RECLAMATION

Managing Water in the West

Site Inventory and Hydropower Energy Assessment of Reclamation Owned Conduits

Supplement to the "Hydropower Resource Assessment at Existing Reclamation Facilities Report"

U.S. Department of the Interior
Bureau of Reclamation
Power Resources Office
Denver, Colorado

March 2012

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Abbreviations and Acronyms

AAO	Albuquerque Area Office
BFO	Bend Field Office
CCAO	Central California Area Office
DKAO	Dakotas Area Office
ECAO	Eastern Colorado Area Office
EFO	Ephrata Filed Office
GP	Great Plains Region
KBAO	Klamath Basin Area Office
LC	Lower Colorado Region
NKAO	Nebraska-Kansas Area Office
MP	Mid Pacific Region
MTAO	Montana Area Office
NKAO	Nebraska-Kansas Area Office
OTAO	Oklahoma-Texas Area Office
PAO	Provo Area Office
PN	Pacific Northwest Region
PXAO	Phoenix Area Office
SCCAO	South-Central California Area Office
SRAO	Snake River Area Office
USFO	Upper Snake Field Office
UC	Upper Colorado Region
WCAO	Western Colorado Area Office
WYAO	Wyoming Area Office
YAO	Yuma Area Office

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Background

On March 24, 2010, the Department of the Interior, the Department of Energy, and the Department of Army entered into a Memorandum of Understanding (MOU) with the purpose of enhancing the coordination of their efforts to provide the Nation with affordable, reliable, and environmentally sustainable hydropower. This Hydropower MOU consists of numerous initiatives including an action item to conduct Federal facility energy resource assessments, and under this direction Reclamation conducted a study called the *Hydropower Resource Assessment at Existing Reclamation Facilities* (Resource Assessment) that gauged hydropower development potential at existing Reclamation facilities. This study was published in March 2011, and is available for download at (http://www.usbr.gov/power).

The Resource Assessment updated the Reclamation portion of the "Potential Hydropower Development at Existing Federal Facilities" study completed in May 2007 under Section 1834 of the Energy Policy Act of 2005 (1834 Study). While the 1834 Study satisfied the requirements of Sec. 1834, it did not include many small and low head sites due to several screening processes.

The updated Resource Assessment utilized the 530 identified sites in the 1834 Study, but analyzed the hydropower potential of all of those sites regardless of size. Additionally, the Resource Assessment incorporated updated economic and technical analyses including detailed turbine selections, green incentives, proximity to transmission, and analysis of regulatory/environmental constraints. Of the 530 identified sites, 191 were determined to have some level of hydropower potential, and 70 of those sites showed some economic potential to be developed.

The Resource Assessment shows that approximately 268 MW and 1.2 million MWh of energy could be produced annually at existing Reclamation facilities if all 191 sites with the technical potential for development were developed. A total of 225MW of installed capacity and 1.0 million MWh of energy could be produced annually at existing Reclamation facilities if all sites with a benefit cost ratio greater than 0.75 were developed.

The Resource Assessment, however, did not fully capture the hydropower potential of all Reclamation conduits. For example, a large portion of the canals that were listed in the 1834 Study did not identify a specific drop or drops in the canal and simply listed the head differential along the entire stretch of the canal (sometimes over tens of miles). Elevation changes in canals and tunnels can occur over short or long distances and field investigations were needed to determine net head. Additionally, not all canal drops were identified in the 1834 Study, and the scope of the Resource Assessment did not include site visits for evaluating new sites. Further study outside of the scope of the Resource Assessment was necessary to clearly identify canal sites and their hydropower

potential. As a result, Reclamation embarked on a phase II study called the "Site Inventory and Hydropower Energy Assessment of Reclamation Owned Conduits, a Supplement to the Hydropower Resource Assessment at Existing Reclamation Facilities", ("Supplemental Assessment Report").

Concurrent to Reclamation's study of hydropower potential on conduits, Idaho National Laboratory's Water Energy Program (INL) was tasked with identifying hydropower potential on conduits across the Nation. Under the auspices of the 2010 Hydropower MOU, Reclamation and INL worked together to produce this report.

Purpose

This Supplemental Assessment Report builds off of the Resource Assessment, and identifies potential hydropower sites on Reclamation owned conduits and determines those sites' capacity and energy potential. In addition, this study identifies proximity to distribution/transmission lines, and provides site maps for the identified sites.

Considerations for Developers

Although Reclamation reserves the right to develop hydropower at non-powered Reclamation sites, this report can aid irrigation districts, cities, municipalities, cooperatives and other nonprofit organizations financed through the Rural Electrification Act of 1936 in their decision making process to determine whether further analysis of a site's hydropower potential may be warranted. As with any non-federal hydropower development on Reclamation facilities, existing project water deliveries must not be negatively impacted by a proposed hydropower project. Protections to ensure that water deliveries would not be negatively impacted would be addressed in either a Lease of Power Privilege or a Federal Energy Regulatory Commission (FERC) License and would at a minimum include requirements that the project be designed to ensure continued water delivery in the event of a powerplant outage. Since Reclamation owned conduits are often operated and maintained by local irrigation districts, it is highly recommended that developers involve those stakeholders in the project.

Licensing jurisdiction for hydropower development at Reclamation facilities is held with either Reclamation through its Lease of Power Privilege process or FERC through its licensing and exemption procedures. Licensing jurisdiction is dependent on the authorizing legislation for the respective project, and jurisdiction for any particular project would be determined in accordance with procedures established pursuant to an existing Memorandum of Understanding between Reclamation and FERC. In some cases existing statutes, contracts or agreements grant power development rights or preference to entities at a specific project.

Data Collection

Hydropower sites on conduits consist of elevation drops in canals, pipelines and tunnels where head can be captured to generate power; or at a turnout or siphon used to move water from a larger canal into laterals or smaller canals for delivery. Since Reclamation owns approximately 47,336 miles of canals, laterals, drains, pipelines and tunnels, many of them with little head or flow, it was determined that the first step was to create feasibility guidelines on hydropower potential. Based on discussions with low-head turbine manufacturers, hydropower developers, and Reclamation staff a reasonable minimum head for a technically feasible micro-hydropower project was determined to be 5 feet. Additionally, it was determined that only sites with at least 4 months of operations per year that could produce 50 kW of capacity based on gross head and the maximum flow capacity of the canal (design flow) would be identified in this report. To calculate the necessary design flow to produce 50 kW at each head range a power calculation of Flow [cfs] = Power [kW] * 11.8/Head [feet] was used.

To locate and identify potential drops on Reclamation owned conduits, Reclamation staff researched project drawings, aerial imagery, utilized expertise from local area officials, and in some cases physically visited the canals. While an attempt was made to identify all sites, it is possible that additional unidentified conduit sites exist. Sites identified in this report consist of a variety of structure types, including:

- Check Structures - Check structures are used to raise the upstream water surface elevation to permit flow diversion through upstream turnouts. Some check structures can be used to measure the flow rate within a canal. When a check structure is introduced into a canal a unique relationship between the upstream water surface and the downstream water surface is established as a function of the channel geometry and flow rate through the canal.

- Vertical Drops - Vertical drops are used to describe a structure that enables a change in elevation over a very short length of canal alignment.

- Chutes - Chutes are usually used where water is conveyed over long distances and along grades that may be flatter than those for drops but steep enough to maintain sufficient velocities.

- Series of Drops - This categorization is used to describe multiple vertical drops structures located in series. The head listed is the difference from the highest point in the alignment to the lowest point.

- Pipelines - A pipeline is a closed conduit structure used to convey water.

- Check drops - Check drops are used to describe a vertical drop structure with a check structure integrated on the upstream end.

To identify the available flows at each site, Reclamation and irrigation district personnel provided seasonal, monthly or daily flow information when available. Actual flows occurring in Reclamation conduits are variable, and while the design flow was useful in screening for possible sites, it is not very reliable when looking for the actual energy and capacity potential of a site because it may significantly overestimate a site's potential.

Flow records through canals and tunnels are often recorded and monitored by Reclamation or U.S. Geological Survey (USGS) gages, but Reclamation also contacted local irrigation districts, local authorities or irrigation districts for additional flow data. In some instances local districts had electronic or hard copy flow data, and these flow data were used for the analysis. In other cases, local officials provided monthly or seasonal estimates for average flow at these sites.

Since the availability of flow data varied per site, it is important to understand the level of precision of the data used to calculate the capacity and energy potential at each site. For many sites, historical daily data were available, and in these cases there was a high level of confidence in its accuracy because the daily, seasonal and annual variability of flows were clearly captured. For sites where historic daily data were not available it was necessary to rely on local knowledge for typical flows. When monthly average flows were used there was less precision in the data, but some of the annual variability in the canal operations were still captured. For sites where local area knowledge of seasonal averages was used, the data confidence level and the corresponding confidence in the capacity and energy results are lower. The level of data utilized for each site is provided in the tables below.

In many cases, site visits to the canals were conducted to confirm the site location, available head, and whether any distribution lines were in the immediate vicinity. It should be noted that while proximity to distribution lines is identified, it is outside of the scope of this report to make a determination regarding whether these distribution lines were sufficient to interconnect to a new hydropower facility.

Every site that was sent forward by the Reclamation field offices was assigned an Object ID to easily track the data; however not all of the sites that were sent forward had the necessary head or design flow to be included in the final results. Additionally, some sites that were sent in as individual sites were combined into a single site after discussions with the area offices. 128 sites were removed from the report for these reasons but are catalogued in Appendix A.

