

Hydropower Project Summary

SOUTH FORK AMERICAN RIVER (CHILI BAR), CALIFORNIA

CHILI BAR HYDROELECTRIC PROJECT (P-2155)



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Hydropower Reform Coalition

and

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DESCRIPTION:

The Chili Bar Project, under license to Pacific Gas & Electric Company (G&E) consists of a single dam near the town of Placerville on the South Fork American River downstream from the Upper American River Project (P-2101). It occupies federal land administered by the U.S. Department of the Interior's Bureau of Land Management. Due to its proximity to the Upper American River Project under license to the Sacramento Municipal Utility District (SMUD), and also undergoing re-licensing, both projects were the subject of collaborative proceeding and settlement negotiations.

The 19 signatories to the Settlement are: American Whitewater, American River Recreation Association, Bureau of Land Management (BLM), California Department of Parks and Recreation, California Fish and Wildlife, California Outdoors, California Sportfishing Protection Alliance, Camp Lotus, Foothill Conservancy, U. S. Forest Service (Forest Service), Friends of the River, U.S. Fish and Wildlife Service (FWS), U.S. Department of the Interior (Interior), U.S. National Park Service, PG&E, Rich Platt, Hilde Schweitzer, Theresa Simsiman, and Sacramento Municipal Utility District (SMUD).

A. SUMMARY

1. License application filed: July 15, 2005
2. License Issued: August 20, 2014
3. License expiration: July 20, 2064
(to coincide with expiration of Upper American River Project P-2101)
4. Waterways: South Fork American River
5. Capacity: 7.0 megawatts (MW)
6. Licensee: Pacific Gas & Electric Company (PG&E)
7. Licensee address: Pacific Gas & Electric Company
245 Market Street
San Francisco, CA 94105
8. County: Eldorado
9. Project Area: The Chili Bar Project is located in El Dorado County, California, on the South Fork American River in the foothills of the Sierra Nevada Mountains immediately downstream of the Upper American River Project's White Rock powerhouse. The project boundary encloses a total of 254.63 acres, including 47.81 acres of BLM-administered land, 15.06 acres of private land, and 191.76 acres of PG&E land.

10. Project Facilities: The Chili Bar Project consists of a dam, reservoir, intake, penstock, and powerhouse. The dam is 126 feet high and 380 feet long with a 170-foot-long spillway located 31 feet below the crest of the dam. The dam impounds the Chili Bar reservoir with a surface area of 110 acres and a useable storage capacity of 1,339 acre-feet. The dam includes:

- a. a screened intake structure approximately 45 feet wide by 55 feet high;
- b. a 14-foot-diameter penstock that conveys water from the intake to a powerhouse located at the foot of the dam;
- c. a powerhouse that contains a single 7-MW turbine unit; and,
- d. a 21-kv transmission switchyard located on top of the powerhouse deck.

There is no transmission line associated with the project because the 21-kV switchyard connects directly to the local distribution grid. There are also no project recreation facilities.

B. IMPORTANT PROVISIONS AND REQUIREMENTS IN LICENSE

The license requires a number of environmental measures that will protect and enhance fish and wildlife resources, water quality, recreational resources, and historic properties.

Many of the most important license requirements fall into three categories:

- 1) Aquatic Resources include increased minimum stream flows and implementing ramping rates to provide suitable habitat downstream for native fish species;
- 2) Monitoring Programs evaluate the impact of the implemented stream flow changes and water quality on aquatic resources including adaptive management steps based on monitoring to balance the protection of native fish, amphibian, and reptile populations and recreational boating use; and,
- 3) Recreation Enhancements include whitewater boating opportunities in coordination with SMUD to maintain minimum recreational flows, new recreation facilities and improved public education and interpretation.

1. Aquatic Resources [See Table 1 for License References]

Implementation of three of the four major measures began within 3 months (November 20, 2014) of license issuance.

