

RECLAMATION

Managing Water in the West

Bureau of Reclamation Renewable Energy Update

Fiscal Year 2014, Q1



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Executive Summary

The Bureau of Reclamation Renewable Energy Update identifies Federal and non-Federal renewable energy projects currently online or in development on Reclamation land, facilities, and water bodies and highlights current Reclamation renewable activities. The update provides Reclamation-wide and regional summaries, renewable energy portfolios, and project updates as well as a listing of WaterSMART Grant projects that have a renewable energy component.

The quarterly update is a compilation of monthly updates submitted by regional offices, with input received from area offices. Reclamation personnel, including Steve Melavic, Rick Clayton, Robert Ross, Jeffrey Ticknor, and Donald Bryce, were instrumental in developing this document.

Renewable Activities

Reclamation has a long and successful history providing renewable, clean, reliable, and affordable hydropower to its customers. As the operating environment has evolved over the past century, Reclamation has adapted, leveraging new technologies and partnerships to meet the Nation's water and energy needs.

One significant partnership in this effort was brought to fruition through the 2010 Memorandum of Understanding for Hydropower (MoU),¹ signed by the Department of the Interior (through Reclamation), the Department of Energy (DOE) (through the Office of Energy Efficiency and Renewable Energy), and the Department of the Army (through the Corps of Engineers). Through the MoU, the three Federal agencies have partnered to improve and expand sustainable hydropower generation in the United States.

Examples of current renewable energy activities are outlined below. Each activity operates under the auspices of the MoU and supports Reclamation's Sustainable Energy Mission, detailed in *The Bureau of Reclamation Sustainable Energy Strategy*.²

¹ The MoU is available at: <http://www.usbr.gov/power/SignedHydropowerMOU.pdf>. The Two-Year Progress Report is available at: <http://www.usbr.gov/power/hydropower-mou/HydropowerMOU.pdf>. Currently, the three agencies are in the process of completing an updated action plan.

² *The Bureau of Reclamation's Sustainable Energy Strategy* is available at: <http://www.usbr.gov/power/Reclamation%20Sustainable%20Energy%20Energy%20Strategy%20.pdf>.

Unit Dispatch Optimization

To increase renewable generation from Reclamation projects, the first Hydro Optimization System (HydrOS) was brought online at Reclamation's Black Canyon Control Center (BCCC) in August 2013. Located in Idaho, the BCCC oversees Black Canyon, Palisades, Minidoka, and Anderson Ranch powerplants which comprise over 254 megawatts (MW) in installed capacity. HydrOS uses a computer-based algorithm to recommend optimal unit dispatch levels to plant operators, allowing plants to conserve water and maximize electrical output.

HydrOS offers a more cost-effective alternative to increasing plant efficiency in comparison to conventional methods, such as generator rewinds, uprates, and turbine replacements. Reclamation estimates that optimizing BCCC plants will increase annual generation by a factor of one to three percent. For context, a two percent increase would yield an additional 20,000,000 kilowatt-hours (kWh) of annual generation (enough electricity to power over 1,770 U.S. homes).³

HydrOS is scheduled to be installed at Elephant Butte powerplant and the Glen Canyon Control Center in fiscal year (FY) 2014. Additional Reclamation facilities have been targeted for installation through FY 2016. Once all Reclamation powerplants are optimized, annual generation is expected to increase by a factor of one to three percent. A two percent increase would yield an additional 820,000,000 kWh of annual generation (enough electricity to power over 72,690 U.S. homes).

Hydrokinetics Demonstration Project

To increase the benefits of renewable energy through technological innovation, Reclamation is working with DOE to evaluate the potential for hydrokinetic (HK) energy generation within existing canal systems. HK devices generate electricity by capturing kinetic energy from free flowing water and therefore do not require conventional hydropower infrastructure (i.e., dams or conduit drops) to operate. Because no conventional infrastructure is necessary, HK devices show potential to support local electricity needs with minimal regulatory or capital investment.

Seeking to better understand the impacts of HK devices in canal systems, Reclamation and Sandia National Laboratories (a DOE lab) partnered with HK turbine developer, Instream Energy Systems (IES). Through a facility use agreement, IES deployed a 25 kilowatt (kW) HK device designed by BAE Systems in the Roza Canal (Yakima Project, Yakima, WA). Once deployed, Reclamation and DOE tested the impacts of the HK device on the open channel hydraulics and the downstream Roza powerplant. Additional testing is scheduled

³ According to the U.S. Energy Information Administration, the average annual electricity consumption for a U.S. residential utility customer was 11,280 kWh. See: <http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3>.

for FY 2014-2015, with various configurations and quantities of HK devices set to be deployed in the canal.

In addition to HK testing, Reclamation is working through the Centre for Energy Advancement through Technological Innovation (CEATI) to perform a “State of Hydrokinetic Technology Study,” designed to identify promising HK technologies and assess their technical and economic characteristics. Study results will lay out a roadmap for future HK demonstration and testing projects.

Improve the Quality and Availability of Hydropower Operations Data

Analyses of hydropower operations (including those intended to address value, operational performance, policy impacts, market participation, and environmental impacts) are often limited in scope, detail, and actionable findings because the operational data to support the analyses are often of insufficient detail or not readily available in a standardized format.

Reclamation is currently working internally and with MoU partners to design data collection systems that capture the appropriate level of hydropower operational data to further these analyses, while ensuring security protocol is met. This effort is intended to leverage existing data systems available in the regions and to develop a system that does not impose an onerous burden on field staff.

Pumped-Storage Hydroelectricity Investigation

To support the integration of variable, non-dispatchable renewable resources into the U.S. electrical grid and increase hydropower capacity, Reclamation is conducting a screening-level analysis to evaluate the potential for adding a pumped-storage configuration to existing Reclamation reservoirs. Sites within the existing Federal footprint may be suitable for pump-storage applications and by utilizing existing infrastructure, project costs may be curtailed. The current, ongoing analysis builds on the “Pumped Storage Evaluation Special Study: Yellowtail, Seminole, and Trinity Phase 2 Report” (Special Study), completed in FY 2013.

For context, the Special Study investigated the potential for converting four conventional Reclamation powerplants (with existing forebay and afterbay reservoirs) to pump storage facilities. The study also evaluated the technical merits of constructing additional reservoirs at the selected sites to accommodate pump storage development. At this time, none of these conversions showed economic feasibility.

The current screening level analysis builds on lessons learned from the Special Study by looking at 60 Reclamation reservoirs that met reservoir storage and

topography requirements necessary for pump-storage development. The study is scheduled to be completed by the end of the 2014 calendar year.

Reclamation Renewable Energy Summary

Online Renewable Energy Projects

Hydropower				
Reclamation Owned and Operated	53	Plants	14,723	MW
Reclamation Owned and Operated by Others ⁴	23	Plants	789	MW
Other Plants on Reclamation Facilities	7	Plants	85	MW
FERC Plants on Reclamation Facilities	50	Plants	460	MW
LOPP Plants ⁵	8	Plants	27	MW
Total	141	Plants	16,084	MW

Other Renewables	
Solar	
Alamosa (UC, New Mexico)	10 kW
Grand Coulee Warehouse (PN, Washington)	5 kW
Boulder City Regional Office Building (LC, Nevada)	276 kW
Boulder City Regional Office Building (Parking) (LC, Nevada)	6 kW
Hoover Spillway House Renovation (LC, Nevada)	48 kW
Total	345 kW

In-Progress Renewable Energy Projects

Reclamation Hydropower		
Generator Rewinds/Uprates ⁶	0	Plants
Turbine Refurbishments/Replacements ⁷	3	Plants
Optimization ⁸	0	Plants
Total	3	Plants

FERC Licenses on Reclamation Facilities		
FERC Licenses	4	Plants
		28 MW

⁴ Power from 5 of the 23 plants is marketed by the Western Area Power Administration (Western): Deer Creek, Towaoc, McPhee, O’Neill, and San Luis.

