

Appendix 1. BUREAU-LEVEL ECONOMIC CONTRIBUTIONS BY STATE

STATE-LEVEL CONTRIBUTIONS FOR BLM MINERALS AND ENERGY DEVELOPMENT

The BLM manages some 700 million acres of Federal onshore mineral estate, providing access to oil, natural gas, coal, and other minerals. Beyond these minerals, BLM lands are managed for renewable energy opportunities including geothermal, solar, and wind energy.

The following data provide estimated employment and economic output resulting from BLM-managed minerals and renewable energy projects in 18 western states, and from BLM's Eastern States Office in 2011. State-level data for locatable minerals were not available. National economic contribution estimates from the mining of these minerals on BLM lands were estimated and presented in the body of this report. The economic contributions of BLM minerals production are shown in terms of direct and total employment and output. Total employment and output estimate direct effects plus the indirect and induced economic effects of that activity in the local economy, such as the activities of other oil and gas service companies required to support oil and gas field development and the local effects of spending the additional income derived from minerals activities. Employment is expressed in annual average full and part time private sector jobs. Total and direct economic estimates are produced using the IMPLAN input-output model.

Table A1-1. State-Level Contributions for BLM Minerals (2011)

State	Sector	Employment (jobs)		Output (billions, \$2011)	
		Direct	Total	Direct	Total
Alaska	Oil and Gas	201	527	0.09	0.14
	Coal Mining	0	0	0	0
	Other Minerals (excluding locatables)	6	8	0.001	0.001
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
Arizona	Oil and Gas	0	0	0	0
	Coal Mining	0	0	0	0
	Other Minerals (excluding locatables)	4	8	0.001	0.002
	Geothermal Energy	0	0	0	0
	Wind Energy	3	7	0.0002	0.0009
	Solar Energy	0	0	0	0
California	Oil and Gas	8,246	18,834	2.25	3.99
	Coal Mining	0	0	0	0
	Other Minerals (excluding locatables)	1,058	2,262	0.24	0.43

Fiscal Year 2011

State	Sector	Employment (jobs)		Output (billions, \$2011)	
		Direct	Total	Direct	Total
	locatables)				
Colorado	Geothermal Energy	402	1,028	0.12	0.21
	Wind Energy	40	102	0.003	0.017
	Solar Energy	2,194	5,469	0.38	1.16
	Oil and Gas	18,101	39,128	6.50	9.51
	Coal Mining	2,650	5,719	0.88	1.31
	Other Minerals (excluding locatables)	45	131	0.02	0.03
	Geothermal Energy	0	0	0	0
Idaho	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
	Oil and Gas	0	0	0	0
	Coal Mining	0	0	0	0
	Other Minerals (excluding locatables)	1,017	1,712	0.17	0.25
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
Kansas	Solar Energy	0	0	0	0
	Oil and Gas	527	766	0.06	0.09
	Coal Mining	0	0	0	0
	Other Minerals (excluding locatables)	0	0	0	0
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
Montana	Oil and Gas	2,404	4,023	0.44	0.63
	Coal Mining	1,394	2,649	0.37	0.51
	Other Minerals (excluding locatables)	0	0	0	0
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
	Oil and Gas	26	41	0.003	0.005
Nebraska	Coal Mining	0	0	0	0
	Other Minerals (excluding locatables)	0	0	0	0
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
	Oil and Gas	344	530	0.04	0.07
	Coal Mining	0	0	0	0
Nevada	Other Minerals (excluding locatables)	16	29	0.002	0.004

State	Sector	Employment (jobs)		Output (billions, \$2011)	
		Direct	Total	Direct	Total
New Mexico	Geothermal Energy	507	920	0.13	0.18
	Wind Energy	87	571	0.01	0.08
	Solar Energy	527	1,277	0.07	0.21
	Oil and Gas	47,807	86,672	10.96	15.28
	Coal Mining	577	1,129	0.17	0.23
	Other Minerals (excluding locatables)	2,522	4,635	0.55	0.80
	Geothermal Energy	12	22	0.004	0.005
North Dakota	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
	Oil and Gas	14,467	25,552	4.23	5.47
	Coal Mining	104	220	0.04	0.05
	Other Minerals (excluding locatables)	0	0	0	0
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
Oklahoma	Solar Energy	0	0	0	0
	Oil and Gas	873	1,678	0.26	0.36
	Coal Mining	103	235	0.04	0.05
	Other Minerals (excluding locatables)	0	0	0	0
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
Oregon	Oil and Gas	0	0	0	0
	Coal Mining	0	0	0	0
	Other Minerals (excluding locatables)	0	0	0	0
	Geothermal Energy	18	29	0.003	0.005
	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
	Oil and Gas	201	267	0.03	0.03
South Dakota	Coal Mining	0	0	0	0
	Other Minerals (excluding locatables)	0	0	0	0
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
	Oil and Gas	1,483	4,277	0.74	1.16
	Coal Mining	0	0	0	0
Texas	Other Minerals (excluding locatables)	0	0	0	0
	Geothermal Energy	0	0	0	0

Fiscal Year 2011

State	Sector	Employment (jobs)		Output (billions, \$2011)	
		Direct	Total	Direct	Total
Utah	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
	Oil and Gas	21,777	49,233	6.55	9.71
	Coal Mining	952	2,171	0.26	0.40
	Other Minerals (excluding locatables)	179	382	0.04	0.06
	Geothermal Energy	101	219	0.03	0.05
	Wind Energy	2	4	0.0001	0.0006
Washington	Solar Energy	0	0	0	0
	Oil and Gas	0	0	0	0
	Coal Mining	0	0	0	0
	Other Minerals (excluding locatables)	0	0	0	0
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0
Wyoming	Oil and Gas	58,012	98,667	17.86	23.08
	Coal Mining	14,295	26,035	4.98	6.51
	Other Minerals (excluding locatables)	2,807	5,458	0.97	1.30
	Geothermal Energy	0	0	0	0
	Wind Energy	2	4	0.0001	0.0006
	Solar Energy	0	0	0	0
	Oil and Gas	1,550	3,807	0.31	0.65
Eastern States	Coal Mining	430	1,394	0.14	0.29
	Other Minerals (excluding locatables)	50	143	0.01	0.03
	Geothermal Energy	0	0	0	0
	Wind Energy	0	0	0	0
	Solar Energy	0	0	0	0

STATE-LEVEL ECONOMIC CONTRIBUTIONS FOR BLM GRAZING AND TIMBER

The Bureau of Land Management (BLM) manages livestock grazing on about 157 million acres of public lands. In addition, out of the 67 million acres of BLM-managed lands forests or woodlands, 11 million acres are commercial forestlands, generally used for traditional forest products such as lumber, plywood, and paper. For grazing, the BLM administers nearly 18,000 permits and leases held by ranchers who graze their livestock at least part of the year on more than 21,000 allotments under BLM management. In managing grazing and timber activities on public lands, the BLM's objectives are to ensure the long-term health and productivity of these lands, create multiple environmental benefits that result from healthy watersheds, and provide livestock and timber-based economic opportunities for rural communities.

The following data provide estimated employment and output resulting from BLM-managed grazing and timber activities in 2011. The method used to estimate the economic contributions associated with BLM forage has been revised and the FY 2011 estimates better reflect the contributions of BLM forage to Western communities. For additional information on the revised methods see Appendix 8. BLM grazing and timber operations have direct effects in terms of employment and output, as well as indirect effects in the local economy, such as the activities of other businesses required to support ranching operations, and induced effects such as the local effects of spending the additional income derived from public lands grazing. Employment is expressed in annual average full and part time private sector jobs. Total economic estimates are produced using the IMPLAN input-output model.

Table A1-2. State-Level Contributions for BLM Grazing and Timber (2011)

	Grazing				Timber			
	Employment (jobs)		Output (billions, \$2011)		Employment (jobs)		Output (billions, \$2011)	
	Direct	Total	Direct	Total	Direct	Total	Direct	Total
Alaska	0	0	0.000	0.000	1	2	0.000	0.001
Arizona	677	912	0.026	0.052	0	0	0.000	0.000
California	217	515	0.026	0.066	67	189	0.012	0.033
Colorado	467	842	0.046	0.094	15	39	0.003	0.007
Idaho	1,844	2,898	0.147	0.275	45	108	0.010	0.018
Kansas	0	0	0.000	0.000	0	0	0.000	0.000
Montana	1,417	2,220	0.099	0.185	42	109	0.010	0.020
Nebraska	1	1	0.000	0.000	0	0	0.000	0.000
Nevada	939	1,342	0.083	0.132	12	25	0.002	0.004
New Mexico	1,929	2,566	0.100	0.173	17	36	0.005	0.013
North Dakota	10	16	0.001	0.001	0	0	0.000	0.000
Oklahoma	0	0	0.000	0.000	0	0	0.000	0.000
Oregon	1,416	2,145	0.068	0.140	905	2,779	0.226	0.537
South Dakota	137	183	0.008	0.013	4	8	0.001	0.001
Texas	0	0	0.000	0.000	0	0	0.000	0.000
Utah	1,258	1,650	0.057	0.105	24	57	0.004	0.011
Washington	78	122	0.003	0.008	14	36	0.003	0.008
Wyoming	1,036	1,543	0.104	0.166	14	31	0.002	0.004
Eastern States	0	0	0.000	0.000	0	0	0.000	0.000
Total (Sum of States)	11,426	16,954	0.768	1.411	1,162	3,420	0.278	0.659

STATE-LEVEL EFFECTS OF ABANDONED MINE LAND FUNDING (OSM AND BLM)

The information below represents the readily available information on State-level contributions of the Abandoned Mine Land (AML) program. Both OSM and BLM have Abandoned Mine Lands programs and activities, however BLM's funding is included in their appropriations and is not included here due to lack of state-level information. The goal of the OSM AML program is to promote the reclamation of mined areas left without adequate reclamation prior to the enactment of the Surface Mining Control and Reclamation Act (SMCRA) in 1977. OSM collaborates with states and tribes to develop their AML programs, and also provides funding, technical assistance, and oversight to ensure that qualified lands are reclaimed.

While OSM has made significant progress in reclaiming AML land, there are over 200,000 acres on coal-related abandoned mine sites that have yet to be fully reclaimed, amounting to an estimated \$3.9 billion worth of health and safety problems areas in 23 states and three tribes across the United States. Characteristics of these high priority problem areas include extreme danger and adverse effects to public health and safety. Table A1-3 shows FY 2011 AML funding by state and the estimated jobs impacts. The long-term economic contribution of reclaimed abandoned mine land (e.g., increased tax revenue from higher property values, improved water quality) is not measured in this report. States and tribes that have certified the completion of their abandoned mine lands may use AML funds for non-coal projects. To date, this group includes Louisiana, Montana, Texas, Wyoming, the Navajo Nation, and the Crow and Hopi tribes.

Table A1-3. Office of Surface Mining, AML Funding, FY 2011

State	2011 Funding (billions, \$2011)	Estimated Number of Jobs Supported (jobs)
Alabama	0.0074	87
Alaska	0.0024	25
Arkansas	0.0023	30
Colorado	0.0073	79
Crow Tribe	0.0020	24
Hopi Tribe	0.0012	15
Illinois	0.0172	207
Indiana	0.0131	161
Iowa	0.0025	30
Kansas	0.0024	26
Kentucky	0.0377	509
Louisiana	0.0004	4
Maryland	0.0027	32
Mississippi	0.0003	3
Missouri	0.0025	33
Montana	0.0122	151
Navajo Nation	0.0068	85
New Mexico	0.0046	52
North Dakota	0.0034	41
Ohio	0.0123	162
Oklahoma	0.0025	32
Pennsylvania	0.0476	610
Tennessee	0.0026	32
Texas	0.0047	58
Utah	0.0042	49
Virginia	0.0091	107
West Virginia	0.0513	544
Wyoming	0.1331	1198
Total (Sum of States)	0.3956	4387

STATE-LEVEL CONTRIBUTIONS FOR OFFSHORE MINERALS – BOEMRE

The BOEMRE program (formerly MMS, currently BOEM and BSEE) supports approximately 734,500 jobs across the nation through Outer Continental Shelf (OCS) oil and gas operations. The jobs in exploration and production on the OCS pay higher than the average national salary. The calculation of industry jobs is based on the BOEMRE's MAG-PLAN model, as well as additional calculations for determining the impact of government revenues and industry profits.

Using the MAG-PLAN model and additional data, jobs from industry spending, OCS revenues paid to the Federal Government (bonus bids, royalties, rentals, and taxes) and industry profits were distributed to both the Gulf of Mexico region and to the rest of the U.S. based on methods outlined in Appendix 8.

Table A1-4. Offshore Energy Minerals – Estimated Job and Output Contributions by State

State	Estimated Number of Jobs Supported ¹ (Jobs)	Output ¹ (billions, \$2011)	State	Estimated Number of Jobs Supported ¹ (Jobs)	Output ¹ (billions, \$2011)
Alabama	31,600	4.44	Montana	1,400	0.25
Alaska	2,800	0.50	Nebraska	2,400	0.39
Arizona	7,100	1.20	Nevada	2,500	0.42
Arkansas	4,100	0.74	New Hampshire	1,700	0.27
California	46,100	7.83	New Jersey	11,400	1.88
Colorado	7,700	1.36	New Mexico	3,800	0.72
Connecticut	5,500	0.92	New York	24,400	4.09
Delaware	1,100	0.19	North Carolina	11,200	1.88
District of Columbia	3,800	0.71	North Dakota	1,500	0.27
Florida	65,100	9.10	Ohio	16,200	2.74
Georgia	9,900	1.67	Oklahoma	7,600	1.50
Hawai'i	2,400	0.42	Oregon	4,700	0.78
Idaho	1,700	0.29	Pennsylvania	19,900	3.39
Illinois	16,500	2.75	Rhode Island	5,100	0.68
Indiana	8,000	1.35	South Carolina	5,300	0.90
Iowa	3,900	0.63	South Dakota	1,100	0.18
Kansas	4,600	0.81	Tennessee	7,700	1.31
Kentucky	5,700	0.98	Texas	157,500	28.97
Louisiana	107,400	16.04	Utah	3,100	0.55
Maine	1,800	0.29	Vermont	800	0.14
Maryland	9,400	1.60	Virginia	16,300	2.83
Massachusetts	10,800	1.81	Washington	9,100	1.49
Michigan	12,100	2.02	West Virginia	2,500	0.46
Minnesota	7,500	1.23	Wisconsin	8,500	1.41
Mississippi	21,500	2.83	Wyoming	1,800	0.38
Missouri	8,800	1.49			
Total				734,500	121.00

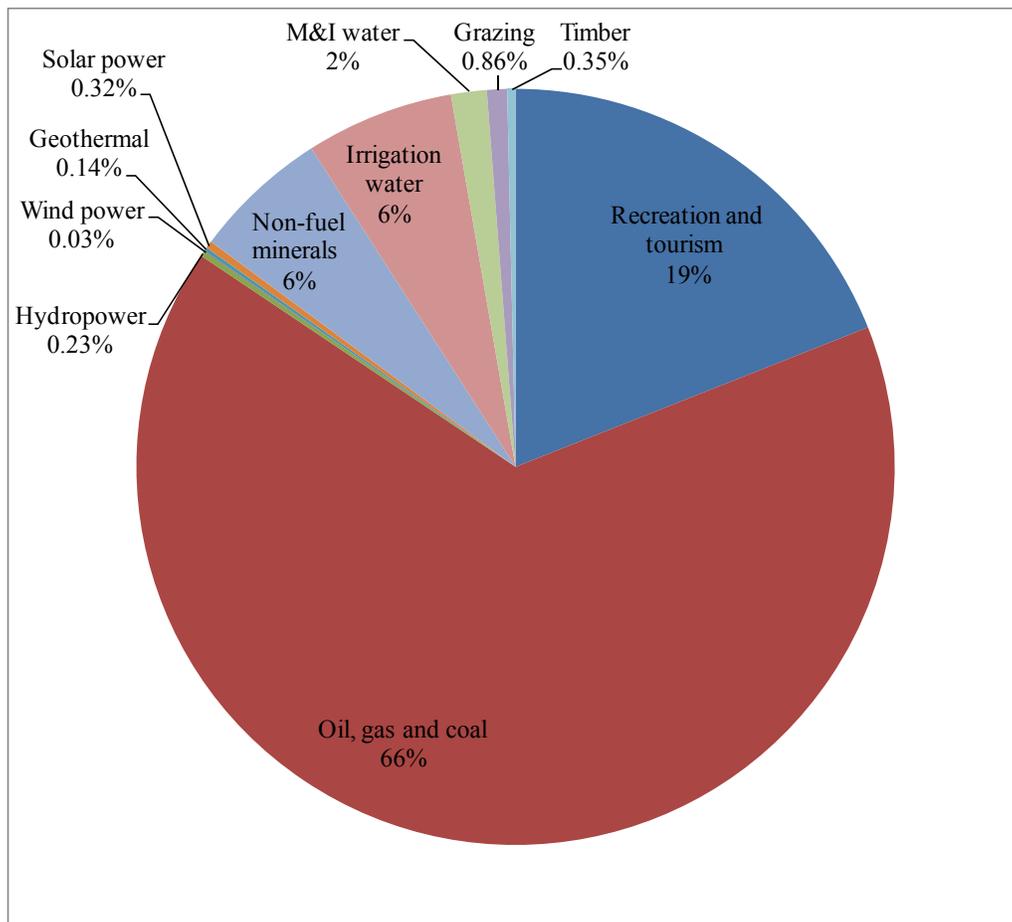
¹ These estimates do not include estimates of jobs or output supported by grants and payments.

Appendix 2. ECONOMIC CONTRIBUTIONS BY SECTOR AND STATE

INTRODUCTION

The Department of the Interior’s public resource management activities support over 2 million jobs, spread across a number of sectors including recreation and tourism, mineral-based energy production, agriculture, and forestry. Many of these sectors have the unique ability to reach rural communities where Interior has management activities. This appendix provides summary information by sector and state. Figure A2-1 shows the percentage of total Interior employment contributions by each sector, at the national level.

Figure A2-1. Percentage of DOI Employment Contributions by Management Activity



RECREATION

Federal and state lands provide outdoor recreation opportunities in all 50 states, and expenditures by recreationists represent an important contribution to state and local economies. Recreation development involves more than just tourist-related businesses, such as hotels and restaurants; it encompasses all economic growth that results from people moving into the community to take advantage of its recreational amenities. This kind of development has the potential to transform a community by attracting retirees, entrepreneurs, and young workers, diversifying the economy, and improving the quality of life with a broader array of goods and services.

Recreation expenditures support a significant amount of economic activity. For example:

- Wildlife associated expenditures (\$133.9 billion; \$2011) were 0.9% of US GDP (\$15.1 trillion; \$2011);
- Wildlife associated expenditures were 17.9% of Total Direct Tourism Output (\$746.2 billion; \$2010)³⁹;
- Texas, Florida, California, Pennsylvania, and Michigan are the top five states in terms of total wildlife associated expenditures (in that order);
- Wyoming, Montana, Maine, Alaska, and Arkansas are the top five states in terms of total wildlife associated expenditures as a percent of total state GDP (in that order);
- Wildlife associated expenditures were 1.3% of Total Personal Consumption Expenditures (\$10.7 trillion; \$2011); and
- Wildlife associated expenditures were 9.4% of Personal Consumption Expenditures associated with Recreational goods and vehicles, Transportation services, Recreation services and Food services and accommodations (\$1.43 trillion; \$2011). While this is a very broad category, 9.4% represents a significant share.

