



February 21, 2024

Via Electronic Submittal (E-File)

Debbie-Anne A. Reese, Acting Secretary
Federal Energy Regulatory Commission
Office of Energy Projects
888 First Street, N.E.
Washington, DC 20426

**RE: Potter Valley Hydroelectric Project, FERC No. 77-CA
2024 Minimum Instream Flow Variance Request Due to Restricted Storage
Capacity**

Dear Secretary Reese:

Please consider this letter a request for a 2024 flow variance for Pacific Gas and Electric Company's (PG&E) Potter Valley Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) No. 77. Article 52 of the Project license requires PG&E to comply with the National Marine Fisheries Service (NMFS) Reasonable and Prudent Alternatives (RPA), as described in their 2002 Biological Opinion. Subsequently, the RPA prescribed minimum instream flows became license requirements following FERC's Order Amending License, issued January 28, 2004.

PG&E is evaluating the seismic risk at Scott Dam as part of its Dam Safety Program. In 2023, PG&E determined that the seismic risk is greater than previously understood. To reduce the potential seismic risk, the gates at Scott Dam will remain open indefinitely, reducing the water storage capacity from approximately 76,000 acre-ft (AF) to 56,000 AF (a maximum storage reduction of roughly 20,000 AF). With the dam's spillway gates remaining open, water availability could be similar to the dry conditions experienced in 2020 and 2021, when Lake Pillsbury's spring top-off did not reach the spillway crest elevation and the Project operated under FERC-approved flow variances. In a letter dated March 28, 2023, FERC requested PG&E to file an application to amend the license to leave the spillway gates open indefinitely. Currently, PG&E has initiated the internal process to prepare the license amendment.

Accordingly, PG&E is requesting a flow variance for 2024 from the current license requirements to reduce East Branch Russian River (EBRR) flows to proactively manage reservoir storage in a manner that is protective of the Project facilities and minimizes and avoids potential impacts to federally Endangered Species Act (ESA)-listed salmonid species and other aquatic resources that occupy the Eel River within the Project area. Based on FERC's procedural recommendations, PG&E is submitting this request well in advance of the summer/dry season flow period, to provide FERC with adequate time to evaluate this variance. However, this approach requires some flexibility due to the inherent

uncertainty with long-term weather forecasting and storage inflows for the remainder of the 2024 runoff season. This request has been developed in consultation with NMFS, California Department of Fish and Wildlife (CDFW), Round Valley Indian Tribes (RVIT) and United States Fish and Wildlife Service (USFWS) (hereafter Agencies).

Current License Requirement

The RPA includes requirements for the minimum instream flows released by the Project. PG&E requested flow variances in 7 out of the last 10 years when the spillway gates were in operation between 2013 and 2022, and the need for flow variances under prior operating conditions demonstrates that current license-prescribed flows will be unobtainable in nearly all years with the gates permanently open and the reservoir storage restriction in place.

Table 1 provides a summary of the expected license-required flows for spring/summer 2024 in the absence of a flow variance.

Table 1: Expected 2024 Flows under the RPA

Compliance Point	4/1-5/31 Requirement without Variance	6/1-9/30 Requirement without Variance with Classification*	10/1-12/31 Requirement without Variance with Classification*
Eel River below Scott Dam (E-2)	Dry – 40 cfs Normal – 100 cfs	Dry – 40 cfs Normal – 60 cfs	Dry – 40 cfs Normal – 60 cfs
Eel River below Cape Horn Dam (E-11)	Value depends on Eel Index Flow	Very Dry- Summer base flow is 3 cfs Dry – 9 cfs Wet – 15 cfs Very Wet – 30 cfs	Value depends on Eel Index flow
East Branch Russian River (E-16)	Dry – 35 cfs (25 cfs starting 4/15) Normal – 35 cfs	Dry – 25 cfs Normal – 75 cfs Normal with Dry Spring Exclusion – 40 cfs	35 cfs (begins 9/16)
<p>Notes: cfs = cubic feet per second; RPA = Reasonable and Prudent Alternative. *Classifications are not finalized until May 15th for E-11 and June 1st for E-2/E-16. Range of expected classifications shown. While there exists a Critical Water Year Type classification for E-2 and E-16, the threshold for triggering is extremely unlikely, and the Critical flow requirement at E-2 is below the minimum release capability of the Scott Dam low level outlet</p>			

1As of Feb 1, 2024, the Cumulative inflow to Lake Pillsbury (CLP) for the 2024 Water Year is at 140,848 AF, which exceeds the Critical Water Year Type threshold for E2 and E16, accordingly, the Critical Water Year Type classification has been omitted from this table.

Lake Pillsbury Minimum Pool

As a condition of a prior flow variance for the Project issued on July 15, 2016, FERC required PG&E to “determine the current low level operation constraints at Lake Pillsbury (beyond operator recommendations) that support a low reservoir elevation level.” To address this requirement, PG&E submitted a technical memorandum (TM) to FERC on

April 3, 2017, that identified and evaluated potential dam safety and operational constraints on lowering the operating level. As described in the TM, a high potential of bank sloughing exists at pool levels between 5,000 and 12,000 AF; the degree of bank sloughing partially depends on the drawdown rate of the reservoir. Since this analysis was performed, PG&E has used 12,000 AF as the Lake Pillsbury planning minimum for water management.

Water Temperature Analysis and Flexible Management Release Strategy

Water Temperature Analysis

In response to PG&E's *2022 Flow Variance Request Due to Limited Water Availability*, submitted May 13, 2022, FERC ordered PG&E to continue to conduct Lake Pillsbury water quality monitoring. FERC also ordered PG&E to develop scenarios for water temperature modeling, which would allow PG&E to evaluate the potential benefits of cooler reservoir temperatures and water storage that support federally ESA-listed salmonids during the dry season. PG&E evaluated 12 years of historical water temperature data collected under the RPA to develop a regression model and satisfy FERC's July 27, 2022, order (Enclosure 2 Potter Valley Project – Water Temperature Evaluation, 2023).

The conclusion of the PG&E water temperature analysis (Enclosure 2) was that there are limited options for mitigating high water temperature in the release from Lake Pillsbury in the late-summer and early-fall months. The limited options are caused by the relatively shallow reservoir (small, deep-water volume), minimal spring/summer reservoir inflow that is typically warm, and summer withdrawals that are made from a low-level outlet that mixes the warm, upper layers of the reservoir throughout the water column. The regression-based analysis of existing water temperature data indicated a very predictable pattern based solely on calendar date and suggests that this analysis could be used as a guidance curve to compare current releases to usage patterns from other, similar water years. Two guidance curves were developed, one based on all water-year types with the second based only on dry water-year types. A proposed or ongoing reservoir release pattern is compared with the statistically derived guidance curves. This approach allows PG&E to compare the current strategy for water year releases to previous patterns, which informs operational decisions regarding increasing or decreasing release volumes. This approach provides a practical tool to determine how current spring and summer flow-release decisions may influence late-summer release water temperatures.

FERC's July 27, 2022, order approving PG&E's temporary flow variance inadvertently demonstrated the potential benefit of using reservoir release management to influence water temperature in late summer. The order went into effect and reduced E-16 flows from 75 to 5 cubic feet per second (cfs), and the benefits of this reduction were readily observable. As shown on Figure 1, water temperatures at E-2 were increasing as expected based on historical water temperature data (i.e., regression-based guidance curves) until withdrawals from the reservoir were reduced under the variance. Consequently, release temperature at E-2 decreased and remained stable until withdrawals from the reservoir increased again to support a Blockwater release in late September 2022. Further analysis of flow and temperature data from 2022 indicates that the flow reduction in late July cooled

release temperatures as much as 1.6 degrees Celsius ($^{\circ}\text{C}$) during the approximately 2-month flow-reduction period (Figure 2).

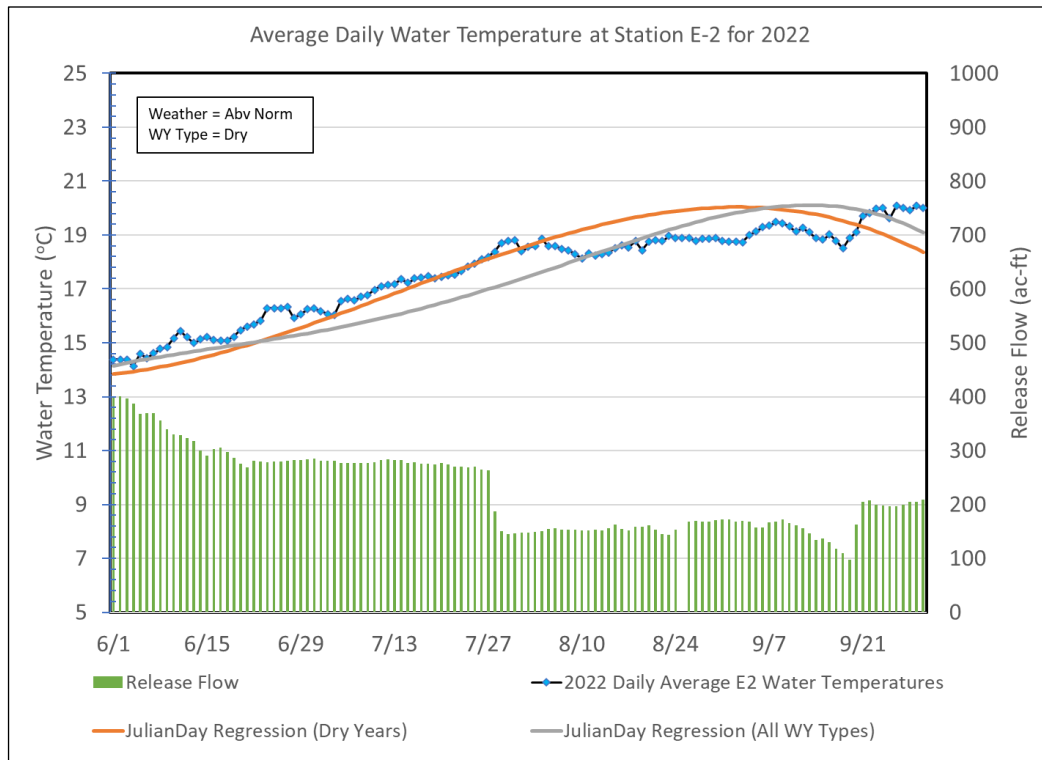


Figure 1: Average Daily Water Temperature at Gaging Station E-2 and release flow for 2022.

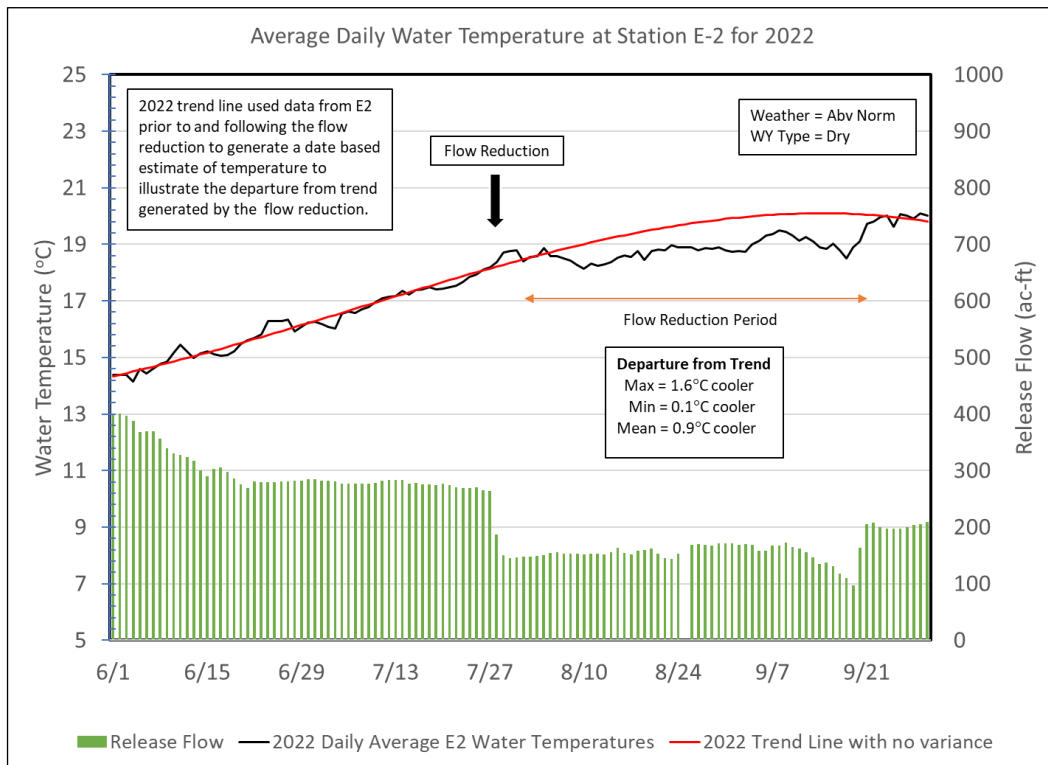


Figure 2: Average Daily Water Temperature at Gaging Station E-2 with 2022 trend line.

Based on the observations above, and in coordination with Agencies, PG&E developed a flexible reservoir release management strategy for the 2023 flow variance request that could support cooler temperatures for ESA-listed salmonids rearing in the Eel River downstream of Scott Dam. The strategy was included in PG&E's 2023 request for temporary flow variance submitted to FERC on May 22, 2023, and approved on October 2, 2023. However, because the variance started later than in previous years, reservoir withdrawals remained elevated during the summer period, depleting the cool water and resulting in increased water temperature above what was predicted by the guidance curves (Figure 3).

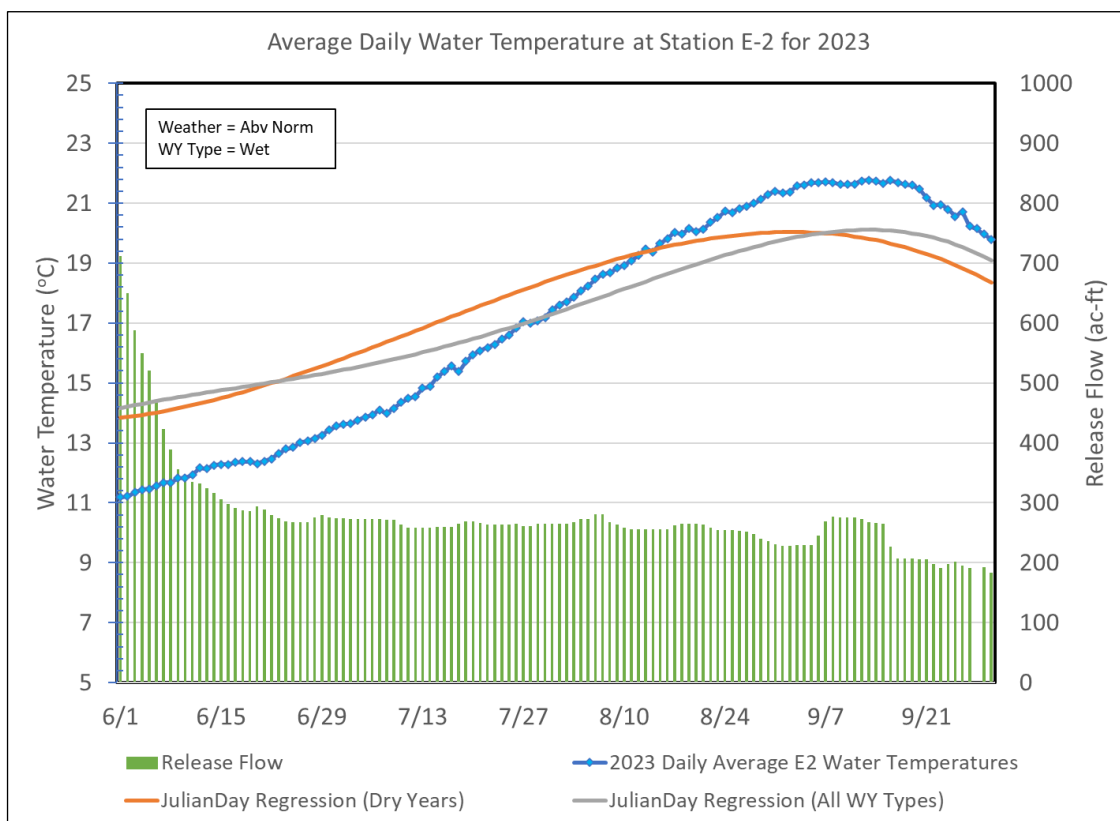


Figure 3: Average Daily Water Temperature at Gaging Station E-2 and Release Flow for 2023

A comparison of water temperature and release flow data from 2022 and 2023 supports the findings of PG&E’s water temperature analysis, with the result that the delayed implementation of the 2023 variance likely contributed to a 2.5 °C warmer maximum release temperature than in 2022, despite 2023 being a much wetter year. As shown on Figure 4, continued elevated withdrawals through the summer in 2023 accelerated the depletion of cooler water in Lake Pillsbury. This resulted in elevated release water temperature in late summer as compared to 2022, even though release water temperatures in early July were approximately 2°C cooler in 2023. Based on our understanding of the relationship between release volume and water temperature, it is likely that release water temperature in 2023 would have been minimized by the proposed flexible management release strategy outlined in PG&E’s 2023 flow variance request.

