Initial Economic Impact Estimates from Planned Climate Resilience Regional Challenge Spending

Summary Estimates

February 9, 2026

Overview

This summary provides the results of a preliminary economic impact analysis of the National Oceanic and Atmospheric Administration's (NOAA) Climate Resilience Regional Challenge (CRRC) Track 1 and Track 2 awards. The analysis was conducted by Ocean Associates, Inc. (OAI) and its subcontractor, Eastern Research Group, Inc. (ERG). The CRRC program funded projects designed to increase resilience to natural hazards, such as coastal storms and flooding. A total of 18 projects were funded across two "tracks." The ten Track 1 awards focus on improving regional collaboration and resilience strategy planning. The eight Track 2 awards focus on implementing on-the-ground projects, such as infrastructure improvements, to increase community resilience. This report focuses on the projected jobs and economic activity generated from nine[1] Track 1 awards and all eight Track 2 awards. This economic output is presented relative to (i) each track and (ii) activities of particular interest across the projects. Ocean Associates, Inc. and Eastern Research Group, Inc. conducted this study using IMPLAN (IMpact analysis for PLANning), an economic impact analysis modeling tool.

Overall, the analysis found that

- NOAA allocated $571.8 million through the CRRC awards ($16.6M for Track 1 and $555.2M for Track 2). Of that total, OAI/ERG evaluated the economic impacts of $528.4 million ($16.6M for Track 1 and $511.8M for Track 2[2]).
- Track 1 awards are estimated to generate **211 jobs**[3] and **$34.8 million** in national economic output.
- Track 2 awards are estimated to generate **5,795 jobs** and **$1.09 billion** in national economic output.
- Across both tracks, these estimates total **6,006 jobs** and **$1.12 billion** of economic output.
- **Overall, every $1 of CRRC spending is estimated to generate $2.13 in economic activity**.

In addition to the estimates for total economic output, IMPLAN provides estimates of value added (i.e., contribution to gross domestic product [GDP]) and labor income. Table 1 provides these estimates for both tracks and overall.

[1] The award for the Federated States of Micronesia (FSM) was not analyzed due to data limitations within IMPLAN. OAI/ERG are currently assessing the best course of action for the FSM award and intend to address its economic impacts in a future analysis.

[2] These numbers represent the award totals minus the award amount for areas where data are not yet available to perform an analysis (i.e., Federated States of Micronesia), as well as transfer payments (e.g., land purchases) and international payments, which cannot be evaluated with the selected model.

[3] IMPLAN jobs include full-time, part-time, and temporary positions, but these jobs are not full-time equivalent (FTE). While IMPLAN does provide conversion ratios for each industry code, conversion cannot be made to full-time equivalent from the estimated totals reported in this summary.

Table 1. Preliminary total national-level estimates.

Track	National Jobs Impact	National Labor Income Impact (millions)	National Value-Added Impact (millions)	National Output Impact (millions)
Track 1	211	$18.46	$24.90	$34.82
Track 2	5,795	$466.06	$701.80	$1,090.18
TOTAL	6,006	$484.52	$726.70	$1,125

Methods: Economic Impact Analysis and IMPLAN Model

IMPLAN (IMpact analysis for PLANning) is a widely used economic modeling tool for estimating the impacts of investments, such as those made by NOAA and the CRRC program. It uses regional data to examine the relationships between various economic sectors (i.e., input-output data) from the U.S. Bureau of Economic Analysis to trace the flow of spending across economic sectors and households at multiple geographic scales. This analysis used IMPLAN's Multi-Regional Input-Output (MRIO) module, which tracks where spending occurs and how it moves across regions through trade and commuting. By accounting for these interregional linkages, the MRIO approach provides a clearer picture of local, regional, and national impacts, which would otherwise be understated if spending were assumed to remain only within the counties or states where expenditures occur.