Tourist expenditures create local demands for traded goods and services, thus creating jobs and income for local residents. In rural areas near large public land holdings, it is not uncommon for a large portion of the economic activity in these sectors to be caused by tourists and other visitors to the area. Given that recreation-based nonmetropolitan counties have experienced three times the rate of net migration as compared to nonmetropolitan areas as a whole, rural communities endowed with natural amenities will likely experience growing local demands on service and retail businesses.

Recreation visits to Interior-managed lands in the contiguous United States, Hawaii, and Alaska in 2011 supported over 403,000 jobs and about \$48.7 billion in economic contributions to the communities and regions surrounding Interior-managed land. Recreation activities have an economic impact in both rural communities and major metropolitan areas.

Recreation and tourism visits to National Parks, Refuges and other public lands support Interior jobs for nearly 7,200 park rangers, environmental interpreters, guides, and visitor use assistants. Employment in the recreation and tourism industry is characterized by low-skilled seasonal and part-time jobs; 40% of all workers have no formal education beyond high school. Youth employment by Interior and organizational partners totaled 21,874 in FY 2010 and 21,084 in FY 2011, mostly in seasonal and part-time positions

³⁹ The most recent data in the Bureau of Economic Analysis's Travel and Tourism Satellite account are for 2010.

developing skills and experience as interpreters, visitor assistants, and trail maintenance workers. The NPS and organizational partners employed the largest number in FY 2011, with 9,089 youth employed. In the rural State of Wyoming, recreation and tourism on Interior-managed lands result in an estimated 15,000 jobs, comprising 5% of the state’s total workforce.

Box A2-1. Wildlife-Associated Recreation: Spending for DOI Lands

The 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (the most recent survey available) documented the trip-related equipment purchases attributed to wildlife-related recreational activities. Equipment type and demand varies widely among visitors, depending on the purpose of the visit, length of stay, and whether the visitor is local or traveled from outside the region. Equipment includes rods and reels, rifles and ammunition, camping gear, binoculars, and GPS devices (big ticket items such as boats and campers are not included).

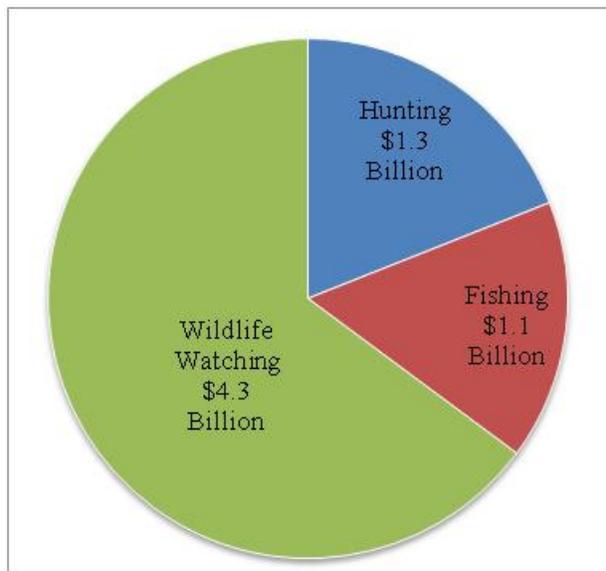


Figure A2-2. Wildlife-Associated Trip-related Equipment Spending for DOI Lands (2011 \$)

In 2006, 41% of wildlife-related recreation occurred on public lands (Federal, state, and local) throughout the United States. The trip-related equipment spending by wildlife-related recreationists amounted to \$22.5 billion (in 2011 dollars). \$13.2 billion of this spending was related to recreation on private lands, and \$9.3 billion was related to recreation on public lands. In 2006, an estimated \$6.7 billion (in 2011 dollars) was spent on trip-related equipment by wildlife-related recreationists on DOI lands. Sixty-five percent of total trip-related equipment expenditures were for wildlife watching items, 19% for hunting items, and 16% for fishing items. Expenditures per day for recreation on DOI lands were \$21 (in 2011 dollars) for trip-related equipment.

More than 4,000 communities with a combined population of 22 million are just a half hour drive from BLM managed public lands. Almost 58 million visitor days were estimated for FY 2011, including almost 30 million camping and picnicking visits, over 2 million non-motorized boating trips, over 6 million interpretation and education visits.

Natural resource amenities can also be attractive to retirees, which can have important implications for fueling local economies. While much of the retiree growth in recent decades has occurred in rural counties close to metropolitan areas and transportation corridors, it has occurred in rural counties endowed with natural amenities as well. Studies have indicated that warm and sunny climates, open lands, scenery, and water are important natural resource amenities to attract retirees. Policies that

encourage nature-based recreational facilities, natural parks and wilderness areas, fishing spots, along with golf facilities and sporting events, can add to the amenity attractiveness of a locality for retirees. In particular, counties close to national parks and containing natural areas and recreation parks experienced a significant growth of retirees in recent decades, and that growth is likely to continue. However, further concentration of retirees, particularly in and around parks and other natural areas, may be problematic in that one of their unique aspects is that they are undeveloped. Too many people wishing to live near public lands may eventually become a threat.

A subset of the tourism industry, “heritage tourism,” is somewhat distinct from active outdoor recreation (although they may overlap) as the business or practice of attracting and accommodating visitors to a place or area based especially on the unique or special aspects of that locale’s history, landscape, and culture. Heritage tourism helps promote the diversification of local economies and preservation of a community’s unique character. Heritage tourism can be a powerful economic development tool because some studies have shown that heritage tourists stay longer and spend more than other tourists.

ENERGY AND MINERALS (OIL, GAS, AND COAL)

Onshore oil, gas and coal activities on Interior-managed lands resulted in over 400,000 jobs and almost \$100 billion in economic contributions, while offshore activities supported an additional 734,500 jobs and \$121 billion in economic contributions. Direct jobs through energy and mineral activities on Interior-managed lands are generally high-paying jobs, including technical specialists employed by Interior bureaus and additional private sector jobs in the technical, labor, and maintenance fields.

BOEM and BSEE employ nearly 500 engineers, scientists, inspectors, and mapping specialists to assist in the safe management of offshore oil and gas management while BLM employs over 900 surveyors and engineers in the development of onshore resources.

Oil and gas activities on public lands and offshore areas provide many high paying, private-sector jobs. The Bureau of Labor Statistics (BLS) reports that in 2010, U.S. oil and gas production workers earned an average of \$28.93 an hour compared to the private industry average of \$21.35 an hour for all job types.⁴⁰ BLS predicts net employment in the mining sector to increase by 24,800 jobs between 2010 and 2020. The oil and gas extraction industry will account for the most new jobs created in the sector (23,200) during this period.

Employment in the coal and metal ore mining industries, on the other hand, is expected to decrease by 3,100 and 8,300 jobs, respectively, during the next decade.⁴¹ The Abandoned Mine Lands (AML) grant program administered by OSM can keep jobs in areas where mining is in decline, such as West Virginia and Kentucky. Based on funding allocated, the AML program is estimated to create 1,566 jobs in these two states in 2011.

⁴⁰ Department of Labor, Bureau of Labor Statistics. May 2010. National Industry-Specific Occupational Employment and Wage Estimates. <http://www.bls.gov/oes/current/oesrsci.htm>

⁴¹ Department of Labor, Bureau of Labor Statistics. January 2012. Industry Employment and Output Projections to 2020. <http://www.bls.gov/opub/mlr/2012/01/art4full.pdf>

RENEWABLE ENERGY (HYDROPOWER, GEOTHERMAL, SOLAR, AND WIND)

The Energy Information Administration (EIA) projects that increased generation from renewable energy in the electric power sector, excluding hydropower, will account for 33 percent of the overall growth in electricity generation from 2010 to 2035. Generation from renewable resources is projected to grow in response to Federal tax credits, state-level policies, and Federal requirements to use more biomass-based transportation fuels, some of which can produce electricity as a byproduct of the production process. The renewable energy share of electric power generation is projected to increase share grows from 10 percent in 2010 to 16 percent in 2035.⁴²

The Bureau of Labor Statistics (BLS) predicts an overall decline in utility jobs sector-wide between 2010 and 2020, but a potential employment increase in the renewable energy sectors. Utility industry jobs pay well; lower-skilled maintenance and installation workers earn on average \$29 per hour while highly trained civil and mechanical engineers earn \$39-41 per hour.⁴³

As employment in electric power generation, transmission, and distribution is expected to decline by 0.9% annually for the next decade, BLS predicts green energy, especially wind and solar, to account for a larger share of growing U.S. energy needs. As these sectors expand, there will be a growing need for more high and low skilled workers to construct, maintain, and operate plants.⁴⁴

Wind Energy

The BLM has authorized some 200 rights-of-way for the use of public lands for wind energy site testing or development. Of these, 31 development authorizations have a total installed capacity of some 440 megawatts. The BLM has approved the first wind energy project on public lands in Nevada, with a potential capacity of 150 MW. The BLM currently has some 40 pending wind energy development applications on the public lands with a potential capacity of over 7,000 MW.

Since 2010, the BLM has approved three wind energy projects on public lands in California, Nevada, and Oregon with a combined capacity of 440 megawatts, estimated to support nearly 1,000 jobs. In California, about 3,062 wind turbines on public lands produce 420 megawatts of power and \$1,385,295 annually in royalties.

Solar Energy

The BLM has approved 11 utility-scale solar energy projects on public lands encompassing all of the commercially viable technologies: parabolic trough, power tower, dish engine, and photovoltaic systems. These 11 projects have a combined capacity over 4,500 megawatts, estimated to support over 10,000 jobs.

Geothermal Energy

The BLM currently manages 818 geothermal leases, with 59 leases in producing status generating about 1,275 megawatts of installed geothermal energy on public lands. This amounts to over 40 percent of U.S. geothermal energy capacity and supplies the electrical needs of about 1.2 million homes. Since 2010, the

⁴² Department of Energy, Energy Information Administration, AEO2012 Early Release Overview, January 23, 2012. Available at http://www.eia.gov/forecasts/aeo/er/early_elecgen.cfm.

⁴³ Department of Labor, Bureau of Labor Statistics. May 2010. National Industry-Specific Occupational Employment and Wage Estimates. <http://www.bls.gov/oes/current/oesrci.htm>

⁴⁴ Bureau of Labor Statistics. 2011. Green Jobs. <http://www.bls.gov/green/greencareers.htm>

BLM has approved eight priority geothermal projects on public lands in Nevada with a combined capacity of 407 megawatts—enough energy to power over 400,000 homes, and to create 700 jobs.

LAND AND WATER RESOURCES – IRRIGATION, GRAZING, AND TIMBER

Interior-managed public lands embody a multiple-use concept that allows for traditional jobs in the farming, ranching, and forestry industries while preserving open space and ecosystems for recreation and environmental benefits.

Public lands and the adjacent private ranches in the West maintain open spaces, provide habitat for wildlife, offer recreational opportunities, and help preserve traditional livelihoods and family ranching.

The BLM's range and timber activities support about 21,600 jobs and nearly \$2.2 billion in economic activity. Timber and grazing activities support small and family-owned businesses and enterprises. The economic activity and employment supported by cattle and sheep using BLM rangeland represents a small, but important share of the total value of the sheep and cattle sector in the western states. The largest contribution to economic output and employment is in Nevada, where BLM's FY 2011 \$83.3 million direct rangeland economic contribution represented about 37% of the \$222.3 million total value of 2010 cash receipts for cattle/calves and sheep/lambs. Similar values for other western states include: New Mexico - 8.4%; Oregon - 14.6%; Utah - 18.6%; and Wyoming - 13.6%.⁴⁵ In addition, forage from BLM lands indirectly contributes to other products from ranch operations, including clover and hay.

State-level data are presented in Table A2-1, Table A2-2, and Table A2-3. Unless otherwise noted, each of the following economic contribution summaries relies on state-level multipliers to develop output and employment contributions within each state's borders. A multiplier for one state does not account for "spillover" effects accruing in other states. Thus, the sum of effects across 50 states will be less than the overall nationwide contribution. In contrast, when a national-level multiplier is used, spillover effects among states are taken into account, providing better estimate of nationwide contributions.

⁴⁵ Source: USDA, National Agricultural Statistics Service, Meat Animals Production, Disposition, and Income 2010 Summary, available at <http://usda01.library.cornell.edu/usda/current/MeatAnimPr/MeatAnimPr-04-28-2011.pdf>. 2011 data were not available at the time the DOI report was prepared.

Table A2-1. Total Jobs Supported by Interior Activities, by State, by Sector

State	Recreation^{1,2}	Energy & Minerals^{2,3}	Grazing & Timber^{2,4} (jobs)	Major Grants & Payments⁵	DOI Salary⁶	Total⁷
Alabama	965	31,600	0	964	81	33,611
Alaska	5,615	3,335	2	1,467	1,049	11,478
Arizona	22,755	7,116	913	917	2,370	34,073
Arkansas	2,866	4,100	0	528	154	7,648
California	35,416	73,795	704	3,082	4,152	117,170
Colorado	13,365	52,678	881	3,324	3,878	74,203
Connecticut	20	5,500	0	115	28	5,662
Delaware	67	1,100	0	113	14	1,294
District of Columbia	12,043	3,800	0	18	457	16,318
Florida	11,411	65,100	0	645	826	77,981
Georgia	3,737	9,900	0	426	617	14,681
Hawaii	4,515	2,400	0	166	220	7,302
Idaho	6,823	3,412	3,006	838	1,001	15,122
Illinois	732	16,500	0	555	139	17,925
Indiana	1,177	8,000	0	435	142	9,755
Iowa	946	3,900	0	280	69	5,195
Kansas	1,070	5,366	0	339	183	6,958
Kentucky	1,521	5,700	0	816	164	8,201
Louisiana	847	107,400	0	1,291	562	110,100
Maine	3,388	1,800	0	187	144	5,519
Maryland	2,561	9,400	0	222	419	12,602
Massachusetts	6,355	10,800	0	155	584	17,893
Michigan	2,548	12,100	0	584	327	15,559
Minnesota	1,419	7,500	0	555	491	9,965
Mississippi	2,123	21,500	0	615	200	24,437
Missouri	2,881	8,800	0	575	398	12,655
Montana	9,958	8,072	2,328	1,845	1,018	23,248
Nebraska	630	2,441	2	256	242	3,573
Nevada	10,457	5,827	1,367	665	934	19,333
New Hampshire	53	1,700	0	162	51	1,966
New Jersey	2,652	11,400	0	159	195	14,406
New Mexico	3,989	96,258	2,602	8,465	1,972	113,402
New York	6,096	24,400	0	355	460	31,310
North Carolina	12,176	11,200	0	494	351	24,221
North Dakota	1,014	27,272	16	887	374	29,563
Ohio	1,163	16,200	0	536	200	18,098

State	Recreation ^{1,2}	Energy & Minerals ^{2,3}	Grazing & Timber ^{2,4} (jobs)	Major Grants & Payments ⁵	DOI Salary ⁶	Total ⁷
Oklahoma	1,812	9,513	0	499	470	12,295
Oregon	12,159	4,729	4,924	614	1,758	24,232
Pennsylvania	5,546	19,900	0	1,083	630	27,158
Rhode Island	274	5,100	0	114	24	5,512
South Carolina	1,353	5,300	0	249	127	7,029
South Dakota	3,654	1,367	191	356	605	6,173
Tennessee	8,242	7,700	0	499	380	16,821
Texas	5,095	161,777	0	1,513	625	169,010
Utah	21,269	55,109	1,707	3,938	1,190	83,292
Vermont	49	800	0	190	44	1,083
Virginia	9,136	16,300	0	419	2,305	28,161
Washington	6,519	9,100	158	594	1,234	17,605
West Virginia	1,049	2,500	0	794	322	4,665
Wisconsin	1,267	8,500	0	541	420	10,729
Wyoming	15,821	131,964	1,574	17,170	612	167,186

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

² BLM's Eastern States and locatable mineral mining on all BLM lands 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

⁴ Timber contributions are based on the value of timber harvested on BLM lands in 2011. Grazing contributions are based on a state-specific estimate of jobs supported per 1,000 animal unit months (AUMs).

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, CESCFC, NPS Grants, and Refuge Revenue Sharing)

⁶ DOI Salary jobs are those supported by DOI employees

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 1-1, were estimated using a national-level model that includes interstate "leakages" not captured in state by state-level models.

Table A2-2. Total Output Supported by Interior Activities, by State, by Sector

State	Recreation ^{1,2}	Energy & Minerals ^{2,3}	Grazing & Timber ^{2,4}	Major	DOI Salary ⁶	Total ⁷
				Grants & Payments ⁵		
(billions, \$2011)						
Alabama	0.07	4.44	0.00	0.09	0.01	4.61
Alaska	0.51	0.64	0.00	0.16	0.13	1.45
Arizona	2.00	1.20	0.05	0.09	0.28	3.64
Arkansas	0.19	0.74	0.00	0.05	0.02	0.99
California	4.01	13.63	0.10	0.40	0.61	18.75
Colorado	1.27	12.22	0.10	0.35	0.49	14.44
Connecticut	0.00	0.92	0.00	0.01	0.00	0.94
Delaware	0.01	0.19	0.00	0.01	0.00	0.21
District of Columbia	1.32	0.71	0.00	0.00	0.07	2.11
Florida	1.05	9.10	0.00	0.07	0.10	10.32
Georgia	0.34	1.67	0.00	0.04	0.07	2.12
Hawaii	0.46	0.42	0.00	0.02	0.03	0.92
Idaho	0.53	0.54	0.29	0.07	0.10	1.54
Illinois	0.07	2.75	0.00	0.07	0.02	2.91
Indiana	0.09	1.35	0.00	0.05	0.02	1.49
Iowa	0.07	0.63	0.00	0.03	0.01	0.73
Kansas	0.09	0.89	0.00	0.03	0.02	1.03
Kentucky	0.10	0.98	0.00	0.09	0.02	1.19
Louisiana	0.08	16.04	0.00	0.12	0.06	16.30
Maine	0.25	0.29	0.00	0.02	0.02	0.57
Maryland	0.24	1.60	0.00	0.03	0.05	1.92
Massachusetts	0.63	1.81	0.00	0.02	0.08	2.54
Michigan	0.19	2.02	0.00	0.06	0.04	2.31
Minnesota	0.12	1.23	0.00	0.06	0.06	1.46
Mississippi	0.14	2.83	0.00	0.05	0.02	3.04
Missouri	0.22	1.49	0.00	0.05	0.05	1.81
Montana	0.79	1.39	0.20	0.16	0.10	2.65
Nebraska	0.05	0.40	0.00	0.02	0.03	0.49
Nevada	1.07	0.97	0.14	0.07	0.11	2.37
New Hampshire	0.00	0.27	0.00	0.02	0.01	0.30
New Jersey	0.23	1.88	0.00	0.02	0.03	2.16
New Mexico	0.31	17.04	0.19	0.74	0.21	18.54
New York	0.71	4.09	0.00	0.05	0.07	4.91
North Carolina	0.89	1.88	0.00	0.05	0.04	2.86
North Dakota	0.07	5.79	0.00	0.07	0.04	5.97
Ohio	0.09	2.74	0.00	0.06	0.02	2.91
Oklahoma	0.15	1.91	0.00	0.04	0.05	2.16
Oregon	1.11	0.78	0.68	0.06	0.20	2.83

State	Recreation^{1,2}	Energy & Minerals^{2,3}	Grazing & Timber^{2,4}	Major Grants & Payments⁵	DOI Salary⁶	Total⁷
			(billions, \$2011)			
Pennsylvania	0.50	3.39	0.00	0.14	0.08	4.10
Rhode Island	0.03	0.68	0.00	0.01	0.00	0.72
South Carolina	0.11	0.90	0.00	0.02	0.01	1.04
South Dakota	0.26	0.22	0.01	0.03	0.06	0.58
Tennessee	0.63	1.31	0.00	0.05	0.05	2.03
Texas	0.42	30.13	0.00	0.16	0.08	30.79
Utah	1.71	10.76	0.12	0.35	0.13	13.08
Vermont	0.00	0.14	0.00	0.02	0.00	0.16
Virginia	0.74	2.83	0.00	0.05	0.29	3.90
Washington	0.61	1.49	0.02	0.07	0.16	2.34
West Virginia	0.07	0.46	0.00	0.10	0.03	0.66
Wisconsin	0.10	1.41	0.00	0.05	0.05	1.60
Wyoming	1.24	31.27	0.17	1.50	0.07	34.26

¹ Recreation output based on visitor spending at units managed by BLM, BOR, FWS and NPS

² BLM's Eastern States and locatable mineral mining on all BLM lands 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

⁴ Timber contributions are based on the value of timber harvested on BLM lands in 2011. Grazing contributions are based on a state-specific estimate of jobs supported per 1,000 animal unit months (AUMs).

