2006 Integrated Resource Plan:
Round One

Public Meeting
July 18, 2006

Seattle City Light

2006 IRP

David Clement	Project Management	Suzanne Hartman/ Charlie Black	Public Involvement
Corinne Grande	Environmental Impact	Cam LeHoullier	Load/Resource Modeling
Tony Kilduff / Mary Winslow	Economic & Demand Forecasts	Steve Lush	Conservation
Don Tinker	Existing Power Supply	Marilynn Semro	New Power Supply/ Transmission

Michele Robbins	Dan Kirshbaum	David Van Holde	Steven Dadashi
Mattie Bailey	Glenn Atwood	Alex Byrne	C.V. Chung
Larry Vogel	Mike Little	Kevin Clark	Tim Cornwell

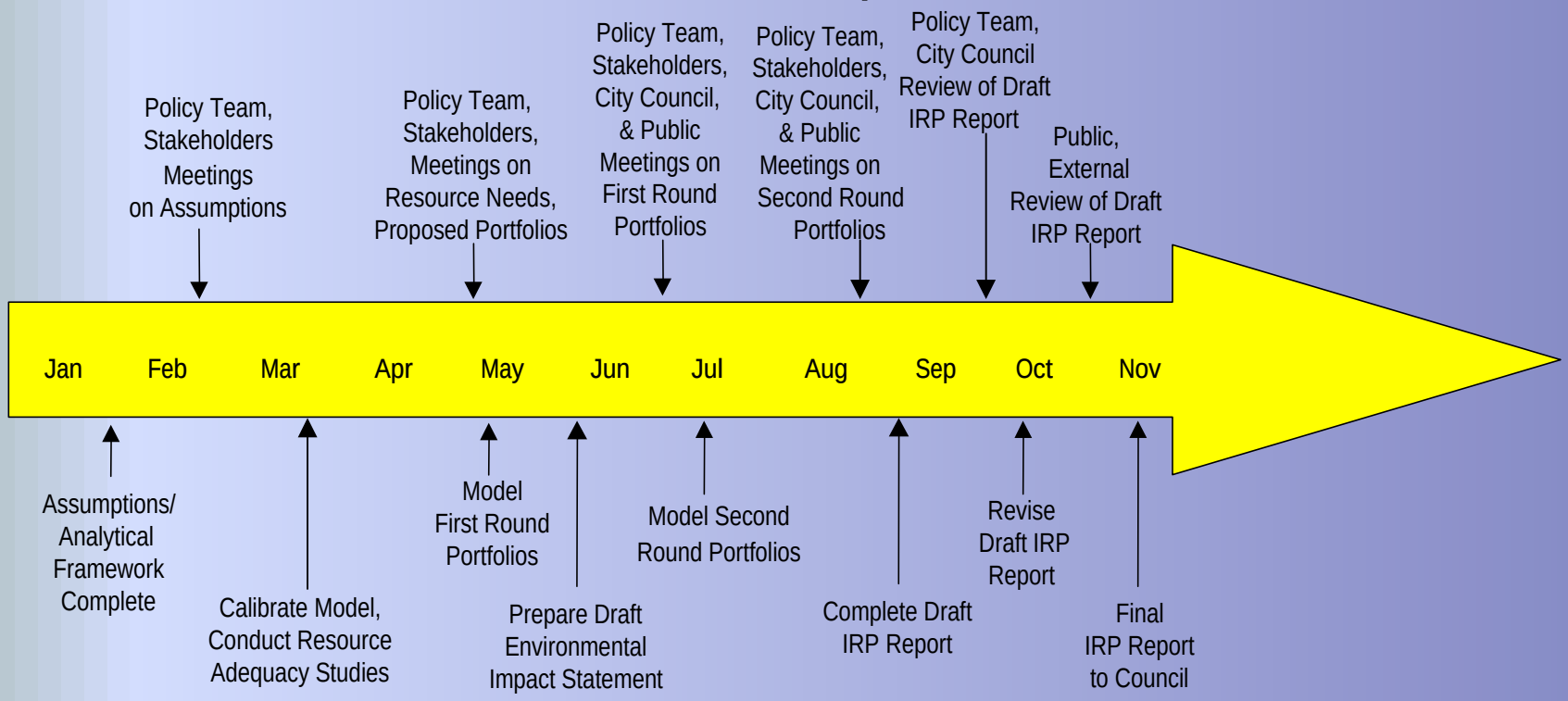
Background

- What is an Integrated Resource Plan (IRP)?
  - A long-range plan evaluating a wide range of electric resource alternatives
  - Defines a strategy identifying need, resources, and timing
  - Utility is responsible to do an update every two years

- What IRP Work has Seattle City Light Done so Far?
  - Analyzed resource needs
  - Evaluated conservation potential
  - Established a wide range of resource portfolios for evaluation
  - Performed round 1 modeling of how the portfolios would operate under many types of conditions