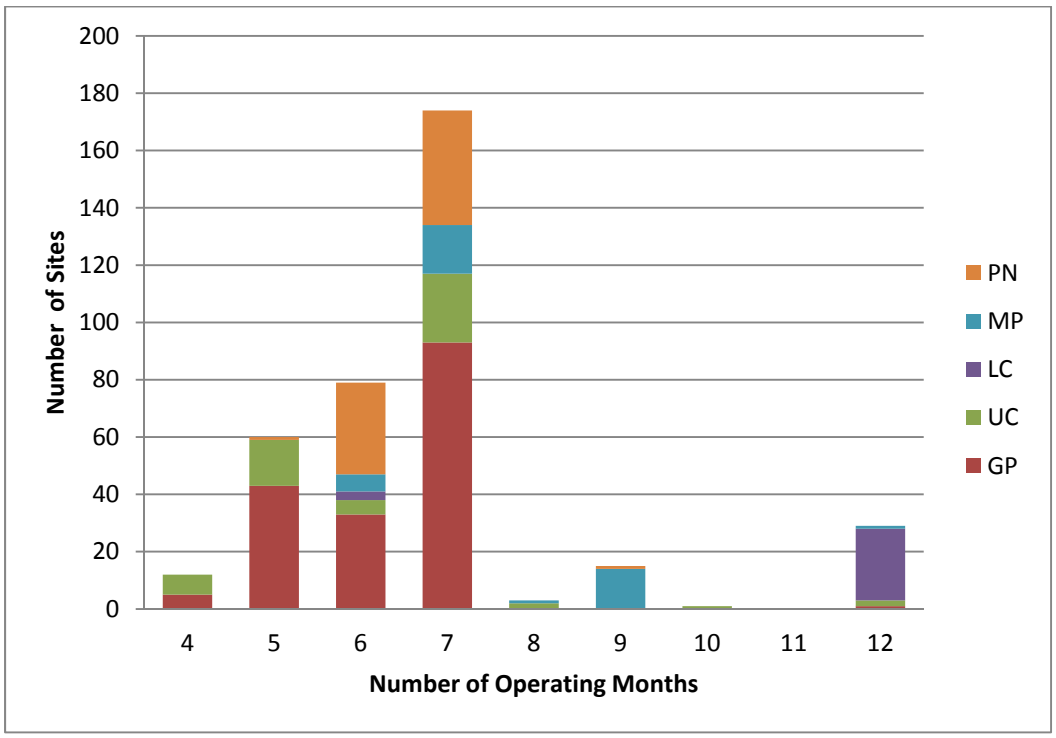
Additionally, flow estimates were not available for 44 of the identified sites. For these sites the capacity and energy potential were not able to be calculated. These sites, including the available information on head and the maximum canal design flow, are catalogued in Appendix B.

Data Analysis

When sufficient data were collected on site location, head, flow and access to distribution lines these data were processed utilizing the Hydropower Assessment Tool and site maps were created.

The Hydropower Assessment Tool is designed to size a plant by utilizing a 30% flow exceedance to eliminate unusual flow events and to act as a first cut at sizing a plant economically to capture the most constant flow. Different exceedance percentages can be selected for sizing the hydropower plant, which could increase or decrease the plant capacity. Changing the plant capacity would effectively change the amount of energy the plant can generate and also change the costs to develop, operate, and maintain the plant. This 30% exceedance is appropriate as a first cut for the majority of hydropower sites, but Reclamation conduits are primarily operated for irrigation purposes and most of these conduits only have seasonal flows. Graph 1 below displays the breakdown of the identified sites and their typical number of operating months and indicates that the vast majority of sites identified in this report operate for 7 months or less. Due to this seasonality, it was determined through discussions with INL and Reclamation staff that it would be appropriate to lower the flow exceedance for this analysis to 15%. This allowed for the capture of more of the seasonal flow, and captured more of the available energy and capacity at all sites.

Graph 1: Seasonality of Sites by Region



As was demonstrated in the Resource Assessment, most sites that operate seasonally do not have positive benefit cost ratios for hydropower development since the generators sit idle for large periods of time during the year. Since the Hydropower Assessment Tool was designed using broad economic assumptions associated with developing hydropower using conventional technologies it may not necessarily capture all of the site specific benefits of developing seasonal small hydropower on a conduit. For instance, in remote locations where pumping plants are needed to move water, transmission expenses can be very large and hydropower development may decrease the costs of providing power for these pumping loads. Additionally, new technologies are being developed and deployed specifically for small conduit hydropower. This could significantly decrease the costs of development, operation and maintenance at these sites and subsequently increase their economic viability.

As a result of the factors listed above, the Supplemental Assessment Report focuses on identifying the technical potential of hydropower development based on each site's available head, flow, and proximity to transmission/distribution lines, but does not provide an economic benefit cost analysis. The report identifies capacity and generation potential; as well as site maps, the number of months of potential generation for each site[1], and their proximity to transmission or distribution lines.

Data Quality Assurance

After INL and Reclamation processed data through the Hydropower Assessment Tool, Reclamation conducted a thorough review of the data and model results, including a review of the site maps, reported head, reported flow, modeled capacity and modeled energy results of each identified site. A listing of site specific head and flow notes for each site is included in Appendix C.

Results

The results of this study show that 103,628 kW of potential capacity and 365,218,846 kWh of potential generation are available at 373 identified sites on Reclamation canals.

As shown on Table 1, although sites were identified in every Reclamation region, the sites identified in this report with the highest energy generation potential are in the Great Plains, Upper Colorado and Pacific Northwest regions.

[1] "Number of months of potential generation" counts a month if more than 2% of the potential annual generation occurs in that month.

Table 1: Energy and Capacity by Region

Region	Canal Sites	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)
GP	175	38,525	122,204,196
LC	28	5,239	29,283,867
MP	39	4,392	17,550,289
PN	74	22,755	85,385,703
UC	57	32,717	110,794,792
Total	**373**	**103,628**	**365,218,846**

Sites were identified in 13 of the 17 western states, but as shown on Table 2 approximately 70% of the capacity and energy potential on Reclamation owned conduits is located in Colorado, Wyoming and Oregon.

Table 2: Energy and Capacity by State

State	Canal Sites	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)
AZ	26	5,061	28,464,753
CA	20	1,570	4,802,925
CO	28	27,286	100,230,315
ID	9	2,771	11,451,814
MT	32	9,885	26,316,565
NE	30	5,501	13,793,995
NM	8	1,427	3,573,029
NV	16	1,533	8,671,966
OR	68	20,404	75,943,044
SD	1	131	572,000
UT	12	3,552	5,965,031
WA	2	1,047	2,885,357
WY	121	23,460	82,548,053

Table 3 provides a ranking of the top 25 sites by energy production potential, and Table 4 provides a ranking of the top 25 sites by installed capacity.

Table 3: Top 25 Sites by Energy Potential

Rank	Object ID	Region	State	Canal Site Name	Structure Type	Potential Annual Energy (kWh)	Potential Installed Capacity (kW)	Plant Factor	Months of Potential Generation
1	386	UC	CO	Shavano Falls	Vertical Drop	20,549,889	5,168	46%	7
2	387	UC	CO	South Canal Drop 4	Chute	18,653,967	4,242	51%	7
3	379	UC	CO	Salt Creek Drop 2	Chute	10,578,729	3,643	34%	5
4	124	GP	WY	Pilot: 25.7	Chute	9,200,057	2,938	36%	5
5	122	GP	WY	Heart Mountain Ralston Chute upper: 0+00	Chute	8,221,222	2,425	39%	7
6	26	GP	MT	Arnold Coulee Drop, Pishkun Canal	Vertical Drop	8,030,780	3,246	29%	6
7	389	UC	CO	South Canal Drop 6	Chute	7,410,479	1,685	51%	7
8	391	UC	CO	Pipe Chute at 1058+00	Pipeline	7,187,372	2,029	41%	7
9	378	UC	CO	Salt Creek Drop 1	Chute	7,055,833	2,411	34%	5
10	27	GP	MT	Pishkun Res Inlet Drop	Vertical Drop	6,759,974	3,174	25%	6
11	524	PN	OR	North Unit Main Canal Mile 45.02	Vertical Drop	6,266,652	1,714	43%	7
12	121	GP	WY	Heart Mountain Ralston Chute lower: 146+98	Chute	5,829,592	1,720	39%	7
13	525	PN	OR	North Unit Main Canal Mile 47	Vertical Drop	5,089,258	1,392	43%	7
14	67	GP	WY	Frannie Canal	Chute	4,672,272	1,084	50%	7

Rank	Object ID	Region	State	Canal Site Name	Structure Type	Potential Annual Energy (kWh)	Potential Installed Capacity (kW)	Plant Factor	Months of Potential Generation
15	480	LC	AZ	Santa Rosa Canal B-2	Vertical Drop	4,506,597	858	61%	12
16	199	LC	AZ	Coachella (North End): 6429+24	Check Drop	4,475,739	670	78%	12
17	69	GP	WY	Upper Deaver Slide	Chute	4,454,226	1,034	50%	7
18	376	UC	CO	Groove Creek Drop 2	Chute	4,363,725	1,503	34%	5
19	530	PN	OR	North Unit Main Canal Mile 52.58	Chute	4,332,528	1,213	42%	7
20	62	GP	NE	Mirdan: 2541+00	Vertical Drop	4,199,219	1,466	33%	6
21	390	UC	CO	South Terminus	Vertical Drop	4,088,542	930	51%	7
22	123	GP	WY	Pilot: 5.2	Chute	3,679,503	1,162	37%	6
23	479	LC	AZ	Santa Rosa Canal B-1	Vertical Drop	3,605,284	686	61%	12
24	375	UC	CO	Groove Creek Drop 1	Chute	3,543,874	1,220	34%	5
25	519	PN	OR	North Unit Main Canal Mile 19.46	Vertical Drop	3,313,699	927	42%	7

