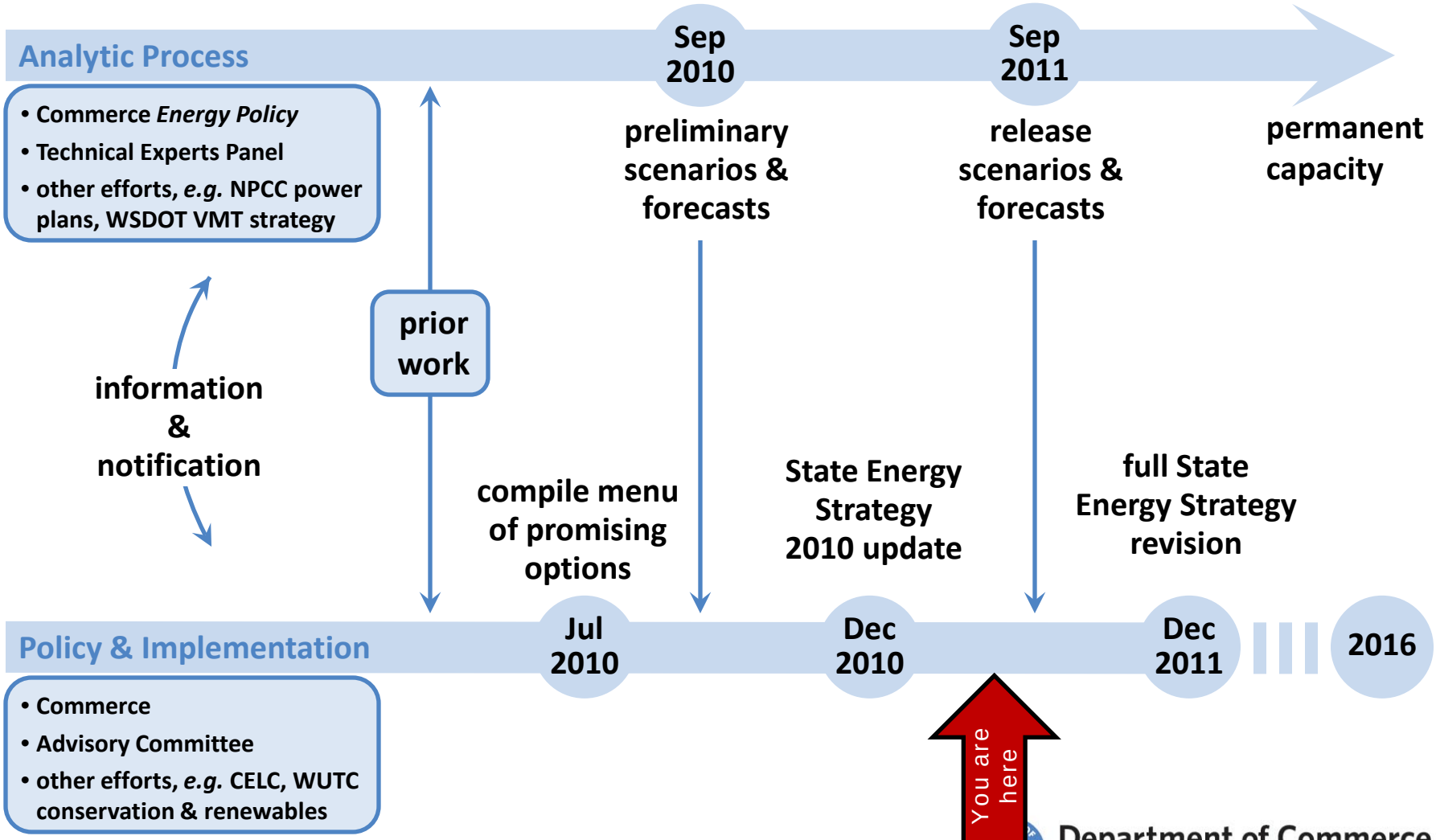
washington
STATE ENERGY STRATEGY
Leadership for a Clean and Efficient Energy Future

The Washington State Energy Strategy

May 17, 2011
Washington State Transportation Commission
Olympia, WA

Washington State Energy Strategy Process



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2010 Update vs. 2011 Full Revision

2010 Update is:

- a survey of prior work;
- recommendations of timely policy initiatives that prior work justifies; and
- interim results from the full analysis.

2011 Full Revision is:

- final results from the full analysis; and
- recommendations of near-term and long-term policy initiatives that the full analysis justifies.

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Legislated Committees

Advisory Committee (26)

Sharon Nelson	NCEP / Itron
Rogers Weed	Department of Commerce

Industrial Customers

Consumer Advocates

Labor

State Elected Officials

Tribal Interests

Regional Planning Agencies

Local Governments

Utilities & Energy Companies

Renewables Developers

Environmental Advocates

Technical Experts Panel (11)

Northwest Power and Conservation Council

Pacific Northwest National Laboratory

Puget Sound Regional Council

University of Washington

Washington State Department of Commerce

Washington State Office of Financial Management

Washington State University

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Three Legislated Goals

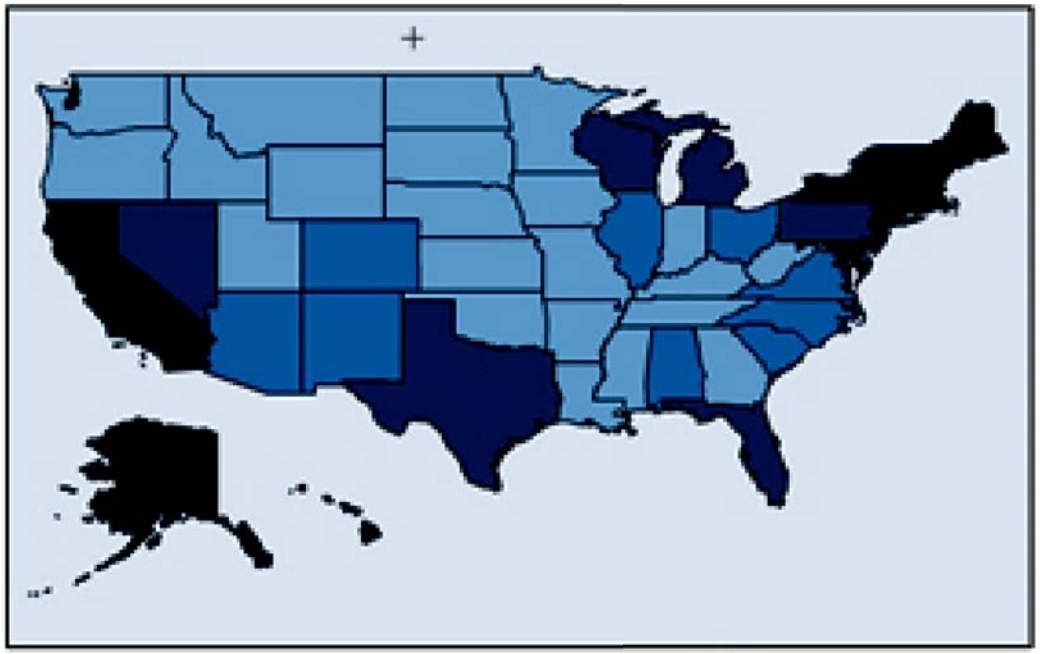
1. Maintain **competitive energy prices** that are fair and reasonable for consumers and businesses and support our state's continued economic success