2006 Project Timeline

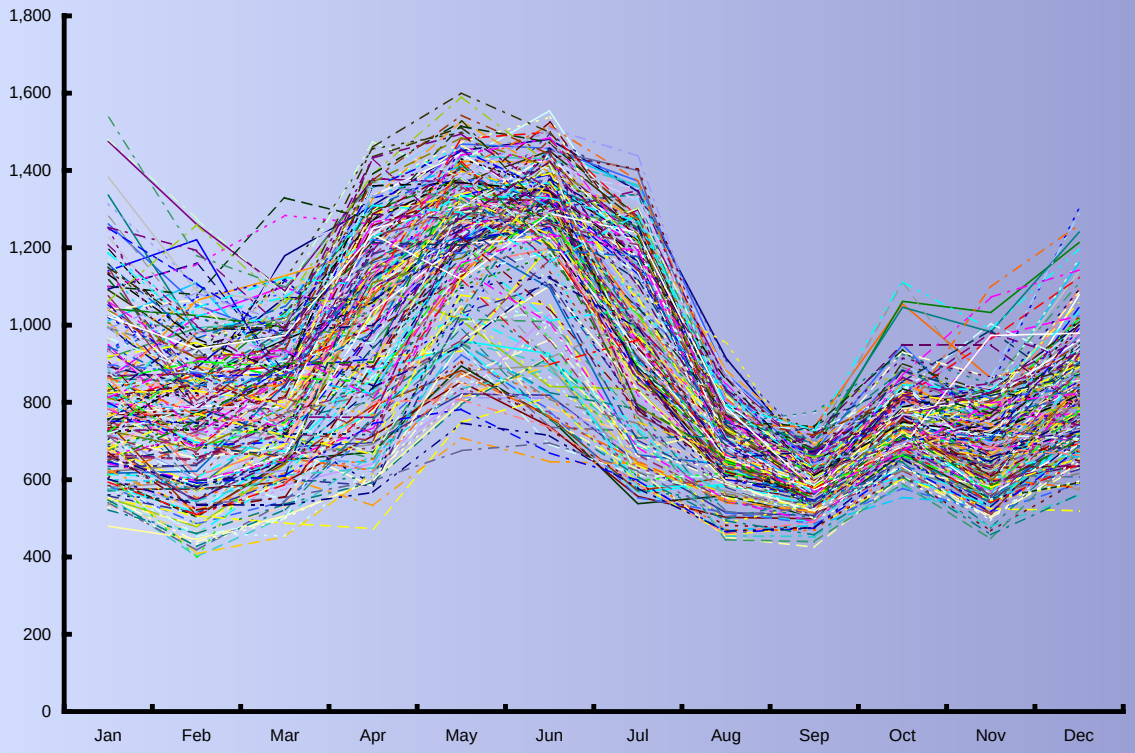
Review & Public Input



IRP Team Tasks

Hydro Volatility

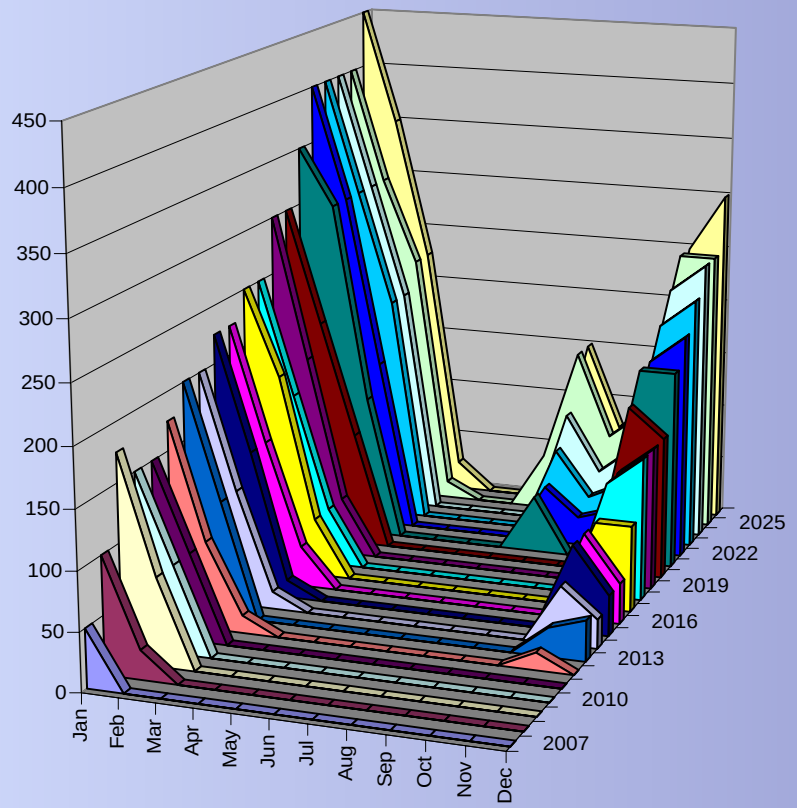
Hydro Generation (GWh)