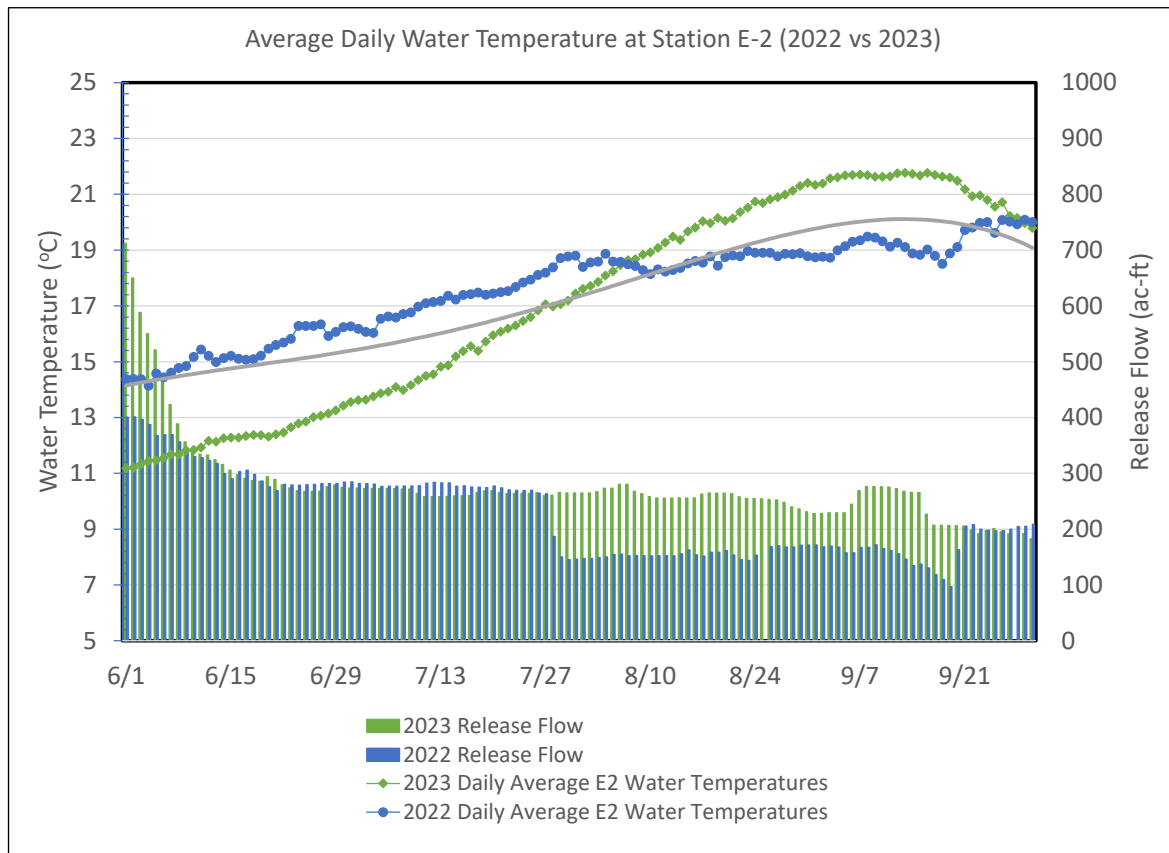


Figure 4. Comparison of Average Daily Water Temperatures at Station E-2.

Proposed Flexible Management Release Strategy

PG&E will monitor release water temperature as measured at E-2 during the summer. When daily average water temperatures exceed 15°C (which could occur beginning in June, assuming median and average values [Figure 5]), PG&E will notify Agencies and begin meeting weekly to determine if diversions to the EBRR, as measured at E-16, should be further reduced in support of preserving water storage for cooler release temperatures.

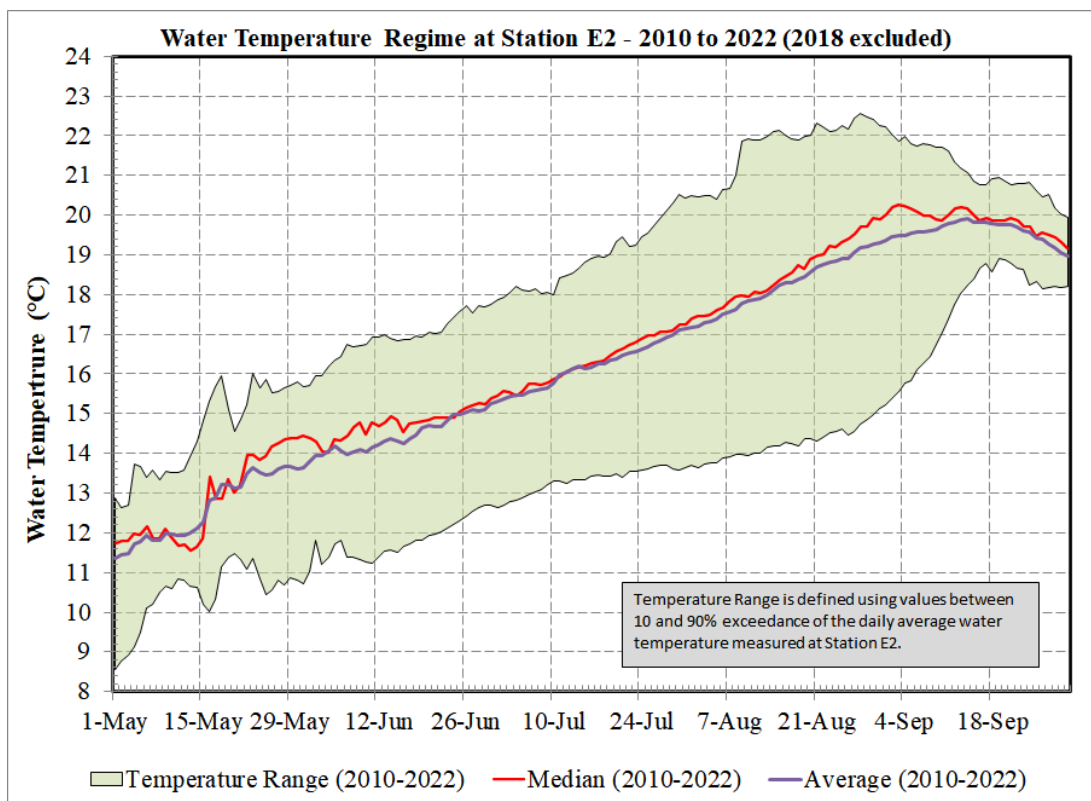


Figure 5: Summary of Median, Average, and 10–90 Percent Exceedance Range of Water Temperatures at E-2 between May and September, using 2010–2022 Data

In coordination with Agencies, PG&E will adjust flows in EBRR between 25 and 5 cfs for July through September 30, as needed to preserve cooler water temperatures in the reservoir. The cooler water will be released in late summer in support of federally ESA-listed species in the Eel River downstream of Scott Dam. Flow adjustments will be informed by the regression-based analysis guidance curves, observed water temperatures for releases measured at E-2, and bi-weekly vertical temperature profiles collected within Lake Pillsbury. The new CE-QUAL water temperature model, developed in coordination with Agencies, may also be used to inform flow adjustments to EBRR.

After September 30, E-16 will be classified as Dry and remain at 25 cfs, barring the reservoir storage forecast indicating a lower release is necessary to prevent the reservoir from reaching concerning storage levels later in the year.

Requested Flow Variance

The following flow variance conditions are requested for 2024, and will be implemented once approved by FERC:

- Gaging Station E-2 will be reclassified as a Critical Water Year Type. In practice, the E-2 flows will be the combined releases for E-11, E-16, and Potter Valley

Irrigation District contract water, with a floor set by the minimum opening of the low-level outlet (approximately 35 cfs) (see Table 2).

- Gaging Station E-16 flows will be reclassified initially as Dry (25 cfs), and then will be adjusted between 5 and 25 cfs based on PG&E and agency determination when daily average reservoir release water temperatures at E-2 exceed 15°C (E-2 water temperatures typically exceed 15°C in early June).
- After September 30, E-16 will be held at 25 cfs for the remainder of the variance.
- Reductions to E-16 flow releases may also occur if the Lake Pillsbury storage forecast indicates facility safety concerns due to low storage levels (12,000 AF).
- The Drought Working Group (DWG) will meet once monthly during the variance period to discuss storage levels, release flow rates, water temperature profiles, release temperatures, and estimated temperature projections at E-2.
- PG&E will submit monthly water storage and temperature reports to FERC.
- The drought variance will end when Lake Pillsbury storage exceeds 36,000 AF after October 1, 2024, or is superseded by another variance or license amendment. The 36,000 AF storage threshold would allow the reservoir to meet minimum flow obligations, including a possible Blockwater release, through January 2025 if inflow is extremely low in early winter.
- Flows will be calculated at a 24-hour average measured at Gaging Station E-11 rather than the current instantaneous measurement. This will allow for a tighter compliance buffer on minimum E-11 flows.

Table 2: Requested Flows under 2024 Variance

Compliance Point	Allowed Range: Min/Max	Water Year Classification	Notes
Eel River below Scott Dam (E-2)	20 cfs*/No max	Critical	Adjusted RPA minimum flow classification to critical
Eel River below Cape Horn Dam (E-11)	TBD**/No max	TBD**	No change from RPA
East Branch Russian River (E-16)	5 to 25 cfs	Critical or Dry	Adjusted RPA minimum flow classification to critical or dry
Potter Valley Irrigation District	No min/50 cfs*** (5 cfs post-irrigation season)	N/A	PG&E's discretion to meet temperature, storage and facility safety objectives
<p>Note: cfs = cubic feet per second; TBD = to be determined on May 15. * In practice, assumed 35 cfs based on low level outlet minimum release (facility limitation) ** Water Year Type for E-11 determined May 15 of each year. *** Demand based deliveries to PVID are secondary to storage, temperature and facility safety objectives.</p>			

PG&E will also implement additional mitigation and monitoring measures to avoid and minimize adverse impacts to federally ESA-listed species as outlined in the enclosed Letter of Intent, dated February 9, 2024 (Enclosure 1).

Biological Impacts

PG&E biologists have reviewed this variance proposal and believe that it is necessary to conserve water in Lake Pillsbury and provide adequate flow releases and suitable water quality conditions for the long-term protection and recovery of federally ESA-listed salmonids within the Eel River watershed. The biological analysis is provided in the following subsections.

Eel River below Lake Pillsbury and Van Arsdale Reservoir

The primary federally and state ESA-listed salmonid species affected by the Project are Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*O. mykiss*). The life stages of these species that could potentially be in the river and whose habitat conditions are influenced by Project operations during the flow variance period are adult steelhead trout (pre- and post-spawn), juvenile Chinook salmon, and steelhead trout. If the variance extends beyond October, adult Chinook salmon will be present as well.

Adult steelhead trout migrate into the upper Eel River watershed to spawn primarily from January through April (summer-run steelhead trout may migrate into the upper Eel River watershed later; however, the project area lacks suitable habitat for over-summering). PG&E would not reduce flows in the Eel River for adult steelhead trout migration and spawning below the license-prescribed flows. Juvenile Chinook salmon remain in the river for several weeks after hatching and then migrate to the ocean during spring (typically April–June), as flows decline, and water temperatures increase. Juvenile steelhead trout, which typically spend one or more years in the river before migrating to the ocean during late winter and spring (typically February–June), also require suitable habitat conditions throughout the summer. Available spring rearing habitat in the Eel River for juvenile salmon and steelhead trout would not be affected by the proposed variance. An increase in spring flows followed by a decrease to summer levels, as prescribed by the license, would still occur, thus providing important migration cues for downstream migrating juvenile fish.

Lower flows during mid- to late summer in the Eel River between Scott and Cape Horn Dams would result under the variance because surplus diversion flows to the EBRR would be reduced. However, the proposed variance would support improved habitat conditions for summer-rearing juvenile steelhead trout by reducing withdrawals from Lake Pillsbury, which has been found to minimize water temperature increases in late summer (see PG&E WT analysis). The non-native Sacramento pikeminnow (*Ptychocheilus grandis*) is a predator and competitor of juvenile salmonids in the Eel River Basin. In laboratory streams, interspecific competition has been found to have a negligible effect on juvenile steelhead at water temperatures less than 18°C, while pikeminnow outcompete juvenile steelhead at temperatures 20-23°C (Reese and Harvey 2002). Under the variance, PG&E would notify Agencies when water temperature exceeds 15°C at E-2 and begin meeting weekly to manage withdrawals from the reservoir to minimize the duration juvenile steelhead trout are exposed to pikeminnow at temperatures above 18°C in late summer.

As mentioned above, the proposed variance would reduce minimum flows in the reach between Scott and Cape Horn Dams to preserve storage in Lake Pillsbury. While this may temporarily reduce the volume of available summer rearing habitat for steelhead trout between the dams, minimum flows would remain above the E-2 “Critical” classification as prescribed by the license and assessed in NMFS’ 2002 Biological Opinion. However, habitat conditions during mid- to late summer would be expected to improve and potentially expand accessible habitat for steelhead trout by maintaining suitable water temperatures. If cooler water temperatures are not maintained during mid- to late summer (see Figure 3. Average Daily Water Temperature at Gaging Station E-2 and Release Flow for 2023), habitat conditions between the dams are likely to become increasingly stressful and potentially unsuitable for steelhead trout due the presence of pikeminnow. Summertime flow requirements in the Eel River below Cape Horn Dam (Stream Gage E-11) under the proposed variance would remain unchanged from the license-prescribed summer flow classification (to be determined on May 15, 2024).

Transitioning into fall and winter, the proposed drought flow variance is the prudent action, given the potential for Lake Pillsbury to reach critical water levels because of unpredictable storm activity and inflow conditions. Low reservoir levels could limit PG&E’s ability to release water at Scott Dam, and limited releases could in turn affect downstream aquatic resources (including Chinook salmon and steelhead trout) because of changes in flow, high levels of turbidity, and sedimentation. Implementation of the proposed variance would conserve water in Lake Pillsbury, improve water quality conditions below Scott Dam, and reduce the risk of reservoir bank erosion and sloughing at low reservoir storage levels. Agencies would also have their Water Year 2025 Blockwater allotments under the license available during the fall/winter adult Chinook salmon spawning season to supplement flows, if needed, given hydrologic conditions in the Eel River watershed.

Overall, the proposed variance would not reduce flows in the Eel River below what is prescribed by the license. Therefore, no further impacts to ESA-listed fish species are anticipated.

East Branch Russian River

The primary fish species of interest in the EBRR downstream of the Potter Valley Powerhouse is resident rainbow trout (*O. mykiss*), which are not ESA listed. Both natural origin and hatchery rainbow trout inhabit this stream reach. CDFW historically planted catchable resident rainbow trout to support the local sport fishery; however, planting activities have been reduced in recent years because of persisting drought conditions and lower flows. Under the proposed variance, flows in the EBRR would be reduced from Normal to between Dry and Critical classifications (75 to 25–5 cfs), resulting in a reduction in habitat for rainbow trout and other aquatic species. In turn, this would result in the continuation of reduced sport fishing opportunities for the duration of the variance.

Agency Consultation and Conclusion

PG&E and Agency correspondence is listed below:

January 2, 2024: PG&E provided the Agencies a draft variance proposal.

January 24, 2024: Agencies provided comments to PG&E.

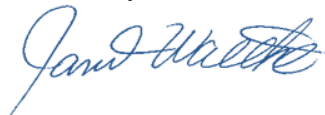
February 9, 2024: PG&E provided responses to the Agency comments (Enclosure 3).

February 16, 2024: PG&E received agency support via email (Enclosure 2)

Given the risk that providing Project license–required flows with the reduced reservoir levels will lead to destabilizing drawdown rates and, in the worst case, reaching critical minimum pool at Lake Pillsbury, PG&E requests that the variance proposal take effect as soon as FERC approves the request.

If you have questions, concerns, or comments, please do not hesitate to contact Jackie Pope, license coordinator at (530) 254-4007.

Sincerely,



Janet Walther
Senior Manager, Hydro Licensing

Enclosures:

1. Biological Monitoring Letter of Intent
2. Agency Consultation
3. Redline Draft Variance and Letter of Intent

cc: w/Enclosure via Email on behalf of Jackie Pope at Jacqueline.Pope@pge.com

Joshua Fuller, Fish Biologist, National Marine Fisheries Service
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Matt Myers, FERC Coordinator Region 1, Department of Fish and Wildlife
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Scott McBain, McBain Associates, Consultant to the Round Valley Indian Tribes
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Josh Boyce, Supervisory Fish Biologist, United States Fish and Wildlife Service
josh_boyce@fws.gov

ENCLOSURE 1

Letter of Intent



Prepared for: National Marine Fisheries Service, United States Fish and Wildlife Service, California Department of Fish and Wildlife, Round Valley Indian Tribes

Date: February 9, 2024

Subject: **Potter Valley Hydroelectric Project, FERC No. 77-CA**
FINAL: Proposed Additional Monitoring Measures and License-Required Monitoring Studies

1. SUMMARY

The purpose of this letter is to outline monitoring measures that Pacific Gas and Electric Company (PG&E) intends to implement in coordination with the National Marine Fisheries Service (NMFS), United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and Round Valley Indian Tribes (RVIT) (collectively referred to as Resource Agencies) for PG&E's Potter Valley Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) No. 77 (Project). In a letter dated March 28, 2023, FERC recommended PG&E file an application to amend the license and PG&E has initiated the internal process to prepare the amendment. PG&E initially developed additional monitoring measures outlined in Section 2 in partnership with Resource Agencies as part of a long-term variance submitted to FERC on July 31, 2023, that would address PG&E's obligation to reduce storage capacity in Lake Pillsbury¹ and implement a modified suite of NMFS interim protective measures (IPMs), as recommended in NMFS's letter to FERC dated March 16, 2022. These modified IPMs are intended to minimize or avoid potential adverse impacts to salmonids listed under the federal Endangered Species Act.

