2010 Integrated Resource Plan Progress Report

Final Draft Progress Report

August 2, 2010

Today's presentation

- IRP Progress Report Because...
- Summary of Recommendations
- District's Net Average Generation and Load Forecasts
- Load Forecast & Potential PHEV load
- District's Eligible Renewable Resources
- Conservation
- Modeling & Portfolio Performance
- Short-Term Plan Updates
- Board and Public Process Schedule

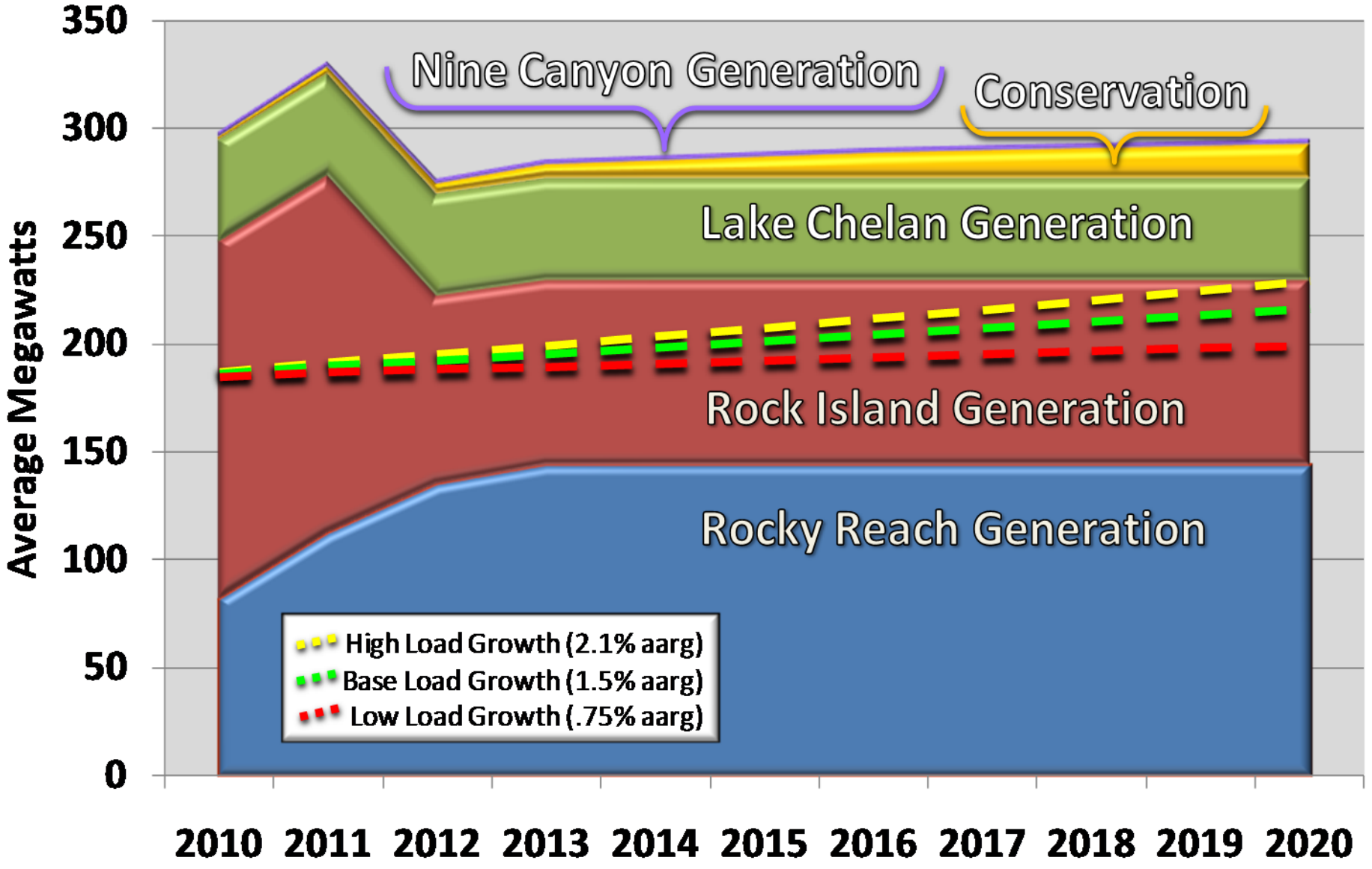
IRP Progress Report Because...