⁵ Grants and Payments output include AML, PILT, Royalties and certain other grants (Sport Fish, Wildlife Restoration, State and Tribal Wildlife Grants, LWCF with GOMESA, Historic Preservation, CIAP, CESCO, Preserve America, Save America's Treasures, Refuge Revenue Sharing)

⁶ DOI Salary output is that supported by DOI employees

⁷ These totals represent output supported by recreation, energy, minerals, grazing, timber, salaries and grants and payments in each of the 50 states. The economic contributions reported in Table 1-1 were estimated using a national-level model that includes interstate "leakages" not captured in state by state-level models.

Table A2-3. State-level Employment and Output Contributions for Recreation Visits

State	BLM			BOR			FWS			NPS			Total		
	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)
AL	0	0	0.00	0	0	0.00	1,136,692	584	0.05	781,550	382	0.02	1,918,242	965	0.07
AK	696,003	540	0.05	0	0	0.00	1,464,315	2,431	0.24	2,274,843	2,644	0.21	4,435,099	5,615	0.51
AZ	5,588,132	4,996	0.50	7,153,910	7,232	0.73	500,225	506	0.05	10,546,150	10,021	0.73	23,788,417	22,755	2.00
AR	0	0	0.00	0	0	0.00	1,118,024	491	0.04	3,125,664	2,375	0.16	4,243,688	2,866	0.19
AS										3,006	NA	NA			
CA	9,074,385	7,268	0.88	12,363,434	8,278	1.08	4,621,833	3,094	0.40	34,915,676	16,776	1.64	60,693,316	35,416	4.01
CO	6,843,838	5,454	0.56	3,482,242	3,308	0.35	77,850	74	0.01	5,635,307	4,529	0.35	16,035,174	13,365	1.27
CT	0	0	0.00	0	0	0.00	25,000	5	0.00	19,313	14	0.00	44,313	20	0.00
DE	0	0	0.00	0	0	0.00	201,748	67	0.01	0	0	0.00	201,748	67	0.01
DC	0	0	0.00	0	0	0.00	0	0	0.00	33,140,005	12,043	1.32	33,140,005	12,043	1.32
FL	0	0	0.00	0	0	0.00	3,804,784	2,833	0.29	9,222,981	8,577	0.76	13,027,765	11,411	1.05
GA	0	0	0.00	0	0	0.00	283,223	118	0.01	6,776,556	3,620	0.32	7,059,779	3,737	0.34
GU										219,349	91	0.01	219,349	91	0.01
HI	0	0	0.00	0	0	0.00	900,400	1,095	0.12	4,493,123	3,420	0.34	5,393,523	4,515	0.46
ID	5,959,217	5,603	0.44	923,074	650	0.05	367,077	258	0.02	530,977	312	0.02	7,780,345	6,823	0.53
IL	0	0	0.00	0	0	0.00	1,247,618	442	0.05	354,125	290	0.02	1,601,743	732	0.07
IN	0	0	0.00	0	0	0.00	212,288	41	0.00	2,395,485	1,136	0.08	2,607,773	1,177	0.09
IA	0	0	0.00	0	0	0.00	1,964,207	744	0.06	222,295	202	0.01	2,186,502	946	0.07
KS	0	0	0.00	2,027,655	870	0.07	278,700	120	0.01	100,361	80	0.01	2,406,716	1,070	0.09
KY	0	0	0.00	0	0	0.00	40,000	16	0.00	1,797,894	1,505	0.10	1,837,894	1,521	0.10
LA	0	0	0.00	0	0	0.00	1,058,296	492	0.04	496,329	356	0.04	1,554,625	847	0.08
ME	0	0	0.00	0	0	0.00	390,945	199	0.02	2,504,208	3,189	0.23	2,895,153	3,388	0.25
MD	0	0	0.00	0	0	0.00	499,195	190	0.02	3,541,570	2,371	0.22	4,040,765	2,561	0.24
MA	0	0	0.00	0	0	0.00	1,064,552	394	0.05	9,913,501	5,960	0.58	10,978,053	6,355	0.63

State	BLM			BOR			FWS			NPS			Total		
	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)
MI	0	0	0.00	0	0	0.00	114,290	50	0.00	1,796,006	2,498	0.19	1,910,296	2,548	0.19
MN	0	0	0.00	0	0	0.00	1,611,210	918	0.09	540,195	501	0.03	2,151,405	1,419	0.12
MS	0	0	0.00	0	0	0.00	321,288	109	0.01	6,588,026	2,014	0.13	6,909,314	2,123	0.14
MO	0	0	0.00	0	0	0.00	433,650	159	0.01	4,140,544	2,722	0.21	4,574,194	2,881	0.22
MT	4,297,224	3,865	0.31	717,933	857	0.07	636,926	761	0.06	4,584,011	4,475	0.34	10,236,094	9,958	0.79
NE	0	0	0.00	835,223	343	0.03	220,284	90	0.01	290,323	197	0.01	1,345,830	630	0.05
NV	7,012,262	5,138	0.55	3,899,134	2,960	0.32	178,238	135	0.01	5,399,439	2,223	0.19	16,489,073	10,457	1.07
NH	0	0	0.00	0	0	0.00	74,000	35	0.00	30,941	18	0.00	104,941	53	0.00
NJ	0	0	0.00	0	0	0.00	607,000	300	0.04	5,858,443	2,353	0.20	6,465,443	2,652	0.23
NM	1,900,624	1,638	0.14	1,459,061	1,149	0.09	240,651	190	0.02	1,657,550	1,012	0.07	5,257,886	3,989	0.31
NY	0	0	0.00	0	0	0.00	654,633	316	0.04	17,506,355	5,780	0.67	18,043,875	6,096	0.71
NC	0	0	0.00	0	0	0.00	1,977,480	1,248	0.11	17,093,464	10,928	0.78	19,070,944	12,176	0.89
ND	23,821	22	0.00	202,818	151	0.01	383,733	286	0.02	659,927	555	0.03	1,270,299	1,014	0.07
OH	0	0	0.00	0	0	0.00	146,783	67	0.01	2,738,275	1,096	0.09	2,885,058	1,163	0.09
OK	0	0	0.00	1,740,753	712	0.06	2,164,490	886	0.08	1,266,189	214	0.01	5,171,432	1,812	0.15
OR	7,609,140	7,325	0.67	1,626,975	876	0.08	5,745,989	3,095	0.29	888,358	862	0.06	15,870,462	12,159	1.11
PA	0	0	0.00	0	0	0.00	159,132	49	0.00	8,970,475	5,497	0.50	9,129,607	5,546	0.50
PR										1,105,252	834	0.06	1,105,252	834	0.06
RI	0	0	0.00	0	0	0.00	403,702	221	0.02	51,559	53	0.00	455,261	274	0.03
SC	0	0	0.00	0	0	0.00	935,451	610	0.05	1,529,172	743	0.05	2,464,623	1,353	0.11
SD	31,493	27	0.00	362,768	398	0.03	349,896	384	0.03	4,199,267	2,844	0.19	4,943,424	3,654	0.26
TN	0	0	0.00	0	0	0.00	1,005,750	319	0.03	7,898,557	7,923	0.60	8,904,307	8,242	0.63
TX	0	0	0.00	1,074,925	721	0.07	1,125,001	755	0.08	5,495,156	3,619	0.27	7,695,082	5,095	0.42
UT	5,701,904	5,483	0.49	6,105,894	6,385	0.58	55,261	58	0.01	8,975,525	9,343	0.63	20,838,584	21,269	1.71
VT	0	0	0.00	0	0	0.00	72,000	26	0.00	31,209	23	0.00	103,209	49	0.00
VA	0	0	0.00	0	0	0.00	1,676,389	900	0.09	22,708,338	8,236	0.65	24,384,727	9,136	0.74
VI										638,298	1,174	0.08	638,094	1,174	0.08

State	BLM			BOR			FWS			NPS			Total		
	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)	Visits	Jobs	Output (billions, \$2011)
WA	506,740	406	0.04	2,615,505	1,628	0.18	936,365	583	0.06	7,281,785	3,902	0.32	11,340,395	6,519	0.61
WV	0	0	0.00	0	0	0.00	77,895	30	0.00	1,811,722	1,018	0.07	1,889,617	1,049	0.07
WI	0	0	0.00	0	0	0.00	1,459,920	930	0.08	251,145	337	0.02	1,711,065	1,267	0.10
WY	2,420,782	1,943	0.16	3,498,866	4,326	0.36	336,200	416	0.03	6,307,997	9,137	0.68	12,563,845	15,821	1.24
Eastern States	117,603	114	0.01	0	0	0.00	0	0	0.00	0	0	0.00	117,603	114	0.01
Total for All Areas	57,783,168	49,822	4.81	50,090,170	40,847	4.17	45,360,579	28,118	2.77	281,303,769	172,022	14.32	434,131,226	290,809	26.07
Total Using National Multipliers		58,942	7.04		51,596	6.31		34,529	4.22		258,416	31.08		403,482	48.65

Note: Totals may display rounding error.

Appendix 3. DOI-RELATED ECOSYSTEM RESTORATION – ADDITIONAL CASE STUDIES AND INFORMATION ON CASE STUDY METHODS

This appendix provides additional information on the cases studies and sources of restoration funding to supplement the material in Chapter 4, Ecosystem Restoration.

Job and income contributions for each case study were estimated using IMPLAN (IMPact Analysis for PLANning). IMPLAN is a widely used input-output software and data system for estimating the job and income effects resulting from the interdependencies and interactions of economic sectors and consumers. See Appendix 7 for additional details on the IMPLAN model. To estimate the economic contributions of the case-study projects, cost data provided by project managers and contractors were used to determine the mix of products and services required to accomplish each project. This mix is commonly referred to as a production function. Local regional impacts were estimated by constructing unique production functions in IMPLAN for each case study. IMPLAN 3.0 county-level data for 2009 were used to estimate the indirect and induced effects (secondary impacts) of each restoration project. Direct impacts were estimated using employment figures, labor expenditures, and non-labor expenditures provided by contractors. Job impacts include full, part-time, and temporary positions, and are reported on an annual basis. Labor income impacts include all salaries, wages, and benefits accruing to local workers. Total output impacts are equal to annual local expenditures and include intermediate expenditures. All impacts are reported on an annual basis in 2011 dollars (\$2011).

The case studies illustrate the substantial economic benefits that restoration projects provide for local communities, and the variation in impacts across projects emphasizes the need to take caution when transferring impact estimates from one project to another. Restoration type, costs and availability of inputs and labor, and modeling methods all play large roles in the final impact estimates. Each of these factors need to be considered when comparing or transferring impact estimates. The four main variables that affect the magnitude of estimated impacts include:

1. **The type of restoration project.** The mix of products and services required to accomplish each project plays a large role in job and income impacts. Projects that are labor intensive, such as projects with large percentages of planning and engineering expenditures and projects requiring hand-labor, will have the largest job and income impacts. Conversely, projects that have large percentages of equipment intensive expenditures or materials expenditures will have relatively lower job and income impacts.

For this analysis, data provided by project managers and contractors were used to determine the mix of labor and non-labor inputs required to accomplish each project. The expenditures for many of the case-studies in this analysis were materials and equipment intensive.

2. **The structure, size, and diversity of the local economy.** Local economies are comprised of a mix of input and service providers. For many projects, firms and input suppliers are chosen within the local economy when possible; however, smaller, less diverse economies often do not

include all of the industries required for a project. If the services and supplies for a project cannot be purchased within the local economy, then they will be purchased outside of the local economy. When money leaves the local economy, it is “leaked” from the model and no longer generates local economic impacts. This means that the economic diversity of the local area matters: the more urban, or diverse, a local area is, the less economic activity will leak. This also makes the selection of the local area an important variable in determining the economic impacts of a project. An appropriate local area definition will include a cohesive economic region, and is often defined to include communities within a reasonable commuting distance of the site.

For this analysis, local areas were defined by considering only those counties that fell within a reasonable commuting distance of each project site. Local area definitions were made through consultation with project managers. For some of the case studies, local is defined as a single county, whereas for others, local is defined as a small cluster of counties adjacent to the project site. In all cases, the local area is constrained to counties located no farther than 60 miles from the project site. Thus, the impact estimates reported in this study represent only those jobs supported in counties with direct ties to the restoration project. Projects with relatively small local area definitions, especially those that are more rural, will generally have lower local economic impacts than similar projects located in larger, more economically diverse locations.

- 3. Retail versus direct purchasing.** When a contracting firm purchases materials for a project, they can either purchase the materials from a retail or wholesale supplier, or directly from the manufacturer. If supplies are purchased directly from the manufacturer, then 100% of the purchase price goes to that manufacturing sector. If the supplies are purchased from a wholesaler or retailer, then it is necessary to “margin” the purchase so that the sale price is distributed between the retail, wholesale, transportation, and producing sectors. For example, 100% of the purchase price for grass seed purchased directly from the farmer would go to the farming sector; whereas for grass seed purchased from a retail store, about 60% would go to the farming sector, 30% to the retail sector, 4% to the wholesale trade sector, and 5% to the truck transportation sector. If grass seed for a project is purchased at a retail store and if a local area does not include grass seed farming, then more than 60% of the expenditures for grass seed will leak from the model, thus reducing overall local economic impacts.

For this analysis, contractors identify those supplies that were purchased from a retailer, and appropriate margins were applied. This level of detail in the modeling results in more accurate, albeit smaller, local economic impacts.

- 4. The duration of the project.** Many restoration projects occur over multiple years. The underlying data used by the IMPLAN software captures one year’s worth of economic activity, thus it is important to express all expenditure values input into IMPLAN on an annual basis. Furthermore, output from IMPLAN is also expressed on an annual basis. Many existing studies report “total jobs” for a project, but this can be misleading. If a study reports that a project lasting 3 years supported 90 total jobs, the project actually supported 30 jobs per year. The 30 jobs supported in the first year are likely to be the same 30 jobs supported in the following two years, thus the project only really supported 30 jobs per year for three years.

For this analysis, average yearly expenditures were input into IMPLAN, and all impacts are reported as average impacts per year. For multi-year projects, employment during any one year may exceed or fall below the average.

SUMMARIES OF RESTORATION CASE STUDIES

The following provides brief descriptions of the economic impacts for each case study.

Truckee River Restoration Project

This project includes nearly 9 river miles, 19 new wetlands, 13 new river meanders, 31 in-stream riffles, and 263 acres of revegetation in Nevada. The series of projects has been led by The Nature Conservancy in collaboration with FWS, BLM, and the Pyramid Lake Paiute Tribe. Restoration expenditures have so far totaled \$18.9 million (\$2011) over the combined projects' five-year duration, averaging \$3.8 million spent annually (2006-2010). Project

expenditures directly accounted for 15 jobs in the local area each year and economic contributions of about \$4.7 million and nearly \$1.5 million annually in local labor income (salaries, wages, and benefits). Over 90% of the materials for the project were purchased from local suppliers. The resulting spending by the suppliers and site workers accounted for an additional 22 jobs and an additional \$1.2 million in local labor income per year. To date, the Truckee River Restoration has brought over \$5.7 million in economic contributions, 37 jobs, and \$2.7 million in labor income to the local economy each year. Beyond these economic impacts, local communities are expected to benefit in the long-term from improved water quality, more flood attenuation, added open recreational space, and enhanced educational opportunities.

Table A3-1. Truckee River Restoration - Economic Contribution Summary

Lead bureau and partners	BLM and TNC
Restoration type	River rechanneling
Project location	NV
Total expenditure (\$2011)	18.9M
Project duration	5 yrs
Average annual expenditure (\$)	3.8M
Local job impact: average jobs per year	37
Local economic contribution: avg/yr (\$)	5.7M
Local labor income impact: avg/yr (\$)	2.7M

Gerber Stew Stewardship Project

This project utilized BLM's new stewardship contracting authority to implement an array of restoration treatments and projects in BLM's Klamath Falls Resource Area within the Lakeview District Office in Klamath County Oregon. BLM stewardship contracts allow the use of the value or sale of forest products to offset the cost of services. The stewardship contracting

mechanism allowed BLM to restore forest health and reduce wildfire risk, while supporting timber utilization markets and providing employment for local rural communities. The stewardship project

Table A3-2. Gerber Stew Restoration - Economic Contribution Summary

Lead bureau and partners	BLM
Restoration type	Forest stewardship
Project location	OR
Total expenditure (\$2011)	3M
Project duration	8 yrs
Average annual expenditure (\$)	370,000
Local job impact: average jobs per year	19
Local economic contribution: avg/yr (\$)	not calculated
Local labor income impact: avg/yr (\$)	870,000

resulted in approximately \$3 million of service work and over 4.4 million cubic feet of marketable biomass removed from the land. Rural and community benefits included: employment opportunities, a substantial reduction in smoke emissions from the utilization of biomass, restoration treatments on over 6,000 acres, and miles of road improvement. Forest and road restoration, logging activities, and processing of biomass from the Gerber Stew Stewardship Contract directly accounted for 10 jobs and over \$570,000 in labor income per year (salaries, wages, and benefits) in the local area. Spending by contractors and site workers accounted for an additional 9 jobs and an additional \$300,000 in local labor income per year. Combined, the Gerber Stew Stewardship contract supported 19 jobs per year in rural counties in southern Oregon and northern California for the eight years (2004-2011) and over \$870,000 per year in local labor income.

Blanca Wetlands Restoration

This project in the San Luis Valley basin of south-central Colorado has been ongoing since the 1960s and has resulted in the restoration of over 200 playa lakes, ponds, and marshlands. This area was once dry due to human-induced dewatering, and has now become a nationally significant migration and nesting area for many wildlife species. Average restoration and monitoring expenditures are about \$75,000 (\$2011) annually and vary from year-to-year based on project need and available funding. Restoration and monitoring contracts are awarded to local businesses and recur annually, providing local contractors with reliable work each year, supporting an average annual economic contribution of about \$102,900 and supporting as many as ten small contracts and an average of over \$29,000 in local labor income (salaries, wages, and benefits) each year.

Table A3-4. Blanca Wetlands Restoration - Economic Contribution Summary

Lead bureau and partners	BLM
Restoration type	Wetland restoration
Project location	CO
Average annual expenditure (\$2011)	75,000
Project duration	on-going
Local job impact: average jobs per year	< 1
Local economic contribution: avg/yr (\$)	102,900
Local labor income impact: avg/yr (\$)	29,000

Las Cienegas Grassland Restoration Project

This project restored over 3,000 acres of degraded grassland in the Las Cienegas National Conservation Area in southeast Arizona. By removing mesquite trees from the area, the project has helped to restore proper living conditions for pronghorn antelope and rare migratory and grassland birds, and has helped to stabilize the regional watershed by increasing water infiltration and reducing erosion. The funding required for the project was granted through American Recovery and Reinvestment Act of 2009 (ARRA) and averaged \$767,000 (\$2011) per year for two years (2009-2010). Project expenditures directly

Table A3-3. Las Cienegas Restoration - Economic Contribution Summary

Lead bureau and partners	BLM
Restoration type	Grasslands restoration, invasive species mitigation
Project location	NM
Total expenditure (\$2011)	1.5M
Project duration	2 yrs
Average annual expenditure (\$)	767,000
Local job impact: average jobs per year	10
Local economic contribution: avg/yr (\$)	not calculated
Local labor income impact: avg/yr (\$)	600,000

accounted for 4 jobs and over \$330,000 in local labor income (salaries, wages, and benefits) per year. An emphasis on local contracting resulted in an additional 6 jobs in the local area and an additional \$270,000 in local labor income per year generated through contractor expenditures.

