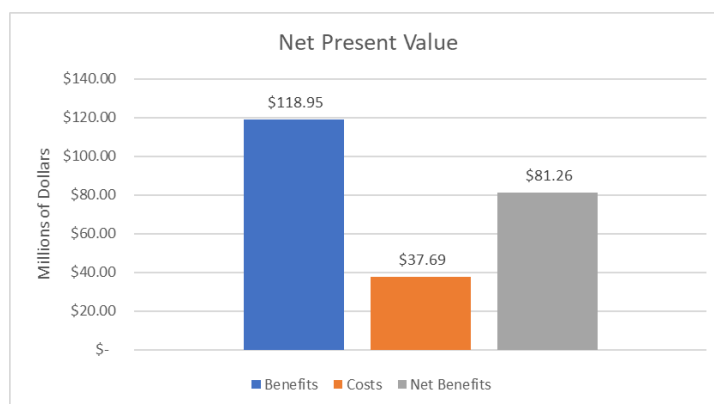


Benefit Cost Analyses and Regulatory Review

Greene Economics has conducted benefit cost analyses and regulatory reviews for over 25 years. We have helped clients including counties, states, and other public entities as well as private industry groups and businesses understand how the implementation of a policy or program will provide short- and long-term benefits and costs to the community. This includes:

- extensive work **assessing the benefits and costs of regulatory review related to critical habitat and other environmental assessment projects**,
- assessing the impacts of **regulation and rulemaking to communities and businesses**, and
- focusing on complex probabilistic **risk-based analyses for flood risks, toxic releases, and earthquakes** with an emphasis on risk based communication
- **estimating the benefits and costs of an existing tele-health program** to better understand the value and impact of the program to the health of both the economy and community.

Environmental regulatory reviews are especially beneficial to policy makers, advisors, industry participants, and anyone who is or may be impacted by a proposed or existing regulation, whether at the local, state, or federal level. One very effective way to assess the merits of a project, program, or regulatory action is to assess and compare the benefits and costs of such an activity. This type of work often requires the collection and analysis of publicly available information and confidential industry-specific data. Much of the industry data is collected through interviews and discussions with the client and other contacts who are well-versed in the proposed or existing activity to provide a robust analysis of costs and benefits. A few examples of our experience are highlighted below and there are brief project descriptions on the following page.



- Evaluating the benefits and costs of:
 - [Early Earthquake Warning Systems](#) - California Office of Emergency Services (CALOES) involving applications from smart phone apps to water and gas utilities
 - [ECHO Tele-health Program](#) - Northwest Portland Area Indian Health Board (NPAIHB)
 - [Critical Habitat Designation for Beluga Whale](#) including impacts to recreational and subsistence fishing and mining and industrial activities - the National Marine Fisheries Service (NMFS)
 - [Nature-Based Climate Adaptation](#) on the coast of California in Ventura County with ecosystem service valuation - The Nature Conservancy (TNC)
 - Economic and Plan Formulation Independent External Peer Review Panel for [Port of Nome Modification Integrated Feasibility Report \(ACOE\)](#)
- Providing Regulatory Review for:
 - Kalama [Methanol Environmental Impact Statement \(DOE\)](#)
 - Economic Impacts of Potential Carbon Reduction Rules ([POP](#))
 - [Stream Protection Rule](#) - National Mining Association (NMA)
 - [GHG Cap and Trade Rule in Oregon \(EVRAZ NA\)](#)
 - [Proposed Regulatory Changes in Offshore Oil and Gas Exploration in the Arctic \(API\)](#)

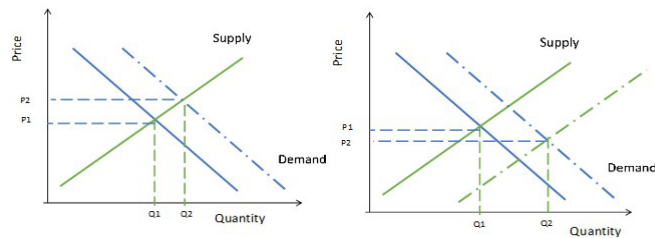
Project Examples

Benefit Cost Analysis of Early Earthquake Warning, California Governor's Office of Emergency Services

Greene Economics was part of a multi-disciplinary team conducting a benefit cost analysis of Early Earthquake Warning (EEW) in the State of California. Relying on empirical research and stakeholder/vendor interviews, estimates for the benefits provided by an EEW system and the costs of that EEW system were developed for twelve use cases. One of the deliverables was an Excel-based tool that allows users to choose different use cases and input assumptions from drop-down menus and view the changes in benefits, costs, net benefits and benefit-cost ratios in both tabular and visual results.

Second Supplemental Environmental Impact Statement (SSEIS) for the Kalama Manufacturing & Marine Export Facility, Department of Ecology

Greene Economics worked with TRC Companies supporting Washington State DOE to evaluate the impacts of a proposed methanol production and export facility along the Columbia River. The team developed an interactive tool to assess the difference in global greenhouse gas emissions with and without the facility. Key among the issues under consideration were the many sources of uncertainty and how these could be communicated to the public. The tool assisted demonstrated how the GHG outcomes will change under different economic forecasts, and alternative economic assumptions such as oil prices and global methanol demand growth.



Methanol Supply and Demand Showing Potential Price Volatility

Analysis of the False Killer Whale Take Reduction Plan, National Marine Fisheries Service, Pacific Island Region, Hawaii

Greene Economics personnel conducted an Environmental Assessment (EA)/ Regulatory Impact Review (RIR)/Initial Regulatory Flexibility Act Analysis (IRFA) of the False Killer Whale Take Reduction Plan (TRP) for the National Marine Fisheries Service (NMFS), Pacific Island Region. The purpose of the TRP is to reduce incidental mortality and serious injury of false killer whales in the deep-set tuna target longline/set line fishery and the shallow-set swordfish target longline/set line fishery. The purpose of the study was to evaluate, to the extent practicable, the economic, socioeconomic, and other costs and benefits attributable to the alternatives. The project included estimating the capital and ongoing replacements costs associated with switching to different fishing gear, potential reduction in catch rates and overall total catch, and increased time and fuel costs to travel



outside of nearshore exclusion zones. In addition to effects on commercial fishing, the analysis identified and evaluated potential impacts to subsistence and recreation fishing, recreation and tourism, seafood consumers, fishing equipment suppliers, and educational/scientific/passive users. Direct and indirect benefits of reduced mortality and serious injury were qualitatively described.

Analysis of Benefits and Costs of Proposed Regulatory Changes in Offshore Oil and Gas Exploration in the Arctic, Oil and Gas Industry

Greene Economics personnel analyzed the benefits and costs of offshore oil and gas exploration in the U.S. Arctic. Analysis included all benefits and costs covering royalties, income, fiscal impacts, regional economic impacts, and environmental benefits and costs. Detailed financial data were developed from public sources and from the client (under a nondisclosure agreement). Analysis was conducted prior to rulemaking on oil and gas operations in the arctic and covered risks of oil spills, safety, and health impacts. Results were presented to the White House Office of Management and Budget. Analysis was also presented in testimony to the U.S. Senate Energy Committee.