- District is required under RCW 19.280: Electric Utility Resource Plans
- Helps assess how different portfolio strategies manage risk exposures such as:
  - Load growth
  - Production Costs
  - Resource Mix (primarily hydro variability)
  - Wholesale Market Power Prices
- Helps identify robust strategies
  - Avoid strategies that depend upon specific events to be successful
- Document shared consensus on known facts and projections

Summary of Recommendations

- Preserve 2008 determination for District to retain its current mix of generating resources which will meet load and the renewables requirements of Washington State RPS for the planning period (2010-2020)
- Continue to refine conservation assumptions and analysis in conjunction with a new conservation potential assessment for the next biennium reporting in 2012 for compliance with the RPS
- Carry on with evaluating/implementing strategies for additional power sales contracts consistent w/financial policies & hedging strategy

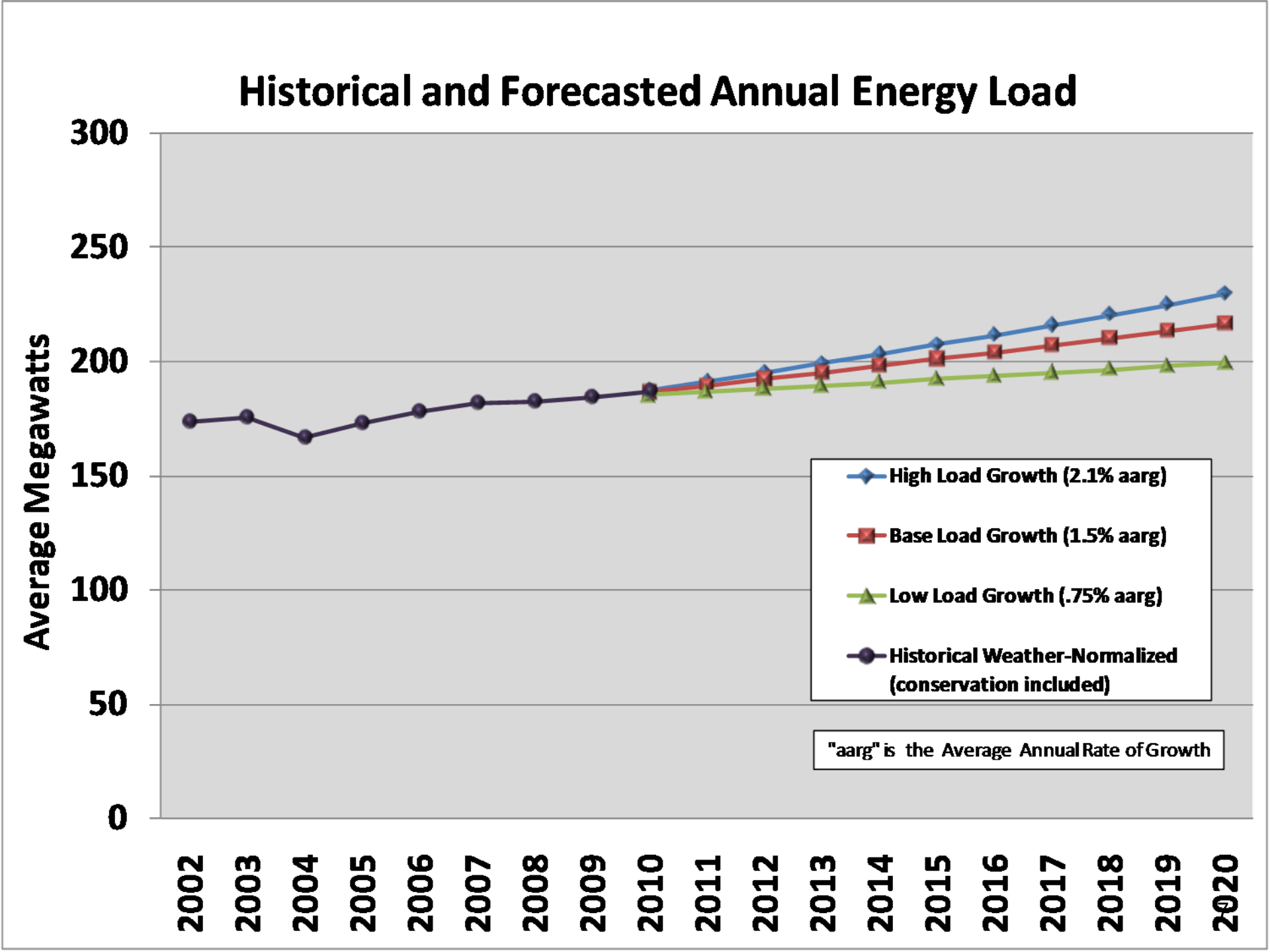
District Net* Average Generation and Load Forecasts



