



Solutions for balanced decision-making

FRAMEWORK FOR ASSESSMENT OF COMPLEX ENVIRONMENTAL TRADEOFFS (FACET), IN SUPPORT OF COMPLEX AND COMPETING ENVIRONMENTAL, SOCIAL, AND ECONOMIC ISSUES

Decision makers often face complex and competing choices that have broad ripple effects among stakeholders, including underserved communities.

FACET is a science-based framework to transparently evaluate tradeoffs among complex environmental, economic, and social issues. It offers customizable support for policy and business decisions, resulting in risk-informed, socially equitable, and defensible evaluations for all stakeholders. Applications include:

- » Energy infrastructure siting (e.g., nuclear power, renewable energy, hydropower, and transmission)
- » Optimal operation of utility infrastructure
- » Urban development in fragile areas (e.g., shorelines, waterways)
- » Human behavior and resource interactions
- » Effects of climate change and extreme weather events

- » Socioeconomic activities and management of the natural environment over time
- » Public land use policy and land management decisions

This framework differs from traditional decision-making tools because of its flexibility in adapting to long-term, environmental factors, like climate change, or unpredictable extreme events. Its advanced analytics can integrate shifting environmental baselines and mitigation alternatives to best protect communities and the environment.

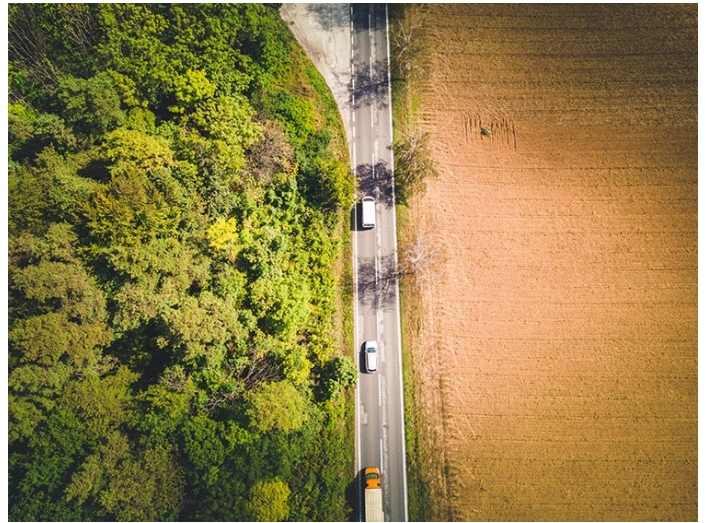
This science-based insight has diverse applications across a broad range of environmental and social issues. FACET's next generation approach makes difficult decisions more defensible, transparent, and equitable.

Since its inception in 1965, PNNL's interdisciplinary team of modelers, economists, lawyers, environmental scientists, and stakeholder engagement experts have led environmental and socioeconomic assessments. We specialize in data-driven solutions to complex issues.

SOLUTIONS FOR NEXT GENERATION DECISION MAKING

FACET helps identify challenges and potential solutions, increasing situational awareness and ultimately improving stakeholder outcomes.

- » **Dynamic Baseline Challenge** – Next generation modeling to describe and understand resource conditions, trends, and interactions spanning time and geographies.
- » **Multidisciplinary Predictive Modeling Challenge** – Quantitative models to rapidly predict effects of natural changes and socioeconomic activities on resources.
- » **Uniform Valuation Challenge** – Fair, balanced, and equitable solutions to environmental and socioeconomic issues. FACET offers a defensible valuation system for quantifying stakeholder costs and benefits, including economic, social, cultural, recreational, and ecosystem impacts.
- » **Multi-Stakeholder Tradeoffs Challenge** – FACET's tradeoff analyses leverage an understanding of resource relationships and values for optimal, equitable, and transparent decision-making.



FACET has broad applications to complex challenges such as wildland/urban interface, climate change, extreme weather, energy infrastructure siting, socioeconomic activities, and management of the environment.

ABOUT PNNL

Pacific Northwest National Laboratory draws on signature capabilities in chemistry, Earth sciences, and data analytics to advance scientific discovery and create solutions to the nation's toughest challenges in energy resiliency and national security. Founded in 1965, PNNL is operated by Battelle for the U.S. Department of Energy's Office of Science.

FOR MORE INFORMATION ABOUT FACET

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