

Energy Efficiency at PSE

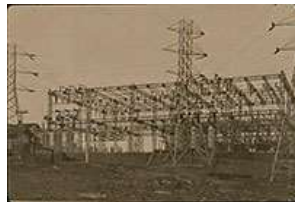
James Marker
Program Manager
Residential New Construction



Regional Energy Efficiency History

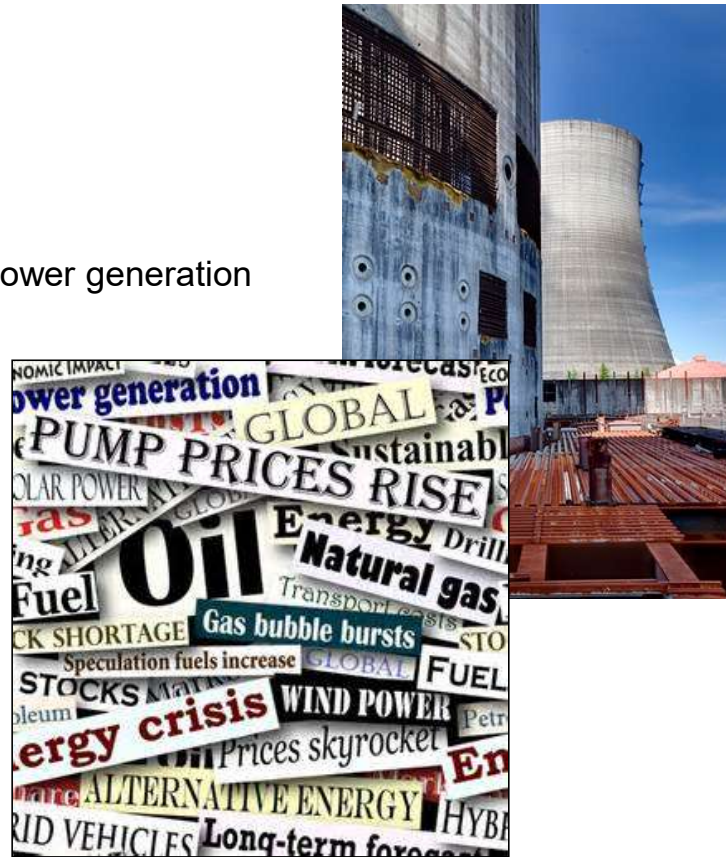
Industry Insight

- Strong regional backing, collaboration and support for over 3 decades
- Cheap hydro electric power attracted industry to the NW
- 1970-1980 Decisions about power supply



Energy Efficiency & the NW

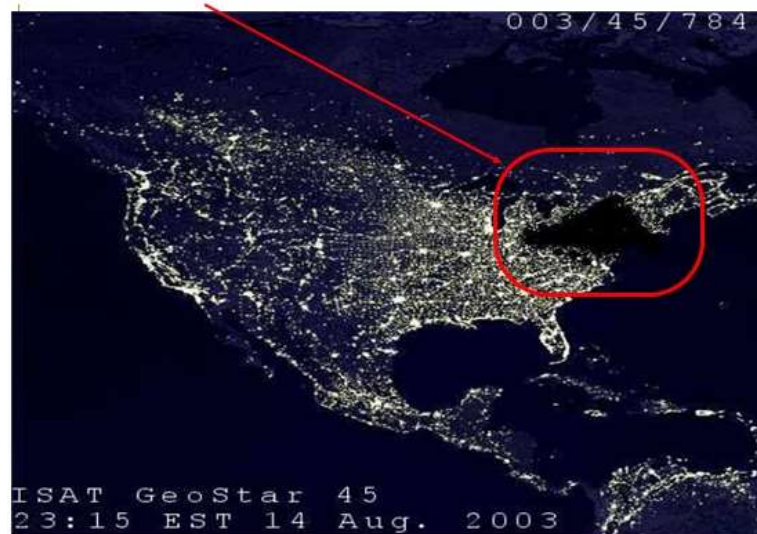
- Regional commitments
- Energy Shortages
 - WPPSS or Whoops!
- NW Power Act 1980
 - Levelized costs associated with power generation
 - Develop cost effective generation
 - 1st PSE program 1978
- EE Program Development
- De-regulation
- Stipulation agreement
 - 2002 agreement with WUTC



