

# RECLAMATION

*Managing Water in the West*

## **Bureau of Reclamation Renewable Energy Update**

**Fiscal Year (FY) 2017, Q2**



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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 feature a renewable energy component.

The quarterly update is a compilation of monthly updates submitted by regional offices with area office input. Reclamation personnel, including Daniel Vallejo, Nicholas Williams, Robert Ross, Gary Grassel, and James Stauffer provided essential support in the development of this document.

## Renewable Activities

### HR 1967 – Bureau of Reclamation Pumped Storage Hydropower Development Act

Cited as the *Bureau of Reclamation Pumped Storage Hydropower Development Act*, H.R. 1967 was introduced by Congressman Doug Lamborn (R-CO-5) on April 6, 2017. If enacted, H.R. 1967 would amend section 9(c)(1) of the Reclamation Project Act of 1939 (43 U.S.C. 485h(c)(1)) to authorize non-Federal pumped storage development, utilizing multiple Reclamation reservoirs through a Lease of Power Privilege (LOPP).

As stated in the Department's testimony to the House Natural Resources' Subcommittee on Water, Power, and Oceans, under current law, both Reclamation and the Federal Energy Regulatory Commission (FERC) are authorized to permit the use of Reclamation assets to non-Federal entities for the purposes of hydropower development. Reclamation and FERC have entered into Memorandum of Understanding (MoU) agreements to define jurisdictional boundaries and responsibilities. Per the MoUs agreements, each Reclamation asset is subject to one - and only one - permitting process, meaning non-Federal entities seeking to utilize a Reclamation asset for the purposes of hydropower development would be required to obtain either a Reclamation LOPP or FERC License – but not both.

The issue H.R. 1967 seeks to address relates to non-Federal pumped storage projects utilizing multiple Reclamation reservoirs which may, under the current

regulatory framework, require both a LOPP and FERC License in the circumstance that one reservoir is within Reclamation's jurisdiction and the other reservoir is within FERC's jurisdiction. Whereas both agencies are acting within their respective authorities, the result is a fragmented, cumbersome permitting process. The legislation as drafted would minimize the regulatory burden in these circumstances by requiring only a single LOPP approval.

The Department's testimony, delivered by Special Assistant to the Secretary, Scott Cameron, is available on Reclamation's newsroom website at: <https://www.usbr.gov/newsroom/testimony/detail.cfm?RecordID=3081>.

# Reclamation Renewable Energy Summary

## Online Hydropower Facilities

	Great Plains		Lower Colorado		Mid-Pacific		Pacific Northwest		Upper Colorado		Bureau of Reclamation	
	#	MW <sup>1</sup>	#	MW	#	MW	#	MW	#	MW	#	MW
Reserved	21	1013	3	2454	10	1910	10	7537	9	1816	53	14730
Transferred	-	-	10	297	3	452	-	-	10	41	23	790
Other	-	-	7	85	-	-	-	-	-	-	7	85
FERC Facilities <sup>2</sup>	7	29	-	-	13	60	27	326	5	50	52	466
LOPP Facilities <sup>3</sup>	2	4	-	-	1	1	-	-	10	41	13	46
<b>Total</b>	<b>30</b>	<b>1046</b>	<b>20</b>	<b>2836</b>	<b>27</b>	<b>2423</b>	<b>37</b>	<b>7863</b>	<b>34</b>	<b>1948</b>	<b>148</b>	<b>16117</b>

## In Development – Conventional Hydropower (FERC)

	Great Plains		Lower Colorado		Mid-Pacific		Pacific Northwest		Upper Colorado		Bureau of Reclamation	
	#	MW	#	MW	#	MW	#	MW	#	MW	#	MW
License	2	20	-	-	1	7	1	3	-	-	4	30
Exemption	1	1	-	-	-	-	4	2	-	-	5	3
Preliminary Permit	2	2	-	-	-	-	8	21	-	-	10	23
<b>Total</b>	<b>5</b>	<b>23</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>7</b>	<b>13</b>	<b>26</b>	<b>-</b>	<b>-</b>	<b>19</b>	<b>56</b>

## In Development – Conventional Hydropower (LOPP)

	Great Plains		Lower Colorado		Mid-Pacific		Pacific Northwest		Upper Colorado		Bureau of Reclamation	
	#	MW	#	MW	#	MW	#	MW	#	MW	#	MW
Contract	-	-	-	-	-	-	-	-	1	1	1	1
Preliminary Lease	3	21	-	-	-	-	-	-	-	-	3	21
Posted Solicitation	-	-	-	-	-	-	-	-	1	0.1	1	0.1
Request for Development	3	3	1	2	2	0.4	-	-	2	1	8	6
<b>Total</b>	<b>6</b>	<b>24</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>0.4</b>	<b>-</b>	<b>-</b>	<b>4</b>	<b>2</b>	<b>13</b>	<b>28</b>

<sup>1</sup> Megawatts (MW)

<sup>2</sup> Non-Federal hydropower developed on Reclamation infrastructure, licensed by FERC.

<sup>3</sup> Non-Federal hydropower developed on Reclamation infrastructure, authorized through a LOPP Contract. Reclamation holds title to the Upper Colorado Grand Valley power facility LOPP.

