

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

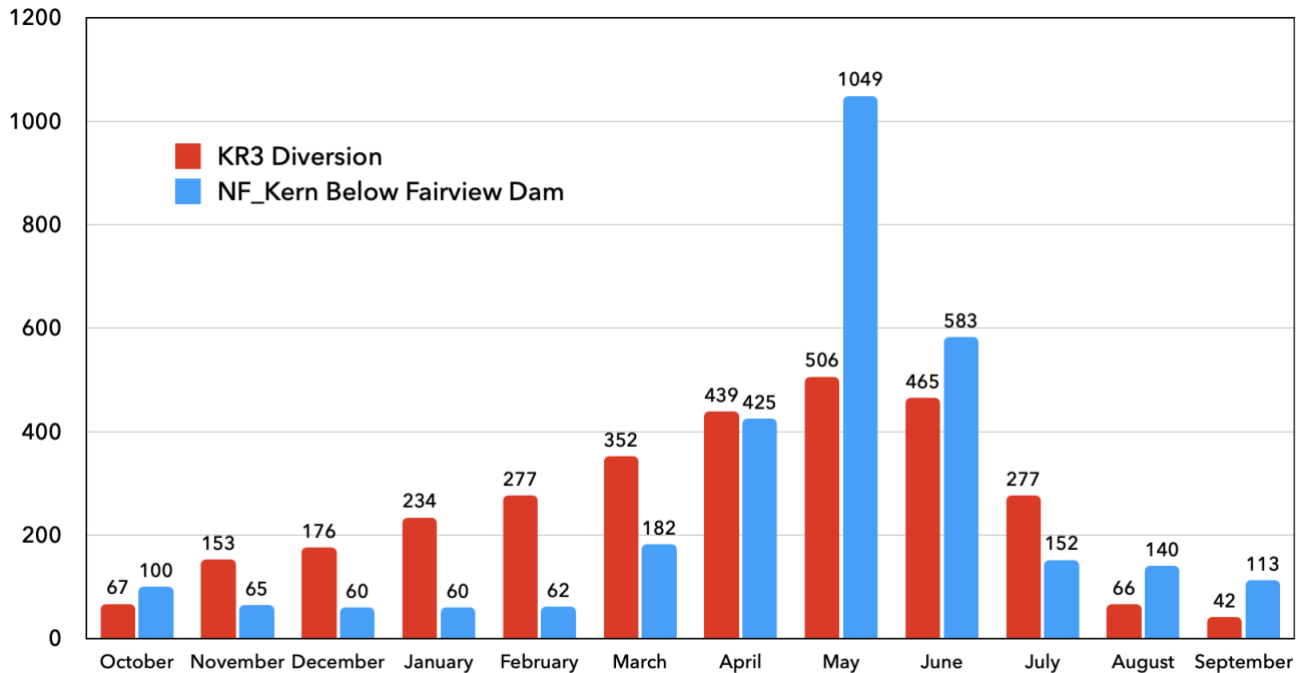
IN RE

**SOUTHERN CALIFORNIA EDISON
KERN RIVER NO. 3 HYDROPROJECT**

DOCKET NO. P-2290-122

**KERN RIVER BOATERS' COMMENTS AND
STUDY REQUESTS IN RESPONSE TO THE KR3
INITIAL STUDY REPORT AND ISR MEETING**

Median Monthly Flows, KR3 Diversion & NFKR Below Fairview Dam, WY 97-21 (cfs)



Source: SCE ISR REC-1 at pp. 24 & 28

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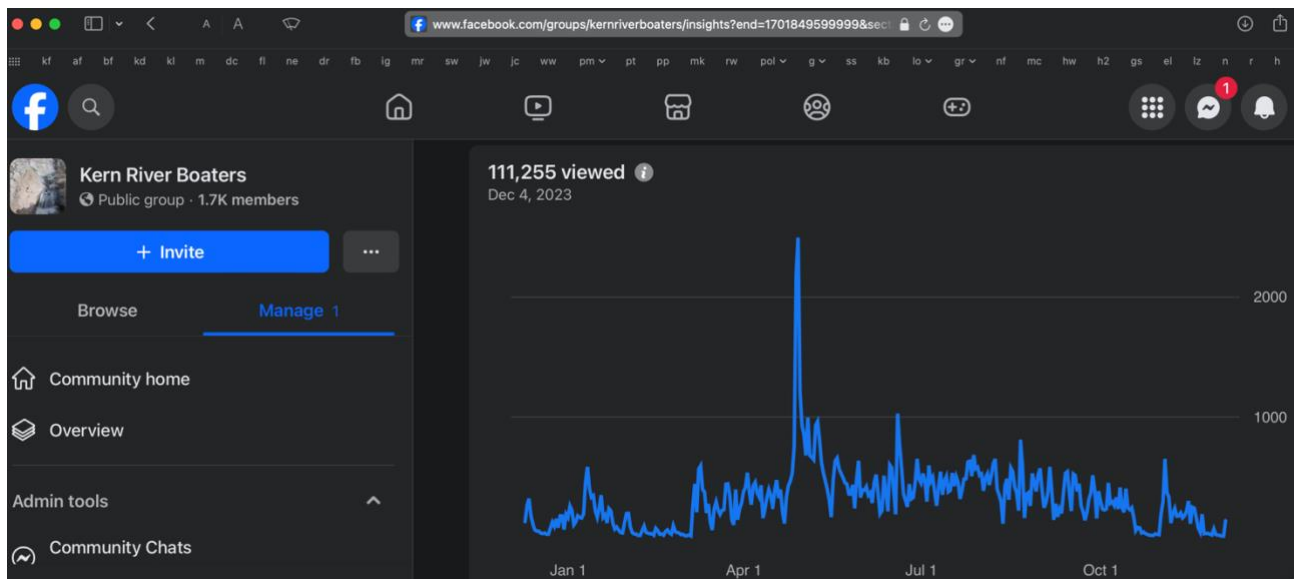
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STUDY REPORT AND ISR MEETING**

Introduction

Kern River Boaters has introduced itself and its interests in this proceeding to the Commission several times before. We will note that we have grown to over 1,700 members (from ~1,000 at the proposed study stage) and have seen more than 111,000 page views over the past year:



We would like to point out the fundamental disparity in this process. Our membership opposes the scope of this diversion — most oppose all of it — and our message is dependent on voluntary donations of time and money. Edison's employees and consultants, who are the only persons making the case for this diversion, are paid with

money earned from that diversion. “Money speaks for money,” it seems: money made from encumbering the river is used to speak for the continuation of encumbrance; the river itself — the case for un-encumbering it, or at least lessening the degree of encumbrance — gets none of that money. In that setting, the highest use of this common treasure can only be obtained if governing agents ensure the outcome reflects the public interest and not simply the gross imbalance of resources.

KRB WR-1.1 Water Quality. Bacterial Monitoring, Modification

Edison: Due to the lotic (i.e., flowing) conditions at riverine sites and low hydraulic retention of Fairview Dam and other diversion dams, all sites monitored showed generally low levels of fecal coliform during the sampling period between September 6 through 26, 2022. (ISR WR-1 at 11.)

KRB: We note that each of the four samples referenced by Edison was taken on a day that Edison diverted less than 2 cfs at Fairview Dam, as shown by the following table (cfs)¹:

DATE	NF_KERN BELOW FAIRVIEW	KR3 DIVERSION	INFLOW ABOVE FAIRVIEW DAM
2022-09-06	107	1.8	108.8
2022-09-12	190	1.8	191.8
2022-09-19	136	1.6	137.6
2022-09-26	116	1.5	117.5

The point of this proceeding is to capture project effects. Measuring water quality parameters above and below Fairview Dam at times of *de minimis* diversion does nothing to capture them, as they are primarily due to the project's diversion of water. The September 2022 bacteria tests should accordingly be run again in late Summer/early Fall 2024 to fulfill the purpose of WR-2: gathering meaningful data on project effects. We ask for that: good cause exists for the reasons stated, and such a modification is merited by the anomalous conditions under which the September 2022 tests were run.

¹ Table, methodology, and data available at the following Apple website:
https://www.icloud.com/numbers/0f8GIZ3_u3wJMKH4e4q386CgA#KR3_ISR_BACTERIA_FLOWS

KRB WR-2.1 Hydrology. Management Goals, Modification

EDISON: Table 5.2-2 summarizes these six EMGs [Ecological Management Goals], sorted chronologically by planning source. . . . Restore the structure and composition of riparian areas. *Sequoia National Forest Land and Management Plan (USFS, 2023)*. . . . Protect and restore cold-water ecosystems. *Strategic Plan for Trout Management: A Plan for 2004 and Beyond (CDFW, 2003)* [Emphasis added]. (ISR WR-2 at 17.)

KRB: Edison’s statement on CDFW is out of date, and its statement on USFS is incomplete. Both are accordingly at variance with the study plan.

CDFW recently (October 06, 2023) sent out an email touting its updated Strategic Plan for Trout Management, as depicted below:

CDFW Releases Updated Strategic Plans for Trout, Hatchery Management



What does the future of trout fishing, trout stocking and trout management look like in California? That vision is laid out in detail within two newly updated strategic plans released recently by CDFW. Developed with input from trout anglers, conservation groups, scientists and tribes, CDFW's Strategic Plan for Trout Management updates a document first published in 2003 and identifies the goals and guiding principles for CDFW's management of trout and landlocked salmon across the state. The Strategic Plan for Trout and Inland Salmon Hatcheries will guide the operations of CDFW's 13 trout and inland salmon hatcheries over the next decade.

In its updated plan², CDFW modified its management goals to include “improving wild trout populations” by — specifically — “identifying trout fisheries *impaired by dams that could benefit from revised flow regimes [and] more natural flow regimes.*” (CDFW Plan at 29.) We ask that the Commission direct Edison to correct the ISR with this updated management goal.

² Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213738&inline>

Edison further neglects the following goal from the USFS NFKR Wild and Scenic River Comprehensive Management Plan: “maintain or enhance viable populations of native wildlife and fish species,” conduct an “active program of stream habitat improvement,” maintain a “riffle to pool ratio [of] approximately 1:1,” and manage the area to “maintain or achieve adequate user safety and experience levels.”³ We ask that the Commission direct Edison to amend the ISR with this omitted management goal.

Good cause exists for these modifications: they correct variances from the study plan direction on identifying ecological management goals per the CEFF rubric (ISR WR-2 at 4), they serve the public and study plan interest in identifying management goals relevant to project hydrological effects, and they can be completed at little cost or effort to the license applicant.

³ 1994 USFS N&SFKR W&SR ROD & CMP, at CMP 24, 48-49 (.pdf pp. 49, 73-74), available: <https://drive.google.com/file/d/1n0D8equMZaOkwLNDGenEkV54n1WACWkp>

KRB WR-2.2 Hydrology. Travel Times, Modification

Edison: *Winter 2023—Summer 2024. Compile additional flow data to inform the flow travel time calculations. (ISR WR-2 at 23.)*

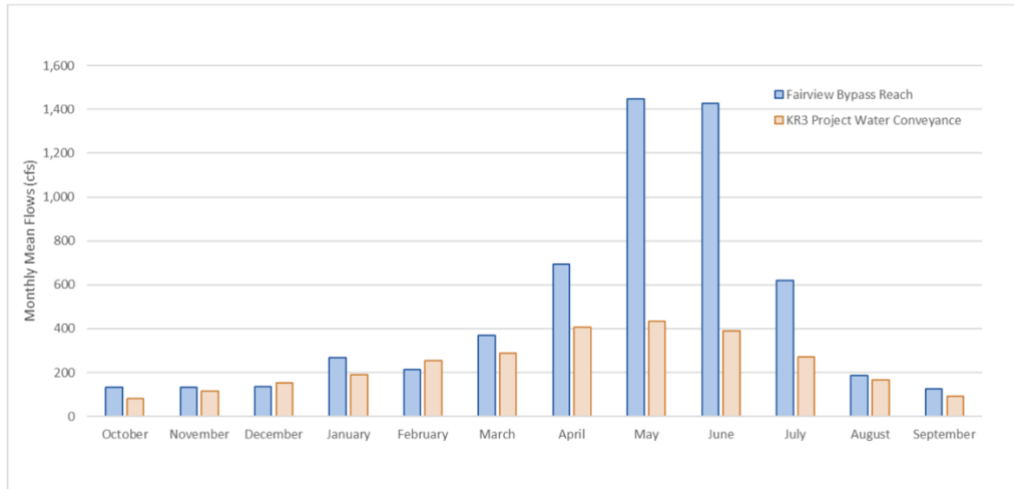
KRB: Unlike KRB's flow travel time proposal⁴, the SPD only required Edison to monitor the stick gauge at the powerhouse from April 01-July 31 and to calculate changes from 40 to 1,400 cfs. (SPD B-6.) There were no known diversion changes within those parameters this year, as flows below Fairview went above 1,400 in early April and never came back down before July 31, and we did not have a whitewater rec release in 2023.

Edison has not reported on this study, but given the facts above, this year's study season likely failed to provide usable data regarding flow travel times. The point of this study is to get reliable data on the time it takes a change in diversion to reach the bottom of the 16-mile dewatered reach. To date, it has been conducted under anomalous environmental conditions justifying modification. In order to ensure the success of this study, which for reasons discussed in the study design process is critically important to match up the timing of rec flows with the phenomenon of marginal/negative energy pricing and renewable curtailment in the CAISO grid footprint, FERC should require Edison to alter its diversion to quantify how long it takes a change of diversion of various degrees (100 cfs increments from 0-600 cfs per the SPD) at various levels of instream flow (40-1,400 cfs per the SPD) to reach the powerhouse through the dewatered reach. We ask that the Commission direct Edison to accomplish this task as soon as practical but prior to July 31, 2024, lest the opportunity to gather this critical data prior to the development of license conditions be lost. Good cause exists for this request for the reasons expressed: it is made to satisfy the goals of the approved study plan given last year's anomalously high flows.

⁴ KRB RSP at 15-16 & 37-40, available:
https://www.kernriverboaters.com/s/KRB_RSP.pdf

KRB WR-2.3 Hydrology. Median Flows, Modification

Edison: Figure 5.1-4. Monthly Mean Flow in the North Fork Kern River for the Fairview Bypass Reach and the Kern River No. 3 Water Conveyance, Water Years 1997–2022.



Source: SCE, 2023b; USGS, 2023a; USGS, 2023b

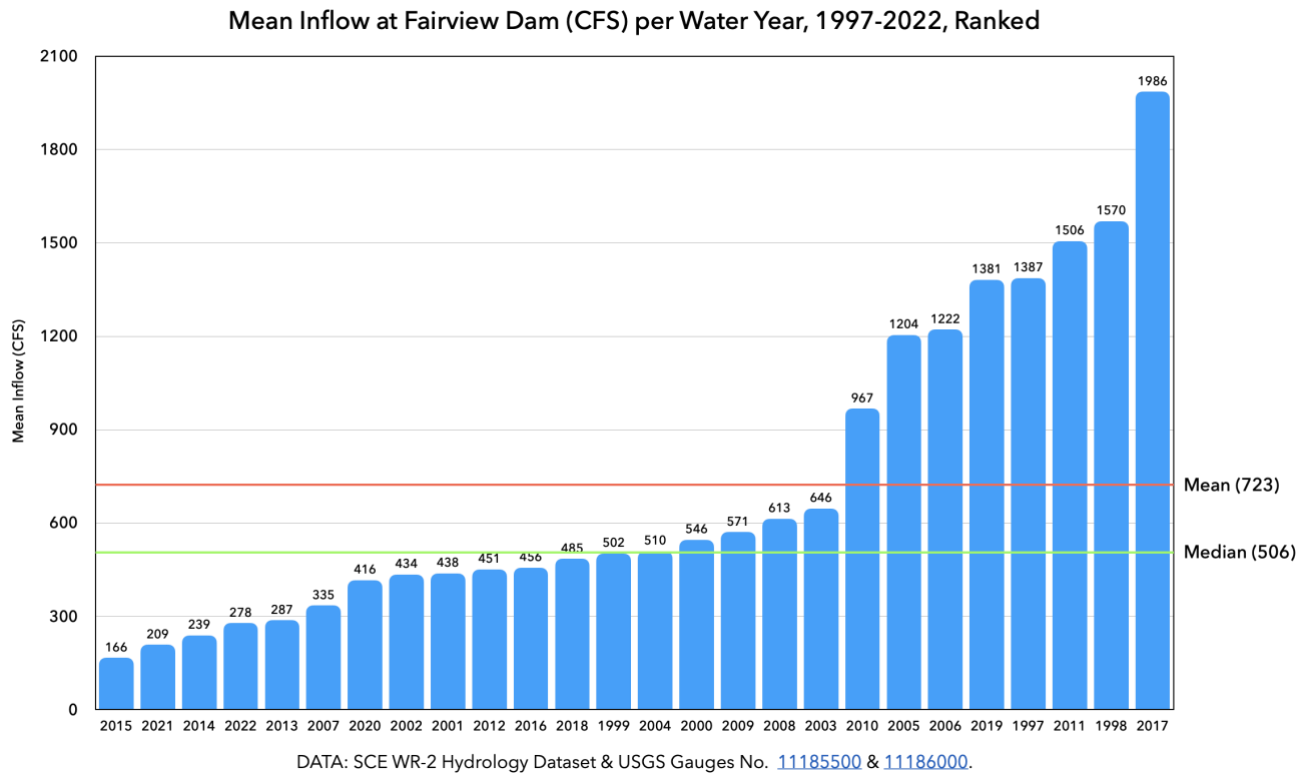
(ISR WR-2 at 10.)

KRB: As indicated by several participants at the October 17, 2023 ISR meeting, Edison’s use of the monthly *mean* for figure 5.1-4 (above) misleads its intended observers — governing agents and stakeholders — about typical project effects. It does so to such an extent it constitutes a variance from the study plan.

The mean is an appropriate representation of a system’s central tendency when its distribution is symmetrical. The distribution of water years in the NF Kern watershed is not symmetrical. Rather, it is asymmetrical, skewed by the presence of outlier high water years up to four times greater in water volume than the median. As a result, representing monthly flows over the years with the mean, as in Edison’s Figure 5.1-4, does not fairly represent the central tendency of project effects. Instead, it gives undue weight to a small proportion of extremely large values, namely, a small proportion of high-water years.⁵

⁵ Weisberg H.F (1992) “Central Tendency and Variability,” Quantitative Applications in the Social Sciences, p.2

The following chart ranks the annual mean⁶ inflow at Fairview Dam for each water year (October 01-September 30) in the current license term (WY 1997-2022), low to high⁷:



This is not a symmetrical distribution. More than two-thirds of the water years are below the mean, the mean is almost 50% higher than the median, and the maximum water volume is almost four times greater than the median (and will likely be more than four times greater when WY 2023 data becomes available). The distribution of water years in the NF Kern watershed is skewed heavily to the right by the presence of outlier high water years. As a result, it is the median — and *not* the mean — that more reliably represents the central tendency of KR3’s effect on this system.

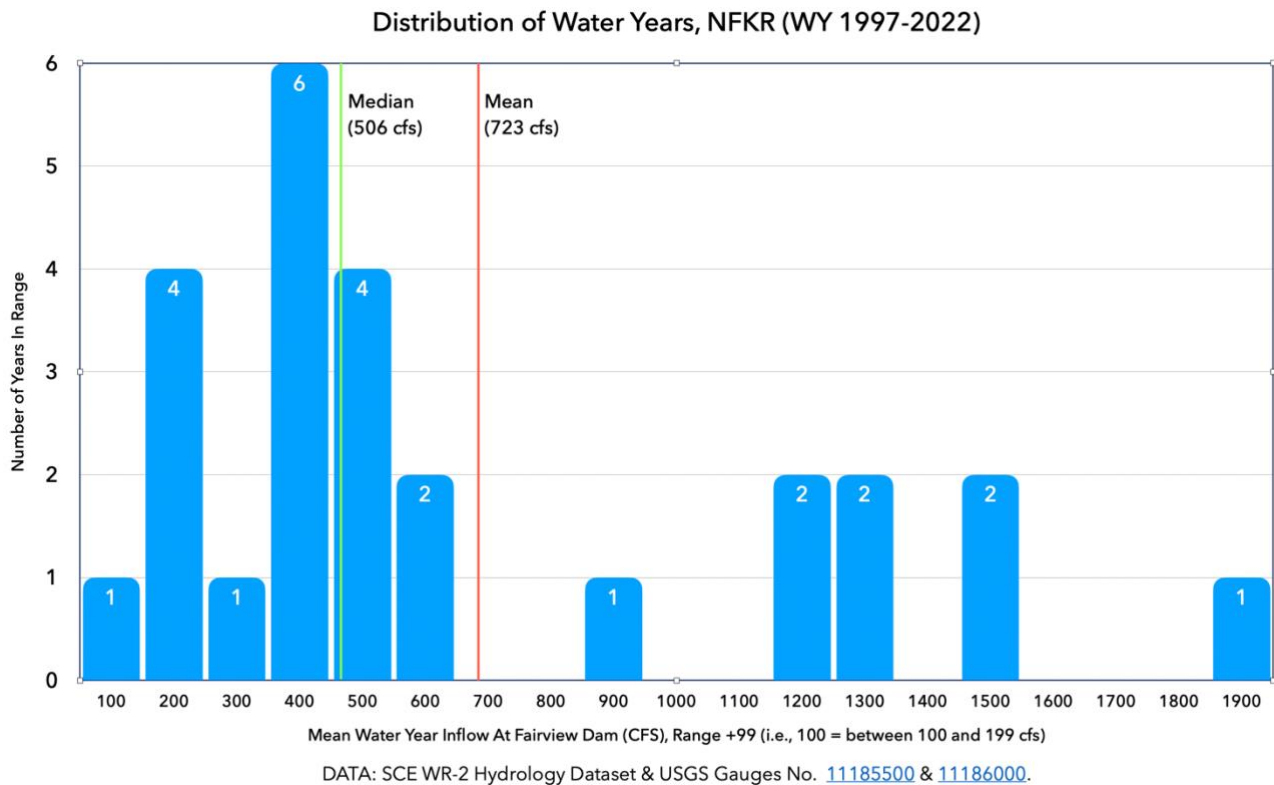
⁶ When characterizing and comparing water years, the mean is appropriate as it represents the gross volume of water in the system for each year; it is used by NOAA for those purposes. See, e.g.:

<https://www.cnrfc.noaa.gov/ensembleProduct.php?id=ISAC1&prodID=12>

⁷ Chart, methodology, and supporting data available at the following Apple website (Sheet 5, “NFKR Water Year Types, 97-22”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

The following histogram⁸ presents a second way to look at the distribution of water years on the NF Kern based on how many years the mean inflow at Fairview Dam fell within a 100 cfs window:



As shown by the gathering of water years towards the left and relatively fewer high-water years reaching out far to the right, the NF Kern watershed is an asymmetrical system whose distribution is skewed by outlier high water years. The central tendency of such a system is best represented by the median over a course of years rather than the mean. Indeed, Edison *used the median* as its graphical monthly flow representation in its PAD:

⁸ Chart, methodology, and supporting data available at the following Apple website (Sheet 5, “NFKR Water Year Types, 97-22”): https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

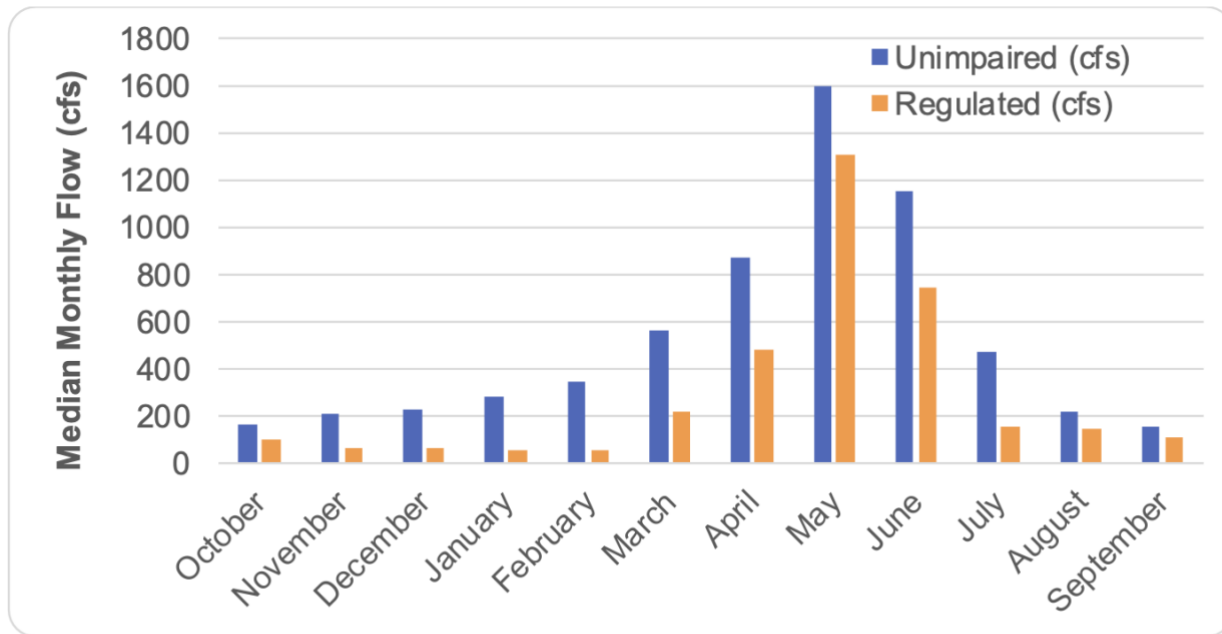


Figure 5.2-1. Unimpaired (sum of USGS gages 11185500 and 11186000) and Regulated (USGS gage 11186000) Median Monthly Flow in the North Fork Kern River, Water Years 1997–2019.

(SCE PAD at 5-25.)

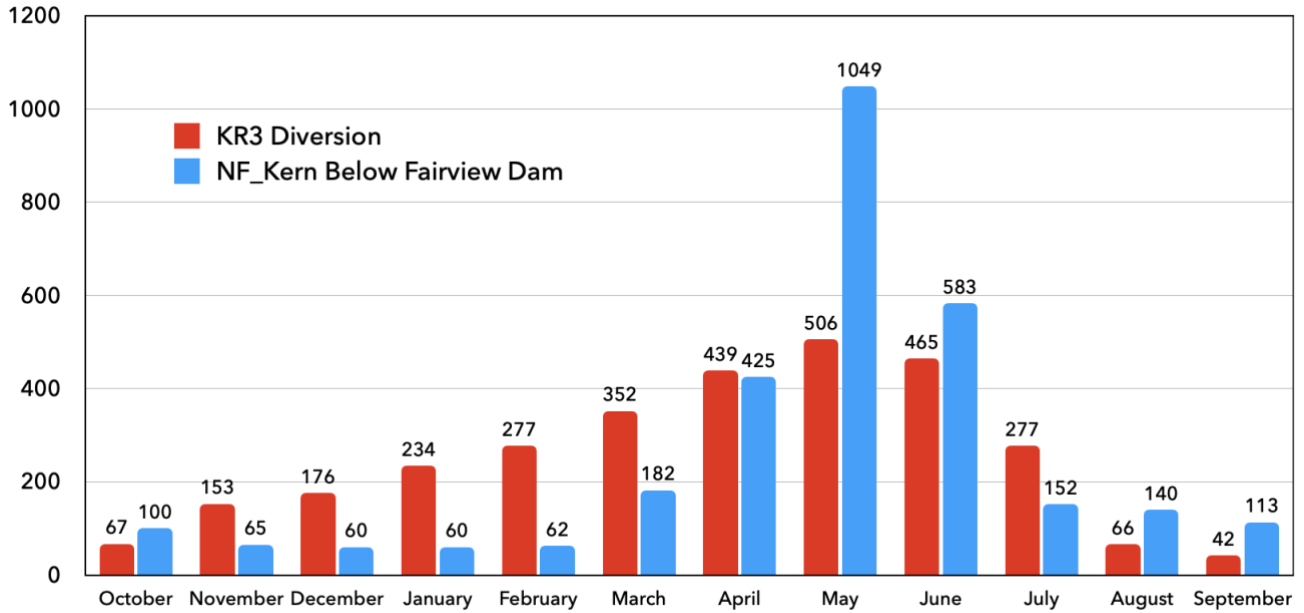
We agree with Edison’s methodology in the PAD (monthly medians) rather than its methodology in the ISR (monthly means). The monthly mean over-represents outlier high water years that misleadingly pad the typical quantity of flow below the diversion. The central tendency of project effects in this watershed — *i.e.*, those effects most likely to be faced by the living things dependent on the quantity of water flowing below Fairview Dam — are best represented, in monthly increments, by the monthly median, not the monthly mean.

A comparison of monthly median flows between the KR3 diversion and the NFKR Below Fairview Dam paints a far different picture of project effects than Edison’s Figure 5.1-4. The following chart and graph⁹ of median monthly flows was generated directly from Edison’s table data in the ISR¹⁰:

⁹ Chart, graph, methodology, and supporting data available at the following Apple website (Sheet 6, “KR3 Median Monthly Flows, 97-21”): https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

¹⁰ Table data at ISR REC-1 at pp. 24 [Table 5.1-7] & 28 [Table 5.1-9]

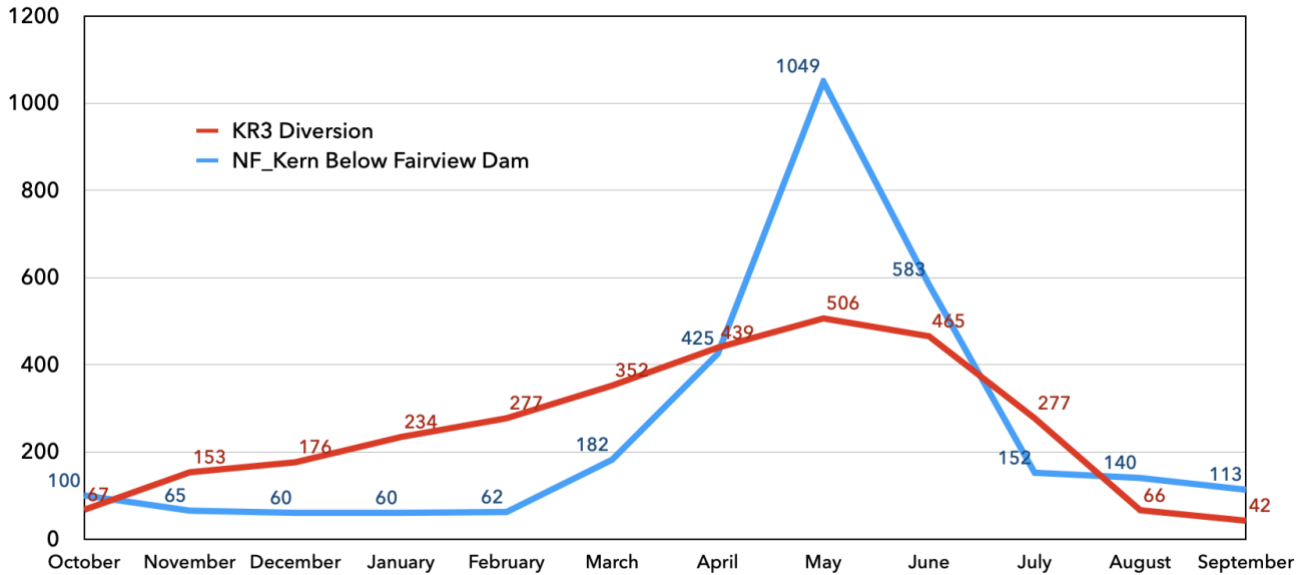
Median Monthly Flows, KR3 Diversion & NFKR Below Fairview Dam, WY 97-21 (cfs)



Source: SCE ISR REC-1 at pp. 24 & 28

Here is the same data represented in line form:

Median Monthly Flows, KR3 Diversion & NFKR Below Fairview Dam, WY 1997-2022 (cfs)



Source: SCE ISR REC-1 at pp. 24 & 28

As shown, the project dominates the use of inflows during all months save those with peak snowmelt (May and June) and moderate fish flow (August through September).

Edison further fails to remind viewers regarding Figure 5.1-4 or account for the fact therein that the project was offline 1,621 days out of 9,496 for repairs and rehabilitation

during the current license term. That’s more than 17% of the days.¹¹ (See SCE ISR WR-2 at 6 [project “zero flow days”].) Nothing guarantees the project will be offline for such a vast number of days in the next license period; if not, the project’s hydrological effects will expand.¹²

One way to represent typical project effects notwithstanding the confounding phenomenon of project outages is to pick the most representative water year where the project was not offline for an extended period of time. The water years closest to the median in the current license term are 1999, 2000, 2004 & 2018:

Mean Inflow (cfs) at Fairview Dam, WY 1997-2022, Ranked Low to High, Tertiles, Zero/Low Flow Days*

Water Year	Mean Inflow	Rank	Tertiles	Zero Flow Days	<i>De minimis</i> Flow (<3 cfs) Days
2018	485	12	2	0	0
1999	502	13	2	40	42
2004	510	14	2	16	17
2000	546	15	2	63	66

Median
506

We think 2018 is the most representative water year under these circumstances. WY 2018 is the closest year to either current median (WY 1999 & WY 2004) that has no zero or *de minimis* (<3 cfs) flow days. WY 2018’s inflow of 485 cfs amounts to 96% of the current median (506 cfs).¹³ And when the high water year of 2023 is added to the dataset, the median will move down to WY 1999 (502 cfs). WY 2018 is directly adjacent to WY 1999. For these reasons, 2018 is the most representative water year we have of project effects uncorrupted by project outages.

¹¹ Edison’s major repair projects during the current license term seek to eliminate outages going forward.