PG&E is willing to adopt the additional monitoring measures before FERC license amendment approval under the following conditions: (1) by funding additional monitoring in Section 2, PG&E will assume no further biological monitoring or associated costs with annual flow variances at the Project, and (2) the amount of payment agreed upon in Table 1 will only be incrementally adjusted annually based on actual increases or decreases in staff salary, benefits, equipment, supplies costs, and administrative overhead.

Sections 3 and 4 document current Project license monitoring requirements, including monitoring set forth in Reasonable and Prudent Alternative (RPA) of the biological opinion NMFS prepared in 2002, which was incorporated into the license in 2004.

¹ In a letter to PG&E dated April 12, 2023, the California Department of Water Resources, Division of Safety of Dams (DSOD), instituted a year-round operation restriction of the reservoir of Scott Dam to an elevation of 1,900 feet (PG&E datum), which reduces the water storage capacity in Lake Pillsbury by approximately 20,000 acre-feet. In a letter to PG&E dated April 28, 2023, FERC concurred.

Letter of Intent

2. ADDITIONAL MONITORING MEASURES

A. CE-QUAL Water Temperature Model

Complete and use the Lake Pillsbury CE-Qual water temperature model in coordination with Resource Agencies to implement a flexible management approach to reservoir releases during the July through September period, as permitted under the FERC temporary flow variances. PG&E will fund up to five model scenarios using the completed/calibrated model annually. Additional updates and/or calibrations to the completed model are not anticipated.

B. Water Temperature Monitoring (Reservoir)

Collect bi-weekly vertical water temperature profiles in Lake Pillsbury immediately upstream of Scott Dam from June to September. Reservoir water temperature data will be compared with historical temperature profiles and lake elevation data, used in coordination with the CE-QUAL water temperature model, and used to inform flow adjustments to East Branch Russian River.

C. Water Temperature Monitoring (Riverine)

Collect bi-weekly spot water temperature measurements at two accessible locations on the Eel River between Scott Dam and Cape Horn Dam (Eel River at/near Benmore Creek and Eel River at/near Trout Creek) to determine water temperature changes and associated water temperature suitability for salmonids. River temperature measurements will be collected June–September in coordination with Lake Pillsbury vertical water temperature profiles.

D. Sonar Monitoring Equipment Funding

Fund one-time replacement of CDFW's DIDSON device with new ARIS system for the monitoring site located on the mainstem Eel River (MSE) above the confluence with South Fork Eel River (SFE). Funding of **not to exceed \$103,650** will be made through a partnership agreement with Pacific States Marine Fisheries Commission (PSMFC) or mutually agreed upon equivalent.

E. Sonar Monitoring Funding Contribution

In partnership with CDFW and RVIT, PG&E will contribute funding for sonar monitoring for up to 7 months a year at MSE and Middle Fork Eel River (MFE) upstream of the confluence of MSE at Dos Rios. Funding will be made through a partnership agreement with PSMFC or mutually agreed upon equivalent.

Letter of Intent

F. Stream Gage Funding Contribution

Contribute funding for the RVIT stream gaging program to monitor flow conditions in the MSE and the Rice Fork above Lake Pillsbury and Tomki Creek. Provide RVIT funding to install (and monitor) a temperature probe at the USGS gaging station at Fort Seward. Funding will be made through a partnership agreement with PSMFC or mutually agreed upon equivalent.

PG&E, in coordination with the Resource Agencies, will review the additional monitoring measures annually to ensure the work provides information useful to Project operations. If a review of measures shows they are insufficient, not beneficial, or unrelated to Project operations, PG&E, in coordination with the Resource Agencies, will reevaluate and revise measures as needed. Table 1 shows PG&E's annual funding commitment for Measures A, E, and F. As noted above, Measure D includes a one-time funding contribution of \$103,650 in addition to the funding in Table 1.

Table 1. Annual Long-Term Monitoring Costs Beginning in 2024

Item	Entity	Annual Cost
Sonar monitoring – Mainstem Eel River	CDFW/PSMFC	\$101,833
Sonar monitoring – Middle Fork Eel River	RVIT/PSMFC	\$50,300
Stream gage monitoring (above Lake Pillsbury, Tomki Creek, and water temperature probe installation/monitoring Fort Seward)	RVIT/PSMFC	\$80,000
CE-QUAL Reservoir model annual maintenance	PG&E/Stantec	\$20,000
Total		\$252,133
<p>Notes: CDFW = California Department of Fish and Wildlife; RVIT = Round Valley Indian Tribes. The amount of payment may be incrementally adjusted annually based on actual increases or decreases in staff salary/benefits, equipment/supplies costs, and/or administrative overhead. However, the scope of this monitoring program is not expected to change while PG&E implements the surrender and decommissioning plan for the Potter Valley Project.</p>		

3. LICENSE-REQUIRED RPA SUMMER MONITORING

The RPA was incorporated into the Project license via amendment in 2004, and it requires a suite of summer monitoring studies. Through a series of study tradeoffs developed in collaboration with the Resource Agencies, a modified suite of studies was implemented in the summers of 2017–2023. PG&E proposes to repeat the 2023 summer monitoring effort annually for the remainder of the Project's operations. Minor modifications to the summer studies with justification may be considered within budget constraints at the annual agency coordination meeting. A list of summer studies to be performed in 2024 and subsequent years is provided below:

Letter of Intent**A. Backpack Electrofishing and Snorkel Sites: Eel River between Cape Horn Dam and Middle Fork Eel River**

1. Eel below Cape Horn Dam (Electrofishing riffle/run and snorkel pool)
 - Historic site that represents reach with suitable temperatures for steelhead.
2. Eel below Emandal (Electrofishing riffle/run and snorkel pool)
 - Historic site that represents reach with unsuitable temperatures for steelhead.

B. Water Temperature Monitoring (Riverine – Eel River from above Lake Pillsbury to below Middle Fork Eel River)

1. Deploy thermographs at the following sites within 15 days after May 1 or within 15 days after actual flows at gage E11 are 110 cubic feet per second or less. Retrieve after October 1.
 - Eel above Lake Pillsbury (Bloody Rock)
 - Eel below Scott Dam (E2 gage site)
 - Eel River between Scott and Cape Horn dams (Monkey Rock)
 - Eel above Cape Horn Dam
 - Eel below Cape Horn Dam (riffle)
 - Eel above Tomki Creek confluence
 - Eel below Thomas Creek (riffle)
 - Eel below Emandal
 - Eel at Ramsing Ranch
 - Eel above Outlet Creek
 - Eel between Outlet Creek and Middle Fork Eel (riffle)
 - Eel above Middle Fork Eel
 - Middle Fork Eel mouth at Rowland Bar
 - Eel below Middle Fork Eel

C. Water Temperature Monitoring (Reservoir)

1. Deploy vertical thermograph array (May–September).

D. Dissolved Oxygen Monitoring (Reservoir)

1. Deploy vertical dissolved oxygen sensor array (May–October). Requires minimum of three field site checks/and calibration during deployment.

* *Note that, as a safety precaution, deployment of the vertical arrays in C and D cannot occur until Lake Pillsbury has stopped spilling.*

Letter of Intent**E. Boat Electrofishing (Pikeminnow Suppression/Monitoring Activities)**

1. Van Arsdale Reservoir from Pioneer Bridge to Cape Horn Dam. Two days per month (June–September) of intensive boat electrofishing in Van Arsdale Reservoir, with focus on hotspots where larger pikeminnow are likely to be found.

4. ADDITIONAL LICENSE-REQUIRED MONITORING OUTSIDE RPA SCOPE**A. Chinook Salmon Carcass Surveys in Eel River and Tomki Creek Watershed**

1. Conduct annual Chinook salmon carcass surveys at one index section in the upper mainstem Eel River and four sections in the Tomki Creek drainage, per the FERC-approved Salmon Carcass Surveys and Stock Rescue Program Funding and Implementation Plan.

B. Adult Salmonid Migration Monitoring at VAFS

1. Monitor upstream migrants over the fish ladder at Cape Horn Dam and report annually, per the FERC-approved annual performance reporting plan.

C. Bald Eagle Productivity Monitoring

1. Conduct bald eagle annual productivity surveys within the FERC boundary during the bald eagle breeding season. Surveys are conducted three times annually and nest forms are submitted to CDFW and USFS.

ENCLOSURE 2

From: Myers, Matt@Wildlife
To: Pope, Jackie; Joshua Fuller - NOAA Federal; Bob Coey - NMFS; josh_boyce@fws.gov; Renger, Allan@Wildlife; Hawk, Debra@Wildlife; Ramsey, Chris@Wildlife; Scott McBain
Cc: McCready, Chadwick; Joseph, Matthew; Walther, Janet; Gigliotti, Tony; Colwell, Matthew; Evans, Mike
Subject: RE: Potter Valley 2024 Variance Request
Date: Friday, February 16, 2024 10:45:12 AM
Attachments: [image001.png](#)

CAUTION: EXTERNAL SENDER!

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Jackie,

The California Department of Fish and Wildlife has reviewed the attached Potter Valley 2024 Variance Request and Letter of Intent 2024. We concur with these proposal and support submitting it to FERC as soon as possible for their approval and implementation. If you have any other needs, please contact me or Allan Renger.

Matt Myers
Senior Environmental Scientist
California Department of Fish and Wildlife
530-638-6027 (cell)

From: Pope, Jackie <JHPL@pge.com>
Sent: Friday, February 9, 2024 4:35 PM
To: Joshua Fuller - NOAA Federal <joshua.fuller@noaa.gov>; Bob Coey - NMFS <bob.coey@noaa.gov>; josh_boyce@fws.gov; Myers, Matt@Wildlife <Matt.Myers@wildlife.ca.gov>; Renger, Allan@Wildlife <Allan.Renger@wildlife.ca.gov>; Hawk, Debra@Wildlife <Debra.Hawk@Wildlife.ca.gov>; Ramsey, Chris@Wildlife <Chris.Ramsey@wildlife.ca.gov>; Scott McBain <scott@mcbainassociates.com>
Cc: McCready, Chadwick <COMM@pge.com>; Joseph, Matthew <MWJA@pge.com>; Walther, Janet <JMw3@pge.com>; Gigliotti, Tony <T1GF@pge.com>; Colwell, Matthew <MHCM@pge.com>; Evans, Mike <MDE3@pge.com>
Subject: RE: Potter Valley 2024 Variance Request
Importance: High

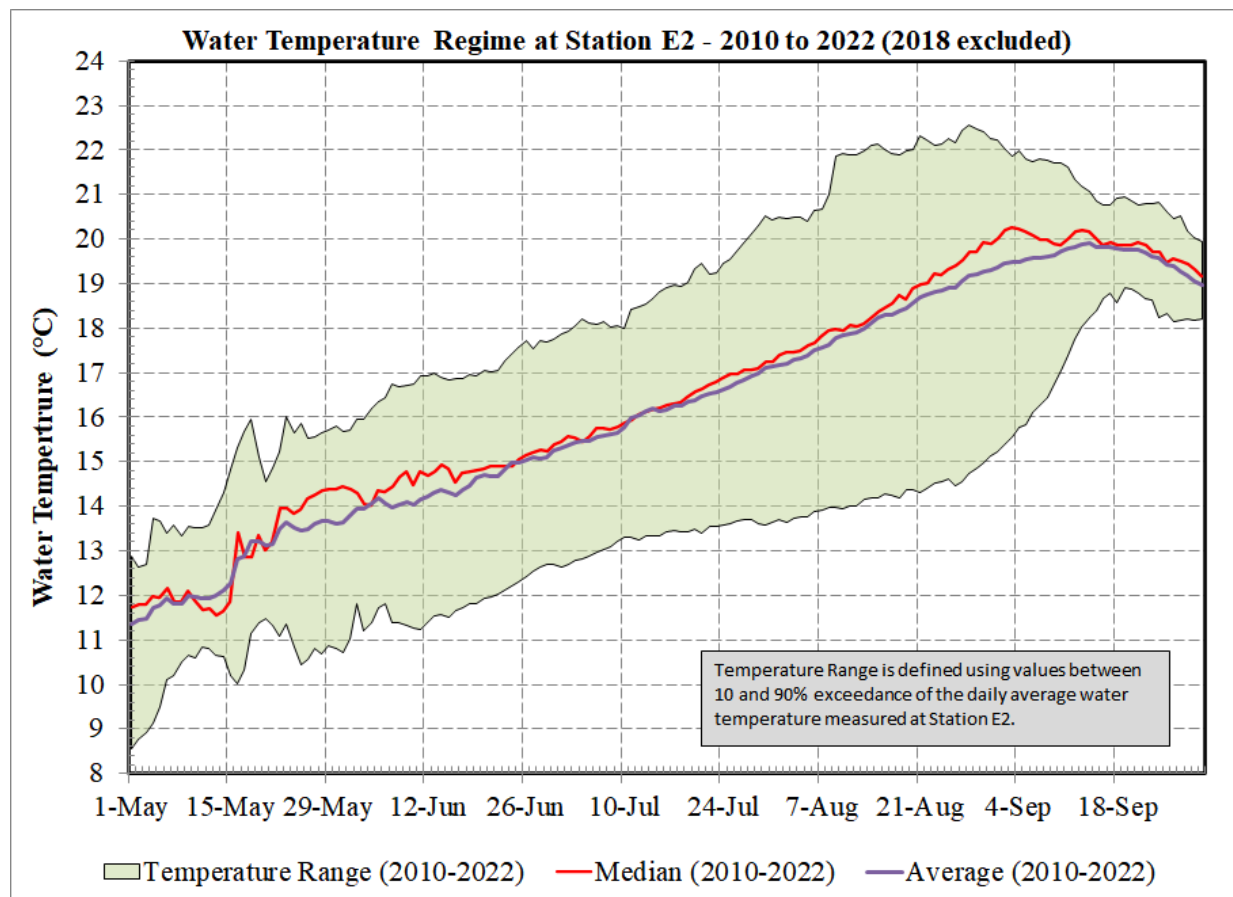
WARNING: This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

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Regarding the sonar monitoring, the additional cost to cover the cost of taxes and a small additional increase to the unit of approximately \$8,500 to cover the cost of taxes was approved by PG&E management.



Please feel free to call me if you have any questions or concerns, please provide comments or concurrence by February 15th, 2024.

Thank you!



