U.S. Department of the Interior

Economic Report

FY 2014

June 23, 2015

Foreword by Secretary Sally Jewell

"*Atop soaring mountain peaks, alongside bubbling streams, in woodlands and grasslands that stretch over rolling hills, Americans find inspiration in our great outdoors. Just as our diverse and rugged landscapes reflect our national character, the way we care for these open spaces mirrors our commitment to future generations." (President Obama, September 26, 2013)*

The lands, waters, ecosystems, and cultural and historic resources the Department of the Interior oversees are engines of prosperity for our Nation. Energy generated from public lands powers America's homes and businesses; minerals and timber are the building blocks for many products we consume; grazing helps supply food for our families; and the landscapes, recreational opportunities, and shared history that draws Americans to Interior lands support jobs and businesses in communities across the country.

The Department of the Interior's programs and resources are fundamental to the American economy, and with the right policies and investments we can do even more to power America's economy and to create jobs here at home. Investments in parks, refuges, national conservation lands, and environmental restoration create homegrown jobs that cannot be exported. Wind, solar, and geothermal power from public lands can put Americans to work supplying clean, affordable energy for our future. We can invest in infrastructure to deliver clean water to rural communities in need, while restoring watersheds and lands for future generations. We can create summer jobs for thousands of young people by restoring America's most special places while inspiring the next generation to be good stewards of our planet. The opportunities are vast.

With innovation and with renewed attention to the benefits of responsible stewardship we can help power our economy and create a lasting foundation for prosperity in America.

A Message from Kris Sarri, Principal Deputy Assistant Secretary for Policy, Management and Budget

The Department of the Interior's mission affects the lives of all Americans. This report is the latest in a series that began in 2009 to demonstrate how Interior's mission and activities, like safeguarding ecosystem services and managing renewable energy sources on Federal lands, have the potential to create thousands of jobs in the United States and have a major impact on the economy. Prior to the release of the Economic Impact report for FY 2008, Interior had not attempted to quantify the economic impacts of its programs and activities agency-wide. We traditionally measured progress in terms of environmental benefits like the number of endangered species protected, streams cleaned up, or acres saved from wildfires. This series aims to show that Interior's activities also have a positive effect on countless Americans and inject billions into the National and local economy, all while managing our shared National resources.

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage, provides vital scientific information about those resources, honors our cultures and tribal communities, and supplies the energy to power our future. To support this mission, the President's budget request for FY 2016 includes $13.2 billion for the Department. Many of the activities discussed in this report feature prominently in the President's FY 2016 Budget.

For example, the President's FY 2016 budget features investments launching a historic effort for the national parks and public lands for the next century. On the 50th anniversary of the Land and Water Conservation Fund Act, the President's budget proposes full funding for LWCF programs at the Department of the Interior and the Department of Agriculture. This highly successful program reinvests royalties from offshore oil and gas activities into public lands across the Nation. Land acquisitions not only conserve lands in or near national parks, refuges, forests, and other public lands—including landscapes identified for collaborative, strategic conservation—they also enable access to lands for sportsmen and hunters, protect historic battlefields, and provide grants to States for recreation and conservation projects on non-Federal lands. Public lands are important for participation in a number of outdoor recreation activities across the country. DOI is also working with the Department of Commerce to develop satellite accounts for recreation, to help formalize the concept of the outdoor economy.

The budget also supports tribal priorities in Indian Country, including a $1.0 billion investment to transform Indian schools and education, and provides full contract support cost funding to support self-determination.

The budget implements the President's Climate Action Plan by promoting renewable energy development, building community resilience in the face of climate change, and investing in science to inform natural resource management. The budget request also addresses the Nation's water supply challenges, in particular those in the arid West, and proposes important investments in America's water infrastructure.

To enhance national energy security and create jobs in new industries, the President's Budget also proposes investments in renewable energy development programs, providing $100.4 million to review and permit renewable energy projects on public lands and offshore waters. These funds will allow Interior to continue progress toward its goal of permitting 20 gigawatts of renewable energy capacity and related transmission infrastructure by 2020.

The budget also provides support for onshore energy permitting and oversight on Federal lands, with the Bureau of Land Management's oil and gas program realizing a 20 percent increase in mandatory and current funding compared to the 2015 enacted level. Coupled with implementation of a new automated permitting system that eliminates paper applications, these budget resources will facilitate improved responsiveness to permit requests while strengthening onshore inspection capabilities.

The report highlights Interior's commitment to integrating our conservation responsibilities with activities that create income and jobs. We firmly believe our mission as stewards of our Nation's lands puts us in an ideal position to conserve natural resources, create American jobs, and support communities.

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Glossary

Value Added: Measures the contribution of DOI's activities to the Gross Domestic Product (GDP) of a regional or the National economy. Value added is the difference between DOI's estimated total output (sales or receipts and other operating income) and the cost of any intermediate inputs (consumption of goods and services purchased from other industries or imported).

Economic Output: The total estimated value of production of goods and services supported by DOI. Output is the sum of all intermediate sales (business to business) and final demand (sales to consumers and exports).

Employment: The total number of jobs supported by DOI-managed activities.

Activities: As used to estimate economic contributions, "activities" means the full range of actions associated with facilitating the use of lands and waters managed by Interior. This includes actions undertaken by the Federal government as well as subsequent actions undertaken by private sector individuals and businesses.

Executive Summary

The U.S. Department of the Interior (DOI, or Interior) plays an integral role in conserving America's natural resources and heritage, honoring our cultures and tribal communities, and supplying the energy to power our future. Interior's people, programs, and responsibilities impact Americans across all 50 States. The Department is the steward of 20 percent of the Nation's lands, managing national parks, national wildlife refuges, and public lands and assisting States, Tribes, and others in the management of natural and cultural resources. Interior grants access to public lands and offshore areas for renewable and conventional energy development—covering roughly a quarter of the Nation's domestic supplies of oil and natural gas—while ensuring safety, environmental protection and revenue collection for the American public. Interior oversees the protection and restoration of surface mined lands and is the largest supplier and manager of water in the 17 Western States, assisting others with water conservation and extending water supplies and providing hydropower resources to power much of the 17 Western States. The Department serves as Trustee to American Indians and Alaska Natives, fulfilling essential trust responsibilities to tribal communities. Interior's Office of Insular Affairs (OIA) carries out the department's responsibilities for U.S.-affiliated Insular Areas, which include the territories of Guam, American Samoa, the U.S. Virgin Islands, the Commonwealth of the Northern Mariana Islands, and three sovereign freely associated states (FAS, which includes the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau). The Department supports cutting edge research in geology, hydrology, and biology, informing resource management and community protection decisions at Interior and across the world.

This report represents the sixth in a series of annual economic reports initiated with a preliminary report released by Interior in December 2009. In the ongoing effort to improve our data reporting and estimation while minimizing administrative burden, the FY 2014 report continues with the FY 2013 report's streamlined format to provide information on economic contributions and value added,[1] employment supported, and economic values associated with some of the outputs produced on Interior land.[2]

Although estimates of value added and economic contributions provide important information on the effect of expenditures on outputs from Interior lands in local economies, there are additional economic values—that are not captured in market values—associated with DOI resources which, if measured, would give a more complete accounting of the effects of Interior's activities. For example, the complete accounting of impacts would include the value individuals place on recreation above and beyond their expenditures; contributions to U.S. energy security; preservation of natural habitats and endangered species; and opportunities associated with water use. While there are established methods to estimate the value of environmental benefits, their estimation is outside the scope of this report.

[1] Of the two measures (output and value added) value added is a more accurate representation of the dollar-value of Interior's resource-management activities.

[2] More detailed treatments of topics from this report are available in the FY 2012 Economic Report.

In FY 2014 production and activities on DOI lands were associated with about $200 billion in value added, $360 billion in economic output, and supported an estimated 2 million jobs. Information related to economic contributions, value added, employment, and other economic values associated with Interior's diverse activities is summarized below:

- **Recreation**: In FY 2014, Interior's lands hosted an estimated 423 million visits. The net economic value of a visit to Interior lands varies depending on the activity. For FY 2014, visitation to Interior sites provided an estimated $24 billion in value added, $42 billion in economic output, and supported about 375,000 jobs.
- **Renewable Energy**: In FY 2014, Interior lands and facilities produced 38 million MWh of hydropower. Interior lands host renewable power projects for solar (8,269 MW), wind (5,608 MW), and geothermal energy (2,157 MW).[3] In FY 2014, through the BLM and BIA renewable energy programs, Interior approved the installation of 768 MW in new solar power projects on public lands.[4] Renewable energy activities contributed an estimated $3 billion in output and supported over 13,000 jobs. In aggregate, generating electricity with renewable energy reduces the amount of electricity supplied by fossil fuel plants, along with the associated emissions, and reduces our Nation's dependence on foreign oil. Market values of power typically do not reflect the adverse environmental and health costs to society associated with fossil fuel pollution or the corresponding benefits to society from substituting cleaner sources of energy.
- **Conservation**: The value added, economic contributions, and employment supported by DOI's conservation related activities are difficult to measure separately because conservation could be a component of recreation, ecosystem restoration, water management, and even some mineral development activities. Many benefits of nature conservation accruing to households, communities, and economies are not defined with a set of consistent metrics nor are they bought and sold in markets. This creates challenges in the valuation of these goods and services.
- **Restoration:** Every Interior bureau engages in some form of restoration from physical structures to habitat and cultural resources. At the Departmental level, the DOI Natural Resource Damage Assessment and Restoration Program works across bureaus to ensure that responsible parties – not taxpayers – bear the cost of restoring resources injured by oil spills or hazardous substance releases around the Nation. In FY 2014, the Restoration Program restored or enhanced 45,027 acres and 423 stream/shoreline miles to achieve desired habitat conditions to support trust species conservation. The Central Hazardous Materials Fund (CHF) is the Department's principal source of funds for the cleanup of the most contaminated sites located within national parks, national wildlife refuges, and on other Department-managed lands. Since the CHF was established in 1995, it has undertaken response action at more than 67 sites and completed cleanup at 20 sites, recovering a total of $87 million in estimated damages and avoiding the approximate cost of $476.9 million in work that would otherwise need to be performed by the parties responsible for the contamination. The Office of Surface Mining Reclamation and Enforcement (OSMRE)'s Environmental Restoration program activities improve natural resources and reduce the risk to public health and safety by correcting problems from coal mining on Abandoned Mine Lands (AML). In FY 2014, OSMRE reclaimed or mitigated the equivalent of 15,849 acres of land. Similarly, the Bureau of Land Management (BLM)'s AML Program enhances public safety and improves water quality by reducing or eliminating the effects of past hardrock mining in the western U.S. In FY 2014, BLM adopted a revised method to calculate the percent of acres reclaimed and/or mitigated to more precisely represent field

[3] Installed capacities as of February 2014.
[4] There were no new approvals for geothermal or wind projects in FY 2014.

performance in restoring/reclaiming abandoned mine land. Using this new method, the AML Program reported that over the life of the program 3,670 of the acres degraded from past mining have been reclaimed or mitigated.

- **Fossil Fuel Energy:** In FY 2014, Interior-managed lands and waters produced 706 million barrels of crude oil, 4 trillion cubic feet of natural gas, and 421 million tons of coal. Some average prices in FY 2014 included $99/bbl for oil, $4.41/mcf of natural gas, and $11.82 per ton of Powder River Basin coal. Oil, gas and coal produced from Interior lands provided an estimated $133 billion in value added; an estimated economic output contribution of $230 billion; and an estimated 1.1 million jobs. External costs are associated with the development of oil, gas, and coal produced from Interior lands, and with the production and the use of these resources. Market prices do not fully reflect these costs. Various regulations and other requirements designed to minimize adverse environmental impacts internalize some (but not all) of these external costs.
- **Non-fuel Minerals**: In FY 2014, Interior lands produced a wide variety of minerals. For example, an estimated that 2.5 million ounces of gold were produced from BLM lands in Nevada; the average price of gold in 2014 was $1,270 per ounce. Non-fuel mineral production was associated with an estimated value added of $7.3 billion; estimated economic output of $11.6 billion; and estimated employment supported about 42,400 jobs. While minerals are generally traded in competitive markets (though some markets may be localized or thin), prices may not incorporate the external costs associated with mining. Moreover, the Federal leasing system does not completely offset these costs, which are primarily associated with the environmental impacts of mining. Various regulations and other requirements designed to minimize adverse environmental impacts help to internalize some of these external costs.
- **Forage and Grazing**: In FY 2014, Interior lands produced over 10 million animal unit months (AUMs) of forage. Prices for forage vary widely, from $1.37 per AUM fee on BLM-managed lands to $18.09 on State and private grazing lands. This production is associated with $1.4 billion in economic output and supported about 17,000 jobs. Value added figures were not readily available for forage and grazing. Forage prices do not fully reflect various ecosystem service values provided by rangelands or the total cost of grazing on Federal lands.
- **Timber**: In FY 2014, about 514,000 mbf (one thousand board-feet) of sawtimber was harvested on BLM and tribal lands. Approximately 51 percent of the harvest came from lands managed by the Bureau of Indian Affairs (BIA), while the remaining 49 percent came from BLM lands. This timber harvest was associated with about $0.4 billion in value added, provided $0.8 billion in economic output, and supported about 3,800 jobs. Market prices do not fully reflect changes to various ecosystem service values provided by forest lands. Interior forestry lands provide various other products besides sawtimber including biomass, fuelwood, poles, posts, and a variety of other products (e.g., seeds, Christmas trees, and mushrooms). The economic contributions associated with some of these products were accounted for in this report; while others could not be explicitly analyzed.
- **Water**: Interior stores and delivers water for irrigation, municipal and industrial (M&I), and other uses. The value of water varies widely according to location, type of use and climatic conditions. Interior's irrigation (BOR and BIA) and M&I water supply activities are associated with $29 billion in value added; about $51 billion in economic output; and supported an estimated 379,000 jobs. Interior also delivers water to support in-stream flows, wildlife refuges, and other uses that are difficult to value fully.