Responsibility to our Customers

- August 14th 2003
- “PSE’s job is to keep the lights on”
- Provide safe environment and infrastructure for our customers
- “If it is to be it’s up to me (us)”

2003 North East Blackout: OOPS!!



Supply

- Power Needs (20 year projection)
 - 1200-1900 new power plants nationally to meet demand
- Grid enhancements and infrastructure upgrades needed
- Increasing Energy Costs
- Global Energy Demand
- Pollution Issues
- Infrastructure
 - Cheaper to save it than **buy it, build it or move it** (transmission)



Emissions

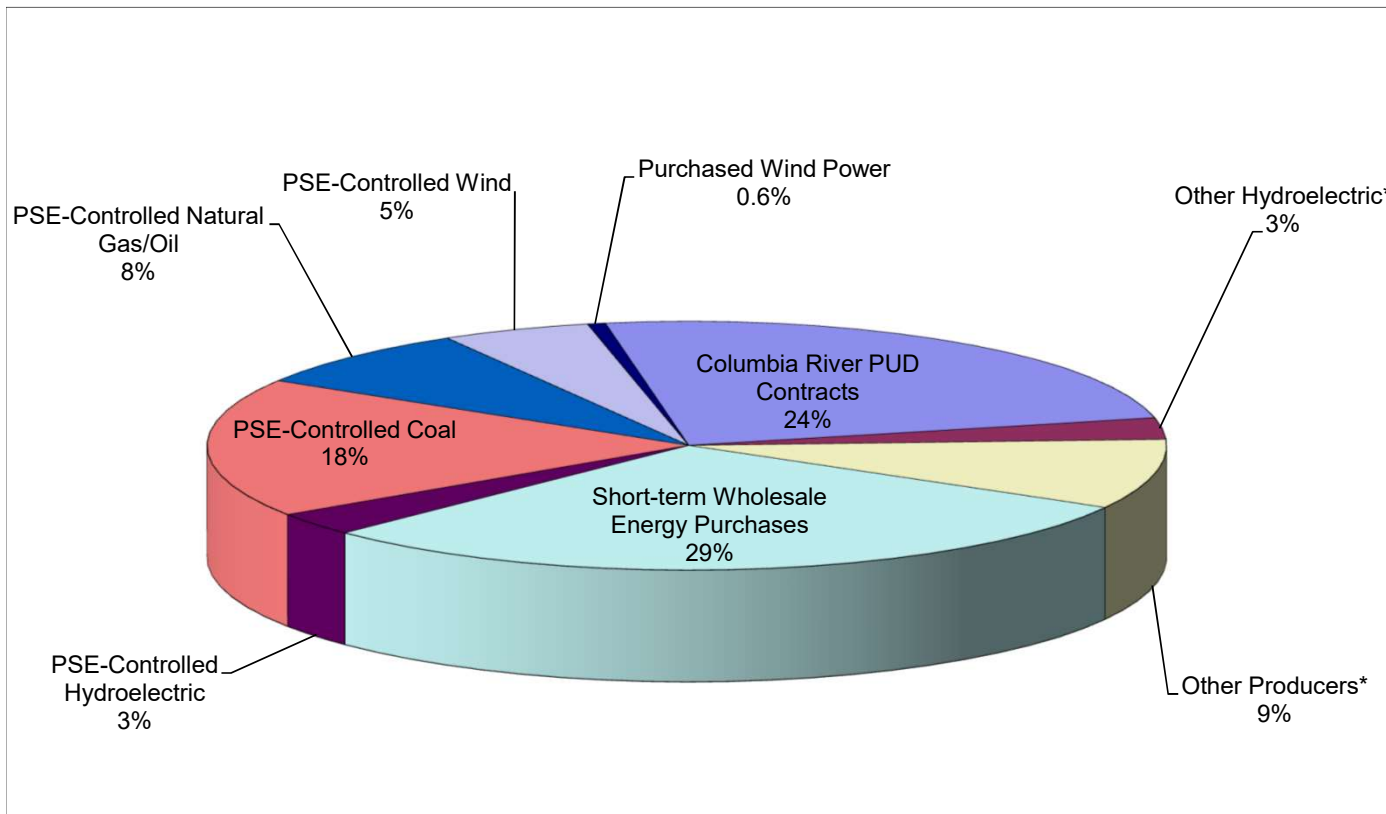


Energy Costs

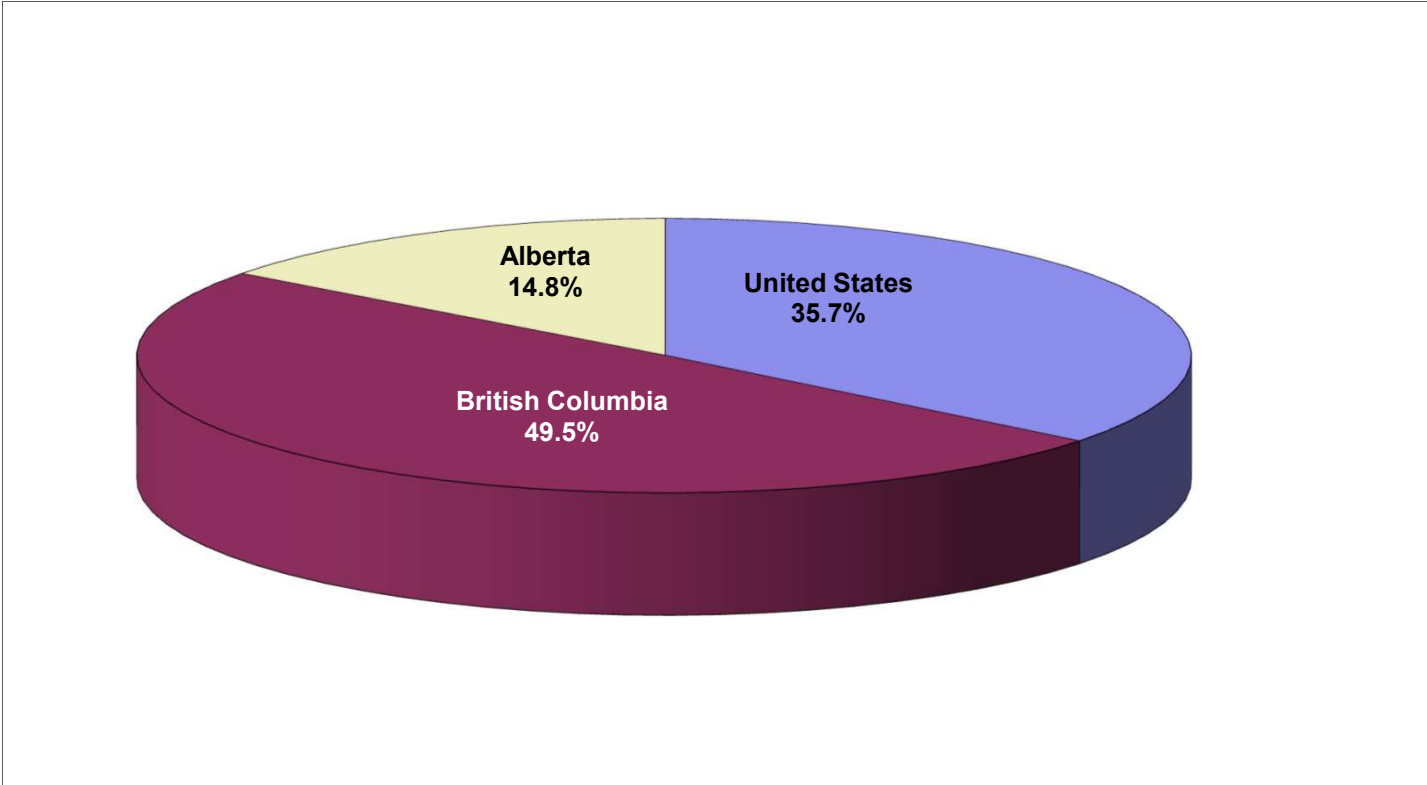


Infrastructure

Electric Power Mix



Origins of Natural Gas Supply



Planning for the Future

- Planning models
 - Urban planning similar to power planning
 - Managing the needs of a large diverse groups of people



Good or poor planning?

