

Planning for Rising Sea Level in Washington: Providing Tools and Guidance for Local Governments

A Coastal Management Fellowship project proposal
submitted to the NOAA Coastal Services Center

by

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Shorelands and Environmental Assistance Program
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October 21, 2009

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1. Background and Introduction

The State of Washington has a unique array of coastal and estuarine environments including the Pacific Ocean coastal area and Puget Sound. The northern Pacific coast consists of rocky beaches backed by high, forested bluffs. The south coast is a broad coastal plain with sandy beaches, dunes, extensive lowlands, and estuaries. The marine shoreline of Puget Sound features marshes, mudflats, bluffs, sandy beaches, and pocket estuaries. In addition, the San Juan Archipelago comprises over 170 significant islands with rugged coastlines and impressive views. Because Washington has over 3,000 miles of marine shoreline, understanding the effects of sea level rise on these environments is of paramount importance. The project described in this proposal will support local, regional, and state planning efforts and will better equip local governments with marine shorelines to make changes in policy and operations to adapt to changes in sea level driven by climate change.

Governor Christine Gregoire has made Climate Change a priority in Washington State Government. In 2007, the [Climate Action Team](#) (CAT) formed and explored climate strategies in all sectors of the state's economy. Through five Technical Working Groups, including a [Coastal & Infrastructure Preparation/Adaptation Working Group](#) (PAWG), the CAT conducted significant analysis of potential policy options for specific sectors of the economy. Since 2007, additional information has been produced to assist the state and local governments of the state of Washington understand impacts of and adapt to climate change. These include:

[Sea Level Rise in the Coastal Waters of Washington](http://cses.washington.edu/db/pdf/moteetalslr579.pdf)
<http://cses.washington.edu/db/pdf/moteetalslr579.pdf>

[The Washington Climate Change Impacts Assessment](http://cses.washington.edu/db/pdf/wacciareport681.pdf)
<http://cses.washington.edu/db/pdf/wacciareport681.pdf>

Developing adaptation strategies for climate change is also a priority for Washington and the West Coast under the West Coast Governors' Agreement on Ocean Health established in 2006. Washington, Oregon, and California are jointly funding a National Academy of Sciences study to evaluate sea-level rise for the years 2030, 2050, and 2100. The evaluation will cover both global and local sea level rise factors and estimates. The states anticipate that the National Academy will publish the final report during the course of this Fellowship. In addition, the West Coast Governors' Agreement Climate Change Action Coordination Team has produced a more comprehensive work plan related to climate adaptation in the region and is currently seeking additional funds to implement this.

Furthermore, the [Washington Coastal Training Program](#) has developed a training class, [Planning for Climate Change](#), to educate shoreline planners and coastal resource managers.

Evaluations from this highly popular class suggest that planners and resource managers want more information about and assistance with specific adaptation strategies by region and incorporating climate variability into codes and planning processes.

In 2009, Governor Gregoire signed [Executive Order 09-05 Washington's Leadership on Climate Change](#) that includes the following:

The Director of the Department of Ecology shall evaluate the potential impacts of sea level rise on the state's shoreline areas, including the potential increases in storm surge and coastal flooding, increased erosion, and loss of habitat and ecosystems, and develop recommendations for addressing these impacts. The Department shall invite the Washington State Association of Counties and the Association of Washington Cities to collaborate in conducting the evaluation and developing recommendations.

Department of Ecology is currently working collaboratively with others to accomplish the Governor's Executive Order. In addition, as geographically specific information regarding potential sea level rise impacts become available, we expect to display this information on the [Washington Coastal Atlas](#).

We would highly value the dedicated work of a NOAA Coastal Management Fellow to build on and tie together previous and ongoing efforts in the state and region to plan for adaptation to sea level rise/climate change.

The core of the state's federally approved Coastal Zone Management (CZM) Program is the Shoreline Management Act (SMA). Enacted by the state legislature in 1971, the SMA began as a citizen initiative to address concerns over increasing coastal development. Significantly updated in 2003, the SMA requires—and provides state funding for—local governments to develop, implement and, and update Shoreline Master Programs (SMPs) to accomplish several fundamental policy goals. Among these are the need to protect ecological functions while encouraging public access and water-dependent development. Cities and counties across Washington State are required to update their SMPs to accomplish these goals – all of which are potentially affected by sea level rise. **The current guidance for conducting SMP updates contains no direction regarding adaptation to sea level rise.**

The Department of Ecology (Ecology) implements both the SMA and CZM Program and, in partnership with local governments, is responsible for overseeing planning and land use decisions across 15 counties, more than 100 cities, and over 3,000 miles of marine shoreline. Developing guidance for how local governments should adapt to sea level rise would clearly have a significant impact as these local governments complete their scheduled SMP updates.