Table 4: Top 25 Sites by Installed Capacity

Rank	Object ID	Region	State	Canal Site Name	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Plant Factor	Months of Potential Generation
1	386	UC	CO	Shavano Falls	Vertical Drop	5,168	20,549,889	46%	7
2	387	UC	CO	South Canal Drop 4	Chute	4,242	18,653,967	51%	7
3	379	UC	CO	Salt Creek Drop 2	Chute	3,643	10,578,729	34%	5
4	26	GP	MT	Arnold Coulee Drop, Pishkun Canal	Vertical Drop	3,246	8,030,780	29%	6
5	27	GP	MT	Pishkun Res Inlet Drop	Vertical Drop	3,174	6,759,974	25%	6
6	124	GP	WY	Pilot: 25.7	Chute	2,938	9,200,057	36%	5
7	122	GP	WY	Heart Mountain Ralston Chute upper: 0+00	Chute	2,425	8,221,222	39%	7
8	378	UC	CO	Salt Creek Drop 1	Chute	2,411	7,055,833	34%	5
9	391	UC	CO	Pipe Chute at 1058+00	Pipeline	2,029	7,187,372	41%	7
10	121	GP	WY	Heart Mountain Ralston Chute lower: 146+98	Chute	1,720	5,829,592	39%	7
11	524	PN	OR	North Unit Main Canal Mile 45.02	Vertical Drop	1,714	6,266,652	43%	7
12	389	UC	CO	South Canal Drop 6	Chute	1,685	7,410,479	51%	7

Rank	Object ID	Region	State	Canal Site Name	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Plant Factor	Months of Potential Generation
13	272	UC	UT	Weber - Provo Diversion (2) 463+38.6	Vertical Drop	1,602	2,815,962	20%	4
14	376	UC	CO	Groove Creek Drop 2	Chute	1,503	4,363,725	34%	5
15	62	GP	NE	Mirdan: 2541+00	Vertical Drop	1,466	4,199,219	33%	6
16	525	PN	OR	North Unit Main Canal Mile 47	Vertical Drop	1,392	5,089,258	43%	7
17	375	UC	CO	Groove Creek Drop 1	Chute	1,220	3,543,874	34%	5
18	530	PN	OR	North Unit Main Canal Mile 52.58	Chute	1,213	4,332,528	42%	7
19	123	GP	WY	Pilot: 5.2	Chute	1,162	3,679,503	37%	6
20	545	UC	UT	Steinaker Feeder Canal Drop 1-13	Series of Drops	1,088	1,162,000	13%	10
21	67	GP	WY	Frannie Canal	Chute	1,084	4,672,272	50%	7
22	69	GP	WY	Upper Deaver Slide	Chute	1,034	4,454,226	50%	7
23	125	GP	WY	Pavillion Main	Chute	1,012	2,761,699	32%	5
24	390	UC	CO	South Terminus	Vertical Drop	930	4,088,542	51%	7
25	519	PN	OR	North Unit Main Canal Mile 19.46	Vertical Drop	927	3,313,699	42%	7

Results by Region

Tables 5 through 9 provide summary data by Reclamation region for each of the 393 sites analyzed. Table 5 provides summary data for the Great Plains Region. Table 6 provides summary data for the Upper Colorado Region. Table 7 provides summary data for the Lower Colorado Region. Table 8 provides summary data for the Mid Pacific Region. Table 9 provides summary data for the Pacific Northwest Region.

Great Plains Results

Table 5: Great Plains Results

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
1	East Bench Lateral 27.9	East Bench Unit	MT	Series of Drops	8	20,760	16	8	31%	5	1.15	Monthly
2	East Bench Lateral 41.2	East Bench Unit	MT	Series of Drops	93	313,317	61	25	39%	6	0.2	Monthly
3	Helena Valley Drop into regulating reservoir	Helena Valley Unit	MT	Vertical Drop	199	645,212	10	279	38%	6	0.25	Daily
4	Helena Valley Lateral 11.9	Helena Valley Unit	MT	Series of Drops	47	189,296	47	17	47%	6	0	Seasonal
5	Helena Valley Lateral 14.8	Helena Valley Unit	MT	Series of Drops	91	341,714	25	60	43%	6	0	Seasonal
6	Helena Valley Unit Lateral 20.7	Helena Valley Unit	MT	Series of Drops	47	189,173	31	25	47%	6	0.5	Seasonal
7	Helena Valley Lateral 32.6	Helena Valley Unit	MT	Series of Drops	29	101,692	47	10	41%	6	0	Seasonal
8	Couts drop	Huntley Project	MT	Vertical Drop	412	1,640,131	38	150	46%	6	0.001	Seasonal
9	Rod McCoy Drop	Huntley Project	MT	Vertical Drop	26	70,830	17	25	32%	5	0.5	Seasonal
10	Lower Yellowstone Lateral C4	Lower Yellowstone	MT	Vertical Drop	15	45,952	16	15	37%	5	0	Seasonal
11	Lower Yellowstone Lateral D	Lower Yellowstone	MT	Vertical Drop	18	59,208	15	20	38%	5	0	Seasonal

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
12	Lower Yellowstone Lateral D6	Lower Yellowstone	MT	Vertical Drop	8	27,390	16	8	41%	5	0	Seasonal
13	Lower Yellowstone Lateral F	Lower Yellowstone	MT	Series of Drops	69	235,736	25	45	40%	5	0.75	Seasonal
14	Lower Yellowstone Lateral H	Lower Yellowstone	MT	Chute	38	120,615	25	25	37%	5	0	Seasonal
15	Lower Yellowstone Lateral N	Lower Yellowstone	MT	Series of Drops	62	197,799	41	25	37%	5	0.75	Seasonal
16	Lateral PP 1st & 2nd drops	Lower Yellowstone	MT	Series of Drops	55	137,977	26	35	29%	5	0	Seasonal
17	Lower Yellowstone Lateral PP5	Lower Yellowstone	MT	Vertical Drop	10	29,078	13	12	36%	5	0	Seasonal
18	Nelson North	Milk River Project	MT	Vertical Drop	140	221,743	46	50	18%	6	0.1	Daily
19	Savage Unit Lateral 1.9	Savage Unit	MT	Chute	7	23,933	15	8	38%	5	0.04	Seasonal
20	Savage Unit Lateral 5.7 1st	Savage Unit	MT	Chute	6	20,798	13	8	38%	5	0.25	Seasonal
21	Savage Unit Lateral 5.7 2nd	Savage Unit	MT	Chute	5	15,998	10	8	38%	5	0.25	Seasonal
22	Ft Shaw A-drop	Sun River Project - Fort Shaw District	MT	Vertical Drop	286	1,092,085	45	90	44%	7	0.5	Seasonal

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
23	Ft Shaw C-drop	Sun River Project - Fort Shaw District	MT	Chute	72	286,808	59	20	46%	7	0.1	Seasonal
24	Sequest Check to A-drop	Sun River Project - Fort Shaw District	MT	Pipeline	314	1,359,128	62	70	50%	7	0.25	Seasonal
25	9-ft Drop, Spring Valley	Sun River Greenfields	MT	Vertical Drop	418	1,035,221	9	900	29%	4	0.75	Monthly
26	Arnold Coulee Drop, Pishkun Canal	Sun River Greenfields	MT	Vertical Drop	3,246	8,030,780	36	1,251	29%	6	3.5	Daily
27	Pishkun Res Inlet Drop	Sun River Greenfields	MT	Vertical Drop	3,174	6,759,974	36	1,251	25%	6	2	Daily
28	GM 47 Drop	Sun River Greenfields	MT	Series of Drops	25	68,681	81	5	32%	4	0.29	Monthly
29	Lower Ashlot Drop	Sun River Greenfields	MT	Chute	110	346,043	22	70	37%	5	0.25	Monthly
30	Middle Ashlot Drop	Sun River Greenfields	MT	Chute	213	666,118	42	70	36%	5	0.25	Monthly
31	Old SRS Drop	Sun River Greenfields	MT	Pipeline	61	199,483	125	8	38%	5	0.5	Monthly
32	Upper Ashlot Drop	Sun River Greenfields	MT	Chute	582	1,823,893	115	70	36%	5	0.25	Monthly
35	Ainsworth: 1375+00	Pick Sloan Missouri Basin - Ainsworth Unit	NE	Vertical Drop	119	238,884	8	241	23%	5	2	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
36	Ainsworth: 1437+08	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	72	145,100	5	241	23%	5	3	Daily
38	Ainsworth: 1590+50	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	74	149,524	5	241	23%	5	6	Daily
39	Ainsworth: 1633+50	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	75	149,819	5	241	23%	5	6.5	Daily
41	Ainsworth: 1722+00	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	89	179,606	6	241	23%	5	4	Daily
42	Ainsworth: 1846+00	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	141	282,827	10	241	23%	5	3.5	Daily
43	Ainsworth: 1858+57	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	82	164,565	6	241	23%	5	3.5	Daily
44	Ainsworth: 1913+47	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	89	179,016	6	241	23%	5	3.5	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
45	Ainsworth: 2023+00	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	137	274,570	9	241	23%	5	3	Daily
46	Ainsworth: 2231+00	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	178	358,326	12	241	23%	5	2.5	Daily
47	Ainsworth: 2358+00	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	156	314,089	11	241	23%	5	2.5	Daily
48	Ainsworth: 2414+00	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	192	386,344	13	241	23%	5	3	Daily
49	Ainsworth: 2466+00	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	196	393,717	13	241	23%	5	2.5	Daily
50	Ainsworth: 2540+32	Pick Sloan Missouri Basin - Ainsworth	NE	Vertical Drop	91	182,850	6	241	23%	5	1.5	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
51	Cambridge: 798+21.7	Pick Sloan Missouri Basin - Frenchman-Cambridge Division	NE	Vertical Drop	84	180,455	15	211	25%	5	0	Daily
52	Cambridge: 897+38	Pick Sloan Missouri Basin - Frenchman-Cambridge Division	NE	Vertical Drop	44	94,587	8	211	25%	5	1.09	Daily
53	Cambridge: 954+41.5	Pick Sloan Missouri Basin - Frenchman-Cambridge Division	NE	Vertical Drop	44	94,708	8	211	25%	5	0.5	Daily
54	Cambridge: 1143.91	Pick Sloan Missouri Basin - Frenchman-Cambridge Division	NE	Vertical Drop	35	75,452	6	211	25%	5	0.5	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
55	Cambridge: 1348+20	Pick Sloan Missouri Basin - Frenchman-Cambridge Division	NE	Vertical Drop	34	72,303	6	211	25%	5	0.25	Daily
56	Cambridge: 1404+00	Pick Sloan Missouri Basin - Frenchman-Cambridge Division	NE	Vertical Drop	35	73,877	6	211	25%	5	1	Daily
57	Cambridge: 1408+50	Pick Sloan Missouri Basin - Frenchman-Cambridge Division	NE	Vertical Drop	35	73,877	6	211	25%	5	1	Daily
59	Mirdan: 2083+00	Pick Sloan Missouri Basin - North Loup	NE	Vertical Drop	654	1,872,607	27	333	33%	6	2	Daily
60	Mirdan: 2310+60	Pick Sloan Missouri Basin - North Loup	NE	Vertical Drop	590	1,689,231	25	333	33%	6	2	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
61	Mirdan: 2509+50	Pick Sloan Missouri Basin - North Loup	NE	Vertical Drop	282	806,441	12	333	33%	6	2.5	Daily
62	Mirdan: 2541+00	Pick Sloan Missouri Basin - North Loup	NE	Vertical Drop	1,466	4,199,219	62	333	33%	6	2.5	Daily
63	Johnson/256 Lateral: 177+00	Kendrick Project	WY	Vertical Drop	72	184,440	13	91	30%	5	0.5	Daily
64	Johnson/256 Lateral: 218+50	Kendrick Project	WY	Vertical Drop	75	191,977	14	91	30%	5	0.02	Daily
65	Johnson/256 Lateral: 227+00	Kendrick Project	WY	Vertical Drop	76	194,821	14	91	30%	5	0.02	Daily
66	Deaver Flume	Shoshone Project	WY	Chute	434	1,868,908	100	60	50%	7	NA	Seasonal
67	Frannie Canal	Shoshone Project	WY	Chute	1,084	4,672,272	125	120	50%	7	NA	Seasonal
68	Lower Deaver Slide	Shoshone Project	WY	Chute	651	2,803,362	90	100	50%	7	NA	Seasonal
69	Upper Deaver Slide	Shoshone Project	WY	Chute	1,034	4,454,226	130	110	50%	7	NA	Seasonal