What should the future of our programs look like?

Power Planning



CCGT (Combined Cycle Gas Turbine)

249 MW capacity

- Cost to build it
- Fixed & variable O&M costs
- Fuel costs
- Economic life of the facility
- Cost to get product to market (line loss)
- Time value of money
- Weighted risks



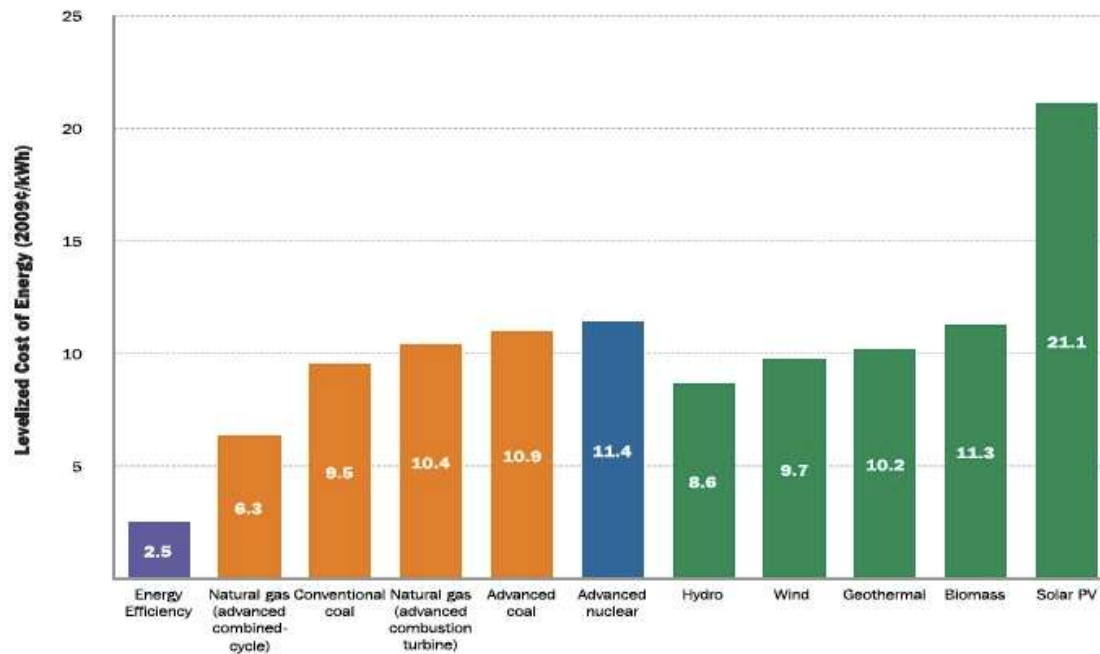
Energy Efficiency

Value of a kWh save based on

- Measure cost vs. baseline (incremental)
- Administrative costs
- Measure savings
- Measure life
- Risk (market potential)

How PSE looks at Energy Efficiency

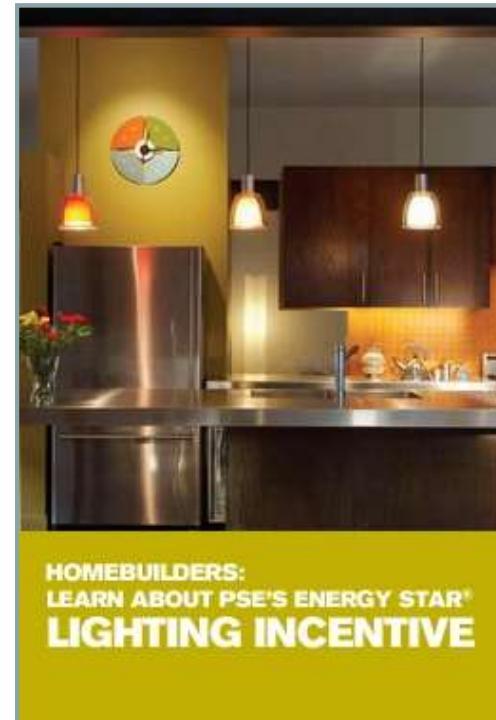
Figure 2: Cost of Energy Efficiency vs. Levelized Cost of New Generation (2016)



