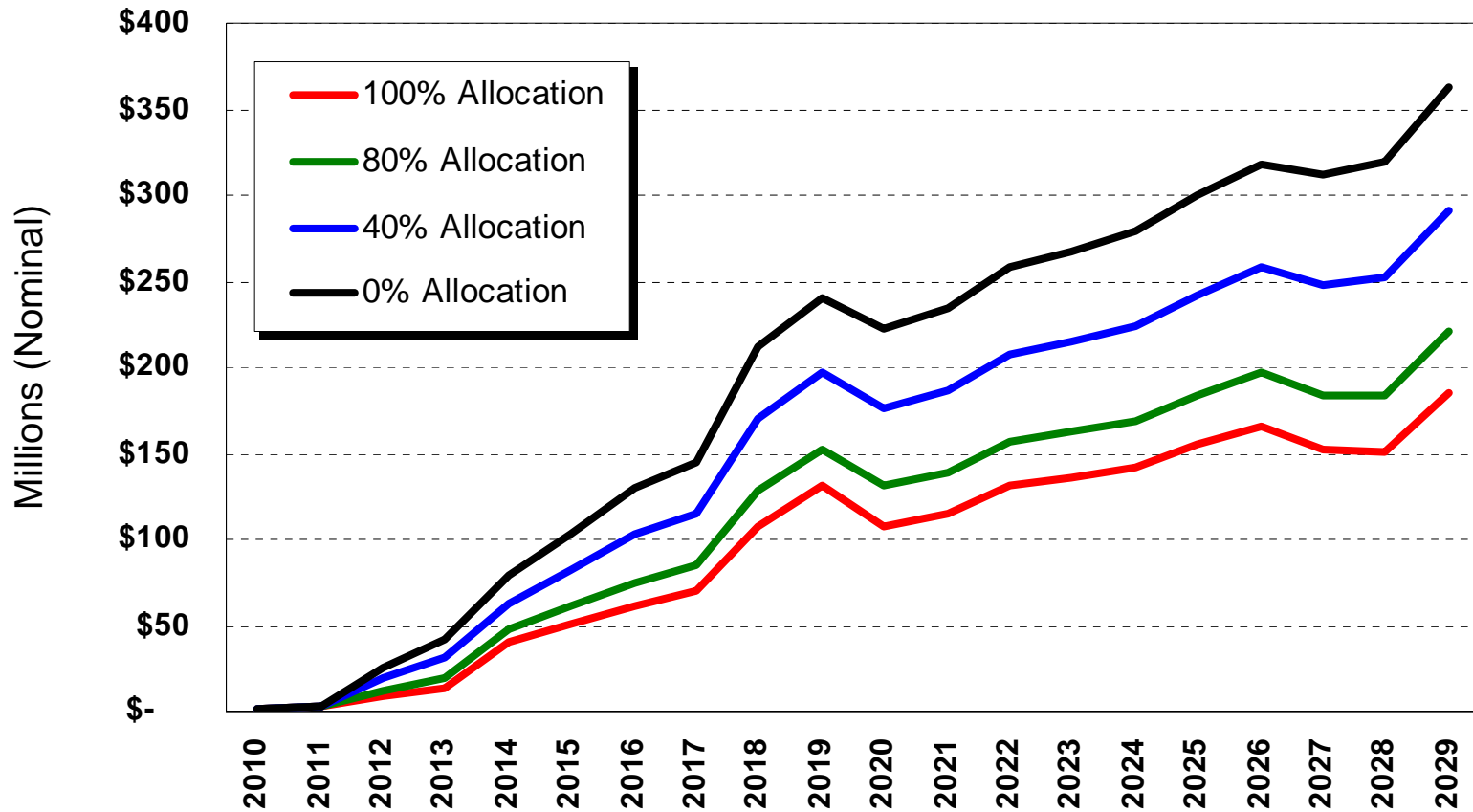
# Power Supply Cost Ranges



# Avista Generator GHG Emissions

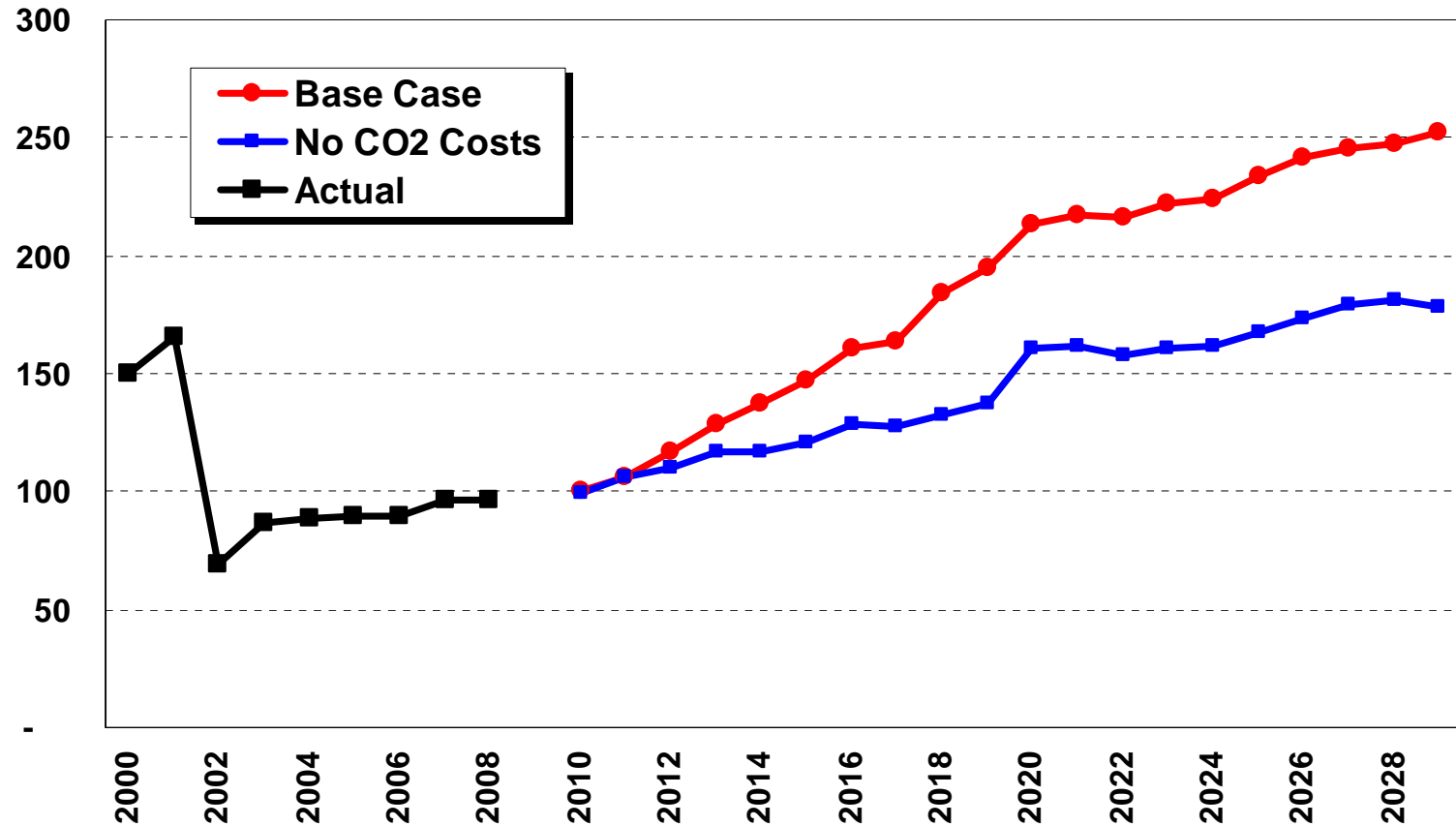


# Total Cost GHG Legislation



# Future Power Supply Costs

(Index: 2010= 100)



# Flexible Strategy

What are the tipping points for key capital costs?

wind capital cost  $< \$1,830/\text{kW}$ , build early

CCCT cost  $> \$1,610/\text{kW}$ , consider SCCT

What are the impacts of load growth changes?

High: 260/100 MW more gas/wind next 10 years

Low: 250/50 MW less gas/wind in next 10 years

What if large hydro upgrades are viable?

eliminate 50/100 MW of wind/gas over 20 years?