Jackie Pope | Hydro License Coordinator | Power Generation

Pacific Gas and Electric Company

Phone: (530) 254-4007

Email: jhpl@pge.com

From: Joshua Fuller - NOAA Federal <joshua.fuller@noaa.gov>

Sent: Wednesday, January 24, 2024 2:37 PM

To: Pope, Jackie <JHPL@pge.com>

Cc: Bob Coey - NMFS <bob.coey@noaa.gov>; josh_boyce@fws.gov; Myers, Matt@Wildlife

<Matt.Myers@wildlife.ca.gov>; Renger, Allan@Wildlife <Allan.Renger@wildlife.ca.gov>; Hawk, Debra@Wildlife

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Jackie Pope | Hydro License Coordinator | Power Generation

Pacific Gas and Electric Company

Phone: (530) 254-4007

Email: jhpl@pge.com

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--

~~~~~

*Joshua Fuller  
Fish Biologist  
North Coast Branch  
California Coastal Office  
NOAA Fisheries West Coast Region  
U.S. Department of Commerce  
777 Sonoma Ave., Rm. 325  
Santa Rosa, CA 95404  
Office: 707-575-6096  
Cell: 707-531-0711  
[Joshua.Fuller@noaa.gov](mailto:Joshua.Fuller@noaa.gov)*

**From:** [Scott McBain](#)  
**To:** [Pope, Jackie](#); [Joshua Fuller - NOAA Federal](#); [Bob Coey - NMFS](#); [josh\\_boyce@fws.gov](mailto:josh_boyce@fws.gov); [Myers, Matt@Wildlife](mailto:Myers, Matt@Wildlife); [Renger, Allan@Wildlife](#); [Hawk, Debra@Wildlife](mailto:Hawk, Debra@Wildlife); [Ramsey, Chris@Wildlife](mailto:Ramsey, Chris@Wildlife)  
**Cc:** [McCready, Chadwick](#); [Joseph, Matthew](#); [Walther, Janet](#); [Gigliotti, Tony](#); [Colwell, Matthew](#); [Evans, Mike](#); [Curtis Berkey](#); [Erica Costa](#)  
**Subject:** RE: Potter Valley 2024 Variance Request  
**Date:** Friday, February 16, 2024 10:29:32 AM  
**Attachments:** [image001.png](#)

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Hi Jackie,

We have reviewed PG&E's Potter Valley Project (PVP; FERC No. 77), *2024 Flow Variance Request Due to Restricted Storage Capacity*, dated February 9, 2024. We have also participated in the agency consultations on the development of this 2024 Flow Variance Request, as well as the long-term flow variance request developed by PG&E in July 2023. The Round Valley Indian Tribes (RVIT) understands the rationale and need for this 2024 Flow Variance Request, and continues to support implementation of flow variances and other measures that seeks to protect Eel River fish while PG&E conducts and implements the FERC License Surrender and Decommissioning process.

Consistent with our support of the July 2023 Long-term Flow Regime Request, we support this 2024 PG&E Flow Variance Request because it: (1) adopts a flexible flow management strategy with agency participation that will enable annual flow management for the Potter Valley Project that will maintain Lake Pillsbury storage and enhance protection for the Eel River fishery, (2) substantially implements the NFMS Interim Protective Measures, and (3) implements and funds the flexible flow management strategy and key Interim Protective Measures. Accordingly, the RVIT supports PG&E's request to implement the 2024 Flow Variance, and we appreciate the substantial effort that you and your staff have made in working with the RVIT and other agencies in developing this 2024 Flow Variance Request.

Scott McBain  
Consultant to the Round Valley Indian Tribes

---

**From:** Pope, Jackie <JHPL@pge.com>  
**Sent:** Friday, February 9, 2024 4:35 PM  
**To:** Joshua Fuller - NOAA Federal <joshua.fuller@noaa.gov>; Bob Coey - NMFS <bob.coey@noaa.gov>; josh\_boyce@fws.gov; Myers, Matt@Wildlife <Matt.Myers@wildlife.ca.gov>; Renger, Allan@Wildlife <Allan.Renger@wildlife.ca.gov>; Hawk, Debra@Wildlife <Debra.Hawk@wildlife.ca.gov>; Ramsey, Chris@Wildlife <Chris.Ramsey@wildlife.ca.gov>; Scott McBain <scott@mcbainassociates.com>  
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**Subject:** RE: Potter Valley 2024 Variance Request  
**Importance:** High

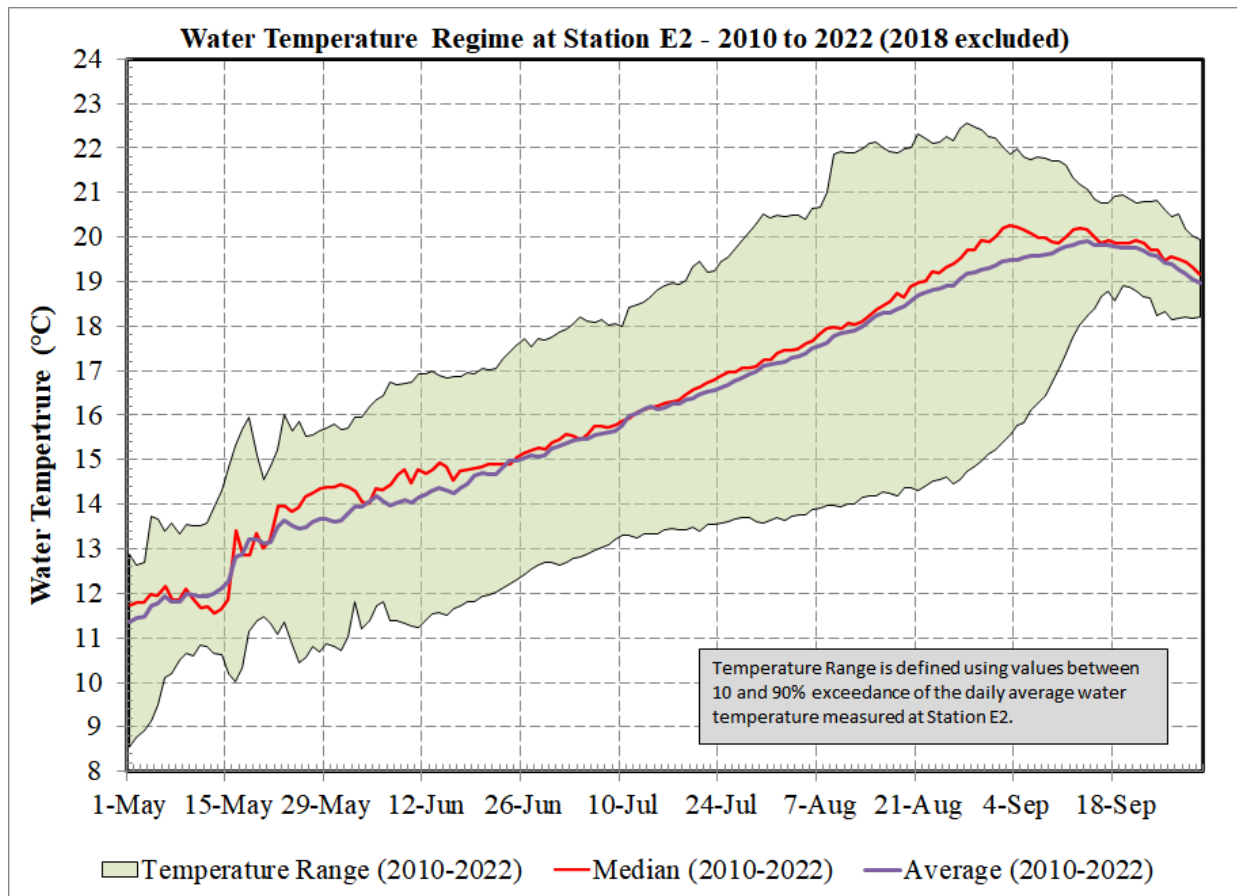
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**Please feel free to call me if you have any questions or concerns, please provide comments or concurrence by February 15<sup>th</sup>, 2024.**

Thank you!

 **Jackie Pope** | Hydro License Coordinator | Power Generation

**Pacific Gas and Electric Company**

Phone: (530) 254-4007

Email: [jhpl@pge.com](mailto:jhpl@pge.com)

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**Sent:** Wednesday, January 24, 2024 2:37 PM  
**To:** Pope, Jackie <[JHPL@pge.com](mailto:JHPL@pge.com)>  
**Cc:** Bob Coey - NMFS <[bob.coey@noaa.gov](mailto:bob.coey@noaa.gov)>; [josh\\_boyce@fws.gov](mailto:josh_boyce@fws.gov); Myers, Matt@Wildlife <[Matt.Myers@wildlife.ca.gov](mailto:Matt.Myers@wildlife.ca.gov)>; Renger, Allan@Wildlife <[Allan.Renger@wildlife.ca.gov](mailto:Allan.Renger@wildlife.ca.gov)>; Hawk, Debra@Wildlife <[Debra.Hawk@wildlife.ca.gov](mailto:Debra.Hawk@wildlife.ca.gov)>; Ramsey, Chris@Wildlife <[Chris.Ramsey@wildlife.ca.gov](mailto:Chris.Ramsey@wildlife.ca.gov)>; Scott McBain <[scott@mc bainassociates.com](mailto:scott@mc bainassociates.com)>; McCready, Chadwick <[COMM@pge.com](mailto:COMM@pge.com)>; Joseph, Matthew <[MWJA@pge.com](mailto:MWJA@pge.com)>; Walther, Janet <[JMW3@pge.com](mailto:JMW3@pge.com)>; Gigliotti, Tony <[T1GF@pge.com](mailto:T1GF@pge.com)>; Colwell, Matthew <[MHCM@pge.com](mailto:MHCM@pge.com)>; Evans, Mike <[MDE3@pge.com](mailto:MDE3@pge.com)>  
**Subject:** Re: Potter Valley 2024 Variance Request

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Please let me know if you have any questions.

Cheers,  
JF

On Tue, Jan 9, 2024 at 3:08 PM Pope, Jackie <[JHPL@pge.com](mailto:JHPL@pge.com)> wrote:

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---

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**Sent:** Tuesday, January 2, 2024 3:22 PM

**To:** Joshua Fuller - NOAA Federal <[joshua.fuller@noaa.gov](mailto:joshua.fuller@noaa.gov)>; 'Bob Coey - NMFS' <[bob.coey@noaa.gov](mailto:bob.coey@noaa.gov)>; [josh\\_boyce@fws.gov](mailto:josh_boyce@fws.gov); Myers, Matt@Wildlife <[Matt.Myers@wildlife.ca.gov](mailto:Matt.Myers@wildlife.ca.gov)>; Renger, Allan@Wildlife <[Allan.Renger@wildlife.ca.gov](mailto:Allan.Renger@wildlife.ca.gov)>; Hawk, Debra@Wildlife <[Debra.Hawk@Wildlife.ca.gov](mailto:Debra.Hawk@Wildlife.ca.gov)>; Ramsey, Chris@Wildlife <[Chris.Ramsey@wildlife.ca.gov](mailto:Chris.Ramsey@wildlife.ca.gov)>; Scott McBain <[scott@mcbainassociates.com](mailto:scott@mcbainassociates.com)>; Renger, Allan@Wildlife <[Allan.Renger@wildlife.ca.gov](mailto:Allan.Renger@wildlife.ca.gov)>

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**Subject:** Potter Valley 2024 Variance Request

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Thank you,



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--

~~~~~

*Joshua Fuller
Fish Biologist
North Coast Branch
California Coastal Office
NOAA Fisheries West Coast Region
U.S. Department of Commerce
777 Sonoma Ave., Rm. 325
Santa Rosa, CA 95404
Office: 707-575-6096
Cell: 707-531-0711
Joshua.Fuller@noaa.gov*

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Subject: Re: Potter Valley 2024 Variance Request
Date: Friday, February 16, 2024 10:48:22 AM
Attachments: [image001.png](#)

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Hello Jackie -

Thank you for the opportunity to review and comment on PG&E's Potter Valley Hydroelectric Project, FERC No. 77-CA, *2024 Flow Variance Request Due to Restricted Storage Capacity*, received via email, dated February 9, 2024. The National Marine Fisheries Service (NMFS) supports the need for a variance to conserve water storage within Lake Pillsbury that ensures suitable flow and water temperature conditions for federally ESA-listed salmonids that inhabit the Eel River downstream of Scott Dam. NMFS believes that the flow components of this variance associated with the Eel River are consistent with the *intent* of NMFS' 2002 Biological Opinion and many components of the *Interim Protective Measures* (IPMs), as outlined in NMFS' March 16, 2022 letter addressed to FERC. As PG&E continues progress through the FERC License Surrender and Decommissioning proceedings, NMFS will continue to support implementation of flow variances and other conservation measures that protect Eel River ESA-listed salmonids.

NMFS has also reviewed the Potter Valley Hydroelectric Project, FERC No. 77-CA, *DRAFT: Proposed Additional Monitoring Measures and License-Required Monitoring Studies*, received via email, dated February 9, 2024. NMFS greatly appreciates PG&E's commitment to the *Additional Monitoring Measures*, which support the IPMs, and the continued *License-Required Summer Monitoring* efforts.

Please let me know if you have any questions or comments regarding NMFS technical assistance and support for this proposed variance.

Best regards,

Joshua Fuller

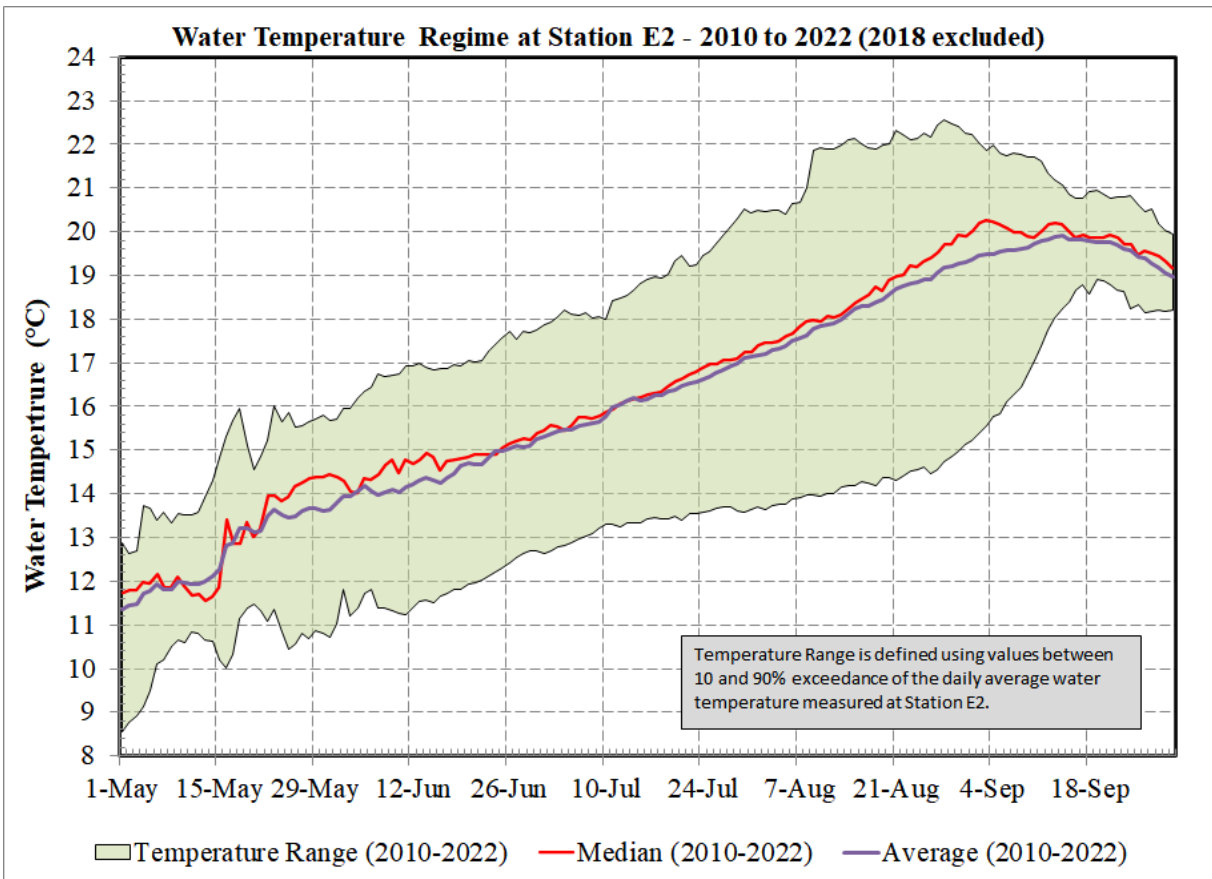
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--

~~~~~  
*Joshua Fuller*

*Fish Biologist*

*North Coast Branch*

*California Coastal Office*

*NOAA Fisheries West Coast Region*

*U.S. Department of Commerce*

*777 Sonoma Ave., Rm. 325*

*Santa Rosa, CA 95404*

Office: 707-575-6096

Cell: 707-531-0711

[Joshua.Fuller@noaa.gov](mailto:Joshua.Fuller@noaa.gov)

--

~~~~~  
Joshua Fuller

*Fish Biologist
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California Coastal Office
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U.S. Department of Commerce
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From: [Boyce, Josh](#)
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Subject: Re: [EXTERNAL] Re: Potter Valley 2024 Variance Request
Date: Wednesday, February 21, 2024 9:51:42 AM
Attachments: [image001.png](#)

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Hi Jackie,

The USFWS concurs with the determination made by NMFS regarding the need for a continued variance as described in PG&E's Potter Valley Hydroelectric Project, FERC No. 77-CA, 2024 Flow Variance Request Due to Restricted Storage Capacity.

Thanks,
Josh

Josh Boyce, Ph.D.
Supervisory Fish Biologist, USFWS
Arcata, CA
707-825-5193 (office)
707-353-0631 (cell)

From: Joshua Fuller - NOAA Federal <joshua.fuller@noaa.gov>
Sent: Friday, February 16, 2024 10:48 AM
To: Pope, Jackie <JHPL@pge.com>
Cc: Bob Coey - NMFS <bob.coey@noaa.gov>; Boyce, Josh <josh_boyce@fws.gov>; Myers, Matt@Wildlife <Matt.Myers@wildlife.ca.gov>; Renger, Allan@Wildlife <Allan.Renger@wildlife.ca.gov>; Hawk, Debra@Wildlife <Debra.Hawk@wildlife.ca.gov>; Ramsey, Chris@Wildlife <Chris.Ramsey@wildlife.ca.gov>; Scott McBain <scott@mcbainassociates.com>; McCready, Chadwick <COMM@pge.com>; Joseph, Matthew <MWJA@pge.com>; Walther, Janet <JM3@pge.com>; Gigliotti, Tony <T1GF@pge.com>; Colwell, Matthew <MHCM@pge.com>; Evans, Mike <MDE3@pge.com>
Subject: [EXTERNAL] Re: Potter Valley 2024 Variance Request

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Hello Jackie -

Thank you for the opportunity to review and comment on PG&E's Potter Valley Hydroelectric Project, FERC No. 77-CA, 2024 Flow Variance Request Due to Restricted Storage Capacity, received via email, dated February 9, 2024. The National Marine Fisheries Service (NMFS) supports the need for a variance to

conserve water storage within Lake Pillsbury that ensures suitable flow and water temperature conditions for federally ESA-listed salmonids that inhabit the Eel River downstream of Scott Dam. NMFS believes that the flow components of this variance associated with the Eel River are consistent with the *intent* of NMFS' 2002 Biological Opinion and many components of the *Interim Protective Measures* (IPMs), as outlined in NMFS' March 16, 2022 letter addressed to FERC. As PG&E continues progress through the FERC License Surrender and Decommissioning proceedings, NMFS will continue to support implementation of flow variances and other conservation measures that protect Eel River ESA-listed salmonids.