Source: EIA Annual Energy Outlook 2011 and ACEEE

PSE Drivers for Energy Efficiency

- Socially responsible
- Helps customers manage energy costs
- Balanced resource planning
- Improves system reliability
- Least cost alternative to power purchases
- Compliance - “It’s the law”



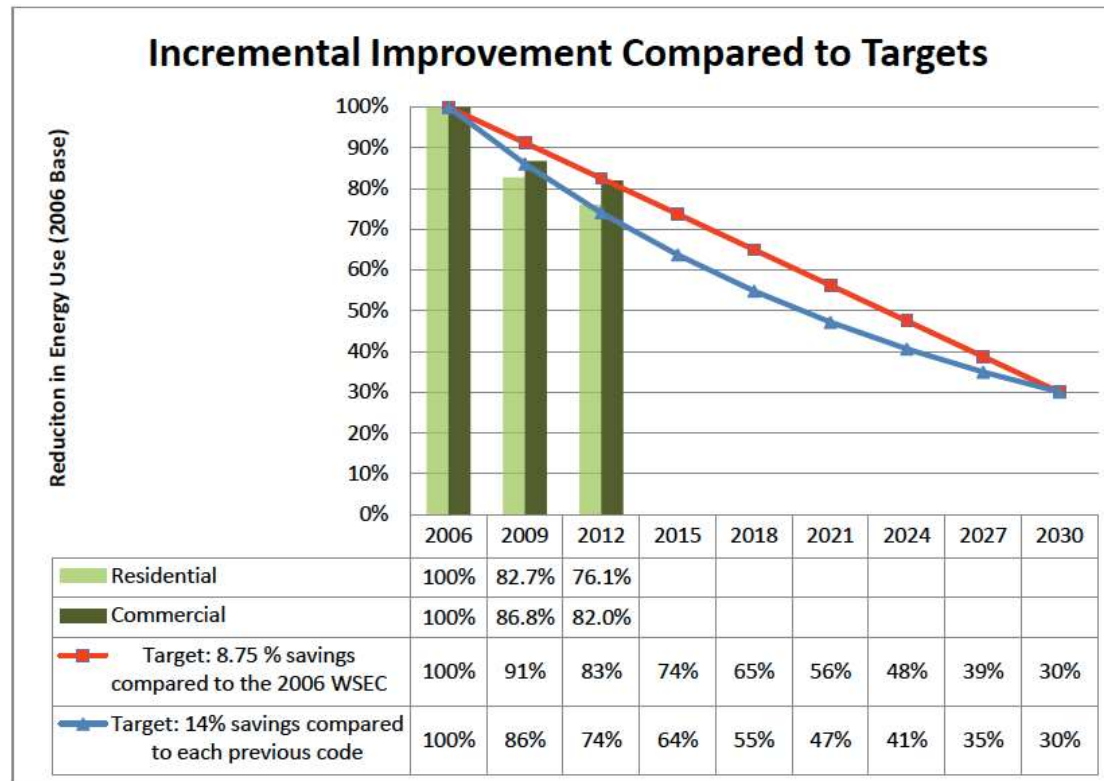
Goals



Washington State Energy Efficiency Target

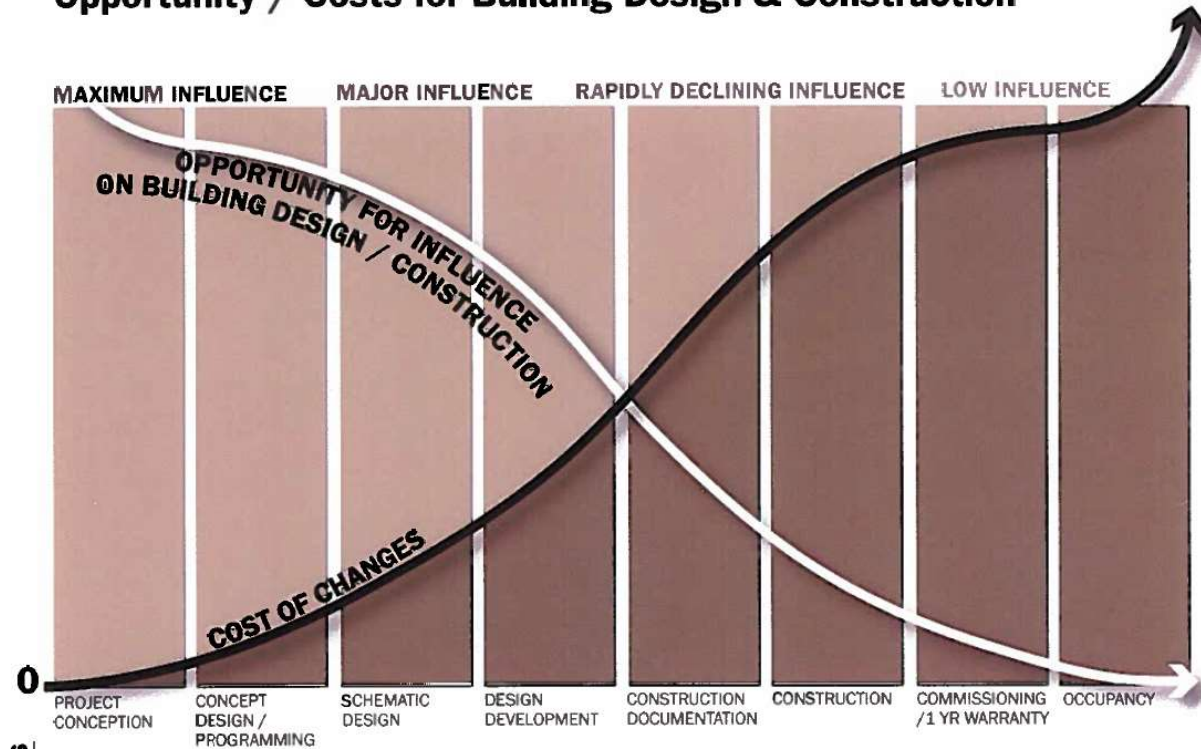
- **2009 – RCW-127-160 Energy Code Act Amended**
 - Requires **70%** reduction in residential and commercial building energy efficiency by 2031
 - 2006 WSEC is the baseline-roughly equivalent to ASHRAE 90.1-2007


Are We Meeting Targets?



New Construction Influence

Opportunity / Costs for Building Design & Construction





Prescriptive

- Incentive per unit
- Used for: Lighting, HVAC, controls



Code

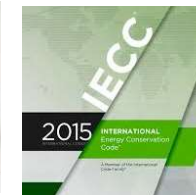
- Incentive per kWh above code
- Used for: All measures, custom projects



Whole Building

- Incentive per kWh
- Used for: complex, custom projects with systems integration
- Requires model

Build your new business using energy-efficient systems for less



Grant estimation approach	Grant applies to...	Grant value	Grant maximum
Whole-building custom approach	Equipment and installation	\$0.30 per annual kWh savings and \$5.00 per annual therm savings compared to code-baseline or standard practice system	No maximum