## In Development – Pump Storage (PS) (FERC and LOPP)

Unlike conventional hydropower facilities that utilize a single waterbody (e.g. a reservoir or conduit) pump storage facilities utilize two waterbodies (e.g. an upper and lower reservoir). Typical pump storage operation consists of pumping water from the lower reservoir to the upper reservoir when electricity demand (and therefore price) is low and releasing water from the upper reservoir to the lower reservoir through a powerhouse to generate electricity when electricity demand (and therefore price) is high. Beyond engaging in arbitrage to maximize facility economic value, pump storage facilities are also fitted to support variable renewable integration through the provision of ancillary (i.e. grid) support services (e.g. energy storage, demand response, contingency reserves, frequency response, etc.).

As noted, non-Federal pump storage development at Reclamation projects may require both a FERC License and Reclamation LOPP if the proposed project utilizes a Reclamation reservoir within Reclamation’s permitting jurisdiction and any second reservoir outside Reclamation’s permitting jurisdiction (i.e. FERC’s jurisdiction). Projects subject to dual FERC/LOPP jurisdiction are identified as “Dual LOPP/FERC PS” projects in the table below and the Appendix – Regional Renewable Energy Portfolios.

Additional information regarding non-Federal pumped storage permitting is available on the Reclamation LOPP website: <https://www.usbr.gov/power/LOPP>.

	Great Plains		Lower Colorado		Mid-Pacific		Pacific Northwest		Upper Colorado		Bureau of Reclamation	
	#	MW	#	MW	#	MW	#	MW	#	MW	#	MW
<b>FERC PS</b>												
License	-	-	-	-	-	-	-	-	-	-	-	-
Preliminary Permit	2	1732	4	3645	1	1250	2	1200	2	800	11	8627
<b>LOPP PS</b>												
Contract	-	-	-	-	-	-	-	-	-	-	-	-
Preliminary Lease	-	-	-	-	-	-	-	-	-	-	-	-
<b>Dual LOPP/FERC PS</b>												
Preliminary Permit <sup>4</sup>	1	133	-	-	-	-	1	400	1	750	3	1283
<b>Total</b>	<b>3</b>	<b>1865</b>	<b>4</b>	<b>3645</b>	<b>1</b>	<b>1250</b>	<b>3</b>	<b>1600</b>	<b>3</b>	<b>1550</b>	<b>14</b>	<b>9910</b>

<sup>4</sup> The proposed Anderson Ranch Pumped Storage Project (PN), Seminole Pumped Storage Project (GP), and Ute Pumped Storage Project (UC) have each received a FERC Preliminary Permit for upper reservoir development, however none have received a Reclamation Preliminary Lease or LOPP Contract for lower reservoir development.

## Capital Improvement Projects at Reclamation Facilities

### Turbine Replacements

Replacing an antiquated runner with a more modern design, featuring improved materials can increase unit operating efficiencies - on average, by three percent. At this time, turbine replacements are in progress at Palisades (G2) and Minidoka (G9).

### Generator Rewinds

Rewinding a generator with modern windings and insulating materials can increase unit operating efficiencies and provide the opportunity to uprate generator capacity. At this time, rewinds are in progress at Yellowtail (G1), Trinity (G1), and Glen Canyon (G1).

## Online Solar and Wind Projects

	Great Plains		Lower Colorado		Mid-Pacific		Pacific Northwest		Upper Colorado		Bureau of Reclamation	
	#	MW	#	MW	#	MW	#	MW	#	MW	#	MW
<b>Solar</b>	-	-	4	14.3	-	-	1	.005	2	.035	7	14.4
<b>Wind</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	-	-	4	14.3	-	-	1	.005	2	.035	7	14.4

## In Development Solar and Wind Projects

	Great Plains		Lower Colorado		Mid-Pacific		Pacific Northwest		Upper Colorado		Bureau of Reclamation	
	#	MW	#	MW	#	MW	#	MW	#	MW	#	MW
<b>Solar</b>	-	-	2	50.02	1	26	-	-	-	-	3	76.02
<b>Wind</b>	-	-	1	500	-	-	-	-	-	-	-	500
<b>Total</b>	-	-	3	550.02	1	26	-	-	-	-	3	576.02

## 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 carry out water and energy efficiency improvements, including projects that save water; increase energy efficiency and the use of renewable energy in water management; support environmental benefits; facilitate and support water markets; mitigate the risk of future water conflict in areas of high risk; and accomplish other benefits that contribute to water supply sustainability in the Western United States. Projects are selected 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.

For additional information visit the WaterSMART program website, available at: <https://www.usbr.gov/watersmart>.

## WaterSMART Updates

The FY2017 WaterSMART Water and Energy Efficiency Grant (WEEG) funding opportunity announcement was posted on <http://www.grants.gov/> in November 2016. Per the announcement, applications are due January 18, 2017. Reclamation expects to announce WEEG project selections in June 2017.

## WaterSMART Summary

All active, FY 2011-2016 WaterSMART WEEG projects that feature a renewable energy component are listed in the table below. Full project summaries are available on the WaterSMART website at: <http://www.usbr.gov/watersmart/weeg/prev.html>.

	<b>Fiscal Year</b>	<b>Recipient and Project Title</b>	<b>Renewable Component Status</b>
1	2011	Three Sisters Irrigation District <i>Main Canal Pipeline Penstock Hydro Project</i>	Online (8/2014)
2	2011	Pershing County Water Conservation District <i>Humboldt River Automation Metering and Hydropower Project</i>	In development, FERC License
3	2011	Boise Project Board of Control <i>Hydroelectric Project</i>	Online (4/2013)
4	2012	Consolidated Irrigation Company <i>Improve Irrigation Efficiencies and Provide Sustainability</i>	Online (9/2015)
5	2013	Cub River Irrigation Company <i>Middle Ditch Water Conservation &amp; Renewable Energy Piping Project</i>	Renewable component has been removed from project scope. Project will be removed from future updates.



