



**DRAFT 2008 Integrated Resource Plan  
Results To-Date**

*Public Meeting  
July 10, 2008*

 **Seattle City Light**



# Agenda

- Introduction 7:00 PM – 7:15 PM
- Future Business Environment 7:15 PM – 7:30 PM
- Round 2 Results 7:30 PM – 7:45 PM
- Wrap-up and Adjourn 7:45 PM – 8:00 PM



# Agenda

- What is an IRP?
  - How does it affect Seattle?
- Round 2 Results
  - Which portfolios of resources performed best?
- Seeking Your Input...
  - Preferred resources and resource portfolios?
  - Should some measures be valued more than others?
    - Cost?, risk?, environmental performance?



# **What is an Integrated Resource Plan (IRP)?**

## **How Can it Affect Customers?**



## Not Distribution Reliability...





## Not Transmission Reliability...





# Power Supply Reliability!





# Integrated Resource Planning

- The Integrated Resource Plan:
  - Identifies how much, when, and what kind of energy resources are needed in the next 20 years
    - Treats conservation as equal to power generating resources
    - Includes public involvement
    - Sets a flexible strategy for conservation and resource acquisition
    - Is updated regularly (every 2 years)



## 2006 IRP Lowest CO<sub>2</sub> of 15 Western IRPs Lawrence Berkeley Laboratories Study

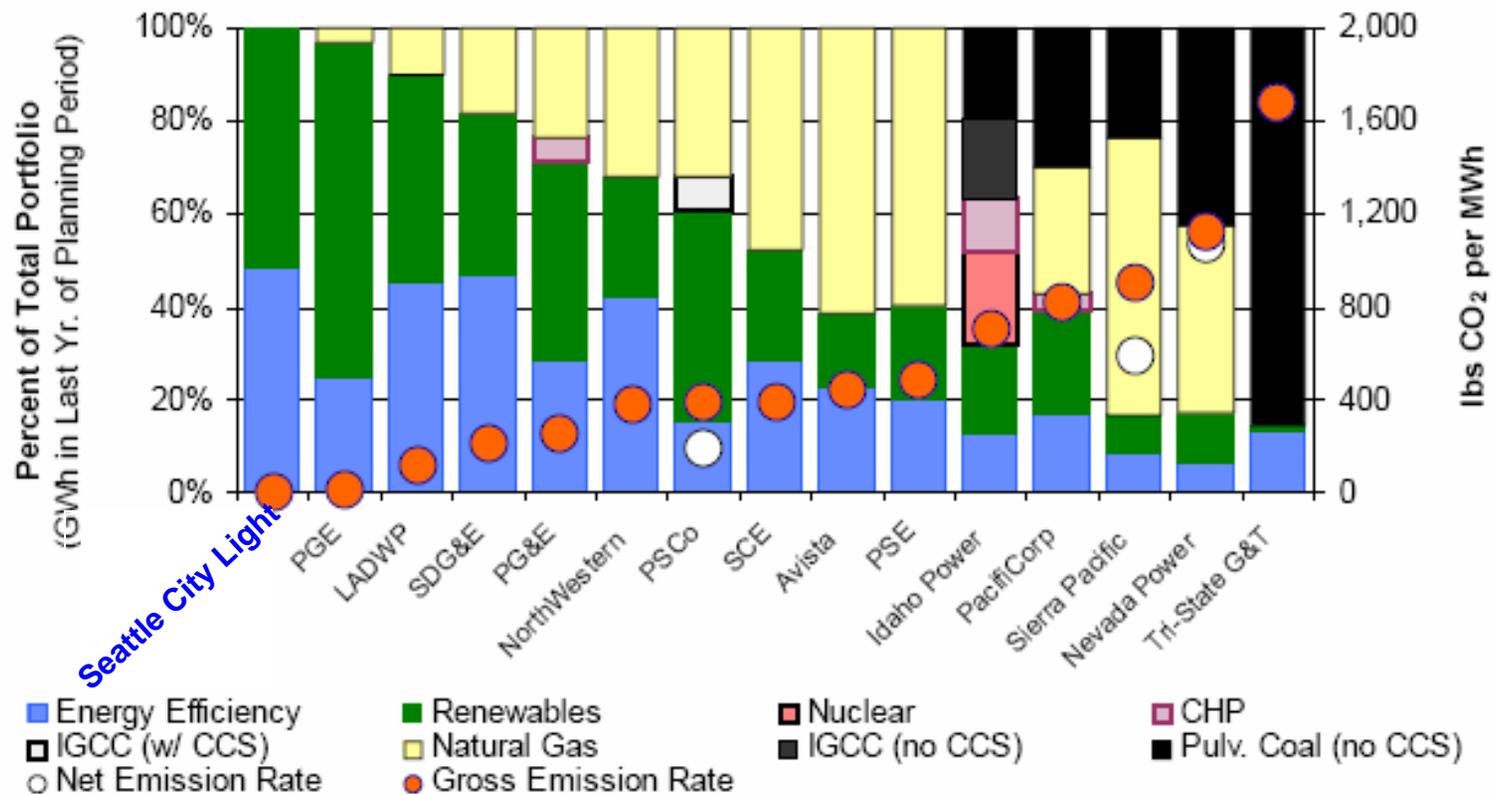


Figure ES - 3. New Resources in Utilities' Preferred Portfolios



## How Can the IRP Affect Customers?



**Reliability**



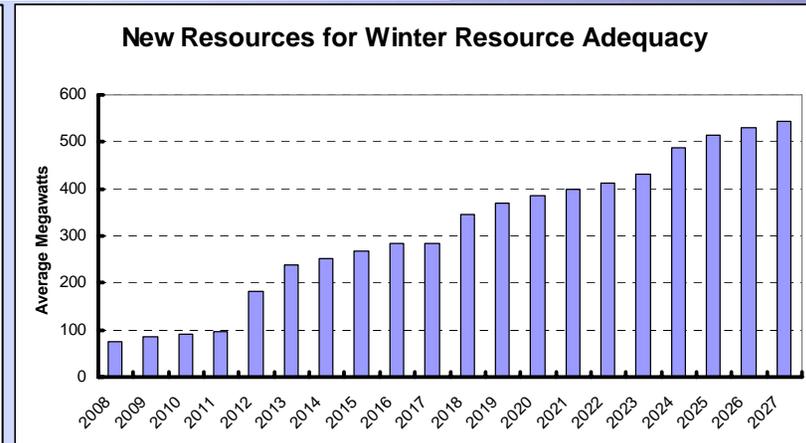
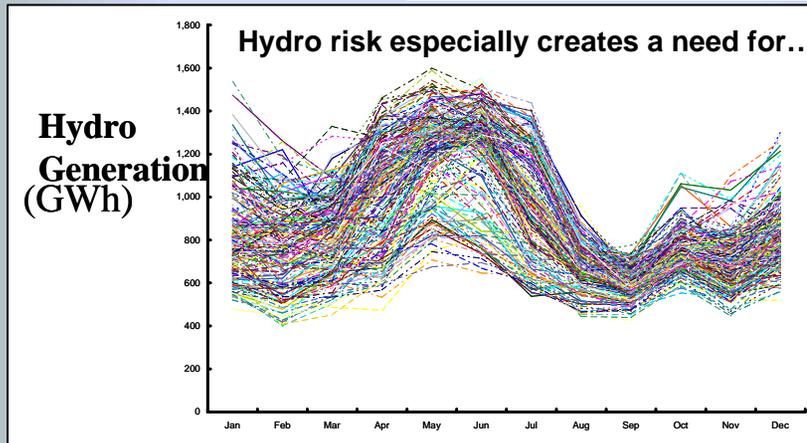
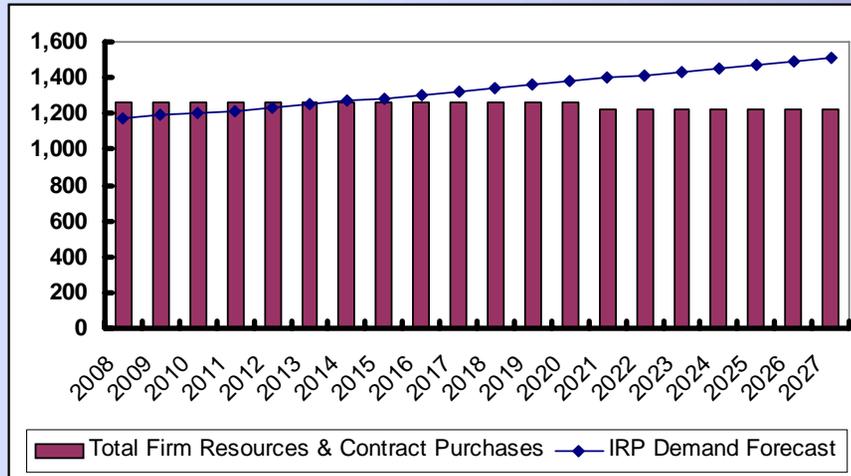
**Electricity  
Bills**