⁵ Reclamation holds title to the Grand Valley Powerplant Lease of Power Privilege (LOPP). South Canal Drop 1 and Drop 3 are recorded as two separate plants.

⁶ A generator rewind was completed at Folsom (G1) in September 2013.

⁷ Turbine refurbishments/replacements projects are in progress at Palisades (G4), Deer Creek (G2), and Glen Canyon (G3). Turbine refurbishments/replacements projects were completed at Estes (G3) and Fremont Canyon (G1) in July 2013, Palisades (G1) in September 2013, and Glen Canyon (G4) in December 2013.

⁸ In August 2013, HydrOS was brought online at Reclamation’s BCCC in Idaho, which oversees operations at Black Canyon, Palisades, Minidoka, and Anderson Ranch plants. See “Renewable Activities” for additional detail.

FERC Exemptions	6	Plants	8	MW
FERC Preliminary Permits (Conventional)	18	Plants	56	MW
FERC Preliminary Permits (Pumped-storage)	11	Plants	8,827	MW
Total	39	Plants	8,919	MW

Lease of Power Privilege

LOPP Contracts	2	Plants	9	MW
LOPP Preliminary Leases	4	Plants	21	MW
LOPP Posted Public Solicitations	1	Plant	0.3	MW
LOPP Requests for Development	9	Plants	28	MW
Total	16	Plants	58.3	MW

Other Renewables

Wind

Searchlight Wind Energy, LLC (LC, Arizona)			200	MW
Mohave Wind Farm (LC, Arizona)			500	MW
Total			700	MW

Solar

San Luis Facility (MP, California) ⁹			9-25	MW
Total			9-25	MW

Pilot Projects

Hydrokinetic Installation on Roza Canal (Instream Energy) ¹⁰			10	kW
Low-head Technology Installation on Monroe Drop ¹¹			300	kW
Low-head Technology Installation on North Unit Irrigation Canal, Mile 45 ¹²			5,000	kW
Hydrodynamic Screw Technology Installation on South Canal, Drop 2 ¹³			850	kW
Total			6,160	kW

WaterSMART

Through WaterSMART Grants (formerly Challenge Grants), Reclamation provides 50/50 cost share funding to irrigation and water districts, tribes, states, and other entities with water or power delivery authority. Projects should seek to conserve and use water more efficiently, increase the use of renewable energy, protect endangered species, or facilitate water markets. Projects are selected

⁹ Capacity is dependent upon the amount of land available to be leased.

¹⁰ The HK unit has been deployed and tested in the Roza Canal. See “Renewable Activities” for additional detail.

¹¹ The Low-head Technology Installation on Monroe Drop has received a Federal Energy Regulatory Commission (FERC) Preliminary Permit and is included in the FERC Preliminary Permits (Conventional) statistic.

¹² The Low-head Technology Installation on North Unit Irrigation Canal, Mile 45, has received a FERC Exemption and is included in the FERC Exemptions statistic.

¹³ Amendments to the existing South Canal LOPP contract may allow the Hydrodynamic Screw Technology Installation on South Canal, Drop 2, pilot project to proceed under the existing LOPP contract. This pilot project is included in the LOPP Requests for Development statistic.

through a competitive process and the focus is on projects that can be completed within 24 to 36 months that will help sustainable water supplies in the Western United States. The FY 2014 Funding Opportunity Announcement was posted on November 14, 2013, with applications due on January 23, 2014. Selections will be announced in June 2014 and grants awarded in September 2014. For additional information, visit www.usbr.gov/WaterSMART. FY 2011 – FY 2013 WaterSMART Grant projects that have a renewable energy component are listed below.

FY 2011

Recipient: Three Sisters Irrigation District

Capacity: 950 kW

The project is projected to generate 3.1 million kWh annually between April and October. Included is an additional 54” HDPE pipe that will eventually deliver up to 80 cubic feet per second of pressurized water to the 4,000 acres between Watson and McKenzie Reservoirs.

Recipient: Pershing County Water Conservancy District

Capacity: 750 kW

The Pershing County Water District will automate its gates, install solar-powered ultrasonic meters, and install 750 kW capacity hydropower turbines to generate renewable energy at the Rye Patch Dam. The hydropower turbines installed as part of this project are expected to generate 2,900 megawatt-hours (MWh) of electricity annually.

Recipient: Boise Project Board of Control

Capacity: 839 kW

The Boise Project Board of Control will develop an 839-kW capacity powerplant at the “Fargo Drop,” which will generate hydroelectric power that will be sold to the Idaho Power Company. The project will also include installation of a Supervisory Control and Data Acquisition system to improve regulation flows below the Fargo Drop diversion, in the Deer Flat Low Line Canal. The project is expected to result in 3,218 acre-feet of water savings annually that will be transferred to irrigation users to improve reliability in water short years.

FY 2012

Recipient: Consolidated Irrigation Company

Capacity: 500 kW

The Consolidated Irrigation Company will convert six miles of unlined earthen canal with three and half miles of high-pressure pipe to address seepage and

evaporation losses. In addition, advanced measuring devices are to be installed at each service connection. Annually, the completed project is expected to conserve 9,484 acre-feet of water. The project includes the installation of a 500-kW hydropower facility, utilizing pipeline drops feeding into the Glendale Reservoir outside Preston, Idaho.

Recipient: Sacramento Suburban Water District

Capacity: 200 kW

The Sacramento Suburban Water District will install a hydroelectric turbine in an existing transmission pipeline. The 200-kW installation will allow the District to generate electricity as deliveries are received from the Folsom Reservoir. The project also includes the installation of a new booster pump, which will allow the District to reverse the flow of water when necessary, providing banked groundwater to other agencies connected to the pipeline. Together, the improvements are expected to increase water management flexibility so that groundwater can be used more effectively during dry periods.

FY 2013

Recipient: Fremont Irrigation Company

Capacity: 2500 kW

The Fremont Irrigation Company in southern Utah will convert 5.8 miles of open ditch and earthen canals to enclosed pipe, an improvement that is expected to result in water savings of 5,352 acre-feet each year by avoiding seepage and evaporation losses. Water conserved as a result of the project will be used to meet the needs of water users during periods of shortage. The project also includes installation of a 2.5-MW capacity hydroplant, taking advantage of the piping improvements to generate renewable energy at the Highline Ditch diversion.

Recipient: Cub River Irrigation Company

Capacity: 456 kW

The Cub River Irrigation Company in northern Utah will convert 6.5 miles of open ditch canal to pipe to address seepage and evaporation losses; improvements expected to result in 2,800 acre-feet of water savings each year. Water conserved as a result of the project will be left in the Bear River and is expected to benefit the Bear River Migratory Bird Refuge downstream. The project also includes installation of a 456-kW capacity hydroplant to generate renewable energy once the pipeline is in place.

Great Plains Renewable Energy Summary

Online Renewable Energy Projects

Hydropower

Reclamation Owned and Operated	21	Plants	1,008	MW
Reclamation Owned and Operated by Others	0	Plants	0	MW
Other Plants on Reclamation Facilities	0	Plants	0	MW
FERC Plants on Reclamation Facilities	7	Plants	29	MW
LOPP Plants	1	Plant	3	MW
Total	29	Plants	1,040	MW

Other Renewables

Solar

Total	0	kW
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In-Progress Renewable Energy Projects

Reclamation Hydropower

Generator Rewinds/Uprates	0	Plants		
Turbine Refurbishments/Replacements ¹⁴	0	Plants		
Optimization	0	Plants		
Total	0	Plants		

FERC Licenses on Reclamation Facilities

FERC Licenses	3	Plants	21	MW
FERC Exemptions	1	Plant	1	MW
FERC Preliminary Permits (Conventional)	6	Plants	18	MW
FERC Preliminary Permits (Pumped-storage)	3	Plants	2,132	MW
Total	13	Plants	2,172	MW

Lease of Power Privilege

LOPP Contracts	0	Plants	0	MW
LOPP Preliminary Leases	2	Plants	7	MW
LOPP Posted Public Solicitations	0	Plants	0	MW
LOPP Requests for Development	2	Plants	14	MW
Total	4	Plants	21	MW

Other Renewables

Wind

Total	0	MW
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Solar

¹⁴ Turbine Refurbishment projects were completed at Estes (G3) and Fremont Canyon (G1) in July 2013.