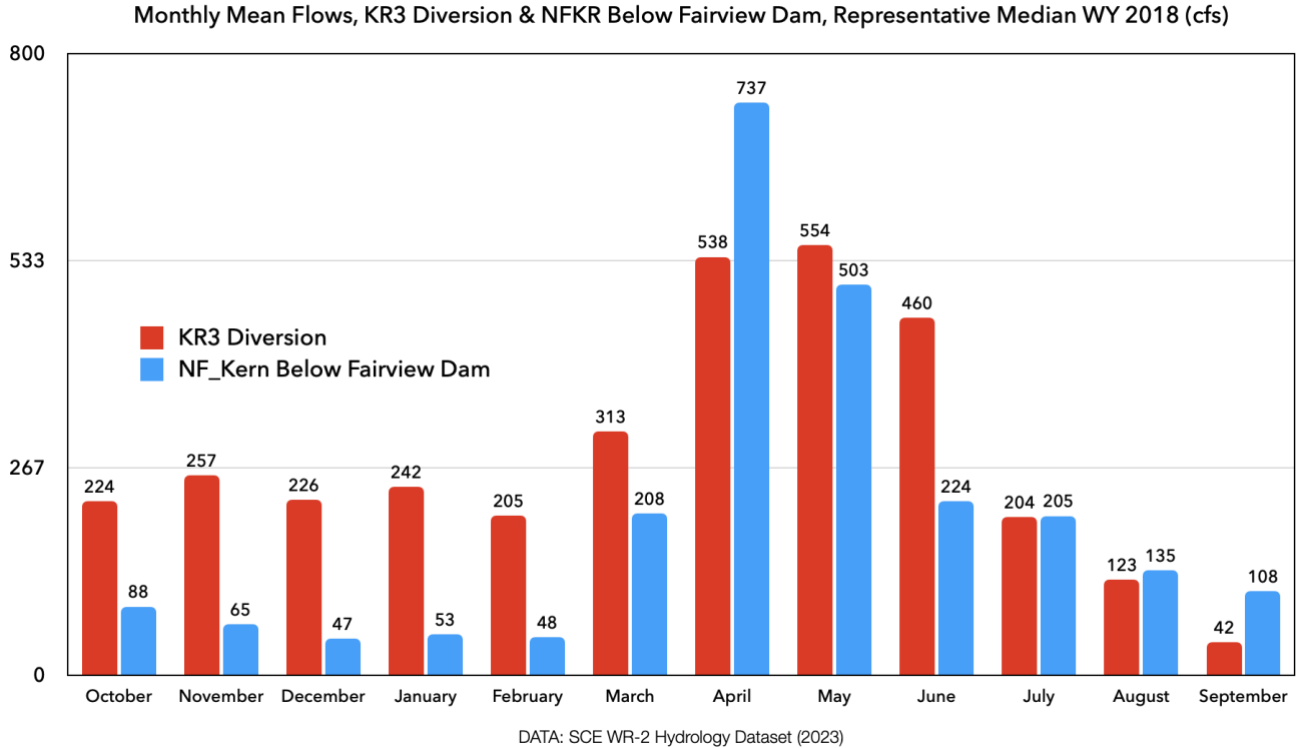
¹² See *ante*, fn. 7. Chart, methodology, and supporting data available at the following Apple website (Sheet 5, “NFKR Water Year Types, 97-22”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

¹³ Edison has not provided hourly flow data prior to WY 2005 due to “technical data storage limitations.” (ISR WR-2 at 4.) Of the hourly dataset SCE has provided, WY 2018 is the median. See Sheet 19, “NFKR Water Year Types, 05-21”) at:

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

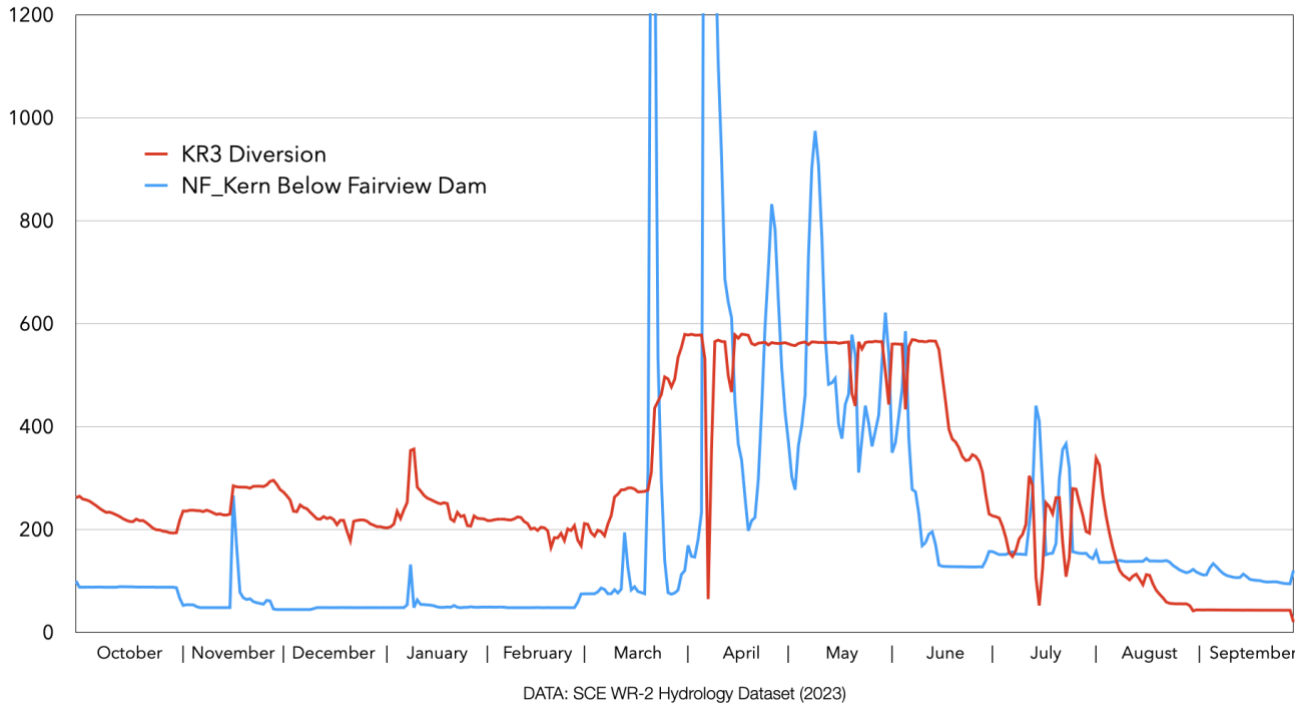
The monthly and daily flow hydrographs for WY 2018 follow¹⁴:



¹⁴ Charts, methodology, and supporting data available at the following Apple website (Sheet 10, “KR3 Representative WY (2018)”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

Daily Mean Flows, KR3 Diversion & NFKR Below Fairview Dam, Representative WY 2018 (cfs)



The above graphs again show the project dominating the use of water in this representative median year in all but a handful of storms and rec release days during the runoff season and two months of moderate fish flows. KR3 reduces the river below Fairview Dam to levels at or near fish flow for almost ten months of the year. In fact, KR3 diverted more water than it left in the river more than 75% of the days that year, and the project averaged 282 cfs for the year while the river below the diversion averaged just 202¹⁵:

KR3 Daily Data, Representative WY 2018, KR3>NFKR & Mean

IS KR3 > NFKR?	DAYS	Percentage	2018	Mean Flow
"YES"	275	75.3%	KR3	282
"NO"	90	24.7%	NFKR BELOW FVD	202
TOTAL DAYS	365			

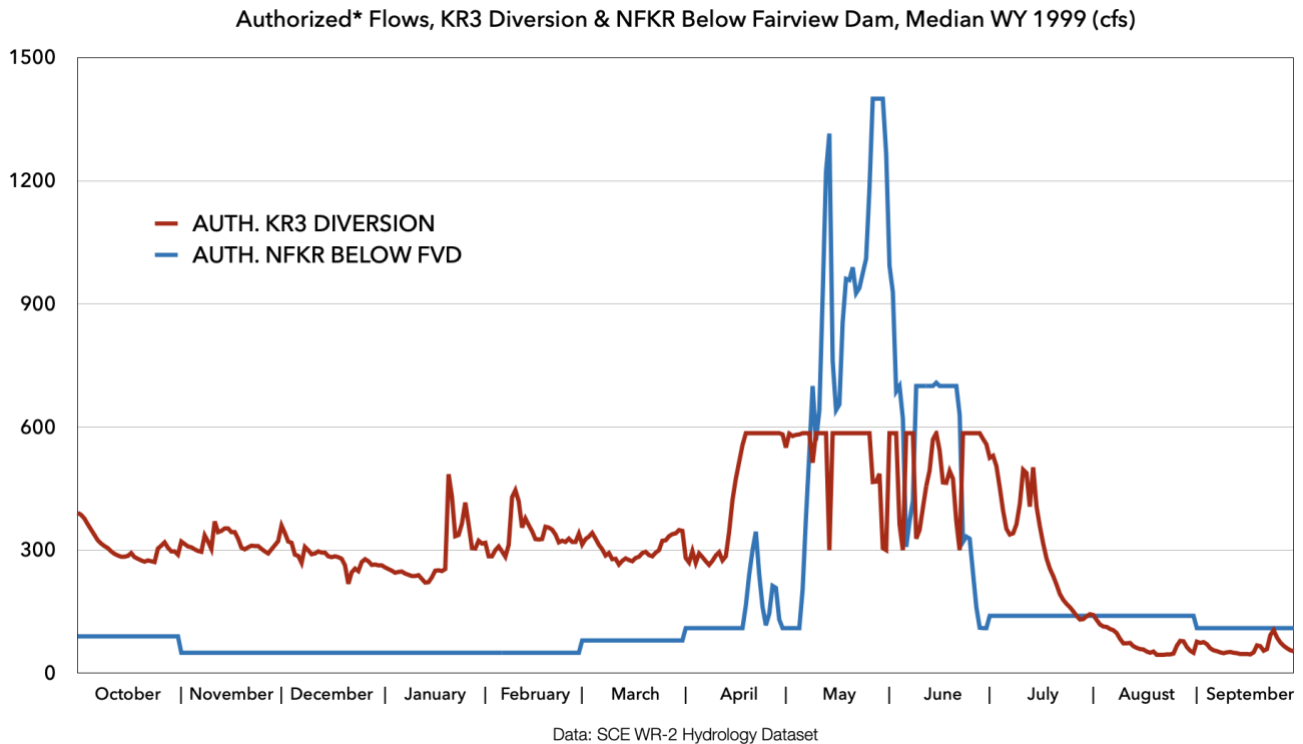
These are far fairer and more faithful representations of the project's hydrological effects than those provided by Edison.

¹⁵ Table, methodology, and supporting data available at the following Apple website (Sheet 8, "KR3/NFKR Counts"):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

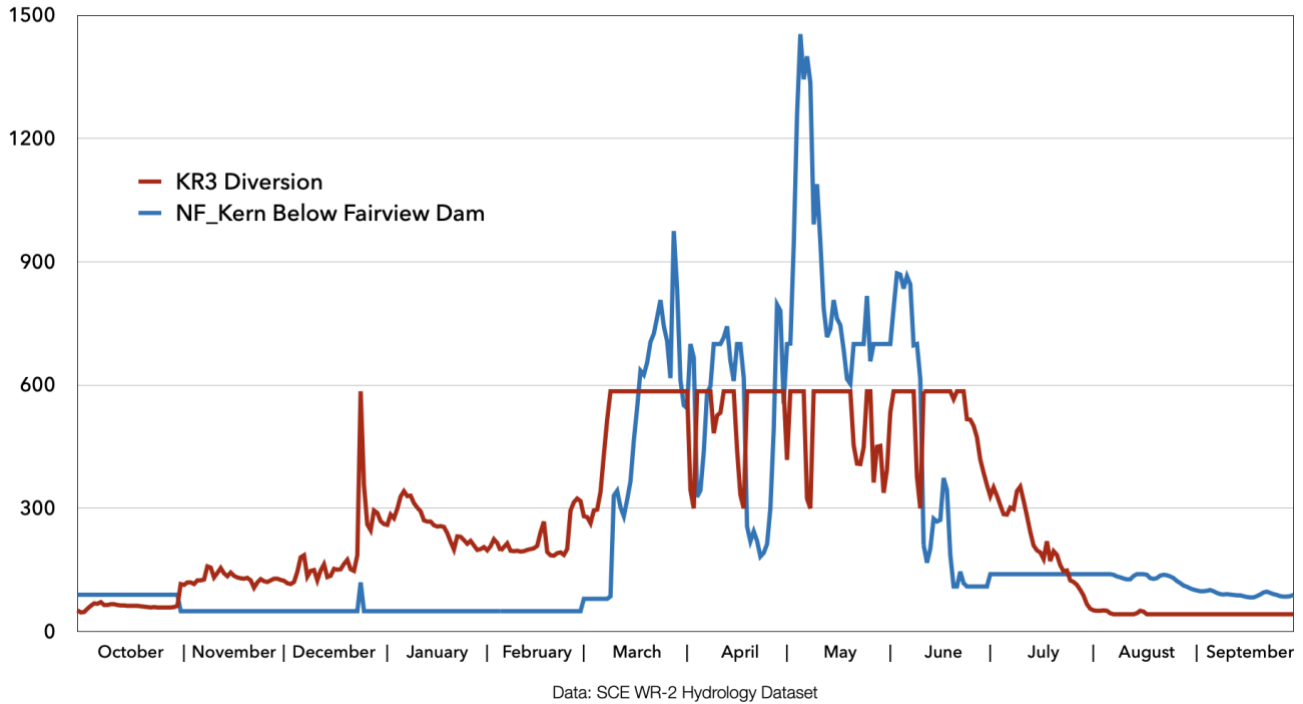
We propose going one step further in removing the confounding effect of project outages: provide a table of flows *authorized* by the present license against the natural inflows at Fairview Dam. Governing agents and stakeholders should have a clear understanding of what flows are authorized by the current license, especially since Edison has proposed no new license conditions to support the natural or social environments.

The authorized flow numbers show the following daily averages for median water years 1999 & 2004¹⁶:



¹⁶ Charts, methodology, and supporting data available at the following Apple website (Sheet 12, “KR3 Authorized Median WYs (2004 & 1999)”): https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

Authorized* Flows, KR3 Diversion & NFKR Below Fairview Dam, Median WY 2004 (cfs)



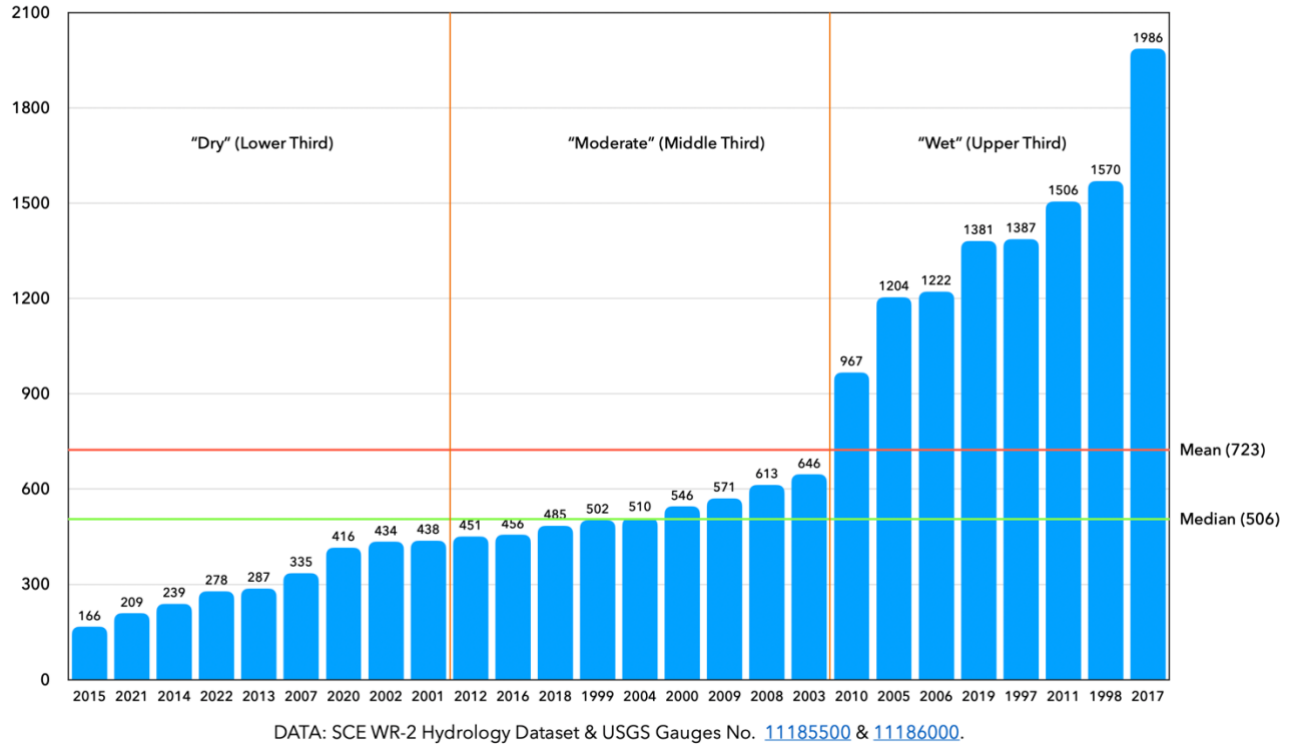
The project again dominates the use of water during these representative median years in all but peak runoff and moderate fish flow months, and reduces the river to fish flow for nine to ten months.

Finally, to paint a picture of project effects in varying water year types, we divided NFKR water years into thirds (wet, moderate, and dry) and analyzed mean authorized flows¹⁷:

¹⁷ Using the mean for *classes* of water year is more appropriate than using it for all water years, for the groupings of water years by class lead to less asymmetry, as shown in the following chart. Chart, methodology, and supporting data available at the following Apple website (Sheet 5, “NFKR Water Year Types, 97-22”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

Mean Inflow at Fairview Dam (CFS) per Water Year, 1997-2022, Ranked

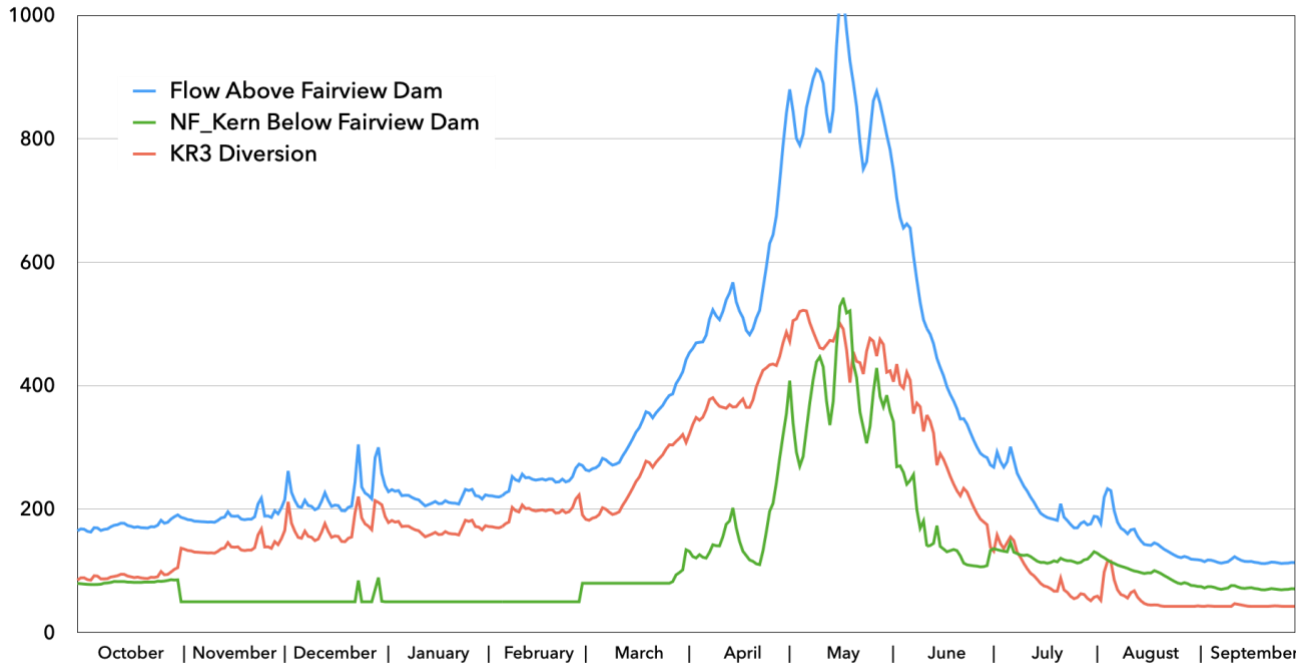


To obtain thirds for our 26-year dataset (WY 1997-WY 2022), we chose to use only the 8 highest years for the third “wet” tertile instead of the 9 we used in the other two, for two reasons: First, to maintain divisibility into an integer. Second, WY 2023 was undoubtedly a “wet” year, so we have “saved a place for it.” We will update all charts with WY 2023 data when it becomes available. That data will have *some* impact on our wet year graphs that follow, but will have zero impact on the moderate and dry year graphs.

The results of our analysis follow¹⁸:

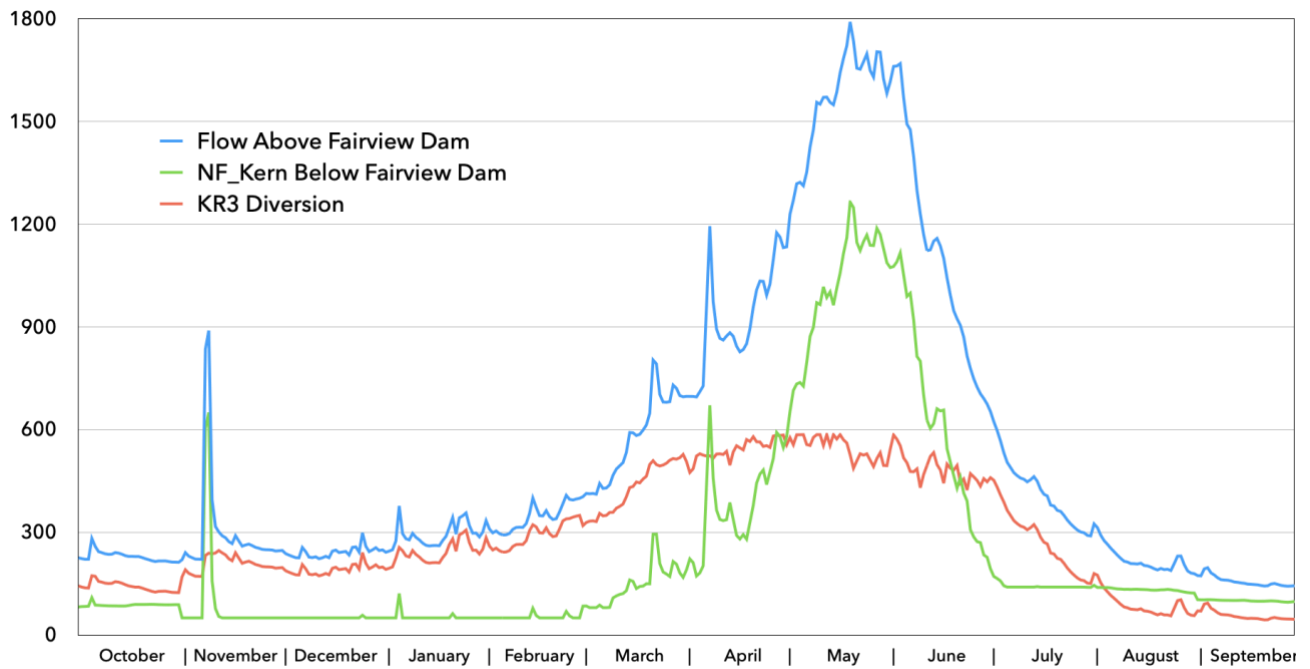
¹⁸ Charts, methodology, and supporting data available at the following Apple website (Sheet 13, “KR3 Authorized Flows by Tertile, 97-22”): https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

Authorized* Daily Mean Flows (cfs), "Dry" (First Tertile) Water Years, 97-22



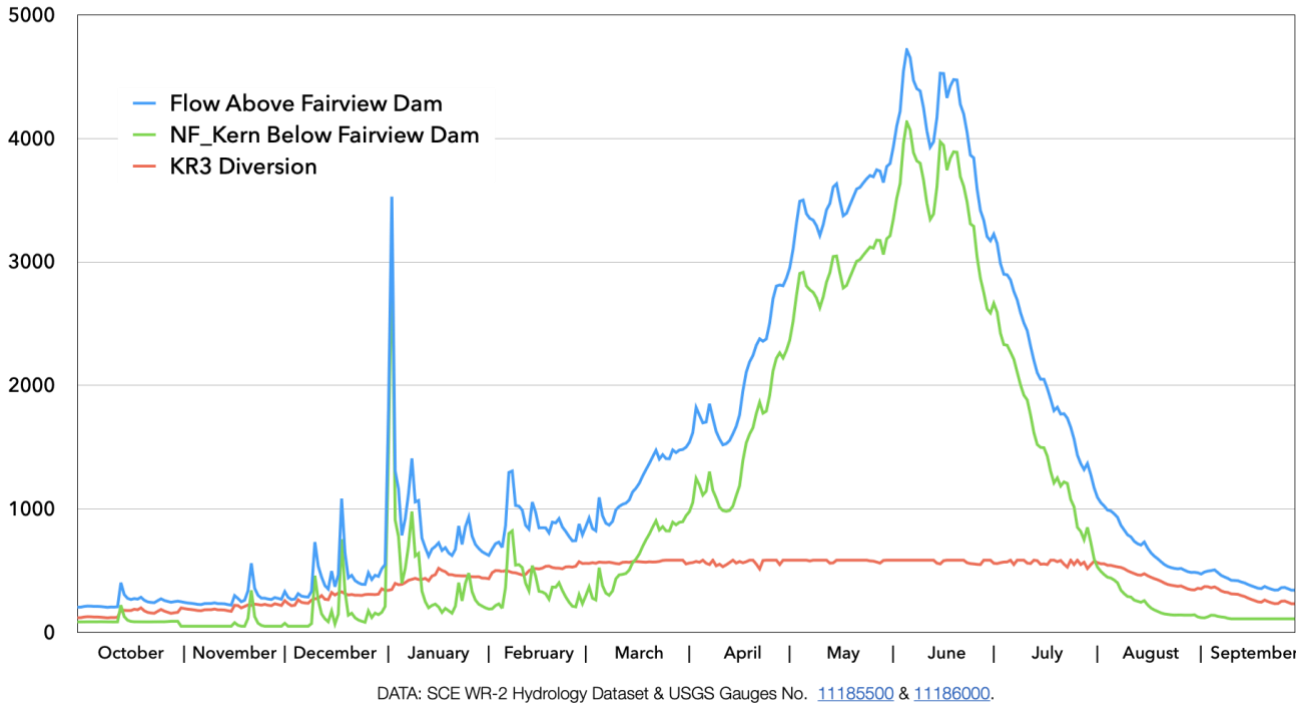
DATA: SCE WR-2 Hydrology Dataset & USGS Gauges No. [11185500](#) & [11186000](#).

Authorized* Daily Mean Flows (cfs), "Moderate" (Second Tertile) Water Years, 97-22



DATA: SCE WR-2 Hydrology Dataset & USGS Gauges No. [11185500](#) & [11186000](#).

Authorized* Daily Mean Flows (cfs), "Wet" (Third Tertile) Water Years, 97-22



Several points are apparent in the three graphs above. In dry years, the river below Fairview Dam barely and briefly breaks 450 cfs due to the project diversion, compared with natural inflows that remain over 450 cfs for several months reach up to 1,000 cfs. In moderate years, the river below the dam crests 450 cfs for about two months, while natural inflows remain above that figure for about four — the project reduces flows at and over that magnitude by half. In wet years, the river below the dam loses about four months of flows above 450 cfs to the project. Importantly, in each set of years, the project reduces the river to fish flow no matter the magnitude of mean inflow at Fairview Dam: eight or more months of fish flow in moderate and dry years, and four months in wet years. Finally, we come full circle to the issue of project effects and outlier high water years: as the water year sets go from dry to wet, the “red line” of project effects in each graph decreases in relative magnitude to the others — dramatically so in wet years. That is because the project’s hydrological effects are capped by its inability to divert more than about 600 cfs. Project effects are least pronounced during the runoff months of wet water years but are incredibly significant during those months in moderate and dry years. And in all years — even wet ones — the project dewateres the river to fish flow (or lower due to the Hatchery Flow) for months and months at a time — more than two-thirds of the months during two-thirds of the years.

Based on the preceding analysis, we ask that the Commission modify the WR-2 study to require summaries based on median monthly flows and account for the time the project was offline. Good cause for this request is as follows: FERC studies are supposed to be

based on commonly used scientific methodologies. WR-2 seeks to summarize fair representations of project hydrological effects. (RSP WR-2 at 1.) Edison has not provided those, offering instead a summary of monthly effects that are (1) based on monthly means and (2) based on long periods of time the project was offline and could have no effect. No generally accepted scientific practice would use the mean over the median to represent project effects on hydrology given the asymmetrical distribution of water years over the license term. Nor would a generally accepted scientific practice fail to account for time the project was offline in such a representation, given that the Edison has proposed no new license conditions and such large swaths of offline time for repairs and rehabilitation cannot be guaranteed going forward — to the contrary, Edison spent millions and millions of dollars during this last term ensuring the project would not have such lengthy outages in the next term. The WR-2 ISR is accordingly at variance with the approved study. It should be corrected in the manners we have shown above, but at the very least the summaries should use the median to represent the central tendency of the diversion and make a good-faith effort to account for times there was no diversion. This is entirely desktop work, and we completed our summaries with less than 20 hours of analysis for a total estimated cost of about \$3,000. We have provided the blueprints for such in our linked spreadsheet, making the task even easier for Edison. Given the importance of the WR-2 summaries in this process, the misleading nature of Edison's work to date, and the relatively small cost to the licensee, good cause for this request exists.

KRB WR-2.4 Hydrology. Authorized Flows Tables, New Study

Criterion (1) – Describe the goals and objectives of each study proposal and the information to be obtained.

The goal of this study is to characterize and summarize project hydrological effects unconfounded by times the project was offline for repairs and rehabilitation. The objective is to create a dataset of daily and hourly flows for the KR3 diversion and the dewatered reach below Fairview Dam that are authorized by the present FERC license under the WR-2 gauge record of inflows for the current license term (WY 1997-WY 2022).

Criterion (2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Not applicable.

Criterion (3) – if the requester is not a resource agency, explain any relevant public interest considerations in regards to the proposed study.

The Commission is charged by the Federal Power Act to balance developmental values with “the protection, mitigation of damage to, and enhancement of, fish and wildlife ..., and other aspects of environmental quality” in its formation of hydropower licenses. The California Department of Fish and Wildlife (CDFW) is the relevant State fish and wildlife agency for resource consultation pursuant to the Federal Power Act Section 10(j).¹⁹ CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species.²⁰ Information generated through this study will further inform the managing agencies’ goals by providing a modern, state of the art science-based flow assessment and recommendation that balance ecosystem and human needs for water. USFS is responsible under Section 7 of the Wild and Scenic River Act with evaluating whether a proposed license renewal for KR3 would cause any direct and adverse consequences on the outstanding resource values provided by the North Fork Kern. The 1994 W&SR CMP directs USFS to “maintain or enhance viable populations of native wildlife and fish species” in the project area, conduct an “active program of stream habitat improvement,” maintain a “riffle to pool ratio [of] approximately 1:1,” and manage the area to “maintain or achieve adequate user safety and experience levels.”²¹ None of these management goals can be obtained without an accurate and comprehensive understanding of project hydrological effects. The authorized flow dataset promises to provide such an understanding free of the confounding phenomenon of

¹⁹ 16 U.S.C. § 803(j)

²⁰ Fish & Game Code § 1802

²¹ 1994 USFS N&SFKR W&SR CMP 24, 48-49

project time when the project was offline for repairs — especially since those outages cannot be guaranteed going forward and the license applicant has proposed no new conditions and is seeking a continuation of the license *status quo* but with a higher rate of project reliability.

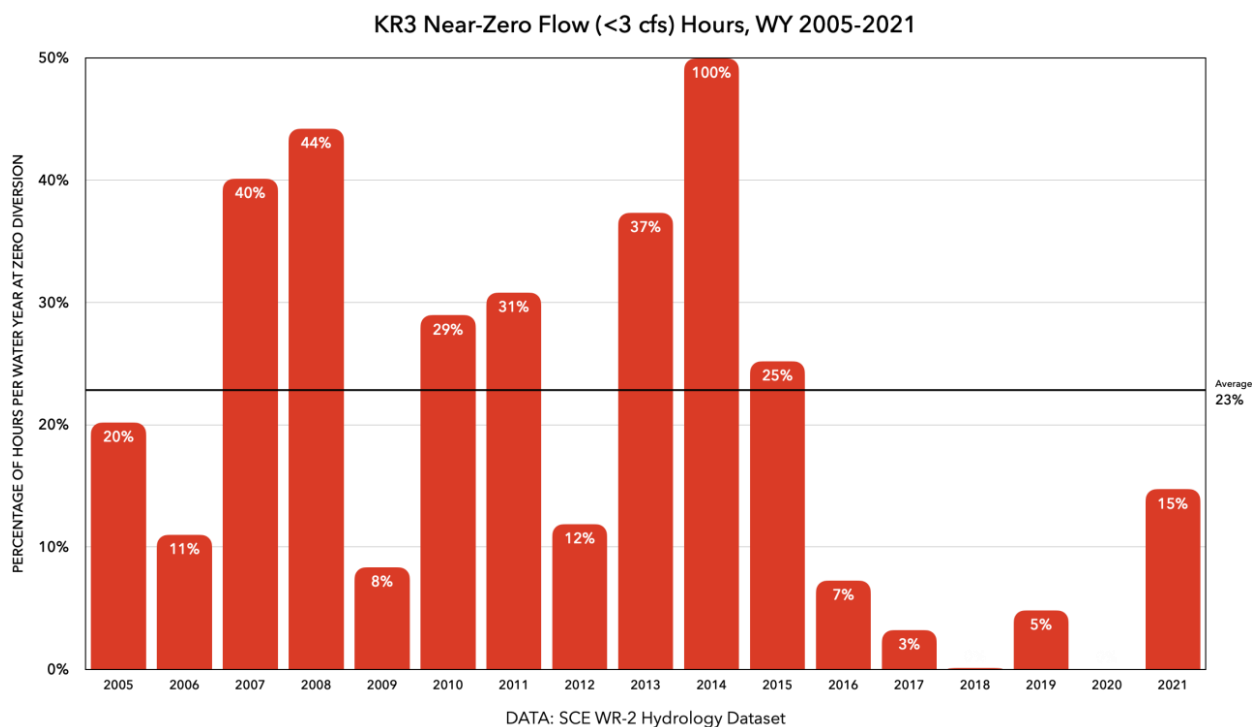
Criterion (4) – Describe existing information concerning the subject of the study proposal, and the need for additional information.

Edison maintains two gaging stations to monitor and record flows associated with Project operation. The gauges record flow in NFKR below Fairview Dam and within the KR3 conveyance flowline. These gauges are operated with independent review by USGS. Edison throughout ISR WR-2 has presented that data *as representative of project hydrological effects*. (See ISR at 4 [“to characterize the hydrology in the NFKR, the daily data were summarized monthly and annually using statistical parameters such as maximum/minimum flows and mean and median flows”] 6 [“NFKR hydrograph (seasonal streamflow pattern) for the Fairview Dam Bypass Reach”] & 7-15 [set of tables and graphs based on gauge data].)

The WR-2 dataset includes significant quantities of hours and days when the project is offline due to repairs or rehabilitation. There are obviously zero or *de minimis* project hydrological effects during those times. Those times account for 23% of the hours in the Edison WR-2 hydrology dataset²²:

²² Tables, methodology, and supporting data available at the following Apple website (Sheet 9, “KR3 Zero/Low Flow”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD



Edison has not guaranteed the project will be fully or partially offline to the same degree in the next license term. To the contrary, it has undertaken the repairs and rehabilitation that caused these outages to increase project reliability. To have an accurate understanding of project hydrological effects going forward under the current license regime — which is the starting point in this proceeding since Edison has proposed no operational changes to support the natural or social environments — one must account for these outages. To do so, this study proposes to identify the hydrological effects that are *authorized* by the current license. This is the only proposed study to do so and account for those outages.