**Environmental  
“Footprint”**

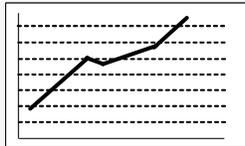


# Enough Until 2014 on an Annual Basis But Hydro and Temperature Create Risks





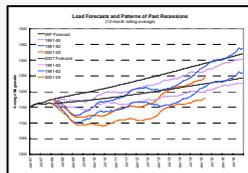
## Studies and Scenarios for the 2008 IRP



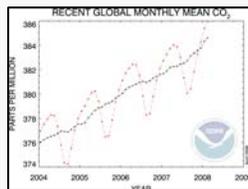
Rising Power Prices; and  
Rising Renewables Prices



Potential Impacts of Plug-in Hybrid  
Electric Vehicles to Electric Demand



Recession; and High Growth  
Impacts for Seattle



Partial Analysis of Climate  
Change



Combined Heat & Power; Demand  
Response; and Ocean Energy



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# Round 2

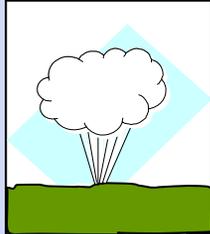
## Draft 2008 Integrated Resource Plan (IRP)



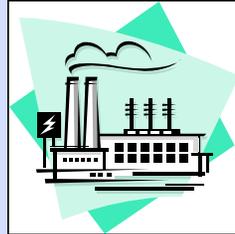
# Resources in the 2008 IRP



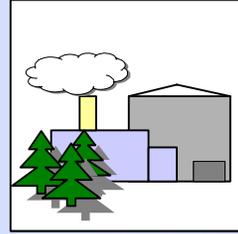
Conservation



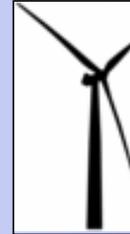
Geothermal (Binary)



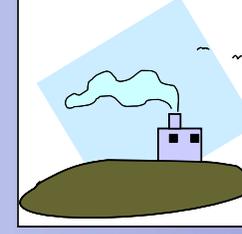
Natural Gas Turbines



Large Biomass (Wood)