Total	0 MW
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Pilot Projects

Total	0 kW
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Great Plains Project Updates

Federal Energy Regulatory Commission Projects

Project: A-Drop

Developer: Hydrodynamics, Inc.

Status: Terminated License (P-12549)

Article 301 of the Order Issuing Minor License for the A-Drop Hydroelectric Project, issued October 19, 2009, and extended by a FERC order issued February 25, 2013, required that construction of the A-Drop project begin October 19, 2013. Hydrodynamics, Inc., failed to begin construction by the October 19, 2013, deadline. On October 24, 2013, FERC sent a letter to the licensee providing notice of “probable termination” of the A-Drop license on November 24, 2013 (30 days from the date of the letter). FERC terminated the A-Drop license on November 25, 2013.

Lease of Power Privilege Projects

Project: Carter Lake Outlet

Developer: Northern Water Conservancy District

Status: Online

Generation ended in early October due to low reservoir levels. Generation is set to resume in December/January, when Flatiron Unit 3 begins pumping operations. Facility has generated over 7,007 MWh through November in calendar year 2013.

Project: Yellowtail Afterbay

Developer: Crow Tribe

Status: Request for Development

Title 4 of the Claims Resolution Act of 2010 (Pub. L. 111-291) grants the Crow Tribe the exclusive right to develop power at Yellowtail Afterbay Dam. Reclamation met with the Crow Tribe and their consultant on January 11, 2012, to discuss the project and joined the Crow Tribe on a field trip of Yellowtail Afterbay on July 12, 2012.

Reclamation has since received a draft appraisal report from the Tribe and has requested to enter into a reimbursable agreement. Reclamation will discuss the reimbursable agreement at an upcoming meeting scheduled for January 14-15, 2014.

Currently, the Montana Area Office is drafting a Preliminary Lease and Funding Agreement between Reclamation and the Tribe. The draft agreement will be circulated for internal review and, once approved, will be forwarded to the Tribe’s negotiating team. The agreement will (1) establish a business relationship between Reclamation and Tribe, (2) define the roles and responsibilities during the pre-construction phase, and (3) serve as the basis for reimbursing Reclamation for performing environmental, administrative, technical and other services necessary to establish and implement a LOPP.

Lower Colorado Renewable Energy Summary

Online Renewable Energy Projects

Hydropower

Reclamation Owned and Operated	3	Plants	2,454	MW
Reclamation Owned and Operated by Others	10	Plants	297	MW
Other Plants on Reclamation Facilities	7	Plants	85	MW
FERC Plants on Reclamation Facilities	0	Plants	0	MW
LOPP Plants	0	Plants	0	MW
Total	20	Plants	2,836	MW

Other Renewables

Solar

Boulder City Regional Office Building (LC, Nevada)	276	kW
Boulder City Regional Office Building (Parking) (LC, Nevada)	6	kW
Hoover Spillway House Renovation (LC, Nevada)	48	kW
Total	330	kW

In-Progress Renewable Energy Projects

Reclamation Hydropower

Generator Rewinds/Uprates	0	Plants
Turbine Refurbishments/Replacements	0	Plants
Optimization	0	Plants
Total	0	Plants

FERC Licenses on Reclamation Facilities

FERC Licenses	0	Plants	0	MW
FERC Exemptions	0	Plants	0	MW
FERC Preliminary Permits (Conventional)	0	Plants	0	MW

FERC Preliminary Permits (Pumped-storage)	4	Plants	3,645	MW
Total	4	Plants	3,645	MW

Lease of Power Privilege

LOPP Contracts	0	Plants	0	MW
LOPP Preliminary Leases	0	Plants	0	MW
LOPP Posted Public Solicitations	0	Plants	0	MW
LOPP Requests for Development	2	Plants	3	MW
Total	2	Plants	3	MW

Other Renewables

Wind

Searchlight Wind Energy, LLC (LC, Arizona)			200	MW
Mohave Wind Farm (LC, Arizona)			500	MW
Total			700	MW

Solar

Total			0	MW
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Pilot Projects

Total			0	kW
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Lower Colorado Project Updates

Federal Energy Regulatory Commission Projects

Project: Las Vegas Wash Hydroelectric Project

Developer: Hydrodynamics, Inc.

Status: Terminated License (P-14468)

Application for Preliminary Permit was accepted for filing by FERC on November 16, 2012. On July 17, 2013, the developer withdrew the application for Preliminary Permit.

Lease of Power Privilege Projects

Project: Laguna Dam

Developer: Archon Energy 1, Inc.

Status: Request for Development (formerly P-14495)

On November 27, 2013, FERC granted Reclamation jurisdiction at Laguna Dam and subsequently dismissed the Preliminary Permit Application filed by Archon

Energy 1, Inc., on December 4, 2013. The Laguna Dam project will now proceed through a LOPP.

Mid-Pacific Renewable Energy Summary

Online Renewable Energy Projects

Hydropower

Reclamation Owned and Operated	10	Plants	1,910	MW
Reclamation Owned and Operated by Others ¹⁵	3	Plants	452	MW
Other Plants on Reclamation Facilities	0	Plants	0	MW
FERC Plants on Reclamation Facilities	13	Plants	60	MW
LOPP Plants	1	Plant	1	MW
Total	27	Plants	2,423	MW

Other Renewables

Solar

Total			0	kW
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In-Progress Renewable Energy Projects

Reclamation Hydropower

Generator Rewinds/Uprates ¹⁶	0	Plants		
Turbine Refurbishments/Replacements	0	Plants		
Optimization	0	Plants		
Total	0	Plants		

FERC Licenses on Reclamation Facilities

FERC Licenses	1	Plant	7	MW
FERC Exemptions	0	Plants	0	MW
FERC Preliminary Permits (Conventional)	0	Plants	0	MW
FERC Preliminary Permits (Pumped-storage)	1	Plant	1,250	MW
Total	2	Plants	1,257	MW

Lease of Power Privilege

LOPP Contracts	1	Plant	2	MW
LOPP Preliminary Leases	0	Plants	0	MW
LOPP Posted Public Solicitations	0	Plants	0	MW
LOPP Requests for Development	0	Plants	0	MW
Total	1	Plant	2	MW

Other Renewables

Wind

¹⁵ Power from 2 of the 3 plants is marketed by Western: O'Neill and San Luis.

¹⁶ A generator rewind was completed at Folsom (G1) in September 2013.

Total	0 MW
Solar	
San Luis Facility (MP, California) ¹⁷	9-25 MW
Total	9-25 MW

Pilot Projects

Total	0 kW
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Mid-Pacific Project Updates

Lease of Power Privilege Projects

Project: Lewiston Powerplant Replacement

Developer: Trinity Power Authority

Status: Lease Contract

The Trinity Public Utility District (TPUD) is replacing Reclamation’s existing powerplant under a LOPP arrangement. Reclamation will continue to receive the 10-year average production of the plant (2,764 MWh) and TPUD will receive all generation above that amount plus the Renewable Energy Credits of the plant.

Following a delay due to government furlough, a revised contract is now under final review. In accordance with the revised contract, the government will fund 25 percent of the total project cost and TPUD will fund 75 percent. Construction of the new facility is to commence in March 2014 with a completion target date of October 2015. The construction period will be interrupted during the two months when the fish hatchery is in operation.

Pacific Northwest Renewable Energy Summary

Online Renewable Energy Projects

Hydropower				
Reclamation Owned and Operated	10	Plants	7,537	MW
Reclamation Owned and Operated by Others	0	Plants	0	MW
Other Plants on Reclamation Facilities	0	Plants	0	MW

¹⁷ Capacity is dependent upon the amount of land available to be leased.

