

MEETING SUMMARY
WASHINGTON CLIMATE CHANGE
Coastal/Infrastructure Preparation/Adaptation Workgroup
Meeting #4 – September 11, 2007 9:00am – 12 p.m.
Ecology Headquarters, Lacey

Attendance:

Preparation/Adaptation Workgroup Members:

Hugh Shipman, Department of Ecology
Todd Zackey, Tulalip Natural Resources Department
Lara Whitely Binder, Climate Impacts Group (via phone)
Cyrilla Cook, People for Puget Sound
Randy Carmen, Washington State Department of Fish & Wildlife
Joe Cloud, EDAW
Nancy Boyd, Washington Department of Transportation
Mike Doherty, Clallam County Commissioner (via phone)
Clare Fogelsong, City of Bellingham
Richard Myers, Washington Public Ports Association
Mike Rechner, Department of Natural Resources
Doug Peters, Washington State Department of Community, Trade, & Economic Development
Rich Hoey, City of Olympia
Doug Myers, Puget Sound Partnership
Bobbi Hudson, Pacific Shellfish Institute

Washington Department of Ecology staff: Tom Clingman, Hedia Adelsman,
Spencer Reeder (via phone)
Other Support Staff: Andy Chinn, Ross & Associates Environmental Consulting

Background Documents:

1. Meeting agenda
2. Copy of HB 1303
3. Presentation by Hugh Shipman
4. Notes from 8/30/07 SLR briefing with Jay Manning
5. Proposed Outline for Report
6. Actions and Criteria

Discussion Items:

1. Updated on HB 1303

Key comments from PAWG:

- There does not seem to be anything on public health and safety under the research approach of the CIG task. There does not seem to be anything to do with people living near water.
- Under “Potential collaborators” it would be good to include an environmental NGO. Currently the list is only government and business.
- It might be useful to have the PAWG’s work mentioned in the bill, although it was mentioned in the overall scope of work.
- The areas that the bill is talking about focusing on are good; what’s missing is 90% of WA shoreline – rural – that is going to be a high impact category.
- This is a two stage process- the first step is for the CIG to do what it can with the given money; the next step is to make recommendations.
- There will be a discussion of additional research needs in the write-up from the CIG.

2. Update on 8/30 Briefing with Jay Manning

Key points:

- There will likely be improved sea level rise projections in the next year and a half.
- Jay encouraged the PAWG to group/cluster the impacts of sea level rise and to provide a range of alternative actions, from individuals to state-mandated.
- There will be limited action in the upcoming legislative session; most of the action on climate change will be in the 2009 session. The Climate Impacts Group will focus on the December report and interim actions, and major actions will occur in 09.
- Hedia noted that next year’s budget request will include support for the Western Climate Initiative, as well as funds to ensure that the CAT and TWG process is completed. A large chunk of the budget is staffing for updating SEPA (creating the checklist and guidance for local governments and the state to use SEPA to set up a carbon registry). There is not as much funding for the preparation/adaptation work.
- Tom added that it is important to consider the responsibility of Ecology’s Shoreline program, specifically the need for clarity on how Shoreline Master Plans (SMP) will deal with sea level rise. The Shoreline program is also responsible for managing the Flood Control Assistance Program (FCAP), which may be a better place than the SMP for communities to assess vulnerabilities and look at adaptation strategies, since it can lead to federal money. Some coastal communities, in fact, have already utilized the FCAP. The contact for that program is Dan Sokol. The funding level for the program fluctuates but is around two million dollars, and has been used for everything from drainage ditches to tsunami preparation.
- Hedia added that she is going to set up a meeting to discuss how climate change can be incorporated into the updated growth management

guidelines. She is also going to set up a meeting with CTED to discuss the overlap between the work of the CAT and a CTED-ordered legislative study on infrastructure.