NMFS has also reviewed the Potter Valley Hydroelectric Project, FERC No. 77-CA, *DRAFT: Proposed Additional Monitoring Measures and License-Required Monitoring Studies*, received via email, dated February 9, 2024. NMFS greatly appreciates PG&E's commitment to the *Additional Monitoring Measures*, which support the IPMs, and the continued *License-Required Summer Monitoring* efforts.

Please let me know if you have any questions or comments regarding NMFS technical assistance and support for this proposed variance.

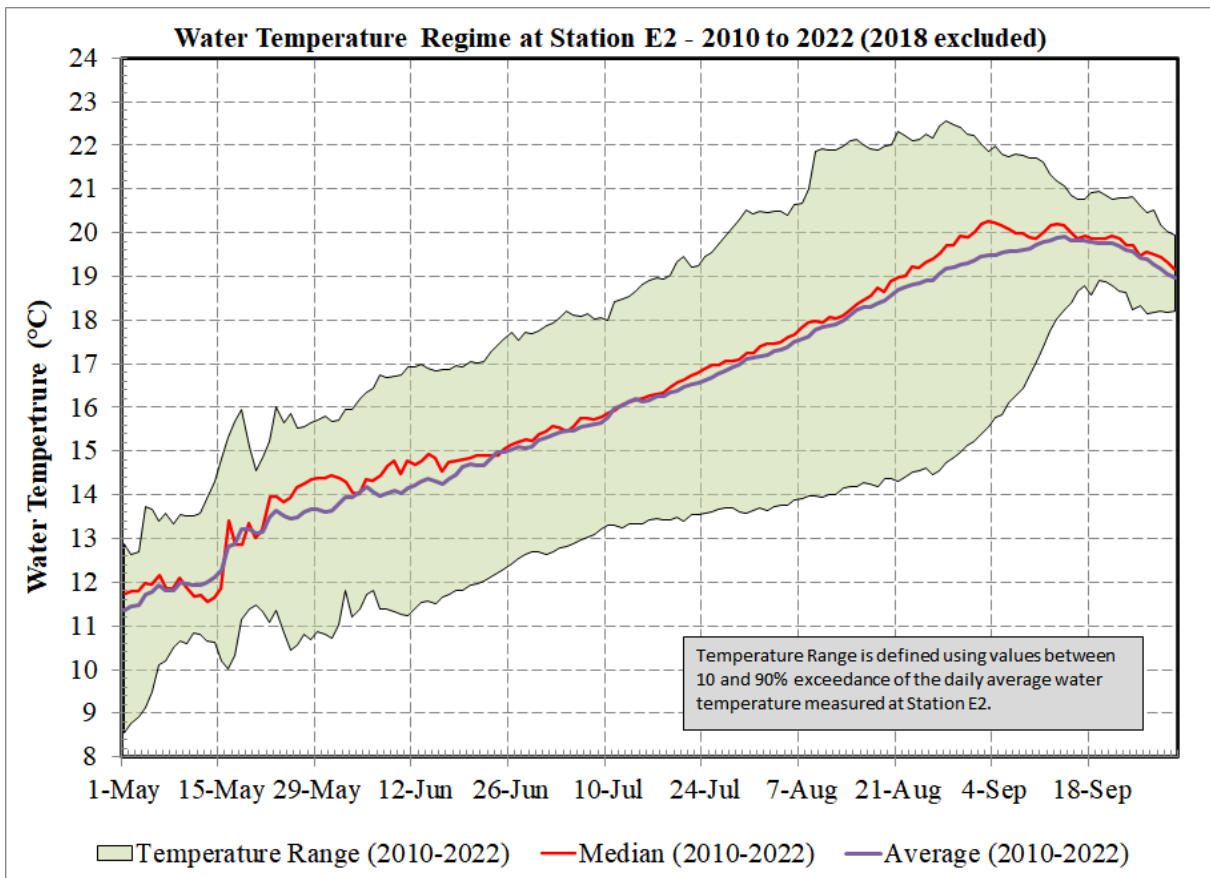
Best regards,
Joshua Fuller

On Fri, Feb 9, 2024 at 4:37 PM Pope, Jackie <JHPL@pge.com> wrote:

Greetings Agencies,

We reviewed the comments and edits and determined because most of the feedback was editorial, we did not use a comment matrix, see the redlined version of the variance to review edits. The only substantial change to PG&E's original proposal was to reduce the temperature thresholds from 16 degrees (Celsius) to 14 degrees measured at E2 to trigger agency coordination and possible flow changes/reduction (from 25 to 5 cfs) to the East Branch Russian River. PG&E reviewed this request with subject matter experts and determined that agency coordination and potentially reducing flows at 14 degrees as early as mid-May is not justified by the temperature analysis. The 14-degree threshold would be problematic for the EBRR stakeholders, and existing data suggest we can achieve temperature thresholds by reducing flows in July. We see benefit in coordinating with agencies earlier at 15 degrees to evaluate potential flow reductions, which on average would begin around June 16 each year; thus, we adjusted our proposal to meet agencies in the middle at 15 degrees.

Regarding the sonar monitoring, the additional cost to cover the cost of taxes and a small additional increase to the unit of approximately \$8,500 to cover the cost of taxes was approved by PG&E management.



Please feel free to call me if you have any questions or concerns, please provide comments or concurrence by February 15th, 2024.

Thank you!



Jackie Pope | Hydro License Coordinator | Power Generation

Pacific Gas and Electric Company

Phone: (530) 254-4007

Email: jhpl@pge.com

From: Joshua Fuller - NOAA Federal <joshua.fuller@noaa.gov>

Sent: Wednesday, January 24, 2024 2:37 PM

To: Pope, Jackie <JHPL@pge.com>

Cc: Bob Coey - NMFS <bob.coey@noaa.gov>; josh_boyce@fws.gov; Myers, Matt@Wildlife <Matt.Myers@wildlife.ca.gov>; Renger, Allan@Wildlife <Allan.Renger@wildlife.ca.gov>; Hawk, Debra@Wildlife <Debra.Hawk@wildlife.ca.gov>; Ramsey, Chris@Wildlife <Chris.Ramsey@wildlife.ca.gov>; Scott McBain <scott@mcbainassociates.com>; McCready, Chadwick <COMM@pge.com>; Joseph, Matthew <MWJA@pge.com>; Walther, Janet <JMW3@pge.com>; Gigliotti, Tony <TIGF@pge.com>; Colwell, Matthew <MHCM@pge.com>; Evans, Mike <MDE3@pge.com>

Subject: Re: Potter Valley 2024 Variance Request

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expecting this email? Are you expecting any links or attachments? If suspicious, do not click links, open attachments, or provide credentials. Don't delete it. **Report it by using the "Report Phish" button.**

Hello Jackie -

Thank you for the opportunity to review the draft 2024 variance request and letter of intent. The attached docs with embedded comments/edits are provided collectively and in coordination with CDFW, RVIT, and NMFS. However, each entity may provide additional comments and/or submit separately. NMFS has reviewed and supports all included comments/edits regardless of the commenter, etc.

Please let me know if you have any questions.

Cheers,
JF

On Tue, Jan 9, 2024 at 3:08 PM Pope, Jackie <JHPL@pge.com> wrote:

Greetings Agencies,

Please see the attached 2024 variance request and the letter of intent for additional monitoring measures. Please provide your comments or consensus by January 19, 2024.

Additionally, let me know if you have any questions or want to schedule a meeting to discuss the proposal.

Thank you,



Jackie Pope | Hydro License Coordinator | Power Generation

Pacific Gas and Electric Company

Phone: (530) 254-4007

Email: jhpl@pge.com

From: Pope, Jackie

Sent: Tuesday, January 2, 2024 3:22 PM

To: Joshua Fuller - NOAA Federal <joshua.fuller@noaa.gov>; 'Bob Coey - NMFS' <bob.coey@noaa.gov>; josh_boyce@fws.gov; Myers, Matt@Wildlife <Matt.Myers@wildlife.ca.gov>; Renger, Allan@Wildlife <Allan.Renger@wildlife.ca.gov>; Hawk, Debra@Wildlife <Debra.Hawk@Wildlife.ca.gov>; Ramsey, Chris@Wildlife <Chris.Ramsey@wildlife.ca.gov>; Scott McBain <scott@mcbainassociates.com>; Renger, Allan@Wildlife <Allan.Renger@wildlife.ca.gov>

Cc: Pope, Jackie <JHPL@pge.com>; McCready, Chadwick <COMM@pge.com>; Joseph, Matthew <MWJA@pge.com>; Walther, Janet <JM3@pge.com>; Visinoni, Jamie <JNVS@pge.com>; Gigliotti, Tony <TIGF@pge.com>; Colwell, Matthew <MHCM@pge.com>; Evans, Mike <MDE3@pge.com>

Subject: Potter Valley 2024 Variance Request

Greetings Agencies,

We are sending you the 2024 variance request for your review. I will send another email with biological monitoring details within the next week. Unlike previous years, we plan to give Agencies and FERC the biological monitoring component of the variance as an enclosure. The biological monitoring will be similar to what PG&E included in the long-term variance request submitted to FERC on August 31,

2023.

Please let me know if you have any questions or want to schedule a meeting to discuss this. Feel free to contact Andrew or me if you have any questions.

Thank you,



Jackie Pope | Hydro License Coordinator | Power Generation

Pacific Gas and Electric Company

Phone: (530) 254-4007

Email: jhpl@pge.com

You can read about PG&E's data privacy practices at [PGE.com/privacy](https://www.pge.com/privacy).

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*Joshua Fuller*  
*Fish Biologist*  
*North Coast Branch*  
*California Coastal Office*  
*NOAA Fisheries West Coast Region*  
*U.S. Department of Commerce*  
*777 Sonoma Ave., Rm. 325*  
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[Joshua.Fuller@noaa.gov](mailto:Joshua.Fuller@noaa.gov)

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~~~~~  
Joshua Fuller
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Joshua.Fuller@noaa.gov

ENCLOSURE 3



Power Generation

300 Lakeside Drive
Oakland, CA 94612
Mailing Address:
P.O. Box 28209
Oakland, CA 94604

Click or tap to enter a date.

Via Electronic Submittal (E-File)

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Office of Energy Projects
888 First Street, N.E.
Washington, DC 20426

**RE: Potter Valley Hydroelectric Project, FERC No. 77-CA
2024 Minimum Instream Flow Variance Request Due to Restricted Storage
Capacity**

Dear Secretary Bose:

Please consider this letter a request for a 2024 flow variance for Pacific Gas and Electric Company's (PG&E) Potter Valley Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) No. 77-~~(Project)~~. Article 52 of the Project license requires PG&E to comply with the National Marine Fisheries Service (NMFS) Reasonable and Prudent Alternatives (RPA), as described in their 2002 Biological Opinion. Subsequently, the RPA and the prescribed minimum instream flows became license requirements following FERC's Order Amending License, issued January 28, 2004.

PG&E is evaluating the seismic risk at Scott Dam as part of its Dam Safety Program. In 2023, PG&E determined that the seismic risk is greater than previously understood. To reduce the potential seismic risk, the gates at Scott Dam will remain open indefinitely, reducing the water storage capacity ~~from approximately 767,576,000 acre-ft (AF) to 56,000 AF~~ ~~(a maximum by approximate maximum maximum storage reduction of roughly roughly 20,554,200,000-554 acre-feet (AF))~~. With the dam's spillway gates remaining open, water availability ~~could be~~ ~~likely to be~~ similar to the dry conditions experienced in 2020 and 2021, when Lake Pillsbury's spring top-off did not reach the spillway crest elevation and the Project operated under FERC-approved flow variances. In a letter dated March 28, 2023, FERC requested PG&E to file an application to amend the license to leave the spillway gates open indefinitely. Currently, PG&E has initiated the internal process to prepare the license amendment.

Accordingly, PG&E is requesting a flow variance for 2024 from the current license requirements to reduce East Branch Russian River (EBRR) flows to proactively manage reservoir storage in a manner that is protective of the Project facilities and minimizes and avoids potential impacts to federally Endangered Species Act (ESA)-listed salmonid species and other aquatic resources that occupy the Eel River within the Project area. Based on- FERC's procedural recommendations, PG&E is submitting this request well in advance of the summer/dry season flow period, to provide FERC with adequate time to

Commented [JAF1]: Why consider? Just state that this letter is a request for a 2024...

Commented [AA2R1]: Agreed

Commented [AA3]: Should this number align with the previous estimates? 75k - 56k =19k

Commented [ML4R3]: Yes, we should make the numbers consistent...

Commented [ML5R3]: P.S. I adjusted the numbers again. I think we quoted a storage loss of 20 TAF before, so suggesting going with 76 TAF - 56 TAF = 20 TAF.

Commented [SM6]: This may still need to be changed to "could be" or similar, as if it is a wet year (like last year), it would not be like 2020 or 2021

Commented [AA7R6]: agreed

evaluate this variance. However, this approach requires some flexibility due to the inherent uncertainty with long-term weather forecasting and storage storage in storage inflows for the remainder of the 2024 runoff season. This request has been developed in consultation with NMFS, California Department of Fish and Wildlife (CDFW), Round Valley Indian Tribes (RVIT) and United States Fish and Wildlife Service (USFWS) (hereafter Agencies).

Commented [SM8]: Also depends on snowmelt runoff and antecedent conditions, so this may be better
Commented [JP9R8]: Agreed

Lake Pillsbury Minimum Pool

~~As a condition of a prior flow variance for the Project issued on July 15, 2016, FERC required PG&E to "determine the current low level operation constraints at Lake Pillsbury (beyond operator recommendations) that support a low reservoir elevation level." To address this requirement, PG&E submitted a technical memorandum (TM) to FERC on April 3, 2017, that identified and evaluated potential dam safety and operational constraints on lowering the operating level. As described in the TM, a high potential of bank sloughing exists at pool levels between 5,000 and 12,000 AF; the degree of bank sloughing partially depends on the drawdown rate of the reservoir. Since this analysis was performed, PG&E has used 12,000 AF as the Lake Pillsbury planning minimum for water management.~~

Current License Requirement

The RPA includes requirements for the minimum instream flows of released by the Project. PG&E requested flow variances in 7 out of the last 10 years when the spillway gates were in operation between 2012 and 2022, and the need for flow variances under prior operating conditions demonstrates that current license-prescribed flows will be unobtainable in nearly all years with the gates permanently open and the reservoir storage restriction in place.

Commented [JAF10]: Does this need updating? Other years when a variance was drafted and not submitted?

Commented [PJ11R10]: Updated language to date range prior to gates announcement 2012-2022

Commented [AA12]: Most? Since we were able to meet them last year

Commented [ML13R12]: Last year was quite unusual...

Commented [PJ14]: Have quite a few things here:
 •Should add the Dry year for E-2
 •Should add the other water years for E-16 (particularly for Normal and Dry), and the E-16 date range is a bit different than the ones for E-2 and E-11 (15th of the month). Adding the Critical year would also allow context for the first and second bullets in the Proposed Variance. Not sure how to fix this without the table being split or made more complicated
 •Could combine columns 2 and 3, and give a total date range (4/1-5/30) agree, updated
 •Since variance will extend past the summer baseflows, should add at least one more column after September 30 agree updated
 •Should clarify that we're in a singular year for summer baseflows since we barely missed the Extremely Wet CLP threshold on May 15 only applies to Eel, which we are not making modifications to, confusing to reader

Table 1 provides a summary of the expected license-required flows for spring/summer 2024 in the absence of a flow variance.

Table 1: Expected Spring/Summer 2024 Flows under the RPA

Compliance Point	4/1 -5/31 Requirement (cfs) without Variance	Expected 6/1-9/30 Requirement (cfs) without Variance with Classification*	10/1--12/31 Requirement (cfs) without Variance with Classification*
Eel River below Scott Dam (E-2)	Critical 20 cfs Dry - 40 cfs Normal - 100 cfs	Critical 20cfs Dry - 40 cfs Normal - 60 cfs	Critical 20cfs Dry - 40 cfs Normal - 60 cfs
Eel River below Cape Horn Dam (E-11)	Value depends on Eel Index Flow	Very Dry- Summer base flow is 3 cfs Dry - 9 cfs Wet - 15 cfs Very Wet - 30 cfs	Value depends on Eel Index flow
East Branch Russian River (E-16)	Dry - 35 cfs (25 cfs starting 4/15) Normal - 35 cfs	Dry - 25 cfs Normal - 75 cfs Normal with Dry Spring Exclusion - 40 cfs	35 cfs (begins 9/16)

Commented [ML15]: As of Feb. 1st, the WY2024 CLP stands at 140,848 AF, which means it has well exceeded Critical threshold for E2 and E16. So, without a variance, Critical WYT is no longer on the table for WY2024. With upcoming storms, E11 Very Dry WYT might leave the tables as well.