2. Increase competitiveness by fostering a **clean energy economy and jobs** through business and workforce development

3. Meet obligations to **reduce greenhouse gas emissions**

1. Competitive Energy Prices

State Ranking 12. Electricity Residential Prices, February 2010
(cents/kWh)



Map Instructions: For statistical information for a given State, hover over the State. For full information about the State, click to zoom in and then click the when it appears. To zoom out, right-click and select "Zoom Out"

Electricity Residential Prices Data Source

Legend (cents/kWh)

- > 14.20
- 10.40 - 14.20
- 8.81 - 10.39
- < 8.81
- NA

Rank	State	Electricity Residential (cents/kWh)
1	Hawaii	27.46
2	Connecticut	19.08
3	New York	17.89
4	Alaska	16.21
5	Rhode Island	16.03
6	New Jersey	15.80
7	New Hampshire	15.43
8	Maine	15.35
9	Vermont	15.28
10	Massachusetts	14.97
11	California	14.64
12	Maryland	14.25
13	District of Columbia	13.41
14	Delaware	13.01
15	Nevada	12.99
16	Pennsylvania	12.20
17	Wisconsin	11.93
18	Texas	11.70
19	Florida	11.53
20	Michigan	11.49
	United States	10.93
21	Colorado	10.61
22	Illinois	10.48
23	Ohio	10.42
24	Virginia	10.27
25	South Carolina	10.16
26	North Carolina	10.07
27	New Mexico	9.97
28	Arizona	9.86
28	Alabama	9.86
29	Minnesota	9.47
30	Georgia	9.39
31	Kansas	9.33
32	Mississippi	9.09
33	Arkansas	8.68
33	Iowa	8.68
33	Oregon	8.68
34	Louisiana	8.67
35	Montana	8.56
36	Indiana	8.54
37	West Virginia	8.33
38	Utah	8.25
39	Wyoming	8.24
40	Oklahoma	8.17
41	Tennessee	8.13
42	South Dakota	7.99
43	Kentucky	7.96
44	Nebraska	7.87
45	Washington	7.73
45	Idaho	7.73
46	Missouri	7.20
47	North Dakota	7.05

2. Clean Energy Economy & Jobs

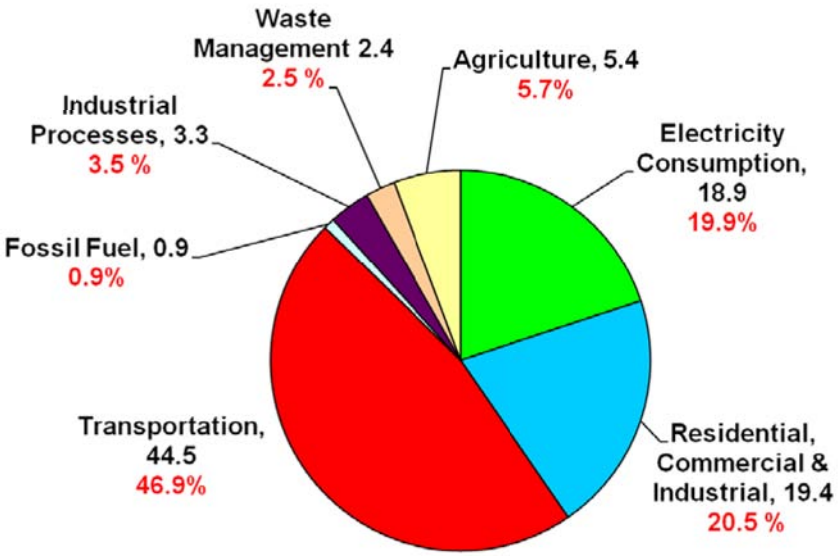
- 22% of nation's hydro; #4 wind producer
- agricultural & silvicultural resources

- high tech center
- university system
- Pacific Northwest National Laboratory

- Boeing & agriculture spearhead export economy
- Evergreen Jobs Act of 2009
- Clean Energy Leadership Council

3. Washington's GHG Targets

- **By 2020** reduce GHG emissions to 1990 levels
- **By 2035** reduce emissions to 25% below 1990 levels
- **By 2050** reduce emissions 50% below 1990 levels