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	<b>Fiscal Year</b>	<b>Recipient and Project Title</b>	<b>Renewable Component Status</b>
6	2014	Nevada Irrigation District <i>Hydroelectric Project</i>	In development
7	2014	Rosedale-Rio Bravo Water Storage District <i>Water Conservation, Energy Efficiency, and Solar Power Project</i>	Online (6/2016)
8	2014	Uncompahgre Valley Water Users Association <i>Shavano Falls Hydropower Development</i>	Online (5/2015)
9	2014	Elephant Butte Irrigation District <i>Water-Habitat-Energy-Nexus</i>	In development
10	2014	Davis and Weber Counties Canal Company <i>Main Piping and Small Hydro Project</i>	In development
11	2014	Fremont Irrigation Company <i>Extension to Improve Irrigation Efficiency and Provide Sustainability</i>	In development
12	2014	Richmond Irrigation District <i>Upper High Creek Canal Enclosure and Hydropower Development Project</i>	In development
13	2015	Bella Vista Water District <i>Renewable Energy, Advanced Metering Infrastructure, and Water Conservation Improvements</i>	In development
14	2015	Uncompahgre Valley Water Users Association <i>South Canal Drop 4 Hydropower Development</i>	Online (6/2015)
15	2015	Navajo Agricultural Product Industry <i>Create and Implement a Comprehensive Water Management Web-Based Tool for Ordering and Delivering Irrigation Water</i>	In development
16	2015	Three Sisters Irrigation District <i>Main Canal Pipeline and Micro Hydro Generation Project</i>	In development
17	2015	Cameron County Irrigation District No. 6 <i>Conversion of the Saldana Canal into Pipeline, Elimination of the Saldana Pump by Construction of Aerial Crossing and Solar Powered Second Lift Pump</i>	In development
18	2015	Santa Cruz Irrigation District No. 15 <i>Shotcrete Lining of the N-Canal, Installation of a VFD at Pump-15, and Wind Powered Alternative at Pump 15</i>	In development
19	2015	Davis and Weber Counties Canal Company <i>Canal Piping and Hydro Project</i>	In development
20	2015	Davis and Weber Counties Canal Company <i>Secondary Water Irrigation Metering and Hydro Project</i>	In development
21	2015	Marion Upper Ditch Company <i>Main Canal Pipeline and Micro Hydro Generation Project</i>	In development
22	2016	Uncompahgre Valley Water Users Association <i>South Canal Hydropower Development Project: Drop 5</i>	Online (8/2016)
23	2016	Davis and Weber Counties Canal Company <i>Piping and Hydro Project</i>	In development
24	2016	Haight Creek Irrigation Company <i>Green Road Piping, Metering, and Small Hydro Project</i>	In development
25	2016	Weber Basin Water Conservancy District <i>Uintah Bench Secondary Water Metering &amp; Small Hydro Project</i>	In development
26	2016	Woodruff Irrigation Company <i>Woodruff Hydroelectric Project</i>	In development

# Regional Renewable Energy Updates

## Great Plains Renewable Energy Updates

### FERC Projects

**Project:** Clark Canyon Dam  
**Developer:** Clark Canyon Hydro, LLC  
**Status:** License (P-14677)

As noted in the FY16 Q4 Update, on September 1, 2016, the Upper Missouri Waterkeeper filed an appeal and request for rehearing in response to the Montana Department of Environmental Quality's issuance of a final Section 401 Water Quality Certification, arguing the certification is, "arbitrary and capricious, and not in accordance with law." The appeal was resolved on March 1, 2017 through a MoU agreement between Clark Canyon Hydro, LLC, the Montana Department of Environmental Quality, and the Upper Missouri Waterkeeper.

With the appeal resolved, FERC issued a License for the Clark Canyon Dam project on March 31, 2017.

**Project:** Willwood Diversion Dam and the Deer Creek Hydroelectric Project  
**Developer:** Willwood Irrigation District  
**Status:** Expired (P-13423) (P-14370)

Preliminary Permits for both the Willwood Diversion Dam and Deer Creek Hydroelectric Project have expired. Both projects have been removed from the FY17 Q2 Update.

**Project:** Medicine Bow Pumped Storage  
**Developer:** Medicine Bow Hydro, LLC  
**Status:** Expired (P-13836)

Preliminary Permit for the Medicine Bow Pumped Storage project has expired. Project has been removed from the FY17 Q2 Update.

**Project:** Fresno Dam  
**Developer:** Alpine Pacific Utilities Hydro, LLC  
**Status:** Preliminary Permit (P-14751)

Alpine Pacific Utilities Hydro, LLC filed a FERC License application on February 1, 2017. On March 22, 2017 FERC issued a "Deficiency of Application and Request for Additional Information," requesting Alpine Pacific Utilities

Hydro, LLC resolve application deficiencies (noted within the correspondence) within 90 days (i.e., June 20, 2017).

### **LOPP Projects**

**Project:** Yellowtail Afterbay  
**Developer:** Crow Tribe  
**Status:** Preliminary Lease

A 60% design package was submitted to Reclamation in mid-November 2016. Reclamation comments were submitted via letter to Crow Tribe representatives in mid-January 2017. Within the letter Reclamation noted that the proposed project entailed significant modifications to the Yellowtail Afterbay Dam, requiring extensive review.