Four types of economic indicators are useful for understanding the impact of award spending:

- **Jobs created** are the estimated number of jobs generated from spending (these may be new jobs that are created by the activity or existing jobs supported by the activity).
- **Economic output** is the total value of production (i.e., sales or business revenue) resulting from the activity.
- **Value-added** is the contribution of the economic output to a region's gross domestic product.
- **Labor income** is the income earned by workers from the new spending.

The impacts of spending and the flow of money through the economy are reported at three levels:

- **Direct impacts** reflect the changes from immediate spending.
- **Indirect impacts** reflect how the spending ripples through the supply chain, resulting in additional spending.
- **Induced impacts** reflect additional spending generated from household income resulting from direct and indirect impacts

The sum of direct, indirect, and induced impacts provides a total estimate of the economic impact for each indicator.

To perform the analysis, OAI/ERG extracted data from each grant's budget. Each line-item expense was assigned to (1) an industry category and (2) a location (county, state, "United States," or "international"). OAI/ERG

developed this process based on guidance from and interactions with economists in NOAA's Office of Performance, Risk & Social Science (PRSSO). In addition to an industry and a location, each line item was assigned to an activity type category. OAI/ERG worked with NOAA to develop a set of categories and subcategories based on a thorough review of project narratives. Table B-1 in Appendix B provides the category definitions. Subcategories were applied whenever possible, but the IMPLAN analysis was based only on the primary categories. The final result was a set of budget items with unique IMPLAN industry codes, locations, and activity categories.

Results

Tables 2 and 3 provide national-level estimates for jobs, labor income, value added, and total output for both Track 1 and Track 2 awards, broken down into direct, indirect, and induced impacts.

Table 2. Total estimated economic impacts from CRRC Track 1 awards, 2024–2029.

Impact	Jobs	Labor Income (millions)	Value Added (millions)	Output (millions)
Direct	124	$12.54	$14.26	$16.46
Indirect	41	$3.11	$5.07	$9.54
Induced	46	$2.80	$5.56	$8.82
Total	211	$18.46	$24.90	$34.82

Table 3. Total estimated economic impacts from CRRC Track 2 awards, 2024–2029.

Impact	Jobs	Labor Income (millions)	Value Added (millions)	Output (millions)
Direct	3,185	$280.13	$365.33	$513.57
Indirect	1,229	$98.35	$164.97	$308.38
Induced	1,381	$87.59	$171.50	$268.23
Total	5,795	$466.06	$701.80	$1,090.18

Tables 4 and 5 provide estimates broken down by activity. The activities reported for each track reflect those with the largest total economic output. For Track 1, these included planning for resilience, education and outreach, and research and monitoring. For Track 2 the largest impacts came from infrastructure, planning for resilience, ecosystem restoration, and workforce development. For a full set of activity definitions and category estimates, see Appendix B.

Table 4. Preliminary total national-level activity category estimates for selected Track 1 activities, ordered from highest to lowest output.

Activity Category	Jobs	Labor Income (millions)	Value Added (millions)	Output (millions)	Total Expenditure (millions)	Output/ Expenditure Ratio
Planning for Resilience	66	$5.02	$6.88	$10.08	$5.14	1.96
Education and Outreach	20	$1.93	$2.85	$3.95	$2.31	1.71
Research and Monitoring	19	$1.31	$1.61	$1.71	$1.60	1.07
Total	105	$8.26	$11.33	$15.74	$9.04	1.74

Table 5. Preliminary total national-level activity category estimates for selected Track 2 activities, ordered from highest to lowest output.

Activity Category	Jobs	Labor Income (millions)	Value Added (millions)	Output (millions)	Total Expenditure (millions)	Output/ Expenditure Ratio
Infrastructure	1,517	$110.88	$174.83	$317.28	$151.41	2.10
Planning for Resilience	568	$49.50	$72.54	$110.49	$56.20	1.97
Ecosystem Restoration and Maintenance	583	$46.65	$72.62	$103.84	$57.97	1.79
Workforce Development	202	$17.08	$24.66	$36.72	$19.13	1.92
Total	2,870	$224.11	$344.65	$568.32	$284.70	2.00

Limitations

Federated States of Micronesia Award

This summary does not include impact estimates for the Federated States of Micronesia because the required Bureau of Economic Analysis and Bureau of Labor Statistics data are not available to analyze its $2 million resilience award using IMPLAN. OAI/ERG are currently exploring options to create a stand-alone analysis for the Federated States of Micronesia.