2. Goals and Objectives

The Washington State Coastal Zone Management Program is seeking a NOAA CSC Coastal Management Fellow with an interest in sea level rise, marine shoreline management, and the ability to work well on collaborative projects.

The goal of the project is to provide information and guidance on how local governments should plan for and adapt to sea level rise.

The specific objectives for this project are to:

- 1) Organize existing information regarding adaptation to sea level rise and create a web page on the Department of Ecology's Shoreline Management Program web site for use by local government planners and resource managers.
- 2) Use existing available information to identify marine and estuarine areas in Washington that are particularly vulnerable to sea level rise.
- 3) Build on the work done by the Washington Coastal Training Program and work with state and local marine shoreline planners to identify specific additional needs regarding sea level rise.
- 4) Work with partners to develop specific guidance for local governments to incorporate sea level rise adaptation into Shoreline Master Program during scheduled update cycles.
- 5) Prepare outreach materials for local governments regarding adaptation planning and share information with regional partners.
- 6) Collaborate with experts and engage in climate activities in the region by connecting state-level work to activities underway as a part of the West Coast Governors' Agreement on Ocean Health.

3. Milestones and Outcomes

Spring 2010

Participate in Fellow matching workshop and selection.

June or July 2010

Ecology will encourage and financially contribute to a pre-fellowship planning visit to introduce Fellow to geographic area, work environment, and partners.

August-October 2010

Task 1 Receive an orientation including:

- An overview of state and local government responsibilities in the management of marine shorelines and resources.
- Introductions to key staff with whom the Fellow will be working: colleagues in Ecology's Coastal and Shorelands Section, shoreline planners at Ecology's regional offices, advisory group members, key local government staff, staff from other agencies with resources in the nearshore, and regional experts on climate change/sea level rise.

- Opportunities for field visits with experienced Ecology staff in order to become familiar with Washington's marine shorelines.

Task 2 Work with the advisory group to become familiar with resources and information available related to sea level rise adaptation in Washington and the west coast region.

Task 3 Work with Mentor and advisory group to develop a project strategy.

Task 4 Mentor and Fellow will work together to develop an individual work plan outlining the responsibilities and expectations of both Ecology and the Fellow. This work plan will include specific tasks and products.

November 2010-January 2011

Task 5 Work with the Coastal Training Program, Shoreline and Coastal Planners Group, advisory group, and state and local marine shoreline planners and resource managers to identify local government needs for sea level rise adaptation information and guidance (e.g. hazard avoidance and mitigation, erosion and flood control, loss of coastal habitat and ecological functions, increasing public cost of protecting and maintaining shorelines).

Task 6 Identify data gaps and challenges. Conduct a literature search to help fill data gaps, including available local and regional information.

February 2011-June 2011

Task 7 Use existing available information and guidance from advisory group to identify marine and estuarine areas in Washington that are particularly vulnerable to sea level rise.

Task 8 Work creatively with partners to develop engaging and practical ways to present information gained in Tasks 6 and 7 on web site.

June 2011-July 2011

Task 9 Prepare and present a poster at the Coastal Zone 2011 conference.

August 2011-December 2011

Task 10 Work with the advisory group to develop draft guidance to help local governments characterize threats and management issues and develop policies to maintain resilience and reduce adverse impacts associated with rising sea level. The guidance will support the update of local Shoreline Master Programs..

Task 11 Develop a plan to obtain formal review of draft guidance document

January 2012-March 2012

Task 12 Implement the plan to obtain formal review of draft guidance document. Incorporate or document response to comments from reviewers. Produce a final draft.

Task 13 Post guidance document on web and begin development of specific outreach materials to communicate about the guidance document and the information available on the web site.

April 2012-June 2012

Task 14 Develop a survey tool to assess the state of local governments' adaptation planning progress and additional needs.

