Chapter 1 Introduction and Overview of the Department of the Interior's Economic Contributions

Introduction

The purpose of this report is to present information on the economic contribution of the activities of the Department of the Interior for FY 2011. This report, prepared at the direction of the Secretary of the Interior, contains information on economic contributions as well as economic information on other key issues that impact Interior's broad land, water, and resource management responsibilities.¹

The Department of the Interior plays a substantial role in the U.S. economy, supporting nearly 2.4 million jobs and approximately \$385 billion in economic activity for 2011. Interior's economic contributions are underpinned by substantial investments in facilities, lands, information, and institutional capacity made in past years. These include: physical infrastructure to

In a nutshell

- ❖ The Department of the Interior plays a substantial role in the U.S. economy, supporting nearly 2.4 million jobs and approximately \$385 billion in economic activity for 2011.
- Interior's economic contributions are underpinned by substantial investments in facilities, lands, information, and institutional capacity made in past years.
- While it is straightforward to quantify and value outputs bought and sold in markets (such as oil, gas, and coal), Interior's lands and managed resources also produce or support a wide range of valuable ecosystem services, including agriculture, drinking water, energy, flood and disease control, carbon sequestration, recreation, and cultural resources.

support recreation activities and efficiency improvements in water storage and delivery systems; ecosystem restoration and land acquisitions to protect unique ecosystems, and knowledge that allows the provision of geologic, minerals, and other information to support decision making. In addition to physical infrastructure, key investments made in the last year include enhancements to the capacity to evaluate and process applications for renewable energy technology on public lands and to the capacity to provide for safe and efficient offshore energy development.

These investments have resulted in a substantial number of permits for renewable energy development being issued in FY 2011, with the accompanying renewable energy generating facilities anticipated to follow in subsequent years.

The revenues resulting from Interior's management of natural resources on Federal lands include economic contributions associated with protecting unique natural resources, leasing mineral rights, storing and conveying irrigation, municipal, and industrial water supplies, and providing valuable information to mineral markets. Many of Interior's activities, such as the leasing of mineral rights,

¹ This report includes the economic contribution of payroll, grants and other payments, although these transfers are not classified as benefits or costs. A full benefit-cost analysis or tally of net benefits is beyond the scope of this report.

significantly affect the national economy because they enable private industry to create wealth and jobs. Other Interior activities, which do not directly produce revenues, also support significant economic contributions. These include the provision of scientific information and technology transfer, support and capacity building for tribes, and a suite of conservation activities supported by various grants and payments. Table 1-1 provides a summary of values for the activities where the economic contributions can be quantified. However, these values only represent the gross economic value of Interior's activities. The net benefits associated with providing these contributions are substantially more difficult to quantify and value. While it is straightforward to quantify and value outputs bought and sold in markets (such as oil, gas, and coal), Interior's lands and managed resources produce or support a wide range of valuable ecosystem services, including agriculture, drinking water, energy, flood and disease control, carbon sequestration, recreation, and cultural resources. Additional empirical research that helps managers to better understand and quantify the value of these services can result in better land management decisions.

This report highlights the current economic contribution of Interior's existing programs and activities, and provides information on the Department's contribution on a state-by-state basis.² The report also addresses a set of topics where Interior has significant management responsibilities and where market transactions do not fully reflect net economic values. In general, comparing DOI economic contributions from FY 2010 and FY 2011, the value of all commodities and other inputs to production associated with Interior's activities increased by 6% in nominal terms from \$136 billion to \$144 billion. The change in value for individual inputs varied significantly across commodities. This difference can largely be attributed to commodity price changes and changes in the quantity of inputs produced.