*Hydro generation includes the effects of encroachments, Canadian Entitlement Allocations, other contractual obligations including long-term power purchaser contracts and potential long-term hedging strategy slice contracts

Load Forecast

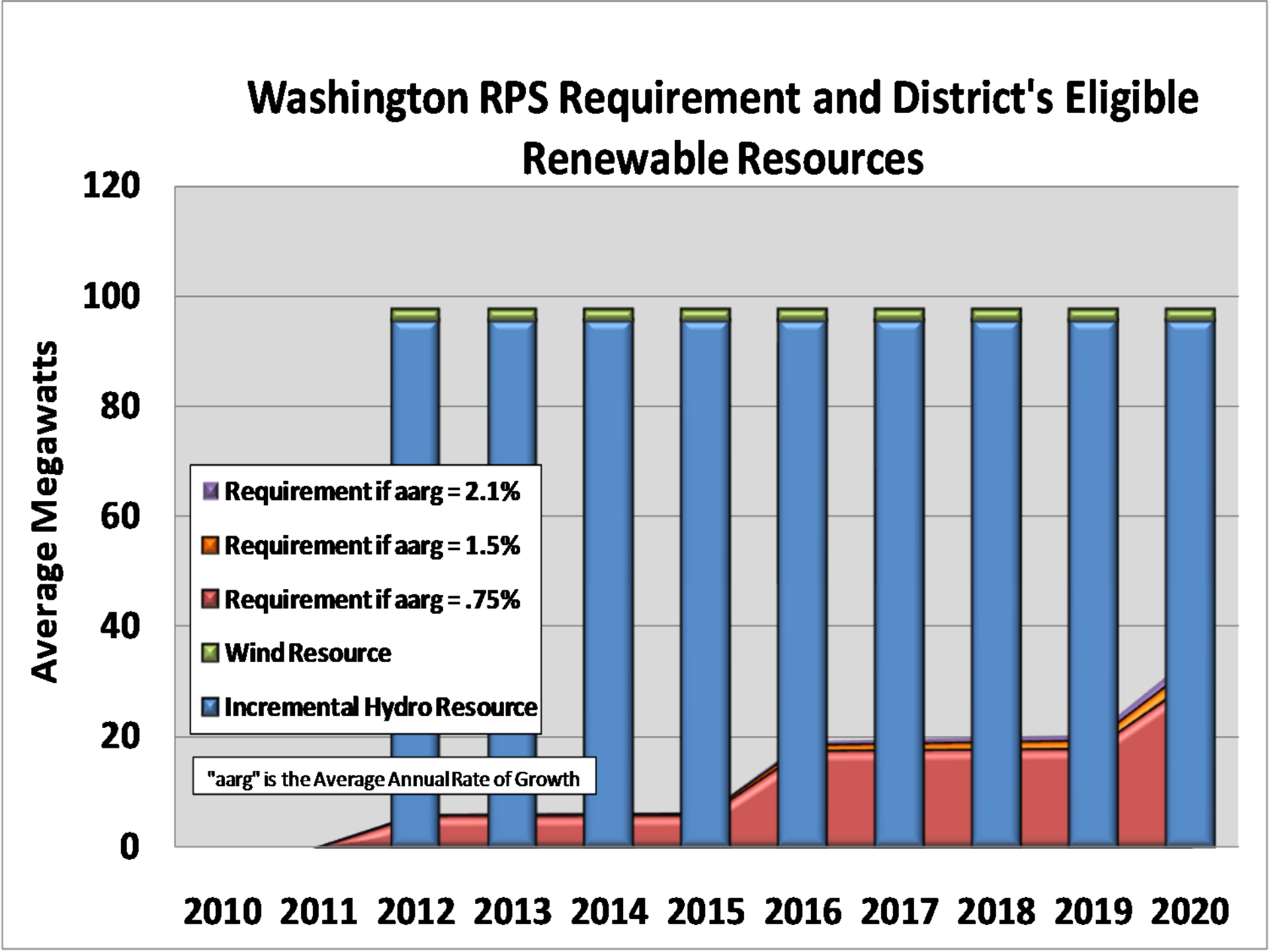
- Total Sector Sales – Residential, Commercial, Industrial & all "Other" (plus system losses) for 2010-2020
  - Low – .75% average annual rate of growth (1.0% in '08 IRP)
  - Base – 1.5% average annual rate of growth (1.9% in '08 IRP)
  - High – 2.1% average annual rate of growth (2.6% in '08 IRP)
- District's Historical Load Growth
  - 1990-2009 – approximately 1.3%
  - 1999-2009 – approximately 1.0%
- Region-wide load forecasts from Sixth Power Plan (2010-2020)
  - Low - .8%
  - Base – 1.2%
  - High – 1.5%