- **Scientific Data**: Investments in research and development promote economic growth and innovation, ensure American competitiveness in a global marketplace, and are critical to achieving Interior's mission. Investments in Interior's research and development will improve U.S. strategic mineral supplies, water use and availability, and natural hazard preparedness. Sustainable stewardship of natural resources requires strong investments in research and development in the natural sciences. Scientific knowledge is not typically valued in markets, and hence is underprovided by the private sector.
- **Grants/Payments**: Activities related to grant and payment programs administered by Interior provided $7.4 billion in value added; economic contributions of $10.4 billion; and supported employment of 99,000 jobs.[5] Within these totals:
    - Indian Affairs grants to support tribal governments provided value added of $0.9 billion, economic contributions of $1.2 billion, and supported about 11,000 jobs.
    - Grants and payments to Insular areas supported $0.9 billion in valued added and supported employment of about 26,000 jobs. Economic output estimates supported by these grants and payments were not readily available.

[5] It is possible that grants and payments support some of the economic activity reported for other sectors throughout this report. We have not attempted to correct for this source of potential double-counting.

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Chapter 1 Introduction and Overview

Background

The U.S. Department of the Interior's programs have a wide-spread impact across the country. Interior conserves America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future. The Department is the steward of 20 percent of the Nation's lands. Interior manages national parks, national wildlife refuges, and public lands and assists States, Tribes, and others in the management of natural and cultural resources. Interior provides access to public lands and offshore areas for renewable and conventional energy development—covering roughly a quarter of the Nation's domestic supplies of oil and natural gas—ensuring safety, environmental protection and revenue collection for the American public and taxpayers. Interior manages the protection and restoration of surface mined lands. The Department is the largest supplier and manager of water in the 17 Western States, assists others with water conservation and extending water supplies, and provides hydropower resources to power much of the 17 Western States. The Department serves as Trustee to American Indians and Alaska Natives. Interior's Office of Insular Affairs (OIA) carries out the Department's responsibilities for U.S.-affiliated Insular Areas, which include the territories of Guam, American Samoa, the U.S. Virgin Islands, the Commonwealth of the Northern Mariana Islands, and three sovereign freely associated states (FAS, which includes the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau). The Department provides scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

Renewable Energy

BLM's Western Solar Plan includes 19 Solar Energy Zones covering 285,000 acres of public lands where the BLM will prioritize solar energy and associated transmission development. The area could support up to 27,000 megawatts of solar energy generation, enough to power 8 million homes.

As of May 2015, the BLM authorized over 100 wind energy testing sites, and 40 wind energy projects with 5,608 megawatts of capacity, enough to supply the power needs of nearly 2 million homes. In FY 2014, BLM's solar, wind and geothermal activities supported $1.2 billion in output and about 6,400 jobs.

BOEM is overseeing wind-energy development offshore of both coasts. As of April 2015, BOEM executed wind-energy leases for areas offshore of Delaware, Maryland, Massachusetts, Rhode Island and Virginia.

Recent data continue to indicate a strengthening economic recovery, a stronger outlook for consumption, and improved figures on net international trade driven largely by falling oil imports.[6] Labor markets continue to strengthen.[7] The goods and services provided by the lands managed by DOI helped to support this economic recovery. These goods and services include outputs bought and sold in markets (such as oil and gas) as well as ecosystem goods and services that are not typically bought and sold in markets (such as clean water, recreation, and habitat for fish and wildlife), but which underpin many activities that do have market values. Ecosystems (and their service flows) provide a form of wealth – natural capital – that people depend on for a range of important benefits. Unlike manufactured capital, and human capital (skills), there are limited options for creating new natural capital, though degraded or damaged ecosystems can sometimes be restored. Further, manufactured capital may not be a good substitute for natural capital.

Contributions from Restoration – AML Grants

The full economic contribution of abandoned mine land reclamation is more than the output and employment from the reclamation activity. Many of the projects financed from Abandoned Mine Land (AML) grants eventually involve public-private partnerships which can result in sustained economic development and growth. These partnerships often involve work carried out over several years. At the culmination of a project, new economic activity can contribute to the U.S. economy above and beyond the annual contribution we typically measure in this report from grant spending. One prominent example of this was the August 2014 opening of the Pittsburgh Botanic Garden, located on a previously abandoned mine land. Prior to reclamation, conditions on the site did not support a garden. These unfavorable conditions were primarily the result of nearly a century of underground and strip coal mining causing acid mine damage and subsidence. The new garden is expected to draw 300,000 visitors in 2015. The park will continue to develop in coming years providing employment and tax revenues for the State of Pennsylvania as well as contributing to the Nation's GDP. The garden and similar investments to improve water quality also enhance real estate values and encourage investment.

[6] Indications of a recovery include growth in GDP and employment. Annual real GDP increased 2.4 percent between 2013 and 2014, topping the previous year's growth of 1.9 percent between 2012 and 2013. (https://www.bea.gov/newsreleases/national/gdp/2015/pdf/gdp4q14_3rd.pdf). Total nonfarm payroll employment rose by 126,000 in March 2015. Job growth averaged 189,000 per month over the prior 12 months (http://www.bls.gov/news.release/empsit.nr0.htm). In March, the unemployment was 5.5 percent, and the number of unemployed persons was 8.6 million. Over the year, the unemployment rate and the number of unemployed persons were down by 1.1 percentage points and 1.8 million, respectively (http://www.bls.gov/news.release/empsit.nr0.htm). GDP, or Gross Domestic Product, is a commonly used measure of economic performance and measures the value of the goods and services produced by an economy. "Real" measures reflect quantities independent of prices, allowing comparison of measures over periods in which prices have changed. GDP represents the market value of all final goods and services produced in a country, i.e., domestic value added which can be shown to be identical to the sum of payments to labor (i.e. salaries, wages and bonuses) plus payments to capital (i.e. production and replacement of existing capital). GDP is an incomplete measure of wellbeing or economic welfare.

[7] See Bureau of Labor Statistics: http://www.bls.gov/news.release/empsit.nr0.htm

Natural resources bought and sold in markets (e.g., oil, minerals, timber, forage, fish, etc.) contribute to a wide range of intermediate and final products. In addition, people value the environment directly even where there is no market for environmental amenities. Furthermore, people may be unaware of the full benefit they receive from these resources.

The ecosystem services provided by Interior-managed lands are typically provided free of charge, and people who benefit from ecosystem services may not be directly involved in determining the supply of services. This is an example of a positive externality. For example, timber harvests can be managed to minimize soil that enters nearby streams. This preserves water quality and stream habitat downstream of the harvest area. Carbon pollution is example of a negative externality, in which the polluters do not directly bear all of the costs associated with their actions. There are numerous potential solutions proposed for internalizing externalities, including payments for ecosystem services, tradable development rights, taxes on activities that result in damages to services, and direct regulations. The social cost of carbon is an estimate of the economic costs associated with a small increase in carbon dioxide (CO_2) emissions, conventionally one metric ton, in a given year. This dollar figure also represents an estimate of the value of damages avoided for a small emissions reduction, or an action that will sequester carbon (i.e., the benefit of a CO_2 reduction).[8]

Some ecosystem services are traded in markets (e.g., commercial fisheries, timber, etc.) and

Celebrating the 50th Anniversary of the National Historic Preservation Act: Examining the Benefits of Historic Preservation

October 2016 will mark the 50th anniversary of the National Historic Preservation Act which created programs for protecting our country's rich and diverse cultural legacy. The preservation of our heritage contributes important cultural, educational, aesthetic, and economic benefits to current and future generations of Americans.

Over the last 50 years Interior assisted in the preservation of many of America's most significant historic and cultural sites. Each year, visitors to these sites contribute to the economic well-being of nearby communities through spending and related economic contributions, employment, and tax revenue. Tens of thousands of visitor education centers, historic buildings, museum collections exhibits, and other important sites listed on or eligible for the National Register of Historic Places are destinations for domestic and international visitors.

For example, the Ridgefield National Wildlife Refuge in Washington is a destination for visitors who enjoy the natural world as well as historic sites. The Refuge manages a reconstructed Chinookan plankhouse based on evidence from the Cathlapotle archaeological site located on the property. The site commemorates the Lewis and Clark Expedition's 1805 visit to the area and makes the Refuge more accessible to visitors. The Refuge is visited by about 165,000 people a year, who spend an estimated $3.0 million. In FY 2014 this spending resulted in $5.6 million in final demand, supporting 39 jobs, $1.7 million in employment income and $758,700 in total tax revenue.

[8] $37 per ton of carbon emitted. Interagency Working Group on Social Cost of Carbon, United States Government. 2013. Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866. Revised, November 2013. www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf.

valuation using market prices is relatively straightforward. But many ecosystem services are "public goods" that are not traded in markets; without market prices there is no ready measure of value for these services.

Researchers have studied the value of some nonmarket ecosystem services. For example, there are numerous empirical studies to assess the value of outdoor recreation and numerous applications of economic analysis being used to assess the value of various environmental amenities (access to open space, access to water resources, and local air quality). One approach taken in these studies is based on people's revealed preferences. A second type of valuation approach is known as stated preference estimation; this includes survey techniques to estimate people's valuation of an amenity. The strengths and weaknesses of revealed and stated preference methods are well understood. However, practical difficulties in assessing value in a manner that will be viewed as objective, authoritative, and accurate is difficult for some ecosystem services such as those services associated with cultural resources. This difficulty may support the argument for the simple provision of information about potential trade-offs among services without attempting to measure all services in the same metric.

Basic scientific knowledge is often not sold in markets, and hence is underprovided by the private sector. Beyond helping Interior bureaus achieve their missions, scientific information (such as that produced by USGS) is an input to production processes and decisions that help promote economic growth and innovation and ensure American competitiveness in a global market. Interior's bureaus are engaged in a variety of activities designed to provide basic research, scientific and technical information, and to transfer technology to decision makers in the public and private sectors. The information produced by Interior is a critical input that helps support private markets, the production processes of private entities, and many public sector decisions.

The FY 2014 Report

This report represents the sixth in a series of annual reports initiated by Interior in December 2009. The FY 2014 report continues the streamlined format used in the FY 2013 report.[9] The remainder of this chapter presents an overview of the key outputs produced by the Department. The chapter also provides a summary of Interior's economic contributions, value added, employment supported, and economic values associated with some of the outputs.

The analysis in this report reflects the effects of the ongoing drought in many Western States. One way to visualize the impact of the drought in California is to look at the changes in the Bureau of Reclamation's water deliveries to the Central Valley Project (CVP), California (Figure A-1). CVP irrigation deliveries decreased 77 percent over the period from 2012-2014. The reduced irrigation deliveries decreases Interior's economic impact but has not substantially impacted California's agricultural industry as a whole. The value of the agricultural output in the CVP delivery area has remained approximately constant, due to greater utilization of groundwater and other surface water sources, and changes in cropping patterns. Deliveries for municipal and industrial (M&I) uses in the CVP area decreased 64 percent over the same period. Reduced M&I deliveries decreased Interior's economic contribution but some of these impacts may also have been mitigated via water transfers or water

[9] More detailed treatments of topics from this report are available in the FY 2012 Economic Report.

conservation efforts. California's Agricultural production in 2013 accounted for about 2% of California's GDP, about 13% of US agricultural GDP and about 0.3% of US GDP. Drought impacts are expected to reduce 2014 surface water delivery for agriculture by 6.6 MAF, resulting in an increase in groundwater pumping of 5.1 MAF, and net reduction in total irrigation deliveries of about 6% of the typical 26 MAF irrigation use. Resulting impacts Statewide from the 2014 drought are expected to be a loss of about $1.0 billion in revenue (about 8% of total State agricultural revenues) and about 17,100 jobs. As of May 26, 2015, 57 local Emergency Proclamations from city, county, tribal governments and special districts have been received by the Governor's office and the Association of California Water Agencies has identified hundreds of local water agencies, including municipalities that have implemented water conservation actions.[10] The mitigation strategies identified above are not necessarily all equally available over the long-term. If the drought continues into future years, further crop shifting, conservation efforts, water transfers and land fallowing would be anticipated.

This report presents information on: the physical and biological "outputs" produced by Interior; and on the economic value added, gross output, and employment supported by Interior:

- *Gross output* (or economic contributions) represents the value of industry production.
- *Value added* nets out the cost of intermediate inputs (i.e., goods and services purchased from other industries or imported that are used as inputs to produce a good or service). This measure is the most appropriate metric when considering Interior's contributions to the Nation's GDP. Of the measures used in the report, value added most accurately captures the dollar-value of Interior-managed resources in the U.S. economy. Value added estimates are not available on a comprehensive basis for all Interior resources; this information is provided where such values are readily available.
- *Employment* represents the estimated annualized number of full and part-time jobs supported by spending related to a particular activity.

Economic contributions—whether measured by labor income, value added, or output—are an incomplete measure of "economic value."[11] Economic contributions measure how programs, expenditures, and investments translate to economic growth, employment, and income. Economic value is defined in terms of relative value, and is equal to the amount an individual or society is willing to give

[10] Total California irrigation deliveries are typically 26 MAF, with 18 MAF from surface water, and 8 MAF from groundwater. A 6.6 MAF drought-related reduction in surface water availability for agriculture amounts to a 36% reduction. However, due to increased pumping of groundwater, the total reduction in agricultural water use was 1.5 MAF, or about 6% of typical agricultural use. (p. ii; p. 2, Howitt et al. https://watershed.ucdavis.edu/files/biblio/DroughtReport_23July2014_0.pdf). The calculations in the text are derived as follows: US agriculture as a percentage of total GDP = 1.21% (http://www.bea.gov/industry/gdpbyind_data.htm, GDP by industry / VA, GO, II); CA GDP in 2013 was $2.2 trillion (http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Misc.htm); CA as a percentage of US GDP = 2,050,693/15,526,715 = 13.2% (http://bea.gov/newsreleases/regional/gdp_state/2014/pdf/qgsp0814.pdf); CA agriculture as a percentage of CA GDP = 46,651/2,202,678 = 2.12% (http://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=1#reqid=70&step=10&isuri=1&7003=200&7035=-1&7004=naics&7005=-1&7006=06000&7036=-1&7001=1200&7002=1&7090=70&7007=2013&7093=levels) CA agriculture as a percentage of 2013 US GDP = 46,651/16,701,415=0.3%.

[11] *Economic contributions* do not account for any activity that might occur even without the event or policy. *Economic Impacts* are more narrowly defined as net changes to an economy that would not be seen without the event or policy. *Economic benefits* refer to total net values, which include both market and nonmarket values.

up in other goods and services in order to obtain a good, service, or state of the world. More specifically, the economic value of a resource is the amount that society is willing to pay for the resource (not how much they actually pay for the resource). This report focuses on economic contributions, and offers some discussion of economic values as well.

