Comments and Discussion on the Final Report

9:15-12:15

Report Overview

- What changed between the 1st and 2nd draft? ***Lots.***
  - 2nd draft is a notably different document; changes made based on known issues and comments from the Panel.
  - Now have "Key Early Actions" instead of priority actions
  - Focused on reducing redundancies, shortening and consolidating actions, bridging between actions; still in progress
  - Worked with workgroup leads or subgroups for feedback on editing
- Comments coming in, mix of editorial fixes and "big picture" issues (will discuss in relevant sections)

While You've Been Reading…

- Updating information on the value of shellfish and marine resources to include wild harvest

- More clearly delineating between monitoring recommended in R&M chapter and the A&R chapter (e.g., 6.2.1,.2 and 7.1.1); working with scientists on reviewing edits we made to the R&M chapter

  – *may see some shifting/language revisions in these sections*

- Identifying ways to further shorten the document & make sure messages, actions, strategies are clear

Recommended Actions

Reduce Carbon Dioxide Emissions

1 strategy, 4 actions

Strategy 4.1 *— Take action to reduce global, national, and local emissions of carbon dioxide.*

Action 4.1.1 — Work with national and regional partners to push for reductions in carbon dioxide emissions and take joint actions to protect oceans and other marine waters from the threat of ocean acidification.*[KEA]*

Action 4.1.2 — Review unimplemented actions recommended by the Climate Action Team or identified in the State Energy Strategy and, where appropriate, take the necessary steps to implement actions to further reduce greenhouse emissions in the State. *[KEA]*

Action 4.1.3 — Reduce local air emissions to lessen acidity in Washington's marine waters if data confirm a significant causal relationship between local air emissions and local marine water acidity.

Action 4.1.4 — Enlist key leaders and policy makers to act as ambassadors for carbon dioxide emissions reductions and protection of Washington marine resources from acidification.

Recommended Actions
Local Source Reduction

2 strategies, 7 actions

Strategy 5.1 *— Strengthen and augment existing pollutant reduction actions to reduce nutrients and organic carbon in geographically targeted areas where these pollutants are exacerbating acidification of marine waters.*

Action 5.1.1 — Implement effective nutrient/organic carbon reduction programs in locations where these pollutants alone or in combination with other pollutants, are causing or contributing to multiple water quality problems, including increased acidity. *[KEA]*

Action 5.1.2 — Support and reinforce actions that help address ocean acidification through existing planning efforts and programs. *[KEA]*

Action 5.1.3 — Identify statutory gaps by reviewing current laws related to nutrient/fertilizer management, and if needed propose statutory fixes.

Action 5.1.4 — Pilot test the applicability of other water quality criteria relevant to ocean acidification for future use if deemed necessary. *[KEA]*

Strategy 5.2 *— Impose stringent controls to reduce/limit nutrients and organic carbon in areas where they are contributing significantly to acidification of Washington's marine waters.*

Action 5.2.1 **—** Require the installation of advanced treatment technologies, if it is scientifically determined that nutrients from small and large on-site sewage systems are significant contributors to local acidification.

Action 5.2.2 **—** Allow sewer connections in rural areas to limit nutrients entering marine waters, if it is determined necessary based on scientific data.

Action 5.2.3 **—** Limit nutrients and organic carbon entering marine waters from point source discharges, if it is determined necessary based on scientific data.

Recommended Actions
Adaptation and Remediation

3 strategies, 10 actions

Strategy 6.1 *— Remediate seawater chemistry*

Action 6.1.1 — Implement a suite of plant-based systems of remediation (phytoremediation) to mitigate the impacts of ocean acidification in targeted are*as*. *[KEA]*

Action 6.1.2 — Expand the use of shells in targeted areas to remediate impacts of local acidification on shellfish.

Strategy 6.2 *— Increase the capacity of shellfish and the shellfish industry to adapt to low pH.*

Action 6.2.1 — Maintain funding for water quality monitoring at the six existing shellfish hatcheries and rearing areas to help real-time management of hatcheries under changing pH condition. *[KEA]*

Action 6.2.2 — Expand the deployment of instruments and chemical monitoring to post-hatchery shellfish facilities and farms.