Criterion (5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

Project operations influence streamflow hydrology along the bypassed reaches downstream of Fairview Dam on the North Fork Kern River. The tables of authorized flows generated by this study would be used to analyze the natural, social, and generational effects of Edison’s *status quo* relicensing proposal going forward and establish a hydrological baseline of the current license against which proposed license conditions could be measured.

Criterion (6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule

including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

The authorized flows dataset would be constructed pursuant to the terms of current license to claims of incoming flows at Fairview Dam between the project and the dewatered reach in the following order of precedence:

1. Hatchery Flow Diversion: a diversion of 35 cfs plus 7.5 cfs (halfway between the 5-10 cfs “buffer” procured by Edison; see SCE PAD at 4-16).
2. Minimum Instream Flow: flows below Fairview Dam of 40-130 cfs, depending on the month, plus a 10 cfs buffer pursuant to Edison’s historical operations ensuring MIF compliance.
3. Tunnel Maintenance Flow Diversion: a diversion of the next 300 cfs at all times.
4. Rec Release Flows: a targeted flow below Fairview Dam of 700 or 1,400 cfs depending on the calendar and the prior day’s average inflow at Fairview, subject to reduction based on current inflows and the precedence of the Tunnel Maintenance Flow. (This flow causes operational changes at KR3 less than 8 days a year on average.)
5. KR3 Diversion: a maximum diversion of 585 cfs based on Edison’s historical operations.

The foregoing rules would be applied to inflows at Fairview Dam for the license term, and the results would be provided in the same formats as the WR-2 hydrology dataset.

We have used this methodology to create an authorized flow dataset for both the WR-2 daily and hourly datasets.²³ Edison would validate or correct our effort, if needed, and publish its results in the manner of the WR-2 hydrology dataset.

Criterion (7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

This is a purely desktop study. KRB’s efforts involved less than 10 hours of spreadsheet work for an estimated cost of less than \$1,500. No other study offers to correct the WR-2 hydrological dataset as a representative of project effects going forward under

²³ Tables, methodology, and supporting data available at the following Apple website (Sheet 11, “KR3 Authorized Daily Flows, 97-22”) & Sheet 16, “KR3 Hourly Authorized, 05-21”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

current license conditions from the confounding phenomenon of significant amounts of hours and days during which the project was offline for repairs or rehabilitation.

Criterion (8) – Describe any material changes in the law or regulations applicable to the information request has occurred.

None known.

Criterion (9) – Describe why the goals and objectives of any approved study could not be met with the approved study methodology.

No alternative hydrological studies correct the present WR-2 dataset as a representation of project effects going forwards by accounting for the phenomenon of widespread outages unlikely to be repeated in the next license term.

Criterion (10) – Describe why the request was not made earlier.

Edison first acknowledged that there were any “zero flow days” affecting hydrology in the ISR — well after the SPD. (ISR WR-2 at 6.) It made no mention of such in the PAD or during the study development process. That hydrological acknowledgement amounts to a significant 17% of the current term: 1,621 of 9,496 days. The WR-2 hydrology hourly dataset (05-21) additionally revealed the fact that an even higher percentage — 23% — of total hours where the diversion was less than 3 cfs. This information was provided months after the SPD (June 30, 2023), even though stakeholders had been asking Edison for hydrology data since the earliest TWG meetings.²⁴

Criterion (11) – Describe whether significant change has occurred in the project proposal, or significant new information material to the study objectives has become available.

None known.

Criterion (12) – Describe whether good cause exists for this request.

Edison in the ISR reported on studies purporting to summarize project hydrological effects. Edison produced those summaries without any attempt to account for the fact that the project was offline for large periods of the current license term due to repairs and rehabilitation — contingencies not guaranteed to occur at anywhere near the same rate going forward. Since Edison has proposed no new license conditions, and since it has not promised the project will be offline at anywhere near the extremely high rate it was during the last license term — 23% since 2005 — Edison’s summaries do not accurately represent project hydrological effects going forward under its proposal, either for the environment or

²⁴ See KRB SD2 at 35 & fn. 116. Available: https://www.kernriverboaters.com/s/KRB_SD2_PSP_COMMENTS.pdf

recreation. Given the importance that project hydrological effects be understood, Edison's late acknowledgement (but no hydrological accounting of) of this salient point — past the PAD, past the SPD — and the small cost and effort required to produce a dataset that accounts for these outages, good cause exists for this study to go forward.

KRB WR-2.5 Hydrology. CEFF Below Fairview Dam, New Study

Criterion (1) – Describe the goals and objectives of each study proposal and the information to be obtained.

The goal of this study is to characterize and summarize project hydrological effects on the dewatered reach below Fairview Dam using the already collected and existent gauge data. The objective is to determine, compile, and summarize CEFF natural functional flow ranges based on available gauge data for the license term *below* Fairview Dam.

Criterion (2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Not applicable.

Criterion (3) – if the requester is not a resource agency, explain any relevant public interest considerations in regards to the proposed study.

The Commission is charged by the Federal Power Act to balance developmental values with “the protection, mitigation of damage to, and enhancement of, fish and wildlife ..., and other aspects of environmental quality” in its formation of hydropower licenses. The California Department of Fish and Wildlife (CDFW) is the relevant State fish and wildlife agency for resource consultation pursuant to the Federal Power Act Section 10(j). CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species. Information generated through this study will further inform the managing agencies’ goals by providing a modern, state of the art science-based flow assessment and recommendation that balance ecosystem and human needs for water. USFS is responsible under Section 7 of the Wild and Scenic River Act with evaluating whether a proposed license renewal for KR3 would cause any direct and adverse consequences on the outstanding resource values provided by the North Fork Kern. The 1994 W&SR CMP directs USFS to “maintain or enhance viable populations of native wildlife and fish species” in the project area, conduct an “active program of stream habitat improvement,” maintain a “riffle to pool ratio [of] approximately 1:1,” and manage the area to “maintain or achieve adequate user safety and experience levels.”²⁵ None of these management goals can be obtained without an accurate and comprehensive of project hydrological effects. CEFF provides a state-of-the-art scientific framework for characterizing and summarizing project hydrological effects against functional flow metrics scientifically tailored for this watershed.

²⁵ 16 U.S.C. § 803(j); Fish & Game Code § 1802; 1994 USFS N&SFKR W&SR CMP 24, 48-49, available:

<https://drive.google.com/file/d/1n0D8equMZaOkwLNDGenEkV54n1WACWkp>

Criterion (4) – Describe existing information concerning the subject of the study proposal, and the need for additional information.

SCE currently maintains two gaging stations to monitor and record flows associated with Project operation. The gages record flow in NFKR below Fairview Dam and within the KR3 conveyance flowline. These gages are operated with independent review by USGS. Depending on the period of record required, this data might be available electronically, on floppy disk, or on paper. SCE has already provided these datasets for the period from 1997-2022.

Separately, and as a part of WR-2, SCE has retrieved and provided the natural flow estimates developed by the CEFWG's Natural Flows database (<https://rivers.codefornature.org>) (Zimmerman 2023). This data uses machine learning models to estimate natural functional flow metrics *above* Fairview Dam. (ISR WR-2 at 4-6 & 15-23.)

This study proposes to use the existing dataset and the eFlows tools provided from the same CEFWG (<https://eflows.ucdavis.edu/>) (Lane 2023) in order to perform the same analysis methodology on the existing dataset in order to establish functional flow metrics *below* Fairview Dam, and visualize the impaired streamflow compared to unimpaired. KRB has run the CEFF analysis on WY 1997 – WY 2022 data from USGS gauge 11186000 (dewatered reach below Fairview Dam). No such analysis has been run elsewhere in the study process or FERC record.

Criterion (5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

Project operations influence streamflow along the bypassed reaches downstream of Fairview Dam on the North Fork Kern River. Gauge data which has already been collected and verified in this study would be used to analyze environmental effects of Edison's relicensing proposal and reasonable alternatives.

Criterion (6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

Calculate flow ranges for the NFKR *downstream* of Fairview Dam with existing gauge data consistent with Section A of the California Environmental Flows Framework (CEFF). (CEFWG 2021; Stein et al. 2021; See also ISR WR-2 at 4-6.)

Edison has already provided these estimated functional flow metrics on flows upstream of Fairview Dam; this study would simply perform the same calculations on flows downstream of Fairview Dam and then graphically represent them against those already obtained by Edison. Such would be used to summarize the hydrological effects of historical operations under the current license by comparing flow ranges above (already compiled) and below (compiled by this study) Fairview Dam.

Criterion (7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

This is a purely desktop study about objective flow ranges under the CEFF rubric. We have run the analysis with the WR-2 hydrology dataset and provided the results herein (see Appendix A). We are seeking Edison to validate and/or correct those results, if required. With our knowledge of the excellent analytical tools provided by CEFF and use of the WR-2 dataset, we estimate the analysis, integration with the CEFF results provided to date, and graphical reporting of the resulting comparisons to take 10 hours at a cost of about \$1,500.

No alternative studies of this nature — comparing functional flow metrics *below* Fairview Dam with the CEFF functional flow ranges obtained *above* — have been proposed. The CEFF framework offers insight into hydrological alterations that are not captured by standard summaries based on mean, median, month, or year, but instead reflect essential ecosystem functions and characterizations. The CEFF is meant to provide a consistent statewide approach to river management, and “improve the scale and pacing at which environmental flow protections can be extended to rivers and streams across the state” (CEFWG 2021).

Criterion (8) – Describe any material changes in the law or regulations applicable to the information request has occurred.

None known.

Criterion (9) – Describe why the goals and objectives of any approved study could not be met with the approved study methodology.

No alternative studies of this nature — comparing functional flow metrics and ranges below Fairview Dam with the functional flow ranges obtained above — have been proposed, and no existing studies bring to weight the analytical framework of the California Environmental Function Flows project. The CEFF framework offers insight into hydrological alterations that are not captured by standard summaries based on mean, median, month, or year. This is a purely desktop study about objective factors under the CEFF framework. With it, all governing agents and stakeholder can go into the PME phase

with the same sets of analysis and graphical summary of the present flow regime and the functional flow analysis.

Criterion (10) – Describe why the request was not made earlier.

KRB injected the CEFF framework into this process at the earliest stages — in its first comments on the PAD & SD1 — and in each of its subsequent filings. (See KRB PAD/SD1 at 115-124, KRB PSP/SD2 at 102-114 [KRB SR-7. Environmental Flows] & KRB RSP at 23-24.) KRB’s proposal sought to compare functional flow metrics from flows below Fairview Dam with the functional flow ranges identified above. During that process, KRB obtained the Forest’s support for its proposal, along with the support of other stakeholders. (SCE RSP at 13.) USFS’s support of our proposal included support to apply the CEFF rubric to flows below Fairview Dam. KRB did not notice that Edison had, with one inserted phrase (“above Fairview Dam”), narrowed our proposal by half — to cover only those flows above Fairview Dam. KRB’s This narrowing of scope fails to capture and elucidate any project effects — which require a comparison of flows above *and below* the diversion point — as we had originally proposed.

Criterion (11) – Describe whether significant change has occurred in the project proposal, or significant new information material to the study objectives has become available.

None known.

Criterion (12) – Describe whether good cause exists for this request.

Limiting the CEFF analysis solely to flows above Fairview Dam frustrates the purpose of applying the CEFF framework. The point of this exercise is to determine functional flow ranges for this river system and compare those ranges to flows impaired by project operations. Again, this is not a subject of negotiations or optimizations, but an objective precursor or building block for fair and meaningful negotiations. USFS agreed with our request for it during the study development process. Everyone should be on board with the same data and summaries regarding the project’s hydrological effects, and the CEFF rubric is the scientific pinnacle in elucidating those effects. KRB would have objected to Edison’s one-term (“upstream of Fairview Dam”) elision of its proposed study had it noticed. We ask that given the good-faith nature of that mistake by an all-volunteer stakeholder group — along with the minor cost and effort of the proposed study and the undeniable value it can seamlessly provide to the process — the Commission approve this proposed plan.

KRB WR-2.5 Appendix A
NF KERN Functional Flows and Flows Alteration Assessment
1997-2022 Data Set

Prepared by Kern River Boaters

Summary

This appendix presents the work of Kern River Boaters (KRB) to:

- 1) Use the hydrological data provided from SCE KR3 Study WR-2 to calculate the observed functional flow metrics (FFM) above and below Fairview Dam;
- 2) Compare the observed data to the modeled flows from the Natural Flows Database;
- 3) Calculate the FFM for the authorized flows dataset in the diverted reach;
- 4) Assess the flows alteration in the diverted stretch of the NF Kern.

Background

The California Environmental Flows Working Group (CEFWG), a collaboration between experts at the CDFW, State Water Resources Control Board, and other academic and advocacy groups, developed the California Environmental Flows Framework (CEFF). The CEFF is meant to provide a consistent statewide approach to river management, and “improve the scale and pacing at which environmental flow protections can be extended to rivers and streams across the state” (CEFWG, 2021).

The CEFF is based upon desktop methods using readily available data (CEFWG Database, 2021 and Zimmerman, 2021) that characterize natural instream flows based upon five functional flow metrics, or FFM: fall pulse flow, wet-season base flow, wet-season peak flows, spring recession flow, dry-season base flow. Ecological flow criteria are developed which correspond to these components, and eventual recommendations should match the natural flow values.

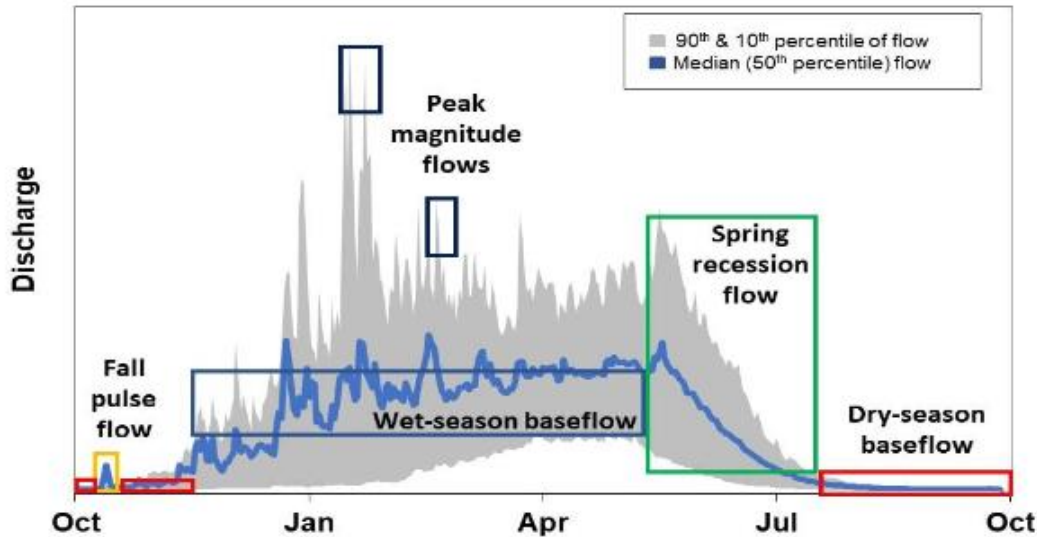


Figure 1: Image of functional flow components for a representative California hydrograph from CEFWG, 2021.

Methods

Data for this study was combined from:

The publicly available CEFWG Database’s median data from all years was used to retrieve an estimated functional flow metrics table for the NF Kern River using COMID 14971709 (as chosen by SCE in WR-2).

Retrieved data estimates from the CEFWG Natural Flows Database was available with 10-, 25-, 50-, 75-, and 90-percentile values for each of the functional flows. The estimated data is based upon a period from 1950-2023. Changing the period made no difference to the data that was provided.

Observed daily flows data was compiled from USGS gauges 11186000 (KERN R NR KERNVILLE (RIVER ONLY) CA) (“flows in diverted reach”) and USGS 11185500 (KERN R NO 3 CN NR KERNVILLE CA) (“flows diverted”). Period of data included is 10/01/1996 - 09/30/2022, for a total of 9,496 days. Data was available as a single daily average from each gauge. By adding the flows in diverted reach and flows diverted as recorded by the two included gauges, total incoming flows above the diversion in cfs were calculated.

Authorized flows below Fairview Dam dataset was constructed pursuant to the terms of current license to claims of incoming flows at Fairview Dam between the project and the dewatered reach in the following order of precedence:

1. Hatchery Flow Diversion: a diversion of 35 cfs plus 7.5 cfs (halfway between the 5-10 cfs “buffer” procured by Edison; see SCE PAD at 4-16).

2. Minimum Instream Flow: flows below Fairview Dam of 40-130 cfs, depending on the month, plus a 10 cfs buffer pursuant to Edison’s historical operations ensuring MIF compliance.
3. Tunnel Maintenance Flow Diversion: a diversion of the next 300 cfs at all times.
4. Rec Release Flows: a targeted flow below Fairview Dam of 700 or 1,400 cfs depending on the calendar and the prior day’s average inflow at Fairview, subject to reduction based on current inflows and the precedence of the Tunnel Maintenance Flow. (This flow causes operational changes at KR3 less than 8 days a year on average.)
5. KR3 Diversion: a maximum diversion of 585 cfs based on Edison’s historical operations.

This methodology was applied to the WR-2 daily dataset to generate the authorized flow dataset.²⁶

The authorized flow dataset is important to include because it represents the full, authorized project effects upon the diverted reach by removing the impact of days the project was offline. It cannot be assumed that just because the project was not operating for 1,621 days (which is a significant 17% of the current term) that this will continue to be the case. The point of the repairs and rehabilitation that led to such long outages was to improve project reliability going forward.

Each of these 4 datasets (Estimated above Fairview Dam, Observed above Fairview Dam, Observed below Fairview Dam, Authorized flows below Fairview Dam) was processed according to the CEFF to determine the functional flow metrics (FFM) according the CEFF Section A, part 2 (CEFWG, 2021). For each of the observed gauge datasets and authorized flows dataset, the datasets were processed with the eFlows tool (Lane, 2023). This tool calculates the functional flow metrics for each water year (October 1 – September 30) in the submitted data set. From these annualized metrics, percentiles were calculated for corresponding 10-, 25-, 50-, 75-, and 90-percentiles. Comparison between the datasets was plotted as box and whisker plots and visualized for comparison.

Finally, with the percentile data, the “Flow Alteration” assessment was performed as described in CEFF Section C, Step 9. This is a purely quantitative, desktop analysis which

²⁶ Table, methodology, and supporting data available at the following Apple website (Sheet 11, “KR3 Authorized Daily Flows, 97-22”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

was generated from the comparison between the observed hydrologic data above Fairview Dam vs the authorized license conditions applied to the hydrograph data.

Analysis

As a part of the eFlows analysis, plots were generated depicting the representative hydrographs for the analyzed datasets. Representative hydrographs comparing the observed data above Fairview Dam to the authorized flow below Fairview Dam can be seen in Figure 2. Within these plots, it is possible to view the flattening (both in magnitude and variability) of the dry season flows, as well as the reduction in magnitude and duration of the wet season in low or median years.

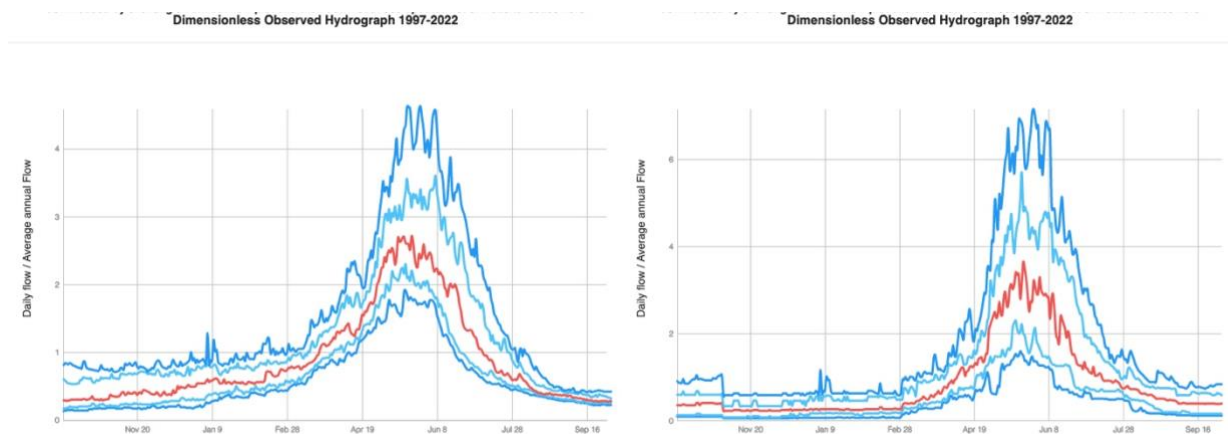


Figure 2: Dimensionless Hydrograph for Observed above Fairview Dam (left) vs Authorized below Fairview Dam (right). Red line represents 50th percentile; light blue lines are 25th and 75th; dark blue 10th and 90th percentiles.

Next, a table of functional flow metrics for each of the 4 datasets is available in Figure 3. The table includes the median and 10th and 90th percentile values, as well as alteration status, as calculated according to CEFF Step 9. Note the alteration status comparison used the Observed above Fairview Dam vs Authorized flows below Fairview Dam to fully capture authorized project effects.

Flow Component	Flow Metric	Predicted Range at LOI LOI = Kern River COMID: 14971709 NF Kern River immediately at Fairview Dam	Observed NF Kern inflow above Fairview Dam eFlows (1997-2022)	Observed NF Kern below Fairview Dam eFlows (1997-2022)	NF Kern authorized below Fairview Dam eFlows (1997-2002)	Authorized Alteration Status
		median (10th - 90th percentile)				
Fall pulse flow	magnitude	506 (202 - 1070) cfs	499 (245 - 1222) cfs	246 (108 - 444) cfs	90 (87 - 2023) cfs	likely altered
	timing	Nov 11 (Oct 3 - Dec 2)	Nov 9 (Oct 17 - Dec 4)	Oct 18 (Oct 1 - Nov 19)	Oct 22 (Oct 12 - Nov 10)	likely unaltered
	duration	3 (2-7) days	4 (2 - 7) days	4 (2-9) days	7 (3 - 8) days	likely unaltered
Wet-season baseflow	baseflow	335 (177 - 516) cfs	357 (209 - 820) cfs	114 (57 - 559) cfs	86 (80 - 603) cfs	likely altered
	median flow	1000 (636 - 1810) cfs	797 (333 - 2569) cfs	571 (216 - 2112) cfs	539 (110 - 2142) cfs	likely unaltered
	timing	Mar 7 (Jan 28 - Apr 3)	Feb 22 (Dec 11 - Mar 16)	Mar 16 (Dec 22 - Mar 25)	Mar 18 (Feb 14 - Apr 5)	likely unaltered
	duration	92 (60-146) days	113 (71 - 187) days	84 (56 - 181) days	82 (53 - 175) days	likely unaltered
Wet-season peak flows	2 yr magnitude	3890 (2150 - 8410) cfs	2754 cfs	2200 cfs	2169 cfs	likely unaltered
	5 yr magnitude	7310 (5870 - 16,800) cfs	6245 cfs	6040 cfs	5660 cfs	likely unaltered
	10 yr magnitude	11,400 (3530 - 30,000) cfs	6765 cfs	6355 cfs	6180 cfs	likely unaltered
Spring recession flow	magnitude	2680 (1370 - 4630) cfs	2344 (697 - 6265) cfs	1760 (340 - 5835) cfs	1759 (140 - 5680) cfs	likely unaltered
	timing	June 12 (May 24 - June 30)	Jun 6 (May 18 - Jun 27)	Jun 4 (May 13 - Jul 5)	Jun 6 (May 15 - Jul 17)	likely unaltered
	duration	73.2 (49 - 104) days	76 (58 - 94)	55 (27 - 105) days	57 (28 - 102) days	likely unaltered
	rate of change	6.14 (4.27 - 8.94) %	4.0 (3.2 - 4.5) %	8.2 (4.3 - 11.4) %	9.1 (4.0 - 18.2) %	indeterminate
Dry-season baseflow	baseflow	195 (65.7 - 366) cfs	196 (120 - 342) cfs	91 (53 - 148) cfs	51 (50 - 90) cfs	likely altered
	high baseflow	398 (144 - 930) cfs	356 (161 - 594) cfs	148 (111 - 326) cfs	140 (80 - 146) cfs	likely altered
	timing	Aug 22 (Jun 23 - Sept 18)	Aug 24 (Jul 21 - Sep 8)	Aug 11 (Jun 24 - Sep 2)	Aug 13 (Jun 29 - Sep 14)	likely unaltered
	duration	198 (150 - 236) days	184 (127 - 204)	212 (160 - 254) days	216 (163 - 270) days	likely altered

Figure 3: Table of Functional Flow Metrics for each of 4 cases: Estimated above Fairview Dam, Observed above Fairview Dam, Observed below Fairview Dam, Authorized flows below Fairview Dam. Alteration status was calculated between the Observed above Fairview Dam dataset vs the Authorized flows below Fairview Dam.



Figure 4: Visualizing Functional Flow Metrics (FFM) in: Estimated above Fairview Dam (purple) vs Observed above Fairview Dam (blue). Box plots represent median (as midline bar) 25- and 75-percentiles (as box), and 10- and 90-percentiles (as whiskers). Sample mean is plotted as X.

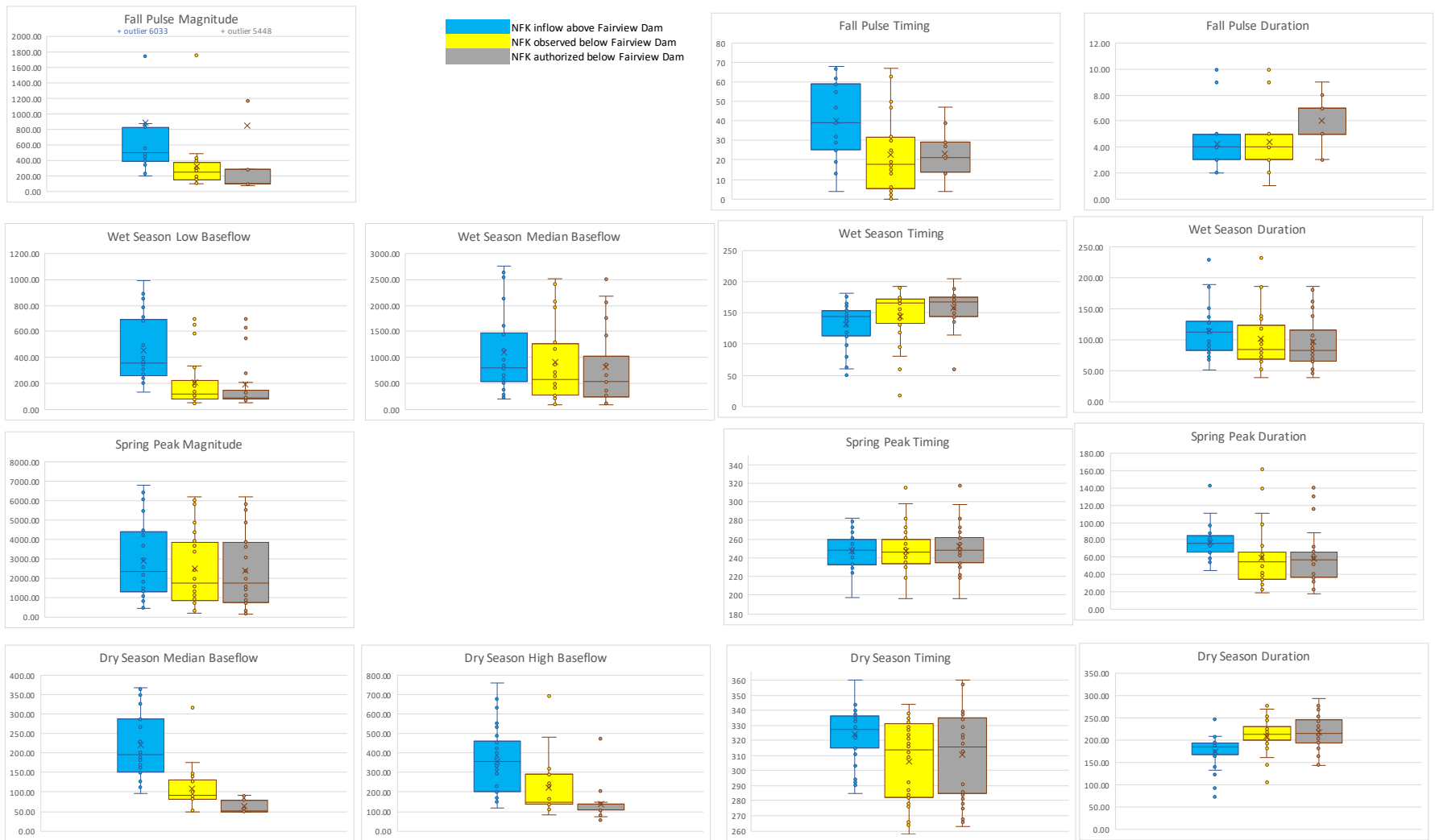


Figure 5: Visualizing Functional Flow Metrics (FFM) in: Observed above Fairview Dam (blue), Observed below Fairview Dam (yellow), and Authorized below Fairview Dam (gray). Box plots represent median (as midline bar) 25- and 75-percentiles (as box), and 10- and 90-percentiles (as whiskers). Individual datapoints are plotted as circles, and sample mean is plotted as X.

Next, Figures 4 and 5 provide the box and whiskers plots corresponding to each of the datasets included in the analysis. In Figure 4, the Estimated above Fairview Dam values (obtained from the Natural Flows database) are plotted against the Observed above Fairview Dam dataset. This step was taken to verify the datasets used, and to examine how well the database estimates correspond to the observed dataset. It indicates that the estimated model is closely aligned to the 26-year observed dataset, and SCE's choice of using the estimated data in the study report (rather than the observed data on hand) was not impactful.

Finally, Figure 5 plots the FFM distributions for 1) the observed data above Fairview Dam, 2) the observed data below Fairview Dam, and 3) the authorized flow dataset below Fairview Dam. From this comparison, two major conclusions about the Authorized flows below Fairview Dam (FVD) can be reached:

Effects of project outages: The Authorized flows below FVD dataset (gray) is altered and is significantly different than the Observed below FVD data (yellow) for metrics within the Fall pulse flow, Wet-season baseflow, and Dry-season baseflow categories. Simply plotting the observed data below Fairview Dam and extrapolating forward to the next license term is not a fair representation of project effects. Outages and prolonged maintenance work over the present license term had significant effects on the functional flows below Fairview Dam. While this did serve to reduce the net projects effects for this license term, it should not be assumed to be an accurate representation of project effects going forward, when no such extensive outages are guaranteed.

Effects of project operations: Even more so, the Authorized flows below FVD dataset (gray) is altered and is significantly different than the Observed above FVD data (blue) for metrics within the Fall pulse flow, Wet-season baseflow, and Dry-season baseflow categories. In particular:

- Fall pulse magnitude is reduced and “likely altered”
- Wet-season low baseflow is reduced and “likely altered”
- Dry-season median baseflow is reduced and “likely altered”
- Dry-season high baseflow is reduced and “likely altered”
- Dry-season duration is increased and “likely altered”

Discussion

Previous attempts at estimating the flow alteration (Duxbury, 2022, Appendix A) suggested that there were several metrics that were in a “likely altered” state compared to natural functional flows. This present effort based upon a full, quality-controlled dataset indicates that this continues to be the case.

There are significant functional flow alterations below Fairview Dam for metrics within the Fall pulse flow, Wet-season baseflow, and Dry-season baseflow categories. During both the wet and dry seasons, the baseflows are consistently outside of natural

functional flow values, and are significantly altering the ecosystem. The fall pulse is significantly reduced or removed (in fact, that is why the fall pulse duration increases slightly in the Authorized dataset— the lower magnitude/duration pulses are removed, so only the longest duration fall pulses remain, thus increasing that value by a slight but insignificant amount). Finally, the flows during the shoulders of the wet season are reduced, causing a significant increase in the dry-season duration, potentially affecting timing of critical ecosystem functions.

Due to the nature of the project, which is such that diversions are capped at 600cfs, the wet-season peak flows and spring recession flows are not significantly altered, simply because the capped volume diverted is not enough to significantly change these metrics. Finally, note that while SCE objected to the inclusion of the “Flow Alteration” assessment simply because it resides in Section C of the Framework, it is in fact a pure data analysis activity performed on data already existing in the study, and provides an important understanding to all stakeholders as to the current state of the stream flow alteration over the entire diverted stretch of the NF Kern River.

These functional flow metrics are indicative of important streamflow alterations that are captured in this alteration assessment, which are not visible in zoomed out linear- or log- scale plots of annualized flows or flow durations. It is important that all stake holders are working from the same starting point and have a clear understanding of the current state of the system as we enter the recommendations portion of the FERC ILP process. “Water managers need a consistent statewide approach that can help transform complex environmental data into scientifically defensible, easy-to-understand environmental flow recommendations that support a broad range of ecosystem functions and preserve the multitude of benefits provided by healthy rivers and streams” (CEFWG, 2021), and that is exactly what this completed functional flows and alterations study is meant to provide.

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KRB WR-2.6 Hydrology. 2018 Preliminary Flows, New Study

Criterion (1) – Describe the goals and objectives of each study proposal and the information to be obtained.

The goal of this study is to determine whether Edison complied with its rec flow obligations on May 20, May 26 & June 07 in 2018.

The objective of this study is to provide hourly preliminary flow data for the days prior to the days listed: May 19, May 25 & June 06, 2018.

Criterion (2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Not applicable.

Criterion (3) – if the requester is not a resource agency, explain any relevant public interest considerations in regards to the proposed study.

The public interest as expressed by congress directs the Commission to take into consideration the “existing licensee's record of compliance with the terms and conditions of the existing license” during relicensing. (16 U.S.C. § 808(a)(3)(A).)

Criterion (4) – Describe existing information concerning the subject of the study proposal, and the need for additional information.

Article 422 of the KR3 license requires Edison to release recreational flows every day between the weekend before Memorial Day weekend and July 04 when preliminary river gage data shows the previous days average inflow at Fairview Dam to be between 1,000 and 1,300 cfs.

In its review of Edison’s WR-2 hourly hydrology dataset, KRB discovered three occasions in 2018 — May 20, May 26 & June 07 — when the previous day’s average was within that flow window but flows were not provided.

The WR-2 dataset is not “preliminary” flow data. It has been subjected to QAQC protocols prior to publication. It does, however, constitute reasonable grounds for investigation as it is *prima facie* evidence of a violation. If QAQC for the days in question did not alter the preliminary hydrology, the WR-2 dataset would constitute *proof* of violation. As such, the preliminary flow data is required to determine whether there was a violation.

