



New Energy  
Solutions

# Thurston County, WA

January 22-23, 2010

New Energy Cities Workshop:  
Blueprint for Jobs & Innovation

# Workshop Sponsors



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Workshop made possible through financial contributions from:

- Thurston County Commissioners
- City of Olympia
- City of Tumwater
- City of Lacey
- City of Yelm
- LOTT

TCAT wishes to acknowledge additional support from:

- Sam Garst/Merrill Lynch
- Jensen Kokis Erwin

# Workshop Goals

- Provide information about opportunities for innovation in the rapidly evolving, dynamic new energy world
- Help Thurston County identify strategies that accelerate the transformation of the energy system
- Create a 20-year Roadmap for Thurston County to develop a clean, efficient energy system
- Create an Action Plan that outlines the initial phases for implementing that Roadmap
- Build momentum, enthusiasm, knowledge and relationships among participants to carry forward into implementation of a clean energy strategy

# Workshop Outcomes

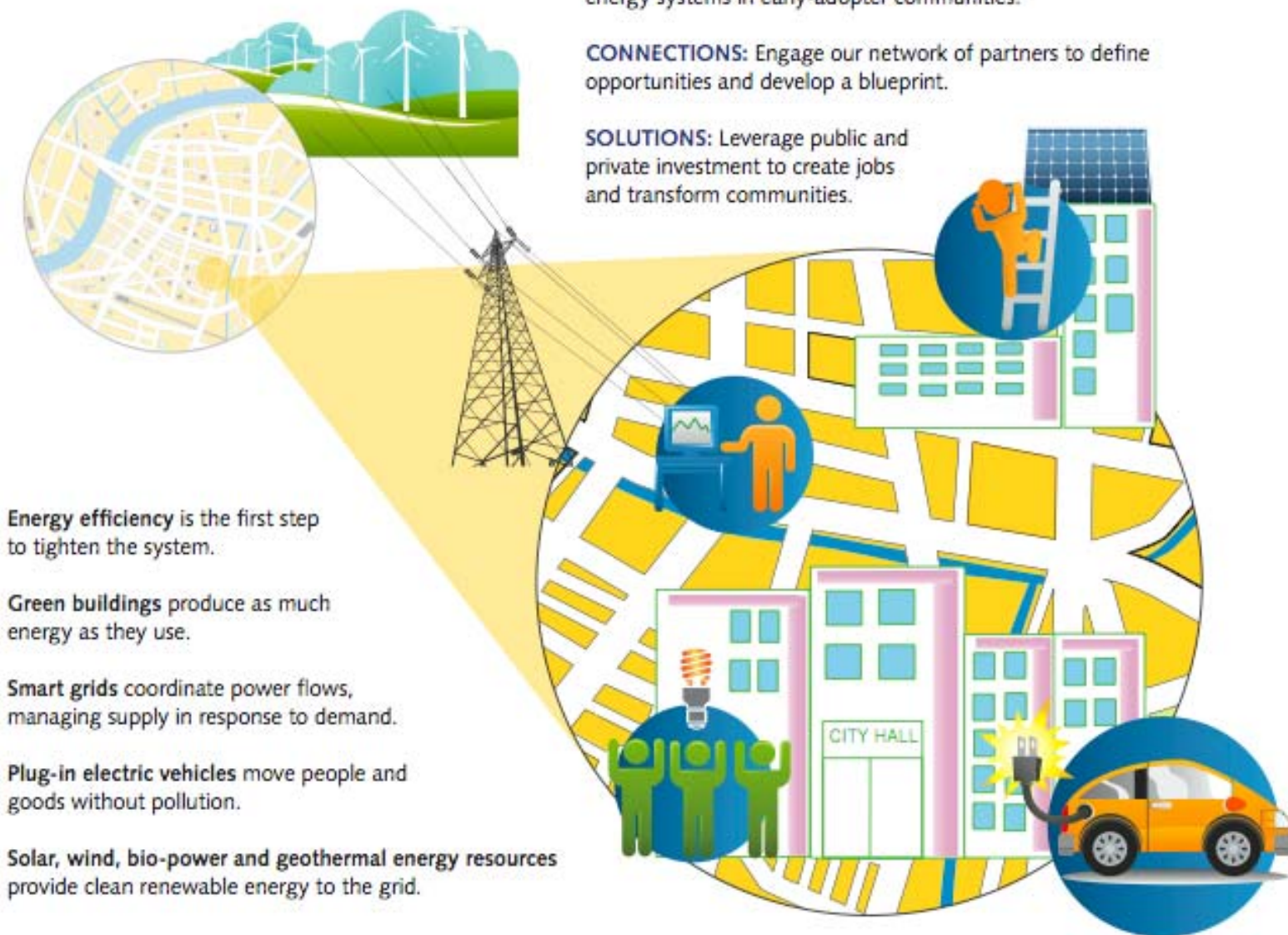
- Participants create a Road Map that charts Thurston County's new energy future
- Produce an Action Plan to guide next steps (three years) for Thurston County in implementing programs that will comprise its new energy system

# New Energy Solutions: a blueprint for jobs and innovation

**VISION:** Accelerate the transition to clean, renewable and intelligent energy systems in early-adopter communities.

**CONNECTIONS:** Engage our network of partners to define opportunities and develop a blueprint.

**SOLUTIONS:** Leverage public and private investment to create jobs and transform communities.




**Energy efficiency** is the first step to tighten the system.

**Green buildings** produce as much energy as they use.

**Smart grids** coordinate power flows, managing supply in response to demand.


**Plug-in electric vehicles** move people and goods without pollution.

**Solar, wind, bio-power and geothermal energy** resources provide clean renewable energy to the grid.

A photograph of a Wal-Mart store sign and an American flag. The sign is blue with white text and a red border. The American flag is flying on a tall pole to the right of the sign. The background is a clear blue sky.

“Our company will run on 100% renewable fuels, create zero waste, and sell an increasing number of sustainable products.”

Wal-Mart CEO H. Lee Scott

An aerial photograph of a city, likely Seattle, showing a dense urban area with numerous high-rise buildings and green spaces. A river is visible in the lower-left corner, with a bridge crossing it. The text is overlaid on a semi-transparent grey box in the center of the image.

“The buildings we are developing will be net producers of power within five years.”