Jaite Paper Mill

This former paper mill became part of the Cuyahoga Valley National Park in 1985. The demolition and removal of the Mill was intended to eliminate a human health and safety hazard and to restore the site back to a natural, visitor-friendly area. Planning for the project took approximately 2.5 years to complete with expenditures totaling \$600,000 (\$2011). Planning activities supported a total of 4 jobs per year and \$214,000 per year in local labor income (salaries, wages, and benefits). The actual demolition and removal fieldwork occurred during the spring of 2006 and took approximately three months to complete. Expenditures for the demolition phase totaled \$1.3 million (\$2011). The total economic

Table A3-5. Jaite Paper Mill Restoration - Economic Contribution Summary

Lead bureau and partners	NPS
Restoration type	Hazardous building demolition
Project location	OH
Total expenditure (\$2011)	Planning: \$600,000; Implementation: \$1.3M
Project duration	Planning: 2.5 yrs; Implementation: 3 months
Local job impact: average jobs per year	Planning: 4; Implementation: 36 (3 months)
Local economic contribution: avg/yr (\$)	Planning: \$479,000; Implementation: \$2.4M (3 months)
Local labor income impact: avg/yr (\$)	Planning: \$214,000; Implementation: \$755,000 (3 months)

contribution of the demolition was estimated to be \$2.4 million. The demolition directly supplied jobs for approximately 27 construction workers for the three month duration and supplied over \$380,000 in labor income to the local economy. Salary spending and equipment purchases for the demolition project increased demand for products and services from local vendors and are estimated to have supported an additional 9 jobs and \$375,000 in labor income within the local economy during 2006.

The Glacial Ridge Prairie and Wetland Restoration Project

This project located in the Prairie Pothole region in northwestern Minnesota, is the largest tallgrass prairie and wetland restoration project in U.S. history. Restoration of the Glacial Ridge property began in 2001 and concluded in 2011. As the area was restored, TNC turned the property over to FWS to establish the new Glacial Ridge National Wildlife Refuge (NWR). With funding provided by over 20 partner agencies/organizations,

Table A3-6. Glacial Ridge Wetlands Restoration - Economic Contribution Summary

Lead bureau and partners	FWS, TNC, USDA/NRCS
Restoration type	Prairie/wetland
Project location	MN
Total expenditure (\$2011)	24M
Project duration	11 yrs
Average annual expenditure (\$)	2.2M
Local job impact: average jobs per year	15
Local economic contribution: avg/yr (\$)	1.9M
Local labor income impact: avg/yr (\$)	839,000

including significant contributions from USFWS and USDA's Natural Resource Conservation Service,

yearly project expenditures averaged about \$2.2 million (\$2011) and supported an average economic contribution of about \$1.9 million over the duration of the project. These expenditures directly supported 6 jobs in local communities surrounding the property and provided nearly \$476,000 in local labor income (salaries, wages, and benefits) each year. In addition to these direct impacts, the Glacial Ridge project supported another 9 jobs each year, which provided an additional \$363,000 in local labor income.

The Ni-les'tun Tidal Marsh Restoration Project

This project restored over 418 acres of tidal marsh in the Bandon Marsh National Wildlife Refuge along the coast of Oregon. As the largest tidal marsh restoration in Oregon, an extensive amount of work was coordinated with FWS and designed, engineered, constructed, and contracted by Ducks Unlimited (DU). Construction funding was pieced together from many smaller grants, ARRA funds, Oregon Lottery

funds granted through the Oregon Watershed Enhancement Board, and about \$1.35 million from the New Carissa oil spill NRDAR settlement. Expenditures for the tidal marsh restoration portion of the project were about \$31,000 annually during the planning phase (2001-2009), and \$700,000 annually during the implementation phase (2010-2011), accounting for a total restoration cost of \$1.65 million (\$2011). In total, including planning and implementation phases, the project supported an average economic contribution of about \$1.1M per year, and provided an average of about \$453,000 per year in labor over the life of the project.

Table A3-7. Ni-les'tun Marsh Restoration - Economic Contribution Summary

Lead bureau and partners	FWS, DU
Restoration type	Tidal marsh
Project location	OR
Total expenditure (\$2011)	1.4M
Project duration	2 yrs
Average annual expenditure (\$)	700,000
Local job impact: average jobs per year	5
Local economic contribution: avg/yr (\$)	1.1M
Local labor income impact: avg/yr (\$)	453,000

Housatonic River Conservation Easements

Conservation easements along the Housatonic River are being purchased by The Nature Conservancy (TNC) to protect water quality and nesting habitat for migratory songbirds and other wildlife and to maintain the scenic, agrarian character of the region. Using funds from an NRDAR settlement, FWS has obligated \$558,000 (\$2011) to TNC for the purchase of permanent conservation easements on approximately 200 acres of riparian lands along the Housatonic River in Salisbury, Connecticut. From 2011 to 2015, \$500,000

will be spent to directly purchase conservation easements and an additional \$58,000 will be spent to administer the easements. Easement administration will be contracted to local business and is estimated

Table A3-8. Housatonic River Conservation Easements - Economic Contributions Summary

Lead bureau and partners	FWS, TNC
Restoration type	Riparian/farm preservation
Project location	CT
Total expenditure (\$2011)	58,000
Project duration	5 yrs
Average annual expenditure (\$)	12,000
Local job impact: average jobs per year	< 1
Local economic contribution: avg/yr (\$)	23,000
Local labor income impact: avg/yr (\$)	12,000

that the project will contribute about \$23,000 per year in economic contributions to the local economy, and an average of \$12,000 per year in labor income (salaries, wages, and benefits), directly impacting businesses providing management, technical service, and real estate consulting.

The Piping Plover Nesting Habitat

Management Program is an ongoing effort by The Nature Conservancy of Rhode Island to increase the number of piping plover chicks produced in Rhode Island following the 1996 North Cape Oil Spill. From 2007-2011, FWS provided \$130,000 (\$2011) to TNC to implement management actions aimed at reducing threats to piping plovers, with funding for the project coming from a NRDAR settlement for the North Cape Oil Spill. This case study demonstrates how even small investments in restoration can support jobs in local communities. The average yearly cost of the program was \$32,000, and these expenditures are estimated to have supported an average annual economic contribution of \$58,000 per year in the local community.

Table A3-9. Piping Plover Nesting Habitat Management Program - Economic Contributions Summary

Lead bureau and partners	FWS, TNC
Restoration type	Habitat management, public education
Project location	RI
Total expenditure (\$2011)	130,000
Project duration	4 yrs
Average annual expenditure (\$)	32,000
Local job impact: average jobs per year	< 1
Local economic contribution: avg/yr (\$)	58,000
Local labor income impact: avg/yr (\$)	41,000

SOURCES OF FUNDING FOR DOI RESTORATION ACTIVITIES

A wide variety of sources provide funding for DOI restoration activities (e.g., bureaus' appropriated base funding; grant funding, funding from the Abandoned Mine Reclamation Fund; funding provided as a result of legal settlements). Each funding source typically has specific goals, timelines, partners, guidelines, rules and/or mandates to implement the restoration projects, which need to be taken into account when evaluating the overall success of the final restoration.

Multiple Bureaus

- **Federal Lands Recreation Enhancement Act (FLREA).** FLREA (P.L.104-134) provides authority for BLM, FWS, NPS, Reclamation, and the USDA Forest Service to collect entrance and expanded amenity fees on federal lands and waters. These fees are to be invested primarily at the collecting sites. FLREA allows the fees to be used for habitat restoration directly related to wildlife-dependent recreation that is limited to hunting, fishing, wildlife observation, or photography. Of the \$260.56 million in FLREA revenues that agencies collected in FY 2011, NPS collected \$172.4 million, BLM collected \$17.4 million, FWS collected \$5.19 million, and Reclamation collected \$0.69 million. In FY 2011, NPS budgeted approximately \$25 million in FLREA funds for habitat restoration. FWS budgeted approximately \$247,000. Fee revenues from BLM management of the Warren Bridge Campground in Wyoming were used to fund several wildlife habitat restoration projects in 2011, including a project to restore native cottonwood trees. This project was designed to replenish Bald Eagle foraging and nesting habitat and other avian habitat. Reclamation has used FLREA revenues to pay for habitat restoration projects such as wood duck and bluebird nesting boxes.
- **Challenge Cost Share (CCS) Program.** The CCS Program works through partnerships to accomplish high priority habitat, recreation and cultural resource work “on-the-ground.” BLM, FWS, NPS and the USFS use appropriated funds to pay for no more than 50% of CCS projects. Eligible private partners include state/local governments, private individuals/organizations, business enterprises, education institutions, non-profit organizations, and charitable groups. Most of BLM’s projects are funded with at least a 1:1 match by state in funds or in-kind contributions from partners. There have been some instances where the program received matches ranging from (1:3) to (1:6). BLM expects to complete habitat restoration projects that benefit bats, birds, deer, elk, and fish while cross-benefitting recreation activities such as hiking, fishing, and hunting in a variety of land designation areas across more than 12 states. FWS has used CCS funds to assist in conservation of coral reef ecosystems through protection and restoration of upland and wetland coastal habitats. One-third of NPS’ CCS funding is set aside for National Trails System projects, supporting work under the National Trails System Act (16 U.S.C. 1241-51).
- **Restoration Fund.** There are two sources of funds for the NRDA Restoration Program: (1) “appropriated funds” received annually from the Congress and (2) “recoveries” received from the entities responsible for natural resource injuries. These funds are maintained and managed in the DOI Restoration Fund, administered by the Office of Restoration and Damage Assessment (ORDA). Over the last several years, the NRDA Restoration Program has received approximately \$6 million in its annual appropriation to help fund damage assessments.

- **Central Hazardous Materials Fund (CHF).** In 1995, Congress created the CHF to allow Interior to better deal with contaminated sites requiring medium to long-term cleanup under the Superfund law. DOI is prohibited by statute from using the Superfund. The CHF enhances the protection of the Interior's interests, lands, resources, and facilities through its multi-bureau clean-up efforts, as well as by working closely with others, including EPA, states, and tribal governments that manage the response to, remediation, and reuse of contaminated sites located on Interior managed lands. The objectives of the CHF are to achieve greater consistency and oversight of site cleanups; promote cost-effective cleanup; conduct cleanup consistent with the National Contingency Plan and bureau land use plans; and pursue cost recovery or cost sharing from parties responsible for the contamination. Annually, the program funds remediation and restoration at approximately 35 sites. The CHF was appropriated \$10.2 million for FY 2011.
- **Great Lakes Restoration Initiative (GLRI).** The Obama Administration established the GLRI in 2009 to restore and protect the Great Lakes region. Comprised of more than 10,000 miles of coastline and 30,000 islands, the Great Lakes provide drinking water, transportation, power, recreation and economic opportunities to 30 million citizens. Led by EPA, the GLRI invests in the region's environmental and public health through a coordinated interagency process. The program focuses on five major restoration priorities: (1) cleaning up toxics and areas of concern, (2) combating invasive species, (3) improving nearshore health by protecting watersheds from polluted run-off, (4) restoring wetlands and other habitats, and (5) improving the information, engagement, and accountability in the program overall. GLRI funds are distributed by EPA and are meant to supplement base funding for federal agencies' Great Lakes activities. Through an interagency agreement with EPA, FWS was allocated approximately \$37.4 million in FY 2011 to implement GLRI priority programs, projects and activities. FWS also received an additional \$10 million in GLRI funding to implement action items from the Asian Carp Control Strategy Framework to stop Asian carp from entering the Great Lakes. The NPS is also a strong partner in carrying out the five major restoration priorities through activities in parks throughout the region. USGS' GLRI contributions are discussed in the Chapter 4.

Box A3-1. Northern California Habitat Restoration

In 1953, the *S.S. Jacob Luckenbach* collided with its sister ship and sank in the Gulf of the Farallones near San Francisco. This vessel was loaded with 457,000 gallons of bunker fuels, which sporadically leaked over the years. In 2002, oil associated with several mystery spills was linked to this vessel; the remaining oil was subsequently removed and the vessel was sealed. Over 50,000 seabirds and shorebirds, including federally threatened marbled murrelets were killed by the leaking bunker fuel between 1990 and 2003. Natural resource trustees (FWS, California Department of Fish and Game, and NOAA) have implemented over \$4 million in habitat restoration and protection projects to address these injured resources. Nesting habitat for rhinoceros auklets was restored on Ano Nuevo Island State Preserve as depicted in these before (May 2004) and after (August 2011) photos.

After non-native vegetation died in a drought, this island was literally blowing away, losing up to 6 feet of topsoil each year. Today, rhinoceros auklets can nest in protected burrows under the restored native vegetation (Steve Hampton, California Fish and Game)



BLM

Receipts from land sales in Nevada have been used to fund conservation, recreation, and restoration-related activities:

- **Burton-Santini Act (P.L. 96-586).** The Act authorizes and directs the Secretary to sell no more than 700 acres of public lands per calendar year in and around Las Vegas, Nevada. The proceeds are to be used to acquire environmentally sensitive land in the Lake Tahoe Basin of California and Nevada.
- **Southern Nevada Public Land Management Act (SNPLMA).** The SNPLMA, as amended, allows BLM to sell certain public lands in Clark County, Nevada, near the city of Las Vegas. Approximately 50,000 acres of public land are within the disposal boundary area. The proceeds are used to fund environmental restoration, conservation, and public recreational projects throughout the state. Land sales have provided more than \$3 billion since passage of the Act in 1998 to projects throughout Nevada, including more than \$300 million for Lake Tahoe Basin restoration, since passage of the Act in 1998. This \$300 million, in conjunction with local, state and private donations, has resulted in more than \$1 billion to restore Lake Tahoe's water clarity and critical natural resources, and enhance public safety through the implementation of hazardous fuels reduction projects to protect lives and property throughout the Lake Tahoe Basin.

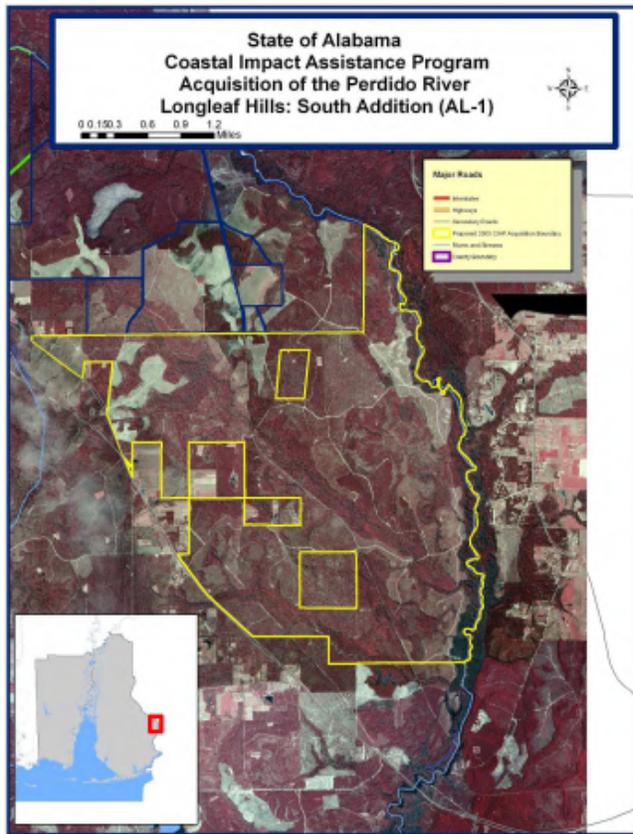
Nevada's natural beauty and unique landscapes are economic engines for the state, and these funds will not only help restore and enhance these special areas for future generations, but the projects will create jobs and provide vital resources to hard hit communities for the benefit of all who live in and visit the state (Secretary Salazar's announcement of \$43 million for Nevada and Lake Tahoe restoration, conservation and recreation projects, 8/16/11).

BOEMRE/FWS

- **Coastal Impact Assistance Program.** Section 384 of the Energy Policy Act of 2005 (P.L. 109-58) established the Coastal Impact Assistance Program (CIAP), authorizing funds to be distributed to Outer Continental Shelf (OCS) oil and gas producing states for the conservation, protection and preservation of coastal areas, including wetlands. Under the CIAP, Secretary Salazar is authorized to distribute, to offshore oil producing states and their coastal political subdivisions (CPS), \$250 million for each of the fiscal years 2007 through 2010. The CIAP directs funding to conserve, protect, and restore coastal areas, including wetlands, and to mitigate the impacts of offshore drilling to natural resources and the public. This money is shared among Alabama, Alaska, California, Louisiana, Mississippi, and Texas and is allocated to each producing state and eligible CPS based upon legislated allocation formulas. CIAP grant-funded projects include enhancement, conservation, mitigation, and restoration of a wide variety of natural resources. In addition to improved environmental quality, many communities also benefit from increased recreational opportunities. This program has been implemented from its inception by MMS/BOEMRE. However, in FY 2012, CIAP was transferred to FWS as the purpose of the CIAP aligns more directly with the mission of the Service.

Box A3-1. Examples of FY 2011 Coastal Impact Assistance Program Projects

Alabama. The project objective was to purchase the remaining acreage of this tract (approximately 4,796 acres) from The Nature Conservancy. BOEMRE awarded a \$6,957,000 Coastal Impact Assistance Program (CIAP) grant to the State of Alabama to be used towards the purchase of 2,782 acres along the Perdido River. The result is conservation and preservation of natural waterway systems, wetland forests and estuarine sea life in the Longleaf Hills and Perdido Bay area of coastal Baldwin County. The Perdido River is one of the highest-quality, free-flowing blackwater river systems in the Gulf Coastal Plain. The forests along the river corridor include slash pine flatwoods, pitcher plant seepage bogs, longleaf pine forests, and Atlantic white cedar swamps. The Perdido River clarity provides high-quality fresh water to Perdido Bay, which is home to an abundant diversity of estuarine life, including dwarf seahorses, dolphins, manatees, and coastal arch grasses. The Perdido River contains numerous, large beach-quality sandbars at nearly every curve in the river. In addition, it will protect and conserve vital wetlands and sensitive habitats in the northern bay area and along the Perdido River. Lands along the Perdido River corridor are utilized by hundreds of species of neotropical migratory birds as feeding and resting sites during spring and fall migrations.



Louisiana: Adolph Thomae Park Shoreline

Restoration. CIAP funds of \$847,000 were awarded to the Texas General Land Office to improve the county park, which is located in the Laguna Atascosa region. With the funds, Cameron County built a bulkhead to stabilize about 1,650 feet of shoreline at Adolph Thomae Park where erosion had been exacerbated by increased currents from the nearby Gulf Intracoastal Waterway, flooding from storms, and frequent barge traffic in the Arroyo Colorado River. With the bulkhead construction, erosion on the shoreline should be reduced by approximately 90% and is expected to protect saline habitat in the Laguna Atascosa National Wildlife Refuge.