Commented [ML16R15]: Do we want to add a sentence to this effect?

Commented [PJ17R15]: Comments incorporated into document with the exception of the last bullet, the Extremely Wet CLP is highly unlikely and will be omitted from this document

Notes: cfs = cubic feet per second; RPA = Reasonable and Prudent Alternative.
*Classifications are not finalized until May 15th for E-11 and June 1st for E-2/E-16. Range of expected classifications shown. While there exists a Critical Water Year Type classification for E-2 and E-16, the threshold for triggering is ~~such that it is extremely unlikely to be met, and the Critical flow requirement at E-2 is below the minimum release capability of the Scott Dam low level outlet.~~

~~Table 1- As of Feb 1, 2024, the Cumulative inflow to Lake Pillsbury (CLP) for the 2024 Water Year is at 140,848 AF, which exceeds the Critical Water Year Type threshold for E2 and E16, accordingly, the Critical Water Year Type classification has been omitted from this table. will not be included in this analysis. Have quite a few things here:~~

- ~~Should add the Dry year for E-2~~
- ~~Should add the other water years for E-16 (particularly for Normal and Dry), and the E-16 date range is a bit different than the ones for E-2 and E-11 (15th of the month). Adding the Critical year would also allow context for the first and second bullets in the Proposed Variance. Not sure how to fix this without the table being split or made more complicated~~
- ~~Could combine columns 2 and 3, and give a total date range (4/1-5/30)~~
- ~~Since variance will extend past the summer baseflows, should add at least one more column after September 30~~
- ~~Should clarify that we're in a singular year for summer baseflows since we barely missed the Extremely Wet CLP threshold on May 15~~

Lake Pillsbury Minimum Pool

As a condition of a prior flow variance for the Project issued on July 15, 2016, FERC required PG&E to “determine the current low level operation constraints at Lake Pillsbury (beyond operator recommendations) that support a low reservoir elevation level.” To address this requirement, PG&E submitted a technical memorandum (TM) to FERC on April 3, 2017, that identified and evaluated potential dam safety and operational constraints on lowering the operating level. As described in the TM, a high potential of bank sloughing exists at pool levels between 5,000 and 12,000 AF; the degree of bank sloughing partially depends on the drawdown rate of the reservoir. Since this analysis was performed, PG&E has used 12,000 AF as the Lake Pillsbury planning minimum for water management.

Water Temperature Analysis and Flexible Management Release Strategy

Water Temperature Analysis

In response to PG&E’s 2022 Flow Variance Request Due to Limited Water Availability, submitted May 13, 2022, FERC ordered PG&E to continue to conduct Lake Pillsbury water quality monitoring. FERC also ordered PG&E to develop scenarios for water temperature modeling, which would allow PG&E to evaluate the potential benefits of cooler reservoir temperatures and water storage that support federally ESA-listed salmonids during the dry season. PG&E evaluated 12 years of historical water temperature data collected under the RPA to develop a regression model and satisfy FERC’s July 27, 2022, order (Enclosure 2 Potter Valley Project – Water Temperature Evaluation, 2023).

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Commented [JAF18]: I’d add critical too, because they were evaluated in the 2002 BiOp. In the event we have to drop near or below those flows, it could become relevant... could happen, correct?

Commented [PJ19R18]: Agree, added

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Commented [SM20]: Should we also mention at the end that we’ll have a CE-QUAL reservoir temperature model to use for active management this summer? Seems important to mention, maybe at the end so it doesn’t undermine the analysis here

Commented [PJ21R20]: Language added, see paragraph below

Commented [SM22]: I assume this is the analysis that is described in the next paragraph, so may want to clarify

Commented [PJ23R22]: Enclosure 2 includes the Potter Valley water temperature analysis submitted to FERC May 22, 2023, 2023 Potter Valley Project Water Temperature Evaluation

The conclusion of the PG&E water temperature analysis (Enclosure 2) was that there are limited options for mitigating high water temperature in the release from Lake Pillsbury in the late-summer and early-fall months. The limited options are caused by the relatively shallow reservoir (small, deep-water volume), minimal spring/summer reservoir inflow that is typically warm, and summer withdrawals that are made from a low-level outlet that mixes the warm, upper layers of the reservoir throughout the water column. The regression-based analysis of existing water temperature data indicated a very predictable pattern based solely on calendar date and suggests that this analysis could be used as a guidance curve to compare current releases to usage patterns from other, similar water years. Two guidance curves were developed, one based on all water-year types with the second based only on dry water-year types. A proposed or ongoing reservoir release pattern is compared with the statistically derived guidance curve curves. This approach allows PG&E to compare the current strategy for water year releases to previous patterns, which informs operational decisions regarding increasing or decreasing release volumes. This approach provides a practical tool to determine how current spring and summer flow-release decisions may influence late-summer release water temperatures.

FERC's July 27, 2022, order approving PG&E's temporary flow variance inadvertently demonstrated the potential benefit of using reservoir release management to influence water temperature in late summer. The order went into effect and reduced E-16 flows from 75 to 5 cubic feet per second (cfs), and the benefits of this reduction were readily observable. As shown on Figure 1, water temperatures at E-2 were increasing as expected based on historical water temperature data (i.e., regression-based guidance curves) until withdrawals from the reservoir were reduced under the variance. Consequently, release temperature at E-2 decreased and remained stable until withdrawals from the reservoir increased again to support a Blockwater release in late September, 2022. Further analysis of flow and temperature data from 2022 indicates that the flow reduction in late July cooled release temperatures as much as 1.6 degrees Celsius (°C) during the approximately 2-month flow-reduction period (Figure 2).

- Commented [SM24]:** May want to describe what a guidance curve is here rather than force the reader back into Enclosure 2. I think it is the regression lines in Figure 1 and 2.
- Commented [JAF25R24]:** Agreed
- Commented [PJ26R24]:** PG&E concurs, language added
- Commented [JAF27]:** Nice!

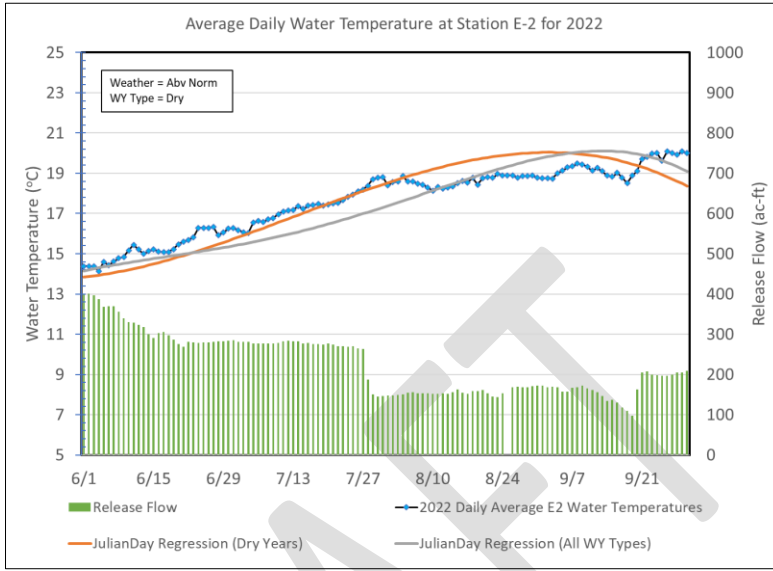


Figure 1: Average Daily Water Temperature at Gaging Station E-2 and release flow for 2022.

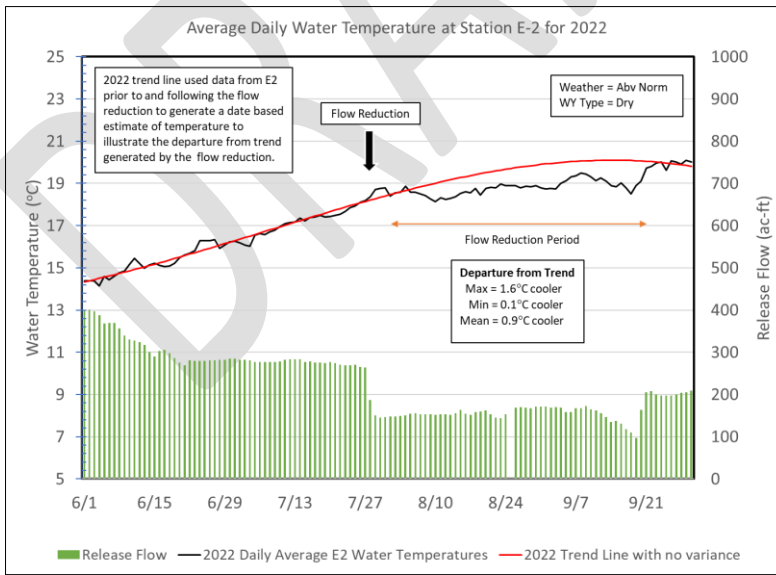


Figure 2: Average Daily Water Temperature at Gaging Station E-2 with 2022 trend line.

Based on the observations above, and in coordination with ~~NMFS, California Department of Fish and Wildlife (CDFW), Round Valley Indian Tribes (RVIT) and United States Fish and Wildlife Service (USFWS) (hereafter Agencies)~~ Agencies, PG&E developed a flexible reservoir release management strategy for the 2023 flow variance request that could support cooler temperatures for ESA-listed salmonids rearing in the Eel River downstream of Scott Dam. The strategy was included in PG&E's 2023 request for temporary flow variance submitted to FERC on May 22, 2023, and approved on October 2, 2023. However, because the variance started later than in previous years, reservoir withdrawals remained elevated during the summer period, depleting the cool water and resulting in increased water temperature above what was predicted by the guidance curves (Figure 3).

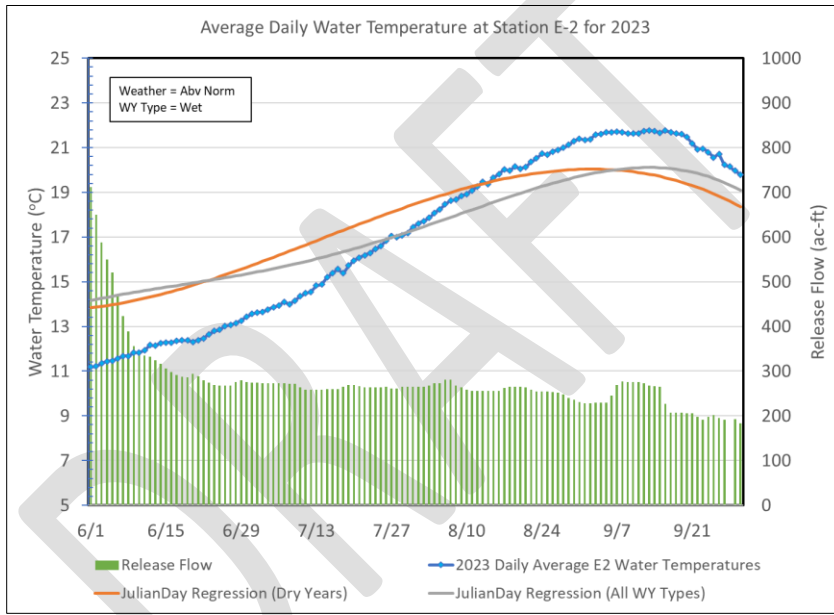


Figure 3: Average Daily Water Temperature at Gaging Station E-2 and Release Flow for 2023

A comparison of water temperature and release flow data from 2022 and 2023 supports the findings of PG&E's water temperature analysis, with the result that the delayed implementation of the 2023 variance likely contributed to a 2.5 °C warmer maximum release temperature than in 2022, despite 2023 being a much wetter year, and equivalent start of the dry season storage (XX AF). As shown on Figure 4, continued elevated withdrawals through the summer in 2023 accelerated the depletion of cooler water in Lake Pillsbury. This resulted in elevated release water temperature in late summer as compared to 2022, even though release water temperatures in early July were approximately 2°C cooler in 2023. Based on our understanding of the relationship between release volume and water temperature, it is likely that release water temperature in 2023 would have been

Commented [SM28]: Should be defined way earlier

Commented [PJ29R28]: Agreed, updated

Commented [JAF30]: Resource Entities? Tribes okay with being lumped into "Agencies"? I defer to RVIT.

Commented [PJ31R30]: To remain consistent with previous requests PG&E will leave as agencies

Commented [JAF32]: True not true? June 1 start or May 1?

Commented [PJ33R32]: To much varability to define from year to year, removing last part of sentence

[minimized by the proposed flexible management release strategy outlined in PG&E's 2023 flow variance request.](#)

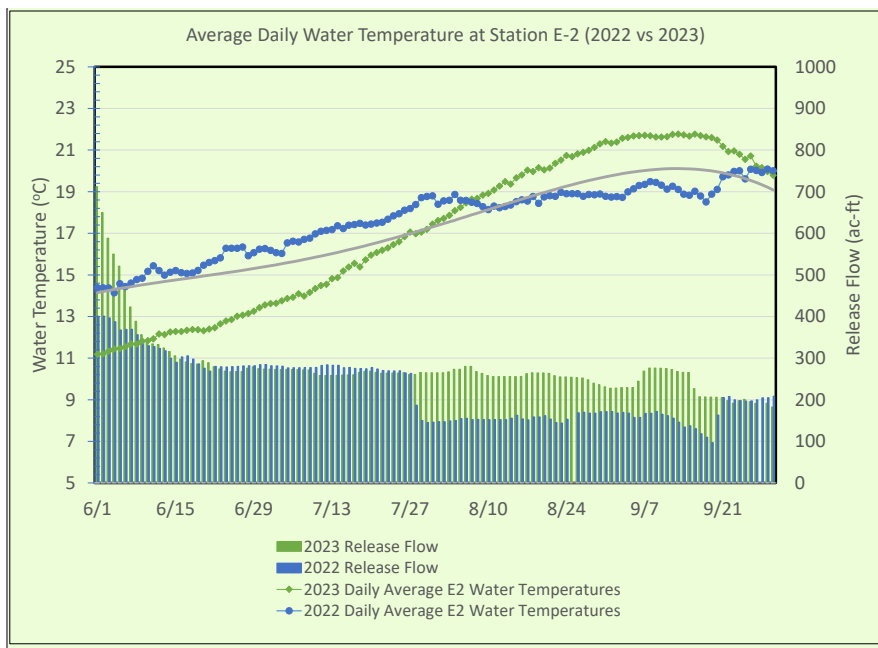


Figure 4. Comparison of Average Daily Water Temperatures at Station E-2.

Proposed Flexible Management Release Strategy

[PG&E will monitor release water temperature as measured at E-2 during the summer. When daily average water temperatures exceed 15°C \(which could occur beginning in June, assuming median and average values \[Figure 5\]\), PG&E will notify Agencies and begin meeting weekly to determine if diversions to the EBRR, as measured at E-16, should be further reduced in support of preserving water storage for cooler release temperatures.](#)

Commented [SM34]: Nice!

Commented [JAF35R34]: YES – WELL DONE!!

Commented [SM36]: Already stated in the header. Also, seems like this section could be moved up to support the Requested Variance section rather than coming way down here. I guess if the temperature analysis gets moved up above the Requested Variance section, then this may be ok here

Commented [PJ37R36]: Agreed, accepted

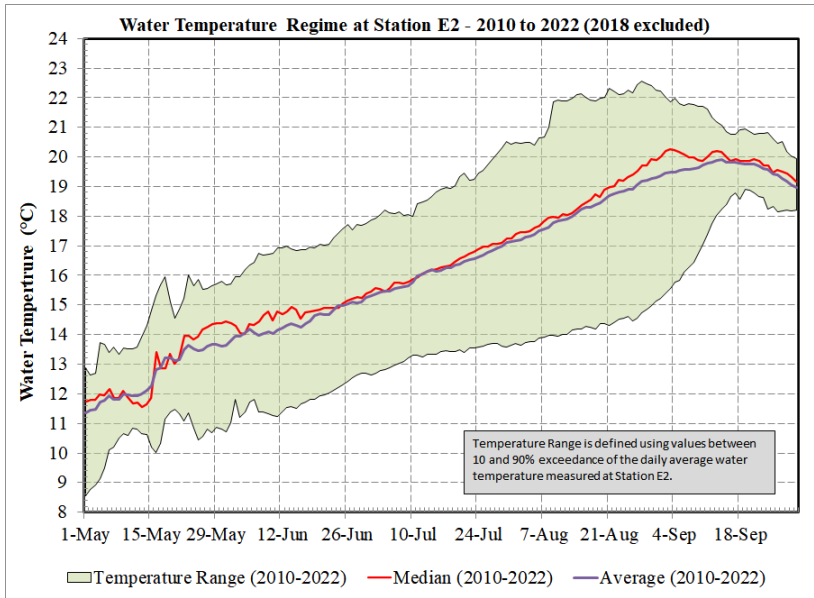


Figure 5: Summary of Median, Average, and 10–90 Percent Exceedance Range of Water Temperatures at E-2 between May and September, using 2010–2022 Data

In coordination with Agencies, PG&E will adjust flows in EBRR between 25 and 5 cfs for mid-July through September 30, as needed to preserve cooler water temperatures in the reservoir. The cooler water will be released in late summer in support of federally ESA-listed species in the Eel River downstream of Scott Dam. Flow adjustments will be informed by the regression-based analysis guidance curves, observed water temperatures for releases measured at E-2, and bi-weekly vertical temperature profiles collected within Lake Pillsbury. The new CE-QUAL water temperature model, developed in coordination with Agencies, maywillmaymay also be used to inform flow adjustments to EBRR.