While this report relied on generally similar methodologies to estimate value added, output and employment, the results are not directly comparable to those of earlier reports due to changes in some of the underlying modeling. Additional information is provided in Appendix A.

Overview of Outputs Produced and Economic Values

Table 1-1 summarizes the quantities of the key outputs produced by Interior in FY 2014. The table also provides information (where such information is readily available) on the unit economic values for each commodity. This report provides a range of economic values associated with each resource, and reports total production for the year. The table does not associate production with individual unit prices, so the report does not provide a total value for the annual production.

Table 1-1. Interior-Managed Resources: Production Quantities and Values, FY 2008-FY 2014

Commodity [a]		FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Recreation [b]	*Visits to Interior sites (millions)*	n/a	415	439	434	417	407	423
	Economic value per visit (2014-$)			$37 to $64				
Crude Oil [c]	*Federal production (millions of barrels)*	575	657	736	649	626	652	706
	WTI - Average price per bbl (2014-$)	$118.37	$74.10	$92.03	$103.23	$98.22	$102.27	$99.30
Natural Gas [d]	*Federal production (trillions of cubic feet)*	5.8	5.7	5.4	4.9	4.5	4.1	3.8
	Average wellhead price per thousand cubic feet (2014-$)	$9.47	$4.39	$5.19	$4.30	$2.78	$3.72	$4.41
Coal [e]	*Federal production (millions of tons)*	509	488	478	470	460	420	421
	Average price per short ton subbituminous coal (2014-$)	$12.63	$13.60	$13.98	$14.86	$9.41	$10.90	$11.82
Hardrock Minerals – Gold [f]	*Estimated gold production on Federal lands in NV (kg)*	100,190	95,890	99,330	100,620	73,187	76,223	77,738
	Average gold price per ounce (calendar year)	$900	$1,000	$1,200	$1,600	$1,700	$1,400	$1,270
Forage [g]	*BLM, AUMs permitted (millions)*	8.6	8.6	8.7	9.1	8.9	8.5	8.3
	Price per animal unit month (2014-$)			$1.35 to $18.09				
Timber [h]	*BLM commercial sawtimber harvested (thousand board-feet, mbf)*	162,902	190,504	183,558	218,467	208,943	236,889	252,689
	BIA harvested timber (mbf)	530,972	426,250	396,532	359,697	333,209	336,320	261,089
	Total for BLM and BIA (mbf)	693,874	616,754	580,090	578,164	542,152	573,209	513,778
	Average Western OR BLM received price per mbf (2014-$)	$195.85	$169.26	$100.50	$97.47	$ 123.02	$128.35	$154.16

(Table continues)

Commodity [a]		FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Electricity Generation								
Hydroelectric	*Net generation (million MWh)*	40.8	39.5	35.8	48.6	47.5	39.8	38.0
Geothermal [i]	*New approved capacity (MW)*	0	67.5	30	312	70	110	0
Wind [i]	*New approved capacity (MW)*	110	4	150	654	1815	826	0
Solar [i]	*New approved capacity (MW)*	0	0	2,744	1,975	489	1,000	768
	Average electricity spot price per MWh [j]							
	Mid-Columbia (Northwest)	$65.00	$35.66	$35.90	$29.10	$22.22	$31.93	$38.54
	SP-15 (California)	$79.36	$38.31	$40.21	$36.87	$34.57	$42.43	$51.89
Water Irrigation, and Municipal & Industrial	*Million acre-feet delivered (estimated)* [k]	n/a	n/a	n/a	n/a	26.7	27.3	24.4
	$ per acre-foot [l]			$0 to $4,500				
Ecosystem Services	Ecosystem services are measured in many different metrics; information on annual flows of these services is not readily available. Because most ecosystem services are not bought and sold in markets, prices are not readily available.							

(Table continues)

Notes to Table 1-1
[a] Unit values are FY 2014 market values or estimated economic value, depending on the commodity.
[b] Currently available datasets do not track visitors' activities. Low end estimate is the mean study value for "general recreation"; high end estimate is for "wildlife viewing." This range also includes activities such as sightseeing, camping, picnicking and visiting beaches. Source: John Loomis (2005) "Updated Outdoor Recreation Use Values on National Forests and Other Lands," updated to 2014-$ using consumer price index.
[c] Production is based on ONRR sales and non-revenue volumes, by sales year. Crude oil prices are West Texas Intermediate (WTI) per-barrel spot prices from EIA.gov. WTI is a benchmark price used for indexing crude oil.
[d] Production is based on ONRR sales and non-revenue volumes, by sales year. Natural gas prices are U.S. wellhead price per mcf from EIA.gov.
[e] 2008-2011 coal prices from EIA.gov: http://www.eia.gov/totalenergy/data/annual/pdf/sec7_21.pdf, updated to 2014-$ using the CPI-U; 2014 price data are from ONRR Monthly Market Analysis reports
[f] Gold figures for 2008-2011 are estimates of gold production from the Federal estate. Production for 2012-2014 represents production from Federal estate in Nevada based on data from the State of Nevada.
[g] The low-end value is the Federal grazing fee; the high-end value is the 11 Western State average rental price for private forage in 2014, as reported by the USDA, National Agriculture Statistics Service. For FY2014, BIA permitted an estimated 2.15 Million AUMs. Historic BIA grazing data are not available.
[h] Source: BLM Data. Data include sawtimber harvested for commercial use. Additional sawtimber is harvested from BLM managed lands under the Stewardship Program and Special Forest Products Program. These volumes represent a relatively small proportion of the volume and are not shown in this table. Other wood-based timber products not included in these volumes include biomass, posts, poles, fuelwood, and "other."
[i] Source: BLM data. Generation information is not available for these resources. The data represents approved capacity. In FY 2014 there was no new capacity approved. We estimate economic contributions based on installed capacity for the calendar year.
[j] Prices are annual average on-peak. Source: EIA – Electric Market National Overview, Regional Spot Prices.
[k] Does not include deliveries for facilities where water users, rather than the Bureau of Reclamation, have operating and maintenance responsibilities. Irrigation-water deliveries make up about 90 percent of total deliveries; M&I deliveries make up about 10 percent. Some Reclamation-supplied water is also delivered for other uses, such as supplying National Wildlife Refuges or supporting instream flows.
[l] Values depending on region, end-use, and other circumstances; the high end of the range would be relatively rare.

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Chapter 2 Value Added, Output, and Employment Estimates

Introduction

Table 2-1 presents information on Interior's economic contributions, value added, and employment by activity for FY 2014; Table 2-2 presents contributions by bureau. Economic contributions are a measure of the cumulative effects of spending as it cycles through the economy.[12] Value added is the contribution of an activity to overall Gross Domestic Product (GDP) and equals the difference between an industry's gross output (e.g., sales or receipts and other operating income, commodity taxes, and inventory change) and the cost of its intermediate inputs (including energy, raw materials, semi-finished goods, and services that are purchased from all sources).[13] Employment represents jobs supported in the National economy, above and beyond Interior employees. These economic measures should not be confused with measures of economic benefits or net economic effects resulting from Interior's implemented activities or policies. The distinction between economic contributions or impacts and economic benefits as well as

Concepts: Economic Contributions and Benefits

The results of an economic contributions analysis should not be equated to an analysis that measures net economic benefits. Net economic benefits are a measure of the extent to which society is better (or worse) off because of a given policy, program or event. Net economic benefits can include measures of market values and non-market values.

Economic contributions analysis estimates the total output, value added, and jobs supported by a flow of expenditures through the economy. Conversely, an analysis of net economic benefits relies on market-based valuation methods as well as non-market valuation methods to derive monetary estimates of benefits and costs to determine the net economic benefits to society.

There are two elements in the value of any commodity: the market price, and any additional "nonmarket" benefits that aren't reflected in the price. For example, ecosystem services may not be fully reflected in area land prices.

Surveys often show that people are willing to pay more for recreation than they actually spend. Economists call this additional value consumer surplus or net economic value.

[12] 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.

[13] The components of value added consist of compensation of employees, taxes on production and imports less subsidies, and gross operating surplus. GDP measures the value of the goods and services produced by the U.S. economy in a given time period. The output approach to economic contributions totals up the sale prices at every step of the chain, in effect double-counting the contributions of intermediate goods. The value added approach focuses on the change in sale price at each step, avoiding this double-counting. The measure of output does not account for external costs and benefits not reflected in market prices. The implication of not including these costs is that statistics on gross sales or output may over or understate the actual contribution a given activity or sector makes to the economy. Value added is a more appropriate concept when considering Interior's contributions to the Nation's GDP, though GDP does not fully capture changes in economic welfare. Where possible, this report addresses the economic value of Interior's resources and programs, but the focus of the report remains the economic impacts or contributions of the Department of the Interior.

the limitations associated with an economic contribution analysis are discussed in the FY 2012 Economic Report.[14] Economic welfare costs also are not fully measured by changes in GDP. GDP fails to capture nonmarket values, such as environmental improvement or environmental damages. These can be important components of total economic welfare. GDP can sometimes be misleading: for example, cleanup costs from an oil spill would increase GDP, however, this provides little information about the total economic costs incurred by individuals and society overall.[15]

Although the Department of the Interior's record for contributing to the Nation's annual economic output is impressive, the Department's contributions are a by-product of the Department carrying out its unique mission, which is primarily to manage Federal lands and waters and make investments that conserve and restore natural landscapes and cultural heritages of the Nation. In many cases, increasing goods and services and associated supporting jobs each year ultimately lies with the private sector. Making wise public investments such as investing in landscapes through reclamation and restoration and providing environmental stewardship enables the private sector to sustainably create far more jobs and economic output than would otherwise be possible for generations to come.

Value Added and Economic Contributions

DOI's FY 2014 value added and output are estimated to be $207 billion and $358 billion, respectively. The value added and economic contributions are estimated to have supported 2.1 million jobs in FY 2014. The value of all commodities and other inputs to production associated with Interior's activities increased over the past year by about 2 percent in nominal terms, from $156 billion in FY 2013 to $159 billion in FY 2014. Changes in value for individual inputs vary significantly across commodities due largely to changes in commodity prices and the quantity of inputs produced. Detailed estimates of value added, economic contributions, and employment estimates are presented in Table 2-1. Some highlights for value added, economic contributions, and employment are presented below.

Recreation: An estimated 423 million visits to DOI lands contributed about $24 billion in value added, $42 billion in output, and supported 375,000 jobs.

Renewable energy: Activities related to geothermal, wind, and solar energy rights-of-way grants for renewable energy facilities on BLM lands contributed an estimated $1.2 billion in output, and supported about 6,400 jobs. Hydropower contributed about $1.4 billion in value added, $2.1 in output, and supported about 6,400 jobs.

New renewable energy generating capacity can reduce the amount of energy generated with conventional fuels. This offers two major sources of cost savings: (1) reduced operating and fuel costs; and (2) reduced greenhouse-gas and particulate emissions. The average wholesale market value is about $40 to $50 per MWh for the marginal generation that an additional unit of renewable energy would

[14] One of the important limitations is that contribution analysis is a static approach and does not incorporate potential price changes over time or other shifts in labor or capital resources as a result of changes in the scale or scope of economic activities. A different type of modeling approach (computable general equilibrium models) would be necessary to incorporate price changes and other economy wide resource shifts. The FY 2012 report can be found at: http://www.doi.gov/ppa/economic_analysis/upload/FY2012-DOI-Econ-Report-Final-2013-09-25.pdf.
[15] In the Department's economic report for FY 2011, Chapter 7 discussed externalities associated with Interior's activities. This chapter is available on the Department's website at http://www.doi.gov/ppa/upload/Chapter-7.pdf.

displace. Emissions costs can be estimated based on health effects, and by applying estimates of the social cost of carbon. Applying the Federal Interagency Working Group's estimate of $37 per ton of carbon yields an additional $15 to $35 per MWh of avoided greenhouse gas-related costs.

Energy from Fossil Fuels: Activities related to oil, gas, and coal contributed an estimated $133 billion in value added, $230 billion in economic output, and supported 1.1 million jobs.

Non-fuel minerals: Activities related to BLM locatable minerals in Nevada and hardrock leasables in Missouri contributed an estimated $4.7 billion to value added, $7.0 billion in output, and supported about 22,000 jobs. In addition, activities related to salable and other leasable minerals authorized by the BLM contributed $2.6 billion to value added, $4.6 billion in output, and supported about 21,000 jobs.

Timber: Activities related to timber contributed an estimated $0.4 billion in value added, $0.8 billion in output, and supported about 3,800 jobs.

Land Buy-Back Program for Tribal Nations

In 2012 the Secretary of the Interior established the Land Buy-Back Program for Tribal Nations to implement the land consolidation provisions of the Cobell Settlement Agreement. The Buy-Back Program allows participating individual owners to receive payments for voluntarily selling their land. All lands sold by individuals will be held in trust for the tribe. Spending by landowners using payments from the program generates and supports economic activity. The input-output modeling used in this report estimates the level of economic activity generated from program payments. In 2014, payments from the program to landowners contributed an estimated $352 million in value added, $640 million in economic output and supported about 4,000 jobs Nationwide.

Forage: Activities related to forage and grazing on public and Indian land contributed an estimated $1.4 billion in output, and supported about 17,000 jobs.

Water: Interior's irrigation (BOR and BIA) and M&I water activities are associated with $29 billion in value added; about $51 billion in economic output; and supported an estimated 379,000 jobs. Activities associated with irrigation alone (both BOR and BIA) contributed an estimated $24.1 billion in value added, $43 billion in output, and supported 344,000 jobs. Activities associated with municipal and industrial water contributed about $4.9 billion in value added, $7.9 billion in output, and supported 35,000 jobs.

Grants and payments: Activities related to major grants and payments contributed an estimated $7.4 billion in value added, $10.4 billion in output, and supported about 99,000 jobs. Indian Affair's support for tribal governments contributed about $0.9 billion in value added, $1.2 billion in output, and supported about 11,000 jobs.[16]

[16] It is possible that grants and payments support some of the economic activity reported for other sectors throughout this report. We have not attempted to correct for this source of potential double-counting.

Insular Affairs: Interior's activities related to Insular Affairs contributed about $0.9 billion in value added (equivalent to a share of GDP ranging from 3 percent for the Northern Mariana Islands to 65 percent for Micronesia); and supported about 26,000 jobs.