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
70	Heart Mountain Lateral 79 after 79-5: 203+15.27	Shoshone Project	WY	Chute	19	62,986	40	8	38%	7	0	Daily
71	Heart Mountain Lateral 79-5: 124+08.08	Shoshone Project	WY	Chute	2	8,153	18	2	42%	7	0	Daily
72	Heart Mountain Lateral 79-5: 127.+86.58	Shoshone Project	WY	Chute	3	9,388	21	2	42%	7	0	Daily
73	Heart Mountain Lateral 79: 19+60	Shoshone Project	WY	Vertical Drop	31	103,576	11	46	39%	7	0	Daily
74	Heart Mountain Lateral 79: 23+33	Shoshone Project	WY	Vertical Drop	31	103,576	11	46	39%	7	0.1	Daily
75	Heart Mountain Lateral 79: 26+88	Shoshone Project	WY	Vertical Drop	31	103,576	11	46	39%	7	0.25	Daily
76	Heart Mountain Lateral 79: 30+43	Shoshone Project	WY	Vertical Drop	31	104,517	11	46	39%	7	0.2	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
77	Heart Mountain Lateral 79: 33+48	Shoshone Project	WY	Vertical Drop	31	103,576	11	46	39%	7	0.15	Daily
78	Heart Mountain Lateral 79: 36+43	Shoshone Project	WY	Vertical Drop	31	103,576	11	46	39%	7	0.1	Daily
79	Heart Mountain Lateral 79: 39+93	Shoshone Project	WY	Vertical Drop	25	86,031	11	38	39%	7	0	Daily
80	Heart Mountain Lateral 79: 42+90	Shoshone Project	WY	Vertical Drop	25	86,031	11	38	39%	7	0	Daily
81	Heart Mountain Lateral 79: 45+63	Shoshone Project	WY	Vertical Drop	25	86,031	11	38	39%	7	0	Daily
82	Heart Mountain Lateral 79: 48+31	Shoshone Project	WY	Vertical Drop	23	79,383	10	38	39%	7	0	Daily
83	Heart Mountain Lateral 79: 50+85	Shoshone Project	WY	Vertical Drop	23	79,148	10	38	39%	7	0	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
84	Heart Mountain Lateral 79: 53+37	Shoshone Project	WY	Vertical Drop	23	79,148	10	38	39%	7	0	Daily
85	Heart Mountain Lateral 79: 55+36	Shoshone Project	WY	Vertical Drop	23	79,148	10	38	39%	7	0	Daily
86	Heart Mountain Lateral 89 after 89-10: 141+06.14	Shoshone Project	WY	Chute	22	76,383	25	15	40%	7	0.3	Daily
87	Heart Mountain Lateral 89 after 89-10: 154+83.16	Shoshone Project	WY	Chute	19	64,452	21	15	40%	7	0.25	Daily
88	Heart Mountain Lateral 89: 2+77	Shoshone Project	WY	Vertical Drop	35	117,393	15	38	39%	7	1	Daily
89	Heart Mountain Lateral 89: 9+64.25	Shoshone Project	WY	Vertical Drop	34	115,750	15	38	39%	7	0.9	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
90	Heart Mountain Lateral 89: 17+60	Shoshone Project	WY	Chute	87	292,426	37	38	39%	7	0.8	Daily
91	Heart Mountain Lateral 89: 21+34.25	Shoshone Project	WY	Vertical Drop	34	115,907	15	38	39%	7	0.5	Daily
92	Heart Mountain Lateral 89: 33+91	Shoshone Project	WY	Vertical Drop	22	74,993	12	31	39%	7	0.3	Daily
93	Heart Mountain Lateral 89: 37+36	Shoshone Project	WY	Vertical Drop	23	75,434	12	31	39%	7	0.3	Daily
94	Heart Mountain Lateral 89: 40+26	Shoshone Project	WY	Vertical Drop	22	74,993	12	31	39%	7	0.3	Daily
95	Heart Mountain Lateral 89: 43+16	Shoshone Project	WY	Vertical Drop	22	75,056	12	31	39%	7	0.3	Daily
96	Heart Mountain Lateral 89: 45+20	Shoshone Project	WY	Vertical Drop	22	74,678	12	31	39%	7	0.3	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
97	Heart Mountain Lateral 89: 47+43.5	Shoshone Project	WY	Vertical Drop	20	65,855	10	31	39%	7	0.3	Daily
98	Heart Mountain Lateral 89: 50+25.75	Shoshone Project	WY	Vertical Drop	17	55,978	12	23	39%	7	0.3	Daily
99	Heart Mountain Lateral 89: 54+59.75	Shoshone Project	WY	Vertical Drop	14	46,609	10	23	39%	7	0.3	Daily
100	Heart Mountain Lateral H-103	Shoshone Project	WY	Pipeline	241	814,535	145	23	39%	7	1	Daily
101	Heart Mountain Lateral H57: 65+26.03	Shoshone Project	WY	Chute	7	22,680	24	5	37%	7	0.1	Daily
102	Heart Mountain Lateral H57: 71+67.87	Shoshone Project	WY	Chute	7	21,437	22	5	37%	7	0.05	Daily
103	Heart Mountain Lateral H57: 87+62.23	Shoshone Project	WY	Chute	7	21,302	22	5	37%	7	0	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
104	Heart Mountain Lateral H57: 95+33.79	Shoshone Project	WY	Chute	6	17,678	18	5	37%	7	0.05	Daily
105	Heart Mountain Lateral H57: 103+50.35	Shoshone Project	WY	Chute	8	23,904	25	5	37%	7	0.1	Daily
106	Heart Mountain Lateral H57: 139+22.50	Shoshone Project	WY	Chute	20	63,019	65	5	37%	7	0.1	Daily
107	Heart Mountain Lateral H65: 4+09	Shoshone Project	WY	Chute	86	290,080	37	38	39%	7	0.2	Daily
108	Heart Mountain Lateral H65: 10+50.92	Shoshone Project	WY	Chute	94	318,705	41	38	39%	7	0.1	Daily
109	Heart Mountain Lateral H65: 22+75.25	Shoshone Project	WY	Vertical Drop	34	115,672	15	38	39%	7	0.1	Daily
110	Heart Mountain Lateral H65: 28+28	Shoshone Project	WY	Vertical Drop	35	118,801	15	38	39%	7	0.2	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
111	Heart Mountain Lateral H65: 37+58.13	Shoshone Project	WY	Chute	84	284,136	36	38	39%	7	0.4	Daily
112	Heart Mountain Lateral H65: 48+29.09	Shoshone Project	WY	Chute	53	180,195	23	38	39%	7	0.6	Daily
113	Heart Mountain Lateral H65: 59+92	Shoshone Project	WY	Chute	49	162,023	26	31	39%	7	0.9	Daily
114	Heart Mountain Lateral H65: 69+53.42	Shoshone Project	WY	Chute	56	185,718	29	31	39%	7	0.9	Daily
115	Heart Mountain Lateral H65: 79+22.42	Shoshone Project	WY	Chute	54	181,118	29	31	39%	7	0.7	Daily
116	Heart Mountain Lateral H65: 111+19.36	Shoshone Project	WY	Chute	109	364,127	58	31	39%	7	0.25	Daily
117	Heart Mountain Lateral H71: 6+45.64	Shoshone Project	WY	Chute	18	59,088	37	8	38%	7	0.5	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
118	Heart Mountain Lateral R45 Site 1	Shoshone Project	WY	Vertical Drop	45	150,351	12	61	39%	7	0.12	Daily
119	Heart Mountain Lateral R45 Site 2	Shoshone Project	WY	Chute	230	783,260	60	53	40%	7	0.25	Daily
120	Heart Mountain Lateral R45 Site 3	Shoshone Project	WY	Chute	183	617,923	110	23	39%	7	0.5	Daily
121	Heart Mountain Ralston Chute lower: 146+98	Shoshone Project	WY	Chute	1,720	5,829,592	130	183	39%	7	0.25	Daily
122	Heart Mountain Ralston Chute upper: 0+00	Shoshone Project	WY	Chute	2,425	8,221,222	110	305	39%	7	0	Daily
123	Pilot: 5.2	Pick Sloan Missouri Basin - Riverton	WY	Chute	1,162	3,679,503	30	542	37%	6	0.04	Daily
124	Pilot: 25.7	Pick Sloan Missouri Basin - Riverton	WY	Chute	2,938	9,200,057	150	271	36%	5	0	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
125	Pavillion Main	Pick Sloan Missouri Basin - Riverton	WY	Chute	1,012	2,761,699	100	140	32%	5	0	Monthly
126	Wyoming: 37.2	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	113	387,353	12	155	40%	6	1	Monthly
127	Wyoming: 41.9	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	124	426,635	14	145	40%	6	0.06	Monthly
128	Wyoming: 42	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	97	335,213	11	145	40%	6	0.06	Monthly
129	Wyoming: 42.6	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	97	335,213	11	145	40%	6	0.09	Monthly
130	Wyoming: 43.1	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	88	304,739	10	145	40%	6	0.17	Monthly
131	Wyoming: 44.5	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	63	218,412	8	130	40%	6	0.23	Monthly