California: Removal of Hazards in Coastal Areas. BOEMRE awarded a \$700,000 CIAP grant to the California State Lands Commission for removing hazards in coastal areas of the Santa Barbara Channel. According to BOEMRE Director Bromwich, “This project will help to increase public safety and provide for the cleaning and restoration of these coastal areas.” The CIAP grant will fund a hazards removal program to eliminate old and unusable structures located within or adjacent to state lands at 22 sites along the coastline of Santa Barbara and Ventura Counties. These hazards are obsolete, deteriorating structures that include corroded sheet piling, railroad irons, and electric cables to old pipes. They impede coastal uses and/or pose a potential threat to public health and safety. Many of these hazards are located on lands that are used for commerce, navigation, fishing, recreation, or reserved for open space. The goal of the removal program is to eliminate these potential risks to public health and safety.

As described in the Sources of Funding section, CIAP grants are now managed by FWS.

FWS

The Service's budget includes \$1 billion of permanent appropriations, most of which is provided directly to the states for fish and wildlife restoration and conservation, including:

- **The Appropriations Act of August 31, 1951** (P.L. 82-136, 64 Stat. 693), which authorizes receipts from excise taxes on selected hunting and sporting equipment to be deposited in the Wildlife Restoration Account, as a permanent, indefinite appropriation. Receipts and interest distributed to the Wildlife Restoration Account are made available for use by FWS in the fiscal year following collection.
- **The Wildlife and Sport Fish Restoration Programs Improvement Act of 2000**, (P.L. 106-408) amends the Pittman-Robertson Wildlife Restoration Act and the Dingell-Johnson Sport Fish Restoration Act, authorizing the Secretary of the Interior to provide funding under the Multistate Conservation Grant program for wildlife and sport fish restoration projects identified as priority projects by the Association of Fish and Wildlife Agencies. These high priority projects address problems affecting states on a regional or national basis. It also provides \$200,000 each to the Atlantic States Marine Fisheries Commission, the Gulf States Marine Fisheries Commission, the Pacific States Marine Fisheries Commission, and the Great Lakes Fisheries Commission; and \$400,000 to the Sport Fishing and Boating Partnership Council. The Act provides 12 allowable cost categories for administration of the Act, as well.
- **Wildlife Restoration Trust Fund.** The Federal Aid in Wildlife Restoration Act of 1937, now referred to as The Pittman-Robertson Wildlife Restoration Act, as amended (16 U.S.C. 669-669k), provides federal assistance to the 50 states and territories for projects to restore, enhance, and manage wildlife resources, and to conduct state hunter education programs. The Act authorizes the collection of receipts for permanent-indefinite appropriation to FWS for use in the fiscal year following collection. Funds not used by the states within two years revert to the Service for carrying out the provisions of the Migratory Bird Conservation Act.
- **Fisheries Restoration and Irrigation Mitigation Act of 2000**, (16 U.S.C. 777 note; PL 106-502). Congress recently passed, and the President signed into law, legislation reauthorizing the Fisheries Restoration and Irrigation Mitigation Act (FRIMA) as part of the Omnibus Public Land Management Act of 2009, P.L. 111-11. FRIMA was established in 2000 and has been an important tool for addressing fish screening and fish passage needs in the Pacific Northwest states. Authorization of Appropriations: Expires September 30, 2015
- **The Federal Aid in Sport Fish Restoration Act of 1950**, now referred to as the Dingell-Johnson Sport Fish Restoration Act (16 U.S.C. 777, et seq.), as amended, authorizes assistance by FWS to the 50 states, the District of Columbia, the Commonwealths of Puerto Rico and the Northern Mariana Islands, and the Territories of American Samoa, Guam, and the U.S. Virgin Islands to carry out projects to restore, enhance, and manage sport fishery resources.
- **Aquatic Resources Trust Fund** (26 U.S.C. 9504) authorizes appropriations from the Sport Fish Restoration Account to carry out the Coastal Wetlands Planning, Protection and Restoration Act

of 1990 (16 U.S.C. 3951 et. seq.) provides for three federal grant programs for the acquisition, restoration, management, and enhancement of coastal wetlands in coastal states (including Great Lakes). FWS administers two of the three grant programs for which this Act provides funding, including the National Coastal Wetlands Conservation Grant Program and the North American Wetlands Conservation Grant Program. The latter program receives funds from other sources, as well as from the Dingell-Johnson Sport Fish Restoration program. The U.S. Army Corps of Engineers administers the third grant program that receives funding because of this Act.

FWS also has access to the:

- **Estuary Restoration Act of 2000 (ERA; P.L. 106-457).** The Act promotes restoration of estuary habitat through enhanced coordination of federal and non-federal restoration activities and more efficient project financing. Specifically, the Act established a national program to restore one million acres of estuary habitat; established a federal council of five agencies (includes FWS) to assist in program development; established a National Estuary Restoration Strategy; and authorized federal assistance for restoration projects sponsored by non-federal partners. The Army Corps has traditionally been the only agency to receive funding for project implementation under the ERA. In the 2007 ERA Amendments, all five ERA agencies are now authorized to receive appropriations to carry out restoration projects.

NPS

- **Everglades National Park Protection and Expansion Act of 1989.** As amended, the Act authorizes activities to restore Everglades National Park. The Everglades Forever Act, passed in 1994 and amended in 2003, extends this commitment to cleaning up and restoring all of the Everglades, not just the federal areas.

OSM

- **Abandoned Mine Reclamation Fund.** The Surface Mining Control and Reclamation Act (SMCRA) authorized an Abandoned Mine Land (AML) Reclamation fee based on coal production in order to hold the entire coal industry responsible for reclaiming coal mine lands left abandoned across the country. OSM collects the AML fee, and then distributes the fee receipts to states and tribes for reclamation activities. The current law allows the fees to be used for purposes other than reclamation of abandoned coal mine lands. Therefore, the fees are not necessarily spent on the highest priority AML coal sites. AML Fees are calculated based on the OSM tonnage estimates multiplied by the applicable fee rates—\$0.135, \$0.315, and \$0.9 for underground, surface, and lignite, respectively—through 2012. In 2011, \$269.2 million were projected to be deposited in the AML fund. For 1978 through 2011, the cumulative receipts and interest income total over \$10 billion.

Reclamation

In FY 2011, Reclamation participated in extensive restoration projects through the following four funding mechanisms:

- **California Bay-Delta Restoration Fund.** Title I of P.L. 108-361, the CALFED Bay-Delta Authorization Act (2004), authorized \$389.0 million in federal appropriations for FY 2005-FY 2010, which was extended through 2014 by the Energy and Water Development and Related Agencies Appropriations Act of 2009. The Sacramento–San Joaquin River Delta (Delta) is an integral part of an ecosystem with more than 750 wildlife species and more than 120 species of fish. As a migratory corridor, the Delta hosts two-thirds of the state's salmon and nearly half of the waterfowl and shorebirds along the Pacific flyway. The Bay-Delta system is critical to California's economy because the two rivers that flow into the Bay-Delta provide potable water for two-thirds of California's homes and businesses. It also irrigates more than 7 million acres of farmland on which 45 percent of the nation's fruits and vegetables are grown as part of a \$28 billion agricultural industry.⁴⁶ Using various appropriations before transitioning to the Restoration Fund, the CALFED Bay-Delta Program (1995) was established for the purpose of developing a comprehensive, long-term solution to the complex and interrelated problems in the Bay-Delta. The program's focus is on the health of the ecosystem and improving water management. In addition, this program addresses the issues of uncertain water supplies, aging levees, and threatened water quality. A component of the CALFED Program is the Ecosystem Restoration Program (ERP). The goal of the ERP is to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. In addition, the ERP, along with the Water Management Strategy (WMS), is designed to achieve or contribute to the recovery of covered and at-risk species found in the Bay-Delta and, thus, achieve goals in the Multi-Species Conservation Strategy (MSCS). Improvements in ecosystem health will reduce the conflict between environmental water uses and other beneficial uses and allow more flexibility in water management decisions. Environmental Water Account (EWA) agencies are coordinating EWA actions with the ERP to ensure that EWA is consistent with the ERP goals.
- **Central Valley Project (CVP) Restoration Fund.** This fund was established by the Central Valley Project Improvement Act, Title XXXIV of P.L. 102-575 (1992) to provide approximately \$53 million in funding from project beneficiaries for habitat restoration, improvement and acquisition, and other fish and wildlife restoration activities in the CVP area of California. Revenues are derived from payments by project beneficiaries and from donations. Extensive coordination and cooperation between FWS and Reclamation, in conjunction with the Restoration Fund Roundtable, helps ensure efficient and effective implementation of the Act. The Restoration Fund Roundtable includes Central Valley water users, hydropower representatives, and interested groups.
- **San Joaquin River Restoration Fund.** This \$9 million fund was established to implement the provisions described in the Settlement for the National Resources Defense Council (NRDC) et al., v. Rodgers lawsuit. The Settlement's two primary goals are: (1) to restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining

⁴⁶ A Reclamation Fact Sheet on California water is available on-line at <http://www.usbr.gov/newsroom/presskit/factsheet/factsheetdetail.cfm?recordid=3001>

populations of salmon and other fish; and (2) to reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.

- **Lahontan Valley and Pyramid Lake Fish and Wildlife Fund.** The Fallon-Paiute Shoshone Indian Water Settlement Act (P.L. 101-618) establishes the Fund to be administered by FWS for use in restoring Lahontan Valley wetlands and recovering the endangered and threatened fish of Pyramid Lake. Section 206(a) authorizes the acquisition of water rights for restoring wetlands in Lahontan Valley. The Act stipulates that sufficient water rights be acquired to restore and sustain, on a long term average, approximately 25,000 acres of primary wetland habitat within Nevada's Lahontan Valley.

Box A3-2. West Shore Northern Pike Habitat Restoration Project in Green Bay Ecosystem

To help restore the northern pike, an important predator fish in the Green Bay ecosystem, the Fox River/Green Bay Natural Resource Trustee Council implemented the West Shore Northern Pike Habitat Restoration Project. This project was funded by NRDAR settlement funds, and included the establishment of vegetated riparian buffers in the Suamico/Little Suamico watershed to improve spawning and rearing habitat for adult and young northern pike. A total of 5.8 acres of vegetated buffers were established, along with 20 acres of spawning wetlands. In addition to providing northern pike habitat, this project has also helped improve water quality in Green Bay by filtering sediment, nutrients, and pesticides present in surface runoff. The Fox River/Green Bay natural resource trustees include FWS, Oneida Tribe of Indians of Wisconsin, Menominee Indian Tribe of Wisconsin, Wisconsin Department of Natural Resources, Michigan Department of Environmental Quality, Michigan Department of Natural Resources, Michigan Attorney General's Office and NOAA.



Young northern pike (Colette Charbonneau).

Appendix 4. EXAMPLES OF LOCAL AND REGIONAL ECONOMIC CONTRIBUTIONS

Interior activities can provide a significant economic contribution to local communities. In some particularly economically distressed rural areas where jobs are scarce, Interior-managed lands provide a steady source of jobs and income. Even in more prosperous metropolitan areas, Interior-managed lands bring in tourist money and create local jobs. The examples below summarize economic contributions associated with visitor spending in local areas for selected NPS and FWS units (additional rural case studies can be found in Chapter 5). These case studies demonstrate the differing levels of economic support that Interior activities provide to various communities. The following examples examine several factors, including local area population and labor force, and annual visits to Interior lands. Generally, NPS and FWS units provide the most economic support in areas with high levels of visitation and an overall small labor force.

NATIONAL PARK SERVICE EXAMPLES

Golden Gate National Recreation Area (CA)

Golden Gate National Recreation Area is located in the San Francisco metropolitan area with land in Marin, San Francisco, and San Mateo Counties. The three urban counties have a combined population of around 1.8 million (Census, 2010), with an average unemployment rate across the three counties of 6.9 percent. In 2010, Golden Gate National Recreation Area attracted over 14.2 million visitors, and visitors spent an estimated \$264.2 million. Of this total, \$109.7 million came from non-local visitors. Total visitor spending supported 3,445 local jobs and \$402.5 million in economic output. Even in a large metropolitan area like San Francisco, Interior’s activities can provide a significant economic contribution to the economy and bring in important tourism dollars.

Table A4-1. Golden Gate NRA Totals, 2010

Visits (2010)	Area Unemployment Rate (%, April 2012)	Visitor Spending (\$ millions)	Estimated Total Jobs Supported (jobs)
14,271,503	6.9 (p)	264.15	3,445

Source: NPS; Bureau of Labor Statistics; (p) preliminary.

Grand Canyon National Park (AZ)

Grand Canyon National Park is located in Coconino and Mojave Counties in northern AZ. These geographically large counties have a combined population of around 334,607 (Census, 2010), a combined labor force of 155,642 and an unemployment rate of 8.1 percent. In 2010, Grand Canyon National Park attracted 4.4 million visits (all from non-locals), and visitors spent an estimated \$415.8 million. These expenditures supported 6,167 local jobs and \$428.9 million in economic output. Grand Canyon National Park provides substantial economic contributions to the Northern Arizona region.

Table A4-2. Grand Canyon NP Totals, 2010

Visits (2010)	Area Unemployment Rate (%, April 2012)	Visitor Spending (\$ millions)	Estimated Total Jobs Supported (jobs)
4,388,386	8.1 (p)	415.80	6,167

Source: NPS; Bureau of Labor Statistics; (p) preliminary.

Gettysburg National Military Park (PA)

Gettysburg National Military Park is located in Adams County, PA. The county has population of around 100,000 (Census, 2010), a labor force of 54,481 and an unemployment rate of 5.9 percent. In 2010, Gettysburg National Military Park attracted over a million visits, and visitors spent an estimated \$63.6 million. Of this total, \$63.1 million came from non-local visitors. Total visitor spending supported 1,058 local jobs, and \$71.4 million in economic output. Gettysburg National Military Park provides an important source of economic activity in Southeast Pennsylvania.

Table A4-3. Gettysburg NP Totals, 2010

Visits (2010)	Area Unemployment Rate (%, October 2011)	Visitor Spending (\$ millions)	Estimated Total Jobs Supported (jobs)
1,031,554	5.9	63.57	1,058

Source: NPS; Bureau of Labor Statistics.

Fort Sumter National Monument (SC)

Fort Sumter National Monument is located in Charleston County, SC. The urban county has population of around 350,209 (Census, 2010), a labor force of 176,181 and an unemployment rate of 7 percent. In 2010, Fort Sumter National Monument attracted 797,713 visits, and visitor spent an estimated \$18.4 million. Of this total, \$16.4 million came from non-local visitors. Total visitor spending supported 238 local jobs and \$19.3 million in economic output. Fort Sumter National Monument provides important long-term employment opportunities in Charleston County, SC.

The NPS also conducted a study in 2000 to estimate the economic value of a visit to Fort Sumter. The goal of this study was to estimate the user-day values for a visit to an historic fort. The study relied on a stated preference approach and estimated that the mean economic value (or willingness-to-pay) for a Fort Sumter visit was \$8.26 with a 95 percent confidence interval of (\$7.79, \$8.80). The economic value represents a measure of value over and above the amount individuals actually spend to visit the Fort.

Table A4-4. Fort Sumter NM Totals, 2010

Visits (2010)	Area Unemployment Rate (%, April 2012)	Visitor Spending (\$ millions)	Estimated Total Jobs Supported (jobs)
797,713	7.0 (p)	18.41	238

Source: NPS; Bureau of Labor Statistics; (p) preliminary.

U.S. FISH AND WILDLIFE SERVICE EXAMPLES

Deer Flat National Wildlife Refuge (ID)

Deer Flat National Wildlife Refuge, established in 1909, is one of the nation's oldest refuges. Located southwest of Boise, Idaho, the refuge includes the Lake Lowell sector (10,588 acres) and the Snake River Islands sector. The Snake River Islands sector contains about 800 acres on 101 islands. These islands are distributed along 113 river miles from the Canyon-Ada County Line in Idaho to Farewell Bend in Oregon. Lake Lowell is an irrigation project reservoir that provides an oasis for wildlife in this arid region.

The refuge provides a mix of wildlife habitats from the open waters and wetland edges of Lake Lowell, to the sagebrush uplands around the lake, to the grasslands and riparian forests on the Snake River islands. With assistance from local growers, the refuge also cooperatively farms 240 acres to provide food for wildlife.

The variety of habitats makes Deer Flat NWR an important breeding area for resident and migratory birds and other wildlife. The refuge is also a significant resting and wintering area for birds migrating along the Pacific Flyway. The late-summer drawdown of the lake reveals mud flats that provide food for a variety of resident and migratory wildlife. Historic wintering waterfowl populations averaged over 300,000 birds. The Snake River Islands (101 islands along 113 miles of river) provide a diversity of habitats from small wetlands to sagebrush uplands. Several islands house heron rookeries and gull colonies, and provide feeding and resting spots for migratory birds. The refuge is popular with the public. Each year, more than 100,000 people visit to hunt, fish, photograph and view wildlife, learn about natural resources through displays and programs at the visitor center, and walk the nature trail.

- The refuge received 228,182 visitors in 2011.
- Visitors participated in fishing trips (over 46,000), waterfowl hunts (over 5,000), upland game hunts (over 1,100), and big game hunts (75).
- Non-consumptive visits included photography (1,583), wildlife observation (27,852), environmental education and interpretation (16,836), and general recreation (122,426).

Table A4-5. Deer Flat NWR Totals, 2011

Visits	Area Unemployment Rate (April, 2012)	Visitor Spending (\$ millions)	Estimated Total Jobs Supported (jobs)
228,182	Canyon County – 9.1 % (p)	7.8	99

Source: FWS; Bureau of Labor Statistics; (p) preliminary.

J.N. “Ding” Darling National Wildlife Refuge (FL)

The J.N. “Ding” Darling National Wildlife Refuge is located on the subtropical barrier island of Sanibel in the Gulf of Mexico. The refuge is part of the largest undeveloped mangrove ecosystem in the United States. It is world famous for its spectacular wading bird populations. Travel author Arthur Frommer recently ranked Sanibel Island as his all-time favorite travel destination – ahead of Bali, Paris, and St. John – because the Refuge makes the island a mecca for “thousands of birds of every species.”

The refuge includes over 6,300 acres of habitat, with 2,825 acres designated as Wilderness, and 950 acres of submerged habitat in the Tarpon Bay Recreation Area. The refuge informs and educates over half a million visitors annually in its 12,000 square foot Environmental Education Center and four-mile long Wildlife Drive. The refuge is home to 238 bird species, 51 species of reptiles and amphibians, and 32 species of mammals native to southwest Florida.

The refuge consists of the following habitat types: estuarine habitat consisting of open water, seagrass beds, mud flats and mangrove islands; and interior freshwater habitats consisting of open water ponds, cordgrass marshes, and West Indian hardwood hammocks. Two brackish water impoundments totaling 850 acres managed for wading birds, fisheries and estuarine health. A variety of wildlife-dependent recreational activities are available to visitors, including salt water fishing, wildlife viewing, canoeing and kayaking, and auto-tours, biking and hiking trails.

- The refuge received 674,312 visitors in 2011.
- While all visitors were considered to engage in wildlife viewing, the Refuge estimated that there were over 29,000 fishing visits, approximately 350,000 trail visits, 74,000 boat launches and bike visits, and 108,000 interpretive program visitors.
- Based on data collected by the National Survey of Hunting, Fishing, and Wildlife Recreation, the Service estimates that visitors to the refuge directly spent nearly \$14.0 million in 2011. These direct expenditures contributed a total of \$26.5 million to the local economies and supported 264 jobs.
- In addition to contributing directly to the local economy, the refuge’s presence also service to provide important ecosystem services to the community. Although not easily quantified, the refuge’s undeveloped presence serves as a natural barrier for the developed portions of the island as well as the greater Fort Myers area.