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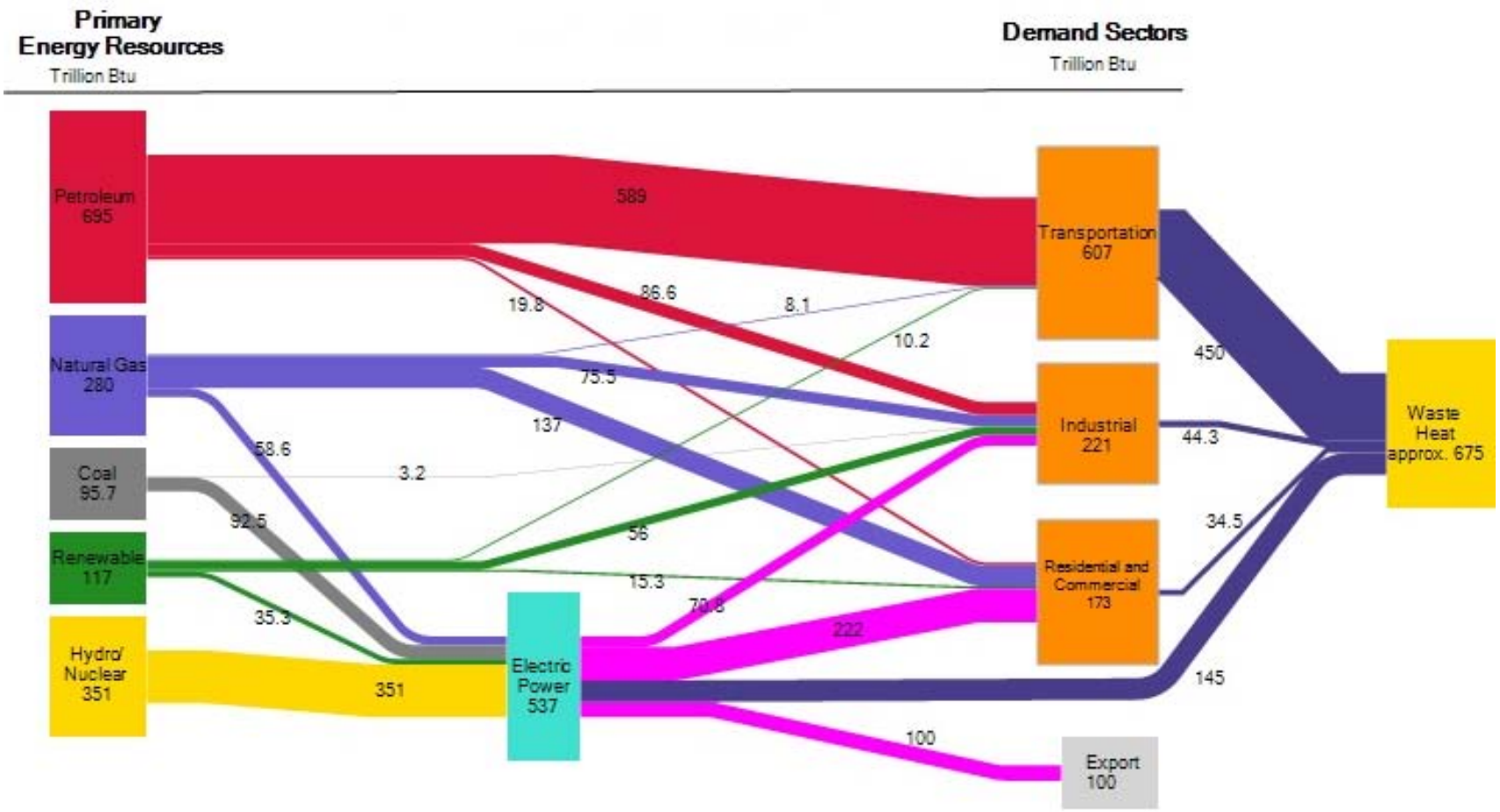
Energy flows in Washington State (2007)



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Nine Legislated Principles

1. Pursue **conservation** as the preferred energy resource
2. Ensure our energy system meets the needs of citizens, especially **vulnerable populations**
3. Maintain and enhance **economic competitiveness**
4. **Reduce** dependence on **fossil fuels**
5. Improve efficiency of **transportation** energy use
6. Meet green house gas limits and **environmental requirements**
7. Build on our **clean electrical grid**
8. Make **state government a model**
9. Maintain & enhance **existing infrastructure**

CAT transportation policies

1. EXPANDING AND ENHANCING TRANSIT, RIDESHARE AND COMMUTER CHOICE
   - 1A: Washington State Transportation Access Network
   - 1B: Enhancements to Urban Commute Trip Reduction and Rideshare Programs
   - 1C: Statewide Residential Trip Reduction Program
2. COMPACT AND TRANSIT ORIENTED DEVELOPMENT RECOMMENDATIONS
   - 2A: Promote and Support Housing and Employment Density
   - 2B: Develop and Provide Parking Incentives and Management
   - 2C: Encourage Bicycle and Pedestrian Accessibility
   - 2D: Encourage Urban Brownfield Redevelopment
   - 2E: Transportation Concurrency
3. CLIMATE CHANGE AND TRANSPORTATION FUNDING—CRISIS AND OPPORTUNITY
   - 3A: Align Investments and Operations with the Achievement of the VMT and GHG Reductions of ESSHB 2815
   - 3B: Pursue New Revenue Sources to Support Transportation Choices
4. USE TRANSPORTATION PRICING TO MEET THE GOALS
   - 4x: Transportation Pricing Recommendations
5. NON-VMT RECOMMENDATIONS TO REDUCE GHG EMISSIONS
   - 5A: Improvements to Freight Railroads and Intercity Passenger Railroads
   - 5B: Diesel Engine Emission Reductions and Fuel Efficiency Improvements
   - 5C: Transportation Systems Management
   - 5D: Vehicle Electrification
   - 5E: Evaluate and Implement a Low Carbon Fuel Standard
   - 5x: Zero Emission Vehicle Standard

WTP 2030 transportation policies

1. ECONOMIC VITALITY

- 1A: Improve Washington's Economic Competitiveness
- 1B: Strengthen Connectivity of People and Communities
- 1C: Support the Coordinated, Connected, and Efficient Movement of Freight and Goods
- 1D: Invest in the State's Aviation System
- 1E: Ensure the Ability to Build and Expand Essential Public Facilities

2. PRESERVATION

- 2A: Focus on Preserving the Existing State and Local Transportation Network
- 2B: Explore New Funding Strategies for Public Transportation
- 2C: Invest in Preservation of Ferry Vessels and Terminal Infrastructure

3. SAFETY

- 3A: Foster Implementation of Comprehensive Safety Strategies Across All Jurisdictions and Transportation Markets
- 3B: Continue to Plan and Engineer Projects for Safety
- 3C: Encourage Inter-Agency Collaboration and Cooperation on Emergency Preparedness and Response

4. MOBILITY

- 4A: Support Mobility Options to Help Communities Meet the Public's Travel Needs
- 4B: Improve Connectivity to Facilitate Travel Across Modes and Communities
- 4C: Strategically Prepare to Meet the Needs of an Aging Population
- 4D: Support Transportation for Special Needs Populations

5. ENVIRONMENT

- 5A: Transportation Investments Should Support Healthy Communities
- 5B: Manage the Transportation System to Foster Environmental Sustainability
- 5C: Accelerate Clean Transportation Options

6. STEWARDSHIP

- 6A: Continue to Implement Performance Measures to Ensure Accountability
- 6B: Leverage Available Technologies to Maximize Efficiency in the Transportation System
- 6C: Support Tolling as a User-Based Funding Mechanism
- 6D: Review Regulations that Require the Same Standard and Performance Level for All Transportation Improvements
- 6E: Strengthen the Integration Between Land Use and Transportation Decision-Making
- 6F: Address Tribal Transportation Needs

(common with Energy Strategy goal, principle, or vision)
(reflected in Energy Strategy policy option)