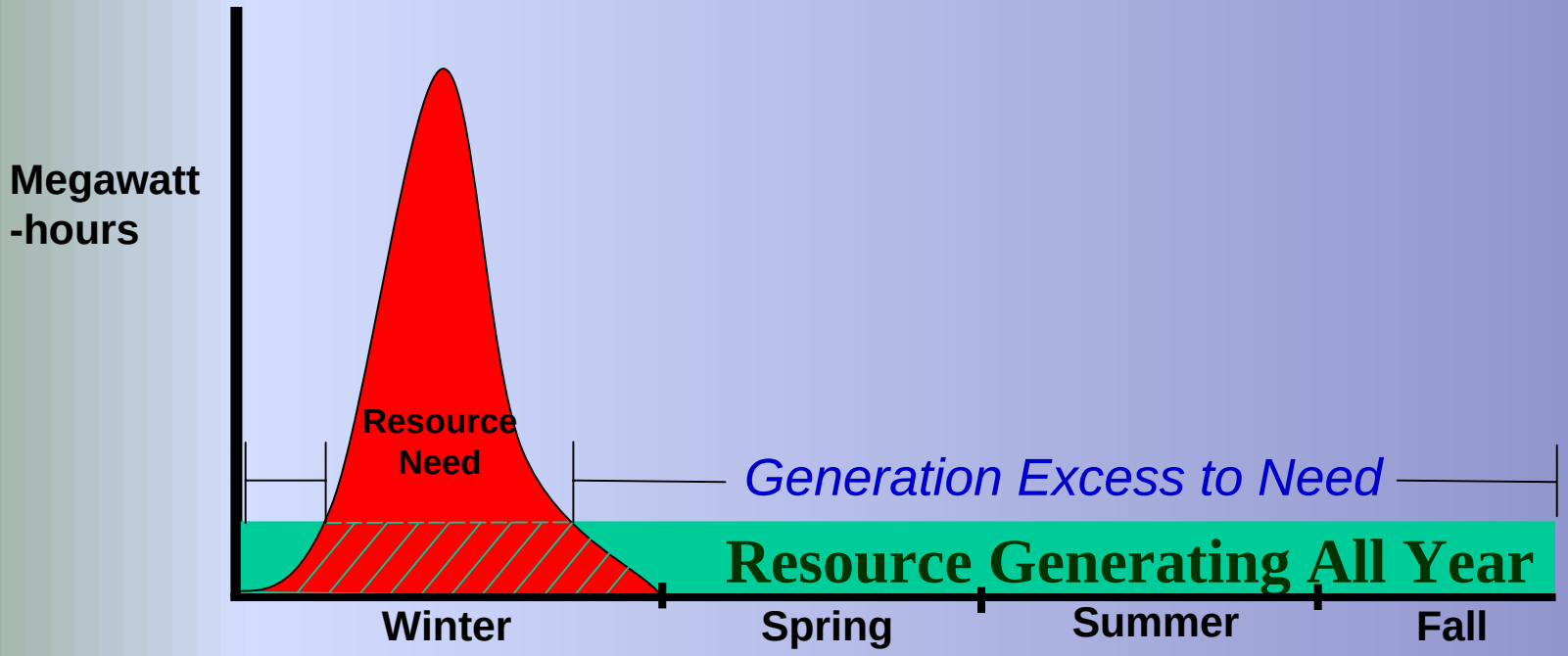
Hydro Volatility = Increased Risk

Resource Additions Meeting a 95% Criterion

Resource Need (Monthly aMW)