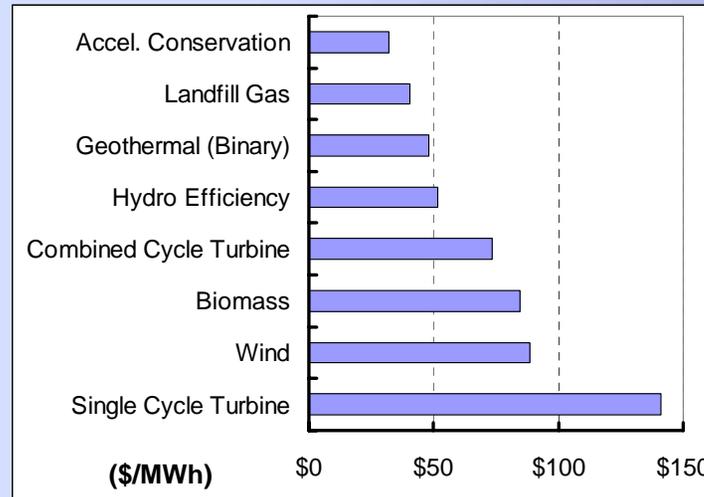
Wind



Landfill Gas

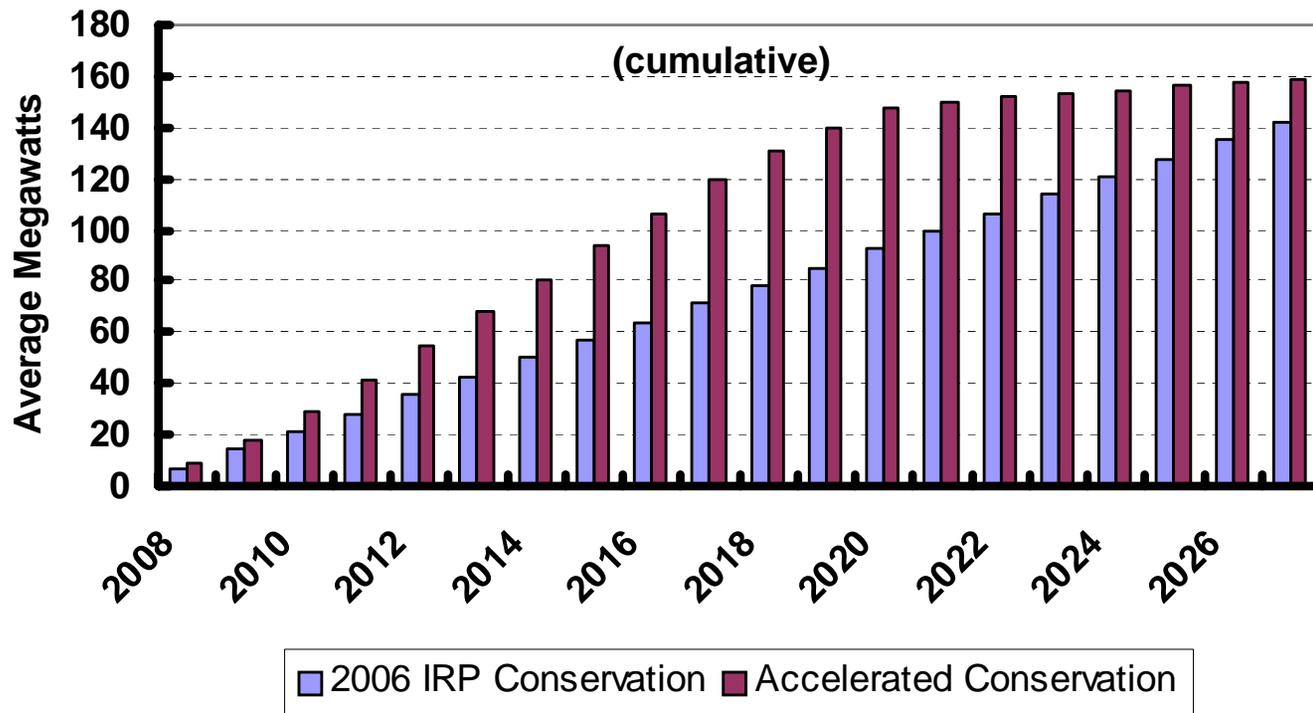


Efficiencies at Hydro Plants





## Testing Accelerated Conservation in Round 1 Portfolios



Round 1 conservation would provide 36% of new resources by 2020



## Round 1 Portfolios: Carbon Tax Assumption Eliminates Natural Gas

**Year 2027 in Average Megawatts**

Portfolios Resources	Hi-LFG/ Biomass	Hi-Geo	Hi-Wind /SCCT	Hi-CCT	Hi-Exch.
<i>Accel. Conservation*</i>	159	159	159	159	159
<i>Exchanges*</i>	100	100	100	100	145
<i>Capacity Contracts*</i>	20	5	10	5	20
Gorge Tunnel	13	13	13	13	13
Landfill Gas	32	22	22	22	22
Geothermal	100	125	0	45	125
Biomass	125	125	0	60	25
Wind	0	0	140	40	40
Comb. Cycle Turbine	0	0	0	100	0
Simple Cycle Turbine	0	0	100	0	0
<b>Total aMW</b>	<b>549</b>	<b>549</b>	<b>544</b>	<b>544</b>	<b>549</b>