WTP 2030 transportation policies

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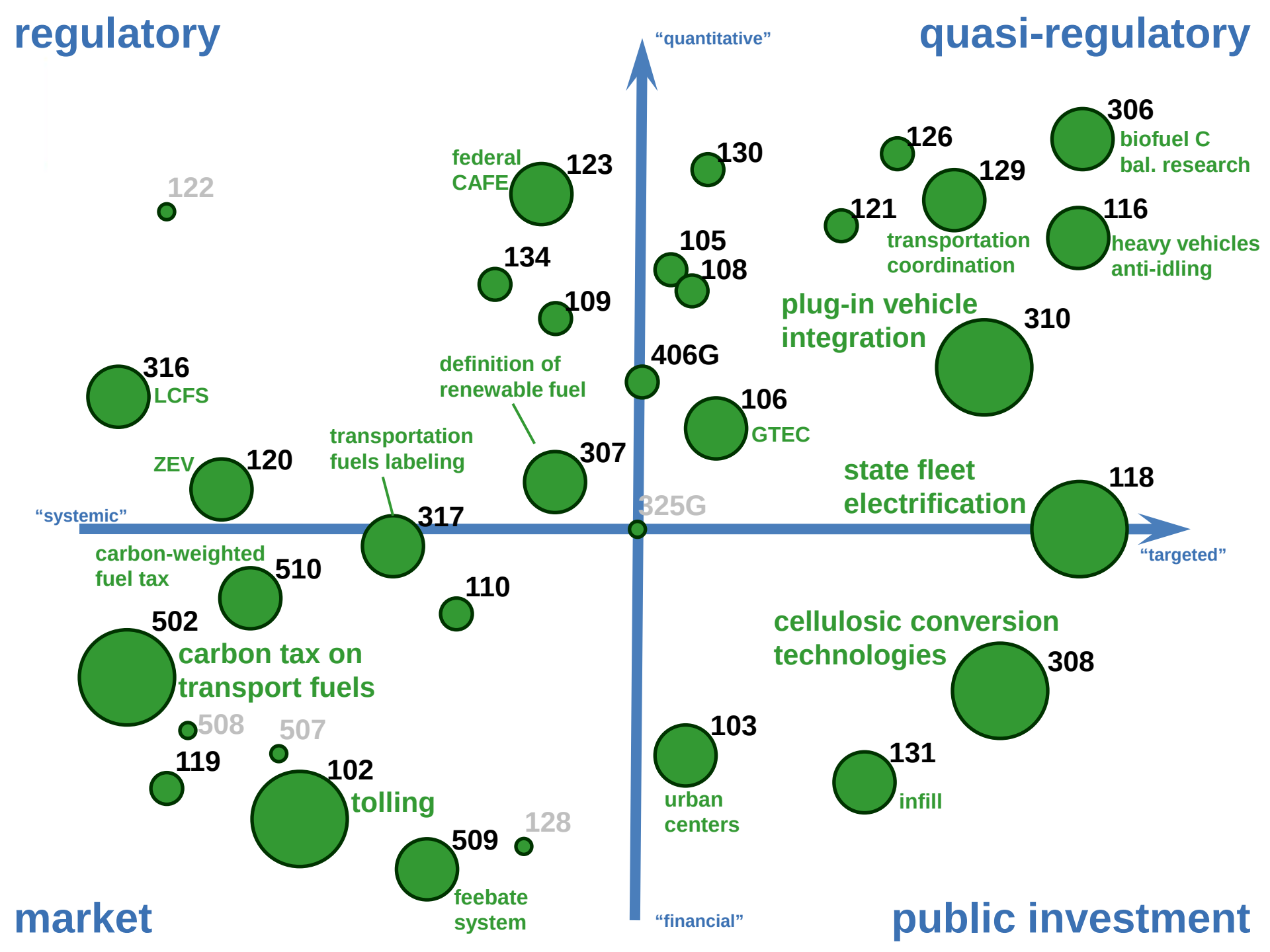
regulatory
quasi-regulatory
market
public investment
"quantitative"
"systemic"
"targeted"
"financial"
122
federal CAFE
123
130
126
306
biofuel C bal. research
129
121
116
transportation coordination
heavy vehicles anti-idling
105
134
108
109
plug-in vehicle integration
310
316
LCFS
definition of renewable fuel
406G
106
GTEC
transportation fuels labeling
307
ZEV
120
state fleet electrification
118
325G
317
carbon-weighted fuel tax
510
110
502
carbon tax on transport fuels
cellulosic conversion technologies
308
508
507
103
119
102
tolling
131
urban centers
infill
128
509
feebate system

Modeling Resources Available

- ENERGY 2020 (NPCC)
- Puget Sound Regional Council
- REMI (WA OFM)
- Washington State I/O (WA OFM)
- NEMS
- McKinsey & Company
- WEMS
- **spreadsheets**

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extras

Advisory Committee

Sharon Nelson	NCEP / Itron
Rogers Weed	Department of Commerce
Ben Bagherpour	SEH America, Inc.
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Terry Brewer	Grant County PUD
Shari Brown	Weyerhaeuser
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KC Golden	Climate Solutions
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William Kidd	BP America
Steve Klein	Snohomish County PUD
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Kris Mikkelsen	Inland Power & Light Co.
Steve Rigdon	Yakama Power
Phil Rockefeller	Senate, D-Bainbridge
Dave Sauter	Klickitat County comm.
Shelly Short	House, R-Addy
Larry Smith	City of Vancouver council

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Technical Experts Panel

- **Northwest Power and Conservation Council**
  Howard Schwartz
- **Pacific Northwest National Laboratory**
  Marc Cummings, Dennis Stiles
- **Puget Sound Regional Council**
  Matthew Kitchen
- **University of Washington**
  Mark Hallenbeck, Daniel Schwartz
- **Washington State Department of Commerce**
  Roel Hammerschlag, Greg Nothstein
- **Washington State Office of Financial Management**
  Ta-Win Lin
- **Washington State University**
  Todd Currier, Chad Kruger

Policy Options Categories

1. transportation energy demand reduction
2. non-transport energy demand reduction
3. promotion or financing of renewable energy
4. natural gas, coal, nuclear
5. carbon pricing or fossil fuel pricing
6. grid, smart grid, distributed generation
7. crosscutting initiatives

Policy Options Decision Tool

goals

- prices
- jobs (p3)
- GHGs (p6)

system coverage

	stationary	mobile
demand	(p1)	(p5)
infrastructure	(p9)	(p9)
supply		

remaining principles

- vulnerable pops. (p2)
- renewables (p4)
- expand clean grid (p7)
- gov't leadership (p8)

feasibility

- political
- fiscal
- prior work

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Policy Options Decision Tool

3 **commercial energy efficiency financing: credit enhancement**

goals		system coverage	st'y	mobile	other		feasibility	
prices	0	demand	2	0	vuln. pops.	0	political	1
jobs	0	infra-structure	0	0	renew-ables	0	fiscal	1
GHGs	0	supply	0	0	expand clean grid	0	prior work	1
					gov't leadership	0		

4 **CNG**

goals		system coverage	st'y	mobile	other		feasibility	
prices	0	demand	0	0	vuln. pops.	0	political	2
jobs	0	infra-structure	0	2	renew-ables	0	fiscal	1
GHGs	1	supply	0	2	expand clean grid	0	prior work	0
					gov't leadership	0		