Chapters 1 and 2 of this report use economic contribution analysis to track the economic contribution of Interior activities as those expenditures cycle through the economy. Chapter 3 addresses the economics of conservation; Chapter 4 addresses ecosystem restoration; Chapter 5 focuses on rural communities and conservation lands; Chapter 6 discusses the value of information and technology transfer; and Chapter 7 explores the concept of full cost accounting. Additional details on Interior's economic contributions at the state level, the bureau level, contributions by sector, as well as the methodology used to evaluate economic contributions are provided in Appendices to this report. Taken as a whole, the Department of the Interior's market and non-market based economic values represent a substantial contribution to the national economy. This report provides context and supporting data to illustrate this important role.

² This report is the third in a series of ongoing annual reports initiated with a preliminary report released by Interior in December 2009. While the reports rely on generally similar methodological approaches, the results are not directly comparable because a number of factors may change from year to year, including prices, quantities, and changes in some of the underlying modeling. Appendix 8 and Appendix 9 provide additional information on changes in approach, methods, and data compared to previous reports. As in the FY 2010 report, the FY 2011 report does not include the impact of funding provided by the one-time American Recovery and Reinvestment Act of 2009 (ARRA), although some projects funded by ARRA are discussed.

Table 1-1. Summary of Values and Outputs for DOI

	Inputs (DOI			
Category	Value (billions, \$2011)	Outputs Resulting from DOI Activity		
		Est. Value of DOI Inputs as % of National Sector	Total Economic Contribution (billions, \$2011)	Total Domestic Jobs Supported (jobs)
DOI Payroll (~81,000 employees in 2011) Grants & Payments to Non- Federal Entities (excludes payments via U.S.	5.13		8.30	58,471*
Treasury)	4.22		10.14	83,638
Support for Tribal Governments	0.48		1.17	9,504
Public Resources as Inputs to Progression and Tourism Energy	19.47	3%	48.65	403,482
Oil, gas and coal	88.02	220/	250.20	1 200 556
Hydropower	1.08	33% 19%	250.20 1.59	1,389,556 4,981
Wind Power	0.00	1%	0.10	688
Geothermal	0.16	36%	0.61	3,029
Solar	0.00	3070	1.37	6,747
Non-fuel Minerals	8.74		21.22	122,928
Other Production	5.			,0
Irrigation water	14.02	12%	33.34	231,977
M&I water	2.30	19%	5.35	32,296
Grazing	0.56	1%	1.49	18,324
Timber	0.07	1%	1.22	7,489
Total	144.25		384.75	2,373,111

^{*} In 2011, DOI's payroll supported about 81,000 employees (direct jobs), as well as 58,471 indirect and induced jobs throughout the Nation. For more information, please see Page 197.

OVERVIEW OF INTERIOR'S ECONOMIC CONTRIBUTIONS

Economic contribution analysis: The economic contribution analysis presented in this chapter and in Chapter 2 is based on tracing spending through the economy and measuring the cumulative effects of that spending. Results are presented in terms of the value of output and number of jobs supported by Interior's activities. This analysis is best characterized as a contribution analysis in comparison to other measures of economic activity, such as an analysis of net

In FY 2011, investments in construction and maintenance totaled about \$2.6 billion. The physical infrastructure makes it possible to use, enjoy, and benefit from Interior managed resources. This funding contributed about \$7.2 billion in economic activity and supported almost 49,000 jobs.

economic benefits.³ Net economic benefits are a measure of the extent to which society is better (or worse) off because of a given policy or action, and include both market and non-market benefits. Economic activity analysis measures expenditures from a policy, program or event and how those dollars cycle through the economy. This type of analysis can include economic contribution analysis, which tracks the gross economic activity attributed to a policy or event in a regional economy, and economic impact analysis, which measures net changes in new economic activity in a regional economy resulting from a policy or event.⁴ The distinction between economic benefits, economic impacts, and economic contributions is discussed in Appendix 7.

Investing in Conservation: Conservation of landscapes and ecosystems help support numerous activities, such as tourism, outdoor recreation, cultural observances, and working landscapes, all making significant contributions to the well-being of the nation and local communities. Investments in conservation provide benefits to society in the form of species and habitat protection, maintenance of working landscapes, and the provision of ecosystem services (such as clean water, timber, fisheries habitat, and carbon sequestration). Chapter 3 discusses several economic issues related to land conservation including measuring the value of conservation, evaluating conservation investments, targeting investments, the relationship between land values and conservation, and options for land acquisition.