*\*These resources do not add new generation capacity*



## Round 2 Portfolios in 2027

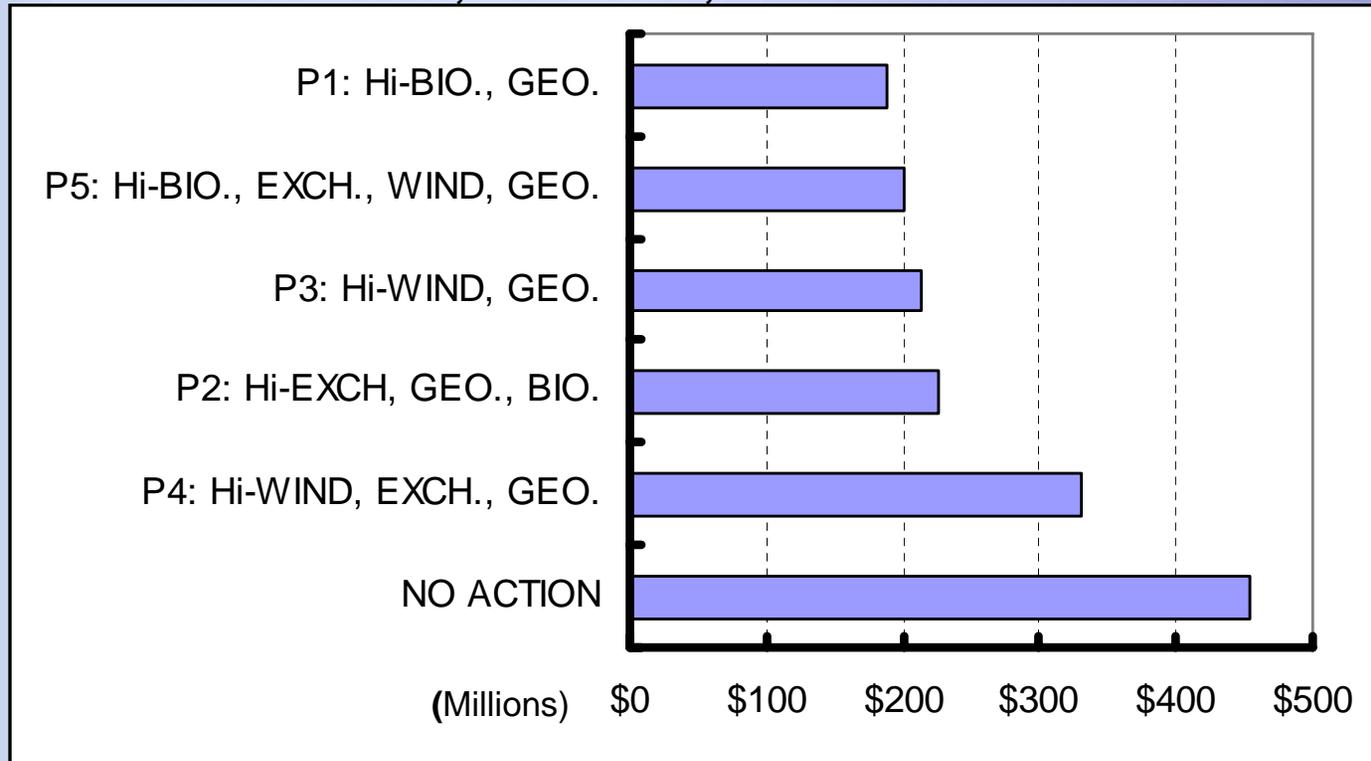
### Total Average Megawatts in Winter

Resources \ Portfolios	P1: Hi-Bio., Geo.	P2: Hi-Exch., Geo., Bio.	P3: Hi-Wind, Geo.	P4: Hi-Exch., Wind, Geo.	P5: Hi-Bio, Geo., Wind
<i>Accel. Conservation*</i>	159	159	159	159	159
<i>Exchanges*</i>	105	135	105	135	105