A design meeting, attended by Reclamation Technical Service Center, Montana Area Office, Great Plains region, and Crow Tribe representatives and consultants, was held in late January 2017. Tribe consultants presented a revised design concept to address Reclamation comments – with the intention to submit a revised 60% design package in May 2017.

The construction schedule has been revised to accommodate proposed design revisions; construction will likely be delayed until 2018 (or later). In addition, the Crow Tribe and Montana Area Office have paused National Environmental Policy Act compliance efforts until the revised 60% design package is available for review.

The Tribe's consultant conducted a bathymetry survey immediately upstream and downstream of the Yellowtail Afterbay Dam in mid-March 2017. The Montana Area Office coordinated public outreach and safety support for the survey effort.

A Project Management Team meeting was held in March to discuss, in part, the revised design. The next meeting is scheduled for mid-April 2017.

### **Lower Colorado Renewable Energy Updates**

No updates for this quarter.

### **Mid-Pacific Renewable Energy Updates**

No updates for this quarter.

## Pacific Northwest Renewable Energy Updates

### FERC/LOPP Pumped Storage Projects

**Project:** Anderson Ranch Pump Storage  
**Developer:** Cat Creek Energy, LLC  
**Status:** Preliminary Permit (P-14655)

The regional director has selected Cat Creek Energy, LLC for award of the Preliminary Lease. At this time, Cat Creek Energy, LLC is evaluating Preliminary Lease and cost-recovery agreement terms.

## Upper Colorado Renewable Energy Updates

### LOPP Projects

**Project:** Spanish Fork Flow Control Structure  
**Developer:** Central Utah Water Conservancy District, Strawberry Water Users Association, and South Utah Valley Electric Service District  
**Status:** Terminated

The development team was selected on March 9, 2012. Per the selection, the team was allotted five years to enter into a LOPP Contract to develop non-Federal hydropower on the Spanish Fork Flow Control Structure. On March 21, 2016, Reclamation contacted the team to initiate LOPP Contract negotiations.

The LOPP Contract was not executed by the defined March 9, 2017 deadline. Accordingly, on March 13, 2017 Reclamation notified the team of a decision to rescind the selection and terminate the LOPP process.

**Project:** Mancos Project Outlet Canal  
**Developer:** Mancos Water Conservancy District  
**Status:** Request for Development

The Preliminary Lease and cost-recovery agreement was submitted to the District on November 8, 2016 for signature. At this time, the District is evaluating Preliminary Lease and cost-recovery agreement terms.

# **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 CE Date	License or Lease Date	Online Date
<b>RECLAMATION OWNED AND OPERATED (RESERVED WORKS)</b>												
WY	Online	Alcova		Wyoming	Reclamation	Conventional	41,400.00					1955
CO	Online	Big Thompson		Eastern Colorado	Reclamation	Conventional	4,500.00					1959
WY	Online	Boysen		Wyoming	Reclamation	Conventional	15,000.00					1952
WY	Online	Buffalo Bill		Wyoming	Reclamation	Conventional	18,000.00					1992
MT	Online	Canyon Ferry		Montana	Reclamation	Conventional	50,001.00					1953
CO	Online	Estes		Eastern Colorado	Reclamation	Conventional	45,000.00					1950
CO	Online	Flatiron (Unit 1, 2, 3)		Eastern Colorado	Reclamation	Conventional/Pump Storage	94,500.00					1954
WY	Online	Fremont Canyon		Wyoming	Reclamation	Conventional	66,800.00					1960
WY	Online	Glendo		Wyoming	Reclamation	Conventional	38,000.00					1959
CO	Online	Green Mountain		Eastern Colorado	Reclamation	Conventional	26,000.00					1943
WY	Online	Guernsey		Wyoming	Reclamation	Conventional	6,400.00					1928
WY	Online	Heart Mountain		Wyoming	Reclamation	Conventional	5,000.00					1948
WY	Online	Kortes		Wyoming	Reclamation	Conventional	36,000.00					1950
CO	Online	Marys Lake		Eastern Colorado	Reclamation	Conventional	8,100.00					1951
CO	Online	Mt. Elbert PS		Eastern Colorado	Reclamation	Pump Storage	200,000.00					1981
WY	Online	Pilot Butte		Wyoming	Reclamation	Conventional	1,600.00					1929

## 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 CE Date	License or Lease Date	Online Date
CO	Online	Pole Hill		Eastern Colorado	Reclamation	Conventional	38,238.00					1954
WY	Online	Seminole		Wyoming	Reclamation	Conventional	51,750.00					1939
WY	Online	Shoshone		Wyoming	Reclamation	Conventional	3,000.00					1992
WY	Online	Spirit Mountain		Wyoming	Reclamation	Conventional	4,500.00					1994
MT	Online	Yellowtail		Montana	Reclamation	Conventional	259,374.00					1966
<b>FEDERAL ENERGY REGULATORY COMMISSION PROJECTS</b>												
WY	Online	Garland Canal	3031	Wyoming	Shoshone Irrigation District	Conventional	2,610.00				10/9/1981	~ 1988
MT	Online	Lower Turnbull Drop	12597	Montana	Turnbull Hydro, LLC	Conventional	7,700.00	6/21/2005			7/28/2006	6/22/2011
OK	Online	McGee Creek Dam	8492	Oklahoma Texas	McGee Creek Authority	Conventional	175.00	7/26/1984	3/14/1985		6/23/1986	~ 1991
CO	Online	Ruedi Dam	3603	Western Colorado	City of Aspen	Conventional	3,200.00				9/8/1983	~ 1990
CO	Online	Sugarloaf Dam	3819	Eastern Colorado	STS Hydropower Limited	Conventional	2,800.00				11/18/1982	~ 1987
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	Clark Canyon Dam	14677	Montana	Clark Canyon Hydro, LLC	Conventional	4,700.00	4/20/2015	9/18/2015		3/31/2017	
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		
NE	Preliminary	Medicine Creek Dam	13648	Nebraska-Kansas	Twin Valleys Public Power District	Conventional	800.00	12/30/2009	6/15/2010			