Investments in land conservation can include land acquisition as well as scientific research and other conservation management activities. The measurement of net benefits from conservation investments

(which are often inappropriately valued using economic contribution or economic impact information) can provide important information to policymakers for future decisions. Economic techniques allow the benefits and costs of conservation investments to be represented in monetary terms, enabling comparison across locations or projects in a common metric. Absent the ability to quantify benefits in monetary terms, physical measures of benefits (e.g., number of

The DOI FY 2011 budget included \$144 million for Land acquisition. These acquisitions support \$141 million in economic activity and support over 1,000 jobs. These long-term investments expand and protect ecosystem services, including recreation, ecotourism, cultural heritage, water filtration, habitat, and flood control.

species conserved) can be substituted, where either measure of benefit can be used to calculate a return on

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³ This analysis also does not evaluate the impacts of ceasing activities on DOI lands or the impacts of alternative management approaches.

⁴ For additional information on economic contribution and economic impact analysis, see: Watson, P., J. Wilson, D. Thilmany, and S. Winter. 2007. Determining Economic Contributions and Impacts: What is the difference and why do we care? *The Journal of Regional Analysis and Policy*, 37(2): 140-146.

investment. Such calculations can provide valuable information to evaluate, target and prioritize land acquisition decisions or other conservation activities.

Ecosystem restoration: Ecosystem restoration is an important component of Interior's activities. It can be difficult, though, to quantify the economic value of restoration. Although the jobs and economic contributions from restoration are substantial and important, they do not represent the full economic value of ecosystem restoration, because they do not capture the net economic benefits associated with environmental goods and services not bought and sold in markets. Chapter 4 includes a number of case studies that highlight the economic contributions of a wide range of restoration projects supported by DOI bureaus and partners. The economic contributions associated with these case studies are summarized in Table 4-1. The magnitude of these contributions varies with the amount of spending on the restoration project, the duration of the project, and the mix of capital and labor used during the restoration. The largest restoration project analyzed, the Truckee River restoration, involved spending \$19 million over five years, supporting an average of 37 jobs per year. Additional information on restoration activities is presented in Appendix 3.

Rural economies: Publically owned conservation lands can play a major role in rural areas through the provision of natural amenities that facilitate engagement in numerous outdoor recreation activities, such as fishing, hunting, bird-watching, hiking, and boating. Chapter 5 explores how the conservation of public lands in rural areas can also serve as an attractant to households specifically looking for access to the natural amenities they offer and their contribution to overall quality of life. As the largest federal land management agency in the United States, Interior has the ability to play a role in shaping the economic and demographic profile of many rural communities through the diverse collection of conservation lands managed by its bureaus. Visitation to Interior sites supports a significant number of rural jobs in many states, including Utah (14,973 jobs); Wyoming (14,445 jobs); Colorado (9,173 jobs); and Arizona (8,249 jobs).

Innovation, Information and Technology Transfer: As used in this report "information," includes both scientific and technical information, and is a critical input that helps support private markets, the production processes of private entities, and many public sector decisions. For example, oil, gas, and mineral markets are underpinned by scientific and technical information on resource availability; water use and allocation decisions rely on precipitation and runoff predictions; and preparedness for natural hazards relies on information about the locations and probability of such events occurring. The information supplied in these examples has an economic value that is at least partly incorporated in the market prices of traded goods and services. The ability to transfer information to nonfederal entities can enhance the value of the information and provide benefits to the public. Chapter 6 discusses some of the different types of information produced by DOI, a short discussion of the economics of information, and provides examples where technology developed by Interior has been transferred to the private sector.