Historical and Forecasted Annual Energy Load
Average Megawatts
300
250
200
150
100
50
0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
High Load Growth (2.1% aarg)
Base Load Growth (1.5% aarg)
Low Load Growth (.75% aarg)
Historical Weather-Normalized (conservation included)
"aarg" is the Average Annual Rate of Growth

Plug-in Hybrid Electric Vehicle (PHEV) Load

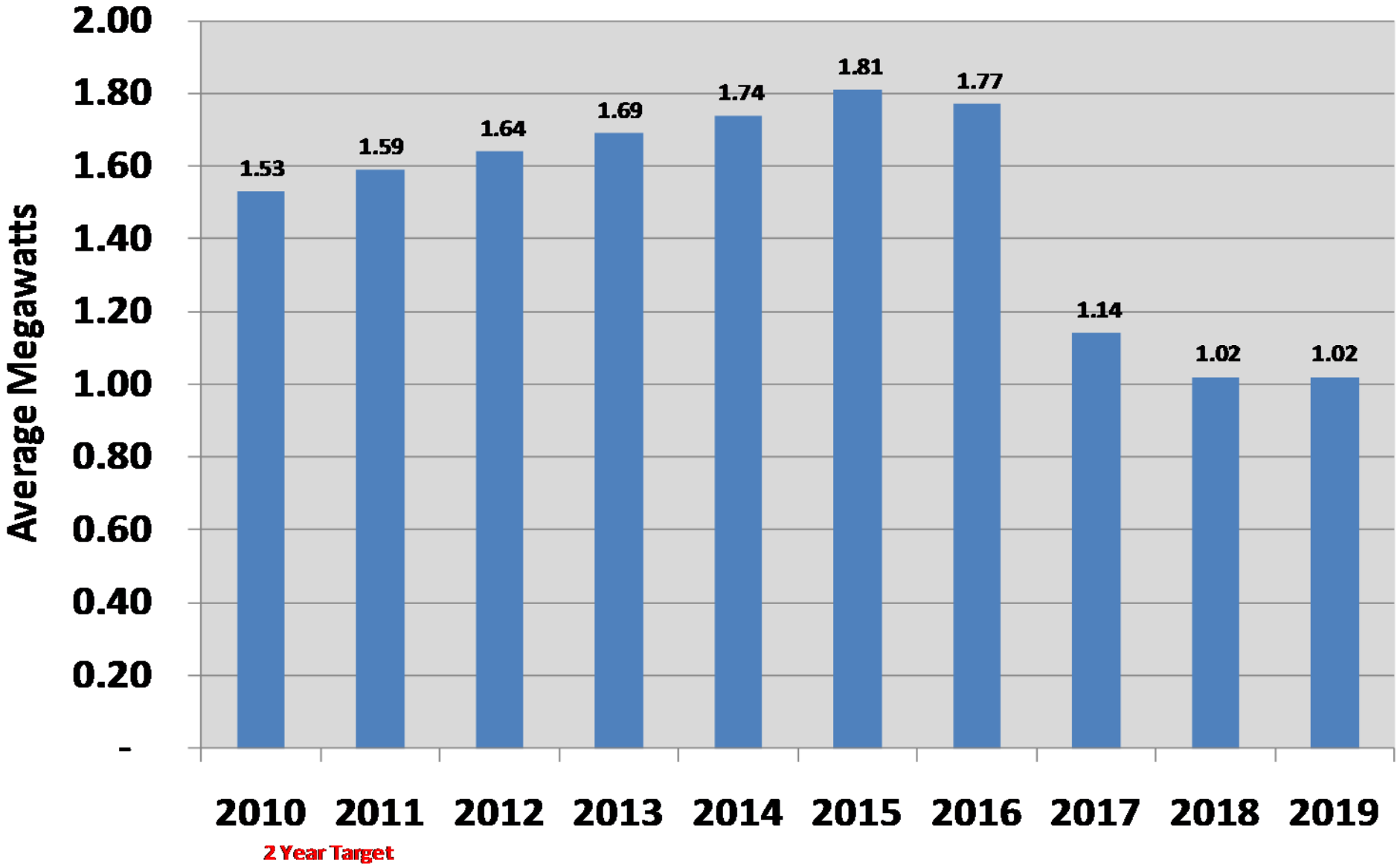
- Sixth Power Plan assumptions used for average energy projections
  - By 2020 – estimate of 900 to 4,500 PHEVs in Chelan County
  - By 2020 – estimate of 0.25 to 1.27 aMW PHEV load