Table 1: Aquatic Resources License References

License Certification Condition No.	Water Quality Certification (Appendix A) Condition No.	Description	Due Date
	1	Minimum instream flows	Within 3 months of license issuance
	2	Ramping rates	Within 3 months of license issuance
	3	Recreational streamflows	Within 3 months of license issuance
4	4	Coordination with UARP license	Within 4 months of license issuance

These measures affect minimum flows, ramping rates, recreational streamflows and coordination with the UARP project immediately upstream of the Chili Bar project:

a. Minimum Instream Flows

Minimum instream flows are required to protect aquatic life and is specified for streamflows below Chili Bar Dam (See **Table 2**) to begin as early as reasonably practicable within 3 months after license issuance. The minimum streamflow schedules are separated into five water year types: Wet, Above Normal (AN), Below Normal (BN), Dry, and Critically Dry (CD).

Table 2: South Fork American River Minimum Streamflow below Chili Bar Dam

Month	Minimum Streamflow by Water Year Type (cfs)*					
	SD	CD	DRY	BN	AN	WET
October	150	185	200	250	250	250
November	150	185	200	200	200	250
December	150	185	200	200	200	250
January	150	185	200	200	200	250
February	150	185	200	200	200	250
March	150	185	200	200	200	250
April	150	200	250	250	300	350
May	150	200	250	250	350	500
June	200	200	250	250	350	500
July	150	185	200	250	300	350
August	150	185	200	250	300	300
September	150	185	200	250	250	250

*Measured at USGS gauge 11444500 (PG&E gauge A49)

The minimum streamflows specified in the schedules may be temporarily modified if required by equipment malfunction or operating emergencies. In order to adjust operations to meet the required minimum streamflows, PG&E has a three-year period after the license is issued or three years after completion of necessary facility modifications, whichever is later, in which daily mean streamflows may vary up to 10 percent below the amounts specified in the minimum streamflow schedules, provided that the average monthly streamflow in any given month equals or exceeds the required minimum streamflow for the month. After the applicable three-year period, PG&E is required to meet the minimum streamflow requirements specified in the minimum streamflow schedules, provided that inflows to Chili Bar Reservoir and Chili Bar Reservoir elevations are sufficient to maintain these streamflows.

Each February through May PG&E is required to determine the water year type based on the Division of Water Resources Bulletin 120 forecast and

operate for that month based on that forecast beginning 3 days after issuance of the forecast and continuing until 2 days after issuance of a subsequent monthly forecast. The May forecast will be used to establish the final water year type for the remaining months of the water year and the month of October.

The water year type for the months of November through January will be based on the Department of Water Resources' Full Natural Flow record for the American River at Folsom for the preceding water year. PG&E is required to operate based on that record beginning November 1.

b. Ramping Rates

Beginning as early as reasonably practicable within 3 months after license issuance, PG&E is required to follow the license prescribed ramping rates (See **Table 3**) provided that inflows to Chili Bar Reservoir and Chili Bar Reservoir elevations are sufficient to maintain these ramping rates.

Table 3: South Fork American River Ramping Rates below Chili Bar

Ramp Up	Ramp Down
Streamflow change of 500 cfs or less per hour for flows between 150 cfs and	Stage change of 1 foot or less per hour for flows between 1,950 cfs and 1,000
Stage change of 1 foot or less per hour for flows above 1,000 cfs and below	Streamflow change of 500 cfs or less per hour for flows below 1,000 cfs and
	Streamflow change of 250 cfs or less per hour for flows between 600 cfs and 150

* Measured at USGS gauge 11444500 (PG&E gauge A49)

c. Recreational Streamflows

In consultation and coordination with SMUD (UARP Licensee), PG&E is required to maintain minimum recreational streamflows below Chili Bar Reservoir Dam as specified in the license. Although the required minimum streamflow duration can extend beyond the times required, they must be provided during the specific times per the license:

1. Minimum recreational streamflows scheduled for three hours must meet or exceed the specified minimum from 9:00 am until at least noon.
2. Minimum recreational streamflows scheduled for four hours must meet or exceed the specified minimum from 8:00 am until at least noon.
3. Minimum recreational streamflows scheduled for five hours must meet or exceed the specified minimum from 7:00 am until at least noon on Saturdays and 8:00 am until at least 1:00 pm on Sundays.
4. Minimum recreational streamflows scheduled for six hours must meet or exceed the specified minimum from 7:00 am until at least 1:00 pm.