Full cost accounting: Interior resources provide energy, minerals, forage, water, habitat, and timber that are subsequently used throughout the economy to generate electricity, provide fuel for transportation, and provide raw materials used as inputs in a number of industries. Yet, in many cases the benefits provided by the raw materials and products that flow from DOI managed lands, as well as the production, distribution and use of these products, also may cause adverse effects on the environment, economy, or society. Economists typically characterize these adverse effects as "negative externalities." Conversely,

some of Interior's activities (e.g., restoration of habitat, historic buildings) have external benefits called "positive externalities." Chapter 7 provides an introduction to the concept of externalities, discusses the application of these concepts in the context of several Interior related examples, and highlights the importance of moving toward full cost accounting of DOI land management activities. Specifically, engaging in full cost accounting of all energy sources—fossil fuels, wind, solar, and other forms of nonfossil fuel power generation—would help promote more cost-effective investments on public lands.

SECTOR HIGHLIGHTS

Highlights of Interior's economic contributions to key economic sectors in 2011 include:

- Recreation and Tourism: Americans and foreign visitors made nearly 435 million visits to Interior-managed lands. These visits supported about 403,000 jobs and contributed \$48.7 billion in economic activity. This economic output represents about 6.5% of the direct output of tourism-related personal consumption expenditures for the United States for 2011 and about 7.6% of the direct tourism related employment.
- Energy and Minerals: Oil, gas, coal, hydropower, wind power, geothermal power, solar power, and other mineral activities on Federal lands supported over 1.5 million jobs and around \$275 billion in economic activity.
- Water, Timber and Forage: Use of water, timber, and forage produced from Federal lands supported nearly 290,000 jobs and nearly \$41 billion in economic activity.
- Grants and Payments: Interior administers numerous grants and payments, supporting programs across the country and improving Federal lands with projects ranging from reclaiming abandoned mines to building coastal infrastructure. Grants and payments totaling \$4.2 billion supported about 83,000 jobs and \$10 billion worth of economic contributions.
- Interior's support for tribal governments represents an important mechanism to advance nation-tonation relationships, facilitate economic development, improve Indian education, and improve the safety of Indian communities. In FY 2011, this funding contributed about \$1.2 billion to economic output and supported about 9,500 jobs.
- Youth employment at Interior totaled 14,011 in FY 2011; 15,051 in FY 2010; and 13,578 in FY 2009. The NPS and organizational partners employed the largest number in FY 2011, with 9,089 youth employed. Interior's partnerships with other organizations employed an additional 7,073 people ages 15-25 in FY 2011 (Box 1-1 provides additional information on youth employment).⁵

⁵ A large body of literature has studied the effectiveness of a variety of career-focused education and training policies and programs. While conducting such analyses is difficult, findings from recent experimental evaluations of programs operated by states and nonprofit organizations, and careful studies of community colleges suggest that employment-focused programs, often developed in cooperation and collaboration with employer or industry partners, have been successful, producing returns for workers that exceed the social cost of the programs. The most successful training programs appear to either coordinate directly with employers and industry partners to ensure that their participants receive training in skills that are in demand, or include career-oriented counseling that steers trainees to the most valuable coursework. See, for example, Greenstone, M. and Looney, A. 2011. *Building America's Job Skills with Effective Workforce Programs: A Training Strategy to Raise Wages and Increase Work Opportunities. Strategy Paper*. The Brookings Institution.

Box 1-1. DOI Youth Employment and Service Activities

Youth Jobs at Interior: Through both bureau programs and organizational partnerships, more than 21,084 employment opportunities were provided to young people between the ages of 15 and 25 on public lands in FY 2011. There is an economic benefit associated with these activities and Interior bureaus are able to attract and retain qualified employees. Participating youth gain valuable work experience that serves to strengthen their skills and increase future wage rates. In addition, youth hires often convert to permanent positions, are promoted to a new position, or receive new job assignments. In FY 2011, about 16% (2,293) of Interior's youth hires converted to permanent positions, were promoted into a new position, or received a new job assignment.

