

# Economic and Fiscal Impacts of an Oil Spill Event

## Project Overview

Marine and coastal resources play a vital role in supporting much of Delaware's economy. An oil spill that damages these resources may lead to job and income losses among Delaware workers and reduce both the size of Delaware's economy and the revenues collected by the state. To inform policymakers and the public of the potential magnitude of these economic and fiscal impacts, DNREC conducted an analysis of these effects, with a focus on spill-related reductions in marine and coastal recreation and commercial fishing activity. Although spill-related changes in commercial shipping activity and spill response may have implications for the Delaware economy, the magnitude of these effects is highly uncertain and therefore excluded from this analysis.

DNREC conducted this analysis for several hypothetical surface spills occurring off Delaware's coast, defined according to spill size, season of the year, and whether mitigation measures such as mechanical removal are implemented to minimize spill impacts.

## Approach for Assessing Oil Spill Impacts

To assess the economic and fiscal impacts associated with each oil spill scenario, this analysis applied the IMPLAN input-output model, a well-established framework for estimating the economic and fiscal impacts associated with a change in demand for the output produced by one or several industries across the economy. Using detailed data on inter-industry relationships, input-output models estimate how a positive or negative shock in one industry (e.g., a change in output) cascades across the broader economy.

In addition to capturing direct economic impacts for industries with changes in production, input-output models capture spillover effects to other industries, including indirect and induced impacts. Indirect impacts reflect inter-industry purchases and arise from firms purchasing inputs from their suppliers; induced impacts, by contrast, result from wages paid to workers, who may spend these wages on consumer electronics, clothing, etc.

The inputs developed for the IMPLAN analysis reflect spill-specific changes in economic activity associated with reductions in coastal/marine recreation and commercial fishing. For recreation, these inputs include various expenditure reductions related to the decline in beach use, recreational fishing, and recreational boating following a spill, such as lodging, restaurant meals, groceries, bait and tackle, entertainment, and related items. For commercial fishing, the reduction in commercial fishery output itself was used as an input to IMPLAN. In addition, because there are various activities in the seafood supply chain that are downstream from commercial fishing, such as seafood processing and wholesaling, the IMPLAN inputs for this analysis included activity changes for these downstream activities as well.

## Results for these five spill scenarios provide key insights into the findings of the analysis:

**Scenario 1:** 200,000-barrel spill in the summer, without mitigation measures

**Scenario 2:** 200,000-barrel spill in the summer, with mitigation measures

**Scenario 3:** 126-barrel spill in the summer, without mitigation measures

**Scenario 4:** 200,000-barrel spill in the winter, without mitigation measures

**Scenario 5:** 2,240-barrel spill in the summer, without mitigation measures

Exhibit 1 presents the estimated reductions in employment, state gross domestic product (GDP), labor income, and state government revenue by spill scenario. For each scenario, these impacts are presented as a range, consistent with the range of reduced recreational and commercial fishing activity associated with each scenario. These results highlight that the losses across all economic and fiscal metrics are significantly higher under the larger (200,000 barrel) spill scenarios than under the scenarios involving lower spill volumes, with losses under the 200,000-barrel, unmitigated summer spill ranging

# Economic and Fiscal Impacts to Delaware

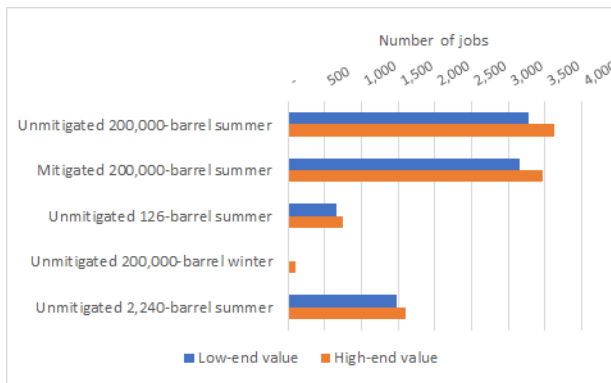
from 3,300 to 3,600 jobs, \$195 to \$216 million in GDP, \$122 to \$135 million in labor income, and \$6.5 to \$7.2 million in state government revenue. Mitigation efforts are expected to reduce economic and fiscal impacts to Delaware by roughly 4% across all four metrics.