The minimum recreational streamflows may be temporarily modified due to the following events:

- A state or federal electrical emergency is declared that requires the PG&E to produce electricity outside normal planned operations;
- System events cause the Operating Reserves to drop below the Western Energy Coordinating Council Minimum Operating Reliability Criteria; or
- Equipment malfunction, public safety emergency, or law enforcement activity.

Additionally, recreational streamflows specified at 1,750 cfs may be reduced to 1,500 cfs during scheduled unit outages. However, PG&E is required to make a good faith effort to avoid scheduling unit outages when recreational streamflows of 1,750 cfs are required.

Where facility modification is required to maintain the specified minimum recreational streamflows, PG&E is required to complete the modifications as soon as reasonably practicable and no later than three years after license issuance. Prior to such required facility modifications, PG&E is required to make every reasonable effort to provide the specified minimum recreational streamflows within the capabilities of the existing facilities.

d. Coordination with UARP Project

PG&E is required to coordinate operation with SMUD in order to comply with Condition 1 (Minimum Instream Flows), Condition 2 (Ramping Rates), and Condition 3 (Recreational Streamflows). PG&E and SMUD are required to jointly prepare plan within four months for coordinated operations of the two projects. The license specifies the minimum recreational flows below Chili Bar Dam by water year type, duration and flow (See **Table 4**).

**Table 4: Minimum Recreational Flow for SF American River below Chili Bar Dam
by Water Year Type, Duration and Flow in cfs**

Water Year	Period	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Super Dry	Apr 1 - Friday before Memorial Day	3 Hrs @ 1300	---	---	---	---	3 Hrs @ 1300	3 Hrs @ 1300
	Memorial Day - Labor Day*	3 Hrs @ 1300	---	---	3 Hrs @ 1300	3 Hrs @ 1300	5 Hrs @ 1300	5 Hrs @ 1300
	Tuesday after Labor Day - Sept 30	---	---	---	---	---	3 Hrs @ 1300	3 Hrs @ 1300
	Oct 1 - Mar 31	---	---	---	---	---	3 Hrs @ 1300	---
Critically Dry	Mar 1 - Friday before Memorial Day	3 Hrs @ 1300	---	---	---	---	3 Hrs @ 1300	3 Hrs @ 1300
	Memorial Day - Labor Day*	3 Hrs @ 1300	---	---	3 Hrs @ 1300	3 Hrs @ 1300	5 Hrs @ 1500	5 Hrs @ 1500
	Tuesday after Labor Day - Sept 30	---	---	---	---	3 Hrs @ 1300	3 Hrs @ 1300	3 Hrs @ 1300
	Oct 1 - Feb 28/29	---	---	---	---	---	3 Hrs @ 1300	---
Dry	Mar 1 - Friday before Memorial Day	3 Hrs @ 1300	3 Hrs @ 1300	---	---	3 Hrs @ 1300	3 Hrs @ 1500	3 Hrs @ 1500
	Memorial Day - Labor Day*	3 Hrs @ 1300	3 Hrs @ 1300	---	3 Hrs @ 1300	3 Hrs @ 1300	5 Hrs @ 1500	5 Hrs @ 1500
	Tuesday after Labor Day - Sept 30	---	---	---	---	3 Hrs @ 1300	3 Hrs @ 1300	3 Hrs @ 1300
	Oct 1 - Feb 28/29	---	---	---	---	---	3 Hrs @ 1300	3 Hrs @ 1300
Below Normal	Mar 1 - Friday before Memorial Day	3 Hrs @ 1300	3 Hrs @ 1300	---	3 Hrs @ 1300	3 Hrs @ 1300	3 Hrs @ 1500	3 Hrs @ 1500
	Memorial Day - Labor Day*	3 Hrs @ 1300	3 Hrs @ 1300	---	3 Hrs @ 1300	3 Hrs @ 1300	6 Hrs @ 1500	6 Hrs @ 1500
	Tuesday after Labor Day - Sept 30	---	---	---	3 Hrs @ 1300	3 Hrs @ 1300	3 Hrs @ 1500	3 Hrs @ 1500
	Oct 1 - 31	3 Hrs @ 1300	---	---	---	3 Hrs @ 1300	3 Hrs @ 1500	3 Hrs @ 1500
	Nov 1 - Feb 28/29	---	---	---	---	---	3 Hrs @ 1300	3 Hrs @ 1300
Above Normal	Mar 1 - Friday before Memorial Day	3 Hrs @ 1300	3 Hrs @ 1300	3 Hrs @ 1300	3 Hrs @ 1300	3 Hrs @ 1300	4 Hrs @ 1750	4 Hrs @ 1750
	Memorial Day - Labor Day*	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500	6 Hrs @ 1750	6 Hrs @ 1750
	Tuesday after Labor Day - Sept 30	---	---	---	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500
	Oct 1 - 31	3 Hrs @ 1300	---	---	---	3 Hrs @ 1300	3 Hrs @ 1500	3 Hrs @ 1500
	Nov 1 - Feb 28/29	---	---	---	---	---	3 Hrs @ 1500	3 Hrs @ 1500
Wet	Mar 1 - Friday before Memorial Day	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500	6 Hrs @ 1750	6 Hrs @ 1750
	Memorial Day - Labor Day*	4 Hrs @ 1500	4 Hrs @ 1500	4 Hrs @ 1500	4 Hrs @ 1500	4 Hrs @ 1500	6 Hrs @ 1750	6 Hrs @ 1750
	Tuesday after Labor Day - Sept 30	---	---	---	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500	3 Hrs @ 1500
	Oct 1 - 31	3 Hrs @ 1300	---	---	---	3 Hrs @ 1300	3 Hrs @ 1500	3 Hrs @ 1500
	Nov 1 - Feb 28/29	---	---	---	---	---	3 Hrs @ 1500	3 Hrs @ 1500