Activities

Activity categorization relied on professional judgment to assign budget items to predefined categories based on task descriptions, roles, and intended outcomes. In some cases, the budget documents clearly indicated the appropriate category—for example, “quarterly meetings” focused on knowledge sharing and network building were categorized as “Collaboration and Partnership Building.” In other cases, ambiguous items required

assumptions based on overall project goals (e.g., GIS analysis within restoration-focused subawards) or were labeled as “Other.” Discussing these activities further with awardees could improve clarity and categorization accuracy.

Category overlap was another persistent challenge. Some budget items supported multiple activities—such as Track 2 projects combining green infrastructure, public access, and ecosystem restoration—but IMPLAN requires a single category per cost item. In these cases, the category most closely aligned with the project’s primary objective was selected. As overlapping activities were common, further analysis is needed to assess the extent and patterns of this overlap.

Appendix A: Additional Methods Detail

CRRC Award Analysis

This preliminary analysis reports outcomes from CRRC spending at the state and national level. OAI/ERG, in collaboration with NOAA, made the following decisions to align the CRRC budget award data with IMPLAN's approach and capabilities:

1. Although the CRRC awards span 2024–2029 and expenditures were extracted annually, IMPLAN's linear structure means the total results are the same whether the model is run using a year-by-year approach or modeled as a single five-year total. Therefore, total results for the five-year period are presented, but annual average results can be estimated by dividing the total by five.

2. The geographic component of this analysis presented challenges because IMPLAN does not allow for overlapping regions in a Multi-Regional Input-Output (MRIO) model, as described in the *Methods* section above. For instance, if expenditures are known for County A and County B but other expenditures can only be allocated at the state level (e.g., a line item detailing plans to hire a lawyer), then an MRIO with spending in counties A and B and to the state as a whole cannot be run. To address this, all state-level expenditures were disaggregated into individual county expenditures, with costs split proportionally based on population. This approach allows state-level totals to be entered as county expenditures, ensuring that study areas can be built in IMPLAN without overlapping regions.

Budget Data Processing

NOAA's Office of Performance, Risk & Social Science and OAI/ERG developed a set of guidelines (available upon request) to govern the process and to appropriately and consistently code the budget items. OAI/ERG coded the budget documents by cost category as follows:

- Personnel costs were classified by employer type (e.g., environmental nonprofit, law firm), not job title. IMPLAN industry codes were selected using the reference sheet developed by NOAA's Office of Performance, Risk & Social Science. Costs were assigned to the organization's county unless otherwise specified.
- Fringe benefits and indirect costs used the same IMPLAN industry code and location as associated personnel costs.
- Travel was broken down into components such as lodging, airfare, and mileage. Travel costs were also separated by location when national travel occurred. Airfare was split evenly between origin and destination when possible. Professional judgment was often required, and uncertainties were flagged.

Per PRSSO recommendations, mileage was further split into fuel (55.2%, IMPLAN code 391) and depreciation (44.8%, IMPLAN code 494).

- **Calculation** (based on 2024 IRS rate):
  2024 reimbursement rate = $0.67 per mile
  2024 depreciation rate = $0.30 per mile
  Fuel cost, estimate = $0.37 per mile
  Fuel cost: **55.2%** of the total mileage rate
  Depreciation: **44.8%** of the total mileage rate

- Supplies and equipment were coded by description to what the team deemed the most appropriate IMPLAN industry code.
- Construction expenses (labor and materials) were coded by description to what the team deemed the most appropriate IMPLAN industry code.
- Contracting items often included subprojects that were further broken down using the same cost categories as were used for the component in question (personnel, fringe, travel, etc.).
- Indirect costs were tied to the primary organization completing the work (i.e., the organization used to determine the personnel and fringe codes).