For both the 2,240-barrel and 126-barrel unmitigated summer spills, economic and fiscal losses to Delaware are significantly lower across all four metrics, representing the significant role of spill size in damage estimates. The lower losses under these scenarios are largely driven by the less significant reductions in coastal recreation under these scenarios.

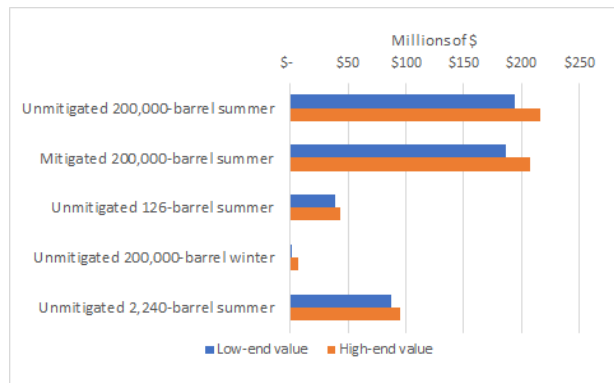
The damage estimates also illustrate that economic and fiscal impacts are likely to be higher for spills occurring during the summer than for spills in the winter. This reflects the timing of the peak coastal recreational period as well as the open commercial fishing seasons for Delaware's more profitable fisheries (e.g., blue crab, which is open from the beginning of March through November). In addition, based on the oil spill modeling conducted for the analysis, spilled oil from the 200,000-barrel unmitigated *summer* spill would travel directly into the coastal areas and waters frequented by Delaware beachgoers, recreational anglers, recreational boaters, and commercial fishers. In contrast, the spill modeling for the *winter* 200,000-barrel scenario projects that the winds and currents would push spilled oil southward away from these areas. Additional details on DNREC's analysis of spill impacts to Delaware's economy, including results for additional oil spill scenarios, are available in the [full oil spill risk assessment report](#).

## Exhibit 1. Summary of Economic and Fiscal Impacts

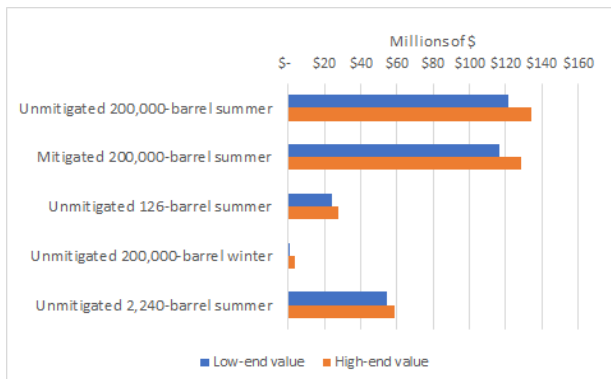
### EMPLOYMENT IMPACTS



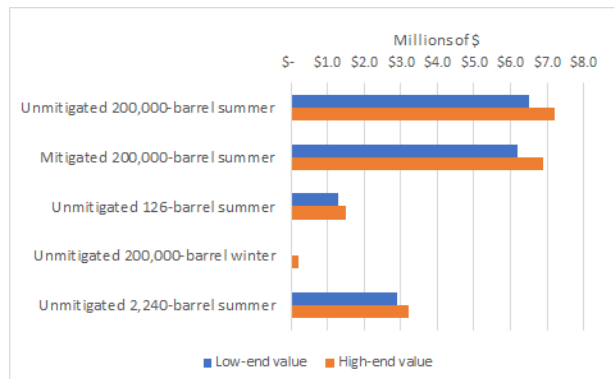
### GDP IMPACTS (\$M)



### LABOR INCOME IMPACTS (\$M)



### STATE GOVERNMENT REVENUE IMPACTS (\$M)



<https://dnrec.alpha.delaware.gov/coastal-programs/coastal-science/research/>