## 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 CE Date	License or Lease Date	Online Date
MT	Preliminary	Fresno Dam	14751	Montana	Alpine Pacific Utilities Hydro, LLC	Conventional	1,348.00	1/21/2016	4/29/2016			
WY	Preliminary	Black Canyon Pumped Storage Project	14087	Wyoming	Black Canyon Hydro, LLC	Pump Storage	700,000.00	1/25/2011	7/15/2011			
MT	Preliminary	Square Butte Pumped Storage	13349	Montana	Square Butte Hydro LLC	Pump Storage	1,032,000.00	12/23/2008	7/23/2012			
<b>LEASE OF POWER PRIVILEGE PROJECTS</b>												
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	Online	Granby Dam	LP11-3	Eastern Colorado	Northern Water Conservancy District	Conventional	1,200.00	4/20/2011	6/26/2012		3/31/2015	5/19/2016
CO	Preliminary	Pueblo Dam	LP11-4	Eastern Colorado	Southeastern Colorado Water Conservancy District, Colorado Springs Utilities, and Board of Water Works of Pueblo, Colorado	Conventional	7,010.00	4/20/2011	2/27/2012			
MT	Preliminary	Yellowtail Afterbay		Montana	Crow Tribe	Conventional	9,000.00	1/11/2012	3/6/2015			
MT	Preliminary	Helena Valley Pumping Plant		Montana	Helena Valley Irrigation District	Conventional	4,800.00	9/13/2013	8/20/2015			
MT	Request for Development	A Drop		Montana	Turnbull Hydro, LLC	Conventional	1,000.00	6/1/2014				
MT	Request for Development	Johnson Drop		Montana	Turnbull Hydro, LLC	Conventional	700.00	6/1/2014				
MT	Request for Development	Woods Drop		Montana	Turnbull Hydro, LLC	Conventional	900.00	6/1/2014				
<b>FEDERAL ENERGY REGULATORY COMMISSION / LEASE OF POWER PRIVILEGE PUMP STORAGE PROJECTS</b>												
CO	Preliminary	Seminole Pumped Storage Project	14787	Wyoming	Black Canyon Hydro, LLC	Pump Storage	133,300.00	6/13/2016	9/23/2016			



## 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 Date
<b>RECLAMATION OWNED AND OPERATED (RESERVED WORKS)</b>												
AZ	Online	Davis		Yuma	Reclamation	Conventional	255,000.00					1951
AZ/NV	Online	Hoover		Lower Colorado	Reclamation	Conventional	2,078,800.00					1936
AZ	Online	Parker		Yuma	Reclamation	Conventional	120,000.00					1943
<b>RECLAMATION OWNED AND OPERATED BY OTHERS (TRANSFERRED WORKS)</b>												
AZ	Online	Arizona Falls Powerplant		Phoenix	Salt River Valley Water Users Association	Conventional	750.00					1902
AZ	Online	Cross Cut Powerplant		Phoenix	Salt River Valley Water Users Association	Conventional	3,000.00					1914
AZ	Online	Horse Mesa Powerplant		Phoenix	Salt River Valley Water Users Association	Conventional/Pump Storage	129,000.00					1927
AZ	Online	Mormon Flat Powerplant		Phoenix	Salt River Valley Water Users 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 Users Association	Conventional	4,600.00					1926
AZ	Online	South Consolidated Powerplant		Phoenix	Salt River Valley Water Users Association	Conventional	1,400.00					1912
AZ	Online	Stewart Mountain Powerplant		Phoenix	Salt River Valley Water Users Association	Conventional	10,400.00					1930
AZ	Online	Theodore Roosevelt Powerplant		Phoenix	Salt River Valley Water Users Association	Conventional	36,020.00					1973
<b>OTHER PLANTS ON RECLAMATION FACILITIES</b>												
AZ	Online	C.C. Craigin Dam and Powerplant	2304	Phoenix	Salt River Project	Conventional	3,000.00					1965

## 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 Date
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
<b>FEDERAL ENERGY REGULATORY COMMISSION PROJECTS</b>												
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	13861	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			
<b>LEASE OF POWER PRIVILEGE PROJECTS</b>												
AZ	Request for Development	Laguna Dam		Yuma		Conventional	2,200.00	1/28/2013				
<b>SOLAR PROJECTS</b>												
NV	Online	Boulder City Regional Office Building		Regional Office	Reclamation		276.36					
NV	Online	Boulder City Regional Office Building (parking)		Regional Office	Reclamation		5.97					

### 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 Date
NV	Online	Hoover Spillway House Renovation		Regional Office	Reclamation		48.00					Aug-13
NV	Online	River Mountains		Regional Office	Southern Nevada Water Authority and SunEdison		14,000.00					Jan-16
NV	In Development	First Solar		Regional Office	First Solar Development, LLC		50,000.00	Jun-14				
CA	In Development	Blythe Office Solar Installation		Regional Office	Reclamation		19.00					
<b>WIND PROJECTS</b>												
AZ	In Development	Mohave County Wind Farm		Regional Office	BP Wind Energy North America		500,000.00					