Science: The Department's bureaus have varying levels of involvement with scientific and technical research and innovation, and technology transfer. The economic value associated with these activities is difficult to measure. The FY 2014 enacted budget for the Department of the Interior included $828.4 million for research and development. Much of the funding was for applied research ($665.7 million), while basic research and development received $52.2 million and $110.5 million, respectively. The U.S. Geological Survey is the largest research and development organization within the Department, both in terms of budget and personnel, and typically accounts for about 80 percent of the Department's R&D budget. The programs supported through these funds greatly advance knowledge and technology, which helps the Department meet its mission objectives and carry over to resource managers, stakeholders, and the general public. The economic values associated with the production and dissemination of scientific information are only partly incorporated in the market prices of traded goods and services.

The Department's scientific, technical and engineering personnel are engaged in a broad range of cooperative activities to develop and disseminate innovative technologies, including: [17]

- Publishing over 7,500 reports, books, papers, fact sheets, and other publications.
- Collaborating on 601 Cooperative Research and Development Agreements, of which 422 were new in FY 2014. In addition, the Department was engaged in at least 292 other collaborative R&D relationships.
- Disclosure of five new inventions. In addition, three patents were filed and two patents were received.
- Managing 15 licenses for inventions and other intellectual property earning over $58,000.

Sustainable Stewardship: Sustainable stewardship of natural resources requires strong investments in research and development in science and engineering to inform decision-making. The Department supports cutting edge research in geology, hydrology, biology, and many other fields of science and engineering, informing resource management and community protection at Interior and across the world.

Youth: The Department of the Interior works to expand job opportunities, engagement and education for youth on our public lands and to facilitate partnerships and volunteer programs that leverage resources for accomplishing the Department's mission. In FY 2014, Interior's youth programs and partnerships provided 16,644 employment opportunities for people between the ages of 15 and 35 interested in working with Interior and organization partners. This was an increase of seven percent over FY 2013 employment (15,546 jobs). In FY 2014, 8,341 youth were employed by DOI and 8,303 were employed by partners. 8,025 of these jobs were with the National Park Service (NPS) and their partners. These programs and partnerships enable participating youth to gain valuable work experience to

[17] Additional information on technology transfer can be found in the Department of the Interior Annual Report on Technology Transfer FY 2014 Activities. January 2015, http://www.doi.gov/techtransfer/upload/DOI-2014-Tech-Transfer-Annual-Report.pdf.

strengthen their skills and knowledge base. Interior bureaus benefit by attracting and retaining qualified employees, especially as youth hires can convert to permanent positions, be promoted to a new position, or receive new job assignments.

Table 2-1. Estimated Economic Contributions Resulting from Interior's Activities

Category	Direct Economic Contribution (billions, 2014-$)	Total Economic Contributions: Direct + Indirect + Induced[1] (billions, 2014-$)	Value Added (billions, 2014-$)	Total Domestic Jobs Supported
DOI Payroll ~70,000 employees in 2014	4.83	6.52	3.60	41,681
Grants & Payments to non-Federal Entities[2]	5.12	10.38	7.42	98,893
Support for Tribal Governments	0.52	1.24	0.86	10,783
Public Resources as Inputs to Production				
Recreation and Tourism	21.63	42.42	24.12	374.602
Energy				
Oil, gas and coal	96.83	229.62	133.07	1,092,592
Hydropower	1.21	2.13	1.41	6,353
Wind Power	0.14	0.14	n/a	765
Geothermal	0.09	0.24	0.00	1,173
Solar	0.13	0.81	n/a	4,416
Locatable Minerals and Hardrock Leasables[3]	4.03	6.99	4.67	21,816
Salable and Other Leasable minerals	2.00	4.62	2.64	20,581
Other Production				
Irrigation water	17.81	43.03	24.12	343,597
M&I water	3.84	7.88	4.89	35,217
Grazing	0.17	1.44	n/a	16,723
Timber	0.37	0.85	0.36	3,791
Total	**158.74**	**358.03**	**207.15**	**2,072,983**

[1] The direct effect is the known or predicted change in the local economy that is to be studied. The indirect effect is the business to business transactions required to satisfy the direct effect. Finally, the induced effect is derived from local spending on goods and services by people working to satisfy the direct and indirect effects.

[2] This category excludes payments via U.S. Treasury.

[3] Contribution estimates are based on production from Federal lands in Nevada (for locatable minerals) and Eastern States (for leasable hardrock minerals primarily in Missouri) only. In addition to Nevada, locatable mineral production from Federal lands exists in many Western States. With the exception of Nevada, information on production by ownership (private, State, or Federal) was not available.

Note: Totals may not add due to rounding. The value added and economic contribution estimates do not capture output or employment effects beyond payroll spending and natural resource production. Bureaus are engaged in various other activities funded by appropriations, e.g., land acquisition, BLM's mine land reclamation, construction, road building, education, etc.

Table 2-2. Summary of FY 2014 Economic Contributions by Bureau

Production Inputs (DOI Activity)	FY 2014			
Bureau	**Sales Value** (billions, 2014-$)	**Total Economic Contribution** (billions, 2014-$)	**Total Value Added** (billions, 2014-$)	**Total Domestic Jobs Supported**
National Park Service				
Recreation[1]	15.53	29.70	17.05	276,960
Fish and Wildlife Service				
Recreation	2.03	4.55	2.48	35,098
Bureau of Indian Affairs[2]				
Oil, gas and coal	6.97	22.52	14.95	83,753
Irrigation water	2.50	7.40	3.03	45,153
Grazing	0.02	0.06	n/a	715
Timber	0.06	0.15	0.06	644
Other minerals[3]	0.002	0.01	0.004	22
BIA Subtotal	*9.56*	*30.12*	*18.04*	*130,286*
Bureau of Land Management				
Oil, gas and coal	33.30	93.63	53.69	357,390
Geothermal	0.09	0.24	n/a	1,173
Locatable Minerals and Hardrock Leasable Minerals	4.03	6.99	4.67	21,816
Salable and Other Leasable Minerals	2.00	4.61	2.63	20,559
Grazing	0.15	1.38	n/a	16,008
Timber	0.31	0.70	0.30	3,147
Recreation	2.87	5.48	3.11	41,664
Wind	0.14	0.14	n/a	765
Solar	0.13	0.81	n/a	4,416
BLM Subtotal	*34.02*	*113.98*	*64.39*	*466,938*

(Table continues)

Production Inputs (DOI Activity)	**FY 2014**			
Bureau	**Sales Value** (billions, 2014-$)	**Total Economic Contribution** (billions, 2014-$)	**Total Value Added** (billions, 2014-$)	**Total Domestic Jobs Supported**
Bureau of Reclamation				
Hydropower	1.21	2.13	1.41	6,353
Irrigation water	15.31	35.64	21.09	298,445
M&I water	3.84	7.88	4.89	35,217
Recreation	1.21	2.70	1.48	20,881
BOR Subtotal	21.56	48.35	28.87	360,895
Bureau of Ocean Energy Management/ Bureau of Safety and Environmental Enforcement	56.57	113.47	64.43	651,450
Subtotal: All Bureau Production Contributions	***148.26***	***340.16***	***195.27***	***1,921,627***

DOI Budgetary Items	**FY 2014**			
	Budgeted Amount (billions, 2014-$)	**Total Economic Contribution** (billions, 2014-$)	**Total Value Added** (billions, 2014-$)	**Total Domestic Jobs Supported**
Payroll				
National Park Service	1.39	1.87	1.04	11,978
Fish and Wildlife Service	0.65	0.88	0.49	5,639
Bureau of Land Management	0.68	0.93	0.51	5,914
Bureau of Reclamation	0.39	0.53	0.29	3,385
Bureau of Safety and Environmental Enforcement	0.07	0.10	0.05	607

(Table continues)

DOI Budgetary Items	FY 2014			
	Budgeted Amount (billions, 2014-$)	**Total Economic Contribution** (billions, 2014-$)	**Total Value Added** (billions, 2014-$)	**Total Domestic Jobs Supported**
Bureau of Ocean Energy Management	0.05	0.07	0.04	464
Indian Affairs	0.47	0.64	0.35	4,090
US Geological Survey	0.67	0.90	0.50	5,775
Office of Surface Mining Reclamation and Enforcement	0.04	0.05	0.03	335
Office of Insular Affairs	0.01	0.001	0.001	758
Other Interior Offices	0.40	0.55	0.30	3,486
Subtotal DOI Payroll (~70,000 employees in 2014)	*4.83*	*6.52*	*3.60*	*41,681*
Grants, Payments, and Tribal Support				
Grants and Payments to non-Federal Entities[4]	5.12	10.38	7.42	98,893
Support for Tribal Governments	0.52	1.24	0.86	10,783
Subtotal Grants, Payments and Tribal Support	***5.65***	***11.61***	***8.28***	***109,675***
Total DOI Production and Budget	**158.74**	**358.30**	**207.15**	**2,072,983**

[1] Recreation sales value and economic contribution estimates do not include values from U.S. territories.

[2] Does not include sales of renewable energy on tribal land.

[3] Source: BIA data. Due to data limitations, values may not match those reported by ONRR. If a 5% royalty is assumed we would expect an estimated $33.8 Million in economic output, $20.4 Million in value added and 132 jobs with additional data.

[4] Excludes payments via U.S. Treasury.

Chapter 3 State-Level Estimates

This chapter presents the results of the analysis on a State-by-State basis for value added, output, and employment. Table 3-1, Table 3-2, and Table 3-3 present State-by-State estimates of value added, economic output, and employment.

Figure 3-1 shows the ten States that contribute the largest estimated value added. The components that contribute to this value added include energy production; grants and payments; recreation; and timber and forage production. The State with the largest value added is Texas (over $20 billion in FY 2014), followed by Wyoming (over $15 billion in FY 2014). Most of this value added is related to Federal lands that support onshore or offshore oil and gas production.

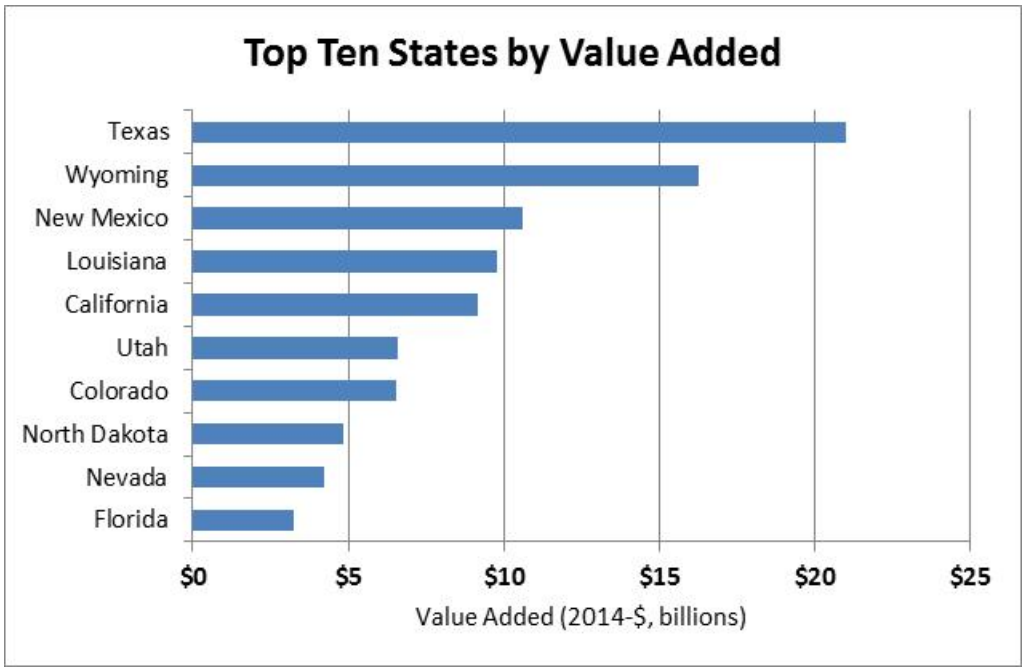

Figure 3-1. Top Ten States for Value Added in All Sectors (FY 2014, $ billions)

Figure 3-2 shows the top ten States for value added associated with recreation on DOI lands. The State with the largest recreation value added is California ($2.3 billion in FY 2014), followed by Alaska ($1.3 billion in FY 2014).