*The "Memorial Day – Labor Day" period refers to Saturday of Memorial Day weekend through Monday of Labor Day weekend.

2. Monitoring Programs [See Table 3 for License References]

The implementation schedules for the various monitoring programs begin as early three-months (October 23, 2014) after license issuance.

Table 3: Monitoring Programs License References

License Article 401: Condition No.	Water Quality Certification (Appendix A) Condition No.	Description	Due Date
	5	Adaptive Management Program	Within 3 months of license issuance
6, 7	6	Monitoring Program	Within 3 months of license issuance
9	9	Streamflow and Reservoir Elevation Gaging Plan (Gaging Plan)	Within 1 year of license issuance

The programs include adaptive management and monitoring numerous measures for a variety of species populations, stream flow gaging, and stream flow and a reservoir level information plan.

a. Adaptive Management Program

PG&E, in consultation with the SMUD, to implement an adaptive management program that will generally consist of:

1. implementation of a monitoring program;
2. analysis of data for trends to identify and address Project-related impacts or effects on beneficial uses and/or water quality; and
3. specific adaptive management measures that will be implemented if the monitoring program and other information indicate that the applicable resource objectives identified in the Rationale Report for Relicensing Settlement Agreement (submitted by California Division of Fish and Wildlife to FERC on January 29, 2007) will likely not be met without adjustment of the initial conditions.

Monitoring is required to determine if the applicable resource objectives are achievable and being met. Analysis of the monitoring results will be used to determine the need for adaptive management measures. Year 1 (calendar basis of January through December) is defined as the first year during which all initial streamflows required by the license are implemented by May 1 for:

1. Coordinated Operations reviewed annually to determine if the operations are effective in achieving the ecological and recreational streamflows in the SF American River downstream of Chili Bar Reservoir Dam, as defined previously in Condition 1 (Minimum Instream Flows), Condition 2 (Ramping Rates), and Condition 3 (Recreational Streamflows).
2. Invasive Algae monitoring to determine whether invasive algae are present and are creating nuisance condition. Adaptive measures will be developed to reduce or eliminate the problem.

b. Monitoring Program

The Monitoring Program supports the Adaptive Management program through monitoring of:

