CLIMATE CHANGE IMPACTS AND ADAPTATION IN WASHINGTON STATE

Toward a Well Adapted Future in Puget Sound:
A Symposium on Climate Change Adaptation and the Law
January 21, 2011
Hedia Adelsman, Department of Ecology

Foundation For Adaptation

EO 07-02
2008 PAWG reports

UW/Climate Impacts Group (CIG) Feb. 2009 Assessment

Leading the Way:
Preparing for the Impacts of Climate Change in Washington
Recommendations of the Preparation and Adaptation Working Groups
State Agency Climate Leadership Act, 2009 (SB 5560)

- Requires the development of an “integrated climate change response strategy…” and requires state agencies “…to incorporate adaptation plans of action as priority activities when planning or designing policies and programs. …and funding infrastructure projects…” The Response Strategy is due December 2011.

- Strategy must address “regional capacity to take action, existing ecosystem and resource management concerns, and health and economic risks.”

- EO 09-05: focus on sea level rise and water resources

Climate Risks more Likely to Occur

- Increase in average air temp. and likelihood of extreme heat events
- Changes in hydrology and water supply: reduced snowpack, changes in timing of water availability in some basins; and changes in water quality
- Increase in frequency of drought events
- Increase in frequency of extreme precipitation events and magnitude of damaging floods
- Increase in wildfire frequency and intensity
- Increased in coastal erosion and risk of inundation from increasing sea levels, wave heights and storm surges
- Increase in diseases, invasive species, and pest
- Loss of habitat, and wetlands ecosystems and services
- Increase in ocean acidification
### Potential Economic Costs in Washington

*If no additional actions are taken to reduce greenhouse gas emissions (million dollars per year)*

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>2020</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued use of less efficient energy technologies</td>
<td>$1,400</td>
<td>$1,600</td>
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<tr>
<td>Increased health-related costs (increased ground-level ozone, increased heat waves)</td>
<td>$1,300</td>
<td>$2,200</td>
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<td>Reduced salmon populations</td>
<td>$531</td>
<td>$1,400</td>
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<tr>
<td>Increased energy costs (reduced hydro supply, higher energy demand)</td>
<td>$222</td>
<td>$623</td>
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<tr>
<td>Increased wildland fire costs</td>
<td>$102</td>
<td>$208</td>
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<tr>
<td>Lost recreation opportunities</td>
<td>$75</td>
<td>$210</td>
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<tr>
<td>Increased coastal and storm damage</td>
<td>$72</td>
<td>$150</td>
</tr>
<tr>
<td>Reduced food production</td>
<td>$35</td>
<td>$64</td>
</tr>
<tr>
<td>Health related spillover costs from continued use of coal-fired electricity</td>
<td>$19</td>
<td>$23</td>
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<tr>
<td><strong>Total increased costs</strong></td>
<td><strong>$3,800</strong></td>
<td><strong>$6,500</strong></td>
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By 2020 total cost expected to reach $1,250 per household each year

Source: University of Oregon, Climate Leadership Initiative

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**SEVEN STATE AGENCIES ARE GUIDING THE DEVELOPMENT OF THE STATE RESPONSE STRATEGY, WITH INPUT FROM A LARGE STAKEHOLDER GROUP:**

- Washington State Department of Natural Resources
- Washington Department of Fish and Wildlife
- Washington State Department of Transportation
- Department of Commerce
- Washington State Department of Health
- Department of Ecology
Topics Addressed

- Water supply; water quality; floodplain management; sea level rise; energy; land use; transportation; and commerce and ports
- Heat related health outcomes; respiratory and cardiovascular disease; infectious disease; injury; and mental health
- Major ecological systems: marine and coastal; freshwater and riparian; forests, alpine, western prairies; and aridlands and shrubsteppe
- Fire prevention and suppression; pests and diseases; water availability; and genetic preservation and development
Guiding Principles

- Adopt Integrated Approaches
- Use best-available science, and embrace uncertainty
- Prioritize the most vulnerable
- Apply risk-management methods and tools
- Apply ecosystem-based approaches
- Recognize regional differences
- Include adaptive management approaches to adjust and refine strategies
- Build partnerships and foster cross-jurisdictional decisions
- Raise awareness and support local community actions

Overarching Strategies

- Integrate adaptation and GHG mitigation strategies
- Incorporate climate adaptation strategies and actions into agency programs, regulation and infrastructure funding
- Bolster adaptation and resilience capacities by enhancing existing systems and developing appropriate tools
- Coordinate among and partner with federal and tribal governments, scientific community, NGOs, businesses and individuals
- Build necessary scientific and institutional readiness
- Increase communication and outreach with the public about preparing for climate change
Examples of Strategies

- Improve water resources management – strengthen data and information, develop integrated water management plan, increase water-use efficiency
- Build resilience to climate change in communities and their underlying infrastructure
- Reduce the vulnerability and increase the resilience of ecosystems through adoption of strategies that focus on provision of essential ecosystem services such as water supply, and coastal protection
- Protect the most vulnerable segments of the population by improving capabilities of public health agencies
- Build integrated surveillance and early warning systems to improve detection of health, agricultural and forest risks
- Leverage existing regulatory programs and processes to adapt to climate change
- Consider the impacts of climate change in planning and designing projects funded by the state
- Maintain and enhance existing state and local capacity to respond to emergency events like floods, fires
- Enhance and expand monitoring, and mapping capabilities

Additional Projects

- Sea Level Rise Survey and Guidebook for Local Governments
- National Academy of Sciences Sea Level Rise Study
- Puget Sound Action Agenda
- Vulnerability Assessment of Transportation Infrastructure (Dept. of Transportation with FHWA)
- Economic Analysis
- British Columbia-Washington Partnership
- Ocean Acidification Study