The Youth Conservation Corps (YCC), a summer work youth program, is an integral component of Secretary Salazar's Youth in the Great Outdoors Initiative. For example, NPS annually accomplishes a minimum of \$4.0 million in work performed by YCC employees and FWS has worked with the YCC to introduce young Americans to conservation opportunities. Interior also participates in a variety of programs focused on youth employment and service, including:

- Student Temporary Employment Program (STEP): The STEP program offers part-time paid positions to students in high school, college, vocational school or graduate school in order to gain experience in new fields. OSM, for example, annually hires through STEP for a variety of projects.
- Student Career Experience Program (SCEP): BLM annually employs approximately 200 students in SCEP nationwide and spends approximately \$12,000 per student or \$2.4 million total for training expenses, salaries, tuition assistance, and travel. BLM provides these students with a housing stipend of \$1,500 per year to offset the costs of temporary housing at the work site. It has also encouraged the participation of economically disadvantaged youth.
- AmeriCorps Volunteers in Service to America (VISTA): OSM partners with the VISTA program to bring environmental and economic improvement to communities affected by coal-polluted watersheds. OSM also supported VISTAs involved in its reforestation projects and in regulatory projects with States. The reforestation program has resulted in substantial environmental, cultural, and economic benefits to areas that were forested before mining.
- Non-Profits: The Student Conservation Association (SCA), the Southwest Conservation Corps, the Greening Youth Foundation, and other organizations provide opportunities to, college and high school students to protect and restore DOI lands across the country. In FY 2011, the partnership agreements between Reclamation and SCA and The Corps Network were planned to be used to assist on-the-ground conservation projects and internships.

In accordance with Executive Order 13562, signed December 27th 2010 (http://www.whitehouse.gov/the-press-office/2010/12/27/executive-order-recruiting-and-hiring-students-and-recent-graduates), the Pathways program eliminates the current student hiring authorities and establishes three new programs including the Internship Program, the Recent Graduates Program, and a reinvigorated Presidential Management Fellows (PMF) Program. For more information on each program please go to: http://www.opm.gov/HiringReform/Pathways/index.aspx. OPM issued final regulations on the new Pathways program on 5/11/12.

BUREAU HIGHLIGHTS

Highlights of Interior's economic contributions by bureau in 2011 include:

- The Bureau of Land Management (BLM) oversees 248 million acres of Federal lands (and 700 million subsurface acres of mineral estate) and contributed about \$151 billion to the national economy and supported over 756,000 American jobs.
- As of March 2012, the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE) administered 6,607 active mineral leases on 36 million offshore acres; energy and minerals production from offshore areas accounted for about \$121 billion in economic contributions and supported around 734,500 American jobs.
- The Bureau of Reclamation maintains 476 dams and 348 reservoirs, provides water that irrigates about 10 million acres of land, provides municipal and industrial water to over 31 million people, generates about 48 million megawatt hours of electricity, and provides recreation opportunities. These activities are estimated to contribute approximately \$46 billion in economic output, and support nearly 312,000 jobs.
- The National Park Service (NPS) maintains 84 million acres on 397 sites in 49 states, providing a recreation-related economic contribution of about \$31 billion, and supporting over 258,000 American jobs.
- The Bureau of Indian Affairs (BIA), the Bureau of Indian Education (BIE) and the Office of Indian Energy and Economic Development (IEED) provide services to 1.7 million American Indians and Alaska Natives from 566 tribes, contributing around \$12 billion in economic output and supporting nearly 126,000 jobs through activities on tribal lands (including oil, gas, coal, other minerals, timber, irrigation, and grazing). Other support for tribal governments (through loan guarantees, and other aid to tribal governments) contributes about \$1.2 billion in economic output and supports around 9,500 additional jobs.
- The U.S. Fish and Wildlife Service (FWS) manages the 150 million-acre National Wildlife Refuge System of 555 National Wildlife Refuges and thousands of small wetlands and other special management areas, providing an economic contribution of over \$4.2 billion and supporting about 34,500 jobs.
- The U.S. Geological Survey (USGS) science informs management of water, mineral, energy, and biological resources, as well as mitigation and adaptation to climate change and preparation for natural hazards.
- The Office of Insular Affairs (OIA) carries out the Secretary's responsibilities for U.S. affiliated insular areas, including the Territories of Guam, American Samoa, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands, as well as the three Freely Associated States: the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau. OIA provided \$429 million in grants and payments directly to the insular areas during FY 2011. This assistance played an important role in the economies of each of these areas by providing financial and technical assistance to promote economic growth, education, public health, and the development of more efficient and effective government. Grants, payments, and technical assistance from OIA supported about 31,000 jobs and around \$1.5 billion in economic activity in these areas. OIA has also strengthened its ability to provide accurate and current socioeconomic data by establishing a technical assistance agreement with the Bureau of Economic Analysis to calculate GDP of the territories.