- Dennis Wilde (Gerding Edlen Development)

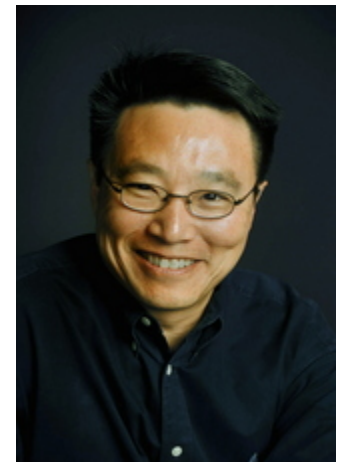
# New Energy Solutions and Prosperity Can (and Must) Go Hand in Hand

*We see clean energy technology, given the right policy signals, as a ripe opportunity for increasing investment and job creation in our region... Clean energy can become as big and valuable to the Northwest as semiconductors, electronic and computer equipment, software and communications technology.*

Nancy Floyd, Nth Power

Stephen Saltzman, Intel Capital

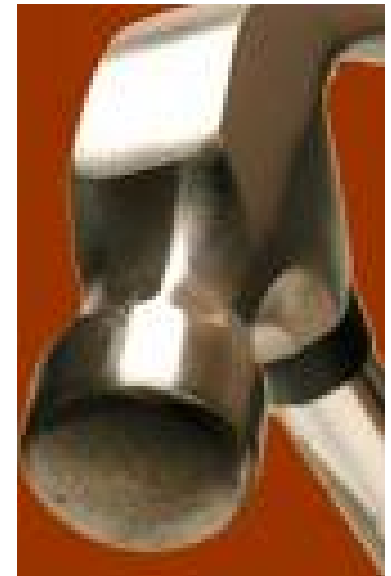
David Chen, OVP Venture Partners



# Clean Energy = Real Productivity

Clean Tech is about:

- “Building Things Right” – it’s exportable
- Excellence in clean, efficient energy, building, and transportation
- Creating lasting 21<sup>st</sup> century businesses and sustainable “green jobs”



# Our Challenge

- To re-invent the energy system in a generation
- To revolutionize how we produce, distribute, and use energy



# Benefits of a Clean Energy Economy



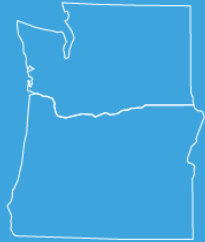
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- Buffer families, farms, businesses from volatile fossil fuel energy costs
- Bring new economic development (billions in new capital investment) to rural communities
- Create new, high-wage jobs
- Contribute to America's energy independence
- Save water and clean up the air



WEDNESDAY, NOVEMBER 14, 6-8 PM  
5:30 reception with food and music  
Lake Merritt United Methodist Church  
1330 Lakeshore Ave., Oakland

OCTOBER 2008

**CARBON-FREE PROSPERITY****2025***How the Northwest Can Create Green Jobs, Deliver Energy Security, And Thrive in the Global Clean-Tech Marketplace*New Energy  
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GREENTECH  
REPORT™ 2009****中国绿色科技****China Greentech Initiative**

Uncover, Create and Promote Greentech Opportunities in China

\$1 Trillion dollar market  
in China

Two \$1 Billion funds  
announced in U.S.

\$3.4 Billion in U.S.  
funding for Smart Grid  
projects

# Our Energy Future

Smart, super-efficient green buildings

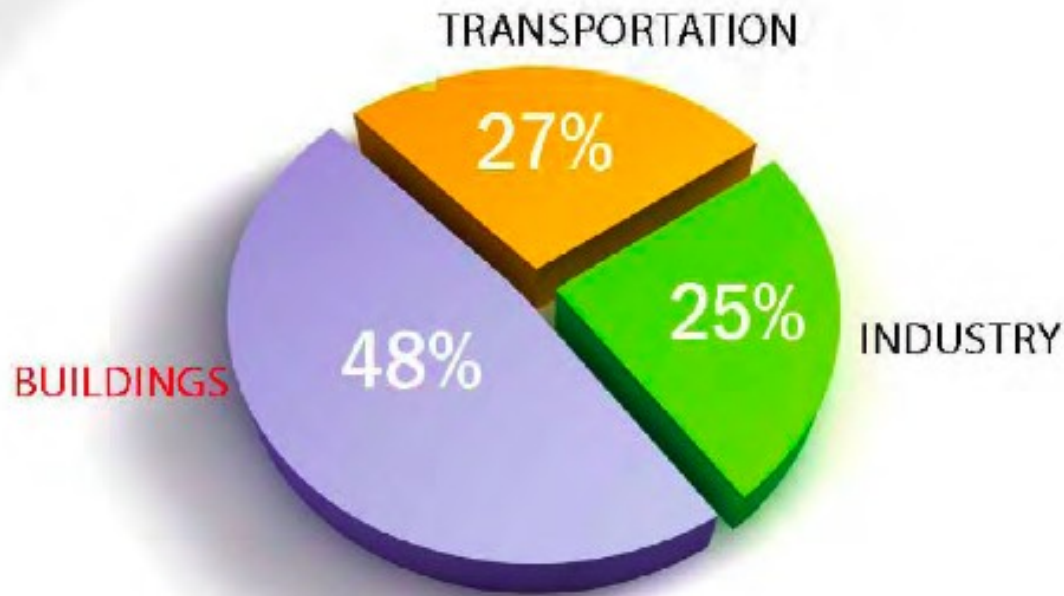
- ✓ ...powered by clean renewable energy
- ✓ ...linked by a smart power grid
- ✓ ...that powers plug-in vehicles



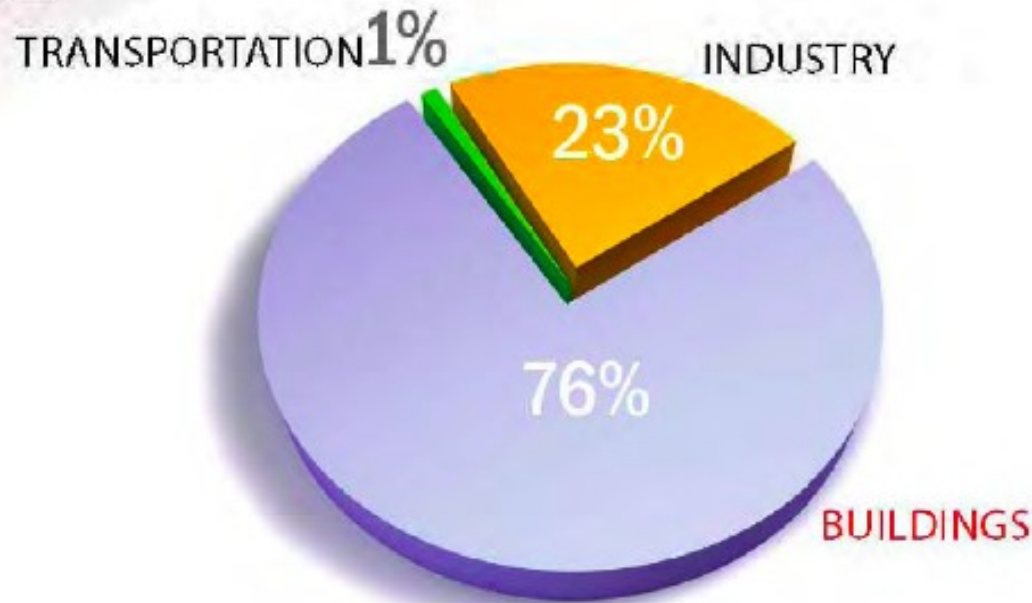
How long will it take to get there?