Reclamation Renewable Energy Update

FERC Plants on Reclamation Facilities	25	Plants	321	MW
LOPP Plants	0	Plants	0	MW
Total	35	Plants	7,858	MW

Other Renewables

Solar

Grand Coulee Warehouse (PN, Washington)			5	kW
Total			5	kW

In-Progress Renewable Energy Projects

Reclamation Hydropower

Generator Rewinds/Uprates	0	Plants		
Turbine Refurbishments/Replacements ¹⁸	1	Plant		
Optimization	0	Plants		
Total	1	Plant		

FERC Licenses on Reclamation Facilities

FERC Licenses	0	Plants	0	MW
FERC Exemptions	5	Plants	7	MW
FERC Preliminary Permits (Conventional)	12	Plants	38	MW
FERC Preliminary Permits (Pumped-storage)	1	Plants	1,000	MW
Total	18	Plants	1,045	MW

Lease of Power Privilege

LOPP Contracts	0	Plants	0	MW
LOPP Preliminary Leases	0	Plants	0	MW
LOPP Posted Public Solicitations	0	Plants	0	MW
LOPP Requests for Development	0	Plants	0	MW
Total	0	Plants	0	MW

Other Renewables

Wind

Total			0	MW
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Solar

Total			0	MW
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Pilot Projects

Hydrokinetic Installation on Roza Canal (Instream Energy)			10	kW
Low-head Technology Installation on Monroe Drop ¹⁹			300	kW
Low-head Technology Installation on North Unit Irrigation Canal, Mile 45 ²⁰			5,000	kW

¹⁸ A Turbine Refurbishment/Replacements project is in progress at Palisades (G4). A Turbine Refurbishment project was completed at Palisades (G1) in September 2013.

¹⁹ The Low-head Technology Installation on Monroe Drop has received a FERC Preliminary Permit and is included in the FERC Preliminary Permits (Conventional) statistic.

²⁰ The Low-head Technology Installation on North Unit Irrigation Canal, Mile 45, has received a FERC Exemption and is included in the FERC Exemptions statistic.

Total**5,310 kW**

Pacific Northwest Project Updates

Federal Energy Regulatory Commission Projects

Project: Unity Dam Hydro

Developer: Amnor Hydro West, Inc.

Status: Preliminary Permit Terminated (P-13834)

On May 6, 2011, Amnor Hydro West, Inc., was issued a preliminary permit to study the feasibility of the proposed Unity Dam Hydropower Project. Article 4 of the preliminary permit required the permittee submit a progress report at the close of each six-month period from the effective date of the permit. The permittee was notified on November 8, 2013, that its fourth progress report due on October 30, 2013, was overdue, and therefore, the permit would likely be cancelled in no less than 30 days. The permittee did not file a response; therefore, the preliminary permit was terminated on January 10, 2014.

Project: Clear Creek Dam Hydro

Developer: Amnor Hydro West, Inc.

Status: Preliminary Permit Terminated (P-14065)

On December 16, 2011, Amnor Hydro West, Inc. was issued a preliminary permit to study the feasibility of the proposed Clear Creek Dam Hydropower Project. Article 4 of the preliminary permit required the permittee submit a progress report at the close of each six-month period from the effective date of the permit. The permittee was notified on November 8, 2013, that its third progress report due on October 30, 2013, was overdue, and therefore, the permit would likely be cancelled in no less than 30 days. The permittee did not file a response; therefore, the preliminary permit was terminated on January 10, 2014.

Project: Keechelus Dam Project

Developer: Keechelus Hydropower, LLC

Status: Preliminary Permit Terminated (P-14116)

On September 23, 2011, Keechelus Hydropower, LLC was issued a preliminary permit to study the feasibility of the proposed Keechelus Dam Project. Article 4 of the preliminary permit required the permittee submit a progress report at the close of each six-month period from the effective date of the permit. The permittee was notified on September 14, 2012, that its second progress report due on September 1, 2012, was overdue, and therefore, the permit would likely be cancelled in no less than 30 days. The permittee did not file a response; therefore, the preliminary permit was terminated on November 19, 2012.

Pilot Projects

Project: Hydrokinetic Installation on Roza Canal (Hydro Volts)

Developer: Hydro Volts

Status: Terminated

Developer, Hydro Volts is no longer in business. Pilot project has been terminated.

Upper Colorado Renewable Energy Summary

Online Renewable Energy Projects

Hydropower				
Reclamation Owned and Operated	9	Plants	1,814	MW
Reclamation Owned and Operated by Others ²¹	10	Plants	40	MW
Other Plants on Reclamation Facilities	0	Plants	0	MW
FERC Plants on Reclamation Facilities	5	Plants	50	MW
LOPP Plants ²²	6	Plant	24	MW
Total	30	Plants	1,928	MW

Other Renewables	
Solar	
Alamosa (UC, New Mexico)	10 kW
Total	10 kW

In-Progress Renewable Energy Projects

Reclamation Hydropower		
Generator Rewinds/Uprates	0	Plants
Turbine Refurbishments/Replacements ²³	2	Plants
Optimization	0	Plants
Total	2	Plants

FERC Licenses on Reclamation Facilities			
FERC Licenses	0	Plants	0 MW
FERC Exemptions	0	Plants	0 MW
FERC Preliminary Permits (Conventional)	0	Plants	0 MW
FERC Preliminary Permits (Pumped-storage)	2	Plants	800 MW

²¹ Power from 3 of the 10 plants is marketed by Western: Deer Creek, Towaoc, and McPhee.

²² Reclamation holds title to the Grand Valley Powerplant LOPP. South Canal (Drop 1) and South Canal (Drop 3) are recorded as two separate plants.

²³ Turbine Refurbishments/Replacements projects are in progress at Deer Creek (G2) and Glen Canyon (G3). A Turbine Refurbishment project was completed at Glen Canyon (G4) in December 2013.

Total	2	Plants	800	MW
Lease of Power Privilege				
LOPP Contracts	1	Plants	7	MW
LOPP Preliminary Leases	2	Plants	14	MW
LOPP Posted Public Solicitations	1	Plant	0.3	MW
LOPP Requests for Development	5	Plants	11	MW
Total	9	Plants	32.3	MW

Other Renewables

Wind

Total	0	MW
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Solar

Total	0	MW
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Pilot Projects

Hydrodynamic Screw Technology Installation on South Canal, Drop 2 ²⁴	850	kW
Total	850	kW

Upper Colorado Project Updates

Reclamation Plants, Operated by Others

Plant: Olmsted Powerplant
Operator: PacifiCorp
Status: Online

Beginning October 2015, the Central Utah Water Conservancy District will assume operation and maintenance responsibility at the Olmsted powerplant.²⁵

The District and the United States Department of the Interior, Central Utah Project Completion Act Office (Interior), as Joint Lead Agencies, are proposing a replacement project that will include: Replacement of the powerhouse, replacement of the penstocks, and the installation of hydraulic grade line at the existing 10 MG Olmsted Flow Equalization Reservoir. The replacement project will allow for continued hydroelectric power generation and will ensure a full water supply for the Central Utah Project Bonneville Unit.

²⁴ Amendments to the existing South Canal LOPP contract may allow the Hydrodynamic Screw Technology Installation on South Canal, Drop 2, pilot project to proceed under the existing LOPP contract. The amendment has been drafted and reviewed by the Solicitor’s Office. This pilot project is included in the LOPP Requests for Development statistic.

²⁵ The 25-year lease with PacifiCorp expires October 2015.

The Joint Lead Agencies are preparing an Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA). The EA will provide the necessary analysis for determining potential environmental impacts associated with the Olmsted replacement project. As part of the EA process, the Joint Lead Agencies are initiating a scoping process and soliciting comments from agencies, interested groups, and the general public regarding the proposed project. The scoping process will assist in the determination of alternatives and environmental impacts to address in the NEPA process.²⁶

Lease of Power Privilege Projects

Project: San Juan Chama Project

Developer: N/A

Status: Posted Public Solicitation

A notice of intent to accept proposals, select lessee, and contract for hydroelectric power development on the Reclamation San Juan-Chama Project was posted to the Federal Register on August 7, 2013. Written proposals were due January 6, 2014 (150 days removed from the posting).