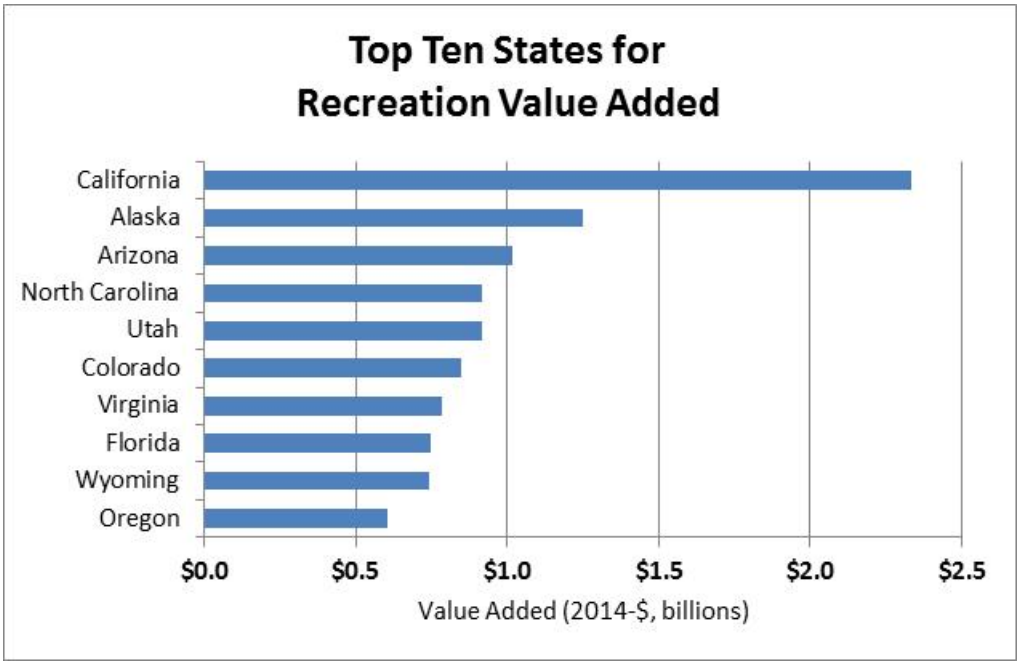

Figure 3-2. Top Ten States for Value Added in the Recreation Sector (FY 2014, $ billions)

Table 3-1. Estimated Value Added Supported by Interior Activities, by Sector and State (FY 2014, $ billions)

State	Recreation Value Added[1,2]	Energy & Minerals Value Added[2,3]	Grazing & Timber Value Added[2,4]	Major Grants & Payments Value Added[5]	DOI Payroll Value Added[6]	All Sectors Value Added[7]
Alabama	0.04	1.51	0.00	0.04	0.02	1.61
Alaska	1.25	0.61	0.00	0.10	0.05	2.01
Arizona	1.02	0.52	0.00	0.07	0.13	1.74
Arkansas	0.13	0.34	0.00	0.03	0.01	0.51
California	2.33	6.32	0.00	0.28	0.24	9.19
Colorado	0.85	5.15	0.00	0.27	0.28	6.55
Connecticut	0.00	0.28	0.00	0.01	0.00	0.29
Delaware	0.00	0.07	0.00	0.01	0.00	0.08
District of Columbia	0.51	0.00	0.00	0.00	0.05	0.56
Florida	0.75	2.42	0.00	0.05	0.04	3.26
Georgia	0.32	1.07	0.00	0.03	0.03	1.45
Hawaii	0.33	0.32	0.00	0.01	0.01	0.67
Idaho	0.23	0.31	0.01	0.05	0.05	0.65
Illinois	0.04	1.11	0.00	0.06	0.01	1.21
Indiana	0.06	0.51	0.00	0.04	0.01	0.61
Iowa	0.04	0.22	0.00	0.02	0.00	0.28
Kansas	0.03	0.50	0.00	0.02	0.01	0.56
Kentucky	0.08	0.47	0.00	0.06	0.01	0.62
Louisiana	0.05	9.64	0.00	0.05	0.03	9.78
Maine	0.19	0.08	0.01	0.01	0.01	0.31
Maryland	0.19	1.18	0.00	0.02	0.02	1.42
Massachusetts	0.43	0.50	0.00	0.02	0.04	0.98
Michigan	0.15	0.68	0.00	0.05	0.02	0.89
Minnesota	0.08	0.45	0.00	0.05	0.03	0.61
Mississippi	0.12	0.98	0.00	0.02	0.01	1.14
Missouri	0.20	0.51	0.00	0.04	0.02	0.78
Montana	0.56	0.80	0.01	0.10	0.05	1.53
Nebraska	0.04	0.17	0.00	0.02	0.01	0.24
Nevada	0.45	3.67	0.00	0.05	0.05	4.23
New Hampshire	0.00	0.09	0.00	0.01	0.00	0.11
New Jersey	0.14	0.63	0.00	0.02	0.01	0.80

State	Recreation Value Added[1,2]	Energy & Minerals Value Added[2,3]	Grazing & Timber Value Added[2,4]	Major Grants & Payments Value Added[5]	DOI Payroll Value Added[6]	All Sectors Value Added[7]
New Mexico	0.21	9.70	0.00	0.58	0.09	10.58
New York	0.49	1.40	0.00	0.04	0.03	1.96
North Carolina	0.92	1.10	0.00	0.04	0.02	2.07
North Dakota	0.06	4.69	0.00	0.08	0.02	4.85
Ohio	0.13	1.11	0.00	0.05	0.01	1.30
Oklahoma	0.07	1.61	0.00	0.04	0.03	1.75
Oregon	0.60	0.25	0.29	0.05	0.08	1.27
Pennsylvania	0.33	1.49	0.00	0.11	0.04	1.97
Rhode Island	0.02	0.10	0.00	0.01	0.00	0.12
South Carolina	0.09	0.43	0.00	0.02	0.01	0.54
South Dakota	0.18	0.09	0.00	0.03	0.03	0.34
Tennessee	0.49	0.41	0.00	0.04	0.02	0.95
Texas	0.23	20.64	0.00	0.10	0.04	21.01
Utah	0.92	5.34	0.00	0.25	0.06	6.57
Vermont	0.00	0.05	0.00	0.01	0.00	0.06
Virginia	0.78	1.73	0.00	0.04	0.14	2.69
Washington	0.45	0.81	0.00	0.05	0.08	1.40
West Virginia	0.04	0.23	0.00	0.07	0.02	0.36
Wisconsin	0.07	0.44	0.01	0.04	0.02	0.58
Wyoming	0.74	14.60	0.00	0.91	0.04	16.29

[1] Recreation value added based on visitor spending at units managed by BLM, BOR, FWS and NPS.
[2] BIA data are not included in these totals due to lack of State-specific information.
[3] Energy & Minerals value added is based on activities related to onshore and offshore oil and gas, coal, non-metallic minerals, and geothermal, wind, and solar electricity generation. Information related to BIA's mineral activities are not available at the State level.
[4] Timber contributions are based on harvests on BLM and BIA lands. BIA timber contributions are based on BLM's FY 2014 per-ccf contributions for each State. Grazing value added is not available.
[5] Grants and Payments value added include AML, PILT, Royalties and certain other grants (Sport Fish, Wildlife Restoration, State and Tribal Wildlife Grants, LWCF with GOMESA, Historic Preservation, CIAP, CESCF, Preserve America, Save America's Treasures, Refuge Revenue Sharing).
[6] DOI payroll value added is the economic contribution of DOI employees spending their pay.
[7] These totals represent value added supported by energy, minerals, grazing, timber, salaries and grants and payments in each of the 50 States and the District of Columbia. The economic contributions reported in Table 2-1 were estimated using a national-level model that includes interstate "leakages" not captured in State-level models. Therefore, a sum of State totals would not equal the national total.

Table 3-2. Estimated Total Output Supported by Interior Activities, by Sector and State (FY 2014, $ billions)

State	Recreation Total Output[1,2]	Energy & Minerals Total Output[2,3]	Grazing & Timber Total Output[2,4]	Major Grants & Payments Total Output[5]	DOI Payroll Total Output[6]	All Sectors Total Output[7]
Alabama	0.07	2.96	0.00	0.06	0.04	3.14
Alaska	2.10	0.98	0.00	0.14	0.08	3.30
Arizona	1.69	0.83	0.06	0.10	0.23	2.91
Arkansas	0.23	0.62	0.00	0.05	0.01	0.91
California	3.94	10.97	0.07	0.42	0.42	15.81
Colorado	1.43	8.51	0.10	0.39	0.47	10.88
Connecticut	0.00	0.48	0.00	0.02	0.00	0.50
Delaware	0.00	0.10	0.00	0.01	0.00	0.12
District of Columbia	0.73	0.00	0.00	0.00	0.07	0.80
Florida	1.25	4.43	0.00	0.07	0.07	5.83
Georgia	0.56	1.65	0.00	0.05	0.06	2.31
Hawaii	0.52	0.44	0.00	0.02	0.02	0.99
Idaho	0.44	0.51	0.29	0.07	0.10	1.42
Illinois	0.06	1.94	0.00	0.09	0.01	2.10
Indiana	0.10	0.93	0.00	0.06	0.01	1.10
Iowa	0.06	0.39	0.00	0.03	0.01	0.49
Kansas	0.05	0.87	0.00	0.04	0.02	0.98
Kentucky	0.15	0.73	0.00	0.11	0.01	1.00
Louisiana	0.09	19.07	0.00	0.07	0.06	19.29
Maine	0.34	0.13	0.03	0.02	0.01	0.54
Maryland	0.31	1.68	0.00	0.02	0.04	2.06
Massachusetts	0.68	0.85	0.00	0.02	0.06	1.61
Michigan	0.25	1.21	0.00	0.07	0.03	1.56
Minnesota	0.15	0.82	0.00	0.07	0.05	1.08
Mississippi	0.22	2.01	0.00	0.03	0.02	2.28
Missouri	0.36	0.85	0.00	0.06	0.04	1.31
Montana	1.08	1.54	0.23	0.16	0.10	3.11
Nebraska	0.06	0.29	0.00	0.03	0.02	0.40
Nevada	0.73	5.31	0.13	0.07	0.09	6.33
New Hampshire	0.01	0.15	0.00	0.02	0.01	0.18
New Jersey	0.23	1.06	0.00	0.02	0.02	1.33

State	Recreation Total Output[1,2]	Energy & Minerals Total Output[2,3]	Grazing & Timber Total Output[2,4]	Major Grants & Payments Total Output[5]	DOI Payroll Total Output[6]	All Sectors Total Output[7]
New Mexico	0.40	15.33	0.17	0.80	0.17	16.88
New York	0.74	2.37	0.00	0.05	0.05	3.22
North Carolina	1.62	1.67	0.00	0.06	0.03	3.38
North Dakota	0.12	8.67	0.00	0.12	0.03	8.94
Ohio	0.23	1.98	0.00	0.07	0.02	2.31
Oklahoma	0.13	2.94	0.00	0.06	0.05	3.17
Oregon	1.07	0.43	0.79	0.07	0.14	2.51
Pennsylvania	0.57	2.66	0.00	0.18	0.06	3.48
Rhode Island	0.02	0.15	0.00	0.01	0.00	0.19
South Carolina	0.15	0.68	0.00	0.03	0.01	0.86
South Dakota	0.34	0.19	0.01	0.04	0.06	0.64
Tennessee	0.82	0.70	0.00	0.05	0.03	1.60
Texas	0.40	36.68	0.00	0.15	0.07	37.30
Utah	1.66	9.83	0.12	0.38	0.11	12.11
Vermont	0.01	0.08	0.00	0.02	0.00	0.10
Virginia	1.33	2.47	0.00	0.06	0.24	4.10
Washington	0.74	1.26	0.02	0.08	0.13	2.23
West Virginia	0.08	0.41	0.00	0.12	0.03	0.63
Wisconsin	0.12	0.81	0.02	0.06	0.04	1.05
Wyoming	1.30	20.30	0.16	1.25	0.06	23.08

[1] Recreation total output is based on visitor spending at units managed by BLM, BOR, FWS and NPS.
[2] BIA data are not included in these totals due to lack of State-specific information.
[3] Energy & Minerals total output is based on activities related to onshore and offshore oil and gas, coal, non-metallic minerals, and geothermal, wind, and solar electricity generation. Information related to BIA's mineral activities are not available at the State level.
[4] Timber contributions are based on harvests on BLM and BIA lands. BIA timber contributions are based on BLM's FY 2014 per-ccf contributions for each State. BLM's grazing contributions are based on a state-specific estimate of jobs supported per 1,000 animal unit months (AUMs). BIA grazing contributions are not available at the State level.
[5] Grants and Payments total output include AML, PILT, Royalties and certain other grants (Sport Fish, Wildlife Restoration, State and Tribal Wildlife Grants, LWCF with GOMESA, Historic Preservation, CIAP, CESCF, Preserve America, Save America's Treasures, Refuge Revenue Sharing).
[6] DOI payroll total output is the economic contribution of DOI employees spending their pay.
[7] These totals represent total output supported by energy, minerals, grazing, timber, salaries and grants and payments in each of the 50 States and the District of Columbia. The economic contributions reported in Table 2-1 were estimated using a national-level model that includes interstate “leakages” not captured in State-level models. Therefore, the sum of State totals will not equal the national total.

Table 3-3 shows estimates of the number of jobs supported in each State; and Figure 3-3 shows the employment supported for the top ten States. In FY 2014, energy production-related activities on Interior lands (and offshore) supported about 200,000 jobs in Texas, and over 120,000 in Louisiana. Figure 3-4 shows the top ten States by recreation-related employment. In FY 2014, recreation on Interior-managed lands supported over 36,000 jobs in California and over 20,000 jobs in Alaska.