As noted above, some of the grant spending could not be evaluated using IMPLAN. Transfer payments, such as the purchase of land, are not items that generate economic impacts in an input-output model since the asset is being transferred and goods and services are not being produced. Any international payments are not included because those payments represent money leaving the area where IMPLAN has data to generate impact estimates. Additional information about the data extraction protocol is available upon request.

IMPLAN Process

All line items from budgets were input to a template provided by IMPLAN so the expenditures ("events" in IMPLAN) could be uploaded to the platform. Each template contained all expenditures from a given budget narrative, and the sum of all events was checked against the award amount to ensure all expenditures were captured. In cases where there was a discrepancy, further quality assurance and quality control (QA/QC) was performed to determine the source, and if possible, the discrepancy was reconciled. Multi-Regional Input-Outputs were run for all awards except for those in the Federated States of Micronesia, which was not compatible with the MRIO module in IMPLAN. For most awards, regions for expenditure allocation consisted of all counties (or county equivalents) within the state or territory where the award activities took place, any counties outside of the primary state where the award activities took place, and an "all else" region built of all remaining states and counties. This "all else" region was needed to capture expenditures that were allocated to the United States as a whole and capture leakages from spending.

Allocating an expenditure to an industry sometimes caused an error in IMPLAN when that industry was not present in the desired county or county equivalent. This issue arises when there are entities in the underlying IMPLAN data for a region. When this error occurred, the event was either (1) assigned to a different, nearby geography or (2) assigned to a similar industry code. Assignments were determined on a case-by-case basis by

reviewing the region for similar present industries and checking if the same industry was present in nearby regions. Since spending patterns for an industry should be similar across nearby regions and between similar industries, the team believes this method of reallocation did not substantially change the results, especially given that these errors were rare and generally only affected minor expenditures.

Appendix B: Activities Tables

Table B-1. Activities categories

Category		
Workforce development	Human capacity	Training of professionals (including at the college level). This includes fellowship and internship programs that may pay stipends to participants.
Workforce development	Technical capacity	Acquisition of new or broader dissemination of technology, tools, and equipment.
Collaborating and partnership building	Knowledge sharing	Efforts to share with and learn from other professionals or project teams. Includes development of and attendance at conferences, collaboratives, communities of practice, and site visits.
Collaborating and partnership building	Process/model development	Development of new models, approaches, or governance structures for collaboration.
Education and outreach	Educational programming	Curriculum development and education programs for schools or the public. Does **not** include general awareness events or outreach.
Education and outreach	Community engagement	Community engagement for decision-making and planning.
Education and outreach	Community outreach	Efforts to broadly educate the community on restoration and resilience.
Planning for resilience	Strategic plans	Development of strategic plans for building resilience. Includes hazard mitigation planning, emergency response planning, and climate action, adaptation, and resilience plans.
Planning for resilience	Community managed retreat or relocation	Efforts to discuss, assess, and plan for migration away from highly vulnerable areas.
Planning for resilience	Site analysis and designs	Site-specific analysis (e.g., feasibility study, alternatives assessment, site investigation) and designs for implementing construction and restoration projects.
Planning for resilience	Permitting and compliance	Acquisition of permits and other requirements (e.g., NEPA) to support construction and restoration actions.
Ecosystem restoration & maintenance	Ecosystem restoration & maintenance	On-the-ground ecological work to restore or upkeep natural habitats (e.g., wetlands, estuaries, coral reefs, mangroves, forests, dunes).
Land acquisition & protective status	Land acquisition & protective status	Purchase or easement of land for conservation, flood mitigation, etc. Legal and title expenses.
Research and monitoring	Research and monitoring	Data collection, modeling, baseline studies, and long-term monitoring.
Implementing community migration	Implementing community migration	Efforts that directly support and result in movement of community members.
Infrastructure	Green infrastructure	Nature-based, green infrastructure, or hybrid installations to address hazards and climate impacts.
Infrastructure	Gray/hard infrastructure	Conventional infrastructure for restoration or adaptation efforts (e.g., road relocation; upgrades, retrofits, and additions to improve building safety).
Infrastructure	Supporting infrastructure	Building of structures or purchase of equipment to support restoration and resilience *infrastructure* efforts (e.g., mangrove nursery, water-quality testing equipment, sensors and monitoring equipment).