The Public Solicitation applies to four conduit drops along the project – the Azotea Tunnel Outlet Drop and Station 1565+00, 1702+75, and 1831+17 Drops.

Project: Ridgway Dam

Developer: Tri-County Water Conservancy District

Status: Lease Contract

Construction is scheduled to be complete in early CY 2014.

Project: Rifle Gap Dam

Developer: N/A

Status: Request for Development

Reclamation began the jurisdiction determination process in April 2013. On June 26, 2013, FERC formally granted Reclamation jurisdiction over hydroelectric development at Rifle Gap Dam. The next step is to develop a Federal Register Notice that solicits the public for proposals.

Project: Shavano Falls

Developer: Uncompahgre Valley Water Users Association

Status: Request for Development

On August 21, 2013, Reclamation received a request from the Uncompahgre Valley Water Users Association (UVWUA) to develop hydropower on the Shavano Falls

²⁶ For additional information see <http://www.cuwcd.com/olmsted/index.html>.

conduit drop site. Pursuant to Pub. L. 113-24, Reclamation responded by letter from the Regional Director requesting proposal information (as described in the LOPP Directive and Standard, FAC 04-08). UVWUA provided the information requested on October 14, 2013.

Reclamation has reviewed the information and is now developing a preliminary lease with UVWUA for the development of this potential hydropower site.

Pilot Projects

Project: South Canal (Drop 2)

Developer: Percheron Power, LLC, Delta-Montrose Electric Association, and UVWUA

Status: Request for Development

Preliminary meetings have transpired between UVWUA and Reclamation. The parties are working to sort out partnership details on this project.

Appendix – Regional Renewable Energy Portfolios

Great Plains Renewable Portfolio

State	Project Status	Project Name	FERC ID	Area Office	Operating Entity	Hydropower Type	Capacity (kW)	Project Initiation Date	Preliminary Permit or Lease Date	Exemption or Cf Date	License or Lease Date	Online Date
RECLAMATION OWNED AND OPERATED												
WY	Online	Alcoya		Wyoming	USBR	Conventional	41,400.00					1955
CO	Online	Big Thompson		Eastern Colorado	USBR	Conventional	4,500.00					1959
WY	Online	Boysen		Wyoming	USBR	Conventional	15,000.00					1952
WY	Online	Buffalo Bill		Wyoming	USBR	Conventional	18,000.00					1992
MT	Online	Canyon Ferry		Montana	USBR	Conventional	50,001.00					1953
CO	Online	Estes		Eastern Colorado	USBR	Conventional	45,000.00					1950
CO	Online	Flatiron (Unit 1, 2, 3)		Eastern Colorado	USBR	Conventional/Pump Storage	98,500.00					1954
WY	Online	Fronton Canyon		Wyoming	USBR	Conventional	66,800.00					1960
WY	Online	Glendo		Wyoming	USBR	Conventional	38,000.00					1959
CO	Online	Green Mountain		Eastern Colorado	USBR	Conventional	26,000.00					1943
WY	Online	Guernsey		Wyoming	USBR	Conventional	6,400.00					1928
WY	Online	Heart Mountain		Wyoming	USBR	Conventional	5,000.00					1948
WY	Online	Kortes		Wyoming	USBR	Conventional	36,000.00					1950
CO	Online	Marys Lake		Eastern Colorado	USBR	Conventional	8,100.00					1951
CO	Online	Mt. Elbert FS		Eastern Colorado	USBR	Pump Storage	200,000.00					1981
WY	Online	Pilot Butte		Wyoming	USBR	Conventional	1,600.00					1929
CO	Online	Pole Hill		Eastern Colorado	USBR	Conventional	38,238.00					1954
WY	Online	Seminole		Wyoming	USBR	Conventional	51,750.00					1939
WY	Online	Shoshone		Wyoming	USBR	Conventional	3,000.00					1992
WY	Online	Spirit Mountain		Wyoming	USBR	Conventional	4,500.00					1994
MT	Online	Yellowtail		Montana	USBR	Conventional	250,000.00					1966
FEDERAL ENERGY REGULATORY COMMISSION PROJECTS												
WY	Online	Garland Canal	3031	Wyoming	Shoshone I.D.	Conventional	2,610.00					1980
MT	Online	Lower Turnbull Drop	12597	Montana	Turnbull Hydro, LLC	Conventional	7,000.00	6/21/2005			10/9/1981	6/22/2011
OK	Online	McGee Creek Dam	8492	Oklahoma/Texas	City of Aspen	Conventional	175.00	7/26/1984	3/14/1985		7/28/2006	6/22/2011
CO	Online	Ruedl Dam	3603	Western Colorado	City of Aspen	Conventional	3,200.00				9/8/1983	1980
CO	Online	Sugarloaf Dam	3819	Eastern Colorado	STS Hydropower Ltd.	Conventional	2,800.00				11/18/1982	1980
MO	Online	Tiber Dam	3574	Montana	Tiber Montana LLC	Conventional	7,500.00		11/20/1990		6/2/1997	6/14/2004
MT	Online	Upper Turnbull Drop	12598	Montana	Turnbull Hydro, LLC	Conventional	5,300.00	6/24/2005			7/28/2006	6/24/2011
MT	License	A Drop	12549	Montana	Hydrodynamics, Inc.	Conventional	1,000.00	9/19/2004	4/1/2005		10/19/2009	
MT	License	Clark Canyon Dam	12429	Montana	Clark Canyon Hydro, LLC	Conventional	4,700.00	1/1/2003	8/15/2003		8/26/2009	
MT	License	Gibson Dam	12478	Montana	Gibson Dam Hydroelectric Company, LLC.	Conventional	15,000.00	10/28/2003	4/20/2004		1/12/2012	
MT	Exemption	Mary Taylor Drop	14294	Montana	Turnbull Hydro, LLC	Conventional	890.00	9/23/2011		6/28/2012		
WY	Preliminary	Deer Creek Drop	14370	Wyoming	Willwood Irrigation District	Conventional	780.00	3/6/2012	9/19/2012			
MT	Preliminary	Fresno Dam	13474	Montana	Hydrodynamics, Inc.	Conventional	2,000.00	5/23/2009	12/7/2009			
NE	Preliminary	Medicine Creek Dam	13648	Nebraska/Kansas	Twin Valley's Public Power District	Conventional	800.00	12/30/2009	6/15/2010			
MT	Preliminary	Mill Coulee	13700	Montana	Hydrodynamics, Inc.	Conventional	900.00	4/5/2010	11/30/2010			
MT	Preliminary	Sun River Diversion Dam	13161	Montana	Hydrodynamics, Inc.	Conventional	12,000.00	3/31/2008	10/28/2008			
WY	Preliminary	Willwood Diversion Dam	13423	Wyoming	Willwood Irrigation District	Conventional	2,000.00	4/6/2009	7/7/2009			
WY	Preliminary	Black Canyon Pumped Storage Project	14087	Wyoming	Black Canyon Hydro, LLC	Pump Storage	700,000.00	1/25/2011	7/15/2011			
WY	Preliminary	Medicine Bow Pumped Storage	13836	Wyoming	Medicine Bow Hydro, LLC	Pump Storage	400,000.00	8/30/2010	12/3/2010			
MT	Preliminary	Square Butte Pumped Storage	13349	Montana	Square Butte Hydro, LLC	Pump Storage	1,032,000.00	12/23/2008	7/23/2012			
LEASE OF POWER PRIVILEGE PROJECTS												
CO	Online	Carter Lake Outlet		Eastern Colorado	Northern Water Conservancy District	Conventional	2,600.00	5/7/2009	11/24/2009		4/22/2011	5/18/2012
CO	Preliminary	Granby Dam	LP1-3	Eastern Colorado	Northern Water Conservancy District	Conventional	700.00	4/20/2011	6/26/2012			
CO	Preliminary	Pueblo Dam	LP1-4	Eastern Colorado	Southeastern Colorado Water Conservancy District, Colorado Springs Utilities, and Board of Water Works of Pueblo, Colorado	Conventional	5,800.00	4/20/2011	2/27/2012			
MT	Request for Development	Helena Valley Pumping Plant		Montana	Helena Valley Irrigation District	Conventional	4,800.00	9/13/2013				
MT	Request for Development	Yellowtail Afterbay		Montana	Cow Tribe	Conventional	9,000.00	1/11/2012				