KRB put its concerns to Edison on November 22, 2023. Edison indicated it had the relevant preliminary flow data but refused to provide it and has terminated communications with KRB on the issue.

Criterion (5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

Project operators and protocols determine whether license conditions are complied with. Evidence of noncompliance informs the questions of eligibility and future license conditions, including additional safeguards to ensure compliance, during relicensing proceedings. Noncompliance on current license recreational flow obligations may suggest that preliminary flow gauges are inadequate to the task of ensuring that adequate recreational opportunities are provided.

Criterion (6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

The methodology involves data retrieval and publishing with integrity. There are no controversial methods at issue.

Criterion (7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

This is a purely desktop study involving the retrieval of data in Edison's possession and publishing it. If it shows Edison in compliance in 2018, that will forestall a negative inference on its compliance record. We estimate the level of effort at two hours of mid-level staff time for retrieval and one hour of publishing at a cost of \$300.

Criterion (8) – Describe any material changes in the law or regulations applicable to the information request has occurred.

None known.

Criterion (9) – Describe why the goals and objectives of any approved study could not be met with the approved study methodology.

No other study involves preliminary flow data, and thus none can meet the informational needs of this request.

Criterion (10) – Describe why the request was not made earlier.

KRB did not learn of the potential violation until it analyzed the WR-2 hydrology dataset, which was asked for (and promised, then rescinded²⁷) well before the SPD but was not provided until more than half a year after the SPD, July 30, 2023.

Criterion (11) – Describe whether significant change has occurred in the project proposal, or significant new information material to the study objectives has become available.

None known.

Criterion (12) – Describe whether good cause exists for this request.

Good cause exists to approve this study in that it is extremely limited, involves relatively little cost or effort (just three days of preliminary gauge data), goes to the heart of licensee compliance and the attendant crafting of future license conditions, and was not discovered prior to the publication of the WR-2 hydrology dataset.

²⁷ See KRB SD2 at 35 & fn. 116. Available: https://www.kernriverboaters.com/s/KRB_SD2_PSP_COMMENTS.pdf

KRB BIO-5.1 Western Pond Turtle. Sudden Inundation, Comment

Edison: *Psomas* biologists . . . observed one adult (sex unknown) northwestern pond turtle basking on a small rock at the northern edge of a pool below Siphon Road in Cannell Creek on August 11, 2023. (ISR BIO-5 at 11.)

KRB: Given this sighting (and others) of this creature near Cannell Creek, we ask Edison and the governing agencies to answer this question: Aren't the turtles in this drainage at risk of decimation — or elimination if the population is small enough — from the sudden operation of the KR3 emergency spillway, which can inundate that creek with 600 cfs of water in an instant and cannot be stopped for several hours given the water travel time between Fairview Dam and the spillway?

KRB REC-1.1 Boating. SIQ, Modification

EDISON: *Study Plan Variances. There are no variances for the REC-1 Study approved in the FERC SPD (FERC, 2022) issued in October 2022. (ISR REC-1 at 5.)*

KRB: The above statement is false.

The Revised Study Plan stated that the ISR would “include L1 results” (RSP REC-1 at 9) and stated those results would include “estimated range of preferred flows and knowledge gaps” developed from the Structured Interview Questionnaire (“SIQ”). (RSP REC-1 at 5.)

The Study Plan Determination approved the REC-1 RSP with no modifications to this reporting requirement. (SPD at B-22 through B-26.)

Edison’s variance from the study plan on this important reporting requirement — and its failure to admit the variance — is extremely problematic.

Whittaker’s phased, three-level approach to study methodology was designed to “allow information to be shared earlier in the process” with governing agents and stakeholders.²⁸ Edison’s failure to report its Level 1 SIQ results in a timely manner frustrates this goal. In fact, Whittaker cautions specifically regarding Level 1 structured interviews like the L1 SIQ: “the earlier this report can be completed and distributed, the better”²⁹ to facilitate shareholder input in the design and implementation of L2 and L3 studies.

At this point, Edison has provided an L1 desktop review and recounted some L2 focus group data. But it has not shown its hand at all regarding how it will handle the task of survey data *analysis*. Specifically, how will Edison validate, aggregate, integrate, and report the survey data it obtains?

Had Edison reported its “estimated range of preferred flows and knowledge gaps” from the SIQ, governing agents and stakeholders would have an example of Edison’s methodologies to accept or criticize and advocated for modifications going forwards. It would also constrain Edison’s analytical choices in the future; it would have to proffer good reasons to alter them. A report would also have engendered a greater degree of trust in this process. Instead, Edison chose not to comply with its reporting requirement and then failed to identify it as a variance — a further violation of trust — leaving Edison with absolute discretion on analytical methods and depriving stakeholders of the opportunity to lodge early-to-mid-process criticism. Edison’s conduct to date is contrary to the phased

²⁸ Whittaker, “Flows and Recreation” (2005) at 8, available: <https://hydroreform.org/wp-content/uploads/2020/05/flowrec.pdf>

²⁹ Whittaker (2005) at 13

methodology envisioned by Whittaker.³⁰ It has chosen to pursue a road that could lead to mischief under the guise of social science.

Survey data is subject to analytical manipulation. Explicit or implicit biases can drive an analyst towards “data dredging” or “p-hacking” — namely, applying different methodologies until the desired result is obtained.³¹ At this point, there is a risk that Edison will ultimately take these large pools of survey data from various sources (SIQ, Single Flow Survey & Comparative Flow Survey, two focus groups) and apply varying methodologies of until it finds the combination that justifies its desired result. To combat this temptation in science, researchers identify each potential methodological degree of freedom and *pre-register their choices on such prior to data collection*. That avoids issues such as (1) Data peeking — the stopping or continuation of data collection once or until the desired result is obtained; (2) Data trimming — the selective exclusion of data that is a natural part of the population being studied; (3) Variable manipulation — the aggregation or disaggregation of subgroups to achieve the desired result; (4) Excessive hypothesis testing — proliferating tests to obtain one with the desired result and explaining away the others; and (5) Selective reporting — failing to reveal or discuss analyses contrary to the desired result.³²

Contrary to the study plan, Edison did not implement the phased approach engendered in Whittaker nor did it report the SIQ. It even failed to note that as a variance. Thus, Edison has put off the day it will first reveal how it intends to use its degrees of freedom in analyzing boater survey data until the tail end of this process. That is not what Whittaker envisioned.

A word on that last thought: Edison complained at the October 17, 2023 ISR meeting that it had 51 SIQ responses to analyze rather than the 10 originally envisioned. The objection is ridiculous, but also revealing. If Edison had a concrete analytical methodology in mind for its choices in analyzing survey responses, it would have been able to process responses 51 — or 5,001 — in no time. Only a desire to explore the innumerable degrees of freedom of analysis could explain an analyst’s inability to rapidly report such a small dataset.

Given this variance, we ask that the Commission direct Edison to (1) immediately report on the SIQ and (2) require the sharing of all gathered survey data to date and going

³⁰ Edison launched its purported L3 single flow study in on April 01, 2023, many months *before* the L2 focus group meeting took place (August 25, 2023) and more than a month *before* it launched the L1 SIQ (May 05, 2023). That is not a phased study approach.

³¹ See generally: https://en.wikipedia.org/wiki/Data_dredging.

³² See: Angelika Stefan & Felix Schrønbrod, “Big Little Lies: A Compendium and Simulation of P-Hacking Strategies” (2023) <https://royalsocietypublishing.org/doi/10.1098/rsos.220346> & David Weinberg, “The P-Hacker’s Toolkit” (2002) <https://sciencebasedmedicine.org/the-p-hackers-toolkit/>

forward (personal information save for zip code and personal identifier scrubbed, of course) with governing agents and stakeholders in order to facilitate independent analysis.³³ Good cause for these modifications exists. Edison advertised that REC-1 was based on Whittaker, but it did not implement it in a phased manner, nor did it share results in an early manner. It failed to meet its reporting requirement — and failed to admit it. It has retained every degree of analytical freedom in survey analysis and quashed stakeholder input until a date deep into these proceedings. Requiring immediate reporting and the provision of all obtained data now and in the future in usable, spreadsheet form (Excel) is at least the Commission can do to try to get this REC-1 process back on track at this late date.

³³ We ask that the Commission direct Edison to post this information as a matter of course (in the manner of the WR-2 hydrology dataset) when reports are issued. Edison has not responded to KRB's request *simply for a timeframe* for providing the data underlying the ISR WR-1 report, even though Edison stated such data was available on request. (See SCE RSP WR-1 at 6 ["A Technical Memo will be appended to either the ISR Associated data files . . . will be included as appendices to the Technical Memo, *as well as in electronic format upon request*"].)

KRB REC-1.2 Boating. Annual Boating Days, Modification

EDISON: *The annual frequency of whitewater boating opportunities was analyzed for inflows to Fairview Dam and in the bypass reach for flows greater than 700 cfs between 8 a.m. and 8 p.m. (Figure 5.1-8). The frequency analysis selected 700 cfs for the Level 1 hydrology analysis based on the whitewater release requirement established in FERC License Article 422.*

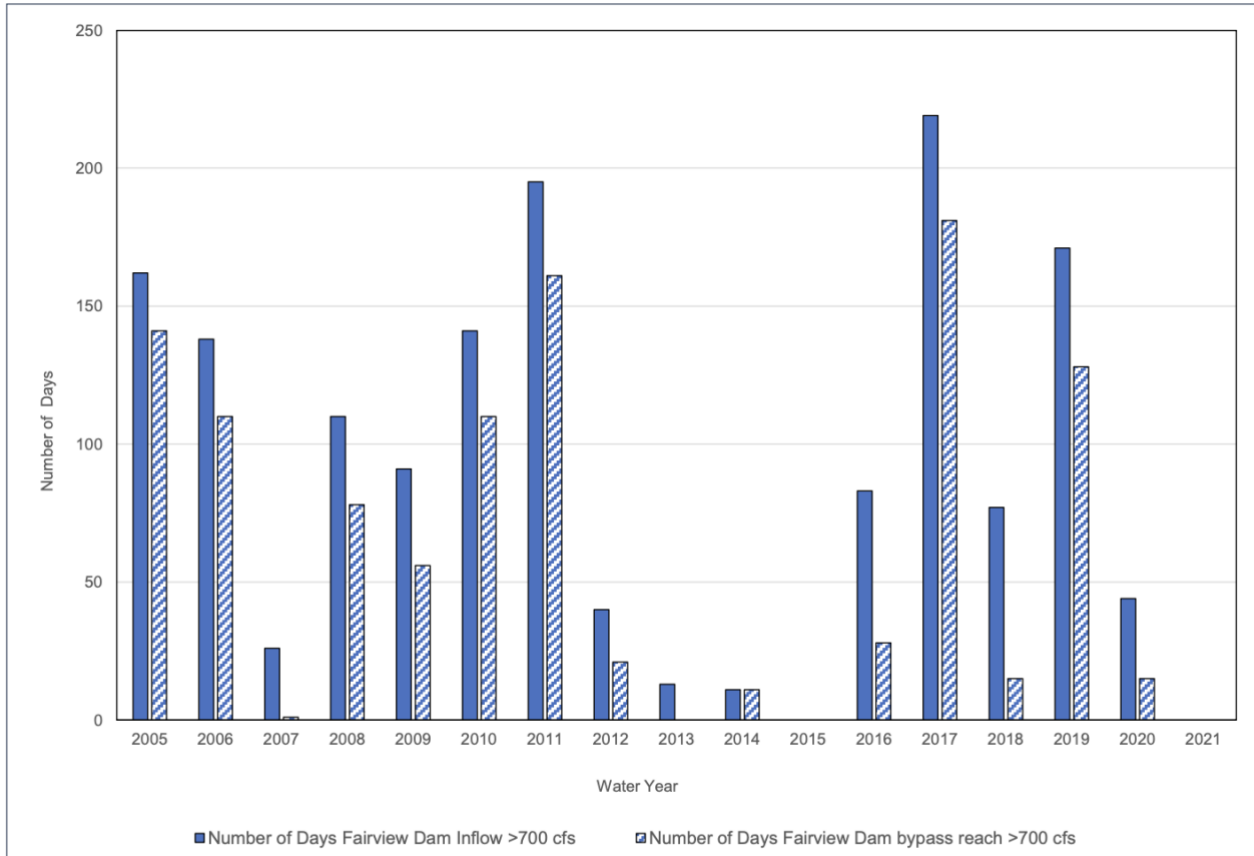


Figure 5.1-8. Comparison of Annual Number of Days Flows are > 700 cfs above Fairview Dam and in the Fairview Dam Bypass Reach, WYs 2005–2021.

(ISR REC-1 at 28.)

KRB: Contrary to Edison’s claim, its choice of 700 cfs was not based on the “whitewater release requirement” established in FERC License Article 422.

Going back to the last year we had a whitewater release on this river — 2020 — WR-2 shows that the rec release went down to 677 cfs on May 31 and down to 663 cfs on May 22.³⁴ These releases were authorized by Article 422 and completely in accordance with it. Yet they were well below 700 cfs.

³⁴ These flows dropped below 700 cfs due to the primacy of the tunnel maintenance flow. Data available at the following Apple website (Sheet 2, “Hourly Data 05-21 (SCE)”): https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

Confronted with these facts at the ISR meeting, Edison’s consultant averred that he chose the 700 cfs figure not based on Article 422 releases, but rather on the 1994 whitewater study. That cannot be true either, as the 1994 study found adequate flows for enjoyable class 2-3 boating at 500 cfs and enjoyable class 3-4 boating at 550 cfs³⁵:

Table 5.1-2. 1994 Study Whitewater Flow Suitability Summary (PSA Method)

Whitewater Run	Minimal (Marginal)^a cfs	Minimum Enjoyable^a cfs	Lower End Optimal^a cfs
Sidewinder / Bombs Away	300 ^b / --	700 / 900	1,000 / 1,000
Fairview Run	250 / 500	500 / 800	1,000 / 1,200
Chamise Gorge	250 / 500	550 / 900	1,000 / 1,200
Gold Ledge	300 / 700	700 / 1000	1,100 / 1,300
Thunder Run	350 / 800	700 / 1000	1,100 / 1,200
Cable/Camp 3	800 / 700	700 / 900	1,000 / 1,200

Edison’s consultant was on notice that boating days are lost at flows of 500-550 cfs: the L2 focus group participants agreed that if their preferred flows were not available in one section but available in a second, they would boat the second. Moreover, those levels were determined in 1994; times have changed and enjoyable boating occurs these days at even lower flows. Edison could have analyzed survey data to date as required by the SPD and reported a more plausible definition of a boating day than 700 cfs.

It ignored these facts because it is in Edison’s interest to keep the definition of a “boating day” at a higher level rather than one lower: project effects in removing boating days increase dramatically as the flow required for a boating day decreases.

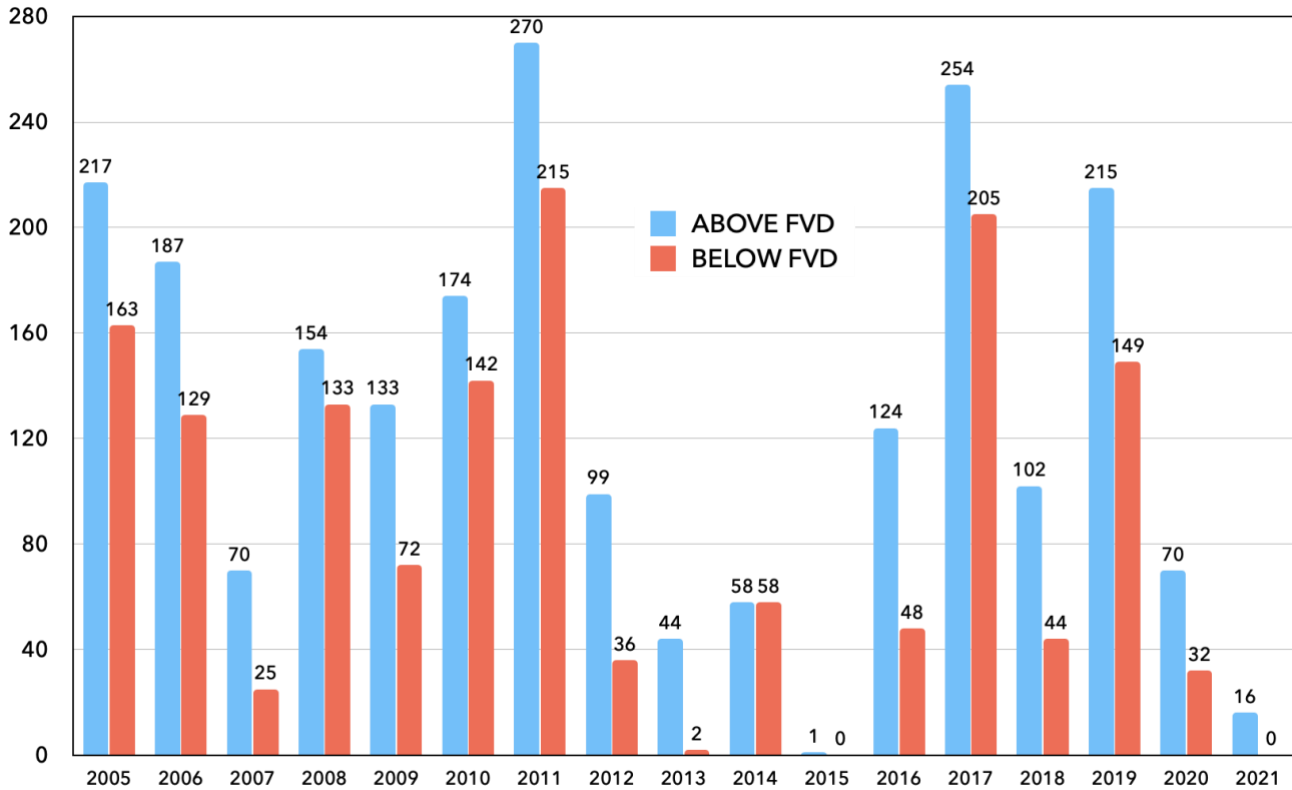
In the following graph, we used the same dataset Edison used for Figure 5.1-8 save one: we decreased the flow required for a boating day from ≥ 700 cfs to ≥ 500 cfs³⁶:

³⁵ ISR REC-1 at 18. Stakeholders have informed Edison’s consultant during the TWG process that his chart contains a typo for Cable/Camp 3: the minimum-marginal flow by definition cannot be lower than the minimum enjoyable flow.

³⁶ Chart, methodology, and supporting data available at the following Apple website (Sheet 15, “KR3 Annual Boating Days”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

Annual Boating Days (≥ 500 cfs), Above & Below Fairview Dam, WY 05-21



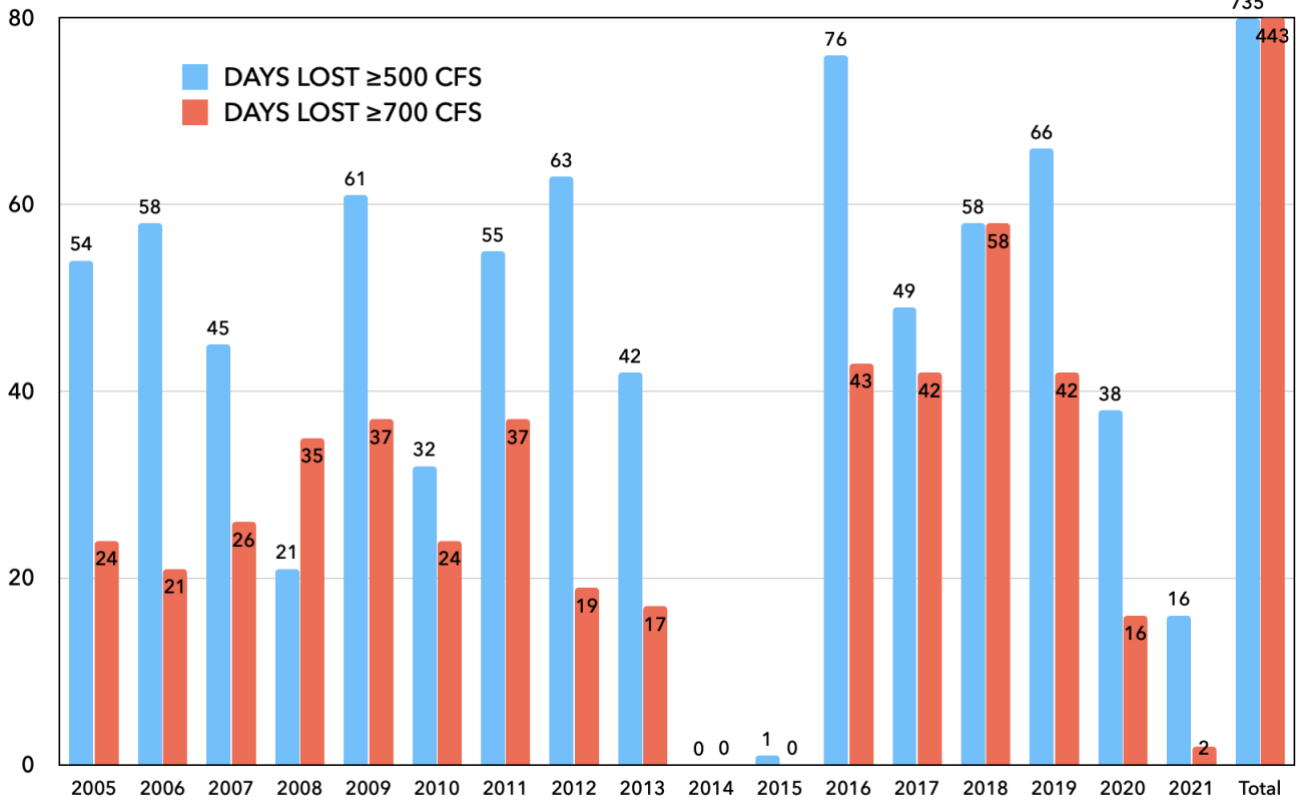
Source: SCE KR3 WR-2 HYDROLOGY DATASET

Project effects increase when the flow required for a boating day is decreased — almost 300 more days are removed when the definition of a boating day is dropped from ≥ 700 cfs to ≥ 500 cfs, all told. Note that in the median water year from this dataset, WY 2018, the project took 57% of boating days away.

The following chart shows the annual number of boating days lost to the project when defined as ≥ 500 cfs and ≥ 700 cfs, respectively³⁷:

³⁷ Chart, methodology, and supporting data available at the following Apple website (Sheet 15, “KR3 Annual Boating Days”): https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

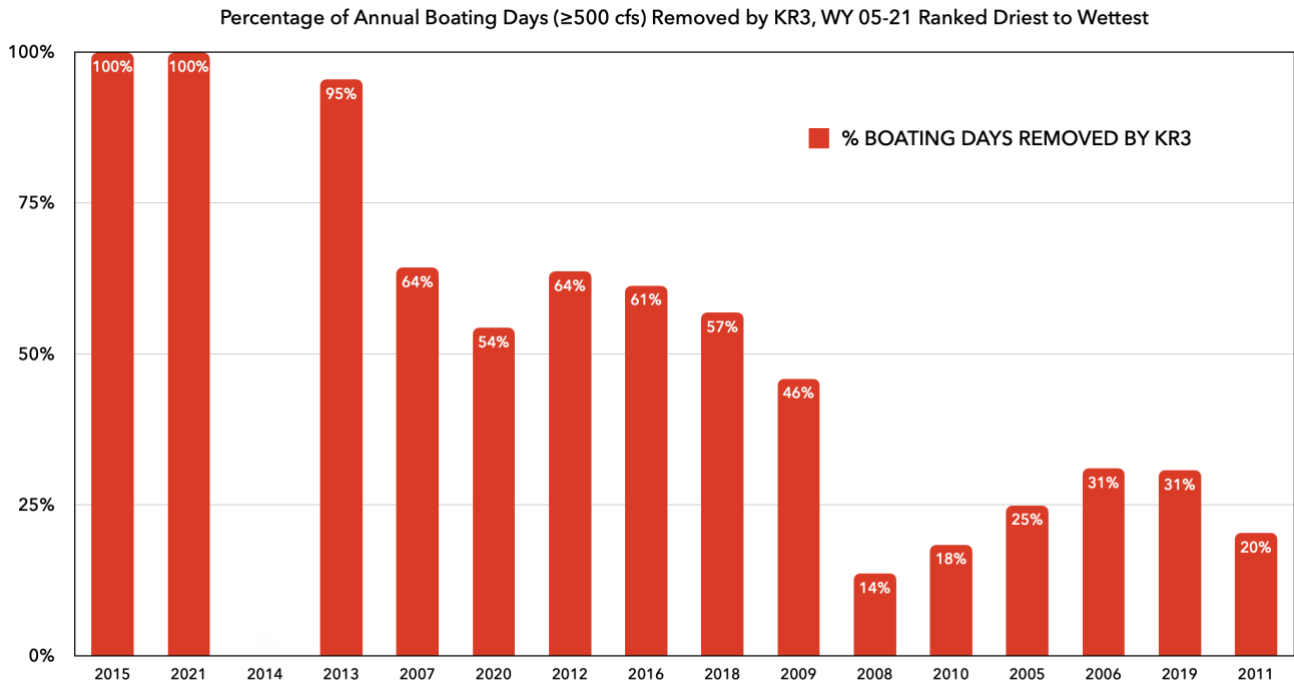
Annual Boating Days Lost To Project (≥ 500 cfs & ≥ 700 cfs), WY 05-21



Source: SCE KR3 WR-2 HYDROLOGY DATASET

Project effects are also more significant to the boating community in dry and moderate water years. The following chart shows the percentage of ≥ 500 cfs boating days removed by the KR3 diversion each water year, with the water years arranged from driest to wettest³⁸:

³⁸ Table, methodology, and supporting data available at the following Apple website (Sheet “15. KR3 Annual Rec Days, 05-21”): https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD



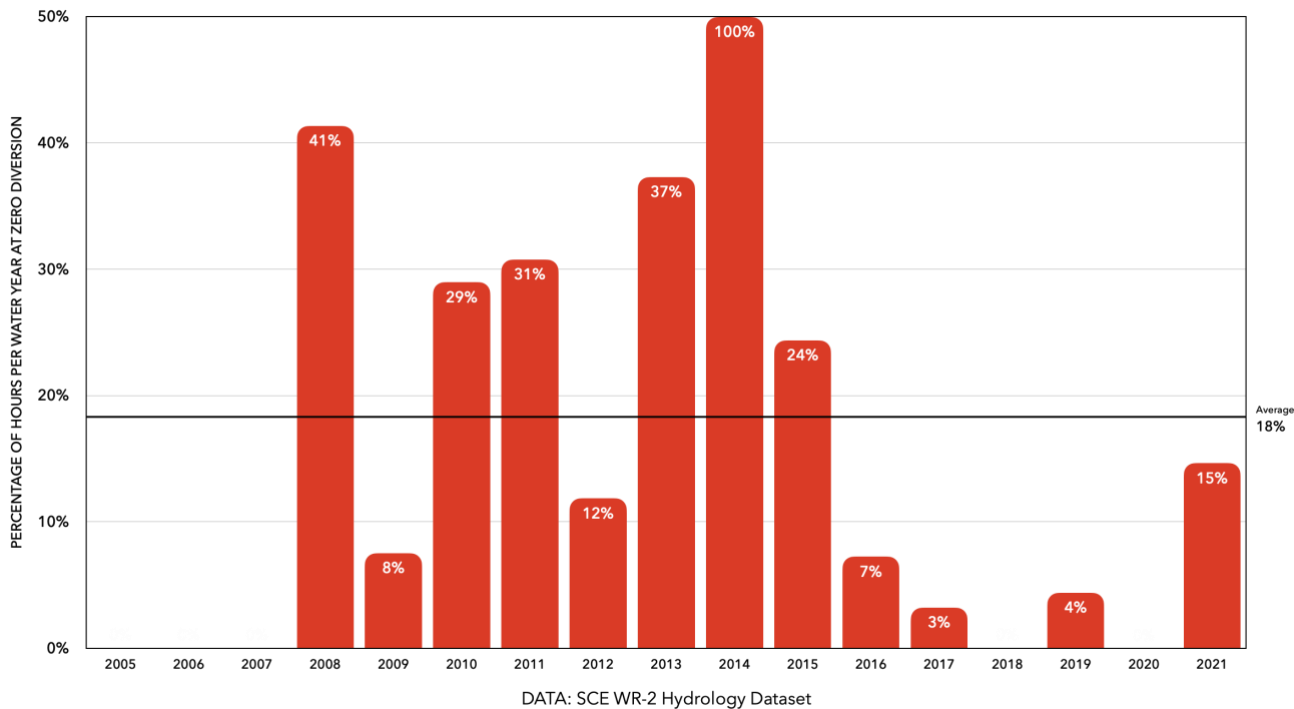
Source: SCE KR3 WR-2 HYDROLOGY DATASET
 *Note that WY 2008 & 2014 contained high volumes of "Zero-Flow" (project offline) hours.

As seen above, there is a strong correlation between the type of water year and the percentage of boating days lost to the diversion: the drier the year, the higher the percentage. In dry years, the project took away almost every day, in moderate years about half, and about a quarter in wet years.

There are a few obvious exceptions to the correlation above — 2008 & 2014 being the most glaring. Why is that? Edison fails to inform its readers that in those two years the project was completely offline a whopping 41% and 100% of the time, respectively³⁹:

³⁹ Chart, methodology, and supporting data available at the following Apple website (Sheet 9, "KR3 Zero/Low Flow"):
https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

KR3 Zero Flow (No Diversion) Hours, WY 2005-2021

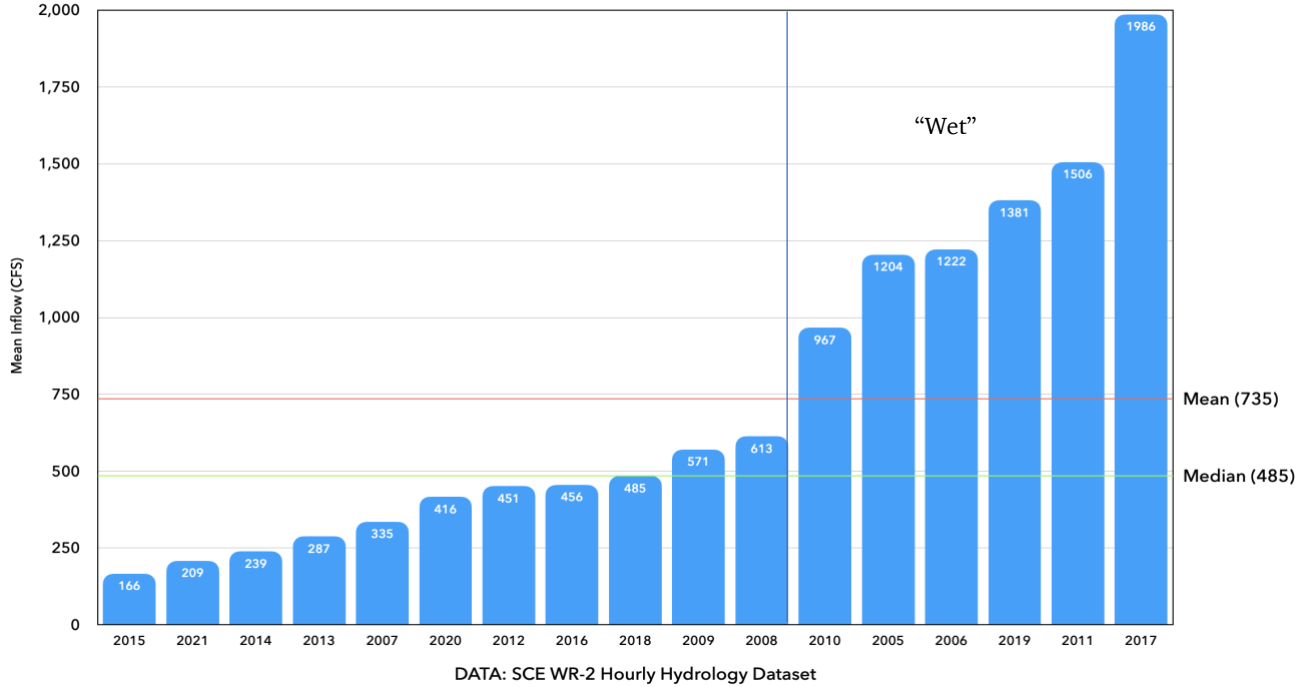


Edison has not guaranteed the project will be offline to the same degree in the next license term as it has been during this one. Indeed, it has undertaken the repairs and rehabilitation that caused those outages in order to ensure the project will not suffer them at the same rate going forward. To have an accurate understanding of project hydrological effects going forward under the current license regime — which is the starting point in this proceeding since Edison has proposed no operational changes to support the natural or social environments — one must account for these outages. We turn to that shortly.