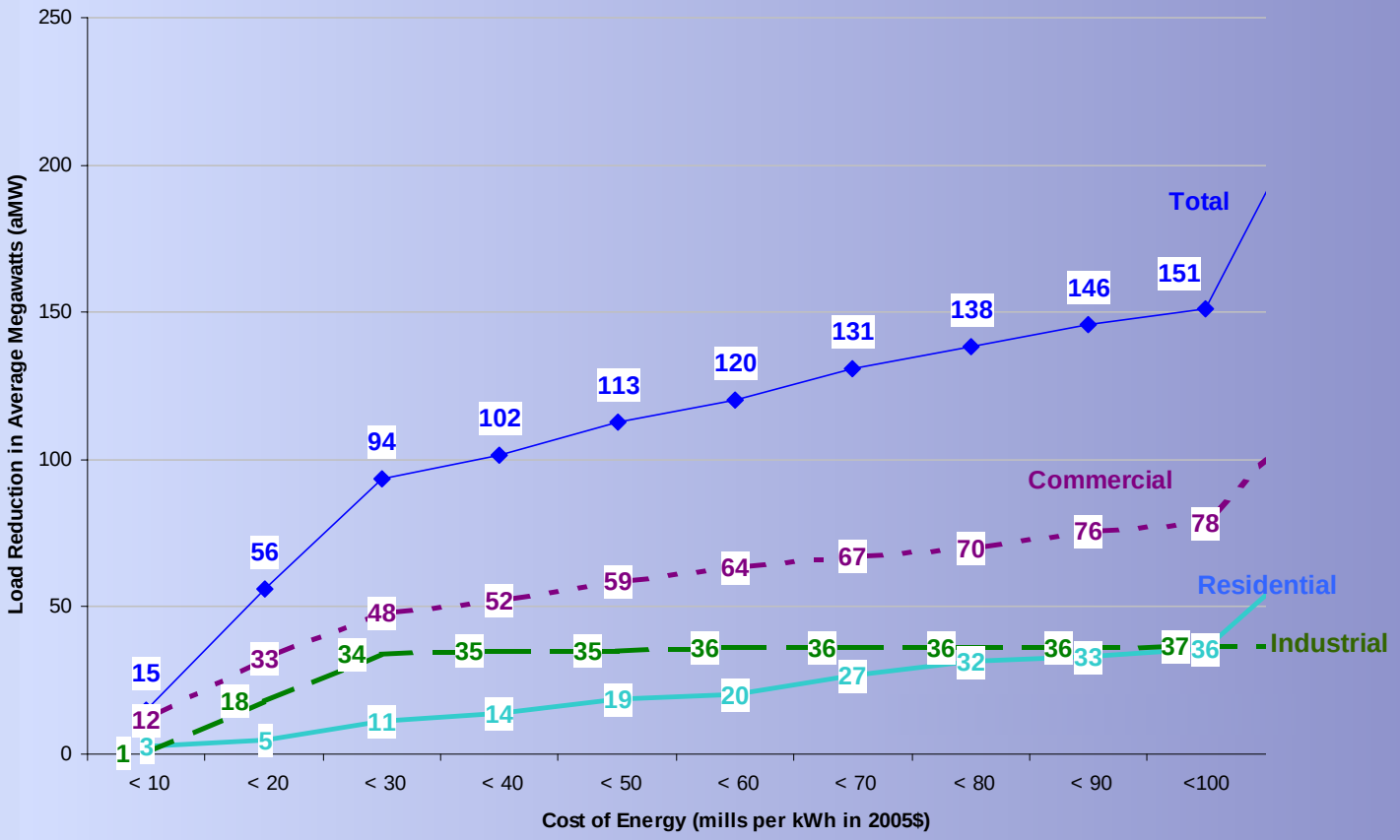


Meeting Seattle's Winter Needs Can Cause Excess in Other Seasons



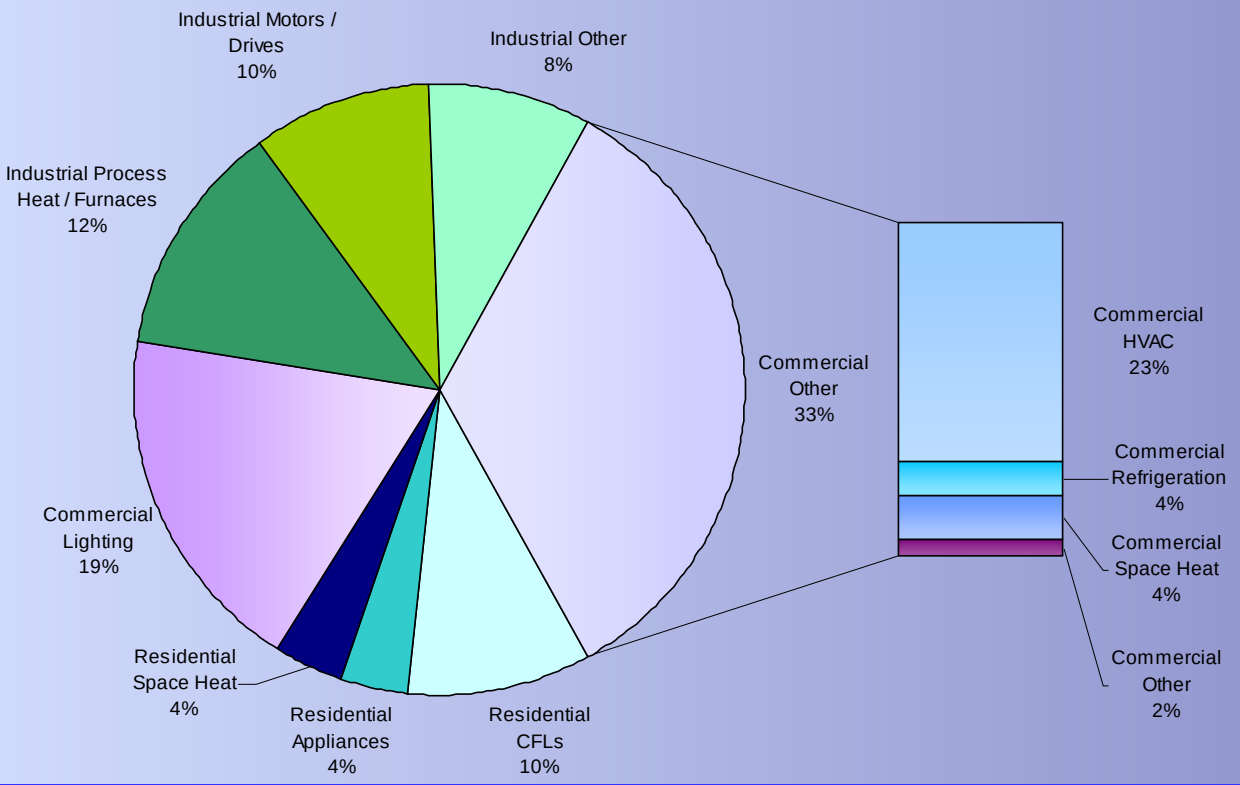
Resources

Achievable Conservation Potential 2006-2020

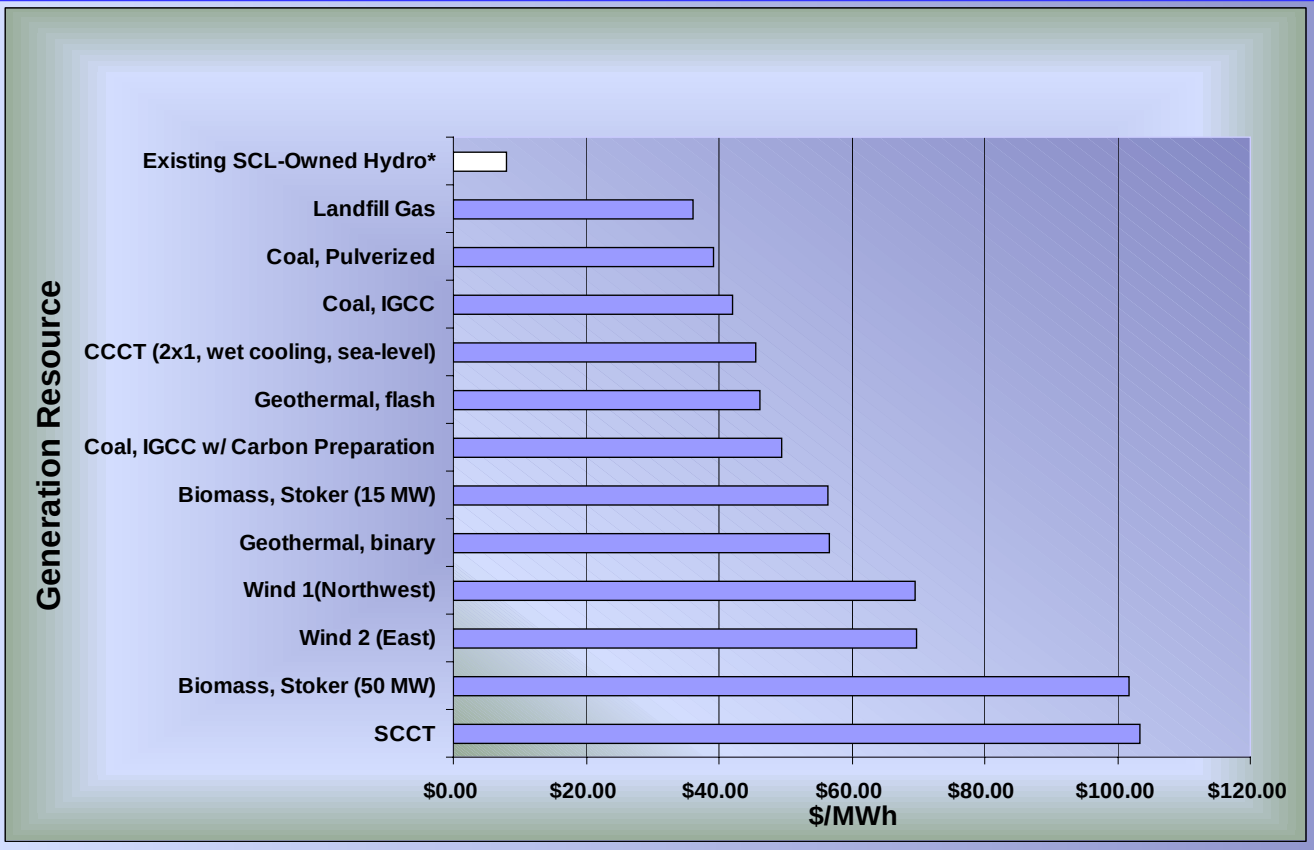


Achievable Conservation Potential 2006-2020

Conservation Achievable Potential 2006-2020
All Sectors, Below 60 Mills per MWh



New Resource Costs With Transmission* (Average 2006 $/MWh)



* Notes: 1. Includes pro-rated, new transmission line costs to Seattle for distant resources
2. All costs are pre-tax and do not include state or federal tax credits
3. Existing SCL-Owned Hydro cost for reference only

Total Resource Additions by Portfolio: 2007 to 2026

Capacity in Megawatts

	Rely on Market	Renew-ables	Hydro, Wind, & Gas	Div-erse	Gas-Fired	50:50 Block/ Slice	100% Block	IGCC and Wind	Coal and Gas
Conservation		140	140	140	140	140	140	140	140
Exchange		100	100	100	100	*100*	100	100	100
Call Option*		*70*	*50*	*50*			*100*	*70*	
Hydro		60	60						
Wind		750	150	450		150		450	
Geothermal		25							
Landfill Gas		25	25	25					
Biomass		25		50					
CHP (co-gen.)			25						
CC Turbine			150	100	50	350	600		225
SC Turbine			50	50	300		50		
IGCC - Coal								300	
Conv. Coal									150
2026 Total	**0**	**1,125**	**750**	**915**	**590**	**640**	**890**	**990**	**615**