Action 6.2.3 — Investigate and develop commercial-scale water treatment methods or hatchery designs to protect larvae from corrosive seawater. *[KEA]*

Action 6.2.4 — Identify and incorporate thresholds into shellfish related management and monitoring plans to guide decisions making, as ocean chemistry changes.

Strategy 6.3 *– Enhance resilience of native and farmed shellfish populations and ecosystems they depend on.*

Action 6.3.1 **—** Identify, protect and manage potential refuges for organisms vulnerable to ocean acidification and other stressors. *[KEA]*

Action 6.3.2 **—** Scale up native oyster restoration and conservation to protect naturally tolerant strains.

Action 6.3.3 **—** Protect genetic diversity for a variety of native shellfish species through hatchery production. *[KEA]*

Action 6.3.4 **—** Investigate genetic mechanisms of, and selective breeding approaches for, acidification tolerance in shellfish and other vulnerable marine species.

Recommended Actions
Research and Monitoring

4 strategies, 14 actions

Strategy 7.1 — Understand status and trends of ocean acidification in Washington's marine waters.

***Action 7.1.1* —** Establish an expanded and sustained ocean acidification monitoring network to measure trends in local acidification conditions, and for a subset of locations, to collect time series of coupled physical, chemical, and biological data. *[KEA]*

***Action 7.1.2* —** Develop predictive relationships for indicators of ocean acidification (pH and aragonite).

***Action 7.1.3* —** Support development of new technologies for monitoring ocean acidification.

Strategy 7.2 *— Identify factors and estimate the relative contribution of each factor to ocean acidification in Washington's marine waters.*

Action 7.2.1 — Quantify key anthropogenic (human-generated) and natural processes that contribute to acidification based on estimates of sources, sinks, and transfer rates for carbon and nitrogen. *[KEA]*

Action 7.2.2 — Develop new models or refine existing models to include biogeochemical processes of importance to ocean acidification.

Strategy 7.3 *— Characterize biological responses of local species to acidification and associated stressors.*

Action 7.3.1 — Determine the association between seawater chemistry, sediment chemistry, and shellfish viability in hatcheries and in the natural environment. *[KEA]*

Action 7.3.2 — Determine the responses of marine species and strains to ocean acidification to help guide management strategies for wild populations and culture practices in hatcheries and on farms.

Action 7.3.3 - Conduct laboratory studies to assess the direct effects of ocean acidification on Washington's species and ecosystems. *[KEA]*

Action 7.3.4 — Conduct studies to determine biological response to ocean acidification in combination with other stressors.

Action 7.3.5 - Undertake field studies to characterize the effects of ocean acidification on local species.

Strategy 7.4 — Build capabilities for short-term forecasting and long-term prediction of acidification.

Action 7.4.1 **-** Establish ability to make short-term forecasts of corrosive conditions for application to shellfish hatcheries, growing areas, and other areas of concern. *[KEA]*

Action 7.4.2 **-** Enhance ability to predict the long-term future status of carbon chemistry and pH in Washington waters by creating models to project ecological responses to predicted ocean acidification conditions.

Action 7.4.3 **-** Enhance ability to model the response of organisms and populations to ocean acidification to improve our understanding of biological responses.

Action 7.4.4 **-** Perform an integrated assessment of ocean acidification impacts in Washington State.

Recommended Actions
Public Education and Outreach

2 strategies, 7 actions

Strategy 8.1 *— Establish that ocean acidification is a real and recognized problem in Washington State that requires action now.*

Action 8.1.1 — Develop and communicate key messages for use by the Governor, Ocean Acidification Panel members, and others who will act as ambassadors on ocean acidification. *[KEA]*

Action 8.1.2 — Increase the understanding of ocean acidification among key stakeholders, targeted audiences and local communities to help implement the Panel's recommendations. *[KEA]*

Action 8.1.3 — Build a network of engaged shellfish growers, tribes, and non-Indian fishermen to share information on ocean acidification adaptation strategies with key groups. *[KEA]*

Action 8.1.4 — Establish a forum that enables agricultural stakeholders to engage with coastal resource users and managers in developing and implementing solutions.