3. Presentation by Hugh Shipman, ECY Coastal Geologist

Key points from presentation:

- The IPC numbers are generally seen as conservative and excluded a lot of uncertainties.
- The IPC will be periodically revisiting this issue; in another year or two there will be new numbers.
- It is highly likely that there will be one foot of sea level rise in the next 100 years; we shouldn't get bogged down in the details of the high and low estimates.
- Vulnerability of Puget Sound
 - From a planning perspective, we need to think about the extreme end of the estimates.
 - The vast majority of Puget sound is steep coastline. The tendency is to focus on the river systems; however the impacts will likely be bigger on bluffs or areas outside of river deltas.
 - Vulnerabilities will vary widely depending on land use.
- River Deltas
 - Deltas are large, flat, and at sea level; however, most of these areas are already completely lined with dikes, tide gates, etc. Long before sea level rises 20 feet, there will be infrastructure failure.
 - Habitat restoration builds more resilience into delta areas. Twenty to thirty years from now we may be doing significant restoration.
 - Trajectory of restoration may change based on sea level change.
- Coastal bluffs
 - All other things being equal, sea level rise raises erosion rates significantly, which affects both armored and unarmored bluffs.
 - There will be a wholesale shift from vegetated bluffs to barer, eroded bluffs. This has implications for riparian forest restoration on bluffs.
- Barrier beaches
 - Most barrier beaches have some sort of coastal wetland complex.
 - Storm damages will increase and insurance will increase; many changes will occur before sea level reaches a 20 foot rise in 2100. There will be more frequent disasters as sea level rises in a series of escalating events.
- Urban waterfronts
 - Built environment will change long before 2100. Decisions on pier/seawall replacement will occur before then, also based on better information.
 - It is important to figure out how to make sea level an important part of urban waterfront redevelopment.

- Ports
 - A common characteristic of port facilities is that they have rail driven freight handling facilities near water level.
 - Over the next 100 years, Port of Seattle will be redeveloping their facilities. Elevating rail facilities is not a huge issue; the biggest problem is operational costs.
 - Ports will go through their own cycles of redevelopment; can we inject additional thinking about sea level into this?
- As water level goes up and the coastline responds, the crises will still be on the edge, not what's underwater. What happens as structures fail and outdated infrastructure becomes more vulnerable?
- Nearshore habitats
 - As water levels rise, if nearshore habitat cannot shift and migrate they will disappear. Wetlands can respond, to some degree, if they have room to move.
 - In tidal lagoon systems there will be huge changes in tidal and sediment dynamics.
- Local inundation maps
 - These are useful to illustrate vulnerability, however we shouldn't forget that they are using very arbitrary numbers. These maps Depend on the quality of information on existing infrastructure. They also presuppose that the natural and built landscape will be exactly the same in 2100 as it is now.
 - Important to keep in mind that inundation maps show extreme high water.
 - Deltas may be an easier issue to deal with than shorelines. Two miles of shoreline with million dollar homes on top might be a greater impact than the Skagit delta.
- Snohomish River delta is a mix of agricultural and urban uses, industrial facilities. Over the next hundred years the Army Corps of Engineers will likely have to rethink the way it manages the delta.
- Samish Bay
 - Increasing difficulty of draining this area during flooding/rain events
 - This area is an example of levees currently being removed for restoration purposes.
 - Many issues will come up long before 2100, and in fact are already occurring.
- Port Townsend
 - Some areas will be heavily affected by sea level rise, some will not.
 - There are issues here that are already being dealt with.
 - Point Wilson; lighthouse movement.
- Storms
 - Impact of rising sea levels – water level is an important factor in severity of storms. In Puget Sound this is highly uncertain; even with exactly the same storm climate that we have, the impact of sea level rise will be much greater.

- Frequency would also be greater.
- Federal Flood Insurance program will be bankrupt if sea level rises two feet.
- Coastal Flooding
 - Frequency will increase
- If sea level rises 1 foot in Puget Sound, a 100 year event will become a 10 year event. If sea level rises 2 feet, a 100 year event will be an annual event.
- Implications of Sea Level Rise on Erosion and Landslides
 - More frequent
 - Re-activation of large landslide complexes
 - Faster erosion equals more sediment on beaches, which will create a habitat response. Possible that some places such as sandspits will receive more sediment.
 - Very complex system; potentially increasing resiliency in some places.
- Barrier beaches
 - Resilience depends on rate of sea level rise, ability to migrate, and sediment availability
- Armoring
 - There will be much larger, taller bulkheads around Puget Sound
- Salt marshes
 - (same as barrier beaches information)
- Thoughts
 - Think about responding to events, not just chronic inundation over the next 100 years
 - Different shorelines will respond differently
 - Resilience is the key to sustaining both natural and built environments
- Next Steps
 - Think about developing scenarios for different environments
 - Continue what we are doing, but try to improve
 - Increase resilience
 - Identify critically vulnerable sites
 - Anticipate responses that will be driven by crises
 - Where engineering is inevitable, be imaginative