• The Office of Surface Mining Reclamation and Enforcement (OSM) protects citizens and the environment during coal mining, and restores the land to beneficial use following mining. OSM collaborates with states and Indian tribes in reclaiming more than 200,000 acres of abandoned coalmine lands. OSM grants are estimated to contribute about \$1.2 billion in economic activity and support about 7,800 jobs.

STATE HIGHLIGHTS

Through management activities conducted at the bureau-level, the Department of the Interior contributes to state and local economies in terms of jobs created and related spending impacts. Figure 1-1 and Figure 1-2 show the state-level economic output and jobs resulting from DOI activities. Additional state-level information is provided in Appendix 2. Some of the highlights of economic contributions associated with a variety of activities including recreation, minerals, timber, and forage on a state-by-state basis include the following:

- **Recreation**: The economic contribution of recreation activities differs considerably across states.
 - Recreation on Interior-managed lands was estimated to support about 35,000 jobs in California, 21,000 jobs in Utah, 23,000 jobs in Arizona, and 12,000 jobs in the District of Columbia.
 - Recreational visits to Interior-managed lands supported economic activity exceeding \$1 billion in several states: Arizona, California, Colorado, the District of Columbia, Florida, Nevada, Oregon, Utah, and Wyoming.
 - Visitation to national parks and national wildlife refuges contributes to local economies in many coastal states. Estimated economic contributions from coastal recreation to NPS sites were significant in many states, with \$895 million in economic output in California, \$764 million in Florida, \$515 million in New York, and \$398 million in Massachusetts. Visitation to coastal parks supported thousands of jobs in many states, including over 8,500 jobs in Florida, over 7,900 jobs in California, over 4,300 jobs in New York, and over 4,100 jobs in Massachusetts. Visitors to National Wildlife Refuges in coastal areas also contributed to economic output in many states, with contributions in Oregon, Florida, Alaska, and North Carolina of over \$100 million each. These expenditures also support jobs in coastal communities, with over 2,800 jobs supported in Oregon, over 2,500 in Florida, over 2,300 in Alaska, and over 1,100 in North Carolina.
- Onshore Minerals: The economic impact of onshore minerals activities also varies widely.
 - o In 2011, oil, gas, coal, and non-metallic mineral activities in New Mexico supported over 92,000 jobs and \$16.3 billion in economic output.
 - o In Wyoming, oil, gas, coal, and non-metallic mineral activities supported over 130,000 jobs and \$30.9 billion in economic output.
 - In California, oil, gas, coal, and non-metallic mineral activities supported over 21,000 jobs and \$4.4 billion in economic output.
- Offshore Minerals: Offshore minerals activities supported a total of about 734,500 jobs across the country in 2011 (this does not include jobs supported by offshore revenues directed toward grant programs). For example: around 157,500 jobs were supported in Texas, around 107,400 jobs were supported in Louisiana, about 65,000 jobs were supported in Florida, and around 46,000 jobs were supported in California.