5 **appliance efficiency standards**

goals		system coverage	st'y	mobile	other		feasibility	
prices	0	demand	2	0	vuln. pops.	1	political	2
jobs	0	infra-structure	0	0	renew-ables	0	fiscal	2
GHGs	0	supply	0	0	expand clean grid	0	prior work	2
					gov't leadership	0		

10 **state leadership**

goals		system coverage	st'y	mobile	other		feasibility	
prices	1	demand	0	0	vuln. pops.	0	political	1
jobs	0	infra-structure	0	0	renew-ables	0	fiscal	0
GHGs	1	supply	1	1	expand clean grid	0	prior work	1
					gov't leadership	2		

11 **energy policy harmonization**

goals		system coverage	st'y	mobile	other		feasibility	
prices	0	demand	1	1	vuln. pops.	0	political	1
jobs	0	infra-structure	1	1	renew-ables	0	fiscal	2
GHGs	0	supply	1	1	expand clean grid	0	prior work	0
					gov't leadership	2		

12 **streamlined permitting**

goals		system coverage	st'y	mobile	other		feasibility	
prices	0	demand	0	0	vuln. pops.	0	political	2
jobs	0	infra-structure	1	0	renew-ables	2	fiscal	2
GHGs	0	supply	2	0	expand clean grid	2	prior work	0
					gov't leadership	1		

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It's not NEMS, it's WEMS!

DEMAND

choose EIA scenarios per workshop

↓

disaggregate by energy type

↓

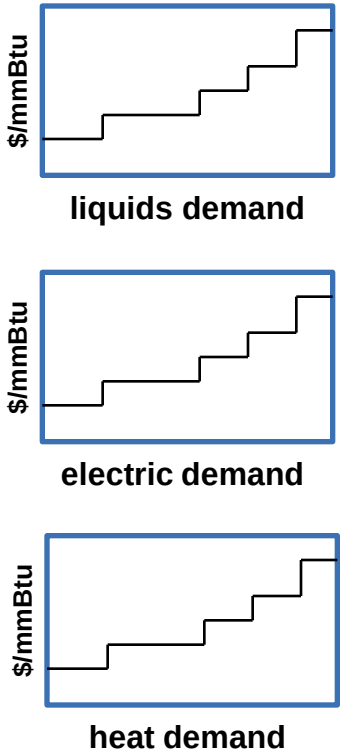
	CW	DA	iF	IN
liquids				
electric		TBtu		
heat				

↓

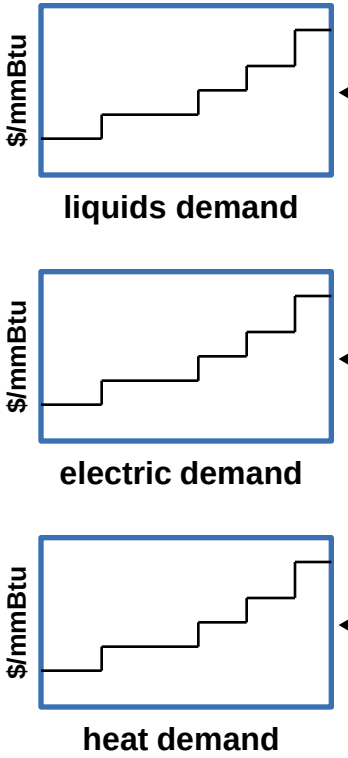
	CW	DA	iF	IN
liquids				
electric		$/mmBtu		
heat				

TECHNOLOGIES

CW/iF



DA/IN



RESOURCES

primary energy inventory

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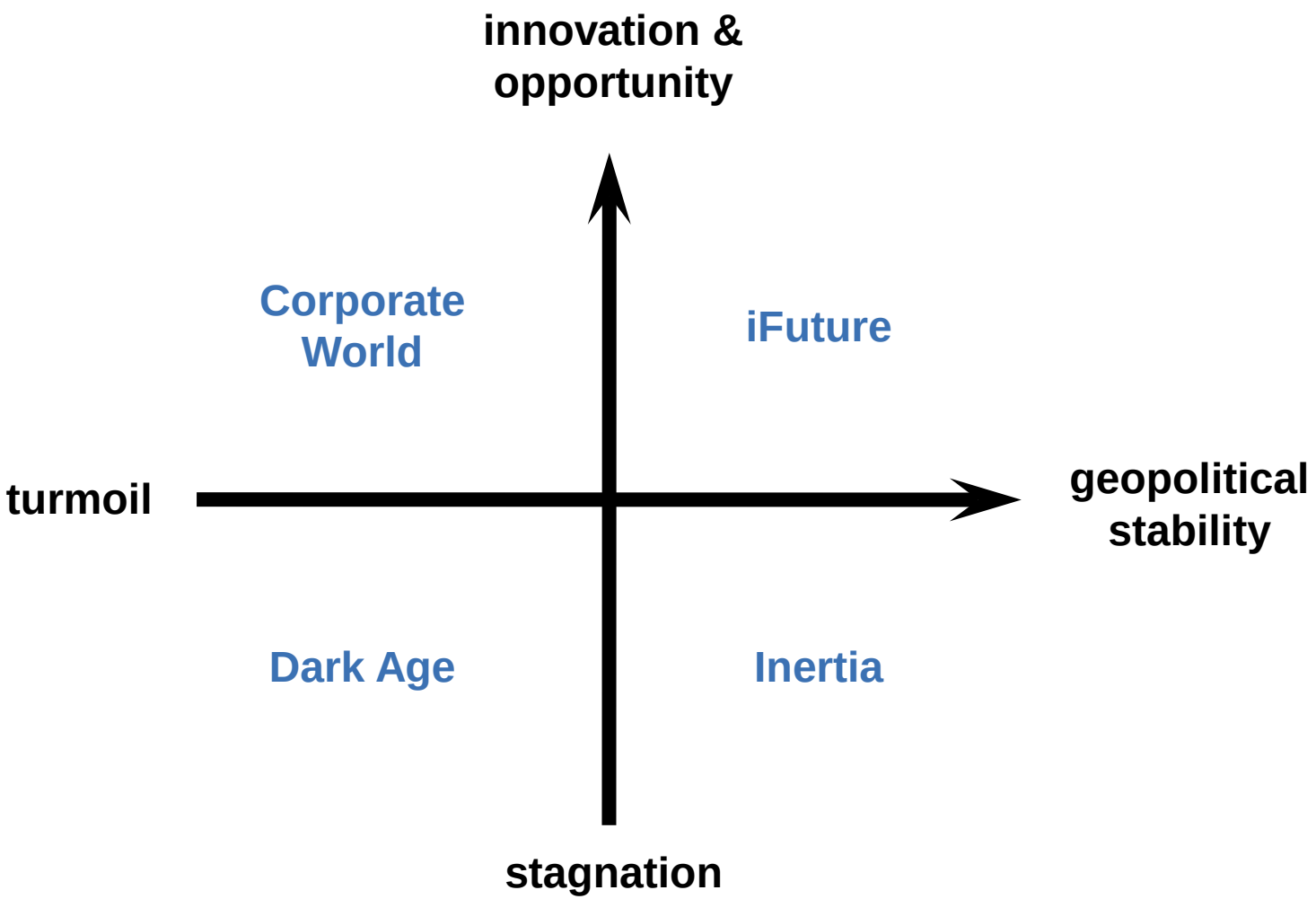
Scenario Planning Process