Table A4-6. J.N. "Ding" Darling NWR Totals, 2011

Visits	Area Unemployment Rate (April, 2012)	Visitor Spending (\$ millions)	Estimated Total Jobs Supported (jobs)
674,312	Lee County – 8.5% (p)	13.9	264

Source: FWS; Bureau of Labor Statistics; (p) preliminary.

Parker River National Wildlife Refuge (MA)

Parker River National Wildlife Refuge was established in 1942 primarily to provide feeding, resting, and nesting habitat for migratory birds. Located along the Atlantic Flyway, the refuge is of vital stopover significance to waterfowl, shorebirds, and songbirds during pre- and post-breeding migratory periods. The refuge occupies in part, the southern three-fourths of Plum Island, an 8 mile long barrier island near the city of Newburyport, Massachusetts.

The refuge consists of 4,662 acres of diverse upland and wetland habitats including sandy beach and dune, shrub/thicket, bog, swamp, freshwater marsh, saltwater marsh and associated creek, river, mud flat, and salt panne. These and other refuge habitats support varied and abundant populations of resident and migratory wildlife including more than 300 species of birds and additional species of mammals, reptiles, amphibians, insects, and plants. A variety of wildlife-dependent recreational activities are available to visitors, including hunting and fishing, wildlife viewing, canoeing and kayaking, and general beach recreation.

- The refuge received 251,312 visitors in 2011.
- While all visitors were considered to engage in wildlife viewing, the Refuge estimated that there were 1,400 migratory bird hunting visits, 11,000 salt water fishing visits, 35 big game hunting visits, and 238,877 visitors who participated in non-consumptive activities such as wildlife viewing, photography, and other types of recreation, including general beach recreation.
- Based on data collected from the National Survey of Hunting, Fishing, and Wildlife Recreation, the Service estimates that visitors to the refuge directly spent \$7.3 million in 2011. These direct expenditures contributed a total of \$13.1 million to the local economies and 113 jobs.
- In addition to contributing directly to the local economy, the refuge's presence also serves to provide important ecosystem services to the community. Although not easily quantified, the refuge's undeveloped presence most notably on Plum Island serves to protect the infrastructure of the city of Newburyport along with the Towns of Newbury, Rowley, and Ipswich from flooding and erosion associated with storm surges and extreme weather events.

Table A4-7. Parker River NWR Totals, 2011

Visits	Area Unemployment Rate (April, 2012)	Visitor Spending (\$ millions)	Estimated Total Jobs Supported (jobs)
251,312	Essex County – 6.2% (p)	7.3	113

Source: FWS; Bureau of Labor Statistics; (p) preliminary.

Crab Orchard National Wildlife Refuge (IL)

Located west of Marion, Illinois, on the northern edge of the Ozark foothills, Crab Orchard National Wildlife Refuge is one of the largest refuges in the Great Lakes/Big Rivers Region. Established in 1947, the 43,890-acre Refuge includes three man-made lakes totaling 8,700 surface acres. The Refuge landscape also includes hardwood and pine forests, croplands, grasslands, wetlands, rolling hills, and rugged terrain with slopes of 24 percent. The 4,050-acre Crab Orchard Wilderness, the first wilderness area designated in the State of Illinois, is within the Refuge.

Crab Orchard National Wildlife Refuge has four primary purposes:

- **Wildlife conservation:** The Refuge exists to protect, enhance, and manage natural resources and the Refuge landscape through an ecosystem approach that sustains optimum populations of migratory waterfowl, native fish and wildlife species, and threatened and endangered wildlife.
- **Agriculture:** The Refuge seeks to provide opportunities for and encourage agricultural uses that help attain wildlife conservation goals, benefit the local economy, and are compatible with other Refuge purposes.
- **Industry:** The Refuge manages an industrial complex fully utilized by compatible tenants that conform to prescribed safety, health, environmental, and maintenance standards.
- **Recreation:** The Refuge provides safe and equitable public use programs and facilities so that visitors have a wholesome, enjoyable recreational experience and gain an appreciation for fish and wildlife resources, natural and cultural history, outdoor ethics, and environmental awareness

Public use opportunities at the Refuge include an auto tour route, hiking trails, hunting, fishing, wildlife observation and photography, environmental education and interpretation, boating, swimming, camping, and picnicking.

- The refuge received 714,918 visitors in 2011.
- The refuge estimates that there were 11,404 waterfowl hunting visits, 2,788 upland game hunting visits, 6,305 big game hunting visits and 170,634 fishing visits.
- Based on data collected by the National Survey of Hunting, Fishing, and Wildlife Recreation, the Service estimates that recreational visitors to the refuge directly spent nearly \$7.9 million in 2011. These direct expenditures contributed a total of \$15.0 million to the local economies and supported 150 jobs.
- In addition to contributing directly to the local economy, the refuge’s presence also service to provide important ecosystem services to the community.

Table A4-8. Crab Orchard NWR Totals, 2011

Visits	Area Unemployment Rate (April, 2012)	Visitor Spending (\$ millions)	Estimated Total Jobs Supported (jobs)
714,918	Williamson County – 7.5% (p)	7.9	150

Source: FWS; Bureau of Labor Statistics; (p) preliminary.

BUREAU OF LAND MANAGEMENT EXAMPLES

Spring Valley Wind Project

This 150-megawatt wind generation farm will be located on 7,673 acres of the public lands in north Spring Valley, about 30 miles east of Ely, Nevada. The project will consist of 75 wind turbines, electrical substation and utilize an existing 230 kilovolt (kV) transmission line for distribution. The Record of Decision for this project was signed in October 2010 and construction is well underway. Construction during FY2011 consisted primarily of infrastructure including project buildings and roads. Turbine construction is planned for spring of 2012 with the goal of having the wind farm in operation by fall of 2012. Construction activities are estimated to directly support over 80 jobs annually, which produces approximately \$6.5 million in labor income. The total economic contribution related to the construction of this project (including direct, indirect, and induced effects) is estimated to support approximately 570 jobs annually in the region with labor income exceeding \$35 million.

Moab Area Examples

North Area Cooperative Community non-motorized trail projects

Moab BLM has partnered with Grand County to create at least eight projects immediately north of Moab City to enhance bicycling and hiking opportunities on a series of paved trails. Moab BLM has performed all the environmental work on these projects, constructed interpretive kiosks, and has been an integral part of the planning and implementation process. According to Grand County Engineer Mark Wright, these projects would not have been accomplished without the involvement of Moab BLM. Monies spent or obligated to date on the paved path projects total \$16,026,000, of which \$1,031,000 is from Moab City or Grand County funds, with the remainder (\$14,657,000) from federal and/or state funding sources. The \$16 million spent or obligated through the end of FY 2011 on these projects has contributed (or will contribute) \$24.5 million in direct and indirect income effects and support 224 jobs in the local economy.

Mountain Bike Trail Construction

During 2011, volunteers donated nearly 11,000 hours to constructing 40 miles of new single-track mountain bike routes on BLM lands in Grand County, Utah. A joint Grand County-BLM entity known as Trailmix planned and supervised this new construction. BLM helps fund this group and is a major partner in its operation. The availability of new trails attracts both return visitors and new visitors to the Moab area for mountain-biking, and helps maintain Moab's position as one of the nation's premier mountain bike destinations.

Commercial Filming and Professional Photography in the Moab, Utah Area

The Moab area has been featured in numerous professional photographs and feature films, ranging from Stagecoach in 1939 to the recent 127 Hours and John Carter. Filming and photography in the Moab area take place on BLM lands, as well as private, state and National Park Service-managed lands. In 2010, filming and photography on BLM land in the Moab area contributed an estimated \$4.3 million dollars to the local economy and supported an estimated 99 jobs. Commercial filming and professional photography provide additional employment and income opportunities for local residents, as well as benefits to local businesses.

Appendix 5. COASTAL VISITATION TO NATIONAL PARKS AND NATIONAL WILDLIFE REFUGES

Visitation to coastal national parks and national wildlife refuges contribute to local economies in many coastal states. Units of the NPS in coastal areas welcomed nearly 83 million visitors in 2010. These visitors spent a total of over \$3.3 billion across the United States. Estimated economic contributions from coastal recreation to NPS sites were significant in many states, with \$895 million in economic output in California, \$764 million in Florida, \$515 million in New York, and \$398 million in Massachusetts. Visitation to coastal parks supported thousands of jobs in many states, including over 8,500 jobs in Florida, over 7,900 jobs in California, over 4,300 jobs in New York, and over 4,100 jobs in Massachusetts.

National Wildlife Refuges in coastal areas of the United States welcomed nearly 20 million visitors in 2011. Expenditures from these visits total \$770 million. These expenditures contribute to economic output in many states, with contributions in Oregon, Florida, Alaska, and North Carolina of over \$100 million each. These expenditures also support jobs in coastal communities, with over 2,800 jobs supported in Oregon, over 2,500 in Florida, over 2,300 in Alaska, and over 1,100 in North Carolina.

Table A5-1 and Table A5-2 provide additional details.

Table A5-1. Economic Contribution of Recreation at Coastal Parks

State	Visitation	Expenditures (\$ millions)	Estimated Economic Contribution* (\$ millions)	Estimated Number of Jobs Supported* (jobs)
Alaska	1,872,454	58.3	67.6	721
California	23,812,831	637.2	895.0	7,940
Florida	9,222,981	582.0	763.5	8,577
Georgia	802,772	41.5	50.5	628
Hawaii	3,120,399	198.5	252.3	2,615
Indiana	2,150,345	63.5	70.8	934
Louisiana	391,019	19.4	28.1	278
Maine	2,504,208	186.3	232.8	3,189
Maryland	1,306,592	86.6	102.6	1,225
Massachusetts	7,809,165	308.8	397.8	4,154
Michigan	1,796,006	143.4	186.7	2,498
Minnesota	113,996	12.6	13.3	198
Mississippi	1,070,937	29.7	31.1	430
New Jersey	1,764,151	32.2	44.0	376
New York	11,967,307	370.0	514.9	4,327
North Carolina	3,029,184	156.4	176.1	2,467
Ohio	92,944	7.2	10.4	145
South Carolina	797,713	18.4	19.3	268
Texas	753,205	50.8	69.1	809
Virginia	4,999,203	159.2	195.7	2,471
Washington	3,326,486	131.0	143.5	1,887
Wisconsin	156,945	17.3	18.0	292

* Estimates of economic contributions and jobs supported are calculated as the sum of effects for individual parks in each state.

Table A5-2. Economic Contribution of Recreation at Coastal Refuges

State	Visitation	Expenditures (\$ millions)	Estimated Economic Contribution* (\$ millions)	Estimated Number of Jobs Supported* (jobs)
Alabama	40,000	1.1	1.7	21
Alaska	1,397,669	146.3	230.7	2,320
California	1,006,000	44.3	88.1	674
Connecticut	25,000	0.4	0.7	5
Delaware	201,748	4.0	6.5	67
Florida	3,405,805	134.2	255.3	2,536
Georgia	131,042	2.9	5.3	54
Hawaii	395,411	30.8	53.0	481
Louisiana	573,362	14.8	24.0	266
Maine	382,620	10.0	16.9	195
Maryland	242,700	5.9	9.9	92
Massachusetts	302,065	7.3	13.1	112
Michigan	350	0.0	0.0	0
Mississippi	10,478	0.2	0.3	4
New Hampshire	20,000	0.5	0.9	9
New Jersey	415,000	13.7	24.1	205
New York	455,235	14.4	25.9	220
North Carolina	1,806,000	60.0	103.4	1,140
Ohio	146,783	3.4	5.9	67
Oregon	5,259,626	151.3	269.1	2,833
Rhode Island	403,702	13.0	22.6	221
South Carolina	526,794	18.1	29.4	343
Texas	793,518	28.9	53.5	532
Virginia	1,602,656	48.4	82.2	861
Washington	326,949	12.3	22.5	204
Wisconsin	119,100	3.6	6.2	76

* Estimates of economic contributions and jobs are calculated using visitation and expenditure totals for each state with state-level multipliers.

Appendix 6. ECONOMIC CONTRIBUTIONS ASSOCIATED WITH LAND ACQUISITIONS AND INFRASTRUCTURE INVESTMENTS

Land Acquisition: Output and employment contribution estimates for land acquisition are derived using national-level multipliers, assuming that land owners receive funds when lands are purchased and that 50% of these funds are spent. Much of the money land owners receive is likely to go into savings, be used to pay off loans, or be subject to tax. Of the 50% of funds assumed to be spent, 40% is modeled as a change in household income, and 10% is assumed to go to service providers associated with real estate transaction costs or monitoring and administration of easements. The change in household income is modeled for households with annual income of \$100,000-\$150,000 (the average household income for the national model in IMPLAN is \$106,630). 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 374 (management, scientific, and technical consulting services) is used to model the services associated with land acquisition. Temporal issues also 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 for the landowner's purchases. Contributions are typically reported for one year, and only a very small portion of the funds received by land sellers is likely to be spent in a year; monitoring expenditures will also often be incurred in perpetuity whereas transaction costs are all up-front.

Table A6-1. Land Acquisition

Bureau	FY2011 Actual (billions, \$2011)	Output (billions, \$2011)	Employment (Jobs)
National Park Service	0.05	0.05	384
U.S. Fish and Wildlife Service	0.05	0.05	384
Bureau of Land Management	0.02	0.02	154
Interior, Appraisal Services	0.01	0.01	85
Total	0.14	0.14	1,007

Table A6-2. Infrastructure

Bureau	Construction FY2011 Actual (billions, \$2011)	Maintenance FY2011 Actual (billions, \$2011)	Output (billions, \$2011)	Employment (Jobs)
National Park Service	0.210	0.697	2.533	17,399
U.S. Fish and Wildlife Service	0.021	0.191	0.590	4,081
Bureau of Land Management	0.005	0.091	0.265	1,841
Bureau of Reclamation	0.564	0.424	2.784	18,784
Indian Affairs	0.210	0.084	0.831	5,566
Wildland Fire Mgt		0.006	0.017	118
USGS - surveys, investigations, research		0.030	0.072	617
Central Utah Project	0.027		0.078	515
Total	1.036	1.524	7.171	48,921

Source: FY 2013 Department of the Interior Budget in Brief and Bureau of Reclamation data. The estimates of economic contributions and employment are based on national-level multipliers.

Appendix 7. METHODS

ECONOMIC BENEFITS VS. ECONOMIC ACTIVITY

Economic benefits are a measure of the extent to which society is better (or worse) off because of a given policy or action, and includes both market and non-market benefits. Economic activity analysis measures expenditures from a policy, program or event and how those dollars cycle through the economy. This can include economic contribution analysis, which tracks the gross economic activity attributed to a policy or event in a regional economy, and economic impact analysis, which measures net changes in new economic activity in a regional economy resulting from a policy or event. Input-output techniques are commonly used for both types of economic activity analysis. The glossary of terms from Watson et al., (2007) is reprinted below.⁴⁷

Table A7-1. Glossary of Economic Terms

Term	Definition
Economic Activity	Dollars spent within region that are attributable to a given industry, event, or policy.
Economic Activity Analysis	An analysis that tracks the flow of dollars spent within a region (market values). Both economic impact and economic contribution analysis are types of economic activity analysis.
Economic Contribution	The gross change in economic activity associated with an industry, event, or policy in an existing regional economy.
Economic Impact	The net changes in new economic activity associated with an industry, event, or policy in an existing regional economy.
Economic Benefit	A net increase in total social welfare. Economic benefits include both market and non-market values.
Cost-Benefit Analysis	An economic efficiency analysis that measures net changes or levels in social welfare associated with an industry, event, or policy. This type of analysis includes both market and non-market values and accounts for opportunity costs.
Input-Output Model	A specific methodological framework that characterizes the financial linkages in a regional economy between industries, households, and institutions. Input-Output only measures economic activity and does not include any non-market values.

This report utilizes economic contribution analysis to track the economic contribution of Interior activities as those expenditures cycle through the economy. The following sections describe input-output models in more detail.

⁴⁷ 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.

INPUT/OUTPUT MODELS

In general, input-output (I/O) models provide a snapshot of economic activity at a given point in time for a given region. Estimates produced by I-O models reflect the pattern and level of economic activity within a state or the nation and indicate the significance of current regional economy. Economic input-output models capture the complex interactions of consumers and producers of goods and services in local economies. Economies are complex webs of interacting consumers and producers in which goods produced by one sector of an economy become inputs to another, and the goods produced by that sector can become inputs to yet other sectors. Thus, a change in the final demand for a good or service can generate a ripple effect throughout an economy.

Estimated model results are analogous to a company's reports on gross sales revenue, rather than profits, the distinction being that profits typically define the value of an activity to businesses. It should also be noted that the estimated output impacts do not account for the value of changes in the quantity or quality of environmental amenities, as these amenities are not typically bought and sold in markets. Nor do these models account for external costs.

This analysis employs a widely used input-output (I/O) software and data system known as IMPLAN for estimating the output (sales), employment (jobs) and income effects arising from the interdependencies and interactions of economic sectors and consumers. IMPLAN draws upon data collected by the Minnesota IMPLAN Group from multiple Federal and state sources including the Bureau of Economic Analysis, Bureau of Labor Statistics, and the U.S. Census Bureau. IMPLAN contains 2010 data for up to 440 economic sectors and 9 income brackets. The IMPLAN platform was developed by USFS and is now privately maintained and updated by the Minnesota IMPLAN Group (MIG).

Because of the way industries interact in an economy, activity in one industry affects activity levels in several other industries. For example, if more visitors come to an area, local businesses will purchase extra labor and supplies to meet the increase in demand for additional services. The income and employment resulting from visitor purchases from local businesses represent the *direct* effects of visitor spending within the economy. Direct effects measure the net amount of spending that stays in the local economy after the first round of spending; the amount that doesn't stay in the local economy is termed a *leakage* (Carver and Caudill, 2007). In order to increase supplies to local businesses, input suppliers must also increase their purchases of inputs from other industries. The income and employment resulting from these secondary purchases by input suppliers are the *indirect* effects of visitor spending within the economy. Employees of the directly affected businesses and indirectly affected input suppliers use their incomes to purchase goods and services. The resulting increased economic activity from new employee income is the *induced* effect of visitor spending. The indirect and induced effects are known as the secondary effects of visitor spending.

Note that IMPLAN accounts for profits as a portion of the total revenues received by firms in an industry. Output represents the value of industry production in producer prices, and IMPLAN considers the full amount firms receive for their products as the relevant shock to model.

Multipliers (or *Response Coefficients*) capture the size of the secondary effects, usually as a ratio of total effects to direct effects (Stynes and White, 1998). The sums of the direct and secondary effects describe the total economic impact of visitor spending in the local economy.

The economic effects and multipliers from the IMPLAN model are reported for the following categories:

Total Industry Output equals the value of all sales to intermediate (business to business) and final demand (consumers, exports).

Employment (jobs) is defined as average annual employment.⁴⁸ It includes full and part time, temporary, and seasonal jobs as well as multiple jobs held by a single person. Jobs do *not* equal Full Time Equivalents. 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.”

MULTIPLIERS

In general, I/O models rely on “multipliers” that mathematically represent the relationship between a change in one sector of the economy (e.g., expenditures by recreationists) and the effect of that change on economic output, income, or employment in other sectors of the economy (e.g., suppliers of goods and services to recreationists). Multipliers developed from I/O models vary by economic sector and the geographic area of analysis (i.e., they are not same if one is looking at the local, state, regional, or national level).

Unless otherwise noted, each of the following economic impact summaries relies on state-level multipliers to develop output and employment impacts within each state’s borders. A multiplier for one state does not account for “spillover” effects accruing in other states. Thus, the sum of effects across 50 states will be less than the overall nationwide impacts. In contrast, when a national-level multiplier is used, spillover effects among states are taken into account, providing a better estimate of nationwide impacts.