# US ENERGY USE



# US ELECTRICITY USE



# PSE Thurston County Residential Customers



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## Electric Customer Counts

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Thurston

103,059

## Gas Customer Counts

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Thurston

42,125

# PSE Thurston County Commercial & Industrial Customers



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## Electric Customer Counts

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Thurston	13,650
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## Gas Customer Counts

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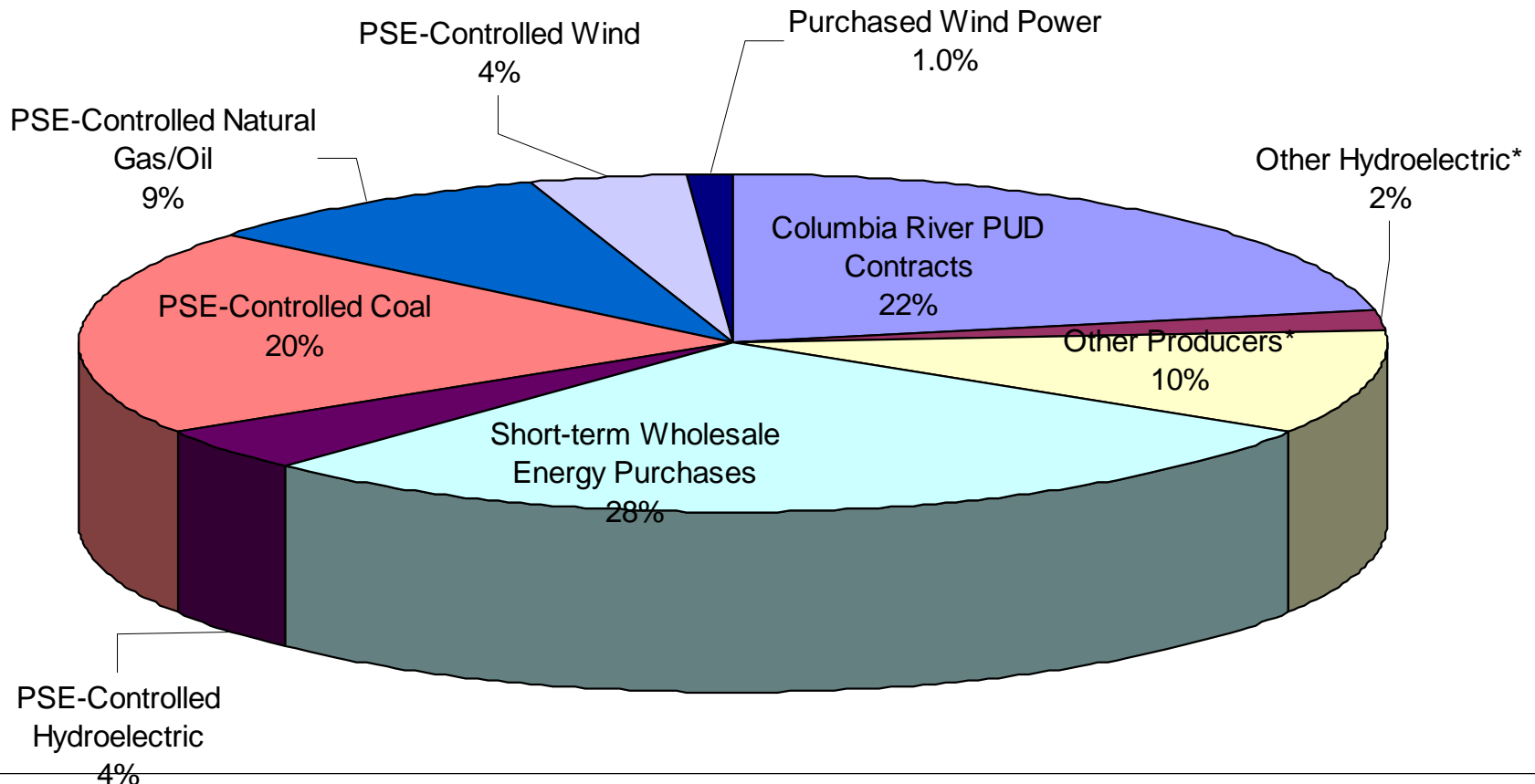
Thurston	3,550
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# PSE Electricity Production 2008



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### Electric Production Mix 2008