Lighting power density reduction	All lighting except residential in-unit	\$0.20 per annual kWh savings compared to code-baseline from the WSEC Lighting Compliance worksheet	No maximum
Prescriptive incentives/rebates	Commercial kitchen, laundry and HVAC	Standard PSE incentives available for various systems of business sites in construction	Contact your PSE representative for details
	For multifamily Clothes washer, ENERGY STAR® or better		\$100 each
	For multifamily Showerhead, in-unit: 1.5 GPM max		\$25 each
	For multifamily Showerhead, in-unit: 1.75 GPM max		\$15 each
Custom approach	Energy-efficient equipment that saves energy above WSEC	Up to \$0.30 per annual kWh and \$5.00 per annual therm saved compared to code-baseline or standard practice system, subject to PSE cost-effectiveness standards. Examples include condensing boilers, exterior lighting, heat recovery, demand control ventilation, etc.	Up to 100 percent of the cost to build beyond current energy code or standard practice
Post-occupancy building commissioning	Post-occupancy commissioning fees only	\$0.35/sq. ft. for third-party, post-occupancy building commissioning per current energy code that are served by all of PSE services. For PSE electric only customers, the incentive is \$0.25/sq. ft. For PSE gas only customers, the incentive is \$0.15/sq. ft.	Up to 100 percent of commissioning agent's post-occupancy fees