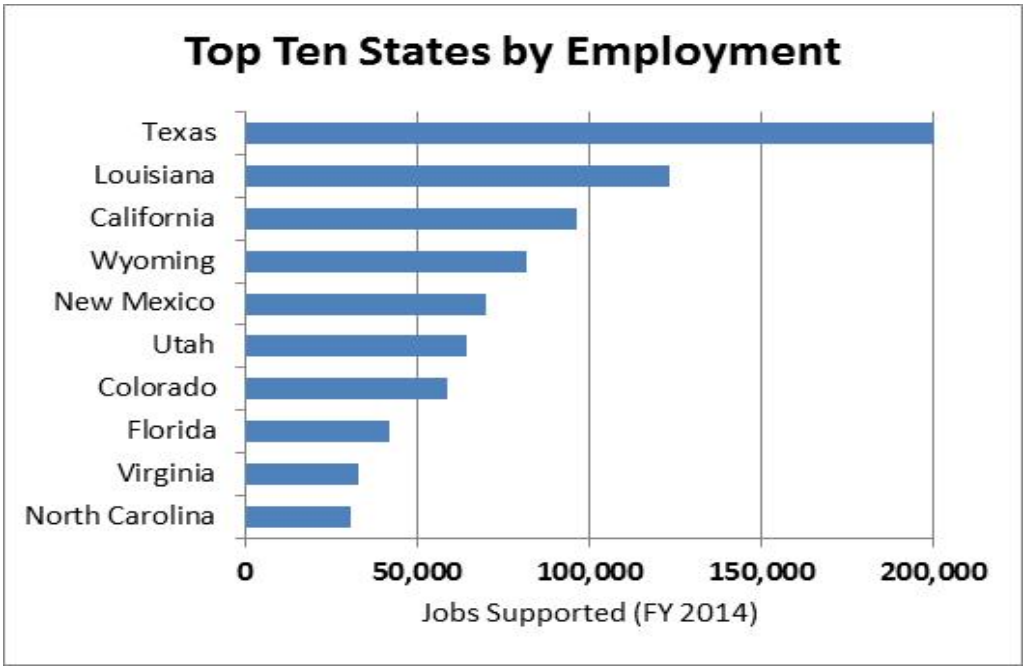

Figure 3-3. Top Ten States for Jobs Supported in All Sectors

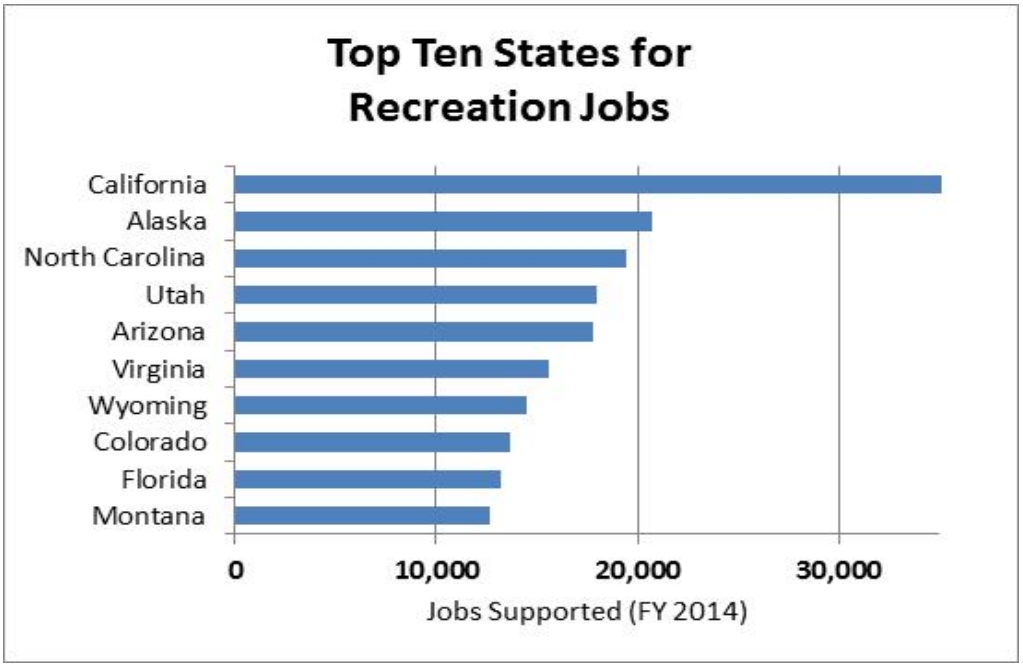

Figure 3-4. Top Ten States for Jobs Supported in the Recreation Sector

Table 3-3. Estimated Total Jobs Supported by Interior Activities, by Sector and State (FY 2014, jobs)

State	Recreation[1,2]	Energy & Minerals[2,3]	Grazing & Timber[2,4]	Major Grants & Payments[5]	DOI Payroll[6]	Total[7]
Alabama	914	18,138	0	614	332	19,998
Alaska	20,768	4,365	1	1,091	551	26,777
Arizona	17,765	5,207	976	954	1,748	26,651
Arkansas	3,015	3,383	0	516	111	7,025
California	36,473	53,465	455	2,832	2,798	96,023
Colorado	13,716	37,204	770	3,477	3,377	58,544
Connecticut	38	2,726	0	136	22	2,922
Delaware	52	662	0	101	12	828
District of Columbia	6,684	0	4	16	421	7,124
Florida	13,246	27,330	0	625	566	41,767
Georgia	6,466	10,097	19	456	440	17,478
Hawaii	5,052	2,753	0	122	169	8,096
Idaho	4,883	2,576	2,878	822	879	12,036
Illinois	607	10,746	0	619	103	12,074
Indiana	1,292	5,170	0	470	104	7,035
Iowa	731	2,279	0	260	45	3,315
Kansas	516	4,963	0	365	132	5,975
Kentucky	1,830	4,409	0	992	117	7,349
Louisiana	962	121,163	18	676	482	123,301
Maine	4,099	885	0	206	122	5,311
Maryland	3,336	10,276	0	201	291	14,105
Massachusetts	7,238	4,874	0	178	423	12,714
Michigan	2,898	6,845	0	654	217	10,614
Minnesota	1,515	4,566	0	608	357	7,046
Mississippi	2,984	13,048	0	315	151	16,498
Missouri	4,475	5,103	122	588	289	10,577
Montana	12,705	7,356	2,275	1,661	872	24,869
Nebraska	767	1,753	1	283	156	2,959
Nevada	6,890	15,876	1,269	610	676	25,321
New Hampshire	87	888	22	147	45	1,190
New Jersey	2,438	6,072	10	175	159	8,854
New Mexico	4,350	53,744	2,207	8,477	1,378	70,155
New York	7,350	13,363	51	357	336	21,457
North Carolina	19,481	10,344	0	539	254	30,618
North Dakota	1,250	27,367	13	1,247	260	30,138
Ohio	2,760	11,008	0	604	144	14,517
Oklahoma	1,279	15,213	0	536	364	17,392
Oregon	11,607	2,578	4,865	606	1,169	20,825
Pennsylvania	6,729	14,605	0	1,402	460	23,195
Rhode Island	265	927	0	112	16	1,320

State	Recreation[1,2]	Energy & Minerals[2,3]	Grazing & Timber[2,4]	Major Grants & Payments[5]	DOI Payroll[6]	Total[7]
South Carolina	1,801	4,196	0	268	81	6,346
South Dakota	4,489	1,126	182	394	474	6,665
Tennessee	9,290	4,070	0	470	235	14,065
Texas	4,281	194,013	243	1,219	474	200,229
Utah	18,020	40,022	1,695	3,546	848	64,132
Vermont	64	516	0	147	32	759
Virginia	15,625	14,847	0	517	1,798	32,786
Washington	7,262	7,541	115	597	889	16,404
West Virginia	1,030	2,337	0	1,099	256	4,723
Wisconsin	1,524	4,519	0	549	286	6,878
Wyoming	14,538	52,081	1,466	12,815	507	81,407

[1] Recreation jobs are based on visitor spending at units managed by BLM, BOR, FWS and NPS.

[2] BIA data are not included in these totals due to lack of State-specific information.

[3] Energy & Minerals jobs are based on activities related to onshore and offshore oil and gas, coal, non-metallic minerals, and geothermal, wind, and solar electricity generation. Information related to BIA's mineral activities are not available at the State level.

[4] Timber contributions are based on harvests on BLM and BIA lands. BIA timber contributions are based on BLM's FY 2014 per-ccf contributions for each State. Grazing contributions are based on a state-specific estimate of jobs supported per 1,000 animal unit months (AUMs). BIA grazing contributions are not available at the State level.

[5] Grants and Payments jobs include Mineral Revenue Payments, PILT, AML, and certain other grants (Sport Fish, Wildlife Restoration, State and Tribal Wildlife Grants, LWCF with GOMESA, Historic Preservation, CIAP, CESCF, NPS Grants, and Refuge Revenue Sharing).

[6] DOI payroll jobs are the economic contribution of DOI employees spending their pay.

[7] These totals represent jobs supported by recreation, energy, minerals, grazing, timber, salaries and grants and payments in each of the 50 States. The jobs reported in Table 2-1, were estimated using a national-level model that includes interstate “leakages” not captured in State-level models. Therefore, the sum of State totals will not equal the national total.

Appendix A. Technical Information

This is the sixth Economic Contribution report produced by DOI. While all of the reports relied on the best available data and sound methods, there are changes across years as improved data, methods, and models are identified or become available. When making comparisons of DOI's economic contribution estimates across years, it is important to identify all of the factors that might contribute to estimates changing from one year to the next. These factors can include:

- Changes in land use. These might be due to changes in resource demand or management decisions, or reflect a natural progression in a project's life cycle, such as a shift from construction to operational status.
- Changes in the data describing a resource's annual economic output. These might be due to actual changes in the quantity or price of a good produced, or changes in data collection and assumptions.
- Changes in the economic models that describe the underlying structure of local economies. For most sectors, these models are developed independent of this report. In some cases, new models that better describe individual sectors replaced models used in prior reports. In other cases, the assumptions and data within the models changed significantly from year to year.

IMPLAN

This analysis primarily employs the widely used I/O software and data system known as IMPLAN for estimating the economic contribution of Interior activities in terms of output (sales), value added, and employment (jobs). In particular, this analysis uses IMPLAN data released in 2013. The underlying data drawn upon by the IMPLAN software is collected by the Minnesota IMPLAN Group (MIG) from multiple Federal and State sources including the Bureau of Economic Analysis, Bureau of Labor Statistics, and the U.S. Census Bureau. Additional information about the IMPLAN modeling software can be found at: http://www.implan.com/.[18]

[18] The most recent version of IMPLAN (Version 3.0) incorporated a number of changes, with one of the most notable being an improvement in the method used for calculating Regional Purchase Coefficients (RPCs). IMPLAN Version 2.0 had been criticized for its use of non-survey based RPCs, which have been shown to produce higher estimates than survey-based data. IMPLAN Version 3.0 attempts to deal with these criticisms through an improved method for estimating RPCs. The new method uses a gravity model that considers the size and proximity of alternative markets to give an improved estimation of imports and exports than the econometric-based estimates in Version 2.0. A study by Koontz, Loomis, and Winter (2011) showed that the differences in the IMPLAN Version 3.0 software can result in lower estimates of employment and income effects for tourism impacts. A job in IMPLAN is the annual average of monthly reports for that industry. This is the same definition used by CEA, BLS, and BEA nationally. One 12-month job is equivalent to two 6-month jobs. The employment data come from a series of surveys taken multiple times each year. The workers are counted regardless of status, thus jobs are permanent, part-time, temporary and seasonal. The data from the surveys are summed and averaged to obtain an "average annual employment."

OSMRE

- The majority of the Office of Surface Mining Reclamation and Enforcement's activities related to reclamation of abandoned mine lands are encompassed by funding from the Abandoned Mine Lands (AML) fund. The impact of these funds is captured in the entry for Grants and Programs reported earlier in the report.

Indian Affairs, BIA, and BIE

- Sales volumes and values for BIA's oil, gas and coal activities are based on data from ONRR.
- Drilling costs for oil, gas, and dry wells were calculated for each State where Indian wells were completed in FY 2014. Costs per well were calculated as the total costs for each type of well (oil, gas, or dry) divided by the total number of completed wells of each type. The cost data were taken from "The Oil & Gas Producing Industry in Your State" (IPAA, October 2012).
- Economic contributions associated with contractual support provided to tribal governments were evaluated by applying State and local government multipliers.
- Irrigation: The Department of the Interior's Bureau of Indian Affairs (BIA) manages 17 irrigation projects on Indian reservations in the Western United States. The overall approach for estimating economic contributions and employment estimates is similar to that used for Reclamation's irrigation activities. Economic contributions and employment estimates were estimated for agricultural activities associated with BIA operated irrigation projects using data from the USDA National Agricultural Statistics Service (NASS). 2012 Census of Agriculture, Volume 2, American Indian Reservations. The Census of Agriculture does not provide complete coverage of all reservations. Irrigated acreage data were combined with average crop revenue per acre for irrigated acreage calculated based on data in the 2012 Agricultural Census. The agricultural revenue values in the Census were indexed to 2014 dollars using the NASS food grain prices received index. The multipliers used were based on IMPLAN grain farming sector. The values reported for Irrigation represent the value of the crops produced using irrigation water supplied by BIA. This value overstates the actual production attributable to BIA, as some level of production would occur without the irrigation water delivered by BIA, and water is only one of many inputs into agricultural production.

BLM

- BLM estimates the contributions from oil and gas activities by adding the value of the gross output to drilling costs and then removing inter-industry sales to derive a final demand figure. A multiplier is then applied to final demand to derive the contribution estimates. The rationale for including drilling costs in the initial sum is that drilling costs are not accounted for in the IMPLAN production function for oil and gas extraction. Note that BLM's results are developed independently of BOEM's figures for offshore production, and use a different approach. This complicates a direct comparison between the onshore and offshore analyses. The BLM considers onshore direct output to include 1) oil and gas well drilling, with costs taken from the Independent Petroleum Producers Association report IPAA Oil & Gas Producing Industry in Your State; and 2) oil and gas sales, based on sales volume and sales value for the fiscal year with preliminary sales year data provided by the Office of Natural Resources Revenue (ONRR). Final demand is taken to be the sum of these two items less inter-industry sales.

- BLM uses IMPLAN to estimate the economic contributions associated with salable minerals and other leasable minerals (i.e., other than oil, gas, and leasable hardrock minerals). The method parallels that of oil and gas production described above. Production and unit prices for leasable minerals for the fiscal year are based on preliminary sales year data provided by ONRR. Salable minerals production data for the fiscal year are from BLM's internal database LR2000; commodity price data are based on the USGS annual Mineral Commodity Summaries (MCS). Preliminary FY 2014 sales year data on leasable mineral sales volume and value were received from ONRR on 12/2/14 through a special data request.
- The economic contributions of hardrock mining on the Federal estate were estimated at a national level using an approach similar to the approach used in FY 2013. The primary limitation in generating useable estimates of hardrock mineral production is identifying the portion coming from Federal lands. These data are generally unavailable. The production estimates from Nevada and Missouri account for the vast majority of production value from Federal lands. USGS's annual MCS provide commodity prices that were used in this analysis.
- For livestock grazing, BLM developed State-specific economic contribution estimates associated with 1,000 Animal Unit Months (AUMs). These estimates were derived using data from the 2007 Census of Agriculture and 2005-2009 American Community Survey. These data sources provided information on a specific subset of livestock that best reflects the animals that actually graze on BLM-managed lands and also accounts for individuals who are unpaid or family laborers. In some areas unpaid or family labor accounts for up to 35 percent of the total labor on ranches and farms. This workforce category was accounted for by developing a ratio between paid and unpaid/self-employed individuals for each of the relevant States. The analysis assumes that the grazing operations included in the Census of Agriculture are representative of those operations using public forage from lands managed by the BLM. It is possible that ranchers utilizing public lands have different spending or employment patterns than grazing operations as a whole, but using the Census of Agriculture provides a standard dataset for comparison across States. In addition, because the Census of Agriculture is only available every five years it is assumed that the per 1,000 AUM calculation remains constant from year-to-year. It is also assumed that the ratio of paid to unpaid and self-employed labor is constant across all agriculture and forestry sectors. The economic contribution estimates associated with livestock grazing on BLM managed lands were derived by multiplying the per 1,000 AUM factors by the AUMs authorized on bills (associated with leases or permits to graze livestock on BLM managed lands) that were due during a given fee year. Fee year 2014 began on 3/1/2014 and ended on 2/28/2015. For the purpose of this analysis, we assume that most of the activity associated with Fee Year 2014 occurred prior to October 1, 2014, and thus falls within Fiscal Year 2014.
- Timber value is composed of the sales receipts for harvested sawtimber, sales of Special Forest Products, and stewardship timber sales. Contracts for sawtimber are typically sold at auction, and the BLM receives the agreed payments when timber is actually cut and sold. Special Forest Products include fuelwood, posts, poles, etc. While the sales are negotiated, the BLM tries to follow the stipulation that sale prices will not go below 10 percent of the estimated market value. Stewardship Program timber sales are associated with BLM bartering goods (timber products) for services (land treatments) done by outside contractors. The product value is used to offset the total cost of service work in the contract.