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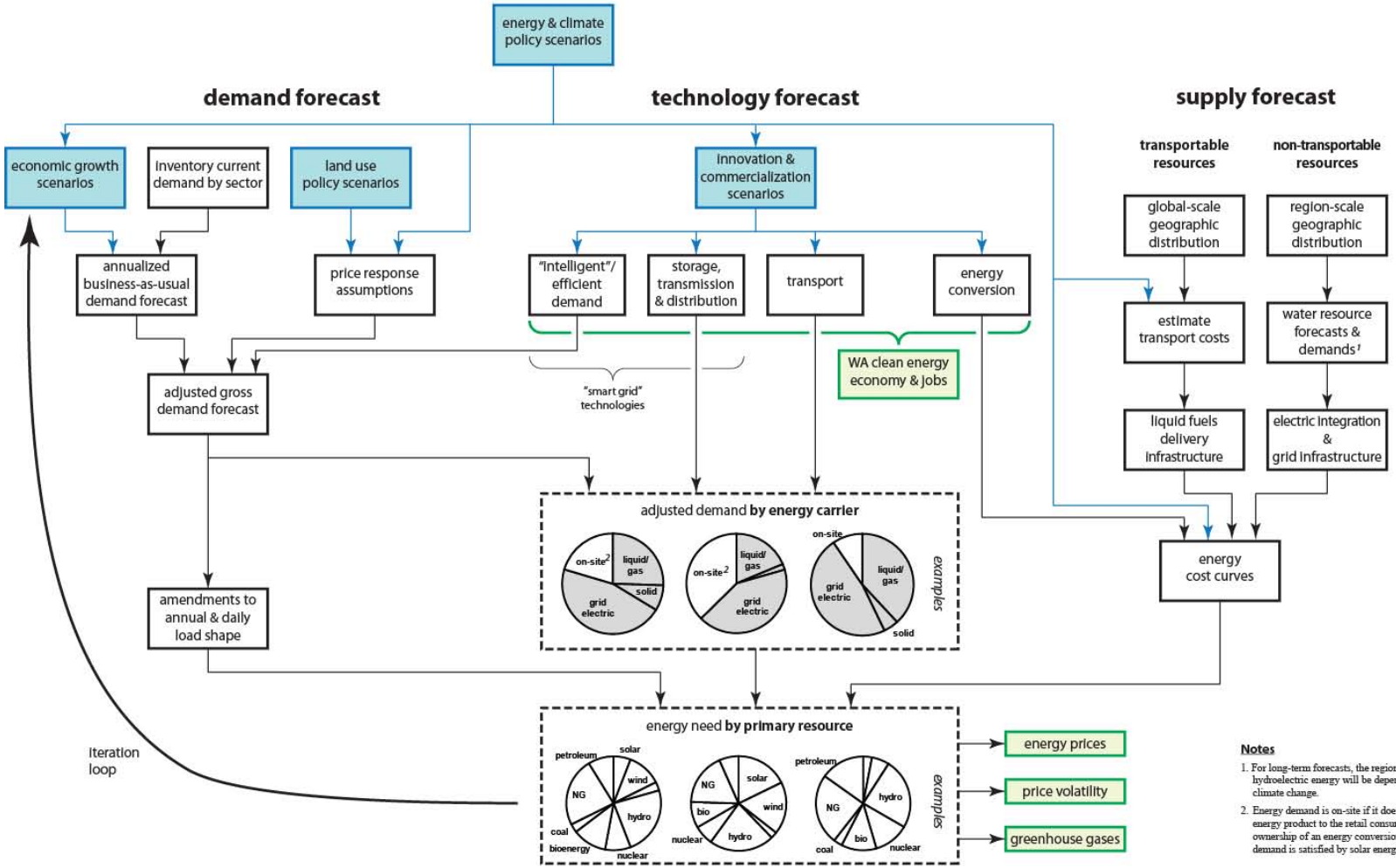
Analytic Framework



Notes

1. For long-term forecasts, the region-scale distribution of hydroelectric energy will be dependent on the impacts of climate change.
2. Energy demand is on-site if it does not require delivery of an energy product to the retail consumer (though it may require ownership of an energy conversion device). On-site energy demand is satisfied by solar energy in most cases.