## 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 Date
<b>RECLAMATION OWNED AND OPERATED (RESERVED WORKS)</b>												
CA	Online	Folsom		Central California	Reclamation	Conventional	207,000.00					1955
CA	Online	Judge Francis Carr		Northern California	Reclamation	Conventional	154,400.00					1963
CA	Online	Keswick		Northern California	Reclamation	Conventional	117,000.00					1950
CA	Online	Lewiston		Northern California	Reclamation	Conventional	350.00					1964
CA	Online	New Melones		Central California	Reclamation	Conventional	380,000.00					1979
CA	Online	Nimbus		Central California	Reclamation	Conventional	13,500.00					1955
CA	Online	Shasta		Northern California	Reclamation	Conventional	714,000.00					1944
CA	Online	Spring Creek		Northern California	Reclamation	Conventional	180,000.00					1964
CA	Online	Stampede		Lahontan Basin	Reclamation	Conventional	3,650.00					1988
CA	Online	Trinity		Northern California	Reclamation	Conventional	140,000.00					1964
<b>RECLAMATION OWNED AND OPERATED BY OTHERS (TRANSFERRED WORKS)</b>												
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
<b>FEDERAL ENERGY REGULATORY COMMISSION PROJECTS</b>												
OR	Online	East Side	2082	Klamath Basin	Scottish Power (PacifiCorp)	Conventional	3,200.00					

## 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 Date
CA	Online	Friant Fishwater Release	11068	South Central California	Orange County Irrigation District	Conventional	510.00				5/16/1991	
CA	Online	Friant Power	2892	South Central California	Friant Power Authority	Conventional	27,360.00				9/30/1982	1991
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 and 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 and 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 and 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 and Power Authority	Conventional	2,125.00	11/23/1981			6/8/1982	
CA	Online	Monticello	2780	Central California	Solano Irrigation District	Conventional	11,500.00				1/29/1981	Jun-83
NV	Online	New Lahontan	7828	Lahontan Basin	Truckee-Carson Irrigation District	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	1986
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			
<b>LEASE OF POWER PRIVILEGE PROJECTS</b>												
OR	Online	Klamath Canal Drop C		Klamath Basin	Klamath Irrigation District	Conventional	900.00	2/8/2011			11/8/2011	5/3/2012

### 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 Date
CA	Request for Development	A-C3 (Panicker Drop)		Lahontan Basin	Truckee-Carson Irrigation District	Conventional	125.00	2014				
CA	Request for Development	V-C2 (Lewis Wasteway)		Lahontan Basin	Truckee-Carson Irrigation District	Conventional	250.00	2014				
<b>SOLAR PROJECTS</b>												
CA	In Development	San Luis Facility		South Central California	San Luis Renewables, LLC		26,000.00	8/5/2011				

## 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 CE Date	License or Lease Date	Online Date
<b>RECLAMATION OWNED AND OPERATED (RESERVED WORKS)</b>												
ID	Online	Anderson Ranch		Snake River	Reclamation	Conventional	40,000.00					1950
ID	Online	Black Canyon		Snake River	Reclamation	Conventional	10,200.00					1925
ID	Online	Boise River Diversion		Snake River	Reclamation	Conventional	3,450.00					1912
WA	Online	Chandler		Columbia Cascades	Reclamation	Conventional	12,000.00					1956
WA	Online	Grand Coulee		Columbia Cascades	Reclamation	Conventional/Pump Storage	6,809,000.00					1941
OR	Online	Green Springs		Columbia Cascades	Reclamation	Conventional	17,290.00					1960
MT	Online	Hungry Horse		Columbia Cascades	Reclamation	Conventional	428,000.00					1952
ID	Online	Minidoka		Snake River	Reclamation	Conventional	27,700.00					1942
ID	Online	Palisades		Snake River	Reclamation	Conventional	176,564.00					1957
WA	Online	Roza		Columbia Cascades	Reclamation	Conventional	12,937.00					1958
<b>FEDERAL ENERGY REGULATORY COMMISSION PROJECTS</b>												
ID	Online	American Falls	2736	Snake River	Idaho Power Co	Conventional	92,400.00				3/31/1975	1975
ID	Online	ARROWROCK DAM	4656	Snake River	Big Bend Irrigation District, et al.	Conventional	15,000.00		8/15/1983		3/27/1989	Mar-10
ID	Online	CASCADE	2848	Snake River	Idaho Power Company	Conventional	12,420.00				2/17/1981	3/4/1985
WA	Online	COWICHE	7337	Columbia Cascades	Yakima-Tieton Irrigation District	Conventional	1,470.00				7/6/1984	1986
ID	Online	Dietrich Drop	8909	Snake River	Big Wood Canal Company	Conventional	4,770.00	3/7/1985			5/22/1987	1989