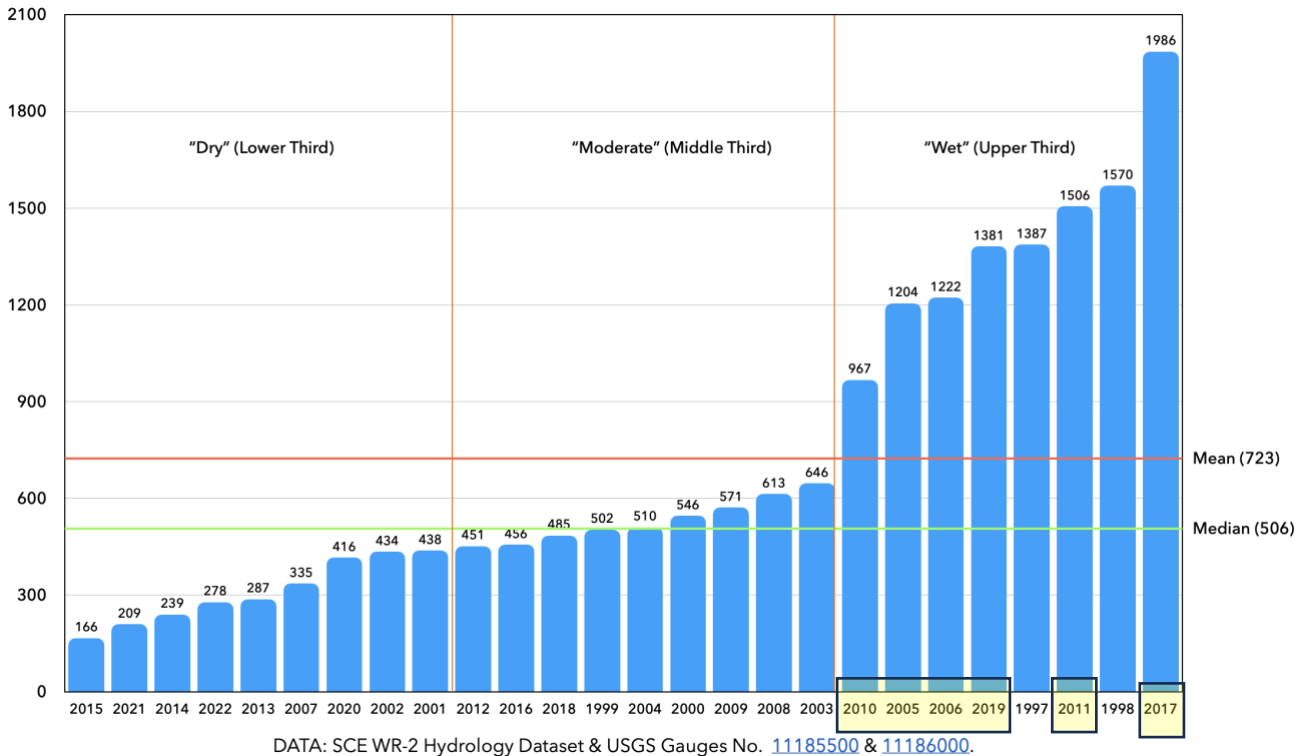
Edison also fails to inform its readers that its “boating days” dataset (WR-2 hourly) includes a disproportionate number of wet years over the full license term: six of 17⁴⁰:

⁴⁰ Charts, methodology, and supporting data available at the following Apple website (Sheet 19, “NFKR Water Years, 05-21”): https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

Mean Inflow at Fairview Dam (CFS) per Water Year, 2005-2021, Ranked



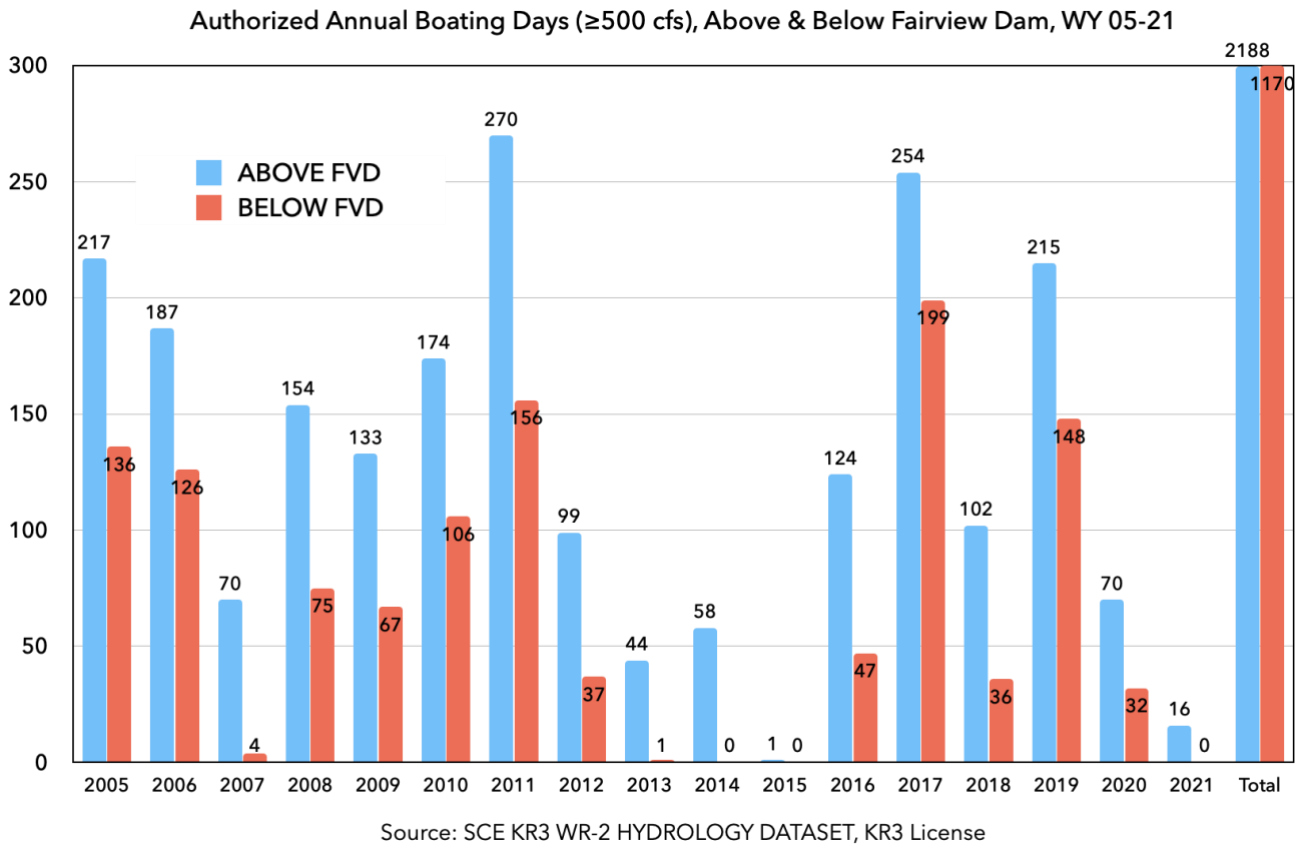
Mean Inflow at Fairview Dam (CFS) per Water Year, 1997-2022, Ranked



When Edison submits its hourly hydrology for WY 2022 & 2023, that figure will rise to seven wet years out of 19.

The fact that Edison fails inform its readers that (1) project effects increase as the flow required for a boating day decreases, (2) that the project was offline for such long timespans in its dataset (41% in 2008, 100% in 2014, 18% overall), and (3) that the dataset is top-heavy with wet water years over the license term all conspire to present a misleading view of project effects on boating days below Fairview Dam.

We can correct for the first and second of these problems by applying the ≥ 500 cfs boating day formula to our authorized flows hourly table.⁴¹ Doing so reveals that the project was authorized to take away 47% of boating days from the 16-mile stretch below Fairview Dam⁴²:



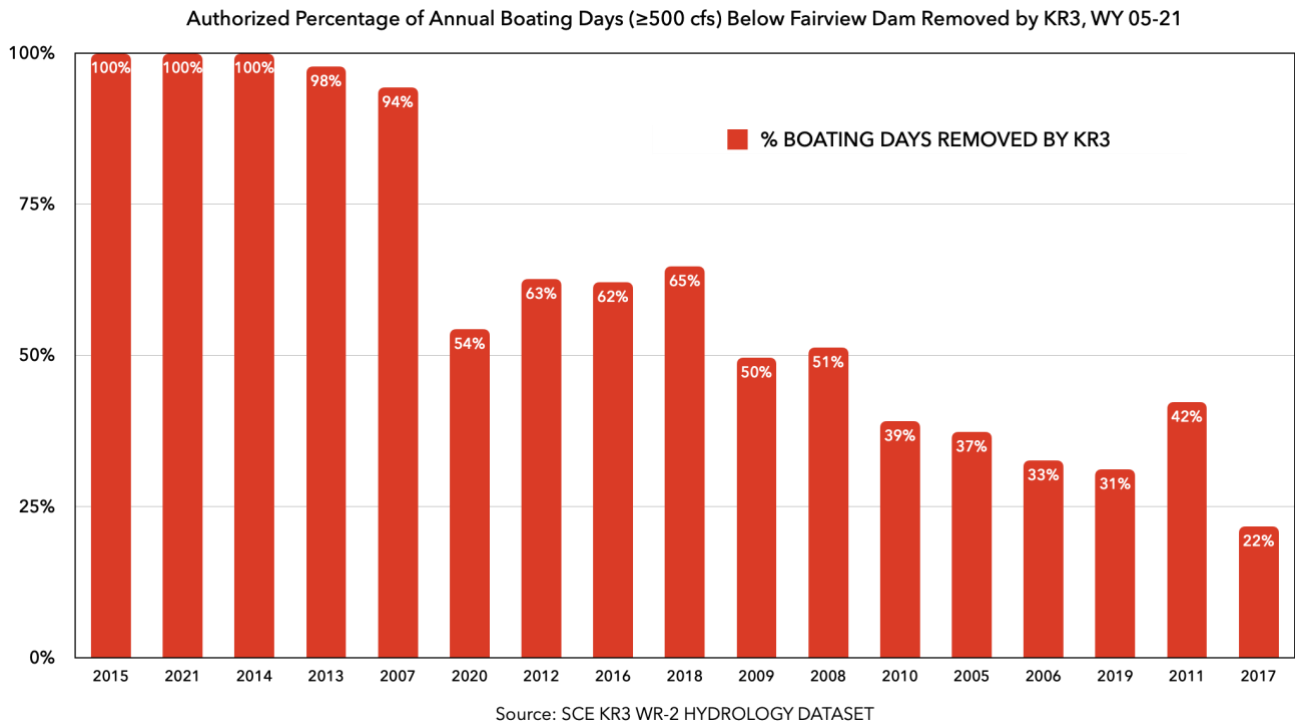
⁴¹ See *ante*,

KRB WR-2.4 Hydrology. Authorized Flows Tables, New Study at 23

⁴² Chart, methodology, and supporting data available at the following Apple website (Sheet 15, “KR3 Annual Rec Days, 05-21”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

Here is the same data presented as annual percentages of boating days below Fairview Dam removed by the project, with water years arranged from driest to wettest⁴³:



Again, the drier the water year, the greater percentage of days removed.

Based on the preceding analysis, we ask that the Commission modify the WR-2 study to require summaries be based on a lower flow definition of boating days, account for project effects in dry and moderate water years, and account for the time the project was offline. Good cause for this request exists as follows: FERC studies are supposed to be based on commonly used scientific methodologies. REC-1 seeks to summarize fair representations of project recreational effects. Edison has not done so, offering a summary of annual effects based on an unsupported definition of boating days, understating moderate and dry year effects, and failing to account for significant project outages that are not foreseeable in a future license term. The REC-1 ISR is accordingly at variance with the approved study. In our opinion, it should be corrected in the manners we have identified above, but at the very least the summaries should be consistent with them and account for the issues raised. Accounting for those issues more faithfully represents project effects now and going forward. This is entirely desktop work, and we completed our summaries with less than 12 hours of analysis for a total estimated cost of about \$1,750.

⁴³ Chart, methodology, and supporting data available at the following Apple website (Sheet “15. KR3 Annual Rec Days, 05-21”):
https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

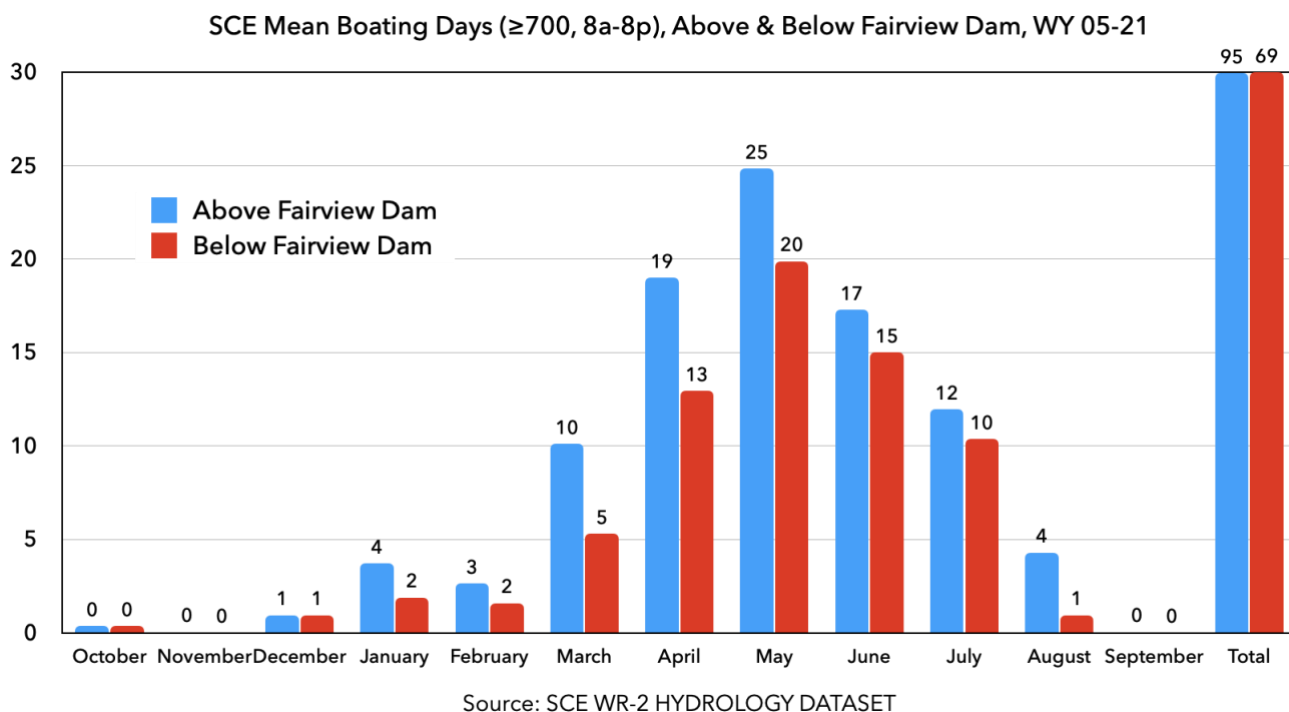
KRB REC-1.3 Boating. Monthly Boating Days, Modification

EDISON: Figure 5.1-9. Comparison of Mean Monthly Number of Days Flows are > 700 cfs above Fairview Dam and in the Fairview Dam Bypass Reach, WYs 2005–2021. (ISR REC-1 at 28.)

KRB: Edison’s use of the monthly *mean* for figure 5.1-9 is another analytical choice that, if unchallenged, would misleads its intended readers — governing agents and stakeholders — about typical project effects.

We have shown the distribution of water years in the NF Kern watershed is not of a symmetrical nature suited to analysis by the mean. Rather, it is asymmetrical, skewed by the presence of outlier high water years up to four times greater in water volume than the median. The central tendency of this system is best represented by the median.⁴⁴

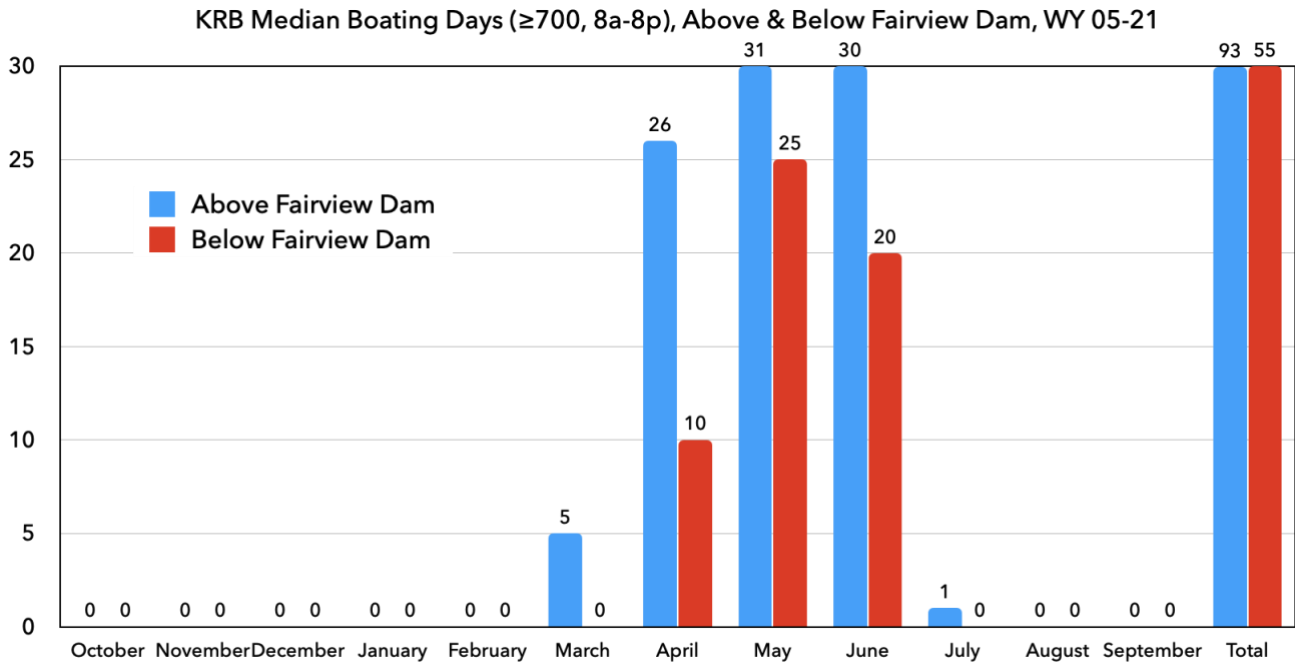
A comparison of *median* monthly boating days above and below Fairview Dam paints a much different picture of project effects than Edison’s Figure 5.1-9. The following charts use identical time and flow methodologies to count boating days (≥ 700 cfs, 8a-8p), but the first uses Edison’s mean, and the second uses the median⁴⁵:



⁴⁴ See *ante*, KRB WR-2.3 Hydrology. Median Flows, Modification at 9

⁴⁵ Charts, methodology, and supporting data available at the following Apple website (Sheet 17, “KR3 Median Boating Days, 05-21”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD



Source: SCE WR-2 HYDROLOGY DATASET

As can be seen, median project effects on 700 cfs boating days are greater than the mean, showing the central tendency of the project to remove almost double the 700 cfs boating days (41% vs. 22%). The reason is that during outlier high water years, project effects are diminished due to the addition of numerous days where inflows are above 1,300 cfs and the project is unable to reduce flows below 700 cfs due to its inability to remove more than 600 cfs from the river at Fairview Dam. But those wet years are few-and-far between, and undue weight should not be afforded them.⁴⁶ The more typical project effect facing boaters is the removal of more days — either absolutely or as a percentage — than Edison’s chart allows.

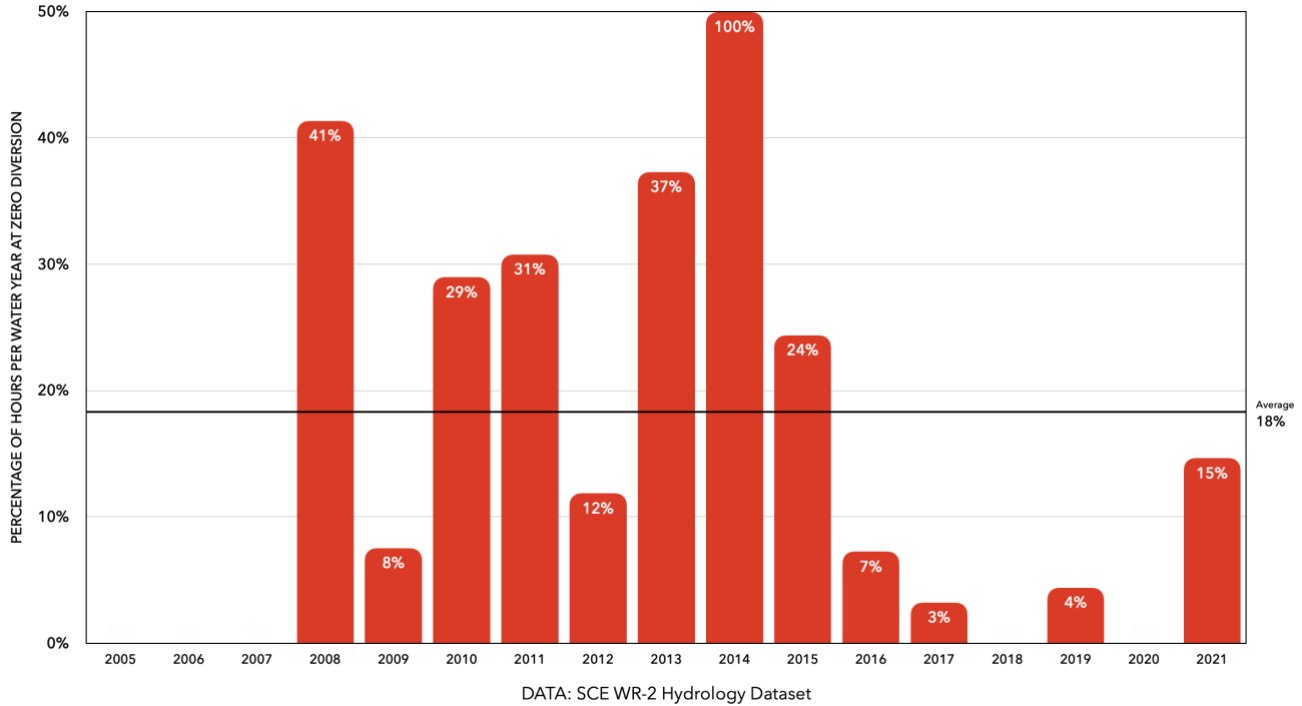
Next, Edison’s Chart 5.1-9 fails to inform its readers that almost a fifth of its underlying occurred when the project was offline for repairs or rehabilitation, when the project cannot have any effect on boating below Fairview Dam⁴⁷:

⁴⁶ See *ante*, KRB REC-1.2 Boating. Annual Boating Days, Modification at 50

⁴⁷ Charts, methodology, and supporting data available at the following Apple website (Sheet 9, “KR3 Zero/Low Flow”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

KR3 Zero Flow (No Diversion) Hours, WY 2005-2021



Edison cannot guarantee the project will be offline to the same degree in the next license term. To the contrary, Edison’s mandate is to generate electricity, and it has undertaken the repairs and rehabilitation that caused these outages to increase project reliability and ensure the project will not suffer outages at the same rate going forward. To have an accurate understanding of project hydrological effects going forward under the current license regime — which is the starting point in this proceeding since Edison has proposed no operational changes to support the natural or social environments — one must account for these outages.

The only way to remove the confounding factor of project outages is to examine the flows the current license *authorizes* Edison to divert from the river. We have done so with our authorized flows hourly table.⁴⁸ We also disagree with Edison, as noted above⁴⁹, that a boating day requires 700 cfs: That figure is not the lowest whitewater release flow

⁴⁸ See *ante*,

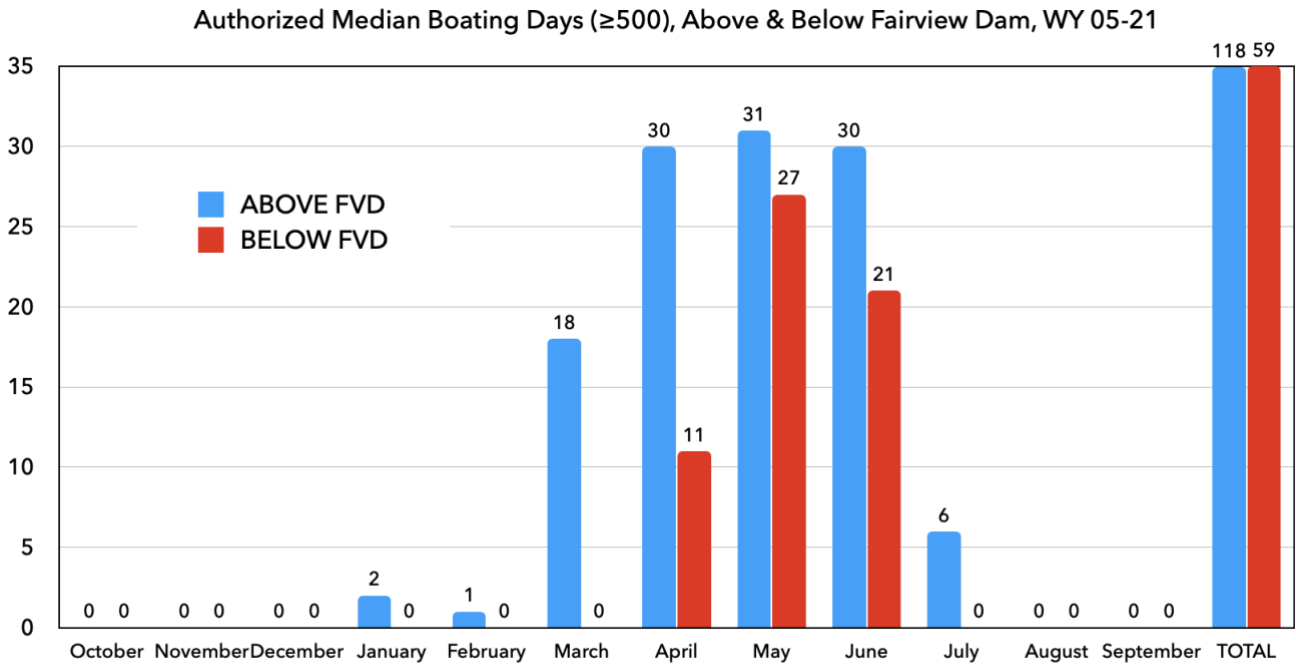
KRB WR-2.4 Hydrology. Authorized Flows Tables, New Study at 23. Chart, methodology, and supporting data available at the following Apple website (Sheet 16, “KR3 Hourly Authorized, 05-21”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

⁴⁹ See *ante*, KRB REC-1.2 Boating. Annual Boating Days, Modification at 50

authorized by Article 422, is not the lowest enjoyable flow noted by the 1994 whitewater study, and is not in line with contemporary boater preferences.

Lowering the boating day figure to 500 cfs and accounting for zero-flow hours with our authorized flows table paints a very different picture than Edison’s Figure 5.1-9⁵⁰:



Source: SCE WR-2 HYDROLOGY DATASET

Lowering the definition of a “boating day” further to ≥400 cfs shows even more deprivation caused by the project diversion⁵¹:

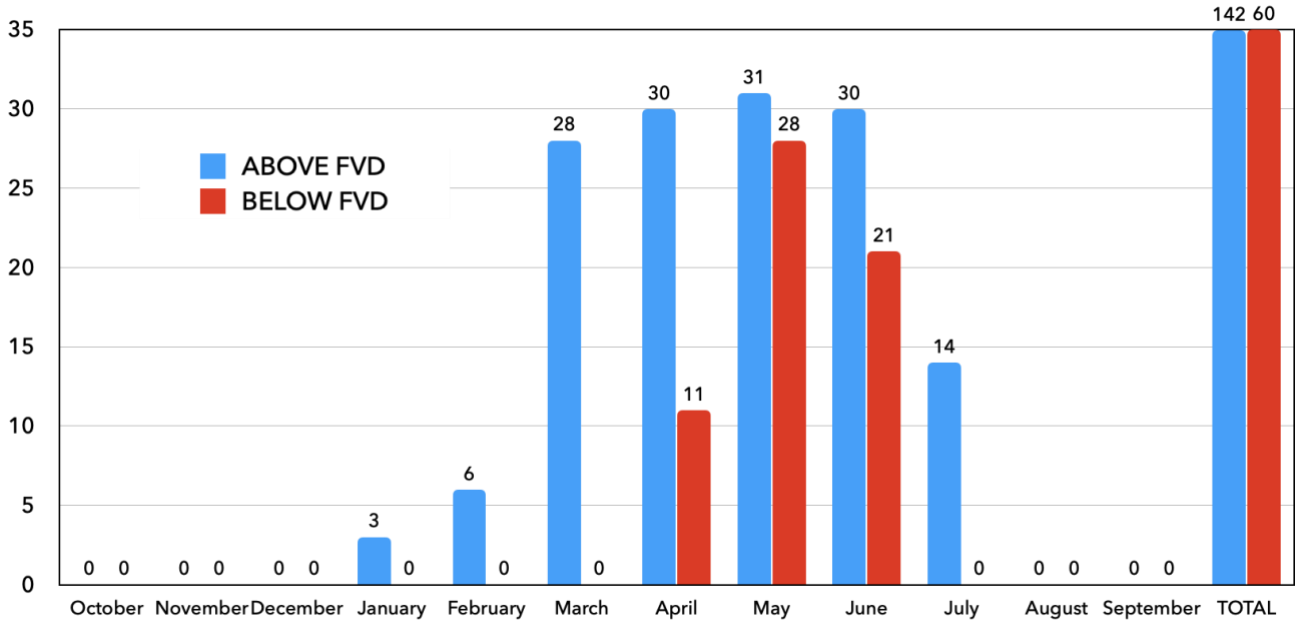
⁵⁰ Chart, methodology, and supporting data available at the following Apple website (Sheet 18, “KR3 Authorized Median Boating Days, 05-21”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

⁵¹ Chart, methodology, and supporting data available at the following Apple website (Sheet 18, “KR3 Authorized Median Boating Days, 05-21”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

Authorized Median Boating Days (≥ 400), Above & Below Fairview Dam, WY 05-21



Source: SCE WR-2 HYDROLOGY DATASET

These charts demonstrate the central tendency of this project as authorized by the current license is to remove 50-60% of boating days from the community.

Based on the preceding analysis, we ask that the Commission modify the REC-1 study to require that monthly summaries be based on a lower flow definition of boating days, be based on median monthly effects, and account for the time the project was offline, as we have done above. Good cause for this request is as follows: FERC studies are supposed to be based on commonly used scientific methodologies. REC-1 seeks to summarize fair representations of project recreational effects. Edison has not done so, offering a summary of monthly effects based on an unsupported definition of boating days, an unsupported methodology of reporting the mean, and failing to account for significant project outages. No generally accepted scientific practice would use these methods to fairly represent project effects under the current license and going forward. The REC-1 ISR summary is accordingly at variance with the approved study. It should be corrected in the manner we have identified above, but at the very least the summaries should account for the issues raised. This is entirely desktop work, and we completed our summaries with less than 10 hours of analysis for a total estimated cost of about \$1,500. We have provided the blueprints for analysis in our linked spreadsheet. Edison could either validate our work or choose to build its own summaries in compliance with the directive.

KRB REC-1.4 Boating. Focus Group Composition, Modification

EDISON: *The 10 Level 2 Limited Reconnaissance site visit participants represented a broad cross-section of the whitewater boating community on the NFKR. (ISR REC-1 at 33.)*

KRB: The participants in the L2 focus group did not represent a broad cross-section of the NFKR boating community.

One participant was a representative of American Whitewater who, living in Northern California and trying to pursue a career in river management, is brand new to the NF Kern and had not been exposed to a “wide range of flows” in the dewatered reach prior to the visit.

Of the nine participants with experience over the range of flows offered by the NFKR, six were local business owners. That does not represent the NFKR boating community. The vast majority of it are not local business owners.

Eight of the nine participants live in the Kern River Valley. That does not represent the NFKR boating community. The vast majority of it live in Southern California.

Of the five participants who kayak, three (including a husband and wife) are local business owners deeply involved in a decade-long effort to obtain Edison’s assistance in refurbishing the whitewater park in Kernville. Those three have attempted to use this relicensing proceeding to do so, proposing a trade of mitigation flows in the dewatered reach for Edison’s permitting support.⁵² Those close ties with Edison — and the willingness to trade flows on the NF Kern for a money-making park — are exceedingly minority viewpoints in the local boating community⁵³ but represented 60% of kayakers at the focus group.

There were no minority participants. That does not represent the NFKR boating community. (See participants in NF Kern videos at socalwhitewater.com)

Adding to this curiousness of this panel, Edison did not attempt to fill three vacancies through community outreach — but it did allow a fourth vacancy to irregularly nominate a replacement beyond the nomination deadline. It revealed neither the vacancies nor the irregularity to the community until the ISR.⁵⁴

Finally, unlike its social media broadcast about the availability of the L1 SIQ and SFS to the general public, Edison related information about focus group nominations in an

⁵² Proposed at the 01DEC2021 American Whitewater boating community meeting [recorded by AW]

⁵³ No boaters supported the proposed trade at the AW meeting, nor have any suggested such in the numerous comments to this proceeding.

⁵⁴ See ISR REC-1 at 32 [*“Another boater nominated a replacement, for a total of 10 boaters”*]

email of uncertain distribution. Stakeholders at the October 17, 2023 ISR meeting expressed frustration about L2 focus group notice process, composition, and event timing.

Edison's failure to obtain a representative panel for its L2 focus group is at variance with the approved study plan. The study plan touted the L2 focus group as being founded on the principles of Whittaker, whose work requires that panels be representative of the boating community. This one, plainly, was not. Due to this variance, we request that REC-1 be modified so that all panels going forward are established with the opportunity for stakeholder comment and require stakeholder agreement⁵⁵, and that disputes be resolved by FERC or its W&SR recreation advisor, NPS. Good cause for this modification exists in that the only panel established by Edison to date was not representative of the boating community and that such representation is required to achieve the study objective, which is to fairly and reliably estimate the range of minimally acceptable and optimum flows for the watercraft of the NFKR.

⁵⁵ Regarding panels, "Stakeholder and agency agreement on composition may be useful." Whittaker (2005) at 14.

KRB REC-1.5 Boating. Focus Group Omissions, Modification

EDISON: *Level 2 Limited Reconnaissance Site Visit [null.]* (ISR REC-1 at 32.)

KRB: Edison's narrative of the L2 focus group makes several omissions.

First, this was a one site "reconnaissance" visit: participants went to a single riverside site and were not asked to look at and evaluate the river. Far from complying with Whittaker's description of the Level 2 reconnaissance methodology, this was just a long quasi-focus group. Participants were asked to fill out the Level 1 structured interview questionnaire ("SIQ") again, and then were asked questions in word-association manner about the segments for the purpose of educating, in Edison's consultant's words, "some bureaucrat in Washington." Many times, the consultant tried to "prime the pump" by suggesting frameworks or potential responses, and the consultant did not memorialize all the participants offered in reply.

Since the L1 desktop review and SIQ were supposed to have informed the conduct of this L2 study, the consultant should have realized that three of his purported eight segments in the dewatered reach are *always* boated in conjunction with another segment. No one boats Sidewinder/Bombs' Away, Salmon Falls, or Riverkern Beach in isolation; all three are always boated in combination with runs above or below. That leaves just five meaningful segments in the dewatered reach — a fact confirmed by consultant's Level 1 desktop review of the Upper Kern Rafting Guide, which identifies just five segments in the dewatered reach, plus one above, and one below: "The Upper Kern River Rafting Guide divides the upper Kern from Johnsondale Bridge [to Riverside Park] into seven distinct segments with detailed descriptions of rapids and locations in each segment." (ISR REC-1 at 11.) Seven minus two is five. Nevertheless, the consultant spent an inordinate amount of time on these three segments at the L2 event, where he was again informed that nobody runs these three short segments in isolation. Yet even after all this information — data from the SIQ, from the desktop review, and from the L2 Reconnaissance chat — Edison continues to report in the ISR that there are *eight* segments in the dewatered reach. This fact reveals, perhaps unintentionally, a major Edison tactic: to proliferate issues rather than narrow and distill them during the study process. As with the non-reporting of the L1 SIQ results, the governing agents are not getting the results they should be expecting from the SPD-approved study plan.

Edison's L2 narrative omits one incredibly important fact: after the SIQs were completed and the site visit concluded, Edison did not adjourn the proceedings, but instead directed the participants to a conference room at the KR3 powerplant. There, Edison attempted to draw divisions by ranking segments with no reference to water levels or skill sets or the fact some preferences might be equal. The boaters did not bite. Rather, they expressed solidarity about what boaters — themselves and others — want from this process. Each boater agreed that the current rec flow regime was unsatisfactory in scope

and design — a non-starter. Rather than the present regime, which is based on exceedingly narrow inflow windows, each participant agreed the regime should simply be a fixed calendar of days focused on the runoff season during which the project would go offline — whether daily with bubble releases or for long weekends if the tunnel could not supply bubbles — regardless of inflow. Boaters on the NF Kern are a sophisticated user base used to navigating the ever-changing hydrograph of impaired flows below Fairview Dam. Unimpairing those flows based on a calendar focused on the runoff season with no regard for inflows — whether for daily bubbles or long weekends — was roundly supported. Edison’s failure to report this critical point obscures the fundamental takeaway from this study group.