- **Timber and grazing**: BLM timber activities are concentrated in Oregon, supporting about 2,800 jobs and about \$537 million in economic activity. BLM forage in Idaho supported about 2,900 jobs and about \$275 million in economic activity in 2011.
- Grants and Payments to non-Federal Entities: Payments to states and counties represent an important source of income to these jurisdictions. In 2011, grants and payments were estimated to support over 17,100 jobs in Wyoming, over 8,400 jobs in New Mexico, over 3,900 jobs in Utah, and over 3,300 jobs in Colorado. Grants and payments were estimated to support over 31,000 jobs in the Insular Areas.
- **Support for tribal governments**: Grants and payments to tribal governments supported about 9,500 jobs and \$1.2 billion in economic activity.

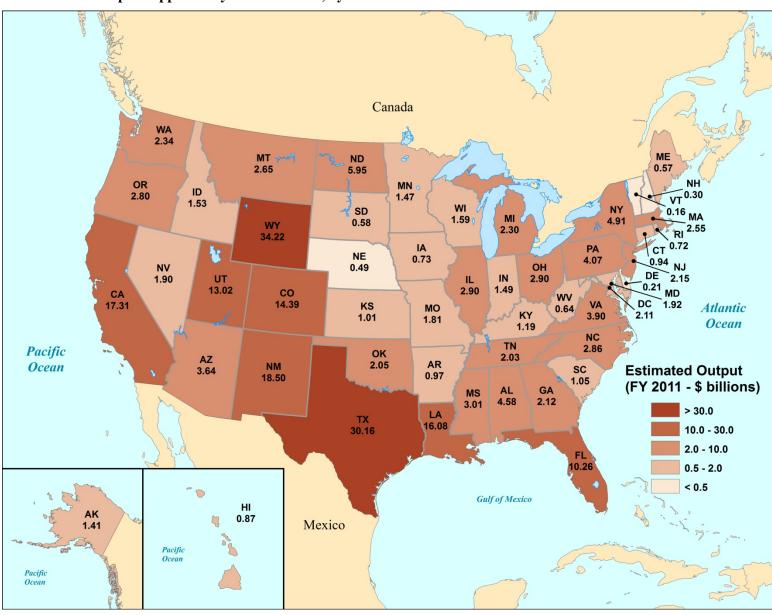


Figure 1-1. Economic Output Supported by DOI Activities, by State

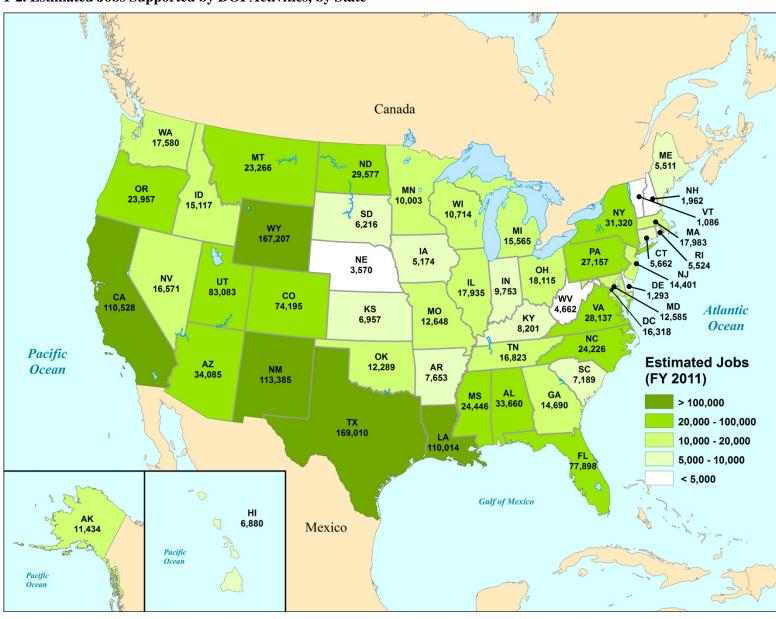


Figure 1-2. Estimated Jobs Supported by DOI Activities, by State