- Estimates reflect economic contribution from commercial sales of timber, primarily wood-based products. The BLM's forestry and woodlands management program also manages public access to a variety of other forestry products including personal use fuelwood (fuelwood gathered by individuals for personal use rather than by companies for commercial resale) and non-wood Special Forest Products (such as Christmas trees, native seeds, mushrooms, and floral/ greenery). Non-wood Special Forest Products from BLM-managed lands generated over $300,000 in sales in FY 2014. Personal use fuelwood gathered from BLM-administered lands in FY 2014 amounted to about 110,000 CCF. Assuming a market price of $200 per cord (EIA, 2014), the market value of this fuelwood is almost $17 million. BLM collected around $550,000 in permit fees for personal fuelwood collection.
- Economic contributions related to constructing and operating wind, solar, and geothermal energy projects were derived using the Jobs and Development Economic Impact (JEDI) models produced by the National Renewable Energy Laboratory (NREL). Prior to FY 2013, economic contributions associated with geothermal energy development were developed using IMPLAN based on sales volume and value from ONRR and drilling data from BLM. Therefore, the economic contribution estimates for FY 2013 and FY 2014 should not be compared to prior years.
- The significant drop in the market price for oil and gas in the last part of 2014 did not greatly reduce the average effective prices for oil and gas in FY 2014 and thus had no impact on calculated economic contribution estimates. However, we anticipate that the lower oil and gas prices will have an effect on economic contributions of oil and gas production on DOI lands for FY 2015 as it may affect exploration, development, and production activity and will affect government revenues and industry profit. While DOI's contribution to the economy may decline, society will receive benefits from lower oil prices as consumers have more disposable income to spend elsewhere creating its own economic impacts.

Reclamation

- FWS trip-related multipliers and average visitor expenditures were used to estimate impacts for Reclamation’s recreation activities. The analysis relies on Reclamation visitation data collected during 2010-2013 and applies current expenditures per day, value added, output, and employment multipliers from FWS.
- The values reported for irrigation represent the proportionate value of the crops produced using irrigation water supplied by Reclamation. In previous years, estimates of economic impacts from Reclamation's agricultural water deliveries in the Central Valley Project (CVP) relied on the assumption that all crops grown in the CVP area used only Reclamation water supplies. Further analysis revealed that large amounts of groundwater are used as a primary source, with Reclamation water as a supplemental supply. For the FY 2014 estimates, we have applied an adjustment factor to the value of CVP crops derived by comparing Reclamation's water deliveries to calculated irrigation requirements. Reclamation is utilizing GIS imagery to document the type and acreage of irrigated crops grown on Reclamation projects. These data, combined with State-level yields and nation-wide prices provided by the USDA, are used to estimate gross crop value. However, at the time the estimates were made only 2013 crop data was available and therefore the results may not completely reflect actual 2014 impacts.

- The Reclamation M&I water economic contributions are associated with operating systems for water, sewage, etc. The economic contribution of delivering M&I water was estimated by using total 2005 M&I contract amounts in acre-feet, and multiplying the total amounts by recent average market M&I water rates for major urban areas derived from various studies that the Bureau of Reclamation Technical Services Center combined and analyzed.
- The value of hydroelectricity generated at Reclamation facilities was estimated using regional wholesale prices for Reclamation major hydropower production areas as follows: BPA, $0.033/kWh; Parker Davis, $0.008/kWh; Boulder-Hoover, $0.020/kWh; Loveland, $0.041/kWh; Billings, $0.033/kWh; Sacramento, $0.049/kWh; and Salt Lake City, $0.03/kWh.

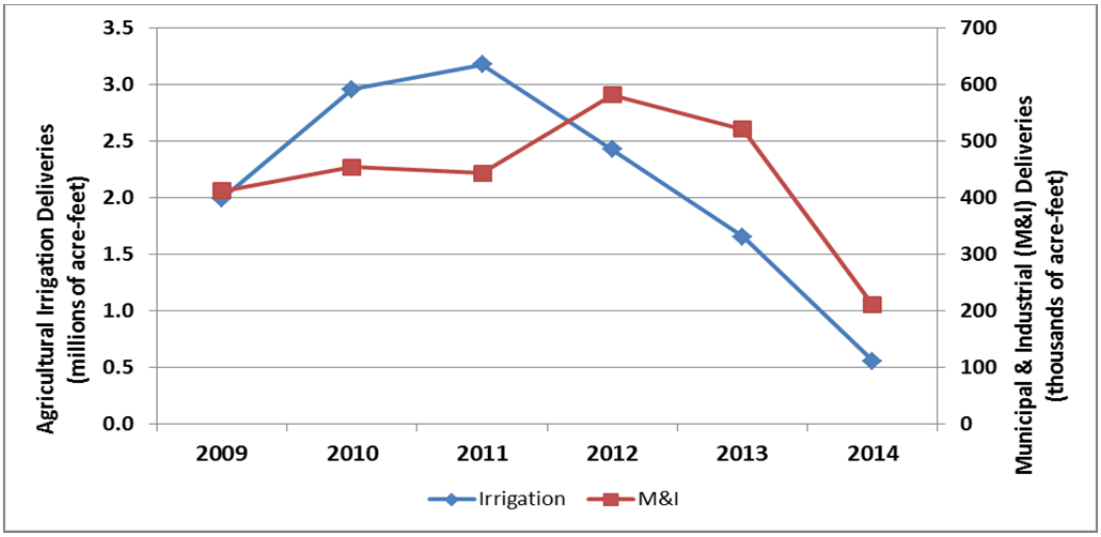

Figure A-1. Bureau of Reclamation Water Deliveries by Use for Central Valley Project (2009-2014)

BOEM and BSEE

- The estimated economic contributions associated with BOEM and BSEE for the FY 2014 report differs from previous reports for several reasons. One primary reason is due to the fact that BOEM revised the methodology used to estimate the impacts from industry spending, government revenue, and the spending of dividends. The new methodology resulted in higher impacts from industry spending and spending of dividends, but the economic impacts declined for government revenue.
- The total FY 2014 economic contributions are less than estimated for FY 2013 ($118 billion in total U.S. output, $62 billion in total value added and 705,000 domestic jobs sustained). Also, all IMPLAN data used in this analysis is from the 2012 data release whereas previous analyses used 2010 IMPLAN data. The revised methodology is discussed below.

- The BOEM maintains an in-house socio-economic impact model, MAG-PLAN, for economic impact analyses to support its lease sale planning duties. MAG-PLAN identifies the industry sectors that contribute to offshore oil and gas activity (e.g., wells drilled, platforms installed, etc.) and calculates the size of the direct impact in each sector.

- Estimates of economic contributions in prior years were based on industry spending effects and applying composite multipliers generated from a standard Mag-Plan run. However, since the IMPLAN multipliers were last updated, the Mag-Plan model became more detailed in geographic specificity within the Gulf of Mexico region. While that has its benefits for lease sale modeling and discussions of specific regional impacts, for this current analysis we are looking at the impact of revenues to the entire nation. Under the regional approach, results in a particular area are shown, but substantial leakage of economic impact occurs any time spending leaves a particular area, due to the fact that MAG-PLAN is unable to estimate interregional trade. Therefore, the smaller the region, the greater the amount of economic activity omitted from MAG-PLAN estimates.
- For the FY 2014 calculations, Mag-Plan was adjusted to assume all spending happens in the United States and national level IMPLAN multipliers are used. The national level multipliers are higher than the composite multipliers calculated by the standard Mag-Plan. Table A-1 shows the 2010 and 2012 composite multipliers from Mag-Plan using the old approach and the 2012 multipliers using the new approach assuming a national model.

Table A-1. Comparison of Response Coefficients

Total Multipliers	2010 IMPLAN M-P Composite	2011 IMPLAN M-P Composite	2012 IMPLAN M-P National
Employment (jobs per million dollars direct output)	14.07	9.77	14.84
Output	2.26	1.90	2.71
Value Added (value added per dollar of direct output)	$1.32	$1.00	$1.40

- Government Revenue. The previous calculations of economic contribution used one sector to apply to all government revenue. Upon further evaluation, BOEM determined this sector was not appropriate for all government spending. For the 2014 calculations, BOEM revised this approach and relied on the institution spending pattern of the Federal and State governments provided in IMPLAN to determine the economic contribution multipliers. Models were built for each State, and used to tabulate final demand for Federal government spending in defense, non-defense, and investment and State and local government spending in education, non-education, and investment. Then we determined the proportion of Federal spending to each of those three categories and in each State. We apportioned Federal government leasing revenues shared with the general treasury to each Federal category within each State. Grant program revenues for 8(g) and GOMESA were spread proportionally between the three categories of State spending within the State that received the grant programs. LWCF and HPF spending was attributed to the non-education State and local government spending pattern as these grant programs are designed to be used for specific projects and not education or general investment. Both the Federal and State government spending amounts were modeled in IMPLAN for each State. The economic impact leakage for each State was tabulated and later applied back to the national model and then re-distributed to States proportionally with original Federal government spending.

- Spending from Dividends: In previous contribution calculations BOEM used an average multiplier from what were considered "consumer sectors" to calculate the economic impact of spending of dividends. In the 2014 calculation, BOEM considered a household income change in the amount of dividends estimated to be spent, with households with annual incomes greater than $50,000 assumed to receive dividends, and that the dividends were received by households in income categories proportional to the share of households in that category. The dividend amount was then modeled in IMPLAN in the respective income categories. From the IMPLAN results we were able to estimate the composite multipliers of a household income change. These multipliers are used to calculate the impacts of dividends which are spent domestically.
- The basis for calculating the FY 2014 impacts of OCS oil and gas activity is the sales value of FY 2014 OCS oil and gas production as published by the Office of Natural Resources Revenue.[19]
- BOEM's economic impact models and the macroeconomic allocation factors available from other agencies indicate that the activities associated with offshore oil and gas production from Federal lands resulted in over $113.4 billion in total output in FY 2014, over $64.4 billion in value added (approximately 0.4 percent of total U.S. GDP), and sustained an estimated 651,000 domestic jobs (approximately 0.5 percent of all U.S. employment). The rows in Table A1-1 identify the individual components that we estimated to arrive at these totals
- As shown in Table A-2, the sales value of OCS production in FY 2014 was $56.6 billion. Because different sources of spending generate different degrees of economic impact, we distributed this sales value among industry spending, government revenue, and after-tax profits to enable the calculation of total economic impact and individual State impacts. The portion of industry profits that flow to foreign entities has spending impacts that cannot be separated from those of other U.S. activities that generate income abroad, so we omit any spending impact from this portion of total sales. That leaves $47.7 billion of OCS stimulated direct spending in the U.S. economy, shown in the second column of Table A-2.
- BOEM's economic impact models and the macroeconomic allocation factors available from other agencies indicate that the activities associated with offshore oil and gas production from Federal lands resulted in over $113.4 billion in total output in FY 2014, over $64.4 billion in value added (approximately 0.4 percent of total U.S. GDP), and sustained an estimated 651,000 domestic jobs (approximately 0.5 percent of all U.S. employment).[20] The rows in Table A-2 identify the individual components that we estimated to arrive at these totals.

[19] http://statistics.onrr.gov/ReportTool.aspx

[20] These jobs are considered "sustained" because many are continued from OCS oil and gas activity in previous years. It should be emphasized that these estimates do not represent "new" jobs; many of these would represent new contracts or orders at existing firms that would essentially keep the firm operating at its existing level as earlier contracts are completed and filled.

Table A-2. BOEM and BSEE Administered Industry Economic Impact FY 2014

	OCS Oil, Gas, and NGL Sales Value ($ millions)	Resulting Direct Domestic Spending ($ millions)	Resulting Total Domestic Output ($ millions)	Resulting Total Domestic Value Added ($ millions)	Domestic Jobs Sustained (Thousands)
Industry Spending	$22,626	$22,626	$61,260	$31,704	336
Government Revenue (includes profit and dividend tax revenues)	$13,147	$13,147	$22,494	$16,636	147
After-Tax Profits (includes profit and dividend taxes)	$20,793	$11,944	$29,718	$16,090	169
Foreign After-Tax Profits	*$8,849*	*NA*	*NA*	*NA*	*NA*
Domestic After-Tax Profits	*$11,944*	*$11,944*	*$29,718*	*$16,090*	*169*
Sales Value	**$56,566**	**$47,717**	**$113,472**	**$64,430**	**651**

NB: Totals may not sum due to rounding

- The analysis assumes that direct industry spending (i.e., capital and operating expenditures) was 40 percent of total sales value (0.4 * $56.7 billion) in FY 2014. We then applied MAG-PLAN national multipliers for direct, indirect, and induced spending (a total multiplier of 2.71) to estimate the total domestic output of $61.3 billion associated with the direct spending of $22.6 billion. The MAG-PLAN industry spending ratio of $1.40 in total value added for every dollar of direct spending results in $31.7 billion of added value. We estimate 336,000 industry jobs by using the MAG-PLAN ratio of 14.8 total jobs per million dollars of direct offshore oil and gas industry spending. These output and employment estimates are shown in the third, fourth, and fifth columns, first row, of Table A1-1 for industry spending.
- Estimated after-tax profits of $20.8 billion plus the $0.873 in dividend tax (for a total of $21.7 billion in overall after-tax profits) were distributed across domestic and foreign entities. Of the profits, $11.9 billion goes to domestic entities as domestic retained earnings, spending from domestic dividends, and domestic reinvested dividends ($7.6 billion, $3.7 billion, and $0.7 billion respectively). The remaining $8.8 billion went to foreign entities ($6.7 in rest of world retained earnings, $1.5 in rest of world dividends, and $0.6 in rest of world retained earnings from reinvested dividends). EIA data were used to split profits into retained earnings and shareholders dividends. The data indicate that retained earnings are roughly equal to 66 percent of after-tax profits in the oil and gas industry ($14.3 billion) and dividends are roughly equal to 34 percent ($6.7 billion).[21]
- Estimated after-tax profits of $20.8 billion ($11.9 billion going to domestic entities and $8.8 billion going to foreign entities) were distributed for our analysis between retained earnings and dividends to shareholders using EIA data which indicates that retained earnings are roughly equal to 66 percent of after-tax profits in the oil and gas industry ($13.2 billion) and dividends are roughly equal to 34 percent ($6.8 billion). We split retained earnings between flows to the rest of the world and funds remaining in the U.S. Using EIA data on oil and gas expenditures, we estimate that 47 percent ($6.184 billion) will be spent in the rest of the world and the remaining 53 percent ($6.973 billion) will remain in the U.S.[22]
- Retained earnings were split between flows to the rest of the world and funds remaining in the United States. Using EIA data on oil and gas expenditures, we estimate that 47 percent ($6.7 billion) will be spent in the rest of the world and the remaining 53 percent ($7.6 billion) will remain in the U.S. Splitting retained earnings this way treats those funds going to the rest of the world as a leakage from the U.S. economy resulting in no discernible spending impacts, because we have insufficient data to assume some percentage of foreign reinvestment in the U.S. economy.
- As with foreign shares of retained earnings, a portion of dividends ($7.4 billion in Table 4) are allocated to foreign shareholders using data from the Bureau of Economic Analysis, Department of Commerce, which indicates 21 percent ($1.5 billion) are sent to shareholders in the rest of the world, resulting in no direct spending impacts. Of the $5.8 billion of domestic dividends paid, we applied the IRS dividend tax rate of 15 percent to calculate taxes of $0.9 billion. This tax revenue is included with government spending in Table 2b and 3. Of the after-tax domestic dividends ($4.9 billion), we assume, based on two empirical studies, that 25 percent ($1.2 billion) is reinvested and shareholders spend the remaining dividends ($3.7 billion).