Key comments/questions from PAWG:

- Question: Are there different data sets showing different rates of tectonic movement? Answer: Spencer commented there is a lot of new point data right now, primarily from GPS stations that have been installed around Puget Sound over the last nine years, but more data analysis is needed. The biggest uplift is occurring north toward Neah Bay, but it's a complex picture. Spencer would like to find some funding to pursue the data analysis and modeling.

- Hugh added that the vertical land movement numbers are fairly small in some areas and will not affect the overall outcomes of sea level rise significantly.
- Shoreline Master Plans and SEPA are aimed at a gradual, rational planning processes but at the same time we use the same regulations when we replace things that are destroyed by events. With more and more events happening, we may want to rethink some of the regulations or process for replacing infrastructure.
- Often when something is destroyed in a storm, the funding mechanisms force it to be replaced in the same way as before. It would be better to find a way to increase flexibility. For smaller scale (e.g. homes being threatened) maybe there is a sustainable funding mechanism that provides an alternative.
- Question: Where do railroads fit into this analysis? Answer: Hugh responded that in many ways railroads are similar to ports in that their actual fill grade is well above the predicted extremes in sea level rise. There is much current discussion about how to make the railroad grade more environmentally friendly. Railroads have the technical capacity to make large scale grade changes, but the challenge is the opportunity cost for closing down the rail line while those changes are made. Railroads are also one of the factors that influence shoreline resilience, and adding more fill would degrade shoreline resilience. We may need to start building shoreline and beaches outside of the rail corridor; this is a highly controversial notion, but perhaps there is a way to have both a rail line and ecological processes.
- Question: In the long run, should we recommend a relocation program for small cities directly in the path of sea level rise? Answer: A perfect example of this is the town of Hamilton in the Skagit Delta. With respect to the town of Edison (see slide): In this type of community, long term sea level rise will set up a ring-dike scenario. It is an unsustainable community; you have to either make the decision about engineering or moving away. There are interesting questions about how we influence decisions in communities such as this. Do we have the incentives to move these communities?

4. Priority Early Action Strategies and Priorities for Research

The PAWG reviewed the prioritized action strategies spreadsheet. General comments:

- This group has identified 13 strategies, and according the report outline we are supposed to narrow them down to two or three. Suggest an appendix listing all of the strategies so they are not lost.
- The two to three action strategies should be actionable within the 09 timeframe. If there are a couple of things that would benefit from immediate investment, then we should highlight those.

Category A: Include Sea Level Rise and Climate Change in Land Use and Hazard Plans

Key comments from PAWG:

- Box A1 may be more ambitious than what is really needed. There is language in the GMA that encompasses this.
- PAWG should be leery of creating statutory amendments without looking at what is already on the books.
- As part of that, it seems like in keeping with Patty Glick's email about setbacks and Critical Area Ordinances (CAOs), identifying an additional factor for sea level rise in CAOs would be a good idea. However, the CAO might not be as useful as the Shoreline Management Act (SMA), since local government plans usually defer to the SMA.
- Capital facilities planning needs to be addressed in the GMA.
- The relationship between GMA and SMA over CAO is a big issue and has not been resolved yet. There is a lack of authority/guidance for local governments.
- If all western states are trying to compete for carbon market revenues, are states with well-defined laws going to have greater ability to get federal funding if it's in an RCW or a WAC? What do we need to do to make Washington as competitive as Oregon or California?
- PAWG should keep in mind that shorelines are now part of the comprehensive plan. For the most part the things that the PAWG needs to pay attention to for sea level rise are already being looked at; this effort just changes the timing and focus.
- There is federal money for pre-disaster planning and communities are going to get that money for disaster relief planning. There may not be a need from a GMA perspective, because the money is already there.
- Side note: The HPA has historically not been a good planning tool; it has been a reactive permit process. SMA has always been a better planning tool.
- EMD could be used as a tool for communities to do vulnerability analyses leading into adaptation strategies.
- Might be feasible to add language to EMD that will make sea level rise competitive/on equal footing with other concerns, but that could be difficult since sea level rise is so episodic and might not meet the same litmus test for disaster declaration.
- It is not that emergency management cannot respond to a storm or flood, it's a budget issue. We also have to make sure that the response is appropriate, and that there is flexibility in the response to use a number other than just replacement value.
- The private sector, in particular mortgage bankers, are already looking at this. They can influence decisions at the front end (point of purchase) but the disaster response is different. In Florida for example the state is picking up the responsibility for flood insurance because private