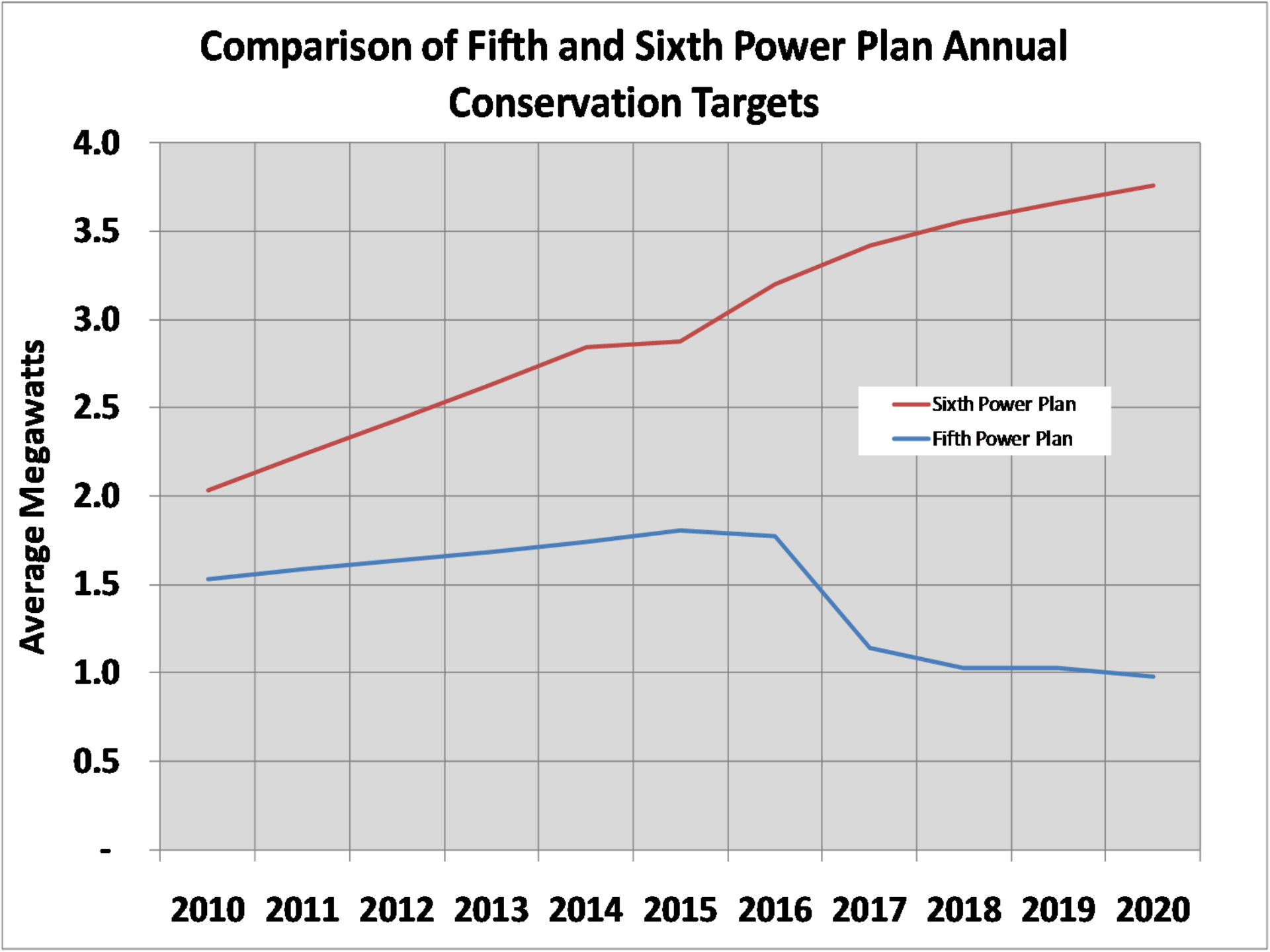
- Pacific Northwest National Laboratory study used to develop shape of load
  - Load shape assumes most charging at homes during the evening and overnight
  - Peak charging load less than 2 MW in 2020
  - Actual charging behavior of vehicle owners and impact of “fast chargers” not known at this time


Washington RPS Requirement and District's Eligible Renewable Resources
Average Megawatts
120
100
80
60
40
20
0
Requirement if aarg = 2.1%
Requirement if aarg = 1.5%
Requirement if aarg = .75%
Wind Resource
Incremental Hydro Resource
"aarg" is the Average Annual Rate of Growth
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020

10-Year Conservation Targets

Source : 5th Power Plan Calculator Method Option No. 1




Comparison of Fifth and Sixth Power Plan Annual Conservation Targets
Average Megawatts
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
-
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Sixth Power Plan
Fifth Power Plan

Conservation Activities

- District on path for achieving 2010 and 2011 targets
- Two year targets & 10-year plan to be updated in 2012
- Council's projections include increase in annual targets
- District to perform utility specific analysis for setting new conservation targets
- Target setting analytic tools include:
  - New Conservation Potential Assessment (CPA)-begin in 2011
  - Economic model- including adjustments for change in Avoided Cost
  - Analysis of advanced metering data and technologies (AMS)
  - Previously performed site specific CPA's