We ask that the Commission direct Edison to append these omitted details to the ISR and USR reports. Good cause for this request exists in that the REC-1 study plan promised a fair reporting of the L2 study, and Edison’s omissions on these points frustrate that promise. The level of cost and effort in satisfying this request is *de minimis*.

KRB REC-1.6 Boating. Level 3 Mischaracterizations, Modification

EDISON: *SCE committed to completing a Level 3 Intensive Study using both the Multiple Flow Reconnaissance Assessment Approach and Flow Comparison Survey approach approved in the FERC SPD (FERC, 2022). The single flow survey is the Multiple Flow Reconnaissance Assessment approach described in Whittaker et al. (2005). . . . Evaluation of broad range of flows by a large number of boaters in a variety of watercraft in all the river segments [in the Single Flow Survey] addresses the limitations identified by Whittaker in the controlled flow approach. In 2024, SCE will conduct a Level 3 Flow Comparison Survey described in Whittaker et al. (2005). (ISR REC-1 at 51.)*

KRB: Each of Whittaker’s Level 3 approaches calls for an evaluation across a range of flows, true. But each calls for that evaluation *by a panel of boaters or experts* — not, as Edison proposes in its SFS, an impersistent “large number of boaters.” (See Whittaker (2005) at 22 [L3 Multiple Flow Reconnaissance Assessment (MFRA) approach requires “assessing multiple flows . . . by panels or experts” and only use experts if “constraints make it difficult to assemble or maintain an evaluation panel”]; at 24 [L3 Flow Comparison Surveys (FCS) of Experienced Users approach requires consultant to “identify panel of knowledgeable users and develop contact information,” “Panel development is critical,” and this panel is “depend[ant] on the availability of knowledgeable users and an existing gage to which they are calibrated”; 26 [L3 Controlled Flow Studies approach requires that “a panel of boaters evaluate several known (usually controlled) flows”].)

Edison is not conducting its FCS “as described in Whittaker,” either. Instead of administering the FCS to a persistent panel, as Whittaker describes, Edison proposes to present it to the general public: “to local, regional and national whitewater boating groups and accessible on the KR3 relicensing website.” (ISR REC-1 at 9.)

Neither Edison’s SFS nor its FCS employ a representative panel familiar with the range of flows at issue, as required by Whittaker for a Level 3 study.

As such, Edison’s method of “addressing the [purported] limitations” of a Level 3 controlled flow study is by retreating to a variety of Level 1 survey methodologies but continuing to call them “Level 3.” A bunch of Level 1 surveys cannot make up for a Level 3 controlled flow study.

Whittaker makes clear that where “where precise information about flow needs or project effects is needed, more intensive effort is recommended” and — speaking directly of the controlled flow methodology — “more precise quantitative output becomes important when potential for controversy is high.” Whittaker assures us the on-water controlled flow study has the greatest reliability and resolution.⁵⁶ When Whittaker says, “Some rivers have extensive recreation use that is clearly flow-dependent and affected by project operations;

⁵⁶ Whittaker (2005) at 22 & 26

here more intensive and detailed efforts are necessary,” he could be speaking directly of the NF Kern, which, but for the diversion, is the only potentially reliable whitewater boating opportunity for Southern Californians for three-quarters of the year.⁵⁷

At the end of the day of the process described in the ISR, Edison will have simply gathered a pile of survey data using varying methods with varying participants. That is nothing like the phased, collaborative, ever-focusing methodology described by Whittaker. Nor does it satisfy the requirements of Level 3 intensive study. This is unacceptable for such a treasured and popular public asset as the NF Kern. What is required, as we will discuss next, is the gold standard of Level 3 studies: a controlled flow whitewater study — a study like those that have been conducted in numerous FERC proceedings.

We ask that the Commission modify the REC-1 study by directing Edison to strike its use of the term “Level 3” in characterizing the SFS or FCS.⁵⁸ Neither of those studies satisfies the Whittaker requirement of a persistent, representative panel of knowledgeable boaters. Good cause for this exists because people will otherwise have the wrong perception of the reliability and resolution of Edison’s work product. This request involves *de minimis* cost and effort.

⁵⁷ Whittaker (2005) at 8

⁵⁸ Edison also states in isolation that there will be a “Level 3 Whitewater Focus Group.” (ISR REC-1 at 9-10.) There is no *independent* provision in Whittaker for a Level 3 focus group — such are contemplated solely within the framework of one of the three panel methodologies (MFRA, CFS, or CFS). Whittaker (2005) 22-28.

KRB REC-1.7 Boating. Controlled Flow Study, Modification

EDISON: *Whittaker et al. (2005) list “Additional Issues” and “Cautions and Limitations” associated with conducting Controlled Flow Studies. These issues and limitations include insufficient storage to provide flows across boatable flow range, number of boatable flow releases needed for investigation, inability to insure [sic] consistent panel of participants across controlled releases, length of bypass reach, complexity of whitewater opportunities in bypass reach, and variety of watercraft being evaluated. Each of these issues exist in the Project Area; for these reasons, SCE determined the Controlled Flow Study approach was not suitable for the Fairview Dam Bypass Reach. (ISR REC-1 at 52.)*

KRB: The 16-mile dewatered reach of the NF Kern deserves the best science available to determine its potential for recreational use. No one can deny that this is a world-class whitewater resource designated Wild & Scenic serving 25 million Southern Californians. We have seen that the central tendency of this project is to remove more than half the boatable days from this population — most of which occur when the NF Kern is the only river running for Southern Californians.

Nor can anyone deny that the best available science for whitewater boating preferences is a controlled flow study (“CFS”). That is why the SPD demanded Edison to provide a new “detailed statement” justifying its choice not to conduct one.

Edison’s statement is neither new nor detailed; it has simply rearranged and repeated the list of objections proffered during the study development process. Nor do Edison’s objections withstand scrutiny.

The “variety of watercraft” objection is a consistent with Edison’s general strategy to proliferate issues. Edison has offered no evidence that the watercraft used on the NF Kern are somehow different or more complex than those on the hundreds of other rivers where controlled flow studies have been conducted in FERC licensing proceedings. The craft used here are used everywhere, yet controlled flow studies go forward elsewhere. They accordingly present no reason to preclude one here.

The “complexity of whitewater opportunities” and “length of bypass reach” assertions are baseless. Edison has *repeatedly* pointed to the 1994 whitewater study during this proceeding, hoping to hold the line at its flow preference conclusions. Yet that study had no problem adjudicating user preferences based on the reach’s “complexity” or “length.”⁵⁹ From the earliest TWG meeting of this proceeding, KRB’s position has not been that the 1994 study was improperly conducted, but rather that times have changed, and the minimum enjoyable / acceptable flow preferences determined by that study are out of date.

⁵⁹ See 1994 Whitewater Study, “Plan of Action for conducting Whitewater River Evaluation and Preparing Summary Report” at .tif pp. 143-155 [FERC Accession No. 19940802-0010]

Note well: neither we nor any other stakeholder in this proceeding has challenged that study's findings on optimal flows. Rather, we think that new boating techniques, new boat designs, and new boater experiences since 1994 have decreased the flow that should be considered minimally enjoyable or acceptable.⁶⁰ Further, any challenges due to the length or complexity of this river directly imply the necessity for nuanced, firsthand judgments — the kind of judgments controlled flow studies are best poised to provide, especially for such an important river.

The 1994 study — which involved just five flows — can be repeated, and it will be repeated if the commission makes it a condition of Edison's license application. But as seen above, we do not believe the entire study needs to be repeated. Since the issue of optimum flows has not arisen, a targeted flow study could be conducted solely on the issue of minimally acceptable flows in the five sections of the dewatered reach. Such a study could potentially be achieved in a single long weekend late-winter/early-spring 2024.

Edison's use of the consistent panel argument to argue against a controlled flow study is rich, in that Edison has removed the requirement of a persistent panel from the rest of its purported "Level 3" studies. As noted above, Edison improperly characterizes both the SFS and FCS as "Level 3," but neither involves a persistent panel; both are open to the general public. How can Edison genuinely object to a controlled flow study based on difficulties in panel maintenance when it has simply removed the same requirement from its other purported L3 studies?

In any event, Edison's consistent panel objection does not hold water. The boaters who know the NF Kern best and bear the lion's share of project effects — those locally and those from Southern California — show up weekend after weekend during the runoff season when impaired flows are sufficient. Edison can form a representative panel from that group with our help, and we can help identify some volunteers to represent Northern California and beyond — who, it must be conceded, do not bear the brunt of project effects because they have far closer alternatives. Southern Californians do not.

Edison's next objection is the purported "number of boatable flow releases needed for investigation." Edison's 1994 study used only five flows, and we think as few as three could update that study on the issue of minimum acceptable flows. Edison unhelpfully asserts without any analysis or justification that it needs to study flows from "200 to 2,500 cfs." (ISR REC-1 at 53.) That's unreasonable. The project has no storage and thus cannot provide flows anywhere near that upper range. To the extent optimum flows are important here, it is the lower range of them that are important, for the project's ability to supplement flows is fixed to natural inflows, which swiftly decline in natural frequency as levels increase. The study of 2,500 in a controlled flow manner would be a waste of resources. We

⁶⁰ See Whittaker (2005) at 24 ["In cases where skill and equipment advances have occurred [Flows Comparison Survey] may not be appropriate"].)

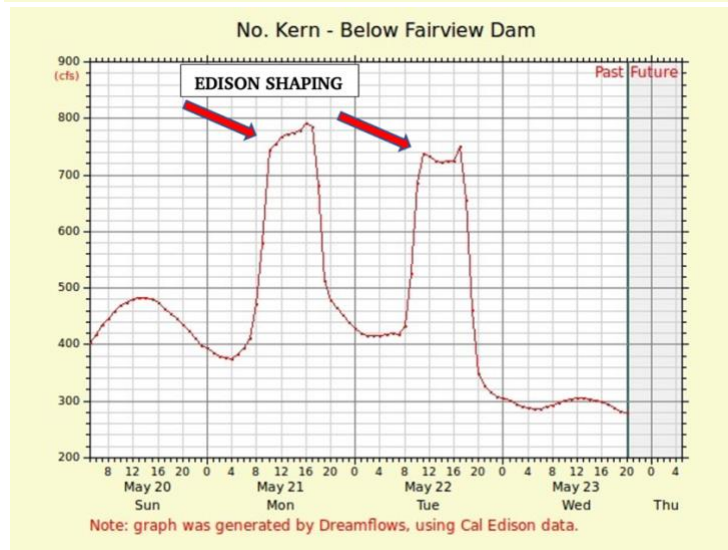
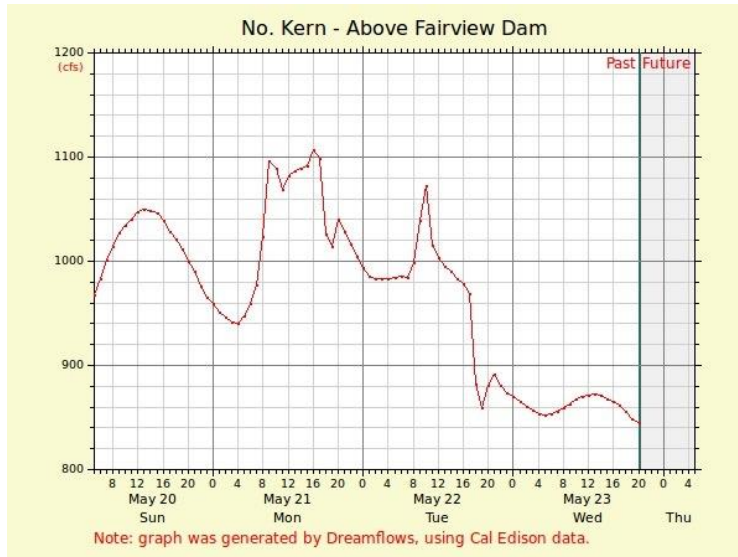
know from 1994 that the optimum range begins around 1,000 to 1,200 cfs and no one has challenged that finding. Proposing to waste a CFS on flows more than twice as high is yet another attempt to proliferate issues in hopes some not-needed-perfect will negate what would be perfect for this proceeding: a CFS that established the most controversial issues of this incredibly important river at the highest level of resolution. That can be accomplished again with five flows — or potentially as few as three should the issue be focused on minimally acceptable flows.

Edison’s “200 to 2,500 cfs” contention is the barest of raw assertions, unjustified by evidence or analysis. Edison had an opportunity to report the SIQ but it didn’t. All we have are a handful of responses from the L2 focus group. There, preferences were reported being as low as 150 cfs and as high as 6,000 cfs in the dewatered reach. (ISR REC-1 at 46.) Why aren’t those required for study? Edison has provided no justification that flows between 200 and 2,500 cfs need to be studied, and that bare assertion should be rejected.

Edison’s final argument against a controlled flow study — lack of storage — is contradicted by its own words elsewhere in the ISR. Think about it: Edison proposes to “opportunistically” “enhance flows” at “specific flow ranges” and “give notice” to “encourage additional boater use.” (ISR REC-1 at 8 & 52.) Edison’s opportunistic flow scheme *has all the core elements of a controlled flow study*: a typically dewatered reach, eager boaters from which a panel could be established, an evaluation tool, and a range of flows identified for study, and the provisions of those targeted ranges provided by the utility. We ask Edison, what’s missing but a willingness to bear the cost of administering the CFS?

Edison has failed to rebut KRB’s analysis in the PSP/SD2 round of comments regarding Edison’s substantial ability to control flows in the dewatered reach. Edison maintains the ability to shape flows below Fairview Dam from the level of the natural inflow to a level anywhere between 1 and 600 cfs less. For instance, if incoming flows are 900 cfs, Edison could set the flow in the dewatered reach anywhere between 300 and 900 cfs for study. If flows were 1,200 cfs, it could set them anywhere between 600 and 1,200 cfs.

Here is an example of Edison shaping flows to a targeted level from May 2018 — the first chart shows flows above Fairview Dam, the second flows below:



As can be seen by the sudden rises around 8am and decreases around 5pm on May 21 & 22, Edison was able to shape flows below Fairview and keep them around 775 cfs for seven hours one day and around 730 cfs the next. The fact Edison can shape flows below Fairview anywhere between the level of incoming flows to a level 1 to 600 cfs less means there is a large inventory of days upon which different flow levels could be targeted for investigation. KRB took the daily average flow data from the last 25 years and found the following average numbers of days upon which different flow ranges could be tested annually⁶¹:

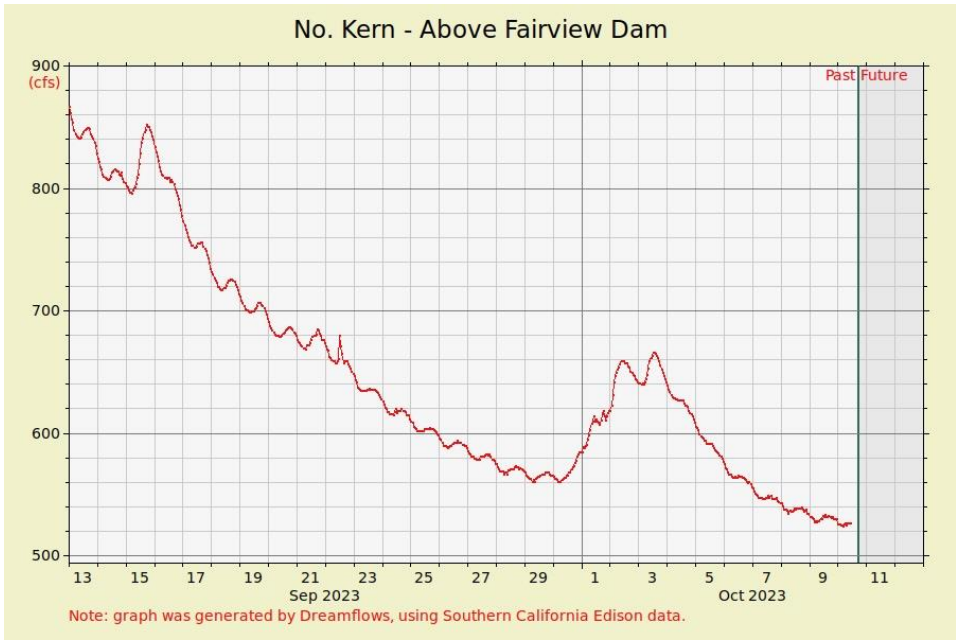
⁶¹ Spreadsheet available:

https://www.kernriverboaters.com/s/KRB_KR3_SHAPE_FLOWS.xlsx

MEAN DAYS PER YEAR FLOWS ARE SUITABLE FOR TESTING WITHIN GIVEN RANGES (NFKR WY 1997-2021)			
RANGE (CFS)		TOTAL DAYS	DAYS PER YEAR
LOW	HIGH		
200	299	4780	191
300	399	3276	131
400	499	2184	87
500	599	1757	70
600	699	1461	58
700	799	1218	49
800	899	1014	41
900	999	933	37

These figures show there to be more than a month’s worth of days on average — indeed, two to five months’ worth at the 699 cfs and below — for testing within these relevant ranges.

For instance, in the 30 days prior to the October 17, 2023 ISR meeting, Edison could have investigated *any flow* between 200 cfs and 500 cfs:



And in September 2023, Edison had weeklong opportunities to examine flows between 500 and 1,500 cfs.

Additional opportunities to target flows at issue here are next likely to occur late-winter into spring 2024.

Finally, Edison's consultant implicitly refuted all of Edison's objections to a controlled flow study here when he told the Commission the 1994 whitewater study was a shining example of a "Controlled Flow Whitewater Stud[y]" like others that "have been undertaken in the relicensing of numerous FERC projects"⁶²:

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American Whitewater and Sierra Club
4/23/2003, page 11

for evaluating instream flows for whitewater recreation because it takes place over a short period of time, allowing consistency among participants for flow comparisons, the exact flows are quantified and the user group serves as the study participants. Controlled Flow Whitewater Studies have been undertaken in the relicensing of numerous FERC projects.

This list includes but is not limited to the following FERC licensed projects: Chelan, FERC No. 637; Stanislaus -Spring Gap, FERC No. 2130; Bearsdley-Donnells, FERC No. 2005; Upper North Fork Feather, FERC No. 2105; Poe, FERC No. 2107; Nantahala, FERC No. 2692; West Fork Tuckasegee, FERC No. 2686; Tapoco, FERC No. 2169; Nisqually, FERC No. 1862; Rock Creek-Cresta, FERC No. 1962; and North Georgia, FERC No. 2354; Moosehead Lake, East Outlet, FERC No. 2671; Sullivan Creek, No. 2225; Bear River, No. 2401; Kern 1 & 3, No. 1930 & 2290; Mokelumne, No. 137; and Pit 1, No. 2687.

With the early identification of a pool of potential panel volunteers and a readiness to get to work, a controlled flow study can be completed at relevant target ranges in accord with Whittaker. Indeed, Whittaker states that "natural flows" might need to be used to conduct a controlled flow study.⁶³ But here we have "natural flows" *and the ability to decrease those flows by up to 600 cfs* to reach a desired target — that is *much* more control than Whittaker's reference to natural flows alone.

⁶² FERC eLibrary No. 20030423-5019 at 11. For an examination of other positions Edison is taking in direct opposition to those its consultant previously supported before this agency, see: <https://www.kernriverboaters.com/blog/gangemi>

⁶³ Whittaker (2005) at 28

We request that the Commission direct Edison to conduct a controlled flow study as contemplated in the SPD. It should include direction on panel composition per our earlier study modification request.⁶⁴ It may in the Commission's discretion be limited to the issue of minimum acceptable flows. Good cause for this request exists in that it is wholly consistent with the SPD and that Edison's objections to conducting the study do not withstand scrutiny, nor do they satisfy the requirement of a meaningful, detailed explanation of why such a study "cannot be conducted." This incredible river and boating community deserve a controlled flow study update to the 1994 study that Edison has touted time and time again.

⁶⁴ See *ante*, KRB REC-1.4 Boating. Focus Group Composition, Modification at 63

KRB REC-1.8 Boating. SFS Reopening, Modification

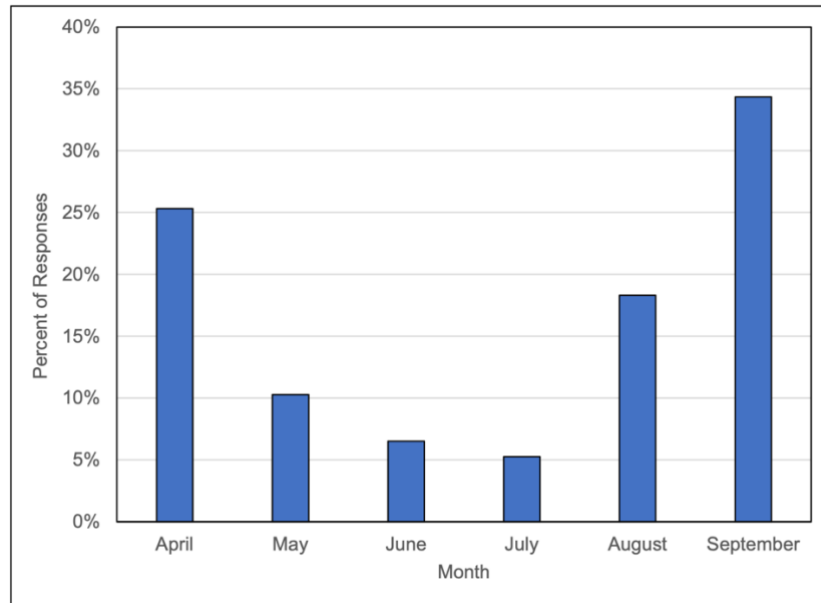
EDISON: *SCE will attempt to enhance flows where potential gaps exist in boater knowledge and experience for specific flow ranges. Flow enhancement may include diverting a portion of flow over Fairview Dam to target specific flow ranges where knowledge gaps were identified in Levels 1 and 2 of the study as well as the single flow survey. Enhanced flows will be opportunistic, not scheduled in advance, and subject to available inflows and tunnel flow needs. The single flow survey may be reopened for additional data collection if quantitative data does not exist for developing flow preference curves. (ISR REC-1 at 52.)*

KRB: Earlier, Edison stated that “the Single Flow study will remain open until end of year.” (ISR REC-1 at 51.) Now, Edison says the SFS may be “reopened” (and reclosed) this coming year at undefined times and undefined flow levels, purportedly to gather additional data for a study that will have already closed on December 31, 2023.

Edison’s proposed reopening and reclosing of the SFS is not social science; it is an invitation to mischief.⁶⁵ An elementary protection against p-hacking is to not allow a study conductor the unencumbered discretion to restart and re-stop the collection of data after examining the initial dataset: that is the very definition of data peeking. Decisions on when to start and stop data collection must be made in advance of any data collection and strictly observed. Any further gathering of data on the subject *would constitute a new study* — not a discretionary data supplement for the old one. The RSP never mentioned the prospect of reopening the SFS, nor did the SPD. Edison has provided neither a study plan nor any independent standards at all for conducting additional data collection or embarking on a new study. That violates the Commission’s rules against new studies. (18 CFR § 5.15, subds. (d) & (e).) Nor has Edison provided good cause, proof of variance, or proof of anomaly for study modification — also at odds with the rules. (18 CFR § 5.15(d).)

On that last point, Edison has provided no factual justification for a discretionary reopening and reclosing of the SFS. Edison has not reported either the preliminary flow or knowledge gap estimates from the SIQ that were promised in the RSP. Nor has it justified the reopening with an analysis of SFS results to date. To the contrary, the record demonstrates there is no need to reopen. Edison’s chart of SFS responses shows high participation in April and August, when flows were in plausible optimal ranges, and the highest rate of response in September, when they were in plausible minimally acceptable ranges:

⁶⁵ See *ante*, KRB REC-1.1 Boating. SIQ, Modification at 46 [discussion of p-hacking and data dredging]



(ISR REC-1 at 51.)

Edison’s consultant announced during the October 17, 2023 ISR meeting that he’d never collected as many survey responses as he had in this SFS. And in April, flows below Fairview Dam were between 800 and 3,000 cfs for half the month. In August, they were between 500 and 1,600 cfs. In September, they were 600 cfs and below. These facts show there is no basis for reopening this study, save for Edison’s dislike of the results to date.⁶⁶

We ask that the Commission reject Edison’s attempt to reopen the SFS study. Good cause exists for this request: Edison’s proposal is at variance with the approved study plan and common scientific practice. Edison has failed to follow the rules for reopening, either as a modification or new study. Edison has also failed to provide a factual basis for its proposal — either through the SIQ or the SFS — and the record on hand strongly shows there is no legitimate basis to be had. For these reasons, Edison’s proposal to modify the approved study plan and reopen the SFS should be denied.

⁶⁶ Recall that at the ISR meeting, the consultant said he looked at the survey responses as they came in.

KRB REC-2.1 Use. Trail Cameras, Modification

Edison: *Study Plan Variance [removal of trail cameras required by the Study Plan Determination]. . . . The [removal] request from the concessionaire noted California is a two-party consent state and also included other provisions under California Video Recording Law stating it is illegal to film someone while they are in a location with any reasonable expectation of privacy, such as a bedroom, bathroom, locker room, fitting room, or medical office, and that this expectation could be expanded to a tent or campsite. (ISR REC-2 at 5.)*

KRB: Trail cameras have several virtues in comparison to spot counts.

First, trail cameras are machines recording human activity, not human beings trained and paid by the license applicant to document such activity. Cameras are impervious to the biases — conscious or unconscious — that threaten the accuracy of data collection.

Second, trail cameras are continuous loggers. They monitor activity around the clock, and a well-placed network of them, as proposed in the SPD, would have painted a fair and thorough picture of visitor use above and below Fairview Dam. The spot counts as implemented, by contrast, gather but a splinter of available data: a single point in the day just a few days a month. Cameras are impervious to anomalous use patterns that might arise on the bases of atypical flows, weather, road contingencies, and the like, and thus provide a more comprehensive picture of recreational use.

We are disappointed that Edison threw up its hands on the trail camera issue. Trail cameras serve the public interest in gathering complete and unbiased data of recreational use. ExplorUS and the Forest are simply wrong that consent is required for every video recording in California. Our two-party consent law applies only to settings where there is a reasonable expectation of privacy. Indeed, Edison took a picture of one of KRB's directors at the REC-1 Level 2 focus group and included it in the ISR with neither his knowledge nor his consent.⁶⁷ Our director obviously has no legal recourse against Edison because he had no reasonable expectation of privacy in this USFS day use area.

Edison counsel Chuck Sensiba averred at the October 17, 2023 ISR meeting that Edison had no choice but to accede to the Forest's request to remove the trail cameras. That contention grossly understates the institutional and political footing Edison has in its relationship with the Forest. It also fails to explain why Edison neither (1) attempted to argue in favor of the public interest to the Forest, correcting its mistaken understanding of the two-party law nor (2) reconfigured the camera network so that only parking lots and trail and river access points — no tent sites or restrooms; no place where there could be any expectation of privacy — were filmed.

When flows above Fairview Dam are boatable but those below are not, there is almost no activity to be seen at any of the boat launches below the dam. All boating interest

⁶⁷ Picture location: ISR REC-1 at 32

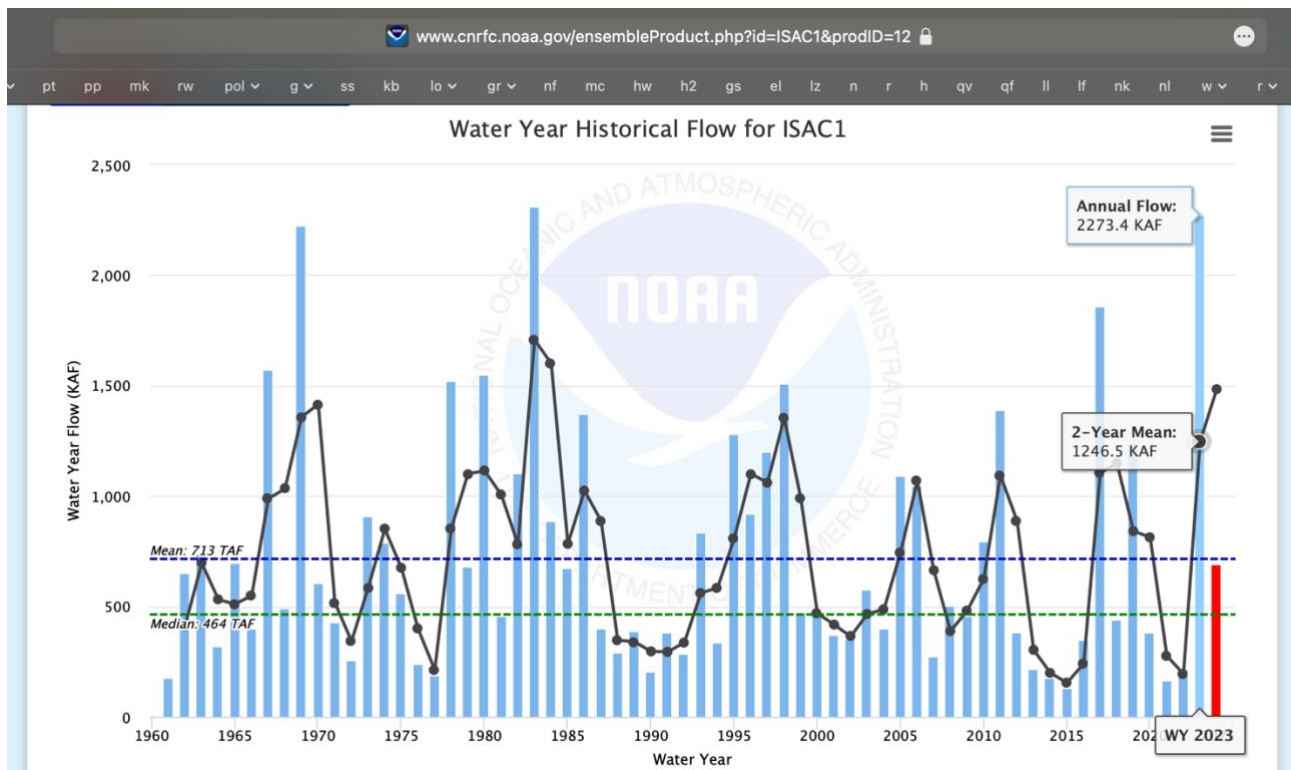
is squeezed into the short section above the dam, along with similarly intensified use by anglers, hikers, and campers, causing such congestion that many potential recreators — not just boaters — are unable to find feasible parking for their desired activity. Providing additional flows below the dam at these times is in the public interest to both facilitate boating that incredible stretch and alleviate project-caused overcrowding of the natural resources for all users above. Knowing when and where the cars are and matching that data to flows above and below Fairview Dam would go a long way towards capturing projects effects on recreation in an unbiased and broad-based manner. For these reasons, we ask that the Commission reject Edison’s variance and carry out the REC-2 trail camera mandate in the public interest as described above.

KRB REC-2.2 Use. Atypical Year, Modification

Edison: Visitor intercept surveys with spot counts will continue one weekday, one weekend day and one holiday weekend day (as applicable) per month between October 2023 and March 2024. (ISR REC-2 at 15.)

KRB: During the study development phase of this proceeding, KRB and others pointed out the possibility that studies might need be extended or repeated should they be conducted in highly atypical environmental or hydrological conditions.

The point of the study process is to reasonably characterize and quantify project effects. Studies conducted during highly atypical conditions fail to reasonably capture project effects borne by all living things dependent on there being adequate quantities of water in the river — from aesthetics, to habitat, to recreation. Although the USGS data at KR3 for WY 2023 has not yet been published, NOAA has weighed in on the water volume in the Kern watershed that year and concluded it to have been near-identical to the last incredible outlier year, 1983⁶⁸:



As seen above, the volume of water in the Kern watershed was just short of five times the median. We haven't seen a year like that since 1983, and there's no guarantee we'll see one again during the next license term. The diversion at Fairview Dam did not

⁶⁸ <https://www.cnrfc.noaa.gov/ensembleProduct.php?id=ISAC1&prodID=12>

drop down to fish flow until the last half of September, unlike median years where fish flows set in by early July and low water years where they set in early June. We also know that project hydrological effects are minimized in outlier high water years in comparison to median and low water years where those effects are severe: see our analyses of hydrology⁶⁹, boating days and the 2016 fish study.

We ask that the REC-2 survey and spot count studies be extended through September 2024, one year past the setting in of fish flows, or at least through May 2024, to capture the congestion above Fairview Dam that obtains when there are boatable flows above Fairview Dam but not below. Good cause for this request exists given the extraordinary hydrological circumstances of 2023 and REC-2's commitment to studying the effects of the project that are typically borne by the natural and social environments.

⁶⁹ See *ante*, KRB WR-2.3 Hydrology. Median Flows, Modification at 9, KRB REC-1.2 Boating. Annual Boating Days, at 49 & KRB ANG-1.3 Angling. L1 Desktop Review at 71

KRB REC-2.3 Use. Survey Participants, Modification
KRB AES-1.1 Aesthetics. L1 Survey Participants, Modification
KRB ANG-1.1 Angling. L1 Survey Participants, Modification

EDISON: Participant responses and analysis of the aesthetic flow related questions will be summarized in spring 2024 when the REC-2 visitor questionnaire is completed and reported in the USR. (ISR AES-1 at 8.)

EDISON: SCE updated the REC-2 visitor questionnaire to include questions designed to query visitors on their angling flow preferences and use in the bypass reach. (ISR ANG-1 at 7.)

KRB: This modification request, founded on the same variance, **applies to REC-2, AES-1 & ANG-1.**

Edison’s REC-2 online survey is fundamentally flawed, and that flaw infects that study as well as the AES-1 & ANG-1 L1 study processes.

Edison implemented the online survey so as to *require* a participant to identify a time and place they visited during the study window at the outset of the survey. Those responses are required for the continuation of the survey:

The screenshot shows a survey form with the following sections listed:

- Section 1 - Demographics
- Section 2 - Current Trip Information and Experience** (highlighted with a yellow box)
- Section 3 - Past Recreation Trips
- Section 4 - Surrounding Landscapes
- Section 5 - Angling Experiences
- Section 6 - User Feedback

Below the sections, it states: "We anticipate this survey will take approximately 10 to 15 minutes."

The highlighted section (Section 2) contains the following questions and input fields:

Recreation Site Visted

Site Visited:*

Springhill Dispersed Camping

Date & Time Visited:*

11/3/2023 03:20 PM

(SCE Online Survey, page one, accessed via sce.com/kr3 November 22, 2023.)