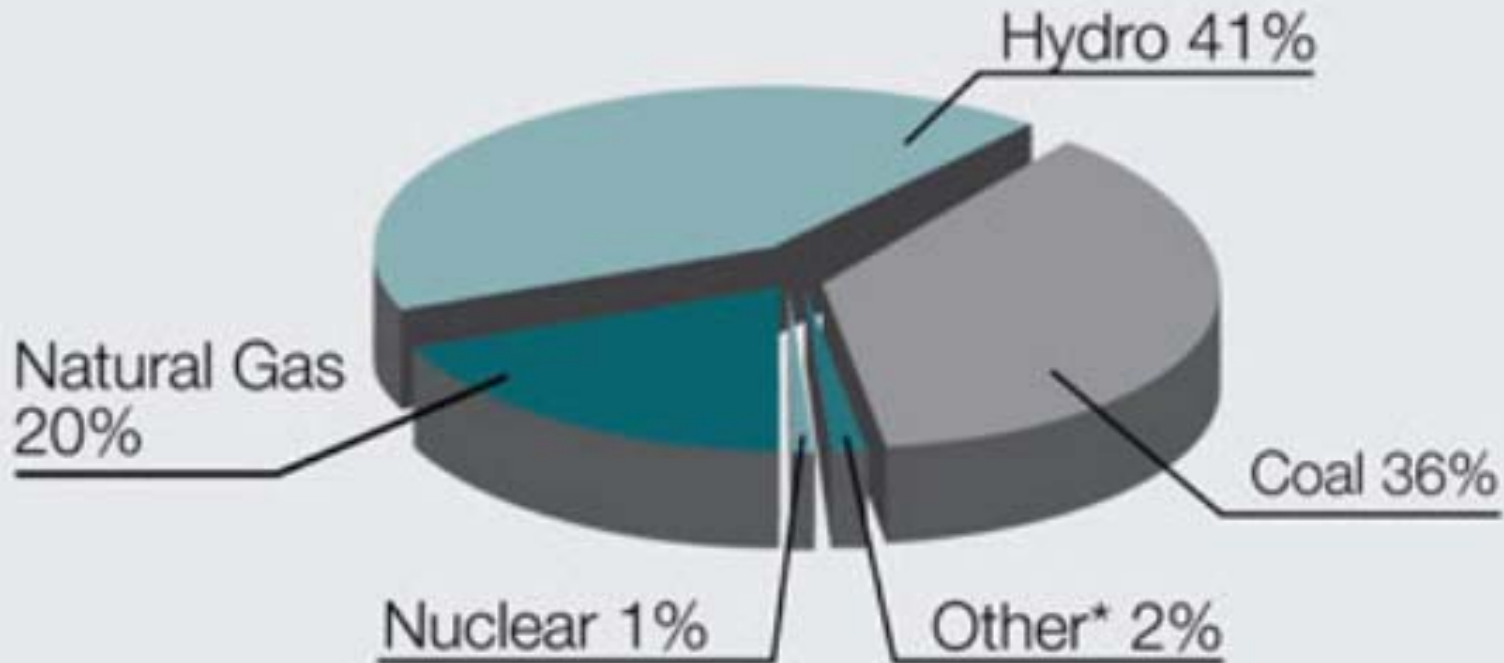


# Energy Sources



**PUGET SOUND ENERGY**

*The Energy To Do Great Things*



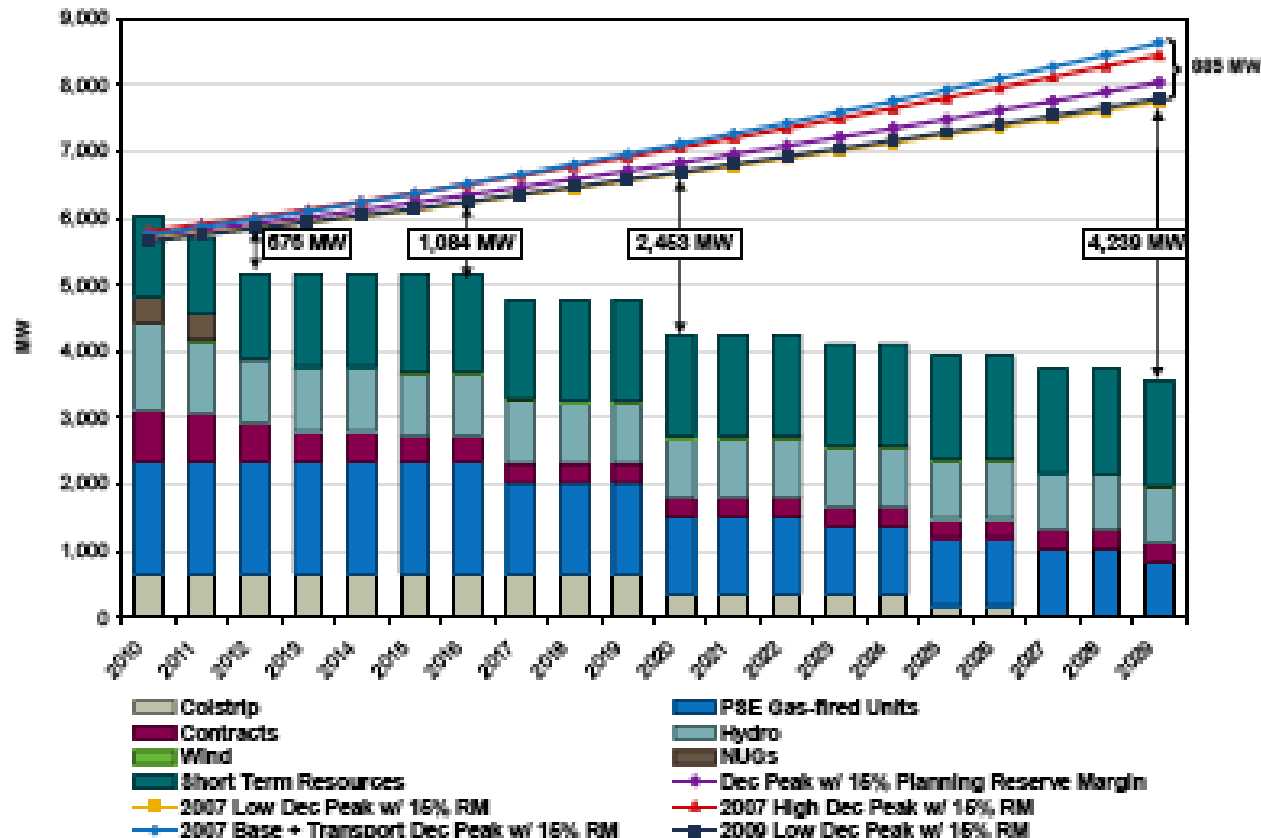
\* Biomass, landfill gas, petroleum, waste and wind.

Source of data: As reported by PSE to, and published by, the State of Washington Office of Trade and Economic Development, Energy Policy Section, 2008.