<i>Capacity Contracts*</i>	5	15	5	0	5
Gorge Tunnel	5	5	5	5	5
Landfill Gas	21	21	21	21	21
Geothermal	125	125	125	125	125
Biomass	125	85	0	0	40
Wind	0	0	125	100	85
<b>Total aMW</b>	<b>545</b>	<b>545</b>	<b>545</b>	<b>545</b>	<b>545</b>



## Round 2 Net Power Costs

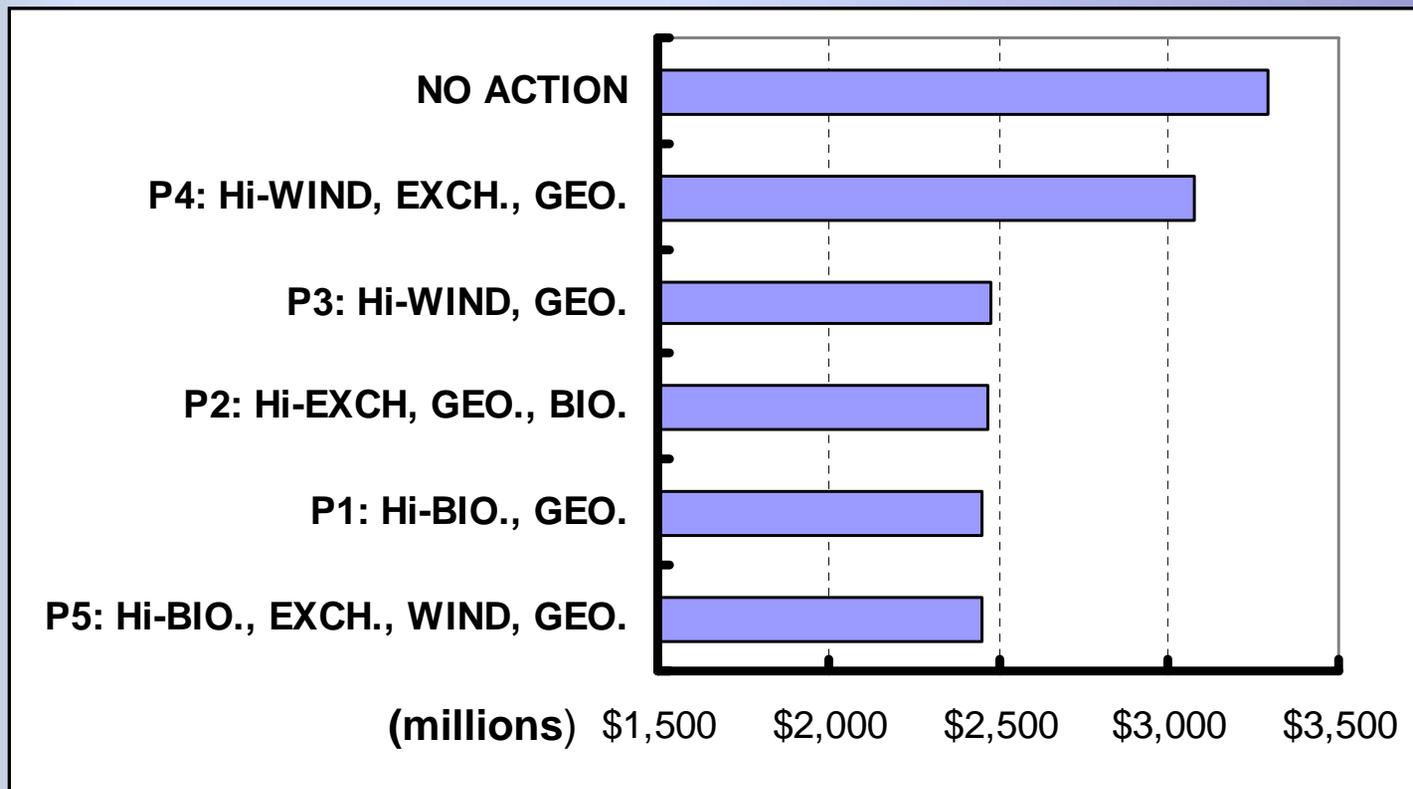
### All-in Production Costs, Net of Sales, Before Incentives and Tax Credits