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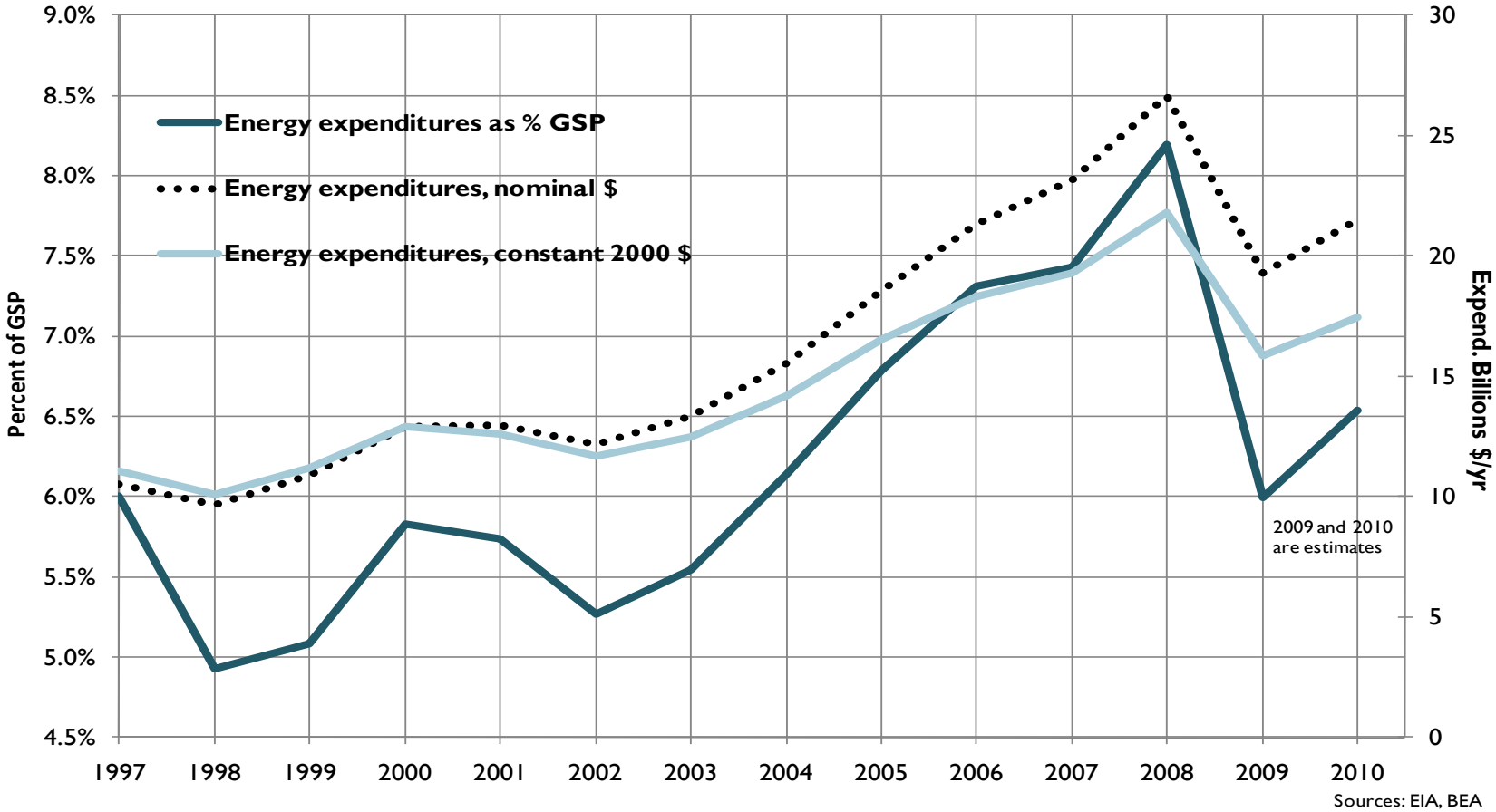
Energy Expenditures – Washington



Energy expenditures in Washington State (1997 – 2010)

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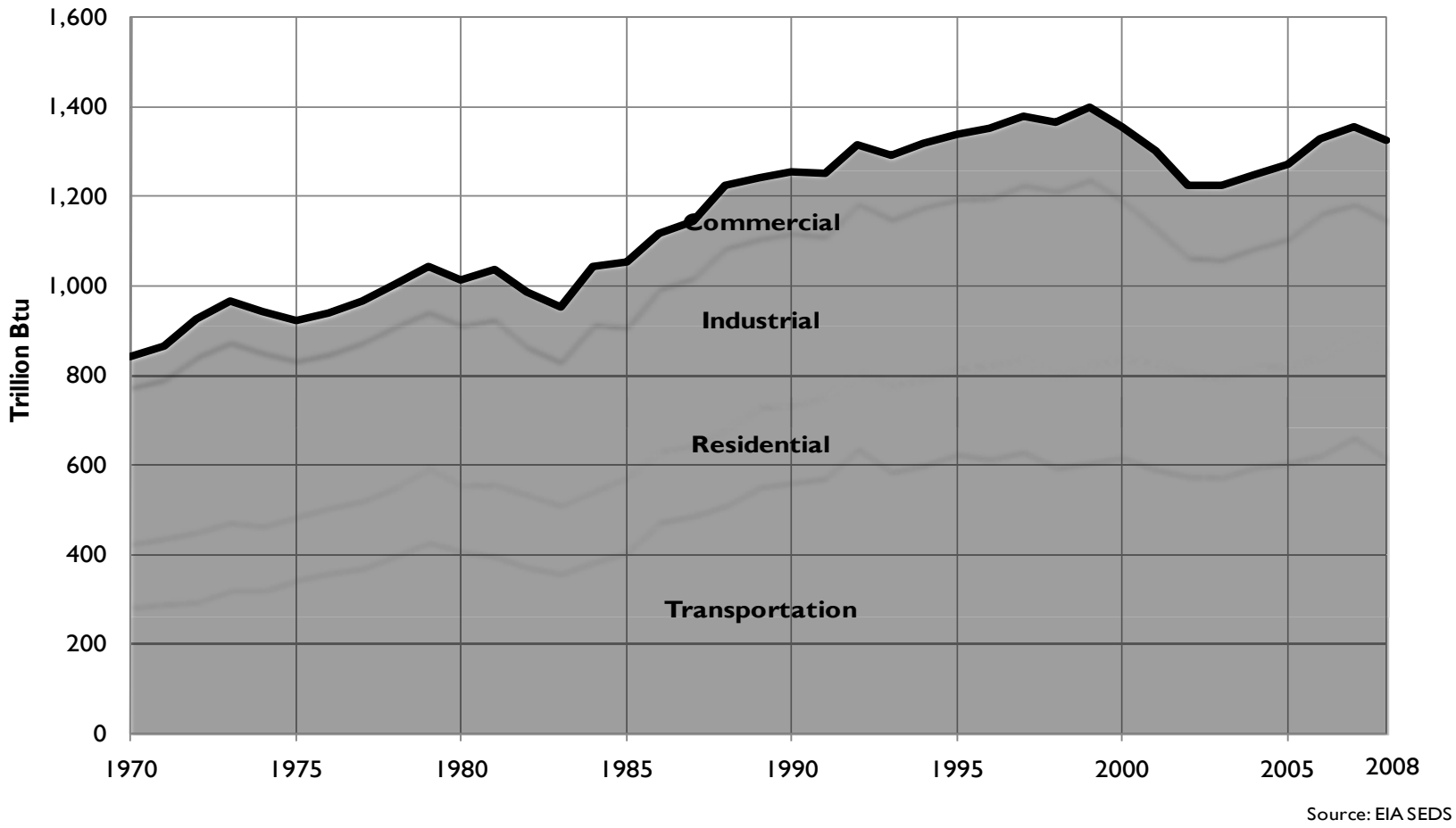
End-Use Energy Consumption by Sector



End-use energy consumption by sector (1970-2008)