The IMPLAN modeling system was used to derive the multipliers that capture the secondary (indirect and induced) effects needed to determine the economic impacts of Interior activities.

Limitations

When using multipliers (or response coefficients), the following should be kept in mind:

- IMPLAN is used to examine “marginal” changes: Estimated jobs and income coefficients are valid only for relatively small changes to a particular area’s economy. Any stimulus large enough to change the underlying structure and trade relationships of the economy will necessarily change the relationships quantified in the coefficients and new models would need to be specified and run.
- Response coefficients (multipliers) are not generic: These coefficients reflect a unique underlying economic structure. They are not, therefore, generally applicable to issues and geographies different from those under which they were originally estimated.
- In reality, job and income effects would be “lumpy”: Response coefficients generated for large geographic areas may contain well developed and complex economies. At a smaller scale, investments in rural, simple economies would necessarily have smaller response coefficients and thus a smaller job and income response.

⁴⁸ 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.

Formulas for Calculating Economic Contributions

Economic contributions are generally calculated using the following formulas:

(Total expenditures on activity) x (expenditure multiplier) = Total Economic Output Contributions

(Total expenditures on activity) x (employment multiplier) = Total Employment Contributions

Economic Impacts of Recreation – An Example Calculation

Recreation is an activity in which Interior plays a significant role. Spending associated with recreation activities on Interior-managed lands can generate a substantial amount of economic activity in local and regional economies. Recreationists spend money on a wide variety of goods and services and trip-related expenditures may include expenses for such items as food, lodging, equipment and transportation. Businesses and industries that supply the local retailers where the purchases are made also benefit from expenditures by recreationists. For example, a family may decide to purchase a set of fishing rods for an upcoming vacation. Part of the total purchase price will go to the local retailer, say a sporting goods store. The sporting goods store in turn pays a wholesaler who in turn pays the manufacturer of the rods. The manufacturer then spends a portion of this income to cover manufacturing expenses. In this way, each dollar of local retail expenditures can affect a variety of businesses at the local, regional and national level.

The income and employment resulting from visitor purchases from local businesses represent the *direct effects* of visitor spending within the economy. In order to increase supplies to local businesses, input suppliers must also increase their purchases of inputs from other industries. The income and employment resulting from these secondary purchases by input suppliers are the *indirect effects* of visitor spending within the local economy. The input supplier's new employees use their incomes to purchase goods and services. The resulting increased economic activity from new employee income is the *induced effect* of visitor spending. The indirect and induced effects are known as the secondary or multiplier effects of visitor spending. Multipliers capture the size of the secondary effects, usually as a ratio of total effects to direct effects. The sums of the direct and secondary effects describe the total economic impact of visitor spending in the local economy.

The examples below provide a general description of the underlying methodology used to calculate the economic impact estimates of recreation expenditures to Interior managed lands. Estimated values specific to visits to Bureau of Reclamation sites in Colorado present a numerical example.

Bureau of Reclamation Example:

1. Estimate Total Recreation Expenditures

(Number of visits to Interior recreation sites in State Y) × (Average spending per visit)
= Total recreation expenditures associated with Interior recreation sites in State Y

Number of visits = 3,482,242

Average spending per visit = \$53.38

$(3,482,242 \text{ visits}) \times (\$53.38 \text{ average spending per visit}) = \$185,882,078$ in Total Expenditures

2. Estimate of Total Output Effect

(Total recreation expenditures associated with Interior recreation sites in State Y) × (Output multiplier for recreation expenditures) = Total Economic Impact for Interior recreation sites in State Y

Output multiplier derived from IMPLAN = 2.28

$(\$185,882,078) \times (2.28) = \underline{\$423,811,138}$ in Total Economic Impact

3. Estimate of Employment Effects

(Total recreation expenditures associated with Interior recreation sites in State Y) × (Employment multiplier per \$1,000,000 in recreation expenditures) = Total Employment effects

Employment multiplier per \$1M in recreation expenditures derived from IMPLAN = 14.48

$(\$185,882,078 / 1,000,000) \times (14.58) = \underline{2,710}$ Total Jobs Supported

National Park Service Example - Great Sand Dunes NM:

Recreation visits in 2008 = 273,903

Total recreation spending = \$9,761,231 (average per visitor spending of \$35.64)

Output multiplier derived from IMPLAN = 1.34

Estimate of percent of spending “captured” in local area based on survey data = 78%

$\$9,761,231 \text{ total recreation spending} \times 78\% \text{ capture rate} \times 1.34 = \$10,266,912$ in Total Economic Impact

IMPLAN VERSION 2.0 VS. VERSION 3.0

A new version of IMPLAN (Version 3.0) was released in November 2009 to replace the previous version (Version 2.0) that was released over ten years prior. The new version 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 has been criticized for its use of non-survey based RPCs, which have been shown to produce higher estimates than survey-based data for a particular site under consideration. 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. Koontz, Loomis, and Winter (2011) show that the differences in the Version 3.0 software can result in lower estimates of employment and income effects for tourism impacts.

APPROACHES FOR ESTIMATING OUTPUT AND EMPLOYMENT EFFECTS OF FISCAL STIMULUS

The economic analysis of the effects of fiscal policy typically focuses on what is called the fiscal multiplier. The most common definition of this multiplier is the magnitude of the change in economic activity caused by a change in fiscal policy. For example, a GDP fiscal spending multiplier of 1.5 means that a \$1 increase in government spending leads to a \$1.50 increase in GDP. The term multiplier refers to the broad effects of government spending and taxes on overall economic activity, not just on those households or businesses directly targeted by fiscal policy.

The CEA has used two methods to estimate the impact of the fiscal stimulus provided via the American Recovery and Reinvestment Act (ARRA): one approach uses estimates of the effects of fiscal policy from standard macroeconomic forecasting models; the second involves a comparison of the actual behavior of GDP and employment relative to a plausible, statistically determined baseline (for details see Executive Office of the President, Council of Economic Advisers, “Estimates of Job Creation from the American Recovery and Reinvestment Act of 2009,” May 2009). CEA further assumed that a one-percent increase in GDP corresponds to a three-quarter percent increase in employment (about one million jobs). Using these multipliers, CEA estimated that \$1 million in government spending creates 10.9 jobs; equivalently, creating one job requires \$92,136 of government spending. In contrast, \$1 million provided to states for fiscal relief is estimated to create 8.6 jobs, or \$116,603 per job. Job creation was assumed to occur over the three fiscal quarters, starting with the quarter in which spending occurs. The \$92,163-per-job figure is assumed to exceed the wages paid for the job retained or created, and includes the effects of increased hours or productivity in current jobs, increased non-wage compensation, and in non-compensation income (rents, profits, etc.). Jobs fall into three categories:

- Direct jobs created in the actual government-sponsored project.
- Indirect jobs created at suppliers for the project.
- Induced jobs created elsewhere in the economy from increased spending by workers and firms.

The Congressional Budget Office (CBO) has also estimated the impacts associated with ARRA. CBO used various economic models and historical data to develop its estimate of the way in which output and employment are affected by increases in outlays and reductions in revenues under ARRA.

CBO grouped the provisions of ARRA into general categories and assigned high and low multipliers to each. CBO estimates that a one-time increase of \$1 in federal purchases of goods and services in one calendar quarter last year raised GDP above what it would have been otherwise by a total of \$0.50 - \$2.50, over several quarters. That cumulative multiplier of \$2.50 at the high end of the range comprises

Fiscal Year 2011

increases in GDP of roughly \$1.45 in the quarter when the federal spending occurred, roughly 60 cents in the following quarter, and roughly 45 cents in later quarters combined. The range of the output multiplier for transfer payments to state and local governments for infrastructure was 0.4 - 2.2; the range for transfer payment to state and local governments for other purposes was 0.4 - 1.8 (Congressional Budget Office, “Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from July 2011 Through September 2011,” November 2011).

The CEA and CBO estimates guidelines differ from the approach taken in this report in several notable respects.

- The CEA and CBO estimates were developed to assess the impact of a discrete change in GDP from stimulus spending, and were not intended to be applied to agencies’ baseline activities. Nevertheless, CEA notes that the ratio of GDP to total employment is not far off from their numbers at \$105,000 per job.
- The CEA and CBO approaches do not account for differences in wages and other costs across project types or regions.

Over the past three years, there has been a resurgence in economic research on the impacts of fiscal policy, as implemented through direct government spending and tax rates. This resurgence is due in large part to the severe global economic downturn and the massive fiscal stimulus programs put in place in many countries as a response. The literature provides a wide range of multiplier estimates, ranging from -1 to 3 (Wilson, 2012 provides a concise summary). However, Wilson states that this range is not so much a reflection of disagreement over an underlying parameter as it is a reflection of one of the key lessons of this research—that there is no single multiplier that can be applied mechanically to all situations. The impact depends on the type of fiscal policy changes in question and the environment in which they are implemented.

Appendix 8. DATA SOURCES AND NOTES

General

- Estimated DOI Inputs as a Percent of National Sector – DOI contributions as a percentage of the entire industry at the national level. For hydropower, wind power, and geothermal the percentage represents the DOI capacity as a percentage of total capacity.
- Table 1-1 and Table 2-1 capture no 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.
- American Recovery and Reinvestment Act (ARRA) funding is not included. The economic impacts of ARRA have been estimated by the President’s Council of Economic Advisers, the Congressional Budget Office, and others.

OSM

- The majority of the Office of Surface Mining’s activities related to reclamation of abandoned mine lands are encompassed by funding from the AML fund. The impact of these funds is captured in the entry for Grants and Programs reported earlier in the table.

Indian Affairs, BIA, and BIE

- Sales volumes and values for BIA’s oil, gas and coal activities are based on data from ONRR. Lacking multipliers specific to oil, gas and coal activities on Reservations, we used a multiplier based on BLM’s onshore oil, gas and coal activities at the national level.
- BIA’s economic contributions from oil, gas, and coal are assumed to be proportional to BLM’s.
- Drilling costs for oil, gas and dry wells were calculated for each state where Indian wells were completed in FY 2011. 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 data were taken from
- “The Oil & Gas Producing Industry in Your State” (IPAA, August 2011).
- The ratio of dry holes to total wells completed was calculated for each state where Indian wells were drilled. These results were used to estimate the number of dry holes associated with Indian wells completed in each state.
- A single entry is provided for BIA timber and grazing activities; to date, no grazing data were provided.
- “Other minerals” were assumed to be construction aggregate (sand and gravel; crushed stone). The value of output was estimated by assuming the 2011 royalty collections of \$35 million were derived from a 5% royalty. This implies a commodity value of about \$698 million. This estimated value represents about 4.12% of the total value of about \$17 billion of construction aggregates produced in the US in 2010 (source: Sand and Gravel, Crushed Stone, U.S. Geological Survey, Mineral Commodity Summaries, January 2011).
- 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.

- 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 16 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) 2007 Census of Agriculture, Volume 2, American Indian Reservations. The Census of Agriculture does not provide complete coverage of all reservations. Where information was not available from the Census of Agriculture, irrigated acreage information was from "Numerous Issues Need to Be Addressed to Improve Project Management and Financial Sustainability," GAO-06-314, Mar 27, 2006. Irrigated acreage data were combined with average crop revenue per acre for irrigated acreage calculated based on data in the 2007 Agricultural Census. The agricultural revenue values in the Census were indexed to 2011 dollars using the NASS food grain prices received index. The multipliers used were based on IMPLAN grain farming sector.

BLM

- The method used by BLM to estimate the contributions from oil and gas activities is based on adjusting the sum of the value of the gross output plus drilling costs to remove 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 adding drilling costs to the gross output value (prior to making an adjustment to derive final demand) 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 BOEMRE's figures for offshore production, using a different approach. This complicates a direct comparison between the onshore and offshore analyses. 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. Final demand is taken to be the sum of these two items less interindustry sales.
- Figures reported for hardrock/locatable minerals were developed by the Office of Policy Analysis, assuming a total sales value of U.S. hardrock and other locatable minerals production of \$41.4 billion (USGS Mineral Commodity Summary 2011) and 12.8 total jobs (direct, indirect and induced) per \$1 million and an output multiplier of 2.43 from IMPLAN Sector 27 "Mining and quarrying other nonmetallic minerals". It was assumed that 15.3 percent of this production value (and hence 15.3 percent of the total jobs) is related to mining on Federal lands (15.3% is from DOI (1993) "Economic Implications of a Royalty system for Hardrock Minerals" Table 3.2 p. 35).
- The minerals included in the locatables category were as follows: barite, beryllium, bentonite, Fuller's earth, kaolin, copper, diatomite, feldspar, gemstones, gold, iron ore, lead, mica, molybdenum, nickel, perlite, platinum, salt, sand, silica, silver, sulfur, talc, and zinc. Non metallic minerals included gypsum, pumice, and crushed rock.

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- Economic contributions associated with locatable minerals are not included in the state-level summaries because sufficient information was not available to apportion the contributions among the states.
- BLM revised the methodology used in the FY2011 report to estimate the economic contributions associated with public lands grazing. The methodology changes result in a substantial increase in the estimated employment, labor income, and output estimated to from BLM forage. Had this methodology been used in the FY 2010 report, the economic contribution from BLM forage would have been substantially higher. Specifically, two changes in the analysis increased the impacts between 2010 and 2011: 1) the methodology used in 2009 and 2010 counted all livestock in each state. The revised analysis focuses on a specific subset of livestock to better reflect the animals that actually graze on BLM lands. 2) The previous analysis of employment from BLM forage did not include individuals who are unpaid or family laborers. In some areas this accounts for up to 35% of the total labor on ranches and farms. The revised methodology includes these workers. That figure was derived by developing a ratio between paid and unpaid/self-employed individuals for each of the relevant states. This methodology more accurately reflects the economic contribution that grazing on public lands makes to the ranching sector more generally. The analysis assumes that the grazing operations included in the Census of Agriculture are representative of those using BLM forage. 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 sales value of BLM forage is based on the total sale price of livestock times the proportion of animal-unit months grazed on BLM-managed lands to total animal-unit months.
- 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 includes fuelwood, posts, poles, etc. While the sales are negotiated, the BLM tries to follow the stipulation that sale prices will not go below 10% of the estimated market value. Stewardship Program timber sales are associated with BLM bartering goods (timber products) for services (land treatments) done outside contractors. The product value is used to offset the total cost of service work in the contract.
- Contributions related to building and operating wind and solar energy projects were derived using the Jobs and Development Economic Impact (JEDI) models produced by the National Renewable Energy Laboratory (NREL). For FY 2011, six solar projects were under construction (four in California and two in Nevada), one wind power project was under new construction (Nevada), and one wind project was retrofitted with new turbines (California). Wind projects in the operations phase were located in four states: California, Nevada, Utah and Wyoming.
- The prices used for determining the value of coal leased by BLM were as follows: Alabama – \$50.49 per short-ton; Colorado -- \$45.58 per short ton; Kentucky – \$50.49 per short-ton; Montana -- \$16.31 per short-ton; New Mexico – \$43.71 per short-ton; North Dakota -- \$17.46 per short-ton; Ohio -- \$35 per short-ton; Utah -- \$37.19 per short-ton; and Wyoming -- \$13.01 per short-ton. These represent average values based on reported quantities and sales values for coal produced from Federal leases in these states.

- The prices used to determine the value of the oil produced from on shore Federal leases were: Alabama – \$92.57/barrel; Alaska – \$ 93.70/barrel; Arkansas – \$92.57/barrel; California – \$95.95/barrel; Colorado – \$84.71/barrel; Illinois – \$71.45/barrel; Indiana – \$ 71.80/barrel; Kansas – \$86.24/barrel; Kentucky – \$92.57/barrel; Louisiana – \$92.57/barrel; Michigan – \$92.57/barrel; Mississippi – \$ 92.57/barrel; Montana – \$ 86.67/barrel; Nebraska – \$92.98/barrel; Nevada – \$81.33/barrel; New Mexico – \$88.32/barrel; North Dakota – \$84.87/barrel; Ohio – \$92.57/barrel; Oklahoma – \$88.53/barrel; Pennsylvania – \$92.57/barrel; South Dakota – \$83.74/barrel; Texas – \$91.48/barrel; Utah – \$78.70/barrel; Wyoming – \$81.47/barrel.
- The prices used to determine the value of the natural gas produced from on shore Federal leases were: Alabama – \$4.00/m cubic feet; Alaska – \$5.25/m cubic feet; Arkansas – \$4.00/m cubic feet; California – \$4.13/m cubic feet; Colorado – \$4.22/m cubic feet; Kansas – \$4.30/m cubic feet; Kentucky – \$4.00/m cubic feet; Louisiana – \$11.03/m cubic feet; Michigan – \$4.00/m cubic feet; Mississippi – \$4.00/m cubic feet; Montana – \$3.18/m cubic feet; New Mexico – \$4.34/m cubic feet; New York – \$4.00/m cubic feet; North Dakota – \$4.02/m cubic feet; Ohio – \$5.32/m cubic feet; Oklahoma – \$4.24/m cubic feet; Pennsylvania – \$4.00/m cubic feet; South Dakota – \$3.43/m cubic feet; Texas – \$5.21/m cubic feet; Utah – \$4.34/m cubic feet; Virginia – \$4.00/m cubic feet; West Virginia – \$4.00/m cubic feet; Wyoming – \$4.15/m cubic feet.

Reclamation

- FWS trip-related multipliers and average visitor expenditures were used to estimate impacts for Reclamation’s recreation activities. The analysis relies on 1998 Reclamation visitation data (the most recent year available) and applies current expenditures per day, output multipliers, and employment multipliers from FWS.
- The values reported for Irrigation represent the gross value of the crops produced using irrigation water supplied by Reclamation. This value overstates the actual production attributable to Reclamation, as some level of crop production would occur without the irrigation water delivered by Reclamation, and water is only one of many inputs into agricultural production. The multipliers used were developed for the 17-western state Reclamation service area. Reclamation is currently revising the methodology used to calculate the economic and jobs impact of Reclamation activities. Reclamation is utilizing GIS imagery to document the type and acreage irrigated crops. These data, combined with state-level yields and nation-wide prices provided by the USDA, will be used to quantify net crop value. Reclamation will then use these values to model the economic contributions and jobs supported by Reclamation activities. Reclamation currently has completed approximately 20% of this project and expects to have enough completed projects in 2013 to extrapolate an accurate estimate.
- The economic contribution delivering M&I water was estimated by using total 2005 M&I contract amounts in acre-feet and multiplying the total amounts by recent (2006) average market M&I water rates for major urban areas. At this time, actual water deliveries are not reported on a Reclamation-wide basis. The most recent year for which actual M&I deliveries were reported on a Reclamation-wide basis is 1992. Therefore, these values should also be treated as estimates. For the FY 2011 report, no new information was available, so the FY2010 value was indexed using the CPI values for water, sewer, and trash collection services. These values are: Dec 2011 – 182.758; Dec 2010 – 174.543; Dec 2009 – 165.204. The economic contributions associated with Reclamation supplied

M&I water are associated with the activities associated with operating water, sewage and other treatment and water delivery systems.

- Hydroelectricity generated at Reclamation facilities was valued using regional retail prices adjusted by a factor of 26%, to reflect the fact that Reclamation functions more as a power wholesaler than a retailer. Wholesale values for the power markets supplied by Reclamation were not readily available. Of these markets, we were able to examine prices for California, where in 2011 the daily weighted-average wholesale price ranged from \$21.92/MWh to \$56.29/MWh, with an average for the year of \$36.51/MWh. Over this same period, California retail prices ranged from \$82.80/MWh (Transportation) to \$152.40/MWh (Residential), with an average across all sectors of \$130.90/MWh. The average wholesale price represented 26% of the average retail price. For each Reclamation project, we used EIA state-level price data to calculate a regional average price for the project’s Power Market Administration. We then applied the factor of 26% to the regional retail price to estimate the wholesale value of the project’s power. For comparison purposes, in 2009 the wholesale prices represented 28% of the average retail price. The retail/wholesale power price ratio is calculated using EIA calendar year data, as only calendar year retail price data were available.