What if non-wind renewables are abundant?

non-wind renewables replace some wind; could reduce gas by 100 MW

Is Nuclear a solution?

least-cost if  $\leq \$4,000/\text{kW}$  (current range \$5-\$10k)

# Schedule

- June 22: Internal draft released
- June 24: Final Technical Advisory Committee meeting
- July 1: “Big Picture” internal comments
- July 6: External draft released
- July 20: Comment deadline
- Aug 31: IRP Filed with Commissions
  
- ~April 2010: Begin 2011 IRP Process

# 2009 IRP Action Items

John Lyons

2009 Electric Integrated Resource Plan  
Sixth Technical Advisory Committee Meeting  
June 24, 2009



# 2007 IRP Action Items

- Renewable Energy
- Demand Side Management
- Emissions
- Modeling and Forecasting Enhancements
- Transmission Planning

# Renewable Energy

- Continue studying wind potential in the Company's service territory, possibly including the placement of anemometers at the most promising wind sites.
- Commission a study of Montana wind resources that are strategically located near existing Company transmission assets
- Learn more about non-wind renewable resources to satisfy renewable portfolio standard requirements and decrease the Company's carbon footprint.

# Demand Side Management

- Update processes and protocols for integrating energy efficiency programs into the IRP to improve and streamline the process.
- Study and quantify transmission and distribution efficiency concepts.
- Determine the potential impacts and costs of load management options currently being reviewed as part of the Heritage Project.
- Develop and quantify the long-term impacts of the newly signed contractual relationship with the Northwest Sustainable Energy for Economic Development organization.

# Emissions

- Continue to evaluate the implications of new rules and regulations affecting power plant operations, most notably greenhouse gases.
- Continue to evaluate the merits of various carbon quantification methods and emissions markets.

# Modeling and Forecasting Enhancements

- Study the potential for fixing natural gas prices through financial instruments, coal gasification, investments in gas fields, or other means.
- Continue studying the efficient frontier modeling approach to identify more and better uses for its information.
- Further enhance and refine the PRiSM LP model
- Continue to study the impact of climate on the load forecast.
- Monitor the following conditions relevant to the load forecast: large commercial load additions, Shoshone county mining developments, and the market penetration of electric cars.

# Transmission Planning

- Work to maintain/retain existing transmission rights on the Company's transmission system, under applicable FERC policies, for transmission service to bundled retail native load.
- Continue involvement in BPA transmission practice processes and rate proceedings to minimize costs of integrating existing resources outside of the company's service area.
- Continue participation in regional and sub-regional efforts to establish new regional transmission structures (ColumbiaGrid and other forums) to facilitate long-term expansion of the regional transmission system.
- Evaluate costs to integrate new resources across Avista's service territory and from regions outside of the Northwest.

# 2009 IRP Action Items

- Resource Additions and Analysis
- Demand Side Management
- Environmental Policies
- Modeling and Forecasting Enhancements
- Transmission and Distribution Planning

# Resource Additions and Analysis

- Continue to explore the potential for wind and non-renewable resources.
- Issue an RFP for turbines at Reardan and up to 100 MW of wind or other renewables in 2009.
- Finish studies regarding the costs and environmental benefits of the large hydro upgrades at Cabinet Gorge, Long Lake, Post Falls, and Monroe Street.
- Study potential locations for the natural gas fired resource identified to be on-line between 2015 and 2020.

# Demand Side Management

- Pursue American Reinvestment and Recovery Act funding
- Analyze and report on the results of the demand response pilot in Moscow and Sandpoint
- Processing and implementing I-937 requirements

# Environmental Policies

- Continue to study the potential impact of state and federal climate change and renewable portfolio legislation
  - Western Climate Initiative
  - Waxman-Markey – American Clean Energy and Security Act of 2009
- Continue to report on Avista's Climate Change Committee

# Modeling and Forecasting Enhancements

- Refine the stochastic model for cost driver relationships
- Continue to refine the PRiSM model
- Continue developing Loss of Load Probability and Sustained Peaking analysis for inclusion in the IRP process
- Study cooling degree day trend coefficient for inclusion in the load forecast

# Transmission and Distribution Planning

- Work to maintain and retain existing transmission rights on Avista's transmission system
- Continued involvement in BPA transmission processes and rate proceedings
- Continued participation in regional and sub-regional efforts to establish new regional transmission structures and to facilitate long-term expansion of the regional transmission system
- Evaluate costs to integrate new resources across Avista's service territory and from regions outside of the Northwest
- Study and implement distribution feeder rebuild projects
- Study transmission re-configurations to reduce system losses