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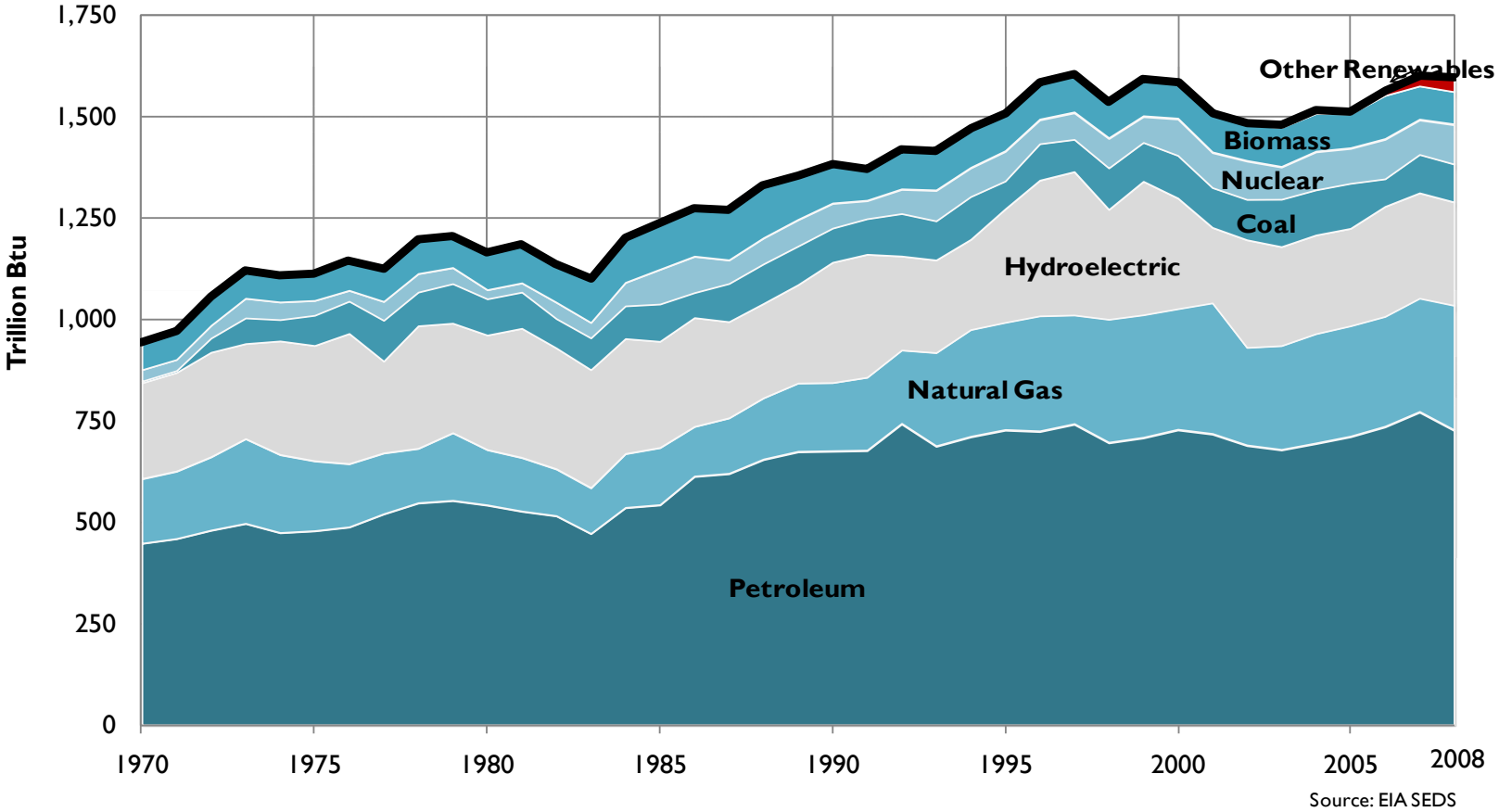
Primary Energy Consumption by Source



Total primary energy consumption by source (1970-2008)

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Four Categories in the 2010 Update

- Residential & commercial buildings efficiency
- Industrial energy efficiency
- Transportation efficiency and technology
- Streamlined permitting for advanced energy technologies

Residential and Commercial Buildings Efficiency

1. improve consumer confidence in energy efficiency retrofits
2. financial tools for residential and commercial energy efficiency investments
3. UTC conservation policy support
4. minimum requirements for rental housing
5. efficiency programs for non-electric fuels

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Industrial Energy Efficiency

6. federal-coupled recognition program
7. streamlined permitting of combined heat & power (CHP) projects

Transportation Efficiency and Technology

8. energy-aware growth management
9. electric vehicle charging station siting
10. Uniform regulatory protection for charging stations
11. amend renewable fuels standard
12. compressed natural gas

Streamlined Permitting for Clean and Advanced Energy Technologies

13. energy overlay zones
14. non-project EIS and planned action SEPA reviews
15. pre-qualification of advanced technologies under I-937
16. accelerated permitting for pilot projects
17. energy technology test zones

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- Fuel Mix Disclosure
- Bioenergy & Biofuels
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- Sustainability & Efficiency
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washington
STATE ENERGY STRATEGY
Leadership for a Clean and Efficient Energy Future

Upcoming Events: Advisory Committee Meeting #2, *July 13, 2010*

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The Department of Commerce is leading an effort to revise the State Energy Strategy, Washington's comprehensive energy plan for meeting our future energy needs. 2010 legislation (E2SHB 2658) directed the revision of the state energy strategy and declared that a successful strategy must balance three goals to:

a) Maintain competitive energy prices;

b) Foster a clean energy economy and jobs; and

c) Meet obligations to reduce greenhouse gas emissions.

The legislation also established nine principles to guide the development and implementation of the state's energy strategy and to meet the above goals.

As directed, the strategy update will be submitted to the Governor and Legislature by December 1, 2010. The fully revised strategy will be submitted by December 1, 2011.

Commerce will engage a Technical Experts Panel, an Advisory Committee, state agencies and other key stakeholders in this effort.

Background	Committees and Work	Getting Involved
State Energy Strategy Overview	Advisory Committee	We encourage feedback during the process. Several opportunities exist:
Guiding Legislation	Technical Experts Panel	Join the ListServ
2003 Energy Strategy Update		Visit the website for upcoming events
1993 Energy Strategy		

Internet | 100%

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Washington's Energy Office

Director
Tony Usibelli

NPCC
Howard Schwartz

Program Management
Rebecca Stillings

- **Office Administration**
  Carolee Sharp
- **State Energy Program**
  Cory Plantenberg
- **EECBG**
  Patti Miller-Crowley
- **ARRA Administration**
  Meg O'Leary

WSU Energy Ext.
Elizabeth Green-Taylor

Energy Strategy
Roel Hammerschlag

- **Data and Analysis**
  Greg Nothstein
  Angela Burrell
- **Siting & Security**
  Mark Anderson
- **Buildings Efficiency**
  Chuck Murray
- **Efficiency & Renewables**
  staff

Emerging Technologies
Peter Moulton

- **Energy Businesses**
  Tim Stearns
- **Transportation**
  Gustavo Collantes
- **Bioenergy**
  (Peter Moulton)

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