[21] Energy Information Agency, Financial Report System Public Data, Schedule 5131: Statement of Cash Flows: Average for 2004-2008. <http://www.eia.gov/emeu/finance/frsdata.html>.
[22] Energy Information Agency, Financial Reporting System Survey, Schedule 5211: Petroleum Segments Expenditure and Operating Expenses: 2009. < ftp://ftp.eia.doe.gov/pub/energy.overview/frs/s5211.xls>.

- Domestic retained earnings and domestic spending from reinvested dividends ($7.579 + $0.655 = $8.234 billion) are considered together and divided between onshore and offshore operations. Using the EIA data on oil and gas expenditures, of the 53 percent of expenditures in the U.S., 73 percent are on onshore activities, and 27 percent are for offshore activities. The offshore expenditure impacts are calculated identically to the industry spending described earlier (with a direct to total output multiplier of 2.71). The onshore portion is calculated using the oil and gas IMPLAN sectors (sector 20 and 29) average multiplier of 2.53 for total spending, 13.02 jobs per million dollars spent, and $1.35 value added for every dollar spent. Domestic retained earnings and reinvested dividends yield total output of $21.192 billion, value added of $11.203 billion and 111,000 jobs. Please note that the numbers in the table and text will vary slightly from calculations provided given differences in rounding.
- The tax revenue from dividends is treated in the same way as government revenues with an output multiplier of 3.19 and a ratio of total jobs to direct spending of 16.85, resulting in a total output of $2.6 billion, a total value added of $1.1 billion and total employment of 14,000. We based the total impact from the spending of domestic dividends ($6.7 billion) on the average (1.96) of the multipliers of the consumer sectors in IMPLAN (sectors 320-425). Likewise, we used the IMPLAN ratio of $0.41 in value added per dollar spent and 14.10 total jobs per million dollars of consumer spending to calculate the value added of $4.1 billion and employment of 48,000 jobs.
- Additional analysis was required to estimate the distribution of economic impacts by State. BOEM's MAG-PLAN model provides percentages of industry spending economic impacts for each of the five Gulf of Mexico (GOM) States while aggregating the remainder to the "rest of U.S." We applied the MAG-PLAN GOM State percentages (direct spending, total output, and total jobs) to the FY 2014 industry spending data to calculate the impacts (listed in bold in Table 6). The five GOM States account for 57 percent ($64.90/$113.48 billion) of total OCS generated spending, 57 percent (373/651) of the OCS related jobs, and 54 percent ($35.03/$64.43) of total value added. For the remainder of the U.S., we used State Bureau of Labor and Statistics (BLS) employment data for each of the ten largest MAG-PLAN sectors identified outside of the Gulf States. We weighted the BLS State employment data by each MAG-PLAN sector's contribution to total industry spending to distribute the State economic impacts. Spending for the "Rest of U.S." was likewise allocated by the BLS-derived percentages.
- For the government revenue sector, we allocated the spending and job components of grant and revenue sharing programs to the state which receives the funds. We allocated the remaining leasing revenue and tax revenue between states in the proportion in which each receives government funds based on historical Federal funds distributions to states as reported by the Bureau of the Census.[23]
- Note that BOEM's results are developed independently of BLM's figures for onshore production, using a different approach. This complicates a direct comparison between the offshore and onshore analyses. BOEM considers offshore direct output to include several related supporting sectors, including steel product manufacturing, water transportation, air transportation, food supply, etc. Interindustry sales are removed in calculating final demand.

[23] U.S. Census Bureau Statistical Abstract Table 467: Federal Funds - - Summary Distribution by State and Island Areas: 2007. http://www.census.gov/compendia/statab/2010/tables/10s0467.xls.

Grants and Payments

- The total grants and payments included in the report represent all grants and payments for bureaus and Interior-wide programs in FY 2014, including current and permanent Payment in Lieu of Taxes (PILT) payments, mineral revenue payments and all AML grants to States and tribes. The DOI Office of Budget provided State-level data for the grants and payments analyzed in this report.
- The report includes a total of $5.12 billion in grants and payments. The FY 2016 Budget in Brief reports actual FY 2014 grants and payments totaling $5.24 billion. Variances between the two figures can be attributed for certain grant and payment totals to the exclusion of program administration costs in grant awards, Coastal Impact Assistance Program (CIAP) payments made during FY 2014, and payments to support tribal governments.
- Economic contribution estimates use national-level multipliers for the appropriate sectors. The State-level analysis of employment impacts related to grants and payments included in Chapter 3 only includes those categories for which State-level data were available. Including information on impacts of the full array of grant programs and payments would likely increase employment impacts. The State analysis uses State-level multipliers for the appropriate sectors for each grant category
- Energy and mineral leasing revenues (bonuses, rents, and royalties) disbursed to the U.S. Treasury help fund various government functions and programs through the General Fund of the U.S. Treasury. Royalty payments are divided into offshore and onshore categories. All employment and output impacts for onshore and offshore royalties were included in the category of Energy and Minerals for the national and State-level analyses.
- The State-level analysis includes a preliminary estimation of the impacts of Federal offshore royalty payments (to States via Treasury). Additional details on these calculations are included in the BOEM section above.
- Federal law requires that all monies derived from mineral leasing and production activities on Federal and American Indian lands be collected, properly accounted for, and distributed. For Federal onshore lands, the revenues are generally shared between the States in which the Federal lands are located and the Federal government. In most cases, States receive about 50 percent of the revenues associated with mineral production on Federal public lands within their borders or off their coastlines.[24] In the case of American Indian lands, all monies collected from mineral production are returned to the Indian Tribes or individual Indian mineral lease owners. Revenues associated with Federal offshore lands are distributed to several accounts of the U.S. Treasury and certain coastal States with special Federal offshore tracts adjacent to their seaward boundaries. Coastal States, with certain Federal offshore 8(g) tracts adjacent to their seaward boundaries, receive 27 percent of the revenues.
- Mineral revenue payments include receipts for sales in the National Petroleum Reserve – Alaska, Mineral Leasing Associated Payments, National Forest Fund Payments to States, and Payments to States from Lands Acquired for Flood Control, Navigation, and Allied Purposes.
- Grants and Payments include mineral revenue payments to States associated with onshore production, and grant programs funded by offshore leasing and other sources of revenues.

[24] Alaska is an exception, receiving 50 percent of revenues for production from the National Petroleum Reserve A (NPR-A), and 90 percent elsewhere.

- Land Acquisitions: Output and employment contribution estimates for land acquisition are derived using State and national-level multipliers. It is assumed that 90 percent of funds goes to landowners and 10 percent goes to transaction costs. Much of the money land owners receive is likely to go into savings, be used to pay off loans, or be subject to tax. It is therefore assumed that landowners will spend only 50 percent of funds they receive. These expenditures are modeled as a household income change for households with annual incomes greater than $150,000. The remaining 10 percent of funds are assumed to go to service providers associated with real estate transaction costs or monitoring and administration of easements. Specific services associated with land acquisition could include land appraisal, title examination and legal services, environmental site assessments, and ecological inventory and management planning. IMPLAN sector 440 is used to model the services associated with land acquisition.[25] Temporal issues complicate the analysis, as there may be a delay between the date of the purchase, the date the landowner receives the funds, and the dates the landowner spends the funds. Contributions are typically reported for one year, and only a small portion of the funds received by landowners is likely to be spent in that same year; monitoring expenditures will also often be incurred in perpetuity whereas transaction costs are all up-front. As a simplifying assumption, all landowner expenditures and service fees are assumed to occur in the same year that the transaction takes place.

Payroll Impacts

- The domestic jobs supported by Interior in Table 2-1 represent additional jobs above and beyond Interior employees.
- For Table 2-1, 2013 payroll data were obtained from Department of the Interior Human Resources data systems. The payroll data include salary data based on the duty-station of all Interior employees through pay period 17, which covered July 28, 2013 through August 10, 2013.
- DOI payroll contributions are estimated using the IMPLAN Labor Income Change activity. Leakages in this IMPLAN activity include payroll taxes and salaries earned by employees who commute from outside of the local area (and thus primarily spend their salaries outside of the local area). Contributions are based on household spending patterns for a distribution of household income levels. Household spending patterns account for leakages related to personal taxes and savings. For the payroll contributions shown in Table 2-1, a national multiplier was used to estimate the employment contributions of Interior payroll, equaling 8.9 jobs per $1 million.
- For State-level salary effects shown in Tables 3-1 and 3-2, 2013 payroll data and State-level multipliers were used. Since State multipliers do not capture leakages outside of each State, the total of State salary impacts will not equal the national-level salary employment impacts.
- The total salary paid and number of employees for each Bureau does not necessarily reflect FTE data typically reported in budget documents. These data were used to estimate total salary impacts rather than data on total FTE's, which would not have been a complete estimate of total salary impacts of DOI employees.

[25] In previous years, we used Sector 374 (management, scientific, and technical consulting services). The change to Sector 440 is related to IMPLAN's switch to a 536-sector scheme.

Recreation Impacts

- Total recreation economic and employment impacts are national estimates calculated using national level multipliers, which include "leakages" between States that are not captured in State-by-State models.
- Last year's report included data for NPS units in U.S. territories, but not for FWS units. This year's report does not include these areas in the economic analysis for NPS or FWS. Visitation data for NPS reported in Table 1-1 includes visitation for all NPS units including U.S. territories. FWS does maintain some visitation data for sites outside of the continental United States, Hawaii, and Alaska, and future analysis could include these areas.
- Visitation and expenditure data sources included the following: FWS Fishing, Hunting, and Wildlife-Associated Recreation Survey; NPS visitor surveys, and unpublished data from *2014 National Park Visitor Spending Effects, Economic Contributions to Local Communities, States, and the Nation,* (Cullinane Thomas, et al. 2015). We calculated site-level impacts of visitor spending for BLM sites using Forest Service expenditure data, and for Reclamation expenditures based on the FWS Fishing, Hunting, and Wildlife-Associated Recreation survey. Spending profiles associated with these data sources were used to develop estimates of average expenditures. BLM visitation estimates are from BLM's Recreation Management Information System (RMIS). BLM used results from the U.S. Forest Service's National Visitor Use Monitoring (NVUM) survey to estimate the distribution of visitor types and the associated expenditure profile.
- In prior years, NVUM survey results used by BLM were based on *Spending Profiles of National Forest Visitors, NVUM Four Year Report* by Stynes and White, 2010. For this year's report, BLM used updated information from *Estimation of national forest visitor spending averages from National Visitor Use Monitoring: round 2, 2013 (http://treesearch.fs.fed.us/pubs/43869)*. The distribution of visit types in the 2013 publication reflects a higher proportion of local visitors when compared to the 2010 publication.
- Reclamation recently revised the method they used to collect recreation visitation information and new data has been collected over the past two years. In most cases, project recreation sites are managed by Reclamation partners, including both Federal and non-Federal entities.
- NPS and BOR visitation data are for 2012; BLM and FWS are for FY 2013. However, the economic contribution estimates for BOR are based on 2011 spending information in 2013$ (from FWS). Multipliers used for FWS and BOR are from the 2008 version of IMPLAN. Multipliers used for NPS are from the 2013 version of IMPLAN.
- The FWS National Survey of Hunting, Fishing, and Wildlife Associated Recreation State-level data were used to determine the average recreationist's trip spending per day.
- The BOR and FWS recreation valued added figures are based on the ratio of NPS valued added to total output. The FWS valued added figure for Delaware is based on the average of the MD, NJ, PA, and VA ratios because Delaware does not have an NPS unit.

Contributors

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Office of the Secretary

Joel Clement

Sarah Cline

Christian Crowley

Peter Grigelis

Wali Osman

Benjamin Simon

Kristin Skrabis

Adam Stern

Ketty Zawarski

Matthew Meyers

Fish and Wildlife Service

Andrew Laughland

Bureau of Safety and Environmental Enforcement

Steven Payson

US Geological Survey

Catherine Cullinane Thomas

Indian Affairs

Martin Abeyta

Dawn Selwyn

David Wilson

National Park Service

Bruce Peacock

Lynne Koontz

Bureau of Land Management

Rebecca Moore

Josh Sidon

Robert Winthrop

Bureau of Ocean Energy Management

Sarah Peters Coffman

Marshall Rose

Bureau of Reclamation

Randy Christopherson

Max Millstein

Karl Stock

Office of Surface Mining Reclamation and Enforcement

Mark Gehlhar