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
132	Wyoming: 44.8	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	73	254,961	10	120	41%	6	0.09	Monthly
133	Wyoming: 45.5	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	56	195,197	8	115	41%	6	0.2	Monthly
134	Wyoming: 45.6	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	70	243,996	10	115	41%	6	0.28	Monthly
135	Wyoming: 45.9	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	45	155,089	7	105	40%	6	0.26	Monthly
136	Wyoming: 46.2	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	67	231,087	11	100	40%	6	0.26	Monthly
137	Wyoming: 46.6	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	61	210,079	10	100	40%	6	0.11	Monthly
138	Wyoming: 46.8	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	55	189,831	10	90	40%	6	0.14	Monthly

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
139	Wyoming: 47.1	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	55	189,831	10	90	40%	6	0.17	Monthly
140	Wyoming: 47.4	Pick Sloan Missouri Basin - Riverton	WY	Vertical Drop	44	151,865	8	90	40%	6	2	Monthly
141	Northport: 19.75	North Platte Project	NE	Vertical Drop	46	116,556	10	76	29%	6	0.7	Daily
142	Northport: 19.79	North Platte Project	NE	Vertical Drop	46	116,556	10	76	29%	6	0.7	Daily
143	#1 Lateral M.P. 1.6	North Platte Project	WY	Vertical Drop	60	130,375	14	70	25%	4	1	Seasonal
144	#18 Lateral M.P. 1.8	North Platte Project	NE	Vertical Drop	24	53,081	21	19	25%	4	0.35	Seasonal
145	#21 Lateral M.P. 4.8	North Platte Project	NE	Vertical Drop	46	100,575	7	108	25%	4	0.02	Seasonal
146	Lake Alice Inlet Check: M.C. 94.6	North Platte Project	NE	Vertical Drop	344	775,234	17	283	26%	6	0.4	Daily
147	Garland Canal: 679+00	Shoshone Project	WY	Vertical Drop	353	1,339,922	6	796	44%	7	0.05	Daily
148	Garland Canal: 693+00	Shoshone Project	WY	Vertical Drop	398	1,511,884	7	796	44%	7	0.05	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
149	Garland Canal: 711+00	Shoshone Project	WY	Vertical Drop	341	1,295,901	6	796	44%	7	0.25	Daily
150	Garland Canal: 722+00	Shoshone Project	WY	Vertical Drop	333	1,265,663	6	796	44%	7	0.45	Daily
151	Garland Canal: 733+00	Shoshone Project	WY	Vertical Drop	332	1,261,343	6	796	44%	7	0.65	Daily
152	Garland Canal: 754+33	Shoshone Project	WY	Vertical Drop	265	1,004,332	9	394	44%	7	0.3	Daily
153	Garland Canal: 758+00	Shoshone Project	WY	Vertical Drop	225	854,751	8	394	44%	7	0.01	Daily
154	Garland Canal: 772+00	Shoshone Project	WY	Vertical Drop	225	854,751	8	394	44%	7	0.2	Daily
155	Garland Canal: 783+00	Shoshone Project	WY	Vertical Drop	282	1,068,439	10	394	44%	7	0.4	Daily
156	Garland Canal: 799+00	Shoshone Project	WY	Vertical Drop	282	1,068,439	10	394	44%	7	0.3	Daily
157	Garland Canal: 818+00	Shoshone Project	WY	Vertical Drop	200	759,618	8	350	44%	7	0.01	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
158	Garland Canal: 831+00	Shoshone Project	WY	Vertical Drop	200	759,618	8	350	44%	7	0.02	Daily
159	Garland Canal: 843+00	Shoshone Project	WY	Vertical Drop	250	949,522	10	350	44%	7	0.01	Daily
160	Garland Canal: 864+63	Shoshone Project	WY	Vertical Drop	177	670,399	8	298	44%	7	0.08	Daily
161	Garland Canal: 875+00	Shoshone Project	WY	Vertical Drop	170	646,651	8	298	44%	7	0.01	Daily
162	Garland Canal: 892+00	Shoshone Project	WY	Vertical Drop	128	484,923	6	298	44%	7	0.1	Daily
163	Garland Canal: 905+00	Shoshone Project	WY	Vertical Drop	175	665,075	10	245	44%	7	0.08	Daily
164	Garland Canal: 926+00	Shoshone Project	WY	Vertical Drop	175	665,075	10	245	44%	7	0.01	Daily
165	Garland Canal: 945+00	Shoshone Project	WY	Vertical Drop	140	532,060	8	245	44%	7	0.005	Daily
166	Garland Canal: 960+00	Shoshone Project	WY	Vertical Drop	140	532,060	8	245	44%	7	0.1	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
167	Garland Canal: 977+80	Shoshone Project	WY	Vertical Drop	86	322,969	10	149	44%	7	0.1	Daily
168	Garland Canal: 990+00	Shoshone Project	WY	Vertical Drop	73	271,974	8	149	44%	7	0.1	Daily
169	Garland Canal: 1006+00	Shoshone Project	WY	Vertical Drop	54	203,980	6	149	44%	7	0.25	Daily
170	Garland Canal: 1021+00	Shoshone Project	WY	Vertical Drop	54	203,980	6	149	44%	7	0.4	Daily
171	Garland Canal: 1044+00	Shoshone Project	WY	Vertical Drop	73	271,974	8	149	44%	7	0.001	Daily
172	Garland Canal: 1061+00	Shoshone Project	WY	Vertical Drop	73	271,974	8	149	44%	7	0.3	Daily
173	Garland Canal: 1074+00	Shoshone Project	WY	Vertical Drop	43	160,291	8	88	44%	7	0.5	Daily
174	Garland Canal: 1090+00	Shoshone Project	WY	Vertical Drop	43	160,291	8	88	44%	7	0.4	Daily
175	Garland Canal: 1111+00	Shoshone Project	WY	Vertical Drop	32	120,218	6	88	44%	7	0.2	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
176	Garland Canal: 1122+00	Shoshone Project	WY	Vertical Drop	32	120,218	6	88	44%	7	0.2	Daily
177	Willwood Canal: Deer Creek	Shoshone Project	WY	Pipeline	769	2,780,834	45	239	42%	7	0.4	Daily
178	Willwood Canal: Willwood Draw	Shoshone Project	WY	Chute	513	1,854,428	35	205	42%	7	0.6	Daily
179	Willwood Canal: Peerless Coulee	Shoshone Project	WY	Chute	323	1,166,623	40	113	42%	7	0.7	Daily
300	DK-10.1	Belle Fourche Unit	SD	Vertical Drop	131	572,000	7	283	51%	12	0.25	Daily