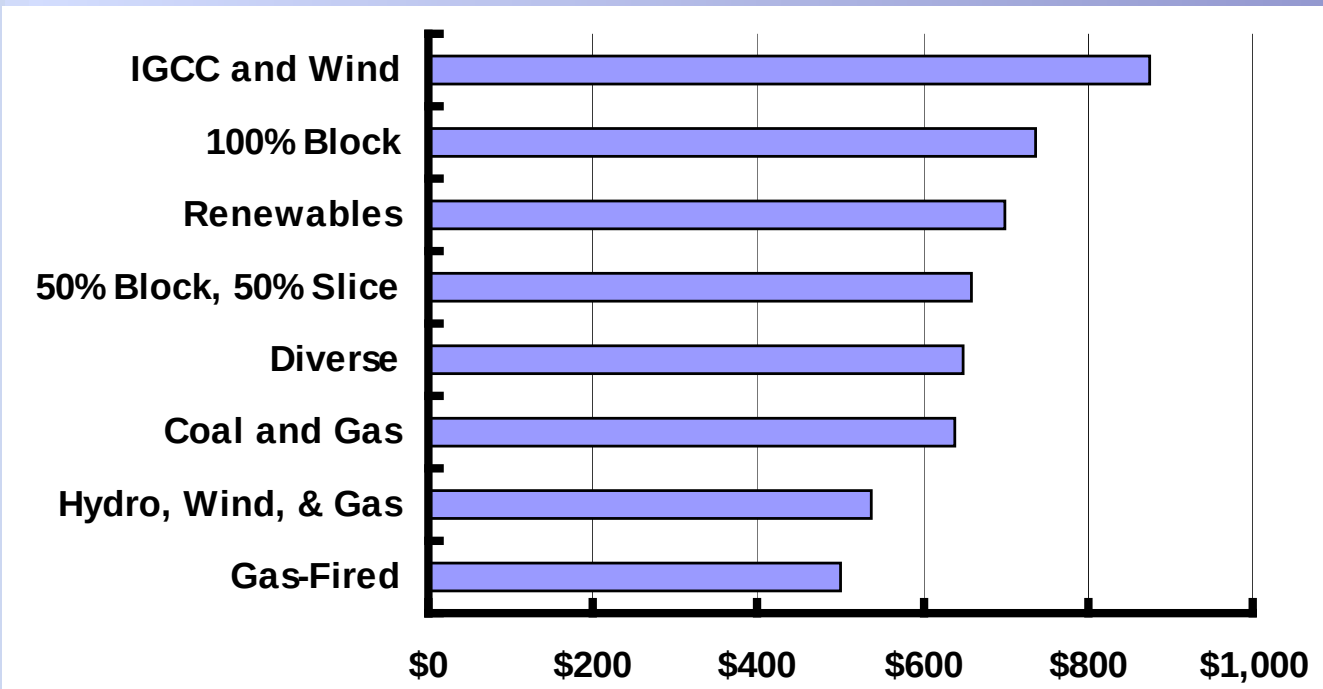
Round 1 Portfolios and Modeling Results

Portfolio Evaluation Criteria

- Reliability
  - Hours of unserved load
- Cost
  - Cost and net revenues
- Environment
  - Control costs of residual emissions
- Risk
  - Variability of costs and revenues