## 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 CE Date	License or Lease Date	Online Date
WA	Online	ELTOPIA BRANCH CANAL	3842	Columbia Cascades	Columbia Basin Hydropower	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		6/6/2008		Apr-12
ID	Online	FARGO DROP NO. 1	5042	Snake River	Boise Project Board of Control	Conventional	1,100.00			10/23/1981		Jun-13
ID	Online	FELT HYDRO	5089	Snake River	Fall River Rural Cooperative	Conventional	7,450.00				9/9/1983	1985
ID	Online	ISLAND PARK	2973	Snake River	Fall River Rural Electric	Conventional	4,800.00		7/8/1983		10/19/1988	1982
ID	Online	Little Wood Reservoir	7427	Snake River	Little Wood Irrigation District	Conventional	3,000.00			4/13/1984		1989
ID	Online	LOW LINE NO. 8 ARENA DROP	5056	Snake River	Boise Project Board of Control	Conventional	385.00	6/10/1981		10/23/1981		Apr-12
WA	Online	MAIN CANAL HEADWORKS	2849	Columbia Cascades	Columbia Basin Hydropower	Conventional	26,000.00				11/16/1981	1987
ID	Online	Mile 28	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 Irrigation District, et al.	Conventional	1,880.00		2/26/1982		12/14/1984	1990
ID	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 Irrigation District	Conventional	1,441.00				7/6/1984	1986
OR	Online	OWYHEE DAM	4354	Snake River	Gem, Owyhee, and Ridgeview Irrigation Districts	Conventional	4,340.00				5/9/1984	1985
OR	Online	OWYHEE TUNNEL NO. 1	4359	Snake River	Gem, Owyhee, and Ridgeview Irrigation Districts	Conventional	8,120.00				2/28/1986	6/1/1983
WA	Online	POTHOLES EAST CANAL	3843	Snake River	Columbia Basin Hydropower	Conventional	2,400.00				12/9/1981	1982
WA	Online	POTHOLES EAST CANAL HEADWORKS	2840	Columbia Cascades	Columbia Basin Hydropower	Conventional	6,500.00				9/21/1982	1991
WA	Online	QUINCY CHUTE	2937	Columbia Cascades	Columbia Basin Hydropower	Conventional	9,367.00				8/20/1982	1983



## 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 CE Date	License or Lease Date	Online Date
WA	Online	RUSSEL D SMITH PEC 22.7	2926	Columbia Cascades	Columbia Basin Hydropower	Conventional	6,100.00				3/27/1980	1982
WA	Online	SUMMER FALLS	3295	Columbia Cascades	Columbia Basin Hydropower	Conventional	92,000.00				8/14/1981	1983
WA	Online	TIETON DAM	3701	Columbia Cascades	Yakima-Tieton Irrigation District	Conventional	13,600.00				6/27/1991	2007
OR	Online	45-Mile	13817	Columbia Cascades	Apple, Inc.	Conventional	5,000.00	7/16/2010		12/17/2010		5/13/2015
OR	Online	Monroe Drop	14430	Columbia Cascades	Apple, Inc.	Conventional	300.00	7/2/2012	3/28/2013	2/18/2015		10/29/2015
ID	License	Mason Dam Hydro	12686	Snake River	Baker County	Conventional	3,400.00	4/25/2006	5/26/2010		9/6/2016	
ID	Exemption	FARGO DROP NO. 2	5040	Snake River	Boise Project Board of Control	Conventional	175.00			10/23/1981		
ID	Exemption	MAIN CANAL NO. 10	5041	Snake River	Columbia Basin Hydropower	Conventional	500.00			10/23/1981		
ID	Exemption	MAIN CANAL NO. 6	5038	Snake River	Columbia Basin Hydropower	Conventional	1,055.00			10/23/1981		
ID	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	Columbia Basin Hydropower	Conventional	1,750.00	7/29/2011	3/26/2013			
WA	Preliminary	46A Wasteway	14351	Columbia Cascades	Columbia Basin Hydropower	Conventional	1,600.00	7/29/2011	3/26/2013			
WA	Preliminary	McKay Dam	14546	Columbia Cascades	Houtama Hydropower, LLC	Conventional	2,300.00	8/13/2013	2/6/2014			
WA	Preliminary	PEC 1973 Drop	14316	Columbia Cascades	Columbia Basin Hydropower	Conventional	2,200.00	11/8/2011	3/26/2013			
WA	Preliminary	Pinto Dam	14380	Columbia Cascades	Columbia Basin Hydropower	Conventional	3,400.00	4/4/2012	10/10/2012			
WA	Preliminary	Scooteney Inlet Drop	14318	Columbia Cascades	Columbia Basin Hydropower	Conventional	1,700.00	5/31/2011	3/26/2013			
OR	Preliminary	Unity Dam by Warm Springs Hydro	14576	Snake River	Warm Springs Hydro, LLC	Conventional	800.00	1/13/2014	6/16/2014			

## 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 CE Date	License or Lease Date	Online Date
WA	Preliminary	Wickiup Dam Hydro	12965	Columbia Cascades	Symbiotics	Conventional	7,150.00	8/17/2007	5/15/2008			
WA	Preliminary	Banks Lake Pumped Storage Project	14329	Columbia Cascades	Columbia Basin Hydropower	Pump Storage	1,000,000.00	11/30/2011	8/22/2013			
OR	Preliminary	Prineville Pumped Storage Project	14553	Columbia Cascades	Prineville Energy Storage, LLC	Pump Storage	200,000.00	8/31/2012	7/19/2013			
<b>FEDERAL ENERGY REGULATORY COMMISSION / LEASE OF POWER PRIVILEGE PUMP STORAGE PROJECTS</b>												
ID	Preliminary	Anderson Ranch Pump Storage		Snake River	Cat Creek Energy, LLC	Pump Storage	400,000.00	11/5/2014	11/27/2015			
<b>SOLAR PROJECTS</b>												
WA	Online	Grand Coulee Solar		Columbia Cascades	Reclamation		4.70					Oct-12

