



## From Knowledge to Action: Washington State Advances Climate Solutions with Ocean Acidification Action Plan

**Government:** Washington State, USA

**Region:** North America

**Sector(s):** Resilience, Land use, Oceans

**Date of publication:** July 2019

More than 30% of Puget Sound’s marine species are vulnerable to ocean acidification by virtue of their dependency on the mineral calcium carbonate to make shells and skeletons. Annual sales of farmed shellfish from Washington account for almost 85% of U.S. West Coast sales and generate \$270 million annually.



Governor Jay Inslee at Taylor Shellfish Farms in Washington State.

### Summary

The ocean plays a central role in regulating our climate and absorbing human caused greenhouse gas emissions. Ocean acidity has already increased by 30 percent and is expected to double over pre-industrial levels by the end of this century as a result of the ocean absorbing one-third of the atmospheric carbon dioxide generated by human activities. Significant adverse impacts on fisheries and marine ecosystems have already been documented due to ocean acidification and these impacts will worsen in the future.

A founding member of [International Alliance to Combat Ocean Acidification](#), Washington State aimed to become the first state to lead the world in addressing the threat of ocean acidification to the local shellfish industry. Washington released an OA Action Plan consisting of 42 recommendations for actions across six key focus areas: **1. Reducing carbon emissions 2. Reducing local land-based contributions to ocean acidification 3. Increasing our ability to adapt to and remediate the impacts of ocean acidification 4. Investing in monitoring and scientific investigations 5. Informing, educating, and engaging stakeholders, the public, and decision makers 6. Maintaining a sustainable and coordinated focus on ocean acidification.**

Washington State’s OA Action Plan includes expanding the protection and restoration of native shellfish and aquatic vegetation habitats such as kelp and eelgrass that can absorb carbon and improve water quality locally. The plan also calls for investing in adaptive measures in partnership with local shellfish companies, developing predictive forecasting models, and performing monitoring and research to understand vulnerability of and impacts to key species in the region to ocean acidification.



## Results and Accomplishments

- Passing a package of climate policies designed to dramatically reduce the state's carbon dioxide emissions, including mandating 100% clean electricity by 2045, improving efficiency of buildings, and advancing electrification of the transportation sector from cars to ferries.
- Establishing the Washington Ocean Acidification Center at the University of Washington to coordinate scientific investigations and the Marine Resources Advisory Council to oversee plan implementation.
- Improving the state's understanding of the role of seagrass and kelp in ameliorating local ocean acidification conditions through a variety of research activities and pilot projects.
- Launching a conservation hatchery that serves as a hub for research on ocean acidification and restoration of shellfish, kelp, and other species.
- Initiating enhanced and widescale monitoring – with real-time sharing through the Northwest Association of Networked Ocean Observing Systems (NANOOS) – to collect data and support shellfish hatchery adaptation practices.
- Developing and enhancing oceanographic models that predict ocean acidification conditions through short-term forecasts and that aid evaluation of how much local land-based sources contribute to exacerbating acidification.
- Improving scientific capacity of state agencies to evaluate ocean acidification as it relates to their authorities and management of resources.
- Creating K-12 curricula, garnering local and national media attention, and aiding development programs and exhibits by aquariums on ocean acidification to increase awareness and literacy among the public.
- Co-founding the [International Alliance to Combat Ocean Acidification](#).

## Enabling conditions

Observable impacts of acidification on shellfish hatcheries helped motivate action and leadership in Washington with Governor Christine Gregoire creating the Washington State Blue Ribbon Panel on Ocean Acidification in 2012 to chart a course for addressing the causes and consequences of acidification. This diverse group of community leaders, scientists, shellfish growers, state agencies, tribes, and other interest groups created a broadly supported, science-based plan for action.

In 2017, the Marine Resources Advisory Council (MRAC) convened Washington's leading ocean acidification thinkers to evaluate progress and revise the state's plan based on emerging science, management practices, and the new global network of partners.

Ongoing state investment and establishment of key institutions have laid the foundation for Washington to continue leading on this issue and have leveraged additional resources and expertise to aid implementation.

## Challenges

Driving carbon dioxide emission reductions is fundamental to addressing ocean acidification. Other challenges regionally and globally include: 1) improving the scientific understanding of OA and vulnerability of key marine species, 2) advancing adaptation and resiliency strategies, including further evaluating effectiveness and feasibility of actions, and 3) identifying how new or existing management frameworks can incorporate and sustain targeted investments and actions over time while also managing for force-multiplying factors like temperature and dissolved oxygen.

## Key lessons learned

Just as some ocean acidification science is in beginning stages, policy response and management discussions are also in beginning stages, making early and frequent collaborations across government, scientists, and impacted communities at a state and regional level all the more beneficial. Having a state commitment for comprehensive action and establishing mechanisms to facilitate ongoing collaboration remain critical to ensuring long-term implementation of mitigation, adaptation, and resiliency strategies.



It is critical to continue efforts to decarbonize our economy, locally, regionally, nationally, and globally and building bridges between ocean and climate policy, management, and science communities plays an important role in facilitating the actions needed to protect our communities.

#### More information

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<http://oainwa.org/>

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