If a person has not visited the area because they know hydrological conditions are poor, they cannot participate in the survey. That unreasonably limits the survey to a self-selected pool of persons who are inherently more predisposed to be satisfied with hydrological conditions than the general public. Flows are commonly known, and persons who choose to visit with that knowledge are more likely to be satisfied with those

conditions than persons who choose to stay away. The survey is closed to the latter — those who have visited the area in the past but choose not to visit due to recollections of poor hydrological conditions. For instance, if a person does not choose to visit the area because, based on past experience, fish flow renders surrounding aesthetics displeasing, they are excluded from participation with those perceptions. Similarly, if a person does not choose to visit the area because, based on past experience, fish flow renders angling unenjoyable, they are excluded from relaying those perceptions.

The exclusion of the general public from the REC-2 online survey is at variance with the approved study plan. The revised study plan does not state that the online survey would be limited to contemporaneous visitors. If it did, it would have been corrected, because that is inconsistent with the goals of the study plan, the L1 structured interview methodology required by Whittaker, and the SPD itself.

A goal of REC-2 is to obtain information on angling and aesthetics and provide a basis on which to estimate future recreational needs. (ISR REC-2 at 1.) That information is also to be used for the Level 1 investigation into angling and aesthetics. In that regard, Whittaker requires that the license applicant “ensure the interviewees represent a sufficient diversity of user types” and cautions against various issues of “self-selection.” (Whittaker (2005) at 12.) Further, the SPD states that the survey would “reach a greater number of respondents, who live locally but *also who live in other areas of California, that are familiar with the . . . character and flows of the bypassed reach.*” (SPD at B-31.) It states the survey would be used to “analyze potential project effects on angling and the preferences of anglers within the bypassed reach.” (SPD at B-31.)

Edison’s implementation of the L1 aesthetics and angling surveys directly contradicts these purposes. The self-selected pool of contemporaneous visitors does not provide for a representative look into angling or aesthetics. It specifically excludes people “from other areas of California . . . familiar” with the area. You had to visit during the study period to participate.⁷⁰

We ask that this variance be corrected by immediately proceeding to a Level 2 investigation (reconnaissance visit) into angling and aesthetics, to be reported by May 01, 2024 so as to allow comment, adjudication, and, if needed, Level 3 investigations. Good cause for the request exists in that Edison was wholly at fault for this critical variance from the goals of the study plan, standard Whittaker methodologies, and the direction of the SPD. The online survey was supposed to form the basis of a Level 1 investigation into the need for further L2/L3 studies. It is now too late to conduct a corrected one-year online

⁷⁰ Edison’s implementation of the REC-2 online survey is also at odds with its implementation of the REC-1 L1 online survey; the latter did not require a contemporaneous visit for participation. It was open to the general public and polled their perceptions *even if they had not visited the dewatered reach during the study period.*

survey, report on it (including a L2/L3 decision), invite stakeholder comment, rule on the report and comments, and still have time to implement meaningful L2/L3 studies with stakeholder input prior to the FLA. For these reasons, the Commission should grant our request.

KRB REC-2.4 Use. Survey Locations, Modification
KRB AES-1.2 Aesthetics. L1 Survey Location, Modification
KRB ANG-1.2 Angling. L1 Survey Location, Modification

EDISON: *Participant responses and analysis of the aesthetic flow related questions will be summarized in spring 2024 when the REC-2 visitor questionnaire is completed and reported in the USR. (ISR AES-1 at 8.)*

KRB: This modification request, founded on the same variance, **applies to REC-2, AES-1 & ANG-1.**

Edison’s online survey is at variance with the Study Plan Determination’s requirement *to include recreation above Fairview Dam*. Edison fails to concede this variance.

As indicated in the ISR (ISR REC-2 at 1), the SPD required Edison to expand its REC-2 online survey to include the stretch above Fairview Dam through Johnsondale Bridge. (See SPD at B-32.) The “primary goal” of the REC-2 online survey was “to collect information on recreation use” from the KR3 powerhouse north *through Johnsondale Bridge*,” including “visitor feedback regarding their perception and experience” on angling, scenery, and crowdedness. (ISR REC-2 at 1.)

However, SCE chose to limit its online survey to visitors in the “project area,” which, as Edison’s maps show, stops at Fairview Dam and does not include the reach above to Johnsondale Bridge.

It did so twice: both in its QR Code description of the survey and in the introduction to the survey:

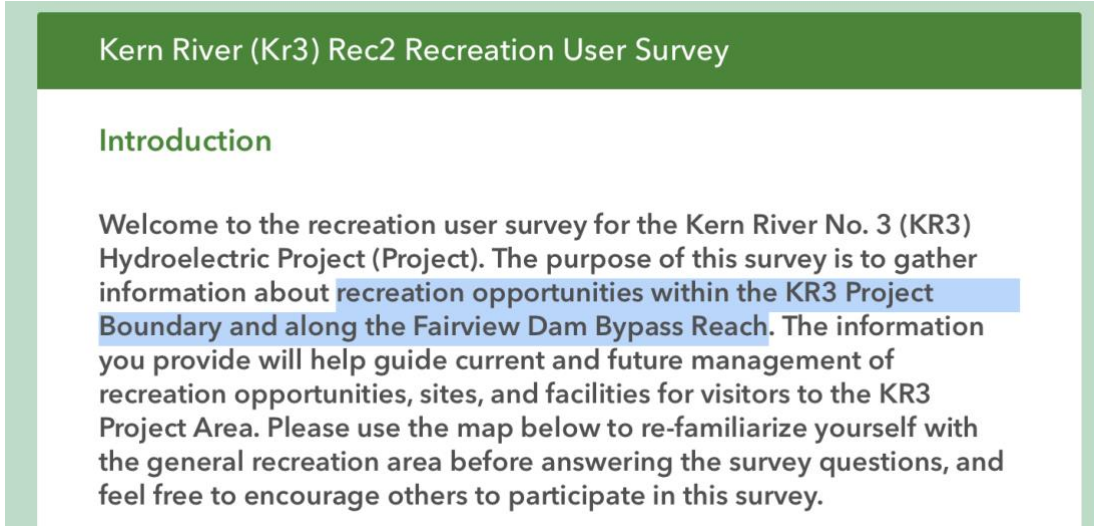
SCE QR Code:

**REC-2 Recreation Facilities Use
Assessment Study Plan**

Recreational User Survey:

Recreators are encouraged to answer questions about their recreation experience and recreation opportunities **in the Project area** along the North Fork Kern River. Please only complete one survey per individual.

SCE Online Survey:



The screenshot shows a green header with the text "Kern River (Kr3) Rec2 Recreation User Survey". Below the header is a section titled "Introduction" in green. The main text of the introduction is as follows:

Welcome to the recreation user survey for the Kern River No. 3 (KR3) Hydroelectric Project (Project). The purpose of this survey is to gather information about recreation opportunities within the KR3 Project Boundary and along the Fairview Dam Bypass Reach. The information you provide will help guide current and future management of recreation opportunities, sites, and facilities for visitors to the KR3 Project Area. Please use the map below to re-familiarize yourself with the general recreation area before answering the survey questions, and feel free to encourage others to participate in this survey.

(Accessed via sce.com/kr3, November 10, 2023.)

Edison's descriptions of the online survey specifically exclude people visiting the area above the Fairview Dam through Johnsondale Bridge in direct contravention of the SPD. Even if a person chose to recreate above Fairview Dam specifically due to poor hydrological conditions below the dam affecting angling or aesthetics, they would be dissuaded from participating in the online survey by both the QR Code description and, if they got that far, the introduction to the survey. That is completely at variance with the dictate of the SPD.

We ask that this variance be corrected by immediately proceeding to a Level 2 investigation (reconnaissance visit) into angling and aesthetics, to be reported by May 01, 2024 so as to allow comment, adjudication, and, if needed, a Level 3 investigation. Good cause for the request exists in that Edison was wholly at fault for this critical variance from the goals of the study plan and the direction of the SPD. The online survey was supposed to form the basis of a Level 1 investigation into the need for further L2/L3 studies into angling and aesthetics. It is now too late to conduct a corrected one-year online survey, report on it (including a L2/L3 decision), take stakeholder comment, rule on the report and comments, and still have time to implement meaningful L2/L3 studies with stakeholder input prior to the FLA. For these reasons, the Commission should grant our request.

KRB AES-1.3 Aesthetics. L1 Desktop Review, Modification

EDISON: *The Wild and Scenic River designation for this segment of the NFKR is “recreational” from the Kern/Tulare County line within the Project Area and continues upstream to the Giant Sequoia National Monument. (ISR AES-1 at 5-6.)*

KRB: Edison’s L1 desktop review on aesthetics unreasonably omits readily available data on area aesthetics to the extent it is an inadequate as a basis on which to determine whether further L2 & L3 studies are required. That is in variance with the study plan.

As shown in the passage above, Edison still fails to concede that even though the Wild and Scenic designation for the project area is “recreational,” the area was found to possess *other* remarkably outstanding values apart from recreation during the designation process.

The 1994 USFS W&SR Final Environmental Impact Statement found that the project area — “Segment 4” of the NFKR — was outstandingly remarkable in the categories “Scenic,” “Recreation,” and “Wildlife”⁷¹:

Tables 1-1. and 1-2. summarize the classification, Outstandingly Remarkable Values and free flowing state of the W&SR segments established by the EA:

Table 1-1. North Fork W&SR Segment Classifications, ORVs & Free Flowing Status

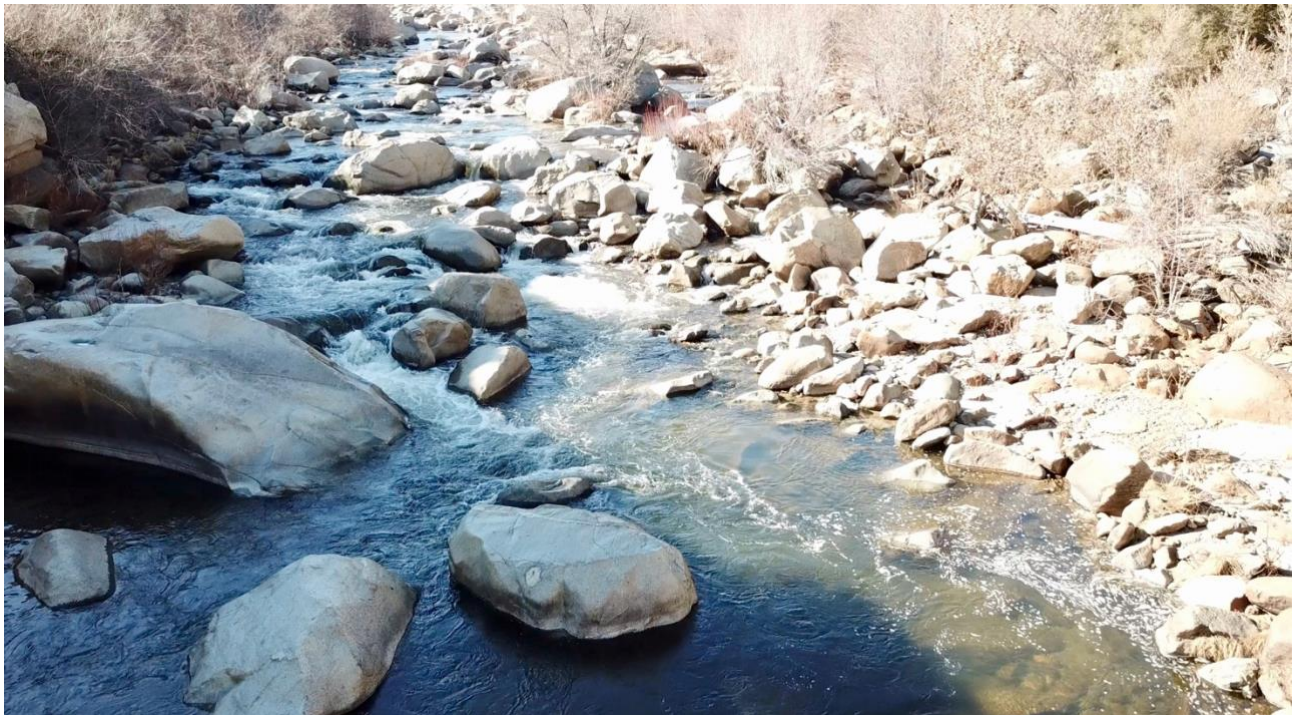
Segment	Classification	Outstandingly Remarkable Values	Free Flowing State
2	Wild (Within Wilderness)	Scenic Recreation Fisheries Vegetation Heritage Geology	Free Flowing
3	Wild (Outside Wilderness)	Scenic Recreation Wildlife	Free Flowing
4	Recreation	Scenic Recreation Wildlife	Diversion

⁷¹ 1994 USFS W&SR FEIS at .pdf 50 (“Affected Environment” at 2), available: <https://drive.google.com/file/d/1-spMefl-icUJmvY450dKy7jZvkKQ7Ozs>

The FEIS also stated, “The outstandingly remarkable values for Segment 4 include fishing, camping, picnicking, Whitewater boating, hiking, driving for pleasure, *and enjoying the scenic beauty.*”⁷²

The 1994 USFS W&SR CMP similarly gives direction to “Strive for higher visual quality whenever practical.”⁷³

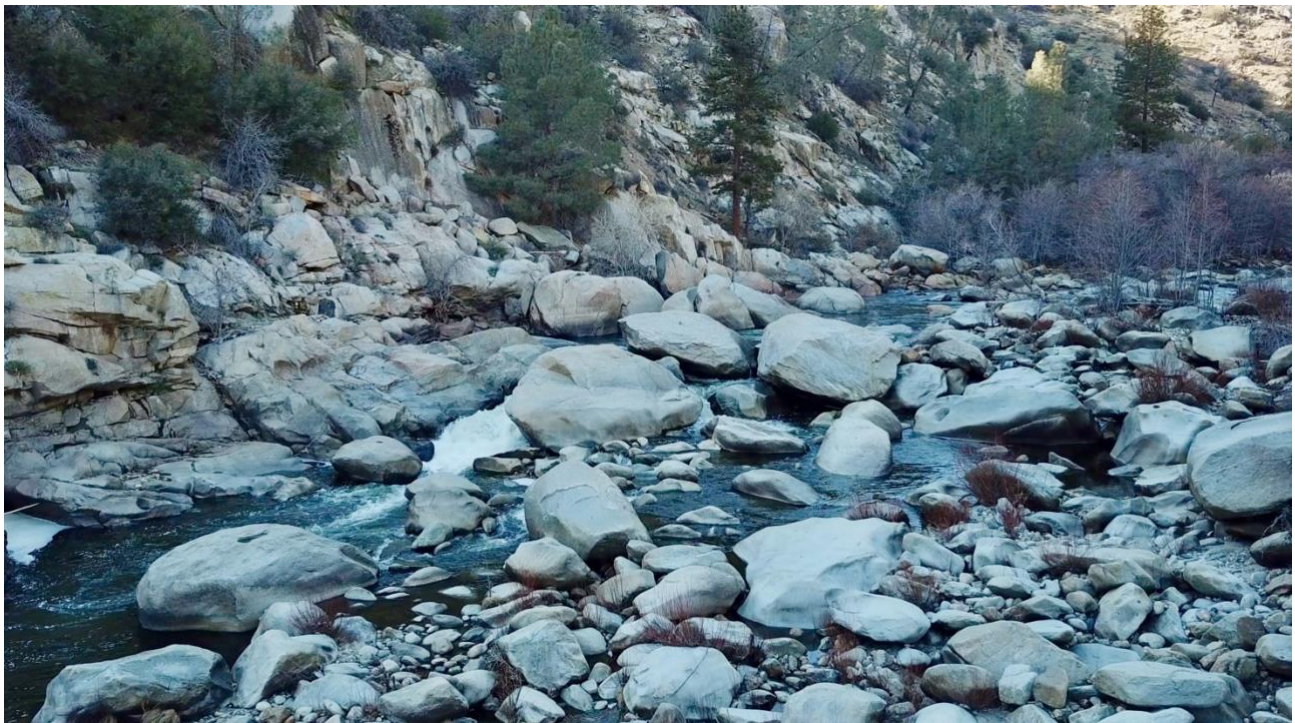
Edison was also aware of the following images depicting the dewatered reach with about 50 cfs in the riverbed (natural inflows have never been that low) on a day when 550 cfs was incoming at Fairview Dam:



⁷² 1994 USFS W&SR FEIS at .pdf 113 (“Affected Environment” at 61) (italics added)

⁷³ 1994 USFS N&SFKR W&SR ROD&CMP at 45, available:

<https://drive.google.com/file/d/1n0D8equMZaOkwLNDGenEkV54n1WACWkp>



Edison was also aware that during the current license term daily average flows above Fairview Dam to rarely fall below 125 cfs — just 5.5% of the time. By contrast, the project causes flows in the dewatered reach to fall below 125 cfs 45.4% of the time due to project operations — almost half the time.

Over the same timeframe, daily average flows above Fairview Dam fell below 85 cfs just 0.7% of the time — almost never. By contrast, project operations reduced flows below Fairview Dam under 85 cfs more than a quarter of the time⁷⁴:

Mean Daily Flow <125 or <85 cfs, Above & Below FVD, WY97-22

	DAYS <125	% OF ALL DAYS	DAYS <85	% OF ALL DAYS
ABOVE FVD	526	5.5%	64	0.7%
BELOW FVD	4310	45.4%	2597	27.3%

The numbers below Fairview Dam would have been even higher had the project not been offline for repairs so often — more than 23% of the hours in the SCE WR-2 hydrology dataset show a de minimis diversion due to project repairs and rehabilitation.⁷⁵

Project operations turn what are rare low flow conditions on the NFKR into a typical occurrence and turn ultra-low flows that the river almost never experienced prior to the project’s existence into a routine event. It is reasonable to expect such radical dewatering would have a negative effect on the river aesthetics experienced by humans in that environment: the river was formed under a natural hydrograph; an unnaturally impaired hydrograph can render that formation aesthetically displeasing. Dewatering the river at Fairview Dam narrows the waters below, dries the riverbanks, exposes rocks that would otherwise be covered, reduces water speeds, lowers pool heights, eliminates many riffle sections and depresses many others, and increases areas covered with algae and other pond scum.

Edison’s L1 desktop review fails to account for these facts along with other stakeholder judgments in the FERC record to date, opting instead to confine its review to judgments consistent with the *status quo*. We ask that the Commission direct Edison to include these facts and those similar from the FERC comment process in its AES-1 L1 desktop review. Good cause exists as the omission of this information is at variance with the study goal of producing a comprehensive review capable of informing a decision on whether further L2 & L3 studies are merited.

⁷⁴ Table, methodology, and supporting data available at the following Apple website (Sheet 8, “KR3/NFKR Counts”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

⁷⁵ Table, methodology, and supporting data available at the following Apple website (Sheet 9, “KR3 Zero/Low Flow”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

KRB ANG-1.3 Angling. L1 Desktop Review, Modification

EDISON: *Literature Review Of Angling Opportunities In The Project Areas.* (ISR ANG-1 at 8.)

KRB: As with its desktop review on aesthetics, Edison has selectively chosen to only include information on angling that supports the *status quo*. That is at variance with the study plan, which requires an L1 desktop review capable of informing the question of whether more intensive studies are needed.

Edison’s review omits significant evidence that anglers find the dewatered reach unenjoyable to fish. Edison has ignored it. That evidence includes (1) multiple direct comments on the point, (2) the results of the only fish monitoring study that took place in a moderate- or low-water year (2016), (3) the unnatural depths to which the project repeatedly dewateres the river below Fairview Dam, and (4) the unprompted comments of the most analytical angler in the reach, Rich Arner.

1. Direct Comments: Members of the Kern River Fly Fishing Club and others have informed the Commission that flows on the NFKR are inadequate for angling.

Those comments note a catch rate of 10% of what it used to be, a lack of desire to spend time and fish there due to inadequate flows, the flows making the river a shadow of what it once was, a steady decrease in fish population over the years, never fishing below the dam because there is not enough water, not fishing there anymore because of high water temperatures and the diversion of water to a hatchery that is closed, rarely fishing there because of inconsistent fish and flows, degraded conditions because of flows inadequate to sustain a trout fishery, fishing not being as good there in recent years due to excess algae and low flows, not fishing there because of no fish and low flows, recent degradation of conditions from murky warm water and algae, the recent depletion of trout to catch in the river, the river being unproductive due to slow pools and no fish, the degradation of the river over time from a Class A stream to a small stream due to the diversion, and increasingly poor fishing due to low water, temperature, and lack of fish.⁷⁶ Other members of the public have chimed in with a chorus of similar comments.⁷⁷

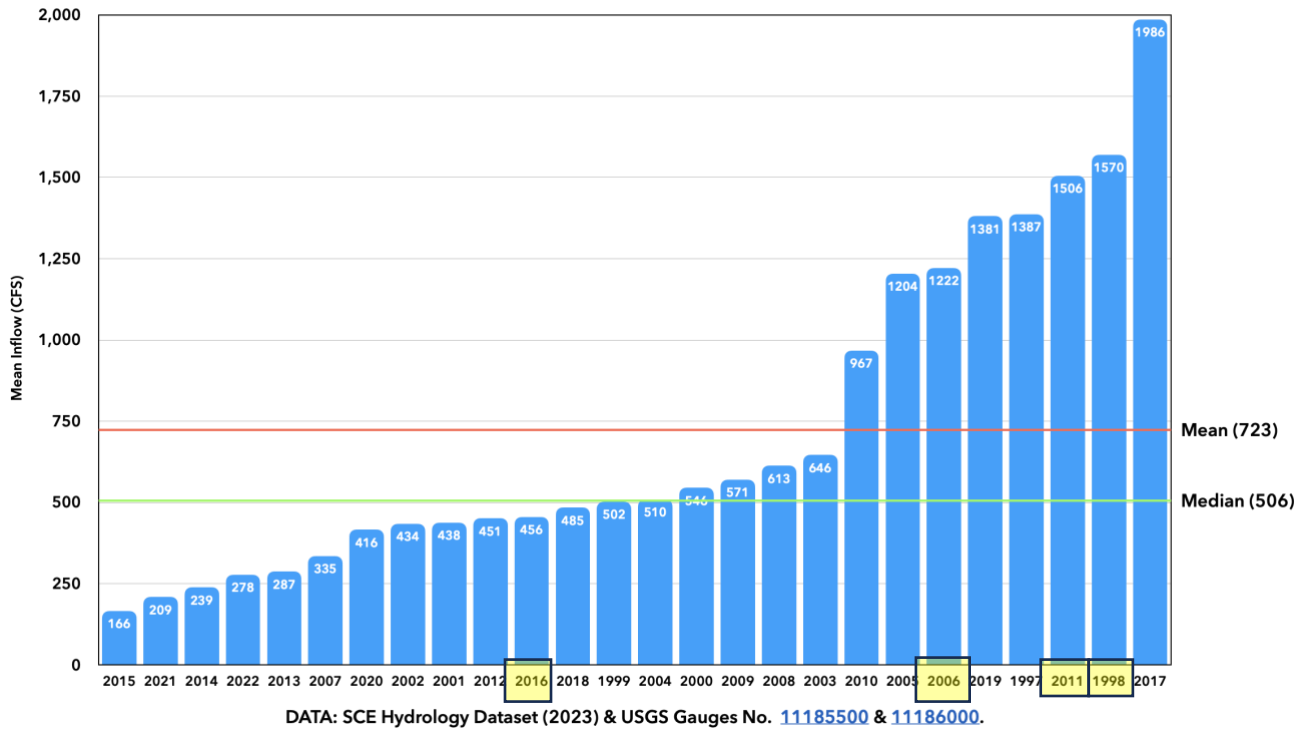
2. Fish Monitoring Studies: During the present license term, Edison has conducted four fish monitoring studies: 1998, 2006, 2011 & 2016. All but one of those — 2016 — occurred during a high water year: indeed, those conducted in 1998, 2006 & 2016 occurred in three of the six highest water years over the license term⁷⁸:

⁷⁶ FERC eLibrary No. 20220531-5308

⁷⁷ See, e.g., FERC eLibrary Nos. 20220120-5089, 20220121-5040, 20220121-5004, 20220120-5168, 20220120-5099, 20220120-5007, 20220120-5006, 20220119-5018, 20220120-5001, 20220120-5002, 20220120-5028 & 20231113-5010.

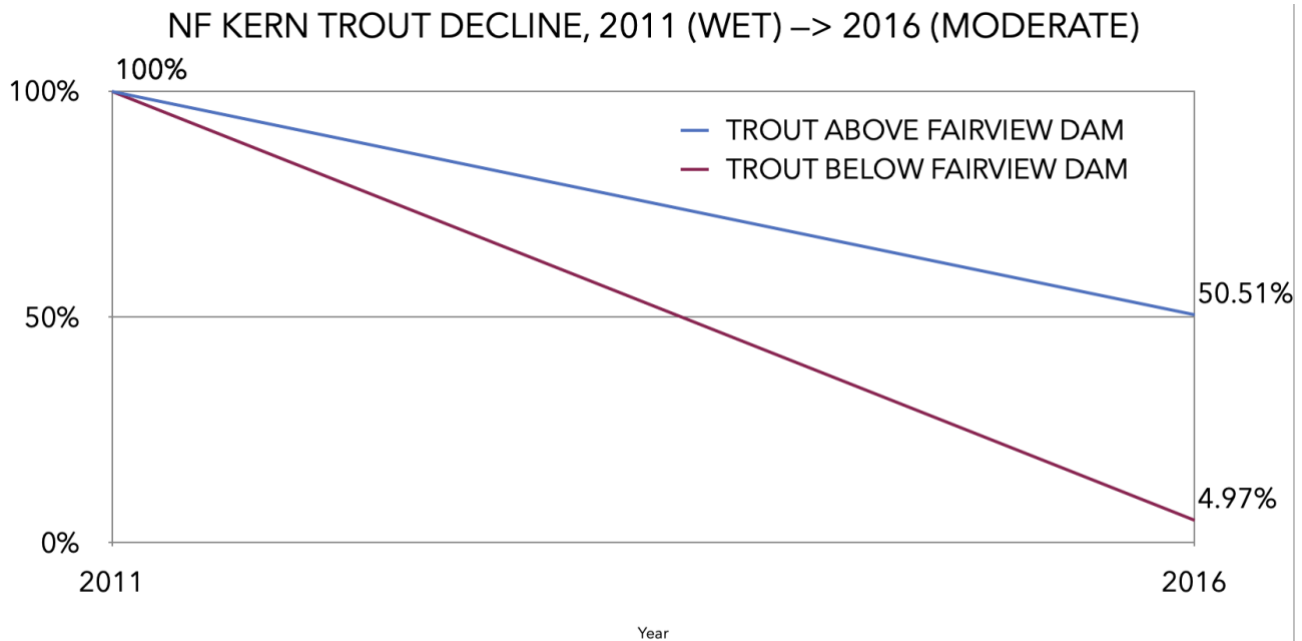
⁷⁸ Chart, methodology, and supporting data available at the following Apple website (Sheet 5, “NFKR Water Year Types, 97-22”):

Mean Inflow at Fairview Dam (CFS) per Water Year, 1997-2022, Ranked



As by the highlighted years above, the only fish study that took place during a moderate year was that conducted in 2016. None occurred during a dry year.

The 2016 fish study's conclusion on the effect of Fairview Dam on the trout populations above and below was shocking:



TROUT POPULATION FIGURES NORMALIZED TO 2011 (100%)
SOURCE: SCE FISH MONITORING STUDIES (2012 & 2017)

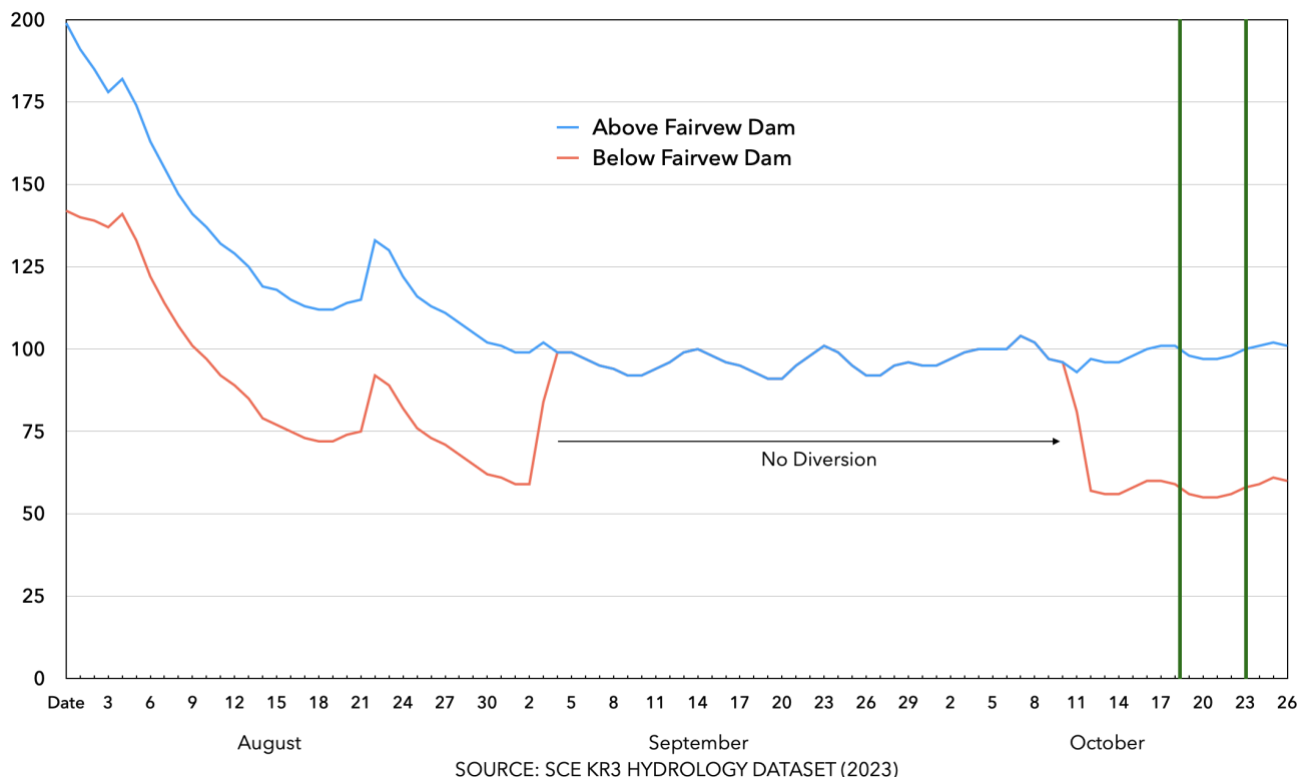
(SCE PAD at 5-63.)

It is important to note that 2016 was not a low water year; it was “moderate” — mean inflow at Fairview Dam that year was 456 cfs, more than 90% of the median over the POR.

Under those hydrological conditions — conditions near typical for this watershed — the project reduced flows below 60 cfs for extended periods that summer due to the precedence of the Hatchery Flow over the MIF⁷⁹:

⁷⁹ Graph, methodology, and supporting data available at the following Apple website (Sheet 14, “2016 Fish Study”):
https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

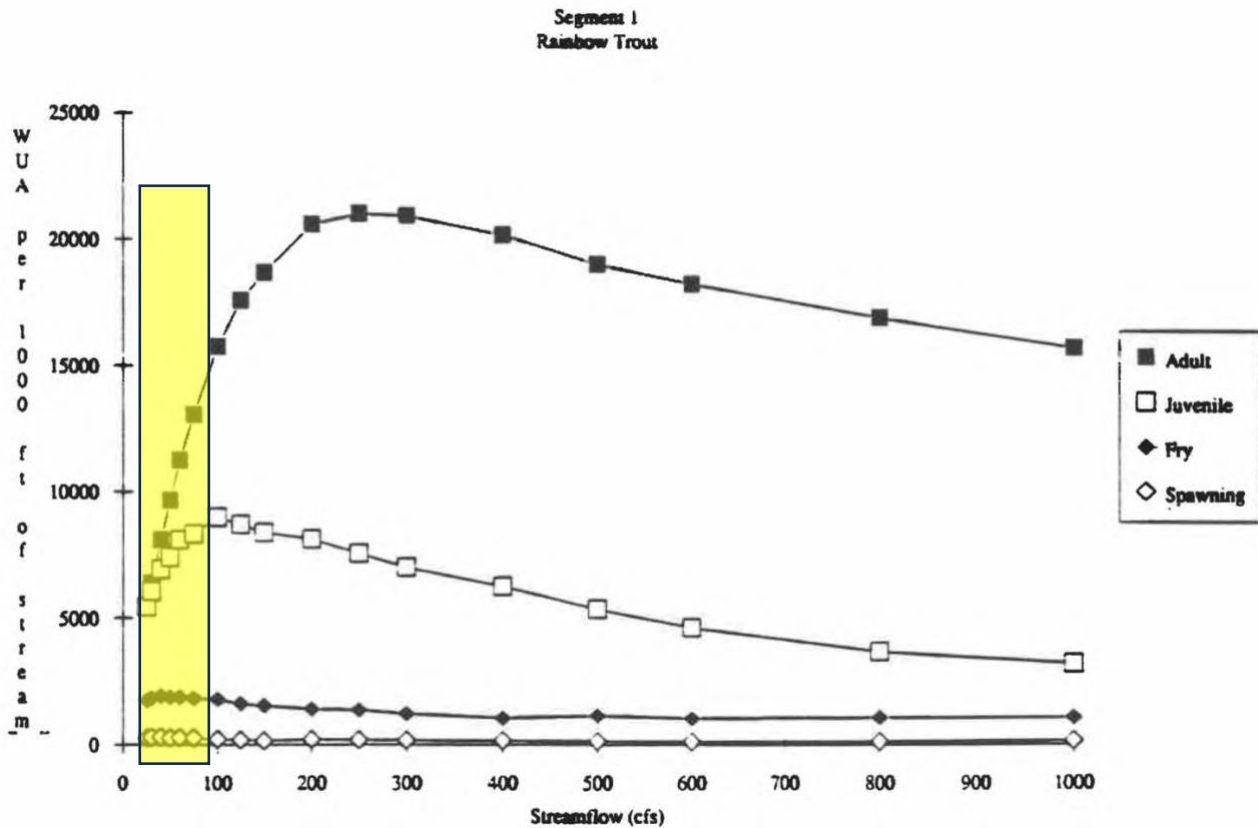
NFKR Average Daily Flows (cfs), 2016 Fish Monitoring Study



The result of such radical dewatering — natural flows on the NFKR drop below 85 cfs just 0.7% of the time — was an extreme reduction of the trout population by more than 95% below Fairview Dam, compared a reduction of just 50% above.

That result is completely consistent with the 1991 IFIM study. That study shows a significant drop-off in trout habitability below Fairview Dam at flows below 200 cfs, with that decrease accelerating radically as flows fall below 100 cfs⁸⁰:

⁸⁰ SCE Application for New License (December 1991) at E-3-74 [.pdf p. 655], accelerated decline highlighted. Available: https://authoring.dms.sce.com/sites/default/files/inline-files/KR3_KernFLA1991Volumes1-3.pdf



Through a series of postponements, Edison cancelled fish scheduled studies that could have provided further devastating results for its project’s effects in 2021 & 2022 — low water years — and instead pushed the next study after 2016 into the highest water year of this term, 2023.