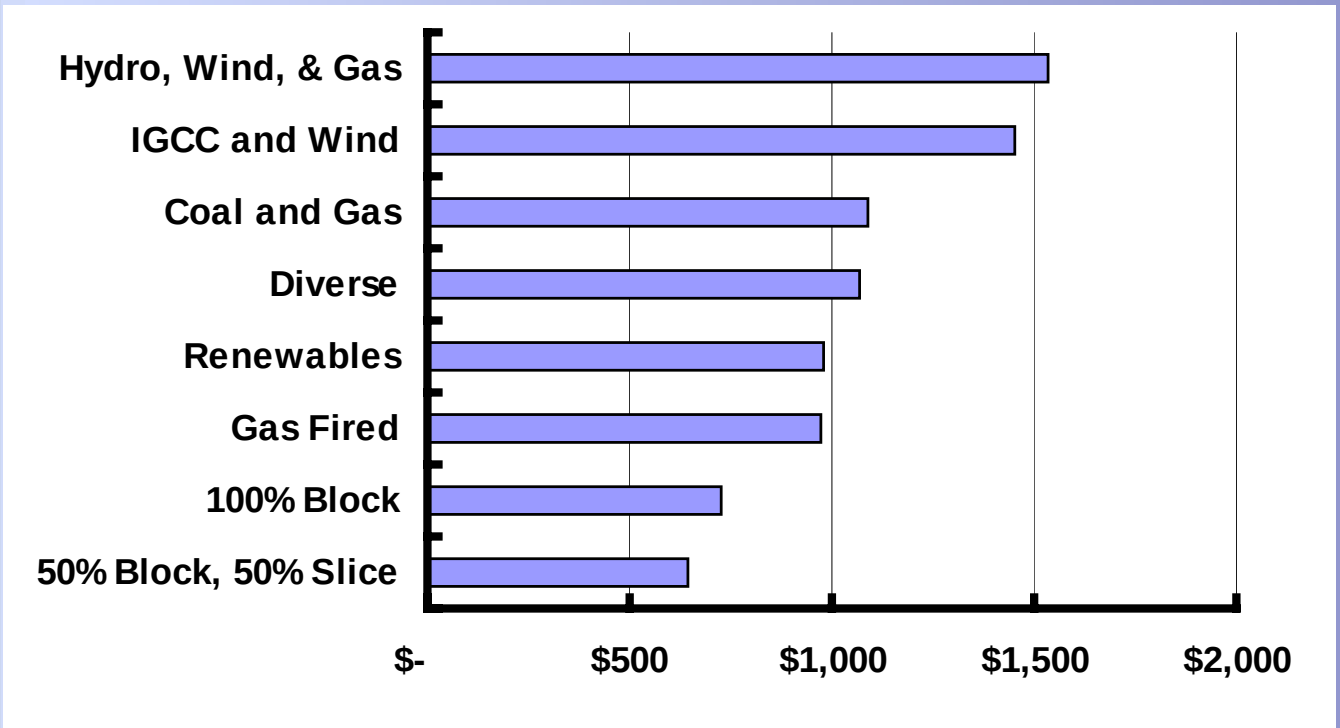
Total Cost

20-year Present Value in Millions of Dollars



Revenue Less Cost

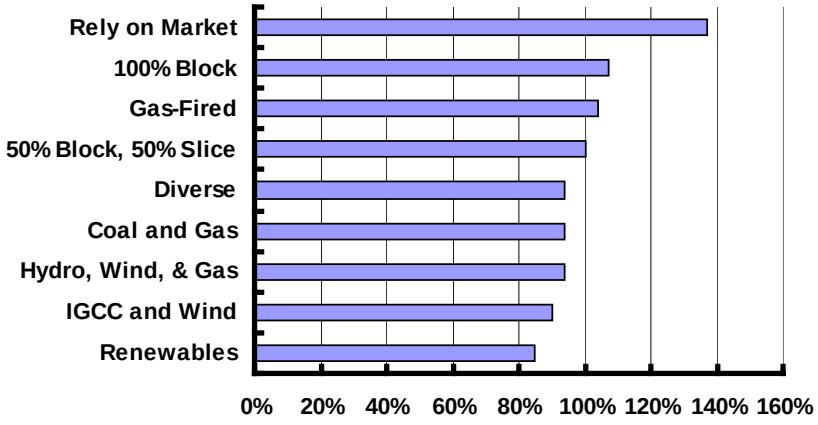
20-year Net Present Value in Millions of Dollars