Upper Colorado Results

Table 6: Upper Colorado Results

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
236	Chute 1 Loutz	Uncompahgre	CO	Chute	217	926,639	30	101	50%	7	0.1	Monthly
237	Chute 2 Loutz	Uncompahgre	CO	Chute	416	1,763,491	57	101	49%	7	0.32	Monthly
238	Chute 3 Loutz	Uncompahgre	CO	Chute	202	864,863	28	101	50%	7	0.84	Monthly
239	Double E Chute	Uncompahgre	CO	Chute	687	2,839,532	42	229	48%	7	0.39	Seasonal
241	Fire Mountain "The Drop"	Paonia	CO	Vertical Drop	81	348,013	12	115	50%	6	0.27	Seasonal
246	S.F. Drop To Reservior	Smith Fork	CO	Vertical Drop	32	102,191	58	9	37%	12	0.03	Monthly
247	S.F. Feeder Drop	Smith Fork	CO	Vertical Drop	7	21,143	12	9	37%	12	0.54	Monthly
260	Eden Canal (1) 726+00	Eden	WY	Vertical Drop	66	153,617	9	127	27%	5	12.57	Daily
261	Eden Canal (2) 804+00	Eden	WY	Vertical Drop	58	135,545	8	127	27%	5	12.71	Daily
262	Eden Canal (3) 871+50	Eden	WY	Vertical Drop	58	135,545	8	127	27%	5	12.94	Daily
263	West Side Lateral (1) 232+30	Eden	WY	Vertical Drop	28	62,779	8	57	26%	5	19.19	Daily
264	West Side Lateral (2) 366+50	Eden	WY	Vertical Drop	36	78,857	10	57	26%	5	18.26	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
265	West Side Lateral (3) 499+68.5	Eden	WY	Vertical Drop	53	116,371	15	57	26%	5	17.82	Daily
266	Farson Lateral (1)	Eden	WY	Vertical Drop	44	95,043	15	47	25%	5	16.32	Daily
267	Farson Lateral (2)	Eden	WY	Vertical Drop	44	95,043	15	47	25%	5	16.06	Daily
268	CC&H(1)	Emery County	UT	Vertical Drop	76	174,063	25	51	26%	5	1.69	Monthly
269	Ogden-Brigham Canal (1) 466+43	Ogden River	UT	Vertical Drop	53	142,152	25	35	31%	7	0.31	Monthly
270	Ogden-Brigham Canal (2) 522+84	Ogden River	UT	Vertical Drop	48	129,592	23	35	31%	7	0.52	Monthly
271	Weber - Provo Diversion (1)	Provo River	UT	Vertical Drop	117	207,204	11	174	21%	4	1.03	Daily
272	Weber - Provo Diversion (2) 463+38.6	Provo River	UT	Vertical Drop	1,602	2,815,962	127	174	20%	4	1.74	Daily
273	Strawberry Highline Canal 1: 1040+11	Strawberry Valley	UT	Chute	99	221,475	60	27	26%	6	0.07	Daily
274	Strawberry Highline Canal 2: 1062+00	Strawberry Valley	UT	Chute	33	73,825	20	27	26%	6	0.1	Daily
275	Ogden Valley Canal (1)	Weber Basin	UT	Vertical Drop	56	149,574	26	35	31%	7	0.55	Monthly

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
276	Ogden Valley Canal (2)	Weber Basin	UT	Vertical Drop	23	62,798	11	35	31%	7	0.61	Monthly
277	Willard Canal (1) 49+42.5	Weber Basin	UT	Pipeline	152	352,112	10	254	27%	6	0.13	Daily
278	Willard Canal (2)	Weber Basin	UT	Vertical Drop	204	474,273	13	254	27%	6	0.09	Daily
279	1st Bridge	San Juan Chama	NM	Vertical Drop	219	513,222	12	300	27%	4	4.4	Seasonal
280	1st Drop Structure sta. 1565	San Juan Chama	NM	Vertical Drop	329	769,832	18	300	27%	4	4.35	Seasonal
281	2nd Drop Structure sta. 1702	San Juan Chama	NM	Vertical Drop	219	513,222	12	300	27%	4	4.01	Seasonal
282	3rd Drop Structure sta. 1831	San Juan Chama	NM	Vertical Drop	329	769,832	18	300	27%	4	3.69	Seasonal
283	Azotea Drop	San Juan Chama	NM	Vertical Drop	238	555,990	13	300	27%	4	4.01	Seasonal
358	Eden Canal (4)	Eden	WY	Vertical Drop	66	153,617	9	127	27%	5	13.12	Daily
359	Angostura Diversion Dam	Middle Rio Grande	NM	Vertical Drop	56	282,444	5	184	59%	7	0.6	Seasonal
371	Sile Canal Drop E	Middle Rio Grande	NM	Vertical Drop	15	68,447	13	19	53%	8	2.57	Daily
374	Bull Basin Drop	Colbran	CO	Pipeline	459	1,342,626	51	126	34%	5	0.37	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
375	Groove Creek Drop 1	Colbran	CO	Chute	1,220	3,543,874	134	126	34%	5	0.75	Daily
376	Groove Creek Drop 2	Colbran	CO	Chute	1,503	4,363,725	165	126	34%	5	0.45	Daily
377	Parker Basin Drop	Colbran	CO	Chute	610	1,771,937	67	126	34%	5	0.99	Daily
378	Salt Creek Drop 1	Colbran	CO	Chute	2,411	7,055,833	269	124	34%	5	0.62	Daily
379	Salt Creek Drop 2	Colbran	CO	Chute	3,643	10,578,729	400	126	34%	5	0.2	Daily
380	CP Check	Uncompahgre	CO	Check Drop	327	1,363,160	8	572	49%	7	1.54	Daily
381	Holly Rd Check	Uncompahgre	CO	Check Drop	98	391,768	6	229	46%	7	0.58	Monthly
382	Loutzenhizer Drop	Uncompahgre	CO	Vertical Drop	98	391,768	6	229	46%	7	0.18	Monthly
383	East Canal Pipeline	Uncompahgre	CO	Vertical Drop	74	276,190	6	172	44%	7	0.04	Monthly
384	GH Lateral	Uncompahgre	CO	Vertical Drop	52	243,557	34	25	55%	7	0.17	Seasonal
385	Junction Ironstone & M&D	Uncompahgre	CO	Vertical Drop	22	102,627	18	20	54%	7	0.32	Seasonal
386	Shavano Falls	Uncompahgre	CO	Vertical Drop	5,168	20,549,889	125	572	46%	7	0.1	Monthly
387	South Canal Drop 4	Uncompahgre	CO	Chute	4,242	18,653,967	73	813	51%	7	1.17	Daily
388	South Canal Drop 5	Uncompahgre	CO	Chute	291	1,277,669	5	813	51%	7	0.5	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
389	South Canal Drop 6	Uncompahgre	CO	Chute	1,685	7,410,479	29	813	51%	7	0.33	Daily
390	South Terminus	Uncompahgre	CO	Vertical Drop	930	4,088,542	16	813	51%	7	0.09	Daily
391	Pipe Chute at 1058+00	Dolores	CO	Pipeline	2,029	7,187,372	326	86	41%	7	0.47	Daily
392	Drop at 725+45	Dolores	CO	Vertical Drop	275	973,290	44	86	41%	7	0.51	Daily
393	Drop at 1041+50	Dolores	CO	Vertical Drop	275	971,686	44	86	41%	7	0.54	Daily
394	Drop at 1058+00	Dolores	CO	Vertical Drop	233	825,756	38	86	41%	7	0.33	Daily
474	Sile Canal Drop F	Middle Rio Grande	NM	Vertical Drop	22	100,039	19	19	53%	8	3.1	Daily
545	Steinaker Feeder Canal Drop 1-13	Central Utah - Vernal Unit	UT	Series of Drops	1,088	1,162,000	72	209	13%	10	.30	Daily

Lower Colorado Results

Table 7: Lower Colorado Results

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
199	Coachella (North End): 6429+24	Colorado River Basin Salinity Control Project	AZ	Check Drop	670	4,475,739	17	558	78%	12	NA	Monthly
215	Yuma Mesa Conduit: 0436+25	Yuma Project	AZ	Series of Drops	244	1,849,332	50	68	88%	12	0	Monthly
216	Yuma Mesa Conduit: 0433+39	Yuma Project	AZ	Series of Drops	36	271,297	9	68	87%	12	0	Monthly
217	Yuma Mesa Conduit: 0433+21	Yuma Project	AZ	Series of Drops	38	279,929	9	68	87%	12	0	Monthly
303	Palo Verde: 242 Lateral	Colorado River Basin Salinity Control Project	AZ	Vertical Drop	345	1,813,542	50	96	61%	12	0.199	Daily
304	North Gila Turnout 1	Gila Valley Project	AZ	Vertical Drop	92	499,661	20	76	64%	12	2.775	Daily
305	Reservation Main Canal Turnout	Boulder Canyon Project	CA	Vertical Drop	148	705,130	19	111	56%	12	0.104	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
306	South Gila Terminus	Gila Project	AZ	Check Drop	8	38,437	20	7	54%	12	0.007	Daily
307	South Gila Turnout	Gila Project	AZ	Vertical Drop	46	237,113	8	96	61%	12	0.014	Daily
308	Yaqui Turnout	Boulder Canyon Project	CA	Vertical Drop	30	113,984	20	24	44%	12	0.08	Daily
478	Santa Rosa Canal A-10	Central Arizona Project	AZ	Vertical Drop	600	3,154,623	14	600	61%	12	0.03	Seasonal
479	Santa Rosa Canal B-1	Central Arizona Project	AZ	Vertical Drop	686	3,605,284	16	600	61%	12	NA	Seasonal
480	Santa Rosa Canal B-2	Central Arizona Project	AZ	Vertical Drop	858	4,506,597	20	600	61%	12	NA	Seasonal
481	East Main Canal TO & Drop	Central Arizona Project	AZ	Vertical Drop	154	795,159	12	180	60%	12	NA	Seasonal
482	Santa Rosa Canal Gate B-5	Central Arizona Project	AZ	Vertical Drop	35	248,879	19	30	83%	12	NA	Seasonal
483	Santa Rosa Canal Gate B-7	Central Arizona Project	AZ	Vertical Drop	95	526,465	19	70	64%	12	NA	Seasonal
484	Santa Rosa Canal Gate B-8	Central Arizona Project	AZ	Vertical Drop	27	196,483	15	30	83%	12	NA	Seasonal

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
485	Santa Rosa Canal Gate B-9	Central Arizona Project	AZ	Vertical Drop	386	2,345,547	27	200	71%	12	NA	Seasonal
486	East Main Canal Gate E-1	Central Arizona Project	AZ	Vertical Drop	182	787,337	15	170	50%	6 [2]	NA	Seasonal
487	East Main Canal Gate E-2	Central Arizona Project	AZ	Vertical Drop	109	472,402	9	170	50%	6 [3]	NA	Seasonal
488	East Main Canal Gate E-4	Central Arizona Project	AZ	Vertical Drop	51	345,951	12	70	79%	12	NA	Seasonal
489	East Main Canal Gate E-5	Central Arizona Project	AZ	Vertical Drop	128	669,710	15	140	61%	12	NA	Seasonal
490	East Main Canal Gate E-6	Central Arizona Project	AZ	Vertical Drop	80	347,355	11	120	50%	6 [4]	NA	Seasonal
491	East Main Canal Gate E-7	Central Arizona Project	AZ	Vertical Drop	39	210,050	8	80	63%	12	NA	Seasonal
492	East Main Canal Gate E-8	Central Arizona Project	AZ	Vertical Drop	34	188,998	8	70	64%	12	NA	Seasonal

[2] Canal operates 12 months, but for 6 months flows are below the minimum turbine flow requirements for the selected turbine.
[3] Canal operates 12 months, but for 6 months flows are below the minimum turbine flow requirements for the selected turbine.
[4] Canal operates 12 months, but for 6 months flows are below the minimum turbine flow requirements for the selected turbine.