After September 30, E-16 will be classified as Dry and remain at 25 cfs, barring the reservoir storage forecast indicating a lower release is necessary to prevent the reservoir from reaching concerning storage levels later in the year.

Proposed-Requested Flow Variance

~~Should really give some background of what happened and what you've learned over past few years that provides a basis for these flow variance recommendations, as the proposal comes up abruptly and without any historical context. I would assume FERC would appreciate some context, as would agencies too. The Water Temperature Analysis section~~

- Commented [AA38]:** Consider changing this to "July" to allow more flexibility under extreme conditions.
- Commented [PJ39R38]:** Agreed
- Commented [SM40]:** This is not discussed in the Proposed Variance section above, so should be added to those bullets
- Commented [PJ41R40]:** Agreed, changes made
- Commented [SM42]:** Again, very late in the document to be discussing this important stuff
- Commented [PJ43R42]:** Agreed, changes made
- Commented [JAF44]:** Agree w/ Scott – see above
- Commented [PJ45R44]:** Agreed, changes made
- Commented [JAF46]:** At least the past 2 years, but yes, agreed. However, we don't want to hold up this process too much and get caught up trying to explain the current regulatory context – less is more here.
- Commented [PJ47R46]:** Agreed, changes accepted
- Commented [JAF48]:** Add language that shows consistency with past variance approvals.
- Commented [PJ49R48]:** Agreed, changes made
- Commented [JP50]:** RVIT: Should really give some background of what happened and what you've learned over past few years that provides a basis for these flow variance recommendations, as the proposal comes up abruptly and without any historical context. I would assume FERC would appreciate some context, as would agencies too. The Water Temperature Analysis section below could be moved above this section to provide this context, and justify the flow requests below.
- Commented [PJ51R50]:** The Water Temperature Analysis section has been moved

below could be moved above this section to provide this context, and justify the flow requests below.

Should probably give an anticipated Variance start date, I guess April 1 based on the first column of Table 1 starting on April 1? I know the bullets below are used from prior variances, but it has always been a little confusing because Table 1 talks about certain time windows but then the variance flows don't, then out pops Table 2 for summer baseflows only (no other times of year), which are presumably covered by the first two bullets. Could we just add two more tables to supplement Table 2, and make everything perfectly clear and match up with Table 1 (see below)?

If the variance is approved, the following flow variance conditions are requested for 2024, and will be implemented once approved by FERC:

- Gaging Station E-2 will be reclassified as a Critical Water Year Type. In practice, the E-2 flows will be the combined releases for E-11, E-16, and Potter Valley Irrigation District contract water, with a floor set by the minimum opening of the low-level outlet (approximately 35 ~~cubic feet per second (cfs))~~) (see Table 2).
- Gaging Station E-16 flows will be reclassified initially as Dry (25 cfs), and then will be adjusted between 5 and 25 cfs based on PG&E and agency determination when daily average reservoir release water temperatures at E-2 exceed 15 ~~degrees Celsius (°C)~~ (E-2 water temperatures typically exceed 15°C in early June).
- Gaging Station E-16 flows will be reclassified initially as Dry (25 cfs), as soon as FERC grants the variance request, and then will be adjusted between 5 and 25 cfs based on PG&E and agency determination when daily average reservoir release water temperatures at E-2 exceeds 15 ~~degrees Celsius (°C)~~ (E-2 water temperatures typically exceed 15°C in early July June). Add post Sept. language here from page 11 (see Scott's comment re: continuation of flow schedule past Sept. 30).
- After September 30, E-16 will be held ~~classified as Dry and remain at 25 cfs~~ for the remainder of the variance.
Reductions
- Additionally, ~~reductions~~ to E-16 flow releases ~~E-16 may also occur if the will be adjusted by between 5 and 25 cfs if the Lake Pillsbury storage forecast shows that flow releases need to be reduced to indicates facility maintain reservoir storage above facility safety concerns due to low storage levels concerning levels for facility safety (12,000 AF). In the unlikely event that cumulative inflows to Lake Pillsbury are classified as critical, are low enough that E-16 is classified as a Critical Water Year Type, E-16 will remain in the Critical classification (5 cfs) as according to the RPA as required by the 2004 FERC amended license (Table 1).~~

Commented [SM52]: Already defined in Table 1

Commented [PJ53R52]: Agreed, thank you

Commented [JAF54]: I'd prefer to start low and then increase vs. the opposite

Commented [AA55R54]: I suggest we stay the course on starting at 25 and adjust down

Commented [SM56]: Can delete if sentence added above. All of these bullets is contingent on FERC approval, so trying to clean up a bit

Commented [JAF57]: Note: E-2 summer temp objective maybe dissimilar to spring release strategies aimed to increase temp (16C) ... I think we would continue the same strategy as before – max surface releases to the extent possible.

Commented [JAF58]: Moved to 14C because we may need more time to adjust storage levels

Commented [AA59R58]: Consider 15C to start meeting

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Commented [ML60]: This isn't accurate...after Sept. 16th, EBRR Dry WYT MIF is 35 cfs, not 25 cfs.

Commented [SM61]: This is not discussed in the Proposed Variance section above, so should be added to those bullets

Commented [AA62R61]: Done

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Commented [JAF63]: Please check – and/or Exceptionally low inflows and/or dry spring exception?? Dry or Very Dry? Can't recall the linkage among schedules.

Commented [LM64]: No longer applicable...that ship has sailed.

Commented [SM65]: If you add Critical to E-16 row in Table 1

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- The Drought Working Group (DWG) will meet once monthly during the variance period to discuss storage levels, release flow rates, water temperature profiles, release temperatures, and estimated temperature projections at E-2.

- PG&E will submit monthly water storage and temperature reports to FERC.

- The drought variance will end when Lake Pillsbury storage exceeds 36,000 AF after October 1, 2024, or is superseded by another variance or license amendment. The 36,000 AF storage threshold would allow the reservoir to meet minimum flow obligations, including a possible ~~block-Block~~ water release, through January 2025 if inflow is extremely low in early winter.

- Flows will be calculated at a 24-hour average measured at Gaging Station E-11 rather than the current instantaneous measurement. This will allow for a tighter compliance buffer on minimum E-11 flows.

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Table 2. Requested Flows under 2024 Variance for the 4/1-5/30 Spring Runoff Period

Compliance Point	Allowed Range: Min/Max	Water Year Classification	Notes
<u>Eel River below Scott Dam (E-2)</u>	<u>20 cfs*/No max</u>	<u>Critical</u>	<u>Adjusted from RPA classification</u> <u>Adjusted RPA minimum flow classification to critical</u>
<u>Eel River below Cape Horn Dam (E-11)</u>	<u>TBD**/No max</u>	<u>TBD**</u>	<u>No change from RPA</u>
<u>East Branch Russian River (E-16)</u>	<u>5 or 25 cfs****</u>	<u>Critical or Dry/Normal</u>	<u>Adjusted from RPA classification</u> <u>RPA minimum flow classification to critical or dry/normal</u>
<u>Potter Valley Irrigation District</u>	<u>No min/50 cfs***</u>	<u>N/A</u>	<u>PG&E's discretion to meet objectives for temperature, storage and facility safety objectives and facility safety storage</u>
<p>Note: cfs = cubic feet per second; TBD = to be determined on May 15. * In practice, assumed 35 cfs based on low level outlet minimum release (facility limitation) requirement ** Water Year Type for E-11 determined May 15 of each year. *** Demand based deliveries to PVID are secondary to storage, temperature and facility safety objectives. **** Could be reduced if temperature thresholds of 15 degrees are met or if there are storage concerns</p>			

Commented [JP66]: RVIT: Should probably give an anticipated Variance start date, I guess April 1 based on the first column of Table 1 starting on April 1? I know the bullets below are used from prior variances, but it has always been a little confusing because Table 1 talks about certain time windows but then the variance flows don't, then out pops Table 2 for summer baseflows only (no other times of year), which are presumably covered by the first two bullets. Could we just add two more tables to supplement Table 2, and make everything perfectly clear and match up with Table 1 (see below)?

Commented [JAF67]: Red flag w/ "adjusted" – assessed within the BiOp which is important. Can't think of better terminology at the moment – or maybe just add *critical was assessed within the BiOp

Commented [SM68]: Based on 2nd bullet, and there won't be any release temperature issues in April and May

Commented [ML69]: Is this correct that there is no flexibility between 5 and 25 cfs for the period of April & May? I know we'd start at 25 cfs and temperature isn't a factor these months, so would we only go down to 5 cfs if storage looked dire?

Commented [ML70R69]: Note: this is the only difference between Table 2 and 3. If we remove this difference (or explain it in Notes), we can have just one table for Requested Variance Flows.

Commented [JAF71R69]: E-16 critical is 5 April/May. Maybe I'm missing something.

Commented [ML72]: Not sure why Normal WYT is in the mix. We're not considering running Normal MIFs.

Table 23. Proposed 3. Requested Flows under 2024 Variance for the 8/1-12/31 1031 Summer and Baseflow and Fall Period

Compliance Point	Allowed Range: Min/Max	Water Year Classification	Notes
Eel River below Scott Dam (E-2)	20 cfs*/No max	Critical	<u>Adjusted RPA minimum flow classification to critical</u> critical <u>Adjusted from RPA classification</u> critical
Eel River below Cape Horn Dam (E-11)	TBD**/No max	TBD**	<u>No change from RPA</u> change from RPA
East Branch Russian River (E-16)	5 cfs/ <u>to 25 cfs</u> *****	<u>Critical or /Dry/Normal</u>	<u>Adjusted RPA minimum flow classification to critical or dry/normal</u> Adjusted from RPA classification <u>normal</u>
Potter Valley Irrigation District	No min/50 cfs **** (5 cfs post-irrigation season)	N/A	<u>PG&E's discretion to meet temperature, storage and facility safety objectives</u> <u>PG&E's discretion to meet objectives for temperature and facility safety storage</u>

Note: cfs = cubic feet per second; TBD = to be ~~determined~~~~decided~~determined~~determined~~ on May 15.
 * In practice, assumed 35 cfs based on low level outlet minimum release (facility limitation) requirement
 ** Water Year Type for E-11 determined May 15 of each year.
 *** Demand based deliveries to PVID are secondary to storage, temperature and facility safety objectives.
 **** Flows return to 25 cfs after September 30
 ***** Demand based deliveries to PVID are secondary to storage, temperature and facility safety objectives.

Table 4. Requested Flows under 2024 Variance for the 10/1-11/30 Fall Baseflow Period

Compliance Point	Allowed Range: Min/Max	Water Year Classification	Notes
<u>Eel River below Scott Dam (E-2)</u>	<u>20 cfs*/25 cfs*/No max</u>	<u>Critical</u>	<u>Adjusted RPA minimum flow classification to critical</u> Adjusted from RPA classification
<u>Eel River below Cape Horn Dam (E-11)</u>	<u>TBD***/No max</u>	<u>TBD***</u>	<u>No change from RPA</u> change from RPA
<u>East Branch Russian River (E-16)</u>	<u>5 cfs/to 25 cfs</u>	<u>Critical or /Dry/Normal</u>	<u>Adjusted RPA minimum flow classification to critical or dry/normal</u> Adjusted from RPA classification
<u>Potter Valley Irrigation District</u>	<u>No min/50 cfs/5 cfs****</u>	<u>N/A</u>	<u>PG&E's discretion to meet temperature, storage and facility safety objectives</u> <u>PG&E's discretion to meet objectives for temperature and facility safety storage</u>

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- Commented [PJ73]:** Added statement and removed table 3 & 4, to simplify information
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- Commented [SM74]:** Added based on E-11 floor changing on October 15, footnote added
- Commented [PJ75R74]:** This is not a license requirement, removing
- Commented [SM76]:** added
- Commented [PJ77R76]:** Not relevant, not a license condition, removed

Note: cfs = cubic feet per second; TBD = to be determined on May 15.
* In practice, assumed 35 cfs based on low level outlet minimum release requirement
** E-11 floor transitions to 25 cfs by October 15
*** Water Year Type for E-11 determined May 15 of each year.
**** 5 cfs after October 15
***** Demand based deliveries to PVID are secondary to storage, temperature and facility safety objectives.

PG&E will also implement additional mitigation and monitoring measures to avoid and minimize adverse impacts to federally [ESA](#)-listed species as outlined in the enclosed [Letter memorandum Memorandum of understanding UnderstandingLetterLetter of Intent](#), dated [XXXX](#) (Enclosure 1).

Water Temperature Analysis and Conditions under the Variance

Water Temperature Analysis

In response to PG&E's 2022 Flow Variance Request Due to Limited Water Availability, submitted May 13, 2022, FERC ordered PG&E to continue to conduct Lake Pillsbury water quality monitoring. FERC also ordered PG&E to develop scenarios for water temperature modeling, which would allow PG&E to evaluate the potential benefits of cooler reservoir temperatures and water storage that support federally ESA-listed salmonids during the dry season. PG&E evaluated 12 years of historical water temperature data collected under the RPA to develop a regression model and satisfy FERC's July 27, 2022, order (Enclosure 2).

The conclusion of the PG&E water temperature analysis (Enclosure 2) was that there are limited options for mitigating high water temperature in the release from Lake Pillsbury in the late summer and early fall months. The limited options are caused by the relatively shallow reservoir (small, deep water volume), minimal spring/summer reservoir inflow that is typically warm, and summer withdrawals that are made from a low level outlet that mixes the warm, upper layers of the reservoir throughout the water column. The analysis results allow one to compare current releases to usage patterns from other, similar water years. A proposed or ongoing reservoir release pattern is compared with a statistically derived guidance curve. This approach allows PG&E to compare the current strategy for water year releases to previous patterns, which informs operational decisions regarding increasing or decreasing release volumes. This approach provides a practical tool to determine how current spring and summer flow release decisions may influence late summer release water temperatures.

FERC's July 27, 2022, order approving PG&E's temporary flow variance inadvertently demonstrated the potential benefit of using reservoir release management to influence water temperature in late summer. The order went into effect and reduced E-16 flows from 75 to 5 cfs, and the benefits of this reduction were readily observable. As shown on Figure 1, water temperatures at E-2 were increasing as expected based on historical water temperature data (i.e., regression-based guidance curves) until withdrawals from the reservoir were reduced under the variance. Consequently, release temperature at E-2 decreased and remained stable until withdrawals from the reservoir increased again to

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Commented [SM78]: Should we also mention at the end that we'll have a CE-QUAL reservoir temperature model to use for active management this summer? Seems important to mention, maybe at the end so it doesn't undermine the analysis here

Commented [SM79]: I assume this is the analysis that is described in the next paragraph, so may want to clarify

Commented [PJ80R79]: Resolved see Water Temperature Analysis section above

Commented [SM81]: May want to describe what a guidance curve is here rather than force the reader back into Enclosure 2. I think it is the regression lines in Figure 1 and 2.

Commented [JAF82R81]: Agreed

Commented [AA83R81]: Text added

Commented [JAF84]: Nice!

support a Blockwater release in late September, 2022. Further analysis of flow and temperature data from 2022 indicates that the flow reduction in late July cooled release temperatures as much as 1.6°C during the approximately 2-month flow reduction period (Figure 2).

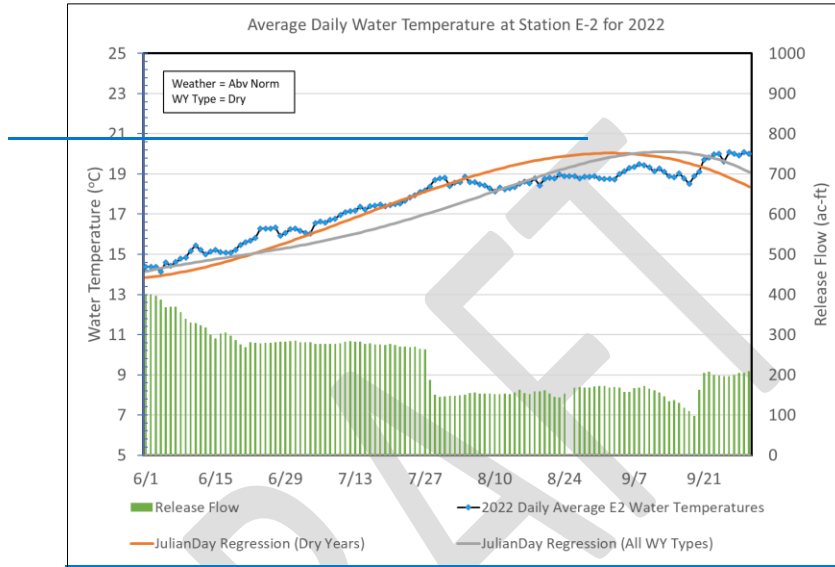


Figure 1: Average Daily Water Temperature at Gaging Station E-2 and release flow for 2022.