Modeling Assumptions

- Current operations of generating facilities (i.e., fish spill, forced outage rates, etc.)
- Conservation 10-year plan
- All Present and future contracts
  - Proposed slice contracts (23% of RR & RI from 2012-2020)
  - Slice valued at Council's base market price forecast
- Council's Sixth Power Plan base case wholesale market power price forecast for spot sales/purchases
- Load forecasts (and required reserves) varied by scenario
- Current resource cost projections (Hydro costs varied by scenario)

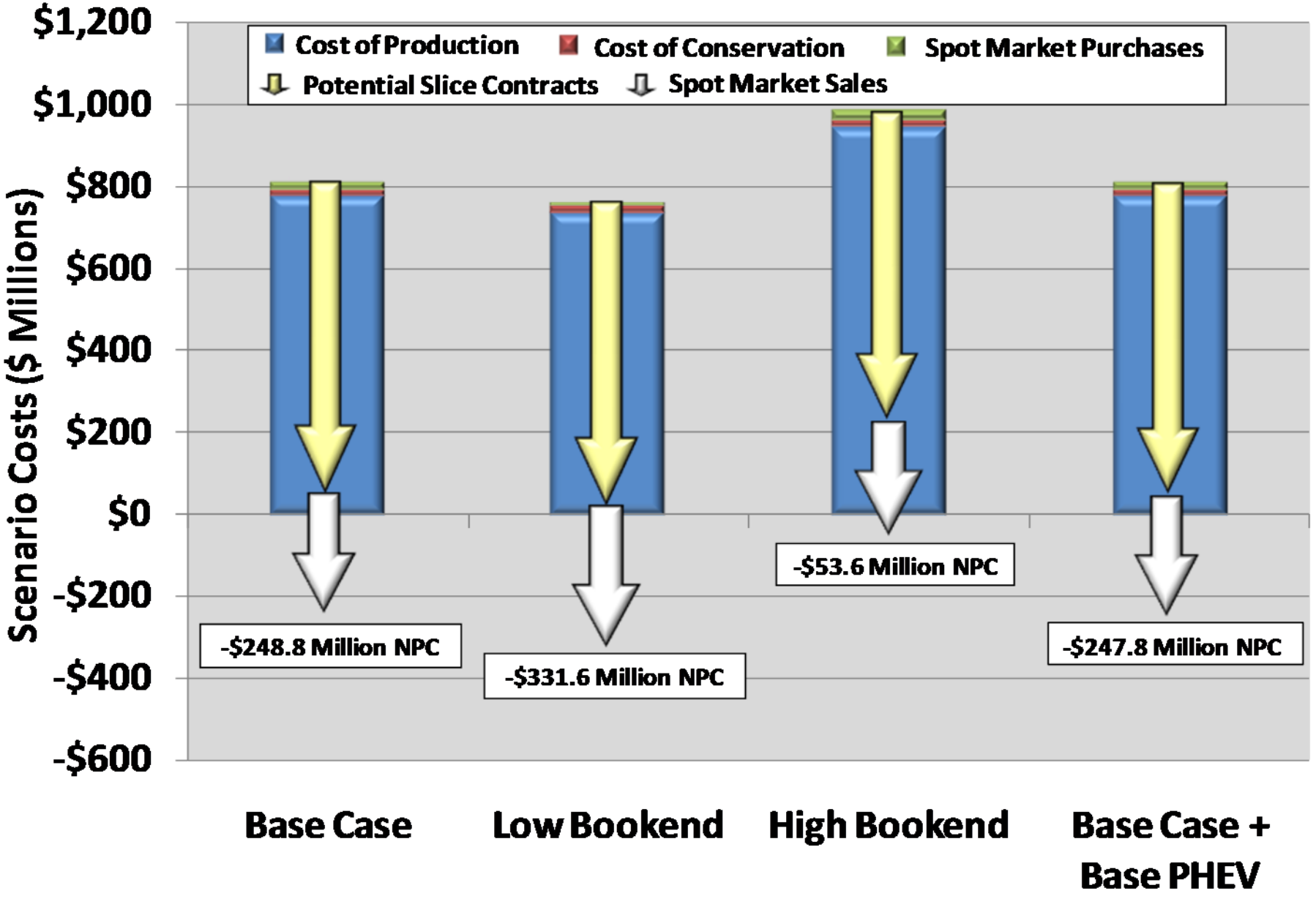
Portfolio Scenarios

- Baseline Scenario
  - Base load growth (1.5%)
  - Base hydro costs
- Low Bookend Scenario
  - Low load growth (.75%)
  - Low hydro costs (base hydro costs minus 5%)
- High Bookend Scenario
  - High load growth (2.1%)
  - High hydro costs (base hydro costs plus 20%)
- Baseline Scenario + Base PHEV Load
  - Base load growth (1.5%) + Base PHEV load
  - Base hydro costs

Portfolio Performance: Scenario Results

- Service Reliability
  - Meets Council's voluntary energy and capacity standards
  - Potential slice or other hedging strategy contract amounts would be reduced before service reliability jeopardized
- Cost
  - Differences in net present value of net portfolio cost (NPC) between portfolio scenarios driven primarily by level of hydro production costs, load growth and spot market activity
- Risk
  - Highlights variability in NPC of each portfolio scenario
  - Hydro generation and market prices greatest uncertainties
- Environmental Impacts
  - Costs/benefits not explicitly modeled – regulatory uncertainty
  - District's hydro and wind resources **do not** emit air pollutants
  - District is purchaser of "market mix" during certain hours

11-Year Median Net Portfolio Cost (NPC)



Short-Term Plan Updates

- Conservation
  - Continue to refine demographic data to develop savings potential – Reviewed available databases, in-house surveys and prelim CPA. Also studied Council Plans
  - Study available measures and programs – Extensive study of regional and national programs
  - Evaluate conservation potential using automated metering & rate design – Funding constraints cancelled automated meter project
