



Coastal Texas Protection and  
Restoration Feasibility Study  
Final Feasibility Report

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## **Appendix E-4:**

### ***Regional Economic Development (RED) Assessment***

**August 2021**

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## REGIONAL ECONOMIC DEVELOPMENT

**General.** The Regional Economic Development (RED) account addresses the impacts that the USACE expenditures associated with the construction of a coastal storm risk management system will have on the levels of income, output, and employment throughout the region. These impacts are not included in the NED analysis, but can still be used by decision makers as part of their investment decision process.

This RED analysis employs input-output economic analysis, which measures the interdependence among industries and workers in an economy. This analysis uses a matrix representation of a regional economy to predict the effect that changes in one industry will have on other industries. The greater the interdependence among industry sectors, the larger the multiplier effect on the economy. Changes to government spending drive the input-output model to project new levels of sales (output), value added Gross Regional Product (GRP), employment, and income for each industry.

RECONS Version 2 was the specific input-output model used to estimate the regional economic development impacts of the Recommended Plan. The U.S. Army Corps of Engineers (USACE) Institute for Water Resources, Louis Berger, and Michigan State University developed the regional economic impact modeling tool, RECONS (Regional Economic System), that provides estimates of jobs and other economic measures such as labor income, value added, and sales that are supported by USACE programs, projects, and activities. This modeling tool automates calculations and generates estimates of jobs, labor income, value added, and sales through the use of IMPLAN®'s multipliers and ratios, customized impact areas for USACE project locations, and customized spending profiles for USACE projects, business lines, and work activities. RECONS allows the USACE to evaluate the regional economic impact and contribution associated with USACE expenditures, activities, and infrastructure.

**Description of Metrics.** “Output” is the sum total of transactions that take place as a result of the construction project, including both value added and intermediate goods purchased in the economy. “Labor Income” includes all forms of employment income, including employee compensation (wages and benefits) and proprietor income. “Value Added” or “Gross Regional Product” represents the value-added output of the study regions. This metric captures all final goods and services produced in the study areas because of the existence of the project. It is different from output in the sense that one dollar of a final good or service may have multiple transactions associated with it. “Jobs” is the estimated worker-years of labor required to build the project.

**Assumptions.** Input-output analysis rests on the following assumptions. The production functions of industries have constant returns to scale, so if output is to increase, inputs will increase in the same proportion. Industries face no supply constraints; they have access to all the materials they can use. Industries have a fixed commodity input structure; they will not substitute any commodities or services used in

the production of output in response to price changes. Industries produce their commodities in fixed proportions, so an industry will not increase production of a commodity without increasing production in every other commodity it produces. Furthermore, it is assumed that industries use the same technology to produce all of their commodities. For this analysis, the Long-Term Impacts and Contributions module was used to account for expenditures occurring throughout the period of analysis. The economic impacts results are presented for the entire period of analysis, aggregated for all 50 years for output, labor income, and value added. The number of jobs is presented as an average across all years included in the period of analysis.

**Results.** The total construction and O&M expenditures associated with the Recommended Plan are estimated to be \$35.7 billion.<sup>1</sup> Of this total expenditure, \$31.7 billion will be captured within the local impact area. The remainder of the expenditures will be captured within the state impact area and the nation. These direct expenditures generate additional economic activity, often called secondary or multiplier effects. The direct and secondary impacts are measured in output, jobs, labor income, and gross regional product (value added) as summarized in the following tables. The regional economic effects are shown for the local, state, and national impact areas. In summary, the expenditures of \$35.7 billion support a total of 5,620 average annual, full-time equivalent jobs, \$35 billion in labor income, \$40.2 billion in value added, and \$63.2 billion in economic output in the local impact area. More broadly, these expenditures support 7,990 average annual, full-time equivalent jobs, \$45.5 billion in labor income, \$58.3 billion in value added, and \$99.3 billion in economic output in the nation. Table 1 summarizes these results.

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<sup>1</sup>A total of \$35,790,184,429 was used for the RED analysis. This total includes construction cost of \$28,873,130,829, which includes the outlying Beach and Dune expenditures combined with the Ecosystem Restoration features. The remaining \$6,917,053,600 is comprised of the O&M cost. The construction and O&M costs were input separately on an annual basis according to the schedule of expenditures. The results displayed are an aggregation of the two categories calculated by RECONS.

Table 1  
 Coastal Texas Protection and Restoration Study Integrated Feasibility Report  
 Regional Economic Development (RED) Summary  
 (\$ Thousands)

Area	Output	Jobs*	Labor Income	Value Added
Local				
Direct Impact	\$31,731,660	3,460	\$23,828,163	\$21,607,622
Secondary Impact	\$31,565,182	2,160	\$11,350,089	\$18,668,170
Total Impact	\$63,296,842	5,620	\$35,178,252	\$40,275,792
State				
Direct Impact	\$33,293,009	3,720	\$24,500,262	\$22,608,549
Secondary Impact	\$37,802,037	2,590	\$12,439,145	\$21,058,404
Total Impact	\$71,095,047	6,310	\$36,939,408	\$43,666,952
US				
Direct Impact	\$34,668,523	4,020	\$24,996,803	\$23,139,058
Secondary Impact	\$64,649,343	3,970	\$20,572,989	\$35,198,925
Total Impact	\$99,317,865	7,990	\$45,569,792	\$58,337,983

\* Jobs are presented in average annual, full-time equivalence (FTE)