Risk by Portfolio

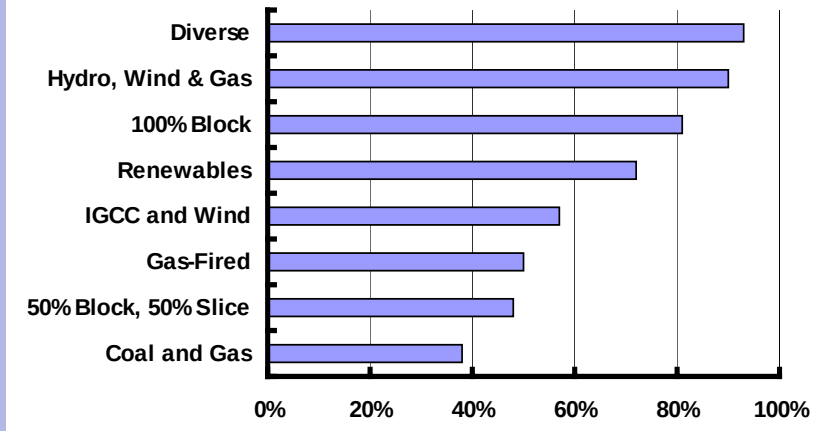
Market Risk

Coefficient of Variation (σ/μ)
of Net Revenues



Variable Cost Risk

Coefficient of Variation (σ/μ)
of Variable Costs



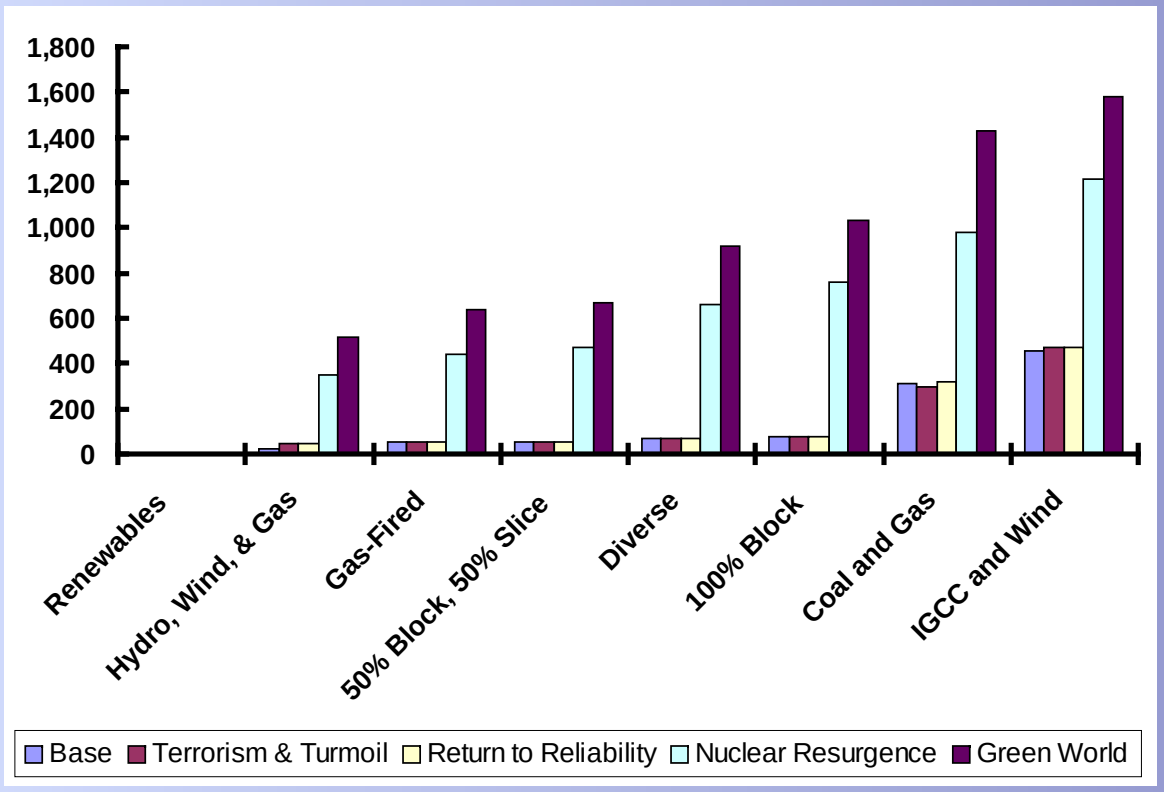
Scenarios

Energy Scenarios for the U.S.
Global Energy Decisions

	Reference Forecast	Terrorism & Turmoil	Green World	Nuclear Resurgence	Return to Reliability
Economic Growth	Medium	Slow	Medium	High	Medium
Gas Supply	LNG arrives (6 new US plants)	LNG constrained; N. Amer. growth	Tight supplies followed by LNG	LNG constrained N. Amer. growth	LNG constrained; N. Amer. growth
Gas Price	Normal	Higher mid-term	Higher long term	High, then lower after 2022	Normal
Environmental Regulation	No new	No new	Four pollutants, fast compliance	Four pollutants by 2020	No new
Coal Generation	No new before 2015 in US West	No new before 2015 in US West	Retires 466 GW by 2025	Retire coal by 2015	Adds coal over Reference levels
Transmission	Existing levels	Existing levels	Increase capacity by 1%	Increase capacity by 5% by 2020	Increase capacity by 20%
Nuclear Build	0 plants	0 plants	2 plants	42 1,000 MW plants by 2026	2 plants

Control Costs of Residual Emissions By Scenario

20-year Present Value in Millions of Dollars



Performance By Measure
Reference Case

Portfolio	Total Cost	Residual Emissions	Cost Risk	Market Risk	Revenue Less Costs
Renewables					
100% Block					
50% Block: 50% Slice					
Hydro, Wind & Gas					
Diverse					
Gas-Fired					
Coal and Gas					
IGCC and Wind					
Rely on Market					

Top third
Middle third
Bottom third

What Have We Learned So Far?

- Net Power Costs of Portfolios Most Sensitive to:
  - Capital costs of generation and transmission
  - Market sales of surplus generation
  - Natural gas costs
- Conservation, “Shaped” Resources, and Dispatchable Resources Can Improve Performance
  - Nearly one-third of resource need (140 aMW) can be covered by conservation
  - Shaping resources to winter needs avoids unnecessary costs
  - Ability to dispatch resources only when needed avoids costs

What's Next?
Plans for Round Two

- Round Two Portfolio Modeling Tasks
  - Formulate candidate resource portfolios
  - Perform model runs, interpret and present results
- Current List of Topics for Round Two
  - Evaluate a range of conservation amounts and timing
  - Consider ways to improve the portfolios seasonal balance
  - Analyze varying proportions of two forms of BPA Power Purchases (Block and Slice)
- Continue Public Involvement Process
  - Stakeholder and Public Meetings on Round 2 Results

Questions?

IRP Website Address:
http://www.seattle.gov/light/news/issues/irp/
E-Mail: SCL.IRP@Seattle.gov

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