Strategy 8.2 — Increase ocean acidification literacy.

***Action 8.2.1* —** Develop curricula on ocean acidification and encourage their use by K-12, universities and community colleges. *[KEA]*

***Action 8.2.2* —** Leverage existing education and outreach networks to disseminate key messages and build support for priority actions.

***Action 8.2.3* —** Share the science and responses to ocean acidification at state and regional symposiums, conferences, workshops, and other events.

Recommended Actions
Post Panel Coordination

1 strategy, 1 action

Strategy 9.1 *— Have a governance mechanism that will ensure effective and efficient multi-agency coordination and collaboration; accountability and oversight; public education and engagement; and reliable sources of funding.*

***Action 9.1.1* —** Charge, by gubernatorial action, a person in the Governor's Office or an existing or new organization to coordinate implementation of the Panel's recommendations with other ocean and coastal actions. *[KEA]*

“Big Picture” Issues Identified To Date – cont’d

Science intro and other comments:

- Suggested: more clearly separate the science from the policy & recommendation discussion…few people will wade past the dense technical discussion to even get to the policy discussion which doesn’t begin for 30 pages. Move into an appendix?

- Suggested: move implementation leads and other information into table and out of the main body of the report. Only action title and description in main body.

“Big Picture” Issues Identified To Date

CO2 emission reduction text (Ch 4)

- Suggestion: issue with “far less effective” ; alternate language for bolded statement at the start of the section (and other places where appropriate):

  “Local actions can buy time while we work on the larger problem of CO2 reduction. However, they cannot replace the essential task of reducing CO2 emissions which, if left unchecked, will have consequences that will eventually overwhelm most local actions to adapt, remediate, and protect sources of resilience against ocean acidification.”

“Big Picture” Issues Identified To Date – cont’d

Nutrient reduction recs (Ch5)

- Question: There is no mention of the Section 303(d) process which is used to both list impaired water and to set TMDLs from both point and non point sources. Does DOE believe it can implement a local control program outside of Section 303(d) processes?

“Big Picture” Issues Identified To Date – cont’d

Adaptation and Remediation (Ch 6)

- Suggested: new ideas for potential inclusion under 6.2 or 7.3 *[R&M]*
  - Establish a formal program/process to solicit, discuss, and evaluate possible adaptation management options.
  - Need a mechanisms for facilitating/coordinating adaptation research and monitoring. This could be done by the same group of expert advisors and practitioners established to evaluate adaptation management options.

“Big Picture” Issues Identified To Date – cont’d

Adaptation and Remediation cont’d

- Suggested: New action proposed to emphasize need to preserve what seagrasses we already; the data are emerging to support this as an important action (Action 6.1.X) -

  “Throughout Washington’s marine waters, preserve seagrass and kelp resources at their current levels of abundance, or restore to historical levels of abundance.”

“Big Picture” Issues Identified To Date – cont’d

Research and Monitoring (Ch 7)

- None submitted, although continued work between R&M and A&R groups (and within R&M group) expected
- Planned changes to Action 7.1.1 (in relation to 6.2.1/2)

Public Education and Outreach (Ch 8)

- Comment: Concerned that the education section talks more about delivering “messages” than information, and could be perceived as suggesting a persuasion campaign rather than education.

“Big Picture” Issues Identified To Date – cont’d

Post-Panel (Ch 9)

- Comment: Says the future entity should “oversee” effective expenditure of funds. Oversee implies a clear decision-making role, as opposed to advisory, consultative, etc. If this is really the intent of this language...this creates a very different budgetary structure.

- Comment: I see the scope of the entity as needing more discussion – is it better to fold this into “oceans” or fold it into “climate change?” Is it best to fold it into anything?

Discussion Strategy

General comments/issues (not-chapter specific)

- *Use/placement of science intro*
- *others?*

then chapter-specific discussion