Task 15 Implement survey and analyze results. Communicate survey results and develop recommendations for future work.

July 2012-August 2012

Task 16 Present work in an oral presentation at the 2012 meeting of The Coastal Society.

Task 17 Write a final report documenting the project.

4. Project Description

The proposed project provides the opportunity for a two-year fellowship with the Coastal Zone Management Program in the Washington State Department of Ecology. This fellowship will provide information on sea level rise issues relevant to coastal and marine shoreline planners and resource managers and provide them with guidance on how best to use this information in local planning decisions. The Fellow will also engage in and contribute to climate change activities underway as part of the West Coast Governors' Agreement on Ocean Health throughout the course of the Fellowship.

The first component of the project is to work with advisory group members, the Coastal Training Program, Shoreline and Coastal Planners Group, and state and local marine shoreline planners and resource managers to identify local government needs for sea level rise adaptation information and guidance. The Fellow will then find information to help fill these gaps. Using existing available information and guidance from the advisory group, the Fellow will identify marine and estuarine areas in Washington that are particularly vulnerable to sea level rise. The Fellow will work creatively with partners to develop engaging and practical ways to present this information on the Department of Ecology web site.

Next, the Fellow will work with the advisory group to develop a draft guidance document for local governments to incorporate sea level rise adaptation into local Shoreline Master Programs during scheduled updates. The Fellow will also develop and implement a plan to obtain formal review of draft guidance document and incorporate or document response to comments from reviewers to produce a final draft. The Fellow will then post the guidance document on the web and develop specific outreach materials to communicate about the guidance document and the information available on the web site. Finally, the Fellow will develop and implement a survey tool to assess the state of local governments' adaptation planning progress and additional needs and write a culminating report. The specific tasks are listed in Section 3 of this proposal.

5. Fellow Mentoring

Dr. Kathy Taylor, the Washington Coastal Zone Management Program's Senior Marine Ecologist, will mentor the Coastal Management Fellow. Kathy is an experienced mentor and will be the primary point of contact for project guidance.

Other key staff within Ecology and external partners will be available as an advisory group to provide technical guidance:

Ecology

- **Cathy Angell**, Washington Coastal Training Program Coordinator, will provide information learned from the development, implementation, and evaluation of the Coastal Training Program class, *Planning for Climate Change*.
- **Tom Clingman**, Policy and Legislative Lead for Ecology's Shorelands Program will provide information regarding sea level rise adaptation policy.
- **Hugh Shipman**, Coastal Geologist, will provide information on Ecology's past and current work on sea level rise.
- **George Kaminsky**, Coastal Engineer, will provide information on SW Washington coastal erosion and current work related to sea level rise.
- **Betty Renkor**, Senior Shoreline Planner, will provide guidance in shoreline planning and policy.
- **Jennifer Hennessey**, Coastal Policy Specialist, will provide information and coordination regarding connections with the climate change work of the West Coast Governors' Agreement on Ocean Health.
- **Brian Lynn**, Assistant Director of Washington's Coastal Zone Management Program and Manager of the Coastal and Shorelands Section will provide additional guidance.

External Partners

- **Patty Glick**, Senior Global Warming Specialist with the **National Wildlife Federation** will provide information regarding NWF's analysis of sea level rise and coastal habitats in Washington.
- **Katrina Hoffman**, Coastal Resources Specialist, with **Washington Sea Grant** will provide coordination of effort with Washington Sea Grant Programs.
- **Tim Quinn**, Chief Scientist with the Washington **Department of Fish and Wildlife**, and member of the Science Panel of the **Puget Sound Partnership** will provide information and assistance on fish and wildlife issues related to sea level rise in Washington's marine shorelines
- **Jena Carter**, Regional Marine Director for **The Nature Conservancy** will provide a connection with TNC's marine program on the west coast.
- **Laura Wharton**, Comprehensive Planning Supervisor with **King County**, will provide information on local government needs and challenges in planning for sea level rise.
- **Scott Andrews**, Environmental Compliance Coordinator, with the **Swinomish Indian Tribal Community** will provide input regarding the needs and challenges in planning for sea level rise from a Tribal perspective.