- Fish populations
- Aquatic macroinvertebrates
- Amphibians and reptiles
- Riparian vegetation species composition
- Water temperature
- Water quality

A Sediment Management Plan includes monitoring sediment in the SF American River downstream of Chili Bar should PG&E elect to dredge Chili Bar Reservoir.

c. Streamflow and Reservoir Elevation Gaging Plan

In consultation with the USGS (U.S. Geological Survey), PG&E will develop a Streamflow and Reservoir Elevation Gaging Plan (Gaging Plan) that meets USGS standards. At a minimum, the Gaging Plan will address compliance gaging at the following locations:

1. Streamflow gaging at SF American River below Chili Bar Reservoir Dam (existing USGS gage number 11444500 or its successor); and,
2. Reservoir Elevation Gaging at Chili Bar Reservoir.

3. Recreation Enhancements [See **Table 4** for License References]

The license requires recreation enhancements as summarized in **Table 4**.

Table 4: Recreation Enhancements License References

License Article No.	Water Quality Certification (Appendix A) Condition No.	BLM 4(e) (Appendix B) Article Condition No.	Description	Due Date
405			Recreation Plan	
401: Condition 11	11		Streamflow and Reservoir Level Public Information Services	Within 6 months of license issuance
401: Condition 14	14		Water Quality Protection Plan (during recreation facility construction)	Within four months of license issuance
		2-13	Recreation Improvements	Within 3 years of license issuance

Additionally, the license requires a one-time payment of \$30,000 to BLM and annual payments of \$30,000, adjusted on or before October 1 of each year based on the U.S. Gross Domestic Product – Implicit Price Deflator (GDP-IPD) with 2007 as the base year.

Recreation enhancements include a recreation plan, streamflow and reservoir level public information services, a water quality protection plan during recreation facility construction, and specific recreation improvements.

a. Recreation Plan

PG&E is required to develop a Recreation Plan that must include, at minimum:

1. Detailed descriptions and locations of the recreational improvements required by BLM Article 2-13 (Appendix B); and,
2. An implementation schedule.

b. Streamflow and Reservoir Level Public Information Services

PG&E is required to prepare a plan to provide public information on streamflow and reservoir level. The plan will include, at a minimum:

1. Real-time lake stage height and storage information for Chili Bar Reservoir. B. Installation of up to two simple staff gages for use by the public;
2. Real-time streamflow and reservoir level information that is available to the public year-round via a toll-free telephone number or other appropriate technology approved by BLM; and,
3. Streamflow information on a website, which is collected consistent with standard USGS gaging practices for the existing stream gage facilities downstream of Chili Bar Reservoir Dam (USGS gage 11444500 or its successor) that includes 15-minute increments and stream flows releases from the past seven days.

PG&E is also required to publish via a website, the minimum streamflow and recreational streamflow schedules as well as the current water year type.

c. Water Quality Protection Plan

PG&E is required to construct new recreation facilities to provide access to Chili Bar Reservoir. However, no later than four months prior to initiating construction activities for the new recreation facilities, PG&E is required to submit a plan that describes the best management practices that will be taken to minimize impacts to water quality during construction.

d. Recreation Improvements

PG&E is required to construct the following public recreation facilities:

1. A gravel parking area for three to four vehicles off Rock Creek Road.
2. A 36-inch-wide trail that meets a grade of 5 percent or less from the parking area to Chili Bar Reservoir.
3. A kiosk sign along the trail near the beginning of the trail, explaining the rules of the area.
4. One picnic table of coated wire mesh material in a leveled out area that is outside of the Chili Bar Reservoir floodplain.

C. MAP

There are two convenient ways to become familiar with this project on the Hydropower Reform Coalition website, www.hydroreform.org.

- Go directly to the project page <http://www.hydroreform.org/projects/chili-bar-p-2155>.
- To understand the geographical context of the project, visit the *On Your River* section of the site. This link (<http://www.hydroreform.org/on-your-river/California>) will take you to the section for rivers in California. Zoom in until you can see the Sacramento and Carson City area. P-2155 is the first marker east and a little north of Sacramento.