Category	Subcategory	Definition
Infrastructure	Public access to green/blue spaces	Infrastructure to improve public access to green and blue spaces (e.g., trails, paths, boat ramps).
Funding and financing	Creating funding opportunities	Development of resilience funds or mini grants using CRRC funding. This does **not** include subawards for defined activities with partners of Track 2 grants.
Funding and financing	Future funding	Research and identification of funding mechanisms to continue work after CRRC funding ends. This primarily applies to Track 1.
Managing the work	Managing the work	Efforts specific to CRRC grant administration and evaluation that do not support a specific stated strategy or action. This likely applies more to budget categories than logic models.
Other	Other	Activity type not described in the existing categories.

Table B-2. Selected Track 1 total national-level activity category estimates, ordered from highest to lowest output. *Due to some results below $1M, values are not rounded.*

Activity Category	National Jobs	National Labor Income (millions)	National Value Added (millions)	National Output (millions)	Total Expenditure (millions)	Output/ Expenditure Ratio
Planning for resilience	66	$5.02	$6.88	$10.08	$5.14	1.96
Managing the work	33	$4.05	$5.44	$6.09	$3.44	1.77
Education and outreach	20	$1.93	$2.85	$3.95	$2.31	1.71
Research and monitoring	19	$1.31	$1.61	$1.71	$1.60	1.07
Collaborating and partnership building	3	$0.19	$0.35	$0.60	$0.38	1.59
Workforce development	2	$0.18	$0.23	$0.32	$0.34	0.94
Funding and financing	1	$0.07	$0.07	$0.12	$0.05	2.27
Other	0	$0.00	$0.00	$0.00	$0.00	N/A
Land acquisition & protective status	0	$0.00	$0.00	$0.00	$0.00	N/A
Infrastructure	0	$0.00	$0.00	$0.00	$0.00	N/A
Implementing community migration	0	$0.00	$0.00	$0.00	$0.00	N/A
Ecosystem restoration & maintenance	0	$0.00	$0.00	$0.00	$0.00	N/A
Total	144	$12.75	$17.43	$22.86	$13.25	1.73

Table B-3. Track 2 total national-level activity category estimates, ordered from highest to lowest output.

Activity Category	National Jobs	National Labor Income (millions)	National Value Added (millions)	National Output (millions)	Total Expenditure (millions)	Output/ Expenditure Ratio
Infrastructure	1374	$110.88	$174.83	$317.28	$151.41	2.10
Planning for Resilience	547	$49.50	$72.54	$110.49	$56.20	1.97
Ecosystem Restoration and Maintenance	504	$46.65	$72.62	$103.84	$57.97	1.79
Managing the Work	378	$40.36	$57.50	$70.47	$30.02	2.35
Funding and Financing	399	$25.31	$39.05	$62.43	$23.55	2.65
Other	292	$32.67	$46.71	$61.84	$23.20	2.67
Education and Outreach	301	$21.40	$32.32	$55.68	$30.50	1.83
Research and Monitoring	283	$22.03	$32.19	$52.96	$23.43	2.26
Collaborating and Partnership Building	174	$14.49	$22.50	$37.41	$15.30	2.45
Workforce Development	196	$17.08	$24.66	$36.72	$19.13	1.92
Implementing Community Migration	49	$2.15	$3.82	$7.43	$3.18	2.33
Land Acquisition and Protective Status	21	$2.43	$3.68	$4.51	$38.03	0.12
Total	4519	$360.31	$543.17	$873.75	$543.50	1.69