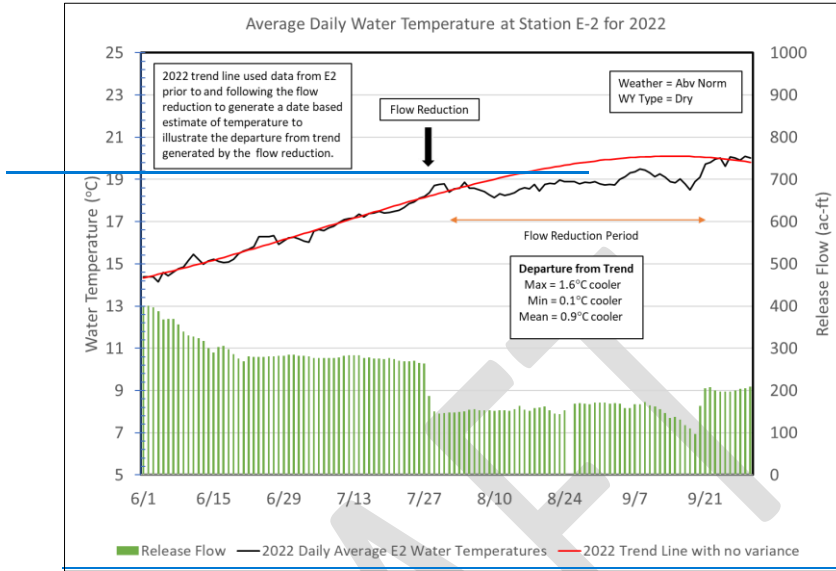


Figure 2: Average Daily Water Temperature at Gaging Station E-2 with 2022 trend line.

Based on the observations above, and in coordination with NMFS, California Department of Fish and Wildlife (CDFW), Round Valley Indian Tribes (RVIT) and United States Fish and Wildlife Service (USFWS) (hereafter Agencies), PG&E developed a flexible reservoir release management strategy for the 2023 flow variance request that could support cooler temperatures for ESA listed salmonids rearing in the Eel River downstream of Scott Dam. The strategy was included in PG&E's 2023 request for temporary flow variance submitted to FERC on May 22, 2023, and approved on October 2, 2023. However, because the variance started later than in previous years, reservoir withdrawals remained elevated during the summer period, depleting the cool water and resulting in increased water temperature above what was predicted by the guidance curves (Figure 3).

- Commented [SM85]: Should be defined way earlier
- Commented [PJ86R85]: Moved to page 2
- Commented [JAF87]: Resource Entities? Tribes okay with being lumped into "Agencies"? I defer to RVIT.
- Commented [PJ88R87]: See comment above

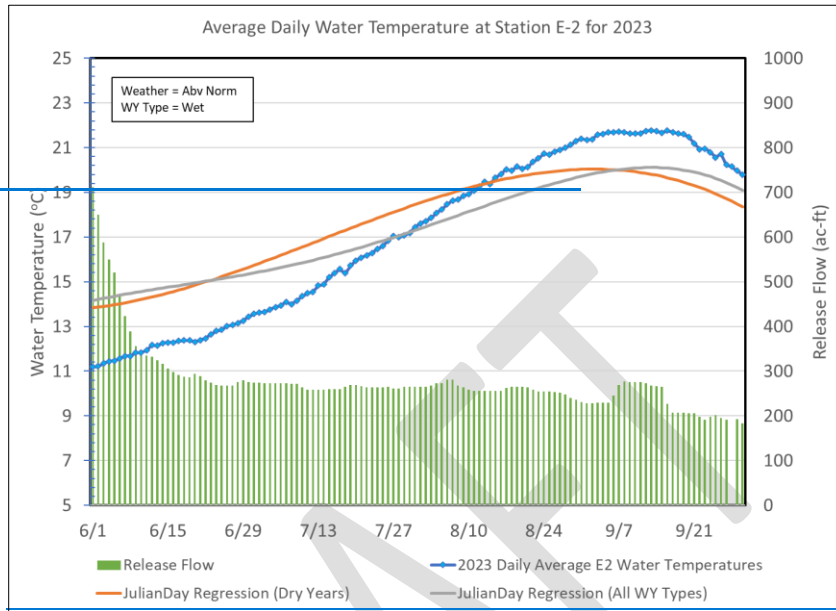


Figure 3: Average Daily Water Temperature at Gaging Station E-2 and Release Flow for 2023

A comparison of water temperature and release flow data from 2022 and 2023 supports the findings of PG&E's water temperature analysis, with the result that the delayed implementation of the 2023 variance likely contributed to a 2.5 °C warmer maximum release temperature than in 2022, despite 2023 being a much wetter year and equivalent start of the dry season storage (XX AF). As shown on Figure 4, continued elevated withdrawals through the summer in 2023 accelerated the depletion of cooler water in Lake Pillsbury. This resulted in elevated release water temperature in late summer as compared to 2022, even though release water temperatures in early July were approximately 2°C cooler in 2023. Based on our understanding of the relationship between release volume and water temperature, it is likely that release water temperature in 2023 would have been minimized by the proposed flexible management release strategy outlined in PG&E's 2023 flow variance request.

Commented [JAF89]: True not true? June 1 start or May 1?

Commented [PJ90R89]: See comment above

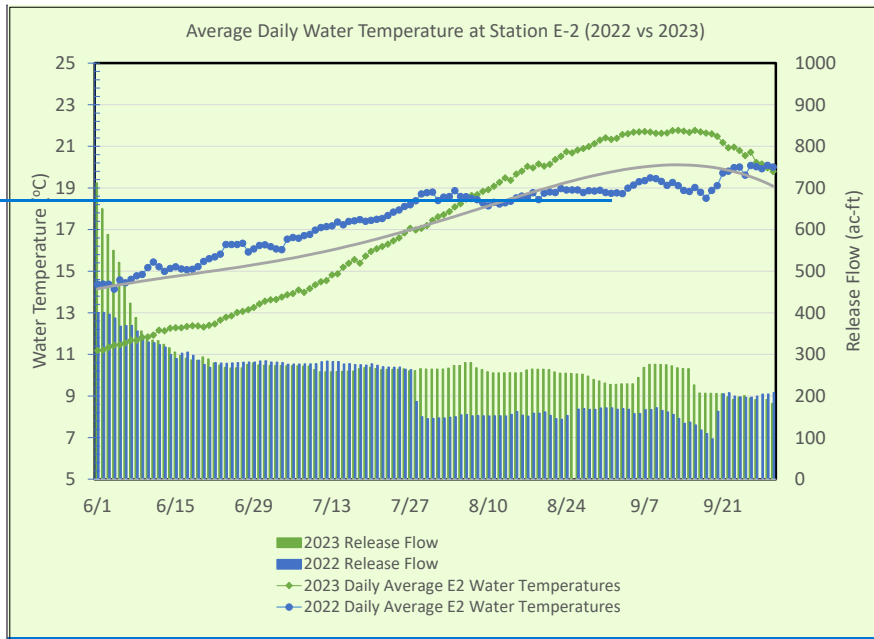


Figure 4. Comparison of Average Daily Water Temperatures at Station E-2.

Proposed Implementation Plan Conditions Under the Variance

PG&E will monitor release water temperature as measured at E-2 during the summer. When daily average water temperatures exceed 16.4°C (which could occur beginning in June, assuming median and average values [Figure 5]), PG&E will notify Agencies and begin meeting weekly to determine if diversions to the EBRR, as measured at E-16, should be further reduced in support of preserving water storage for cooler release temperatures.

Commented [SM91]: Nice!

Commented [JAF92R91]: YES – WELL DONE!!

Commented [SM93]: “Proposed Implementation Plan for the Variance”? Not really sure what “conditions” means

Commented [PJ94R93]: Agreed, updated

Commented [SM95]: Already stated in the header. Also, seems like this section could be moved up to support the Requested Variance section rather than coming way down here. I guess if the temperature analysis gets moved up above the Requested Variance section, then this may be ok here

Commented [PJ96R95]: Agreed, updated

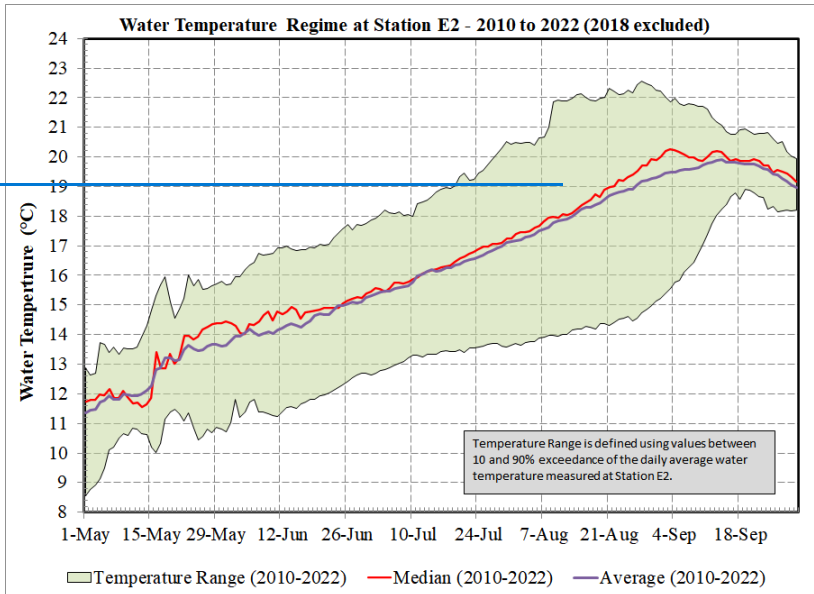


Figure 5: Summary of Median, Average, and 10–90 Percent Exceedance Range of Water Temperatures at E-2 between May and September, using 2010–2022 Data

In coordination with Agencies, PG&E will adjust flows in EBRR between 25 and 5 cfs for mid-July through September 30, as needed to preserve cooler water temperatures in the reservoir. The cooler water will be released in late summer in support of federally ESA-listed species in the Eel River downstream of Scott Dam. Flow adjustments will be informed by the observed water temperatures for releases measured at E-2 and bi-weekly vertical temperature profiles collected within Lake Pillsbury. After September 30, E-16 will be classified as Dry and remain at 25 cfs, barring the reservoir storage forecast indicating a lower release is necessary to prevent the reservoir from reaching concerning storage levels later in the year.

Biological Impacts

PG&E biologists have reviewed this variance proposal and believe that it is necessary to conserve water in Lake Pillsbury and provide adequate flow releases and suitable water quality conditions for the long-term protection and recovery of federally ESA-listed salmonids within the Eel River watershed. The biological analysis is provided in the following subsections.

Eel River below Lake Pillsbury and Van Arsdale Reservoir

- Commented [SM97]:** This is not discussed in the Proposed Variance section above, so should be added to those bullets
- Commented [PJ98R97]:** Agreed, updated
- Commented [SM99]:** Again, very late in the document to be discussing this important stuff
- Commented [PJ100R99]:** Agreed, moved
- Commented [JAF101]:** Agree w/ Scott – see above
- Commented [PJ102R101]:** Resolved

The primary federally and state ESA-listed salmonid species affected by the Project are Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*O. mykiss*). The life stages of these species that could potentially be in the river and whose habitat conditions are influenced by Project operations during the flow variance period are adult steelhead trout (pre- and post-spawn), juvenile Chinook salmon, and steelhead trout. If the variance extends beyond October, adult Chinook salmon will be present as well.

Adult steelhead trout migrate into the upper Eel River watershed to spawn primarily from January through ~~June~~ ~~April~~ ~~April~~ ~~June~~ ~~June~~ (summer-run steelhead trout may migrate into the upper Eel River watershed later; however, the project area lacks suitable habitat for over-summering). PG&E would not reduce flows in the Eel River for adult steelhead trout migration and spawning below the license-prescribed flows. Juvenile Chinook salmon remain in the river for several weeks after hatching and then migrate to the ocean during spring (typically April–June), as flows decline, and water temperatures increase. Juvenile steelhead trout, which typically spend ~~4~~ ~~one~~ or more years in the river before migrating to the ocean during late winter and spring (typically February–June), also require suitable habitat conditions throughout the summer. Available spring rearing habitat in the Eel River for juvenile salmon and steelhead trout would not be affected by the proposed variance. An increase in spring flows followed by a decrease to summer levels, as prescribed by the license, would still occur, thus providing important migration cues for downstream migrating juvenile fish.

Commented [AA103]: We really don't see summer run in the project area. May need to discuss with Agencies

Lower flows during mid- to late summer in the Eel River between Scott and Cape Horn Dams would result under the variance because surplus diversion flows to the EBRR would be reduced. However, the proposed variance would support improved habitat conditions for summer-rearing juvenile steelhead trout by reducing withdrawals from Lake Pillsbury, which has been found to minimize water temperature increases in late summer (see PG&E WT analysis). The non-native Sacramento pikeminnow (*Ptychocheilus grandis*) is a predator and competitor of juvenile salmonids in the Eel River Basin. In laboratory streams, interspecific competition has been found to have a negligible effect on juvenile steelhead at water temperatures less than 18°C, while pikeminnow outcompete juvenile steelhead at temperatures 20-23°C (Reese and Harvey 2002). Under the variance, PG&E would notify Agencies when water temperature exceeds ~~15.4~~ ~~6~~ ~~15~~°C at E-2 and begin meeting weekly to manage withdrawals from the reservoir to minimize the duration juvenile steelhead trout are exposed to pikeminnow at temperatures above 18°C in late summer.

Commented [JAF104]: Very good!

As mentioned above, the proposed variance would reduce minimum flows in the reach between Scott and Cape Horn Dams to preserve storage in Lake Pillsbury. While this may temporarily reduce the volume of available summer rearing habitat for steelhead trout between the dams, minimum flows would remain above the E-2 “Critical” classification as prescribed by the license and assessed in NMFS’ 2002 Biological Opinion. However, habitat conditions during mid- to late summer would be expected to improve and potentially expand accessible habitat for steelhead trout by maintaining suitable water temperatures. If cooler water temperatures are not maintained during mid- to late summer (e.g., see Figure 3. Average Daily Water Temperature at Gaging Station E-2 and Release Flow for 2023), habitat conditions between the dams are likely to become increasingly

~~stressful and potentially unsuitable for steelhead trout, especially with due the presence of pikeminnow.~~ Summertime flow requirements in the Eel River below Cape Horn Dam (Stream Gage E-11) under the proposed variance would remain unchanged from the license-prescribed summer flow classification (to be determined on May 15, 2024).

Commented [JAF105]: May need some more re-wording.

Commented [PJ106R105]: See updated language

Transitioning into fall and winter, the proposed drought flow variance is the prudent action, given the potential for Lake Pillsbury to reach critical water levels ~~as a result of because of~~ unpredictable storm activity and inflow conditions. Low reservoir levels could limit PG&E's ability to release water at Scott Dam, and limited releases could in turn affect downstream aquatic resources (including Chinook salmon and steelhead trout) because of changes in flow, high levels of turbidity, and sedimentation. Implementation of the proposed variance would conserve water in Lake Pillsbury, improve water quality conditions below Scott Dam, and reduce the risk of reservoir bank erosion and sloughing at low reservoir storage levels. Agencies would also have their Water Year 2025 ~~block-Block~~ water allotments under the license available during the fall/winter adult Chinook salmon spawning season to supplement flows, if needed, given hydrologic conditions in the Eel River watershed.

Overall, the proposed variance would not reduce flows in the Eel River below what is prescribed by the license. Therefore, no further impacts to ESA-listed fish species are anticipated.

East Branch Russian River

The primary fish species of interest in the EBRR downstream of the Potter Valley Powerhouse is resident rainbow trout (*O. mykiss*), which are not ESA listed. Both natural origin and hatchery rainbow trout inhabit this stream reach. CDFW historically planted catchable resident rainbow trout to support the local sport fishery; however, planting activities have been reduced in recent years because of persisting drought conditions and lower flows. Under the proposed variance, flows in the EBRR would be reduced from Normal to between Dry and Critical classifications (75 to 25–5 cfs), resulting in a reduction in habitat for rainbow trout and other aquatic species. In turn, this would result in the continuation of reduced sport fishing opportunities for the duration of the variance.

Commented [JAF107]: Add a sentence that states 5cfs okay for hatchery O.mykiss stocked in EBRR.

Agency Consultation and Conclusion

PG&E and Agency correspondence is listed below:

January 2, 2024: PG&E provided the Agencies a draft variance proposal.
~~January XXXX XX, 2023~~ January 24, 2024: Agencies provided comments to PG&E.
XXXX XX, ~~20242023~~ 2024: PG&E provided responses to the Agency comments (Enclosure 3).

Given the risk that providing Project license–required flows with the reduced reservoir levels will lead to destabilizing drawdown rates and, in the worst case, reaching critical minimum pool at Lake Pillsbury, PG&E requests that the variance proposal take effect as soon as FERC approves the request.

Kimberly D. Bose, Secretary
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Page 20

If you have questions, concerns, or comments, please do not hesitate to contact Jackie Pope, license coordinator at (530) 254-4007.

Sincerely,

Janet Walther
Senior Manager, FERC License Management

Enclosures:

1. Biological Monitoring
2. Responses to Agency Comments

DRAFT