Lower Colorado Renewable Portfolio

State	Project Status	Project Name	FERC ID	Area Office	Operating Entity	Hydropower Type	Capacity (kW)	Project Initiation Date	Preliminary Permit or Lease Date	Exemption or CE Date	License or Lease Date	Online
RECLAMATION OWNED AND OPERATED												
AZ	Online	Davis		Yuma	USBR	Conventional	255,000.00					1951
AZ/NV	Online	Hoover		Lower Colorado	USBR	Conventional	2,078,800.00					1936
AZ	Online	Parker		Yuma	USBR	Conventional	120,000.00					1943
RECLAMATION OWNED AND OPERATED BY OTHERS												
AZ	Online	Arizona Falls Powerplant		Phoenix	Salt River Valley Water User's Association	Conventional	750.00					1902
AZ	Online	Cross Cut Powerplant		Phoenix	Salt River Valley Water User's Association	Conventional	3,000.00					1914
AZ	Online	Horse Mesa Powerplant		Phoenix	Salt River Valley Water User's Association	Conventional/Pump Storage	129,000.00					1927
AZ	Online	Morrison Flat Powerplant		Phoenix	Salt River Valley Water User's Association	Conventional/Pump Storage	60,000.00					1926
AZ	Online	New Waddell Pump/Generating Plant		Phoenix	Central Arizona Water Conservation District	Pump Storage	45,000.00					1993
CA	Online	Senator Wash Pump/Generating Plant		Yuma	Imperial Irrigation District	Pump Storage	7,200.00					1966
AZ	Online	Siphon Drop Powerplant		Yuma	Yuma County Water User's Association	Conventional	4,600.00					1926
AZ	Online	South Consolidated Powerplant		Phoenix	Salt River Valley Water User's Association	Conventional	1,400.00					1912
AZ	Online	Stewart Mountain Powerplant		Phoenix	Salt River Valley Water User's Association	Conventional	10,400.00					1930
AZ	Online	Theodore Roosevelt Powerplant		Phoenix	Salt River Valley Water User's Association	Conventional	36,020.00					1973
OTHER PLANTS ON RECLAMATION FACILITIES												
AZ	Online	C.C. Craigin Dam and Powerplant	2304	Phoenix	Salt River Project	Conventional	3,000.00					1965
AZ	Online	Drop Five Powerplant		Yuma	Imperial Irrigation District	Conventional	4,000.00					1982
AZ	Online	Drop Four Powerplant		Yuma	Imperial Irrigation District	Conventional	19,600.00					1941
AZ	Online	Drop One Powerplant		Yuma	Imperial Irrigation District	Conventional	6,000.00					1984
AZ	Online	Drop Three Powerplant		Yuma	Imperial Irrigation District	Conventional	9,800.00					1941
AZ	Online	Drop Two Powerplant		Yuma	Imperial Irrigation District	Conventional	10,000.00					1953
AZ	Online	Pilot Knob Powerplant		Yuma	Imperial Irrigation District	Conventional	33,000.00					1961
FEDERAL ENERGY REGULATORY COMMISSION PROJECTS												
NV	Preliminary	Blue Diamond Pumped Storage Project	14344	Regional Office	The International Consortium of Energy Managers	Pump Storage	450,000.00	1/6/2012			7/11/2012	
NV	Preliminary	Eldorado Pumped Storage Project	13864	Regional Office	Eldorado Pumped Storage, LLC	Pump Storage	400,000.00	10/13/2010			2/3/2012	
AZ	Preliminary	Longview Pumped Storage Project	14341	Regional Office	Longview Energy Exchange, LLC	Pump Storage	2,000,000.00	1/3/2012			5/4/2012	
AZ	Preliminary	Verde Pumped Storage Project	14061	Phoenix	Arizona Independent Power	Pump Storage	795,000.00	1/12/2011			8/15/2011	
LEASE OF POWER PRIVILEGE PROJECTS												
AZ	Request for Development	Laguna Dam		Yuma		Conventional	2,200.00	1/28/2013				
AZ	Request for Development	Santa Rosa Canal		Phoenix	Maricopa-Stanfield Irrigation and Drainage District	Conventional	375.00	9/4/2012				
SOLAR PROJECTS												
NV	Online	Boulder City Regional Office Building		Regional Office	Boulder City Regional Office Building		276.36					
NV	Online	Boulder City Regional Office Building (parking)		Regional Office	Boulder City Regional Office Building		5.97					
NV	Online	Hoover Spillway House Renovation		Regional Office	Boulder City Regional Office Building		48.00					Aug-13
WIND PROJECTS												
AZ	In Development	Mohave County Wind Farm		Regional Office	Mohave County		500,000.00					
AZ	In Development	Searchlight Wind Energy LLC		Regional Office	Searchlight Wind Energy LLC		200,000.00					

Mid-Pacific Renewable Portfolio

State	Project Status	Project Name	FERC ID	Area Office	Operating Entity	Hydropower Type	Capacity (kW)	Project Initiation Date	Preliminary Permit or Lease Date	Exemption or CE Date	License or Lease Date	Online
RECLAMATION OWNED AND OPERATED												
CA	Online	Folsom		Central California	USBR	Conventional	207,000.00					1955
CA	Online	Judge Francis Carr		Northern California	USBR	Conventional	154,400.00					1963
CA	Online	Keswick		Northern California	USBR	Conventional	117,000.00					1950
CA	Online	Lewiston		Northern California	USBR	Conventional	350.00					1964
CA	Online	New Melones		Central California	USBR	Conventional	380,000.00					1979
CA	Online	Nimbus		Central California	USBR	Conventional	13,500.00					1955
CA	Online	Shasta		Northern California	USBR	Conventional	714,000.00					1944
CA	Online	Spring Creek		Northern California	USBR	Conventional	180,000.00					1964
CA	Online	Stampede		Lahontan Basin	USBR	Conventional	3,650.00					1988
CA	Online	Trinity		Northern California	USBR	Conventional	140,000.00					1964
RECLAMATION OWNED AND OPERATED BY OTHERS												
CA	Online	San Luis/Gianelli Pumping-Generating Plant		South Central California	California Department of Water Resources	Pump Storage	424,000.00					1968
NV	Online	Lahontan Powerplant		Lahontan Basin	Truckee-Carson Irrigation District	Conventional	2,400.00					1911
CA	Online	O'Neill Pumping-Generating Plant		South Central California	San Luis Delta-Mendota Water Authority	Pump Storage	25,200.00					1967
FEDERAL ENERGY REGULATORY COMMISSION PROJECTS												
OR	Online	East Side	2082	Klamath Basin	Scottish Power (PacifiCorp)	Conventional	3,200.00					
CA	Online	Friant Fishwater Release	11068	South Central California	Orange County Irrigation District	Conventional	510.00				5/16/1991	
CA	Online	Friant Power	2992	South Central California	Friant Power Authority	Conventional	27,360.00				9/30/1982	6/13/1905
CA	Online	High Line Canal	7252	Northern California	Santa Clara	Conventional	530.00				7/17/1984	
CA	Online	Madera Canal	5765	South Central California	Madera-Chowchilla Water & Power Authority	Conventional	440.00	11/16/1981	4/27/1982		9/8/1983	
CA	Online	Madera Canal Water Power STA.1174+84	2958	South Central California	Madera-Chowchilla Water & Power Authority	Conventional	563.00	11/23/1981			6/8/1982	
CA	Online	Madera Canal Water Power STA.1923+10	2958	South Central California	Madera-Chowchilla Water & Power Authority	Conventional	916.00	11/23/1981			6/8/1982	
CA	Online	Madera Canal Water Power STA.980+65	2958	South Central California	Madera-Chowchilla Water & Power Authority	Conventional	2,125.00	11/23/1981			6/8/1982	
CA	Online	Monticello	2780	Central California	Solano I.D.	Conventional	11,500.00				1/29/1981	Jun-83
NV	Online	New Lahontan	7828	Lahontan Basin	Truckee-Carson I.D.	Conventional	4,000.00				12/26/1985	6/12/1989
CA	Online	Stony Gorge Hydroelectric	3193	Northern California	Santa Clara, City of	Conventional	4,900.00				8/31/1982	Apr-86
OR	Online	West Side	2082	Klamath Basin	Scottish Power (PacifiCorp)	Conventional	600.00					
CA	Online	Whiskey Dam Power Project	2888	Northern California	City of Redding	Conventional	3,530.00	2/17/1982			3/10/1983	6/8/1905
CA	License	Friant Fishwater Release	11068	South Central California	Orange County Irrigation District	Conventional	7,000.00				5/16/1991	
OR	Preliminary	Bryant Mountain (Pumped Storage)	13680	Klamath Basin	Bryant Mountain LLC	Pump Storage	1,250,000.00	3/1/2010	9/24/2010			
LEASE OF POWER PRIVILEGE PROJECTS												
OR	Online	Klamath Canal Drop C		Klamath Basin	Klamath Irrigation District	Conventional	900.00	2/8/2011			11/8/2011	5/3/2012
CA	Lease Contract	Lewisston Powerplant Replacement		Northern California	Trinity Power Authority	Conventional	1,900.00				6/5/2009	
SOLAR PROJECTS												
CA	In Development	San Luis Facility		South Central California			9,000.00 - 25,000.00	8/5/2011	12/13/2011			