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
493	East Main Canal Gate E-10	Central Arizona Project	AZ	Vertical Drop	24	126,077	8	50	60%	12	NA	Seasonal
494	East Main Canal Gate E-11	Central Arizona Project	AZ	Vertical Drop	49	252,153	16	50	60%	12	NA	Seasonal
495	East Main Canal Gate E-12	Central Arizona Project	AZ	Vertical Drop	43	220,634	14	50	60%	12	NA	Seasonal

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Mid Pacific Results

Table 8: Mid Pacific Results

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
312	Klamath Station 48	Klamath Project	OR	Vertical Drop	329	845,138	18	250	30%	7	0.5	Daily
313	Klamath G Canal Drop	Klamath Project	OR	Vertical Drop	266	911,343	12	310	40%	7	0.5	Daily
314	Klamath D Canal Drop	Klamath Project	OR	Vertical Drop	118	401,799	7	255	39%	7	0.1	Daily
315	Klamath A-canal headworks	Klamath Project	OR	Vertical Drop	709	2,582,779	12	827	42%	7	0	Daily
316	Klamath C Canal Spill	Klamath Project	OR	Vertical Drop	44	153,453	40	18	41%	7	0.1	Daily
320	Truckee-Carson Station 1631+70	CVP - Madera Lateral 6.2	CA	Pipeline	361	923,498	8	610	30%	8	0.11	Daily
321	Truckee-Carson Lateral 6.2: Sta. 61+26.44	CVP - Madera Lateral 6.2	CA	Vertical Drop	76	220,981	10	125	34%	7	0.83	Daily
322	Truckee-Carson Lateral 6.2: Sta. 104+00.00	CVP - Madera Lateral 6.2	CA	Vertical Drop	76	221,644	10	125	34%	7	0.34	Daily
323	Truckee-Carson Lateral 6.2: Sta. 162+00	CVP - Madera Lateral 6.2	CA	Vertical Drop	76	221,644	10	125	34%	7	0.11	Daily
324	Truckee-Carson Lateral 6.2: 201+00	CVP - Madera Lateral 6.2	CA	Vertical Drop	57	166,399	8	125	34%	7	0.04	Daily
325	Truckee-Carson Lateral 6.2: 231+00	CVP - Madera Lateral 6.2	CA	Vertical Drop	134	395,091	15	125	34%	7	0.04	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
326	Truckee-Carson Lateral 6.2: Sta: 279+00	CVP - Madera Lateral 6.2	CA	Vertical Drop	57	166,399	8	125	34%	7	0.02	Daily
327	Truckee-Carson Lateral 6.2: Sta. 337+00	CVP - Madera Lateral 6.2	CA	Vertical Drop	57	166,399	8	125	34%	7	0.04	Daily
328	Truckee-Carson Lateral 6.2: Sta. 372+00	CVP - Madera Lateral 6.2	CA	Vertical Drop	76	221,644	10	125	34%	7	0.02	Daily
329	Truckee-Carson Lateral 6.2: Sta. 444+25.0	CVP - Madera Lateral 6.2	CA	Pipeline	58	169,714	8	125	34%	7	0.65	Daily
330	Truckee-Carson Lateral 6.2: Sta. 485+65.0	CVP - Madera Lateral 6.2	CA	Vertical Drop	61	177,227	8	125	34%	7	1.01	Daily
331	Truckee-Carson Lateral 6.2: Sta. 513+50.00	CVP - Madera Lateral 32.2	CA	Vertical Drop	43	123,971	6	125	34%	7	0.7	Daily
332	Truckee-Carson Lateral 6.2: Sta. 563+40.0	CVP - Madera Lateral 32.2	CA	Vertical Drop	43	123,750	6	125	34%	7	0.14	Daily
333	Truckee-Carson Lateral 32.2: Sta. 35+20.75	CVP - Madera Lateral 32.2	CA	Vertical Drop	44	139,684	6	119	37%	6	0.46	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
334	Truckee-Carson Lateral 32.2: Sta. 84+00.00	CVP - Madera Lateral 32.2	CA	Vertical Drop	44	139,684	6	119	37%	6	0.78	Daily
335	Truckee-Carson Lateral 32.2: Sta. 132+00.00	CVP - Madera Lateral 32.2	CA	Vertical Drop	40	127,407	6	119	37%	6	0.52	Daily
336	Truckee-Carson Lateral 32.2: Sta. 173+00	CVP - Madera Lateral 32.2	CA	Vertical Drop	44	139,684	6	119	37%	6	0.54	Daily
337	Truckee-Carson Lateral 32.2: Sta. 402+00.00	CVP - Madera Lateral 32.2	CA	Vertical Drop	43	138,990	6	119	37%	6	0.5	Daily
338	Truckee-Carson A-Head	Newlands	NV	Check Drop	69	443,274	6	175	75%	9	8.62	Seasonal
339	Truckee-Carson AC1 8.52	Newlands	NV	Check Drop	78	500,716	9	150	75%	9	8.61	Seasonal
340	Truckee-Carson AC2 9.07	Newlands	NV	Check Drop	69	444,200	9	125	75%	9	9.66	Seasonal
341	Truckee-Carson AC3 11.33	Newlands	NV	Check Drop	86	554,882	11	125	75%	9	10.79	Seasonal
342	Truckee-Carson AC6 5.36	Newlands	NV	Check Drop	29	183,753	5	88	75%	9	11.14	Seasonal
343	Truckee-Carson L-Head 5.11	Newlands	NV	Check Drop	59	381,730	5	163	75%	9	10.41	Seasonal

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
344	Truckee-Carson LC1 7.63	Newlands	NV	Check Drop	52	336,309	8	113	75%	9	11.17	Seasonal
345	Truckee-Carson LC2 8.1	Newlands	NV	Check Drop	43	277,686	8	88	75%	9	11.17	Seasonal
347	Truckee-Carson VC3 5.19	Newlands	NV	Check Drop	139	894,708	5	375	75%	9	8.63	Seasonal
349	Truckee-Carson VC6 6.01	Newlands	NV	Check Drop	150	966,997	6	350	75%	9	10.41	Seasonal
350	Truckee-Carson VC7 6.39	Newlands	NV	Check Drop	29	187,769	6	75	75%	9	11.44	Seasonal
351	Truckee-Carson VC8 7.34	Newlands	NV	Check Drop	34	215,684	7	75	75%	9	12.55	Seasonal
352	Truckee-Carson SC2 8.24	Newlands	NV	Check Drop	103	662,899	8	175	75%	9	14.93	Seasonal
353	Truckee-Carson TC2 7.54	Newlands	NV	Check Drop	108	693,240	8	200	75%	9	5.37	Seasonal
354	Truckee-Carson TC10 9.54	Newlands	NV	Check Drop	44	139,684	6	119	37%	6	10.36	Seasonal
356	Derby 10.48	Newlands	NV	Check Drop	441	1,788,435	10	589	48%	12	0.49	Daily

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Pacific Northwest Results

Table 9: Pacific Northwest Results

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
309	MIN Main Canal Drop	Minidoka	ID	Vertical Drop	519	1,725,568	7	1,094	39%	7	5	Daily
310	Sulphur Drain Fish Barrier	Yakima	WA	Check Structure	172	696,399	8	308	47%	9	0.08	Daily
311	Taneum Chute KRD	Yakima	WA	Chute	875	2,188,958	204	59	29%	5	0.625	Daily
444	Kingman Lateral Station 137+00 Drop	Owyhee	OR	Vertical Drop	48	205,482	7	114	50%	6	0.7	Seasonal
445	Kingman Lateral Station 392+70	Owyhee	OR	Series of Drops	361	1,558,962	109	46	50%	6	0.3	Seasonal
446	Kingman Sublateral 7.7 7+05	Owyhee	OR	Series of Drops	52	224,331	122	7	50%	6	0.5	Seasonal
447	Kingman Sublateral 5.4 0+60	Owyhee	OR	Series of Drops	71	308,184	18	64	50%	6	0	Seasonal
448	Kingman Sublateral 5.4 29+00	Owyhee	OR	Series of Drops	455	1,963,892	153	41	50%	6	0	Seasonal
449	North Canal Station 3454+65 Chute	Owyhee	OR	Chute	411	1,776,100	95	60	50%	6	0	Seasonal
450	North Canal Lateral 5.3 Station 0+85	Owyhee	OR	Series of Drops	119	513,596	103	16	50%	6	0.4	Seasonal