  - Look for economies of scale with other utilities – Discussed with several utilities; possible single resource conservation manager

Short-Term Plan Updates

- Conservation
  - Develop system for tracking goals & achievements – Developed and implemented in-house system utilizing customer information and purchasing systems
  - Produce a business plan; including how to meet state RPS targets – Established 10-year plan based on Fifth Power Plan Conservation Calculator; evaluated measures with economic analysis tool
  - Implement cost-effective conservation programs, which comply with requirements of the state RPS – Based on above analysis, picked broad array of measures and with approved budget, began implementation in 2010

Short-Term Plan Updates

- Resource Planning
  - Use 2008 IRP as starting point for evaluating new post 2011/2012 contracts – Wholesale revenue stabilization strategy result of additional modeling efforts
  - Follow development of the NWPCC's Sixth Power Plan – Closely followed council's conservation and wholesale power price forecasts
  - Continue to monitor resource adequacy standards – No changes, District closely monitoring
  - Continue to track climate change/environmental legislation – District closely monitoring
  - Continue to refine incremental hydro generation estimates to comply with state RPS – Ongoing work, District closely monitoring potential changes to RPS

Short-Term Plan Updates

- Resource Planning
  - Implement portfolio model upgrades as available – No upgrades available
  - Update model inputs as available & explore more granular modeling periods – All model inputs updated as necessary for progress report. Explored more granular modeling periods, but no changes due to time and resource constraints; may evaluate again in the future
  - Research & evaluate potential effects of plug-in hybrid and/or electric cars – District performed analysis for progress report as presented

Board and Public Process – 2010 (Remaining Schedule)

June 21

"A Reintroduction to Integrated Resource Planning"

August 2

"Final Draft Progress Report"

August 16

Final Draft Progress Report for Board Approval
(Resolution to be presented)

Chelan PUD IRP Website

www.chelanpud.org/IRP.html