Pacific Northwest Renewable Portfolio

State	Project Status	Project Name	FERC ID	Area Office	Operating Entity	Hydropower Type	Capacity (kW)	Project Initiation Date	Preliminary Permit or Lease Date	Exemption or Cf Date	License or Lease Date	Online
RECLAMATION OWNED AND OPERATED												
WA	Online	Anderson Ranch		Snake River	USBR	Conventional	40,000.00					1950
WA	Online	Black Canyon		Snake River	USBR	Conventional	10,200.00					1925
WA	Online	Boise River Diversion		Snake River	USBR	Conventional	3,450.00					1912
WA	Online	Chandler		Columbia Cascades	USBR	Conventional	12,000.00					1956
WA	Online	Grand Coulee		Columbia Cascades	USBR	Conventional/pump Storage	6,809,000.00					1941
OR	Online	Green Springs		Columbia Cascades	USBR	Conventional	17,290.00					1960
WA	Online	Hungry Horse		Columbia Cascades	USBR	Conventional	428,000.00					1952
WA	Online	Minidoka		Snake River	USBR	Conventional	27,700.00					1942
WA	Online	Palisades		Snake River	USBR	Conventional	176,564.00					1957
WA	Online	Rozza		Columbia Cascades	USBR	Conventional	12,937.00					1958
FEDERAL ENERGY REGULATORY COMMISSION PROJECTS												
WA	Online	American Falls	2736	Snake River	Idaho Power Co	Conventional	92,400.00				3/31/1975	1975
WA	Online	ARROWROCK DAM	4656	Snake River	Big Bend Irrigation District, et. al.	Conventional	15,000.00		8/15/1983		3/27/1989	Mar-10
WA	Online	CASCADE	2848	Snake River	Idaho Power Co.	Conventional	12,420.00		2/17/1981		2/17/1981	3/4/1985
WA	Online	COWICHE	7337	Columbia Cascades	Yakima-Tieton ID	Conventional	1,470.00				7/6/1984	1986
WA	Online	Dietrich Drop	8909	Snake River	Big Wood Canal Company	Conventional	4,770.00	3/7/1985			5/22/1987	1989
WA	Online	ELTOPIA BRANCH CANAL	3842	Columbia Cascades	East, Quincy, & South, Columbia Basin ID's	Conventional	2,200.00				12/9/1981	1982
WA	Online	ESQUATZEL POWER	12638	Columbia Cascades	Green Energy Today LLC	Conventional	900.00	1/4/2006				Apr-12
WA	Online	FARGO DROP NO. 1	5042	Snake River	Boise Project Board of Control	Conventional	1,100.00				10/23/1981	Jun-13
WA	Online	FELT HYDRO	5089	Snake River	Fall River Rural Cooperative	Conventional	7,450.00				9/9/1983	1985
WA	Online	ISLAND PARK	2973	Snake River	Fall River Rural Electric	Conventional	4,800.00		7/8/1983		10/19/1988	1982
WA	Online	Little Wood Reservoir	7427	Snake River	Little Wood Irrigation District	Conventional	3,000.00					1989
WA	Online	LOW LINE NO. 8 ARENA DROP	5056	Snake River	Boise Project Board of Control	Conventional	385.00	6/10/1981				Apr-12
WA	Online	MAIN CANAL HEADWORKS	2849	Columbia Cascades	East, Quincy, & South, Columbia Basin ID's	Conventional	26,000.00					1987
WA	Online	MAIN CANAL HEADWORKS	10552	Snake River	Contractor's Power Group	Conventional	1,500.00	12/2/1987	9/15/1988		8/12/1992	1996
OR	Online	MITCHELL BUTTE LATERAL	5357	Snake River	Owyhee ID et. al.	Conventional	1,980.00		2/26/1982		12/14/1984	1990
WA	Online	Mora Drop Hydro	3403	Snake River	Boise Kuna Irrigation District et. Al	Conventional	1,900.00			12/18/1980		9/15/2006
WA	Online	ORCHARD AVENUE	7338	Columbia Cascades	Yakima-Tieton ID	Conventional	1,441.00				7/6/1984	1986
OR	Online	OWYHEE DAM	4354	Snake River	Gem I.D., Owyhee I.D., & Ridgeview I.D	Conventional	4,340.00				5/9/1984	1985
WA	Online	OWYHEE TUNNEL NO. 1	4359	Snake River	Gem ID et. al.	Conventional	8,120.00				2/28/1986	6/1/1983
WA	Online	POTHOLES EAST CANAL	3843	Snake River	East, Quincy, & South, Columbia Basin ID's	Conventional	2,400.00				12/9/1981	1982
WA	Online	POTHOLES EAST CANAL HEADWORKS	2840	Columbia Cascades	Grand Coulee Project Hydroelectric Authority	Conventional	6,500.00				9/21/1982	1991
WA	Online	QUINCY CHUTE	2937	Columbia Cascades	East, Quincy, & South, Columbia Basin ID's	Conventional	9,367.00				8/20/1982	1983
WA	Online	RUSSEL D SMITH PFC 22.7	2926	Columbia Cascades	East, Quincy, & South, Columbia Basin ID's	Conventional	6,100.00				3/27/1980	1982
WA	Online	SUMMITER FALLS	3295	Columbia Cascades	East, Quincy, & South, Columbia Basin ID's	Conventional	92,000.00				8/14/1981	1983
WA	Online	TIFTON DAM	3701	Columbia Cascades	Yakima-Tieton Irrigation District	Conventional	13,600.00				6/27/1991	2007
OR	Exemption	4.5-Mile	13817	Columbia Cascades	Earth by Design	Conventional	5,000.00	7/16/2010				12/17/2010
WA	Exemption	FARGO DROP NO. 2	5040	Snake River	Boise Project Board of Control	Conventional	175.00					10/23/1981
WA	Exemption	MAIN CANAL NO. 10	5041	Snake River	East, Quincy, & South, Columbia Basin ID's	Conventional	500.00					10/23/1981
WA	Exemption	MAIN CANAL NO. 6	5038	Snake River	East, Quincy, & South, Columbia Basin ID's	Conventional	1,055.00					10/23/1981
WA	Exemption	WALDVOGEL BLUFF	5043	Snake River	Boise Project Board of Control	Conventional	300.00	6/30/1981				12/23/1981
WA	Preliminary	16.4 Wasteway	14349	Columbia Cascades	Grand Coulee Project Hydroelectric Authority	Conventional	1,750.00	7/29/2011				3/26/2013
WA	Preliminary	46A Wasteway	14351	Columbia Cascades	Grand Coulee Project Hydroelectric Authority	Conventional	1,600.00	7/29/2011				3/26/2013
OR	Preliminary	Mason Dam Hydro	12686	Snake River	Baker County	Conventional	3,400.00	4/25/2006			5/28/2010	
OR	Preliminary	Monroe Drop	14430	Columbia Cascades	Nitel	Conventional	300.00	7/2/2012			3/28/2013	
WA	Preliminary	PEC 1973 Drop	14316	Columbia Cascades	Grand Coulee Project Hydroelectric Authority	Conventional	2,200.00	11/8/2011				3/26/2013
WA	Preliminary	Pinto Dam	14380	Columbia Cascades	Grand Coulee Project Hydroelectric Authority	Conventional	3,400.00	4/4/2012				10/10/2012
WA	Preliminary	Rocky Coulee Wasteway	14372	Columbia Cascades	Grand Coulee Project Hydroelectric Authority	Conventional	12,000.00	3/13/2012				7/11/2012