\*Net Power Cost = All-in production costs + market purchases – market sales + contract purchases – contract sales (does not include emissions costs from purchases and sales)



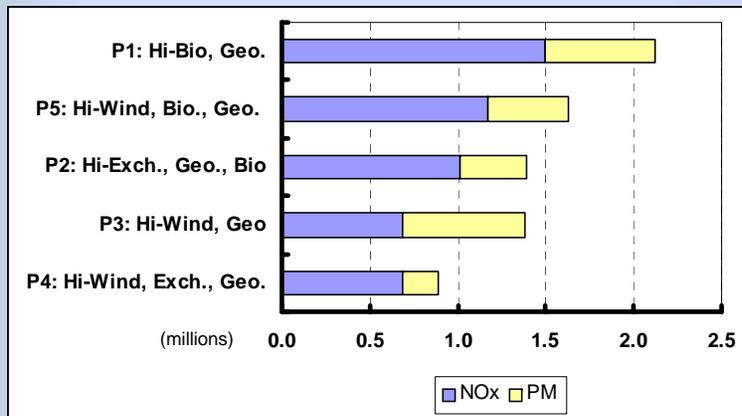
## Risk in Round 2 Portfolios: 5% Chance of Greater Costs



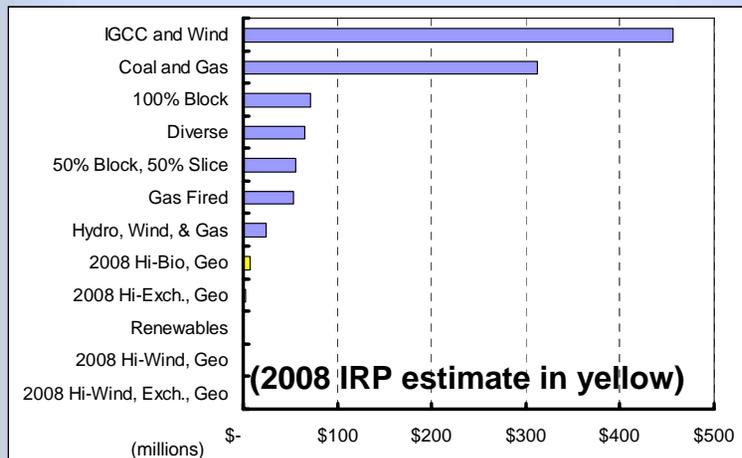


# Round 2 Portfolios

## Emissions Mitigation Cost Estimates



### Round 2 Emissions Mitigation Cost Estimates (NPV)



### Above Emissions Mitigation Cost Estimates for Round 2 Portfolios Compared With 2006 IRP Portfolios



## Results for Round 2 Summary

— (NPV in Millions) —

		5% Risk of Greater Cost		Expected Net Power Cost*		Direct Emissions**	Overall Ranking
<b>Hi-Biomass, Geothermal</b>	\$2,460	2	\$188	1	\$2.1	5	2
<b>Hi-Biomass, Wind, Geothermal</b>	\$2,450	1	\$201	2	\$1.6	4	1
<b>Hi-Exchange, Geothermal, Bio.</b>	\$2,470	3	\$226	3	\$1.4	3	3
<b>Hi-Wind, Geothermal</b>	\$2,480	4	\$214	4	\$1.4	2	4
<b>HI-Wind, Exch., Geothermal</b>	\$3,079	5	\$331	5	\$0.9	1	5