BOEMRE (formerly MMS, currently BOEM and BSEE)

- 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. Total OCS related spending and employment in the U.S. economy is estimated with ratios and multipliers from the recently updated version of the MAG-PLAN model which incorporates 2010 IMPLAN data.
- The basis for calculating the FY2011 impacts of OCS oil and gas activity is the sales value of FY2011 OCS oil and gas production as published by the Office of Natural Resources Revenue. 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 domestic economic impact and individual state impacts. Because 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, we omit any spending impact from this portion of total sales. That leaves slightly less than \$52.4 billion of OCS stimulated direct spending in the U.S. economy.

	Industry Spending	Government Revenue	Domestic Spending from Profits	Total
Total Output Multiplier	2.26	3.19	3.12	NA
Total Jobs per Direct Million Dollars Spent	14.48	16.86	26.59	NA
Total Spending (\$ millions)	55,867	38,826	26,706	121,398
Total Jobs	358,000	205,000	173,000	737,000

- We assumed direct industry spending (i.e., capital and operating expenditures) was 40% of total sales value in FY2011.⁴⁹ We then applied MAG-PLAN multipliers for direct, indirect, and induced spending (a total multiplier of 2.26) to estimate the total domestic output associated with this direct spending. In addition, we estimated jobs sustained by industry spending using the ratio from MAG-PLAN of 14.48 total jobs per million dollars of direct offshore oil and gas industry spending, resulting in a figure of 358,000 jobs sustained.
- Government OCS revenue originates from leasing revenue and taxes. A portion of OCS leasing revenue is allocated to grant and revenue sharing programs including state sharing in the 8(g) zone, GOMESA, Land and Water Conservation Fund (LWCF) and the Historic Preservation Fund (HPF). The remaining 98 percent of leasing revenue and all of the tax revenue go into the Treasury General Fund. To calculate the total output from the spending of government revenues, we used the MAG-PLAN derived Federal government spending multiplier (based on IMPLAN data) of 3.19. We converted government spending to jobs using the IMPLAN ratio of 16.86 total jobs per million dollars of direct spending by the Federal government. Leasing and tax revenue are divided between states based on historical federal funds distributions.
- Industry after-tax profits are split between retained earnings and dividends to shareholders using EIA data. We split the retained earnings into money that would flow to the rest of the world and money that would stay in the U.S. Using EIA data on oil and gas expenditures, we determine that 47% of expenditures will be spent in the rest of the world and the remaining 53% of the expenditures will occur in the U.S.⁵⁰ Splitting retained earnings this way treats funds that go to the rest of the world as a leakage from the economy that have no discernable direct spending impacts in the U.S. Moreover, the domestic retained earnings are either saved or are already included in industry spending, so we assigned no additional economic impact to retained earnings beyond the direct spending. As with foreign shares of retained earnings, we allocated a portion of total dividends to foreign shareholders. Of the dividends paid out domestically, we used the IRS dividend tax rate of 15% to calculate taxes. Of the after-tax domestic dividends, we assume, based on two empirical studies, that 25% is reinvested and the remaining dividends are spent by shareholders.⁵¹ We group reinvested dividends with retained earnings and assume they have no additional economic impact beyond the \$1.4 billion in direct spending. Since domestic retained earnings and reinvested dividends have no multiplier effect the total output from domestic retained earnings is only \$8.733 billion and \$1.425 billion from reinvested dividends. To calculate the corresponding employment impacts, we used the MAG-PLAN ratio from oil and gas industry spending of 4.18 direct jobs per million dollars spent. The only revenue from profits that we associate with creating multiplier economic impacts is the tax revenue from dividends and the spending from domestic dividends. The tax revenue from dividends is treated in the same way as government revenues. We based the total impact from the spending of domestic dividends on the average of the multipliers of the consumer sectors in IMPLAN (sectors 320-425). Likewise, we used the IMPLAN ratio of 26.59 total jobs per million dollars of consumer spending to calculate the employment effects.

⁴⁹ This assumption is based on the results of BOEM's in-house leasing model, IMODEL

⁵⁰ 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>>.

⁵¹ Rough estimate using the following papers as sources: Baker, Malcolm, Stefan Nagel, and Jeffrey Wurgler. "The Effect of Dividends on Consumption." http://www.people.hbs.edu/mbaker/cv/papers/Effect_of_Dividends.pdf>. Rantapuska, Elias. "Do Investors Reinvest Dividends and Tender Offer Proceeds?" http://papers.ssrn.com/Sol3/papers.cfm?abstract_id=675981>.

- Additional analysis was required to estimate the distribution of economic impacts by state. For the industry spending category, the MAG-PLAN model reports the economic impacts that occur in each of the five Gulf of Mexico (GOM) states while aggregating the remainder of the U.S. Since MAG-PLAN has the breakout of economic impact (direct spending, total output, and total jobs) for the GOM states, we applied the percentages for each individual state to the FY2011 industry spending data to calculate the impacts in each of the GOM states. For the remainder of the U.S., we used Bureau of Labor and Statistics (BLS) data on employment by state for each industry sector that MAG-PLAN identifies as having meaningful levels of activity (at least 1% of activity) outside the GOM states.⁵² We weighted the BLS state employment data by the contribution of each sector to total industry spending from MAG-PLAN to give us the distribution of economic impacts from industry spending by state. Next, we allocated the spending outside the GOM states according to the new BLS-derived distribution.
- 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 Census Bureau.⁵³
- In order to split the revenues from retained earnings and reinvested dividends, we determined what portion of spending would occur in onshore oil and gas activity and what would occur in offshore activity. Using EIA data, we determined that 73% of the retained earnings and reinvested dividend spending would occur in onshore oil and gas activities and the remaining 27% would occur offshore.⁵⁴ Because a portion of the profits earned offshore are reinvested onshore, we calculate the impact of onshore spending based on BLS data for onshore oil and gas production. The retained earnings and reinvested dividends that were spent on offshore activities were distributed to states using the same methodology as the offshore industry spending category discussed above. We allocated the spending of domestic dividends by state using data from the Census Bureau on the amount of interest income earned in each state and distributed accordingly.⁵⁵
- 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.

Additional Notes for Grants and Payments

- The total grants and payments reported in Table 1-1 and Table 2-1 represent all grants and payments for bureaus and Interior-wide programs in FY 2011, including current and permanent PILT payments

⁵² <http://www.bls.gov/cew/>

⁵³ 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>>.

⁵⁴ 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>>.

⁵⁵ U.S. Census Bureau, American Community Survey, Table B19054: Interest, Dividends or Net Rental Income: 2010. <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_10_1YR_B19054&prodType=table>.

and mineral revenue payments. State-level FY 2011 grants and payments data were obtained from the DOI Office of Budget for the grants and payments analyzed in this report. The FY 2013 Budget in Brief reports actual FY 2011 grants and payments totaling \$4.66 billion. Table 1-1 includes a total of \$4.18 billion in grants and payments. Variances between the two figures can be attributed to the use of estimates for certain grant and payment totals at the time the Budget in Brief is printed, and exclusion of program administration costs in grant awards.

- The national-level analysis of grants and payments by bureau included in Chapter 2 uses national-level multipliers for the appropriate sectors. The state-level analysis of employment impacts related to grants and payments included in Appendix 2 only includes those categories listed above 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 are one of the Federal Government's greatest sources of non-tax receipts. These revenues 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 offshore royalties were included in the category of Energy & Minerals for the national and state-level analyses. Existing BOEMRE models are not structured to allocate output impacts from energy and mineral activities between states.
- The \$4.18 billion total of FY 2011 grants and payments (displayed in Table 1-1 and Table 2-1) does not include \$12 billion in leasing revenues and corporate taxes that flow to the Treasury as a result of Interior's offshore mineral activities. These revenues are included in the BOEMRE totals.
- 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 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.
- States receive nearly 50 percent of the revenues associated with mineral production on Federal public lands within their borders. Alaska is the one exception, which receives a 90 percent share. 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.
- The Grants and Payments category in Table 1-1 and Table 2-1 includes mineral revenue payments to states associated with onshore production, and grant programs funded by offshore leasing and other sources of revenues.
- 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 BOEMRE section above.

Additional Notes for Payroll Impacts

- Total domestic jobs supported by Interior in Table 1-1 and Table 2-1 represent additional jobs above and beyond Interior employees.
- For Table 1-1 and Table 2-1, 2011 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, 2011.
- The number of employees in each bureau as of 2011 pay period 17 is as follows: BLM = 12,065; Indian Affairs = 9,445; BOEMRE = 1,783; Reclamation = 5,364; FWS = 10,193; NPS = 26,783; OSM = 536; USGS = 9,309; Other DOI Offices = 3,857.
- The calculation of the economic contributions associated with DOI payroll adjusts the total value of payroll for each state to account for taxes and savings rates using state-level data. These disposable income values (payroll – savings and taxes) are then used to calculate the economic impacts. This differs from the method used in last year’s report, in which disposable income was assumed to be 66% of the payroll values for all states.
- For total and bureau-level payroll contributions shown in Table 1-1 and Table 2-1, a national multiplier was used to estimate the employment contributions of Interior payroll, equaling 12.9 jobs per \$1 million.
- For state-level salary effects shown in Tables A2-1 and A2-2, 2011 payroll data and state-level multipliers were used. Since state multipliers do not capture leakages, 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.
- The category “Other Interior Offices” shown in Table 2-1 includes the Office of the Secretary, the Office of the Solicitor, and the Office of the Inspector General. Insular Affairs is included in the Office of the Secretary.
- Some DOI bureaus, such as NPS, report payroll impacts in separate publications such as “*Economic Benefits to Local Communities from National Park Visitation and Payroll, 2010.*” The payroll numbers presented in the NPS report differ somewhat from those in the DOI report due to the fact that DOI used Department-wide FY 2011 payroll data from the central human resources data system and used a different set of national-level multipliers.

Additional Notes for Recreation

- In Table 1-1, the value of the national sector was taken to be \$746.2 billion, the 2010 direct output of the travel and tourism industry, as measured by the output of goods and services sold directly to visitors (source: Bureau of Economic Analysis Travel and Tourism Satellite Accounts).
- 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.
- U.S. territories and other areas in which the U.S. maintains land, including parks, monuments, and refuges are included for NPS but not for FWS in this analysis. 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, the MGM 2010 report, and unpublished data for FY 2010 from Stynes (2011) for site-level impacts of visitor spending (in Chapter 5); for BLM sites, Forest Service expenditure data were used; Reclamation expenditures were also 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. Table A8-1, Table A8-2, and Table A8-3 provide additional details. For BLM the assumptions that were used were based on *Spending Profiles of National Forest Visitors, NVUM Four Year Report* by Stynes and White, 1998.
- The source of the NPS visitation, employment, and output information is Stynes (2011). In May 2012 we received updated visitation figures from the NPS Statistical Abstract for the following areas: Alaska, American Samoa, California, Colorado, New York, and the Virgin Islands. This increased visitation by 406,460 relative to the totals shown in Stynes. NPS did not provide an updated employment or output contribution analysis, thus the employment and output contributions associated with these 406,460 visits are not reflected in the estimates presented in the report. We did not attempt to independently develop output and employment estimates to accompany these 406,460 visits because we did not have specific expenditure profiles for the locations of these visits. However, as a rough approximation, these visits would support a total of approximately 200 jobs. This represents less than one percent of the total number of NPS supported jobs.
- The jobs data in Stynes (2011) includes fractional values, and the sum of the jobs column in Table A2-3 displays rounding error. When the jobs figures for each area are rounded to units, the total appears to be 172,024. The accurate tally is 172,022. Table A2-3 contains a footnote to this effect.
- Reclamation does not have current visitation information readily available. In most cases, project recreation sites are managed by Reclamation partners, including both Federal and non-Federal entities. The most recent comprehensive effort to collect visitation data and estimate benefits was in 1992. Therefore, the best available visitation data for recreation are from 1992. The estimates presented in this report should be considered as approximate. Reclamation has been developing a database for Recreation sites managed by Federal and non-Federal partners that may begin to yield better data on visitation in the future.
- FWS used 2008 IMPLAN data and FY2011 visitation numbers; NPS used 2009 IMPLAN data and calendar year 2010 visitation numbers.
- Calculations for NPS relied on a similar approach to what was used for as BLM, but visitor segment, average persons per party, and spending profiles were derived from NPS data sources. In addition the MGM2 generic multipliers were used instead of IMPLAN state-specific multipliers (2008 NPS MGM2 Report, <http://web4.msue.msu.edu/mgm2/default.htm>). NPS visitation and economic contribution data are from FY2010, the most recent information available.
- 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.
- Table A2-3 presents a state-by-state summary of the employment and total economic impacts of recreation visits for NPS, FWS, BLM, and Reclamation.

Table A8-1. BLM Spending Profiles (Based on Spending Profiles of National Forest Visitors)

National Average Visitor Shares							
Segment	Non-local Day	Non- local Onsite	Non-local Offsite	Local Day	Local Onsite	Local Offsite	Non- Primary
Share	11%	9%	17%	44%	3%	1%	15%
Visitor Spending/Party Trip	\$61.87	\$218.48	\$542.26	\$32.48	\$163.02	\$210.61	Not Available
Visitor Spending/Party Trip	\$65.07	\$229.77	\$570.28	\$34.16	\$171.44	\$221.49	Not Available
Number Persons/vehicle	2.6	2.8	2.7	2.2	2.9	2.5	Not Available

Source: Stynes and White, 1998.

Table A8-2. FWS Refuge Visitor Days and Average per Day Trip-Related Expenditures

State	Refuge Visitor Days	Average per Day Trip-Related Expenditures
Alabama	876,674	\$34.56
Alaska	1,129,353	\$135.71
Arizona	385,799	\$73.61
Arkansas	862,276	\$28.11
California	3,564,589	\$57.11
Colorado	60,042	\$69.96
Connecticut	19,281	\$20.28
Delaware	155,598	\$26.01
Florida	2,934,440	\$51.07
Georgia	218,436	\$28.66
Hawaii	694,434	\$100.97
Idaho	283,108	\$45.54
Illinois	962,225	\$25.50
Indiana	163,727	\$13.19
Iowa	1,514,895	\$24.50
Kansas	214,947	\$29.42
Kentucky	30,850	\$26.20
Louisiana	816,211	\$33.45
Maine	301,516	\$33.82
Maryland	385,004	\$31.43
Massachusetts	821,036	\$31.19
Michigan	88,146	\$28.59
Minnesota	1,242,646	\$37.61
Mississippi	247,793	\$23.12
Missouri	334,453	\$25.07
Montana	491,229	\$80.99
Nebraska	169,894	\$26.07
Nevada	137,466	\$66.04
New Hampshire	57,073	\$34.99
New Jersey	468,149	\$42.67
New Mexico	185,602	\$54.60
New York	504,886	\$40.90
North Carolina	1,525,131	\$43.07
North Dakota	295,954	\$51.30
Ohio	113,206	\$29.67
Oklahoma	1,669,363	\$27.78
Oregon	4,431,594	\$37.31
Pennsylvania	122,731	\$21.64
Rhode Island	311,355	\$41.89
South Carolina	721,467	\$44.46
South Dakota	269,857	\$71.84
Tennessee	775,685	\$22.58
Texas	867,657	\$47.26
Utah	42,620	\$68.82
Vermont	55,530	\$25.79
Virginia	1,292,915	\$39.12
Washington	722,172	\$48.83
West Virginia	60,077	\$28.07
Wisconsin	1,125,963	\$39.72
Wyoming	259,294	\$95.32
United States	34,984,347	

Source: FWS

Table A8-3. NPS Spending Profiles

Spending category	Visitor Segment						
	Local Day Trip	Non-local Day Trip	NPS Lodge	NPS Campground	Back-country	Motel-Outside Park	Camp-Outside Park
Motel, hotel, B&B	0.00	0.02	157.57	0.83	3.02	104.82	0.16
Camping fees	0.00	0.00	1.24	18.09	1.99	0.24	25.33
Restaurants & bars	12.61	19.37	73.42	13.86	7.35	62.45	16.56
Amusements	4.56	9.25	29.11	9.99	5.75	20.62	15.21
Groceries	6.08	6.86	14.06	16.32	5.71	15.29	12.63
Gas & oil	8.75	18.97	22.27	24.59	12.73	22.60	23.82
Local transportation	0.55	1.97	14.11	4.42	1.20	9.19	2.12
Retail Purchases	7.80	13.16	28.78	13.27	8.94	27.21	19.69
Total	40.36	69.60	340.55	101.39	46.69	262.41	115.51

Source: NPS (2011) Economic Benefits to Local Communities from National Park Visitation and Payroll, 2010 (p. 3)

Appendix 9. COMPARISON TO PREVIOUS INTERIOR ECONOMIC CONTRIBUTION REPORTS

This is the third Economic Contribution report produced by DOI, and primarily presents data from FY 2011. The first Economic Contribution report was released by Interior in December 2009, and relied on data from 2008. The second Report was released in June 2011 and relied primarily on data from FY 2010. All of these reports rely on generally similar methodological approaches. However, some changes in modeling have been made since the first report to improve the estimates for certain commodities. Therefore, comparisons of estimates across the reports are difficult because underlying modeling may be changing simultaneously with economic data such as production and prices, making it difficult to determine the underlying reason for the change in economic contribution estimates. Keeping these notes of caution in mind, changes in total value and contribution estimates of DOI activities are shown below:

- In general, comparing FY 2010 and FY 2011, the value of the commodities and other inputs to production associated with Interior's activities increased by 6% in nominal terms from \$136 billion to \$144 billion. This change can largely be attributed to commodity price changes and changes in the quantity of inputs produced.
- The number of jobs supported by Interior related activities changed from about 2.2 million to 2.4 million, an increase of 9%. Economic output contributed increased from about \$363 billion to \$385 billion, an increase of 6%.

As noted above, differences in estimates from one year to the next result in some part from underlying economic conditions. Economic growth in the United States was modest in 2011, with an increase in nominal GDP of 1.7% between 2010 and 2011. Changes in the value of production and economic contributions of Interior's activities are affected by economic factors that change from one year to the next, including price changes and changes in the total quantity of the good or service produced. Some economic factors that influence the estimates include:

- Changes in price of a good or service (see Appendix 8 for more information about sales prices for different commodities included in the report). Price changes result in different production values for commodities from year to year.
- Changes in the total quantity of the good or service produced. Changes in quantity produced also affect total value of production for a given commodity.
- Future efforts will attempt to show more information on trends in price and quantity of DOI activities over time.

Changes in modeling and assumptions used for certain estimates can also influence differences in estimates from one year to the next. Some of the major changes in modeling and assumptions between the FY 2010 and FY 2011 reports include:

Fiscal Year 2011

- Improvements in the methodology used to model BLM's grazing contributions (see Appendix 8 for additional details).
- Changes in the underlying economic structure of local economies between 2009 and 2010, reflected in the updated IMPLAN data.

Errata

The jobs figure reported for the Bureau of Reclamation in the previous report (FY 2010) was erroneously reported as 415,978 jobs. This figure should have been 357,069 jobs. The source of the errors were in the employment estimates for M&I water, listed as 78,479 jobs, which should have been 32,296 jobs and in the employment estimates for hydropower which were listed as 19,581 and should have been 7,126.