Upper Colorado Renewable Portfolio

State	Project Status	Project Name	FERC ID	Area Office	Operating Entity	Hydropower Type	Capacity (kW)	Project Initiation Date	Preliminary Permit or Lease Date	Exemption or Cf Date	License or Lease Date	Online
RECLAMATION OWNED AND OPERATED												
CO	Online	Blue Mesa		Western Colorado	USBR	Conventional	86,400.00					1967
CO	Online	Crystal		Western Colorado	USBR	Conventional	31,500.00					1978
CO	Online	Elephant Butte		Albuquerque	USBR	Conventional	27,945.00					1940
NM	Online	Fanning Gorge		Provo	USBR	Conventional	151,500.00					1963
WY	Online	Fontenelle		Provo	USBR	Conventional	10,000.00					1968
AZ	Online	Glen Canyon		Western Colorado	USBR	Conventional	1,320,000.00					1965
CO	Online	Lower Molina		Western Colorado	USBR	Conventional	4,860.00					1962
CO	Online	Morrow Point		Western Colorado	USBR	Conventional	173,334.00					1971
CO	Online	Upper Molina		Western Colorado	USBR	Conventional	8,640.00					1962
RECLAMATION OWNED AND OPERATED BY OTHERS												
UT	Online	Causey Powerplant		Provo	Weber Basin Water Conservancy District	Conventional	1,900.00					1999
UT	Online	Deer Creek Powerplant		Provo	Provo River Water Users Association	Conventional	4,950.00					1958
UT	Online	Gateway Powerplant		Provo	Weber Basin Water Conservancy District	Conventional	4,000.00					1958
UT	Online	Lower Spanish Fork Powerplant		Provo	Strawberry Water User's Association	Conventional	250.00					1937
CO	Online	McPhee Powerplant		Western Colorado	Dolores Water Conservancy District	Conventional	1,283.00					1992
UT	Online	Onsted Powerplant		Provo	Purchased from PacifiCorp in 1990	Conventional	10,500.00					1904
UT	Online	Payson Powerplant		Provo	Strawberry Water User's Association	Conventional	400.00					1941
CO	Online	Towaco Powerplant		Western Colorado	Dolores Water Conservancy District	Conventional	11,495.00					1994
UT	Online	Upper Spanish Fork Warship Powerplant		Provo	Strawberry Water User's Association	Conventional	3,900.00					1909
UT	Online	Warship Powerplant		Provo	Weber Basin Water Conservancy District	Conventional	1,900.00					1958
FEDERAL ENERGY REGULATORY COMMISSION PROJECTS												
UT	Online	Echo Dam	3755	Provo	City of Bountiful	Conventional	4,500.00		11/30/1981		12/27/1984	6/9/1905
NM	Online	El Vado Dam	5226	Albuquerque	County of Los Alamos	Conventional	8,000.00		1/4/1982		10/31/1985	7/1/1988
CO	Online	Navajo Dam	4720	Western Colorado	City of Farmington	Conventional	30,000.00		10/15/1985		2/1/1988	2/1/1988
UT	Online	Pineview Dam	4597	Provo	Weber-Box Elder Conservancy District	Conventional	1,800.00				3/16/1984	6/13/1905
CO	Online	Vallecito Dam	3174	Western Colorado	Pramigan Resources & Energy, Inc.	Conventional	5,880.00				10/5/1983	5/1/1989
UT	Preliminary	Lake Powell Hurricane Cliffs Pumping Plant	12966	Regional Office	State of Utah	Pump Storage	300,000.00	8/21/2007		5/20/2011		
CO	Preliminary	Plateau Creek Pumped Storage	14426	Western Colorado	Dolores Water Conservancy District	Pump Storage	500,000.00	5/10/2012	10/1/2012			
LEASE OR POWER PRIVILEGE PROJECTS												
CO	Online	Grand Valley Project		Western Colorado	Grand Valley Water Users Assoc., Orchard Mesa Irrigation Dist., PSCO	Conventional	3,000.00				1933	1938
CO	Online	Jackson Gulch Dam		Western Colorado	Manitou Water Conservancy Dist.	Conventional	260.00				1955	1995
UT	Online	Jordanelle Dam		Provo	Central Utah Water Conservancy Dist., Heber Light and Power	Conventional	13,000.00	7/2/1999			2008	7/1/2008
CO	Online	Lennon Dam		Western Colorado	Florida Water Conservancy District	Conventional	120.00				1989	9/1/1988
CO	Online	South Canal (Drop 1)		Western Colorado	Uncompangre Valley Water Users and the Delta-Montrose Electric Association	Conventional	4,000.00	8/26/2009			3/16/2012	6/3/2013
CO	Online	South Canal (Drop 3)		Western Colorado	Uncompangre Valley Water Users and the Delta-Montrose Electric Association	Conventional	3,500.00	8/26/2009			3/16/2012	8/1/2013
CO	License	Ridgeway Dam		Western Colorado	Tri-County Water Conservancy District	Conventional	7,000.00	6/2/2010			2/6/2012	
NM	Preliminary	Caballo Dam		Albuquerque	HydroPower Capital	Conventional	5,900.00	9/22/2011	12/4/2012			
UT	Preliminary	Spanish Fork Flow Control Structure	LP11-2	Provo	Central Utah Water Conservancy District, Strawberry Water Users Association and South Utah Valley Electric Service District	Conventional	8,000.00	5/11/2011	3/9/2012			
NM	Posted Solicitation	San Juan Chama Project	LP12-1-000	Albuquerque	Albuquerque Bernalillo County Water Utility Authority	Conventional	286.00	7/6/2012				
CO	Development	Rifle Gap Dam		Western Colorado		Conventional	341.00					
CO	Development	Shavano Falls		Western Colorado	Uncompangre Valley Water Users Association	Conventional	5,168.00	8/21/2013				
CO	Request for Development	South Canal (Drop 4)		Western Colorado	Uncompangre Valley Water Users Association	Conventional	4,242.00	8/21/2013				

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CO	Request for Development	South Canal (Drop 5)	Western Colorado	Uncompahgre Valley Water Users Association	Conventional	291.00	8/21/2013				
PILOT PROJECTS											
CO	Request for Development	South Canal (Drop 2)	Western Colorado	Percherson Power, LLC, Delta-Montrose Electric Association, Uncompahgre Valley Water Users Association	Hydrodynamic Screw	850.00					