# Future Scenarios - Electricity



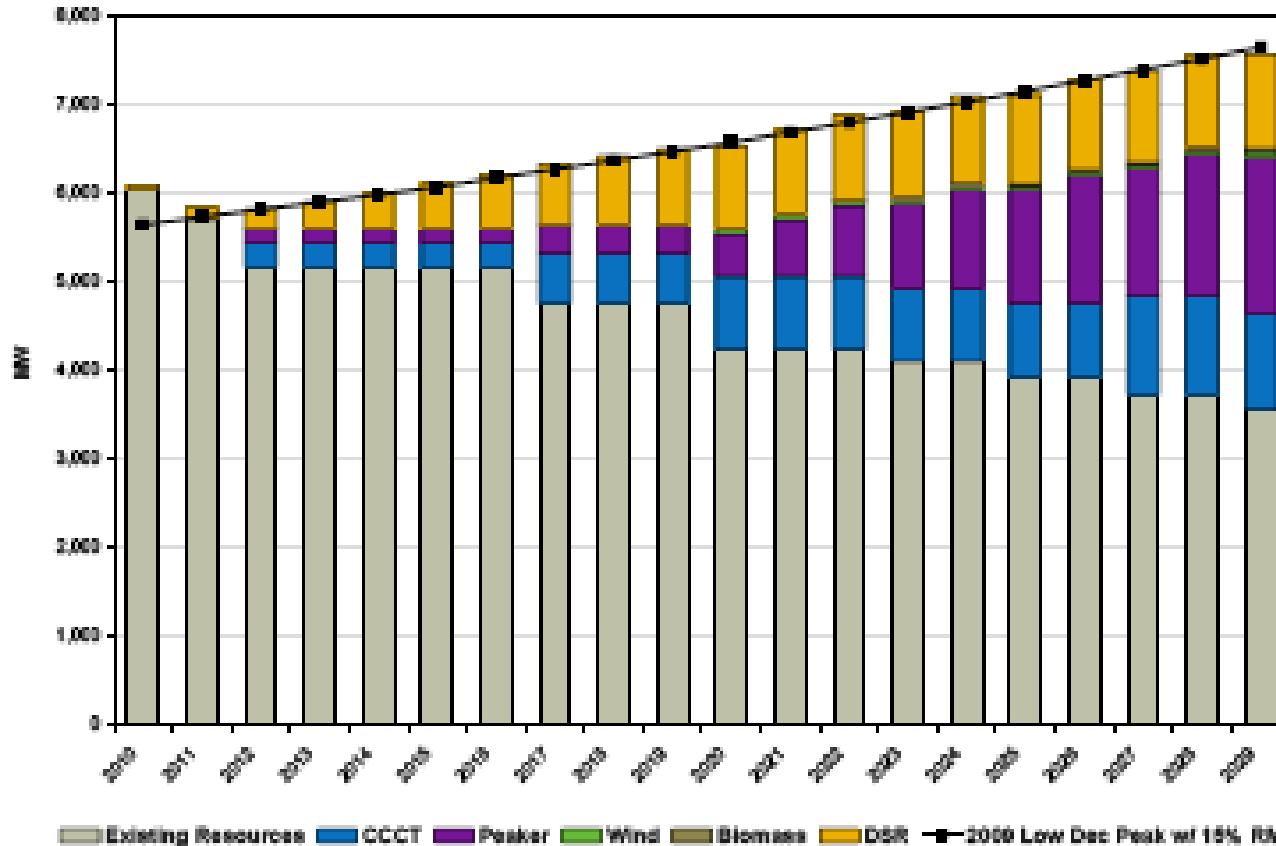
**Electric Peak Capacity Resource Need:  
Comparison of Projected Loads with Existing Resources**



# Future Scenarios - Electricity



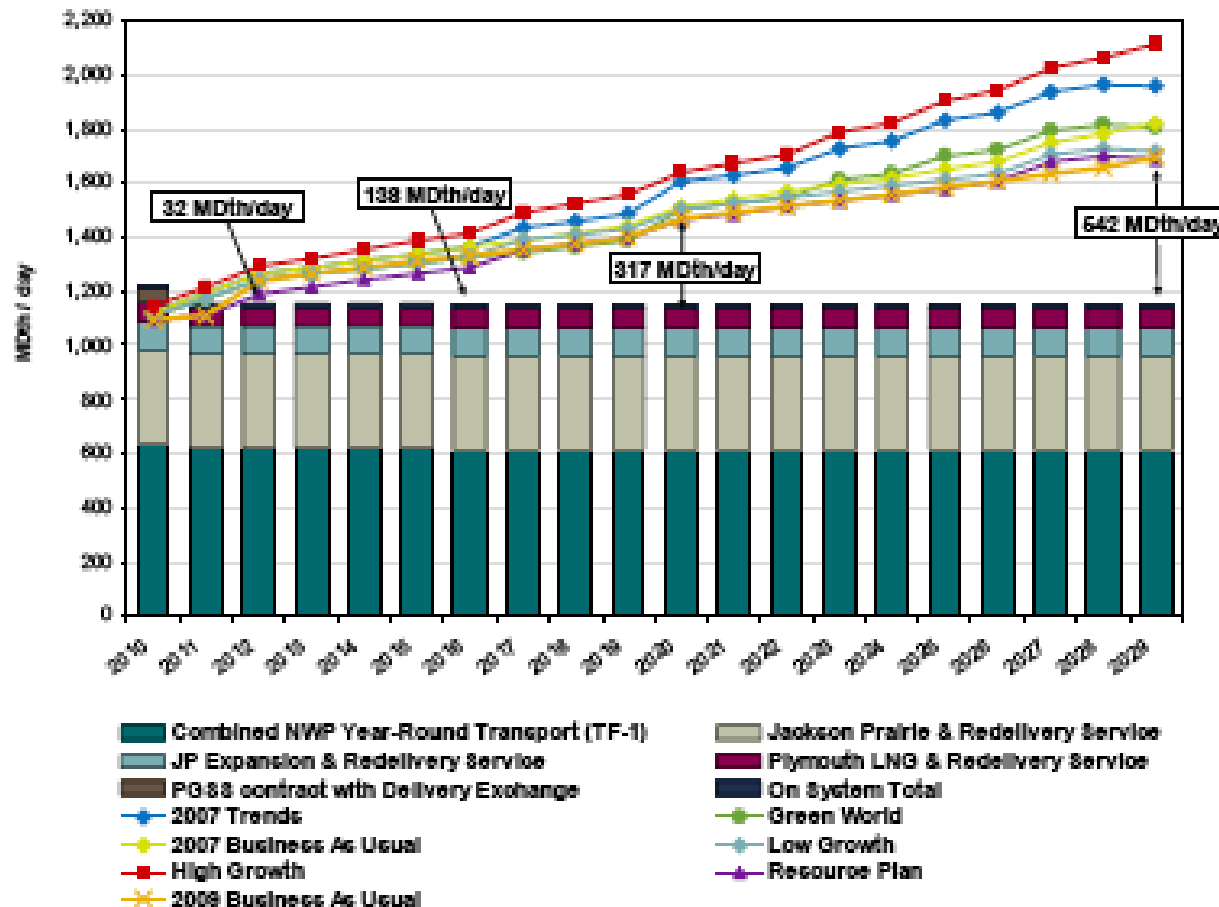
Peak Capacity Electric Resource Plan, 2009 IRP  
Cumulative Resource Additions (MW)