## 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 CE Date	License or Lease Date	Online Date
<b>RECLAMATION OWNED AND OPERATED (RESERVED WORKS)</b>												
CO	Online	Blue Mesa		Western Colorado	Reclamation	Conventional	86,400.00					1967
CO	Online	Crystal		Western Colorado	Reclamation	Conventional	31,500.00					1978
NM	Online	Elephant Butte		Albuquerque	Reclamation	Conventional	27,945.00					1940
UT	Online	Flaming Gorge		Provo	Reclamation	Conventional	151,500.00					1963
WY	Online	Fontenelle		Provo	Reclamation	Conventional	10,000.00					1968
AZ	Online	Glen Canyon		Western Colorado	Reclamation	Conventional	1,320,000.00					1965
CO	Online	Lower Molina		Western Colorado	Reclamation	Conventional	5,589.00					1962
CO	Online	Morrow Point		Western Colorado	Reclamation	Conventional	173,334.00					1971
CO	Online	Upper Molina		Western Colorado	Reclamation	Conventional	9,936.00					1962
<b>RECLAMATION OWNED AND OPERATED BY OTHERS (TRANSFERRED WORKS)</b>												
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	4,275.00					1958
UT	Online	Lower Spanish Fork Powerplant		Provo	Strawberry Water Users Association	Conventional	250.00					1937
CO	Online	McPhee Powerplant		Western Colorado	Dolores Water Conservancy District	Conventional	1,283.00					1992
UT	Online	Olmsted Powerplant		Provo	Central Utah Water Conservancy District	Conventional	10,300.00					1904

## 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 CE Date	License or Lease Date	Online Date
UT	Online	Payson Powerplant		Provo	Strawberry Water Users Association	Conventional	400.00					1941
CO	Online	Towaoc Powerplant		Western Colorado	Dolores Water Conservancy District	Conventional	11,495.00					1994
UT	Online	Upper Spanish Fork		Provo	Strawberry Water Users Association	Conventional	3,900.00					1909
UT	Online	Wanship Powerplant		Provo	Weber Basin Water Conservancy District	Conventional	1,900.00					1958
<b>FEDERAL ENERGY REGULATORY COMMISSION PROJECTS</b>												
UT	Online	Echo Dam	3755	Provo	City of Bountiful	Conventional	4,500.00		11/30/1981		12/7/1984	1987
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
UT	Online	Pineview Dam	4597	Provo	Weber-Box Elder Conservancy District	Conventional	1,800.00				3/16/1984	1991
CO	Online	Vallecito Dam	3174	Western Colorado	Ptarmigan Resources and Energy, Inc.	Conventional	5,880.00				10/5/1983	5/1/1989
UT	Preliminary	Lake Powel 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			
<b>LEASE OF POWER PRIVILEGE PROJECTS</b>												
CO	Online	Grand Valley Project		Western Colorado	Grand Valley Water Users Association and the Orchard Mesa Irrigation District	Conventional	3,000.00				1933	1938
CO	Online	Jackson Gulch Dam		Western Colorado	Mancos Water Conservancy District	Conventional	260.00				1995	1995
UT	Online	Jordanelle Dam		Provo	Central Utah Water Conservancy District, Heber Light and Power	Conventional	13,000.00	7/2/1999			2008	7/1/2008
CO	Online	Lemon Dam		Western Colorado	Florida Water Conservancy District	Conventional	120.00				1988	9/1/1988

## 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 CE Date	License or Lease Date	Online Date
CO	Online	South Canal (Drop 1)		Western Colorado	Uncompahgre 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	Uncompahgre Valley Water Users and the Delta-Montrose Electric Association	Conventional	3,500.00	8/26/2009			3/16/2012	8/1/2013
CO	Online	Ridgway Dam		Western Colorado	Tri-County Water Conservancy District	Conventional	7,000.00	6/2/2010			2/6/2012	4/3/2014
CO	Online	Shavano Falls		Western Colorado	Uncompahgre Valley Water Users Association	Conventional	2,800.00	8/21/2013	1/27/2014		6/18/2014	6/24/2015
CO	Online	South Canal (Drop 4)		Western Colorado	Uncompahgre Valley Water Users Association	Conventional	4,800.00	8/21/2013	5/14/2014		9/8/2014	6/24/2015
CO	Online	South Canal (Drop 5)		Western Colorado	Uncompahgre Valley Water Users Association	Conventional	2,400.00	3/3/2015	6/18/2015		11/5/2015	8/12/2016
CO	Contract	South Canal (Drop 2)		Western Colorado	Percheron Power, LLC, Uncompahgre Valley Water Users Association	Hydrodynamic Screw	987.00	5/27/2014	7/29/2014	9/17/2014	12/17/2014	
NM	Posted Solicitation	San Juan Chama Project	LP12-1-000	Albuquerque	Albuquerque Bernalillo County Water Utility Authority	Conventional	100.00	7/6/2012				
CO	Request for Development	Rifle Gap Dam		Western Colorado		Conventional	341.00	4/1/2013				
UT	Request for Development	Mancos Project Outlet Canal		Western Colorado	Mancos Water Conservancy District	Conventional	415.00	3/22/2016				
<b>FEDERAL ENERGY REGULATORY COMMISSION / LEASE OF POWER PRIVILEGE PUMP STORAGE PROJECTS</b>												
UT	Preliminary	Ute Pumped Storage Project	14742	Provo	Ute Tribe	Pump Storage	750,000.00	12/4/2015	9/8/2016			
<b>SOLAR PROJECTS</b>												
UC	Online	Provo Area Office Solar		Provo	Reclamation		24.80					May-16
UC	Online	Alamosa Solar Project		Albuquerque	Reclamation		9.84					Jul-10