The Fellow will be welcomed as a member of our Coastal and Shorelands Section of the Shorelands and Environmental Assistance (SEA) Program. The Fellow will be:

- Expected to attend staff meetings and actively participate in discussions.
- Provided with opportunities to join staff on field visits, at internal and external meetings, and at a range of regional coastal events.
- Provided with many opportunities to meet coastal and shoreline specialists from local governments, other state government agencies, nonprofit groups, and academic institutions.
- Provided with important sources of background information and the necessary technical resources and training to carry out the project.
- Encouraged to use initiative and creativity in developing the project.
- Encouraged to communicate about their work at both regional and national meetings.
- Encouraged to take advantage of professional development opportunities related to their work

Additionally, this project will provide the Fellow with an excellent opportunity to:

- Complete a well-defined project that will significantly contribute to planning for sea level rise adaptation in Washington and the west coast region.
- Establish productive working relationships with a variety of coastal professionals.
- Become familiar with the marine shorelines of the State of Washington.
- Expand knowledge and skills and gain experience working in Washington's Coastal Zone Management program.
- Spend two years working in a positive environment with opportunities to contribute to the direction of the Department of Ecology's future work.

6. Project Partners

National Wildlife Federation has accomplished significant work on sea level rise in this region and has produced the report *Sea-level Rise and Coastal Habitats in the Pacific Northwest: An Analysis for Puget Sound, Southwestern Washington, and Northwestern Oregon*.

Washington Sea Grant has provided and continues to provide valuable information and outreach on issues related to the marine environment.

Washington Department of Fish and Wildlife is the agency primarily responsible for managing the fish and marine species and their habitats of the State of Washington.

Puget Sound Partnership is the state agency charged with protecting and restoring Puget Sound and is the National Estuary Program for Puget Sound.

The Nature Conservancy's Global Marine Initiative works with partners around the world to find lasting solutions that benefit marine life, local communities and coastal

economies by building resilience into protected areas, applying market-based strategies, protecting and restoring oceans and coasts, setting priorities with science, and developing new tools to manage threats.

King County has been a leader among local governments working on climate change issues. King County's 2008 report, [Vulnerability of Major Wastewater Facilities to Flooding from Sea-Level Rise](#) clearly indicates their ability and willingness to plan for sea level rise.

Swinomish Indian Tribal Community has undertaken a multiyear climate change initiative to respond to climate change challenges and promote long-term proactive action for the Tribe.

7. Cost Share Description

The Department of Ecology will contribute both in-kind support and \$15,000 non-federal cash match from the Department of Ecology's state budget. The Coastal Management Fellow will have access to all equipment and services available to agency staff including office space, supplies, telephone, personal computer, software, remote calling card, fax, and internet and e-mail access. Agency vehicles will be available for work-related use. In addition, Ecology will provide funds for necessary travel, training opportunities, and purchases of data products and software. Office administrative support and computer support staff are available as well as a GIS and cartography center.

Ecology's Core Training Program offers over 30 different training classes that will be available to the student. Further amenities available include miles of walking trails on the wooded campus at the Ecology Headquarters building and a variety of recreational activities planned by the wellness committee.

8. Strategic Focus Area

The project described in this proposal addresses the following thematic area:

Changing Climate: Projects related to climate change adaptation planning and risk assessment. This includes climate-related inundation hazards (flooding, sea level rise, storm surge), and conservation and green infrastructure as means to accomplish adaptation planning.

The proposed project will provide valuable information and guidance on potential sea level rise impacts to Washington's marine shorelines and will provide guidance on recommended adaptation strategies. Making this information available supports shoreline planning, particularly the updating of local Shoreline Master Programs, as well as planning for the conservation and restoration of habitat.

Appendix A Letters of Support



NATIONAL WILDLIFE FEDERATION®

Pacific Regional Center
6 Nickerson Street, Suite 200
Seattle WA 98109
206-285-8707
www.nwf.org

October 15, 2009

RE: Letter of support for the 2010-2012 Washington State Coastal Management Fellowship Proposal from the Washington State Department of Ecology

To Whom it May Concern –

I am writing to express my strong support for the Washington State Coastal Zone Management Program's proposal to NOAA for a CSC Coastal Management Fellow, beginning in 2010, to assist the State of Washington in its efforts to build a strategy to prepare for and respond to sea-level rise. As research by the National Wildlife Federation and others has shown, Washington's unique and diverse coastal habitats and the people and wildlife they support are highly vulnerable the impacts of climate change, including an accelerating rate of sea-level rise. Accordingly, sea-level rise must be a major consideration in the region's coastal management and ecological restoration plans.