# Future Scenarios - Natural Gas



**Total Gas Resource Need (Gas Sales and Gas for Generation)  
Projected Peak Demand Compared to Existing Resources**



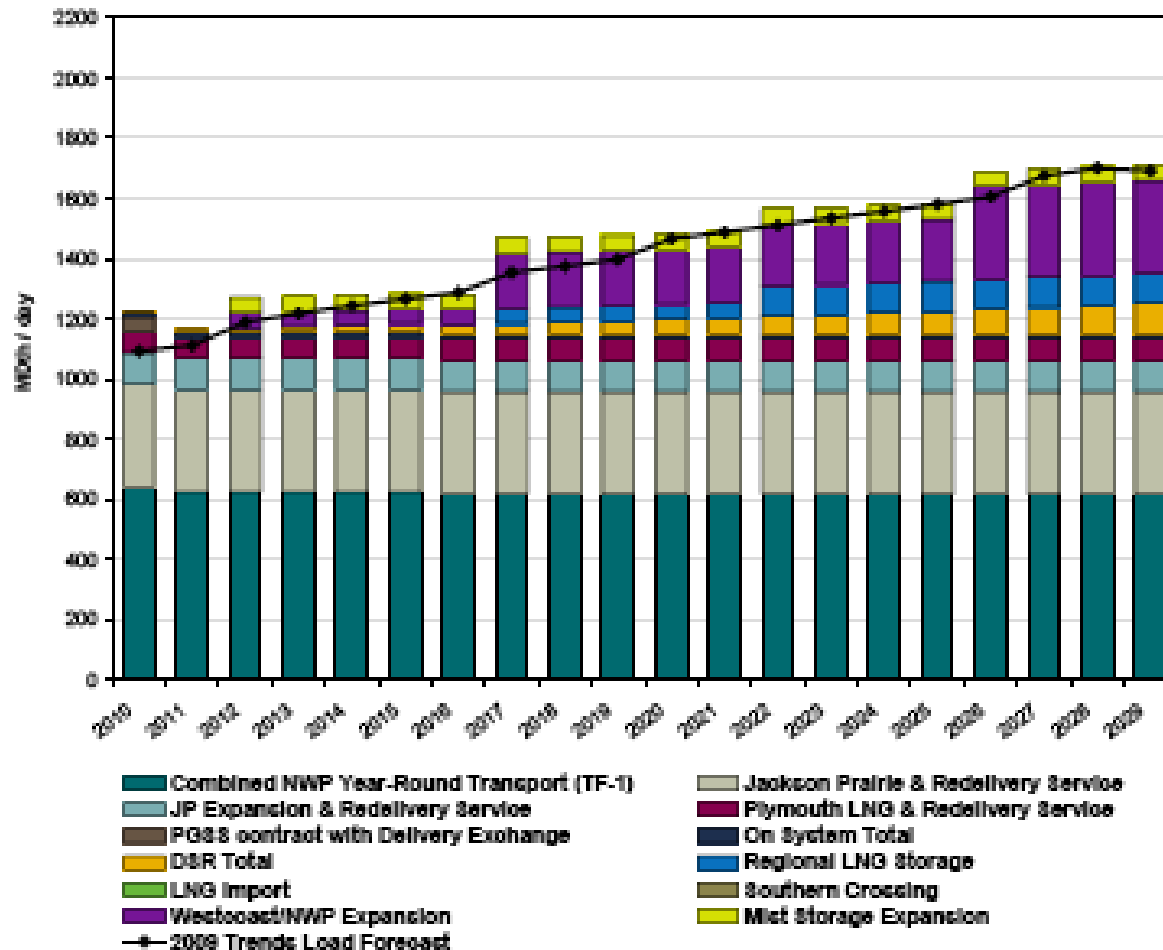
# Future Scenarios - Natural Gas



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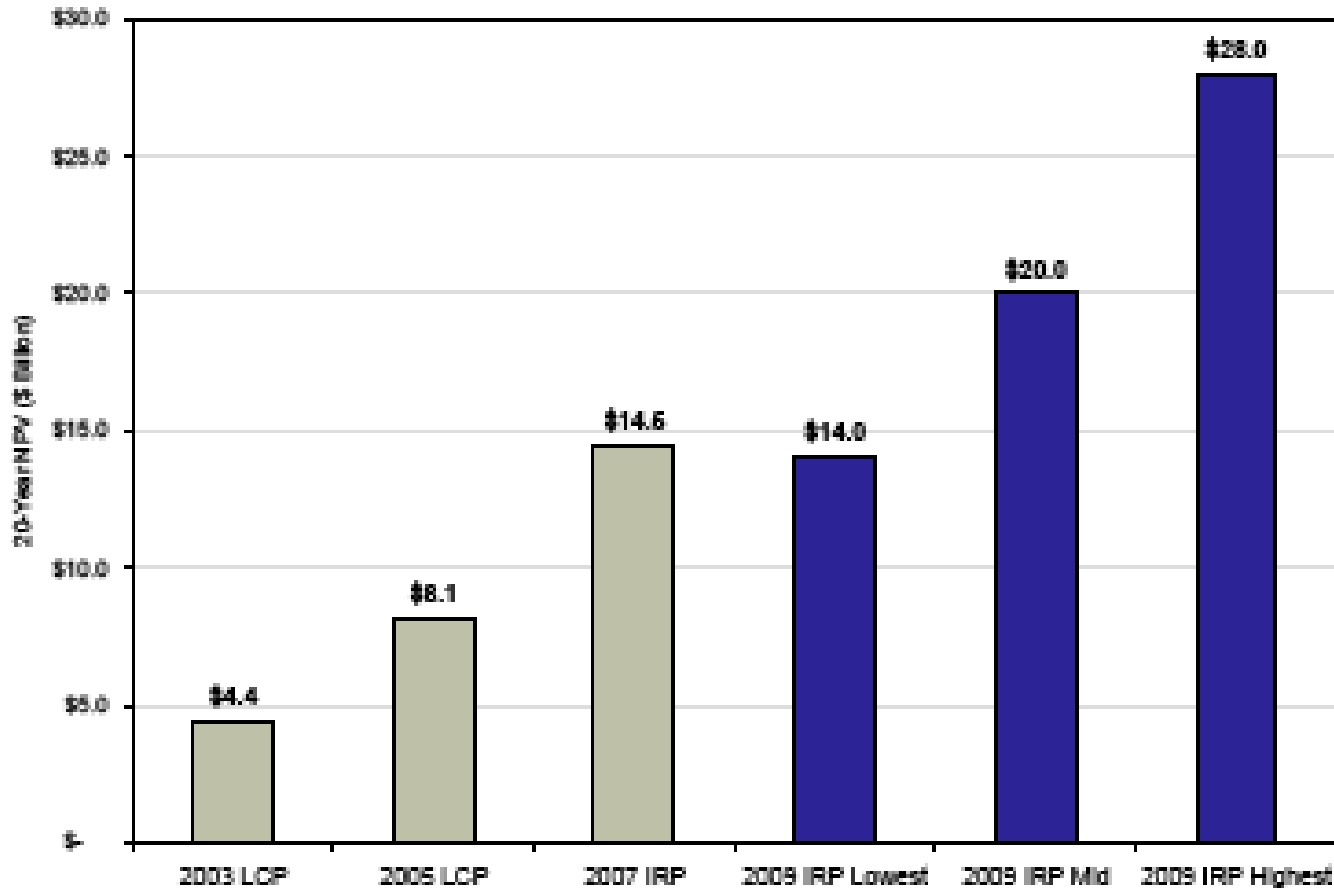
Combined Sales and Generation Fuel Resource Plan