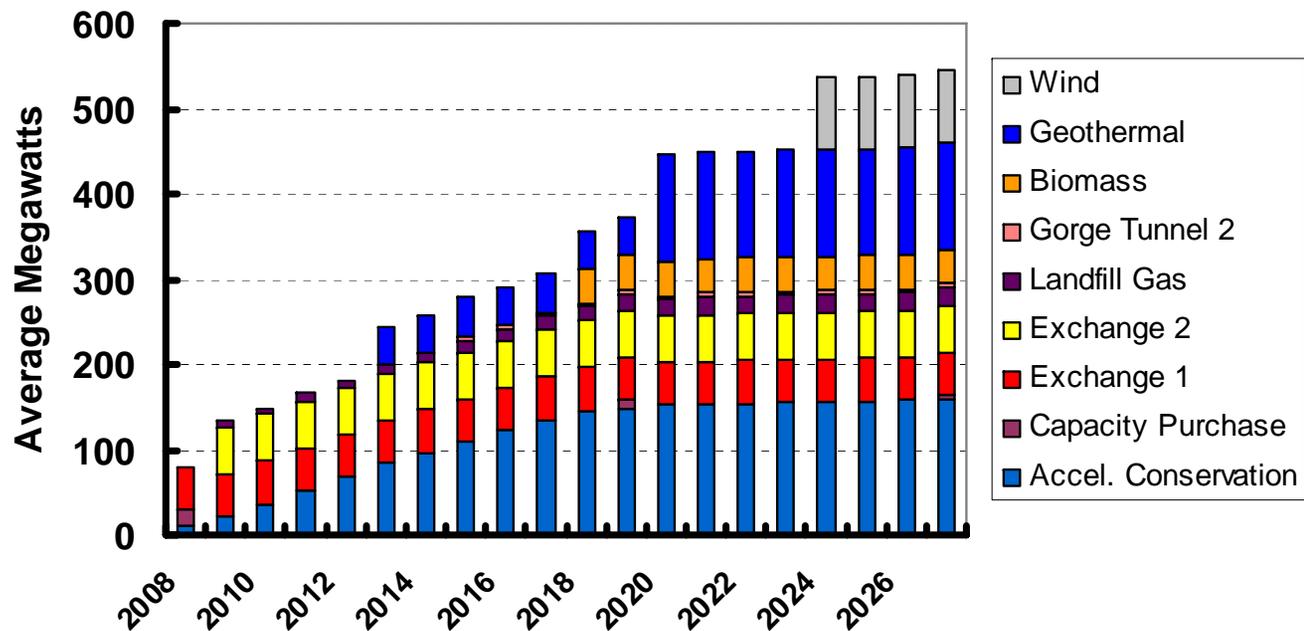
\* Net Power Cost = Generation Costs + Market and Contract Purchases – Market Sales

\*\* Emissions costs are not actually incurred by City Light, but are estimates of the cost of mitigation of all emissions associated with a resource portfolio using control technologies. Does not include market purchases and sales.



# Best Overall Performing Portfolio

**Recommended Portfolio to Meet Winter Resource Needs and Initiative 937**





## Draft 2008 IRP 2-Year Action Plan

- Pursue accelerated conservation aggressively
- Pursue full 2011 BPA contract rights
- Pursue summer for winter exchanges
- Contract for landfill gas resource by Mid-2009
- Evaluate results of distributed generation study and pursue cost-effective opportunities with customers
- Continue to investigate geothermal resources, solar, demand response, and new renewable technologies
- Investigate future capacity versus energy needs as the region grows shorter on capacity
- Participate in climate change research to allow more complete analysis of long-term impacts
- Work to ensure reliable transmission capacity



## Next Steps

- Hold Public Meetings July 10 and July 15
- Brief the Mayor on the Proposed Strategy and Seek Approval
- Brief the City Council Energy and Technology Committee on August 6
- Await the Council's Decision
- Prepare Final IRP documents
- File with CTED by September 1



## Questions?

### **IRP Website Address:**

<http://www.seattle.gov/light/news/issues/irp/>

E-Mail: [SCL.IRP@Seattle.gov](mailto:SCL.IRP@Seattle.gov)

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