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
451	North Canal Lateral 12.4 Station 1+00	Owyhee	OR	Series of Drops	285	1,229,531	151	26	50%	6	0	Seasonal
452	North Canal Lateral 13.6 Station 7+60	Owyhee	OR	Series of Drops	282	1,218,259	176	22	50%	6	0	Seasonal
453	North Canal Lateral 14.5 Station 52+30	Owyhee	OR	Chute	47	200,983	20	38	50%	6	0.1	Seasonal
454	North Canal Lateral 14.5 Station 153+60	Owyhee	OR	Chute	47	202,746	34	23	50%	6	0	Seasonal
455	North Canal Lateral 25.4 Station 1+30	Owyhee	OR	Series of Drops	193	835,809	38	71	50%	6	0.7	Seasonal
456	North Canal Lateral 25.4 Station 31+25	Owyhee	OR	Series of Drops	93	401,431	20	66	50%	6	0.3	Seasonal
457	North Canal Lateral 26.4 Station 3+00	Owyhee	OR	Series of Drops	312	1,347,095	165	26	50%	6	0.3	Seasonal
458	North Canal Lateral 28.7 Station 11+75	Owyhee	OR	Series of Drops	93	400,185	27	48	50%	6	0.04	Seasonal
459	North Canal Lateral 28.7 Station 36+20	Owyhee	OR	Series of Drops	64	275,108	70	15	50%	6	0	Seasonal

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
460	North Canal Lateral 31.0 Station 18+00	Owyhee	OR	Series of Drops	63	273,135	52	20	50%	6	0.1	Seasonal
461	North Canal Lateral 37.6 Station 1+10	Owyhee	OR	Series of Drops	135	583,372	148	15	50%	6	0.1	Seasonal
462	North Canal Lateral 38.7 Station 1+00	Owyhee	OR	Series of Drops	282	1,218,041	122	32	50%	6	0	Seasonal
463	North Canal Lateral 38.7 Station 42+80	Owyhee	OR	Series of Drops	99	427,725	76	18	50%	6	0.06	Seasonal
464	North Canal Lateral 60.0 Station 1+60	Owyhee	OR	Series of Drops	182	784,914	66	38	50%	6	0.25	Seasonal
465	South Canal Lateral 5.7 Station 26+50	Owyhee	ID	Chute	356	1,539,352	40	126	50%	6	0.19	Seasonal
466	South Canal Lateral 5.7 Station 291+00	Owyhee	ID	Series of Drops	157	679,466	54	40	50%	6	0	Seasonal
467	South Canal Lateral 17.1 Station 25+00	Owyhee	ID	Series of Drops	177	763,149	94	26	50%	6	0.1	Seasonal
468	South Canal Lateral 17.7 Station 0+00	Owyhee	ID	Series of Drops	655	2,828,551	137	66	50%	6	0.6	Seasonal

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
469	South Canal Lateral 28.5-1.1 Station 14+20	Owyhee	ID	Pipeline	112	483,494	55	28	50%	6	0.2	Seasonal
470	South Canal Lateral 28.5 Station 0+00	Owyhee	ID	Pipeline	62	267,451	23	44	50%	6	0.2	Seasonal
471	Mora Canal 75+50	Bosie	ID	Check Drop	232	1,003,469	10	325	50%	6	0.11	Seasonal
472	End of New York Canal 75+50	Bosie	ID	Check Drop	500	2,161,316	10	700	50%	6	0.02	Seasonal
475	North Canal Lateral 8.5 Station 6+96	Owyhee	OR	Series of Drops	45	196,352	53	14	50%	6	1	Seasonal
476	North Canal Lateral 8.5 Station 82+65	Owyhee	OR	Series of Drops	78	338,655	129	10	50%	6	0.4	Seasonal
477	North Canal Lateral 10.5 Station 0+85	Owyhee	OR	Series of Drops	225	971,290	163	19	50%	6	0.4	Seasonal
496	North Unit Main Canal Mile 1.78	Deschutes	OR	Vertical Drop	818	2,925,117	20	561	42%	7	NA	Daily
497	North Unit Main Canal Mile 1.95	Deschutes	OR	Vertical Drop	439	1,571,534	11	561	42%	7	NA	Daily
498	North Unit Main Canal Mile 2.11	Deschutes	OR	Vertical Drop	472	1,687,679	12	561	42%	7	NA	Daily
499	North Unit Main Canal Mile 2.41	Deschutes	OR	Vertical Drop	291	1,039,564	7	561	42%	7	NA	Daily
500	North Unit Main Canal Mile 2.57	Deschutes	OR	Vertical Drop	322	1,149,973	8	561	42%	7	NA	Daily

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503	North Unit Main Canal Mile 3.52	Deschutes	OR	Vertical Drop	265	947,795	7	561	42%	7	NA	Daily
505	North Unit Main Canal Mile 3.67	Deschutes	OR	Vertical Drop	465	1,661,869	12	561	42%	7	NA	Daily
507	North Unit Main Canal Mile 6.44	Deschutes	OR	Chute	212	757,089	5	561	42%	7	NA	Daily
508	North Unit Main Canal Mile 11.13	Deschutes	OR	Chute	524	1,875,516	13	561	42%	7	NA	Daily
509	North Unit Main Canal Mile 11.15	Deschutes	OR	Chute	203	725,544	5	561	42%	7	NA	Daily
510	North Unit Main Canal Mile 11.34	Deschutes	OR	Chute	222	792,937	6	561	42%	7	NA	Daily
511	North Unit Main Canal Mile 13.05	Deschutes	OR	Chute	341	1,220,233	9	561	42%	7	NA	Daily
517	North Unit Main Canal Mile 15.92	Deschutes	OR	Vertical Drop	252	901,911	6	561	42%	7	NA	Daily
518	North Unit Main Canal Mile 18.34	Deschutes	OR	Vertical Drop	303	1,082,580	8	561	42%	7	NA	Daily
519	North Unit Main Canal Mile 19.46	Deschutes	OR	Vertical Drop	927	3,313,699	23	561	42%	7	NA	Daily
520	North Unit Main Canal Mile 20.91	Deschutes	OR	Vertical Drop	679	2,428,994	17	561	42%	7	NA	Daily
521	North Unit Main Canal Mile 22.62	Deschutes	OR	Vertical Drop	374	1,336,377	9	561	42%	7	NA	Daily
522	North Unit Main Canal Mile 26.12	Deschutes	OR	Vertical Drop	543	1,942,909	14	561	42%	7	NA	Daily
523	North Unit Main Canal Monroe Drop	Deschutes	OR	Vertical Drop	526	1,733,511	15	491	40%	7	NA	Daily

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524	North Unit Main Canal Mile 45.02	Deschutes	OR	Vertical Drop	1,714	6,266,652	85	279	43%	7	NA	Daily
525	North Unit Main Canal Mile 47	Deschutes	OR	Vertical Drop	1,392	5,089,258	69	279	43%	7	NA	Daily
526	North Unit Main Canal Mile 47.47	Deschutes	OR	Vertical Drop	740	2,727,320	37	279	43%	7	NA	Daily
527	North Unit Main Canal Mile 47.98	Deschutes	OR	Vertical Drop	200	737,530	10	279	43%	7	NA	Daily
528	North Unit Main Canal Mile 48.49	Deschutes	OR	Vertical Drop	180	664,733	9	279	43%	7	NA	Daily
529	North Unit Main Canal 50 Check	Deschutes	OR	Vertical Drop	199	735,325	10	279	43%	7	NA	Daily
530	North Unit Main Canal Mile 52.58	Deschutes	OR	Chute	1,213	4,332,528	68	245	42%	7	NA	Daily
531	North Unit Main Canal Mile 52.75	Deschutes	OR	Vertical Drop	167	602,841	10	245	42%	7	NA	Daily
532	North Unit Main Canal Mile 52.89	Deschutes	OR	Vertical Drop	167	602,841	10	245	42%	7	NA	Daily
533	North Unit Main Canal Mile 52.94	Deschutes	OR	Vertical Drop	167	604,739	10	245	42%	7	NA	Daily
534	North Unit Main Canal Mile 53.69	Deschutes	OR	Vertical Drop	121	449,823	7	228	43%	7	NA	Daily
535	North Unit Main Canal Mile 53.84	Deschutes	OR	Vertical Drop	114	423,825	7	228	43%	7	NA	Daily
536	North Unit Main Canal Mile 54.17	Deschutes	OR	Vertical Drop	90	336,233	6	220	43%	7	NA	Daily
538	North Unit Main Canal Mile 56.45	Deschutes	OR	Vertical Drop	108	401,481	7	220	43%	7	NA	Daily

Object ID	Canal Site Name	Project	State	Structure Type	Potential Installed Capacity (kW)	Potential Annual Energy (kWh)	Design Head (Ft)	Max Turbine Flow (cfs)	Plant Factor	Months of Potential Generation	Closest Distribution or Transmission Line (Miles)	Available Flow Data
539	North Unit Main Canal Mile 62.32	Deschutes	OR	Vertical Drop	33	116,493	6	88	41%	7	NA	Daily
540	North Unit Main Canal Mile 62.49	Deschutes	OR	Vertical Drop	29	103,528	5	88	41%	7	NA	Daily
541	North Unit Main Canal Mile 62.62	Deschutes	OR	Vertical Drop	29	103,718	5	88	41%	7	NA	Daily
542	North Unit Main Canal Mile 62.73	Deschutes	OR	Vertical Drop	29	103,718	5	88	41%	7	NA	Daily
543	North Unit Main Canal Mile 63.28	Deschutes	OR	Vertical Drop	14	47,968	5	41	41%	7	NA	Daily
544	North Unit Main Canal Mile 63.52	Deschutes	OR	Vertical Drop	14	47,968	5	41	41%	7	NA	Daily