# Energy Prices



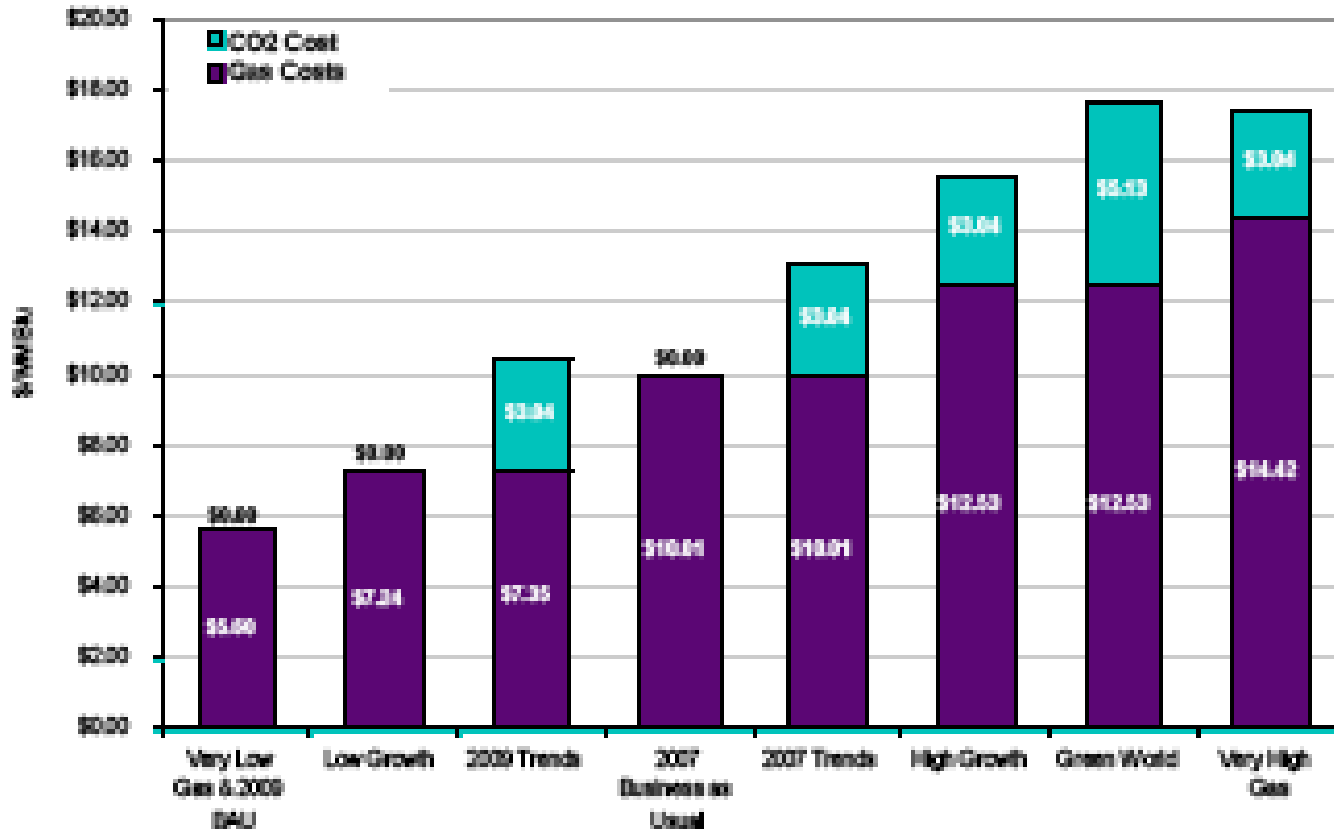
Rising and Uncertain Incremental Power Portfolio Costs