The National Wildlife Federation has been dedicated to helping local and state governments, non-governmental organizations, and the public better understand the risks from climate change as well as develop and promote meaningful solutions – including strategies to cope with those impacts that are either already underway or inevitable. Indeed, the State of Washington has been a true leader in the development of a climate change adaptation strategy to meet this challenge. However, implementing such a strategy requires a significant investment in both funding and staff time, both of which are scarce in these trying economic times.

With the support of a NOAA Coastal Management Fellow, the Department of Ecology will be better able to build on the important work of the state's Climate Action Team and associated Coastal and Infrastructure Preparation and Adaptation Working Group to assist local governments and other stakeholders incorporate sea-level rise into their respective coastal management plans. We therefore highly recommend that this proposal be funded.

Sincerely,

Patty Glick
Senior Global Warming Specialist
National Wildlife Federation
glick@nwf.org
206-285-8707, ext. 104



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

Mailing Address: 600 Capitol Way N • Olympia, WA 98501-1091 • (360) 902-2200, TDD (360) 902-2207
Main Office Location: Natural Resources Building • 1111 Washington Street SE • Olympia, WA

October 20, 2009

Dr. Kathy Taylor
Shorelands and Environmental Assistance Program
Washington Department of Ecology
Post Office Box 47600
Olympia, Washington 98504-7600

Dear Kathy:

The Washington Department of Fish and Wildlife fully supports your proposal to have a NOAA CSC Coastal Management Fellow work on sea level rise issues in Washington State. As you know, we are currently working closely with the Department of Ecology on a number of shoreline planning issues. A Fellow will increase our collective ability to incorporate sea level rise into local shoreline planning efforts, which ultimately will result in better protection for near-shore processes, structures, and functions. I look forward to serving on the advisory group that will provide direction for this work both in my role as Chief Scientist of the Habitat Division at Washington Department of Fish and Wildlife and also as a member of the Science Panel of the Puget Sound Partnership.

Sincerely,

Timothy Quinn, Ph.D.
Chief Scientist
Habitat Program
Washington Department of Fish and Wildlife
600 Capitol Way North
Olympia, Washington 98501
(360) 902 2414
Timothy.Quinn@dfw.wa.gov



WASHINGTON SEA GRANT
UNIVERSITY OF WASHINGTON
3716 BROOKLYN AVENUE NE
SEATTLE, WA 98105-6716

206.543.6600 • FAX: 206.685.0380
WSG.WASHINGTON.EDU

October 22, 2009

Dr. Kathy Taylor
Shorelands and Environmental Assistance Program
Washington Department of Ecology
Post Office Box 47600
Olympia, Washington 98504-7600

Dear Ms. Taylor,

I would like to express my support for the Washington State Coastal Zone Management Program's proposal to NOAA CSC for a 2010-2012 Coastal Management Fellow.

As the Coastal Resources Specialist on Washington Sea Grant's Marine Advisory Services staff, I focus on issues pertaining to shoreline and coastal planning and sustainable coastal community development. I coordinate the Shoreline and Coastal Planners Group, which is a professional development network for interested professionals, and work closely with the Padilla Bay NERR's Coastal Training Program. If Washington State is chosen to receive a NOAA CSC Coastal Management Fellow, I would enthusiastically participate on a fellowship advisory board and collaborate on outreach initiatives where appropriate.

The proposed fellowship project, which focuses on providing information and guidance to local governments in planning for and adapting to sea level rise, is directly aligned with Washington Sea Grant's priorities. Specifically, the fellowship goals are closely tied to three out of four critical program areas as defined in Washington Sea Grant's 2010-2014 Strategic Plan: Living Marine Ecosystems, Ocean and Coastal Environmental Health, and Changing Oceans and Coastal Communities.

I look forward to supporting a Fellow in helping the state generate and disseminate guidance on guidance on how local governments should plan and adapt to sea level rise.

Sincerely,

Katrina Hoffman
Coastal Resources Specialist
Washington Sea Grant
kathoff@uw.edu
206-616-3368