companies are pulling out, which is what we are hoping to avoid. This is a policy issue that has to be decided up front.

- SEPA should be amended to acknowledge the bigger, long-term global picture.
- The state can be more prepared for emergency projects. The open space tax program is one example of a local program that would benefit the public. In order to that however, a statutory change is required; the minimum lot size is currently too large for that program to work. The statute would have to change to allow smaller owners to be able to participate, possibly by compiling their lot sizes.
- It is a question of financial incentives. On the one hand, if people don't armor their shoreline or if they restore their shoreline, they would receive tax incentives. There are elements of the federal flood insurance program that give some financial incentives, and there is debate about the effectiveness of this method. An analogous program is USDA's CRP program for watershed restoration.
- There is a lack of guidance for private property owners for things such as how to build an alternative bulkhead. There is an education gap.
- If people are going to be replacing their structures in the next twenty years, someone needs to get money to identify what areas are going to be asking for money in the next twenty years, then you need to study what is going to happen. Suggest a pilot study to look at targeted areas and figure out how to avoid emergency responses in the next fifteen years. The study would force people to look at alternatives to bulkheading, and if the outcome is that there are no easy solutions, at least we have that response.
- Could change the GMA to have impact fees for armoring that would create a fund for habitat restoration.
- Another way to look at this is to look at the habitat integrity of the issue. Perhaps everyone with a bulkhead proposal has to do a reach assessment – that would be a disincentive due to the cost of the assessment. The concept of some type of disincentive to do harm would be better than government incentives for not doing harm.
- One of the problems is that there are no standards, and often it can be argued whether or not someone actually needs a bulkhead quite often.
- On bluffs, there's no room for armoring and sea level rise will make a thin strip of land more vulnerable. It is incumbent on the PAWG to make a statement like "Avoid armoring" to protect the habitat that already exists.
- From a tribal perspective, if bulkheads and armoring are not addressed with respect to sea level rise, it's a breach of treaty rights and salmon protection.
- The goal is to eliminate armoring, and there are many ways to do that. The PAWG is going to be able to flesh out implementation mechanisms under each strategy.

Category B: Consider Sea Level Rise and Climate Change in Construction/Infrastructure Projects in Coastal Areas

Key Comments from PAWG:

- There are two recent approaches that might work: 1. Sasha Peterson's masters thesis that shows concentric rings of risk and relationship to stormwater infrastructure. 2. NWF looked at several scenarios and relative risk of each scenario.
- Capital projects are going to be built with a lot of engineering design. The PAWG can suggest some guidance that best available information on sea level rise should be used in the design process. The PAWG can encourage the development of numbers in the engineering community.
- Two things to keep in mind: 1. Saltwater intrusion is part of a list of impacts that we just haven't spelled out yet. 2. How do you consider SLR impacts in dealing with infrastructure, which is a huge category.
- Important to keep in mind that most communities have sewage treatment infrastructure at the lowest point in the system, which usually is next to Puget Sound.
- The point is not to identify specific impacts of sea level rise, but to create mechanisms to deal with them.

Category C: Consider Sea Level Rise and Climate Change in Habitat Acquisition and Restoration Projects

Key Comments from PAWG:

- If there is no room for a restoration project to migrate inland with sea level rise, then it's a question of how much investment you want to make in restoration projects that may only be viable for fifty years.
- Suggest more research such as that done by Skagit River Cooperative. If habitat restoration and/or tidegate removal are not carried out, sea level rise will take more habitat away.
- There are many existing models that need to be peer reviewed.
- Argument has been made that we need our own Puget Sound based data system rather than waiting for state-wide systems to come online.

Next meeting: Tuesday October 2, 9 am – 12 pm.

[Meeting Adjourned]