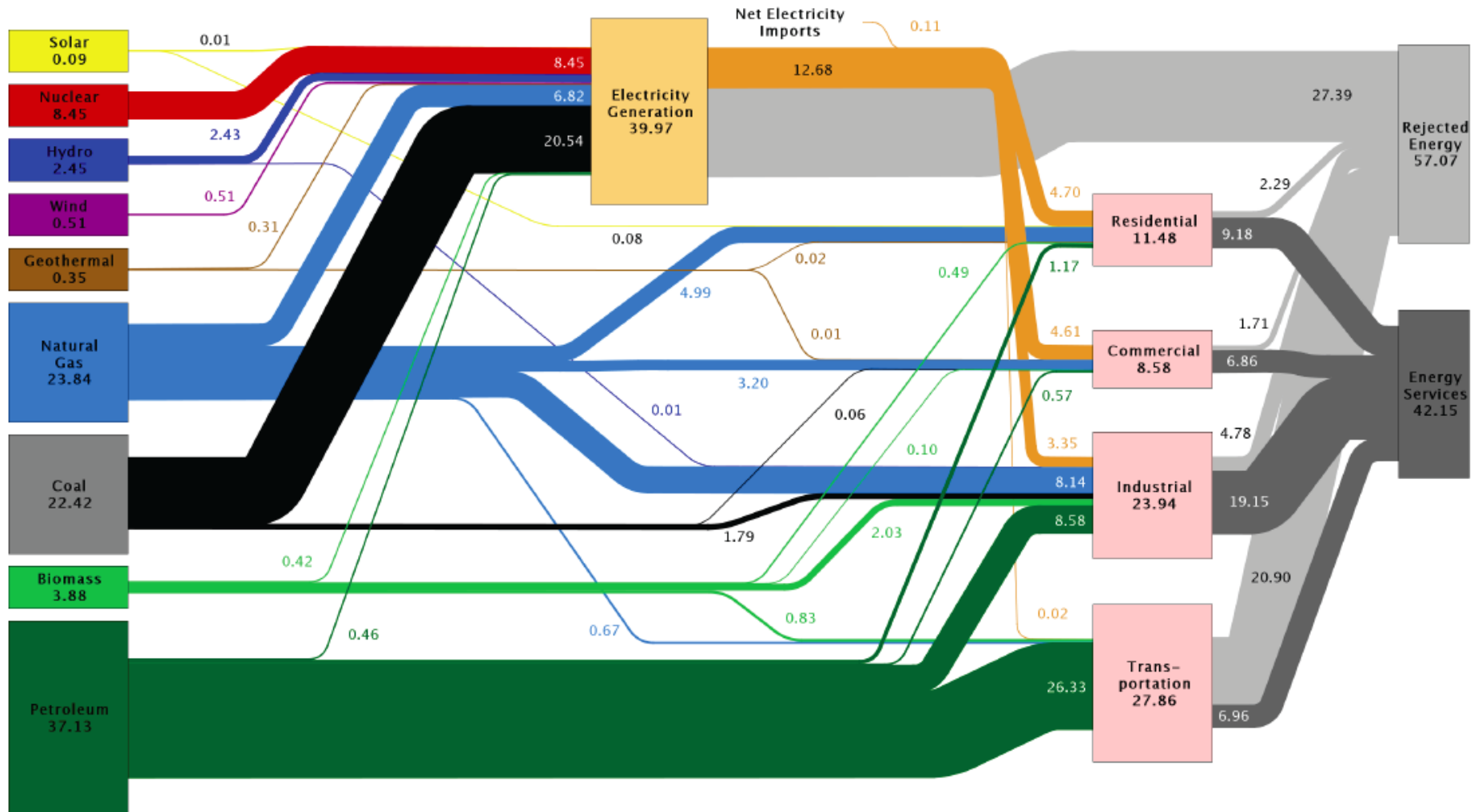
# Energy Prices



Range of Levelized Natural Gas Prices and CO<sub>2</sub> Costs Modeled in the 2009 IRP



# Estimated U.S. Energy Use in 2008: ~99.2 Quads



Source: LLNL 2009. Data is based on DOE/EIA-0384(2008), June 2009. If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports flows for non-thermal resources (i.e., hydro, wind and solar) in BTU-equivalent values by assuming a typical fossil fuel plant "heat rate." The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 80% for the residential, commercial and industrial sectors, and as 25% for the transportation sector. Totals may not equal sum of components due to independent rounding. LLNL-MI-410527

# Pioneer Communities

- Leadership for local prosperity & resilience
- Unique & powerful role to be played by local governments
- Best way to accelerate action is investing in true innovation among select early adopters
- Collaboration among leaders will improve all prospects for success

# A Look at Success

Combination of high performance systems in efficient buildings, served by clean technologies, all delivered at neighborhood district scale

- Financed as a whole system
- End users see value of using less, using better
- Linked to region's economy

Emphasis on how to transform energy system, holistically & in a structured framework and timeline

Includes integration of mobility options with infrastructure

# What Would 80% GHG Reductions Look Like?

## Efficient Buildings

- 30% or more beyond code
- No cooling service
- Waste heat recovery

## Efficient Infrastructure

- Load diversification = lower peak
- More efficient equipment
- 20% improvement



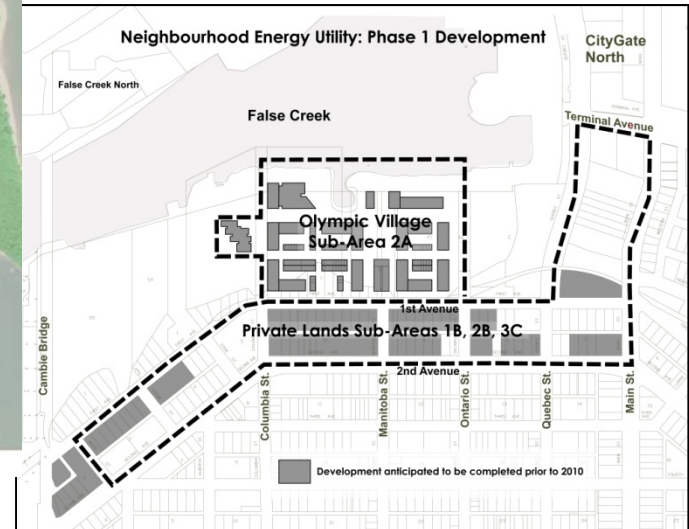
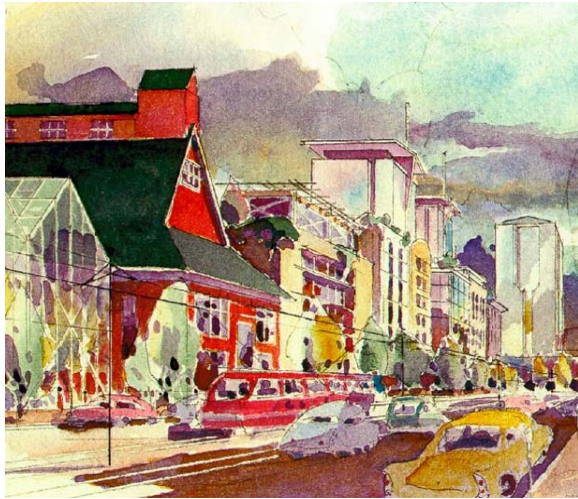
## Clean, renewable energy

- Sewer heat recovery = base load
- Solar thermal supplement
- Natural gas peak/back-up; potential to fuel switch

## Utility service model

- Neighborhood scale focus
- Business planning process
- Positioned to engage new system development options

# New Energy Solutions



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