While Edison’s desktop review talks about seasonal variations in angling opportunities, it conveniently fails to speak about annual variations based on water year type. The record shows that the diversion kills most of the trout in the reach below Fairview Dam in moderate and low water years. That dovetails with the conclusion of the Forest, National Parks, and state Fish & Wildlife: the reach below Fairview Dam “is capable of producing a self-sustaining wild trout fishery” *but for the low flows and high temperatures caused by the diversion.*⁸¹

3. Hydrology of the Diversion: As noted in our aesthetics comments, the project regularly dewateres the river below Fairview Dam down to levels it would otherwise rarely, if ever, see.

⁸¹ USFS, NPS & CDFW, “Upper Kern Basin Fishery Management Plan” (1995) at IV-4. Available: <https://drive.google.com/file/d/1HmiEvpKfsOghZdIQYOcaQ5Z-9uq1RKiF/view?usp=sharing>

Over the existing license term, the daily average flow above Fairview Dam fell below 125 cfs just 5.5% of the time. Flows that low are objectively rare for this river corridor. By contrast, flows in the dewatered reach below Fairview Dam fell below 125 cfs 45.4% of the time due to project operations.

Over the same timeframe, the daily average flow above Fairview Dam fell below 85 cfs just 0.7% of the time — almost never! By contrast, project operations reduced flows in the dewatered reach below Fairview Dam below 85 cfs: *more than a quarter of the time*. And natural inflows were, in fact, *never* below 55 cfs; however, the project pushed flows below that figure *more than one day in seven*⁸²:

Mean Daily Flow Above & Below FVD, <125, 85 & 55 cfs, WY97-22

	DAYS <125	% OF ALL DAYS	DAYS <85	% OF ALL DAYS	DAYS <55	% OF ALL DAYS
ABOVE FVD	526	5.5%	64	0.7%	0	0.0%
BELOW FVD	4310	45.4%	2597	27.3%	1482	15.6%

The numbers below Fairview Dam would have been even worse had the project not been offline for repairs so often — at least 23% of the hours in the SCE WR-2 hydrology dataset, almost a quarter of the time⁸³:

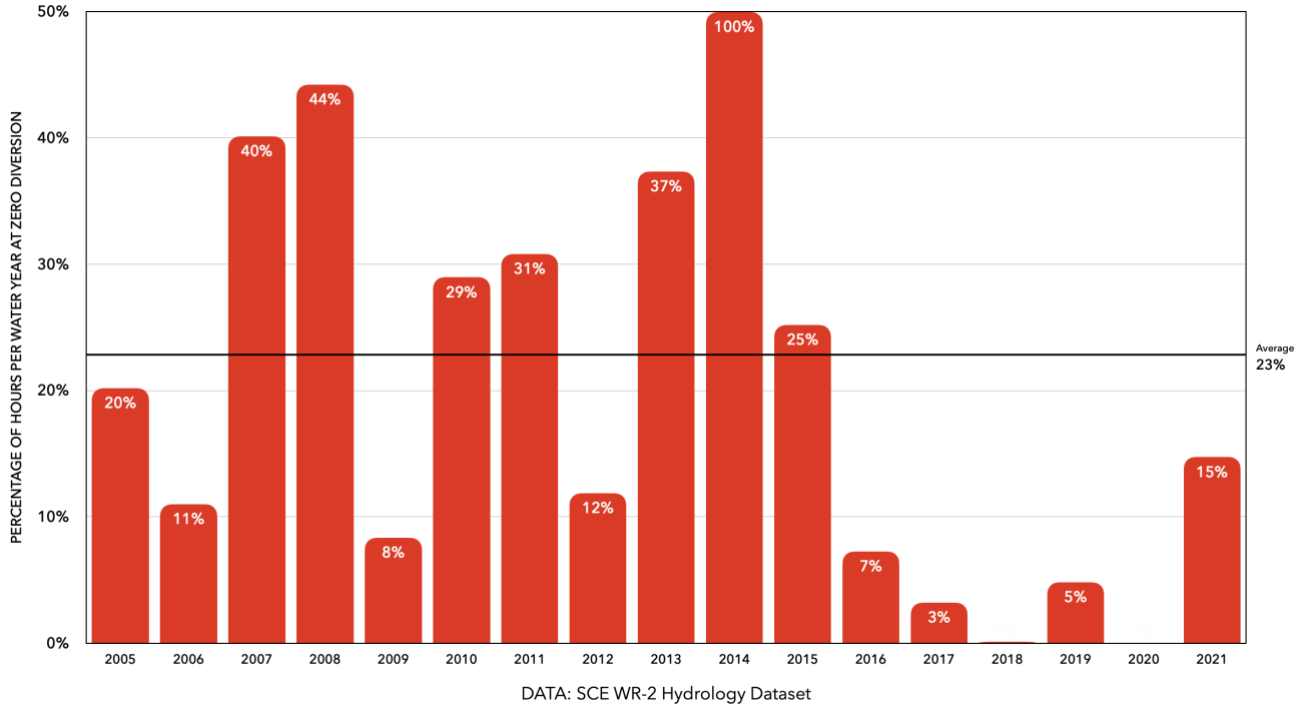
⁸² Table, methodology, and supporting data available at the following Apple website (Sheet 8, “KR3/NFKR Counts”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

⁸³ Table, methodology, and supporting data available at the following Apple website (Sheet 9, “KR3 Zero/Low Flow”):

https://www.icloud.com/numbers/0caQO3V8WS5ViDodrps_tqfuw#KRB_ISR_SPREAD

KR3 Near-Zero Flow (<3 cfs) Hours, WY 2005-2021



Project operations turn what are rare low flow conditions on the NFKR into a near-majority occurrence, and ultra-low flows that the river almost never saw prior to the project’s existence into a routine event.

It is reasonable to expect such dewatering to have a negative effect on the river as experienced by the humans who live in or visit that environment: the river was formed under a natural hydrograph; an unnaturally impaired hydrograph can render that formation aesthetically displeasing. Dewatering the river at Fairview Dam narrows the waters below, reduces water speeds, lowers pool heights, eliminates many riffle sections, increases areas covered with algae and other pond scum, increases the incidence of silt, and, most important, lowers temperatures and DO concentrations to levels that stress and kill fish. Piece these facts together with the 2016 fish study and the 1991 IFIM and it is obvious that the project imposes a significant negative effect on fishing: the river was formed under a natural hydrograph; a hydrograph unnaturally impaired to these extreme degrees renders the river uninhabitable for fish.

4. Angler Analysis: The most analytical member of the oldest fly-fishing club on the Kern — Mr. Rich Arner — has repeatedly opined *unprompted and outside of this relicensing proceeding* that flows below 100 cfs are simply inadequate for enjoyable fishing:

Flows (50 cfs) are very low on section 5 below Fairview and there is lots of wadable water there, however, the extremely low flows have given natural predators a distinct advantage over unwary rainbows. (11/20/19.)

Also the low flow section has been dropped to just 45 cfs. That's nearly a trickle and natural predators are having easy pickings on trout that surface often and do not find good lies in deeper pools with cover. (11/07/19.)

Section 5 is flowing very low (just 85 cfs) and deeper hiding water is becoming less abundant. Dries not getting as many grabs. Shallower water is giving herons a distinct advantage in spotting unwary planters.
(10/22/19.)

We love section 5 to wade but flows have dropped down to just 86 cfs, above Fairview on section 6 flows are holding steady at 350 cfs. . . . There is a lot more moss in the river, especially on section 5 where water temps exceeded 70 degrees the last month of summer. This moss had larvae strewn in it. Did this lunger consume the moss to get at the aquatic insects or just dive into the moss containing larvae trying to evade landing? Who knows?
(10/03/19.)

We hit a favorite spot on section 5 that should have been stocked last week. Water was very low and 50 degrees. We hit every spot that has held trout in the past with nary a tug nor rise. There was quite a bit of moss covering the river rocks (1/4 – 1/2" thick) that I can't say I've ever seen before. Made traction better but did not seem to provide more aquatic insect activity? Not sure what biologically is going on. It was pretty obvious to us that the water on section 5 is too low to sustain trout for long. If trout planted on much of this section weren't harvested by fishers it sure would be easy pickings for herons and hawks. There is very little holding water more than 3' deep with these very low flows around 50 cfs. We tried another social media posted spot further up river on section 5 to see if there were any trout left there but no trout tugs were procured. So up to section 6 where there has been some catching reported the last month We tried another often stocked area low on section 5 on the way home and covered a good 1/2 mile stretch with no grabs nor trout seen scooting. The water is just too low to hold trout for long.
(11/8/18.)

Edison's L1 desktop review fails to account for these easily obtainable sources of information, opting instead to confine its review to judgments consistent with the *status quo*. We ask that the Commission direct Edison to include these facts and those similar from

the FERC comment process in its ANG-1 L1 desktop review. Good cause exists as the omission of this information is at variance with the study goal of producing a comprehensive review capable of informing the question whether further L2 & L3 studies are merited.

KRB NRG-1. Voltage Stepping Costs, New Study

Criterion (1) – Describe the goals and objectives of each study proposal and the information to be obtained.

The goal of this study is to quantify the cost associated with the importation of energy into the KR3 service area.⁸⁴

The objectives of the study are to quantify the additional costs (including components beyond voltage-stepping, if any) incurred by energy importation at several magnitudes (5MW-35MW, in increments of five) for several durations (four hours, seven hours, 72 hours, and 96 hours) under several replacement energy price conditions (high, moderate, low, and negative).

Criterion (2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Not applicable.

Criterion (3) – if the requester is not a resource agency, explain any relevant public interest considerations in regards to the proposed study.

The Commission is charged by the Federal Power Act to balance developmental and nondevelopmental values in its formation of hydropower licenses to a manner best adapted for the affected resource. The United States Forest Service is charged with establishing conditions in hydropower licenses that are necessary for the utilization and enjoyment of the affected resource. Both the Commission and the Forest are charged by Congress to pursue these goals in the public interest. Knowing the amount of cost incurred by voltage stepping various amounts of energy — and knowing the conditions under which such stepping would be required — are essential to a fair and informed balance of developmental and nondevelopmental values. There are vast amounts of time during the year when our grid has excess generating capacity and that could replace KR3 generation. (See KRB NRG-2.2 [enormous ongoing — and increasing — curtailment of renewable generators in the project market].) In balancing values and evaluating the highest usage of the NF Kern, governing agents might consider license conditions that require KR3 to generate less during certain times of the day or year to mitigate its effects on the natural and social environments. Such curtailment of KR3 would require the import of energy at costs asserted by Edison that are to this point unspecified in quantity and unsupported by factual analysis. The quantification of import costs and the conditions under which those

⁸⁴ The KR3 “service area” for purposes of this study are those portions of Kern and Tulare counties that require voltage-stepped replacement energy when KR3 generation is curtailed due to license conditions.

costs arise will inform governing agents and stakeholders the costs of current license conditions, given that the current license proposal is for no new license condition, as well as informing them when — and to what degree — ripe opportunities for modified or new PME exist.

Criterion (4) – Describe existing information concerning the subject of the study proposal, and the need for additional information.

In its Proposed Study Plan, Edison informed the Commission: “the Project adds to the generation portfolio supporting the local community, which is more efficient than importing power from the grid through Isabella Substation because it is not subject to the losses associated with stepping up the voltage for transmission and then stepping it back down for distribution. Despite its lower generation capacity when compared to SCE’s larger hydroelectric projects, the Project provides critical generation to Kern and Tulare Counties, which would otherwise have to rely on power transmitted from Vestal Substation, approximately 40 miles away, at a significant cost to customers.” (SCE Proposed Study Plan at 1.)

Edison’s assertions require quantification. What are these costs and under what circumstances (quantity of imported energy, duration of importation, and market conditions) do they vary? We do know that KR3 was completely offline for 16 months in 2013-2014 (tunnel and dam rehabilitation) and there were no local rate increases or blackouts as a result. The answers will inform governing agents and stakeholders costs of current license conditions given that the current license proposal is for no new license condition as well as informing them when — and to what degree — ripe opportunities for modified or new PME exist.

Criterion (5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

The Commission is charged by the Federal Power Act to balance developmental and nondevelopmental values in its formation of hydropower licenses to a manner best adapted for the affected resource. The United States Forest Service is charged with establishing conditions in hydropower licenses that are necessary for the utilization and enjoyment of the affected resource. The project’s diversion of water out of the NF Kern to generate electricity is intimately connected with both schemes. Knowing when — and to what degree — license requirements incur costs due to the transmission of replacement energy is essential for a fair and informed balancing of potential license requirements against the need for power. Indeed, the Commission states, “Any effects of SCE’s proposal that can be reasonably quantified (e.g., lost generation) will be evaluated by staff.” (SPD at B-49.) Governing agents and stakeholders should have a handle on lost generation costs to

evaluate their own proposals — including against the costs of current license conditions — going in. Transmission stepping costs associated with lost generation are eminently quantifiable — Edison couches them as financial costs borne by its customers — and stakeholders and agencies (particularly the Forest, which has the power to impose conditions necessary for the utilization of forest lands) should have this data so as to evaluate the economic feasibility of and advocate for PMEs. Edison plainly introduced the issue of transmission costs into this proceeding as a constraint on restraining generation; the public and its agency representatives should have reliable information to evaluate that issue beyond Edison’s otherwise unsupported assertion.

Criterion (6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

This is a purely desktop study. The methodology would be to establish additional costs (including components beyond voltage-stepping, if any) incurred by importation of several quantities (5MW-35MW, in increments of five) for several durations (four hours, seven hours, 72 hours, and 96 hours) under several replacement energy market price conditions (high, moderate, low, and negative). The answer should focus only on costs added by importation into the KR3 service area — only those costs that are in addition to costs incurred by Edison during the normal course of business while KR3 is generating. The delineation of quantities (5-35MW) should be sufficient to establish costs under a variety of current and proposed license conditions — *i.e.*, to account for the variables of the amount of water available for diversion (and thus generation) as well as the degree of curtailment inherent in the condition. The four durations chosen are meant to adequately account for plausible recreation conditions, as the current license requires a “bubble” recreational release of seven hours, and plausible alternatives would be for more frequent bubble releases of shorter duration (four hours) or, should tunnel maintenance flows be deemed a legitimate constraint, the safe dewatering of the project less frequently but for longer durations (three or four days) as an alternative. Finally, Edison operates in the CAISO market, both as a generator and as a provider of imported energy. Prices at the Vestal substation range from high to negative. Quantifying the costs at varying market conditions is critical, especially at low or negative pricing, since Edison contends the main cost are “losses” in the voltage stepping prices. If lost energy is available at low or negative prices, those costs may be relatively inconsequential.

The study accordingly amounts to data gathering, aggregation across a few categories, and reporting. We ask for this — like for all studies — that Edison provide a public link to all underlying data in usable spreadsheet (Excel) form.

Criterion (7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

No alternative studies have been proposed. This is a purely an in-house desktop study. Identifying the amount of energy consumed in the KR3 service area on hourly and monthly timescales and the voltage stepping costs associated with importing energy on those scales are matters directly in Edison’s purview and can be performed in-house. The desktop study amounts to data gathering, aggregation across a few categories, and reporting. As Edison are experts in energy, we estimate the effort of providing this factual framework of importation costs to amount to well less than 30 hours for a total of \$4,500.

Criterion (8) – Describe any material changes in the law or regulations applicable to the information request has occurred.

None known.

Criterion (9) – Describe why the goals and objectives of any approved study could not be met with the approved study methodology.

No other study touches on Edison’s vague and unsupported assertion that there are “significant” costs associated with the importation of energy into the KR3 service area.

Criterion (10) – Describe why the request was not made earlier.

SCE first asserted that replacement energy for KR3 would incur “significant cost to customers” due to voltage stepping in the midst of the study planning process — specifically, with its PSP. KRB is an all-volunteer public benefit corporation that was already engaged with the proposal of nine independent study plans and the modification of dozens of points in other studies proposed by Edison. KRB did not have the resources available to propose an additional study at that late date.

Criterion (11) – Describe whether significant change has occurred in the project proposal, or significant new information material to the study objectives has become available.

KR3’s ability to prevent “significant” costs to consumers due to voltage stepping was not revealed in the PAD, which was supposed to have summarized all relevant information about the project. This is a new argument Edison is making regarding the need for power and nondevelopment constraints, and it should be fleshed out with facts under a reasonable handful of magnitude and market conditions.

Criterion (12) – Describe whether good cause exists for this request.

Good cause for this study exists in that the costs of voltage stepping are an obvious potential constraint — and potentially an opportunity — on mitigation. They will further

describe current license conditions, which constitute Edison's proposal to date. Pinning down the nature of such costs under various conditions of quantity, duration, and market pricing are essential to a fair and informed balancing of the need for power against nondevelopmental values. The cost and in-house effort are not disproportionately significant for important study. And this issue was raised by the license applicant late in the study planning process. The Commission should accordingly grant this request.

KRB NRG-2. CAISO Bid History, New Study

Criterion (1) – Describe the goals and objectives of each study proposal and the information to be obtained.

The goal of this study is to quantify the CAISO market valuation of the energy generated by KR3 over the last three years (2021-2023).

The objective is to obtain Edison’s CAISO bid history — specifically the market rates of those bids — over that timeframe.

Criterion (2) – If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Not applicable.

Criterion (3) – if the requester is not a resource agency, explain any relevant public interest considerations in regards to the proposed study.

The Commission is charged by the Federal Power Act to balance developmental and nondevelopmental values in its formation of hydropower licenses to a manner best adapted for the affected resource. The United States Forest Service is charged with establishing conditions in hydropower licenses that are necessary for the utilization and enjoyment of the affected resource. Both the Commission and the Forest are charged by Congress to pursue these goals in the public interest. Knowing the historical market value of energy generated by KR3 over the course of three years is essential to a fair and informed balancing of developmental and nondevelopmental values. There are vast amounts of time during the year when the CAISO grid has vast excess renewable generating capacity (as indicated by negative market pricing leading to widespread renewable curtailment) that could replace KR3 generation. In balancing values and evaluating the highest usage of the NF Kern, governing agents may consider license conditions that require KR3 to generate less during certain times of the day or year to mitigate its effects on the natural and social environments. The market quantification of KR3 energy value over a three-year timeframe will inform governing agents (and stakeholders) when opportunities exist for PME that only effect low- or negatively-priced energy — “no-brainer” opportunities to curtail generation at KR3. It will also describe energy valuations under the current license, which Edison has not proposed to change.

Criterion (4) – Describe existing information concerning the subject of the study proposal, and the need for additional information.

Low and negative market prices cause renewable curtailment. We know about renewable curtailment generally in the CAISO grid footprint thanks to the data it provides

the public. This study would supplement that data with information specifically quantifying the market's valuation of energy provided by KR3.

The deployment of renewables in California has been incredibly successful to this point on our state's path to a green grid. However, that deployment has brought along an unanticipated consequence: the threat of over-generation — that is, generating more power than the grid can handle. All power must serve a load, and system operator CAISO works tirelessly to equalize supply with demand. Balance has become more difficult with the deployment of renewables like wind and solar, which increasingly threaten to swamp the grid with too much energy production during daylight hours, leaving supply well above the levels of demand. That's the risk of over-generation.

CAISO's main strategy to prevent over-generation and balance supply with demand is called "curtailment," which does what it says: curtail (lessen) the amount of generation by modern solar and wind generators whenever the grid is threatened. We'll let CAISO speak for itself on the matter:

Curtilment is the reduction of output of a renewable resource below what it could have otherwise produced. . . . Curtailing renewables results in lost opportunities for clean resources to generate all of the carbon-free power that otherwise could be produced. . . . Curtailing renewables is counterintuitive to California's environmental and economic goals. It reduces the output from the renewable plants in which the state has invested, and could result in overbuilding renewable plants to ensure that the state meets its 50-percent renewable mandate.⁸⁵

Curtilment as a strategy, while effective in keeping the grid safe, is not a desirable public policy, according to CAISO.

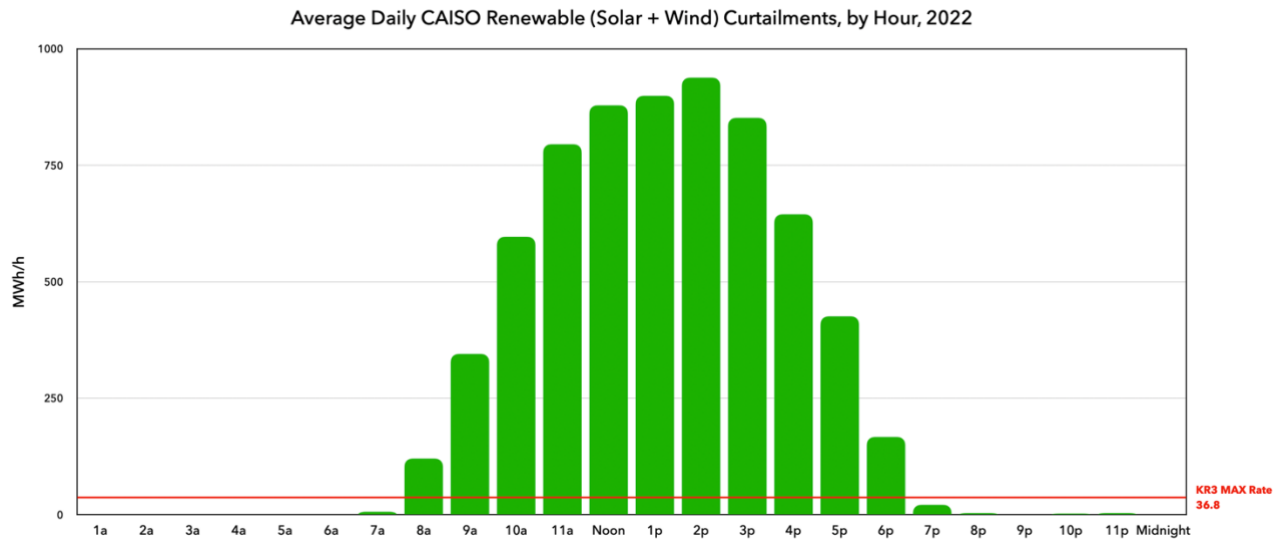
One of CAISO's strategies to reduce the need for curtilment is to "reduce minimum operating levels for existing generators, thus making room for more renewable production." In other words, reduce production to make room for wind and solar, keeping those more modern and rational generators online and profitable, so more will be built. That's where the KR3 hydroproject should come in.

KR3 is a contributing cause to curtilment. Whenever over-generation is threatened, KR3's production of electricity only adds to that threat and causes more modern generators like wind and solar to be sidelined to ensure that supply and demand balance out. The

⁸⁵ <http://www.aiso.com/Documents/CurtailmentFastFacts.pdf> (accessed December 04, 2023)

times when over-generation are threatened are ripe for reducing the output of KR3 “thus making room for more renewable production,” in the words of CAISO.

When are these times? According to the data, significant curtailment generally prevails any time between 9am and 7pm. But it acutely prevails between 10am and 5pm. This chart depicts the average daily curtailment for each hour in 2022⁸⁶:



Note we have included for reference the theoretical *maximum* rate of production at KR3: 36.8 kW. KR3 almost never achieves that rate as the availability of sufficient “fuel” — 600 cfs of diverted river water — is exceedingly rare.

The following chart shows that KR3 typically generates at a small fraction of that rate — on average, a rate of only 12 MW:

⁸⁶ All charts, methodologies, and supporting data for our CAISO curtailment analysis is available at the following Apple website (Sheets: “Curtailment 2022,” “KR3 Annual Energy” & “KR3 Monthly Energy”):

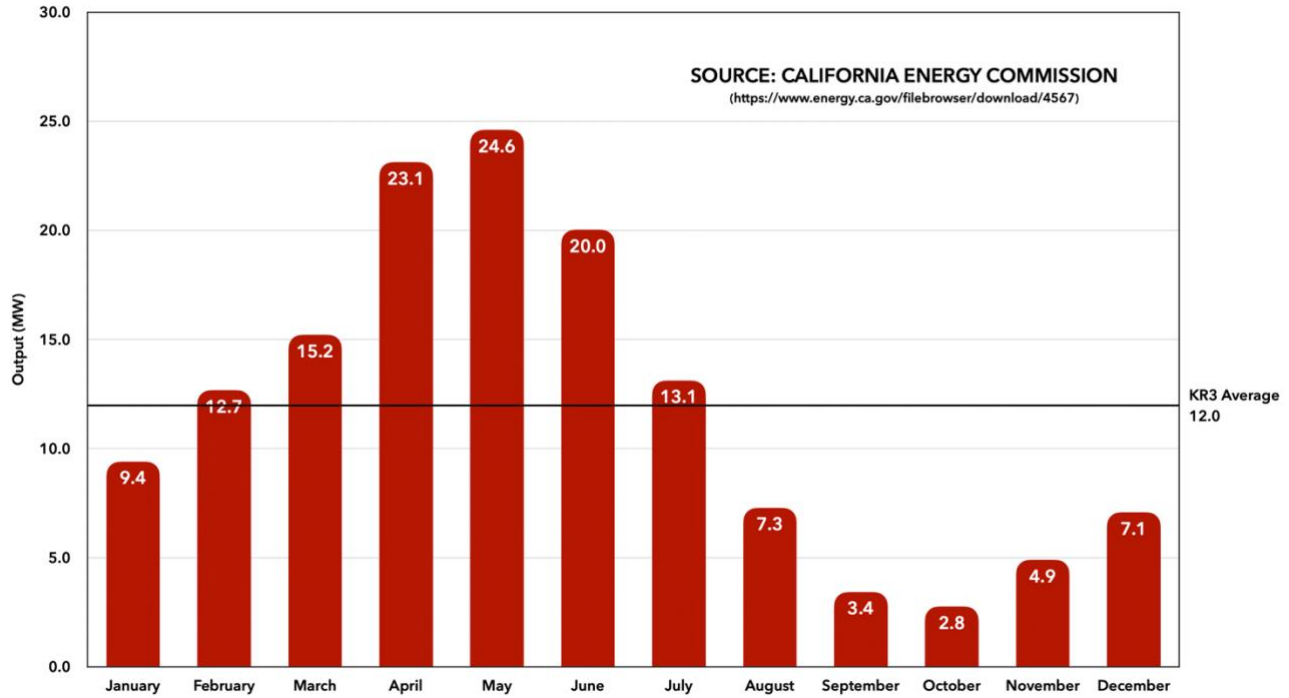
https://www.icloud.com/numbers/002VeqtLdVYZRGysuoGoHoYIg#KRB_KR3_ENERGY

Original data available:

http://www.caiso.com/Documents/ProductionAndCurtailmentsData_2022.xlsx &

<https://www.energy.ca.gov/filebrowser/download/4567>

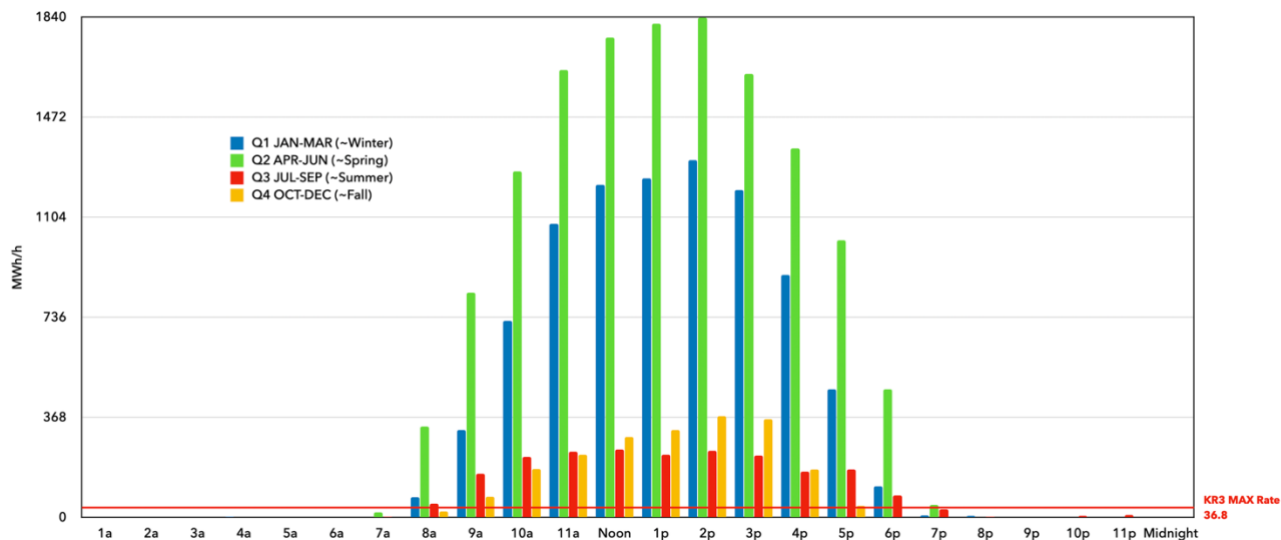
KERN RIVER NO. 3 AVERAGE MONTHLY RATE OF OUTPUT (MW), 2001-2022



As can be seen, KR3 generates at its highest rates in spring, when demand is low (and curtailments, as we will show, are high). In all but the wettest of years, KR3 is nowhere to be found during late summer and early fall, when demand is high and the potential for “loss of load” (blackouts) is acute.

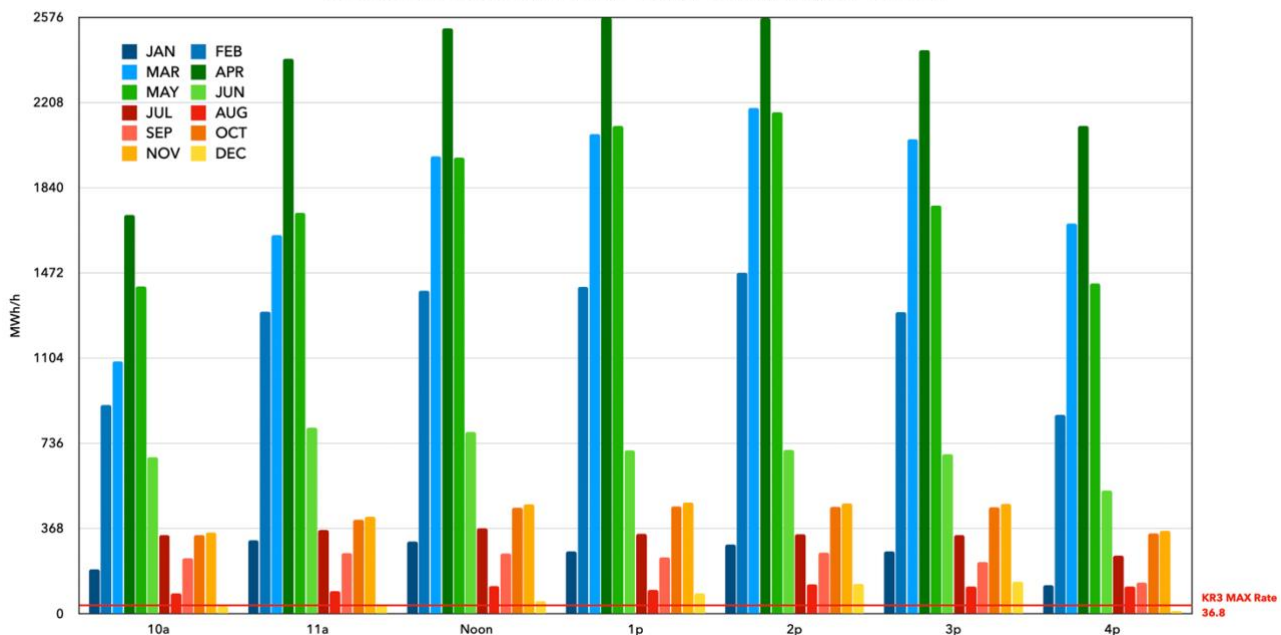
It is important to note curtailment’s seasonal component in addition to its hourly nature. In winter and especially spring, demand is relatively low, forcing widespread curtailment of wind and solar assets. The following graph depicts average daily curtailments, by hour and by quarter, for the year 2022. Note how the figures for winter and spring dwarf the KR3 “Max” reference line. Indeed, *each horizontal axis line represents a ten-fold increase above the theoretical maximum power that KR3 can produce:*

Average CAISO Renewable (Solar + Wind) Curtailments per Hour, Quarterly 2022



Combining those two aspects of curtailment — the hour of the day and the time of year — is revelatory. The following chart depicts CAISO curtailments in 2022 between the hours of 10am and 5pm for each month of the year:

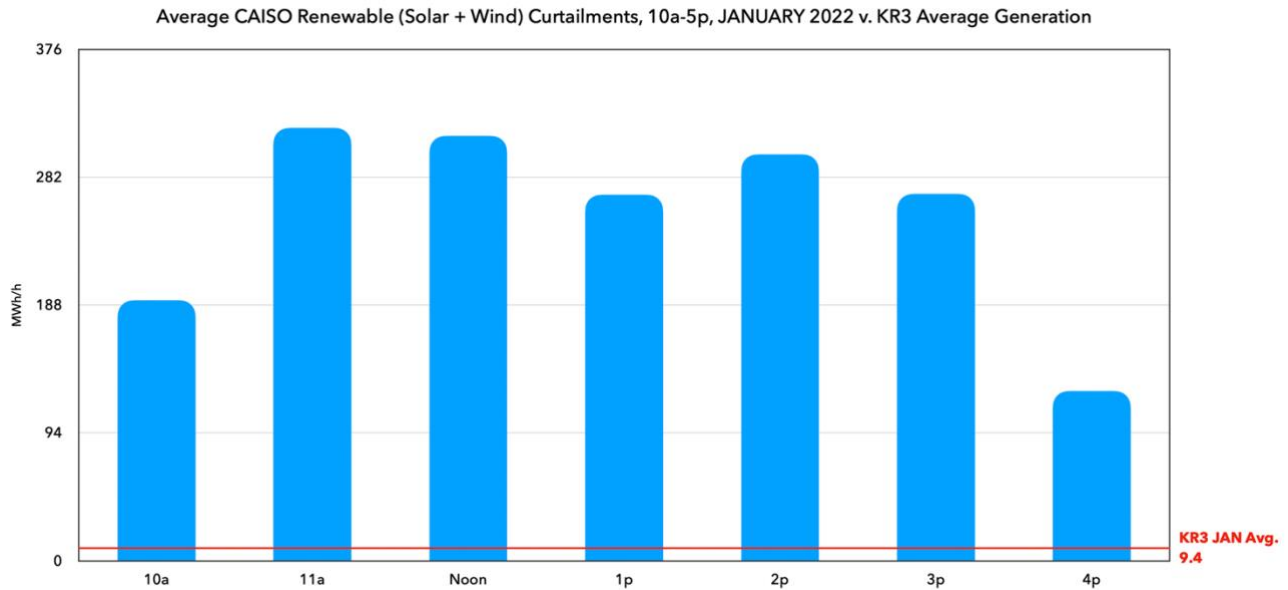
Average CAISO Renewable (Solar + Wind) Curtailments, 10a-5p, 2022



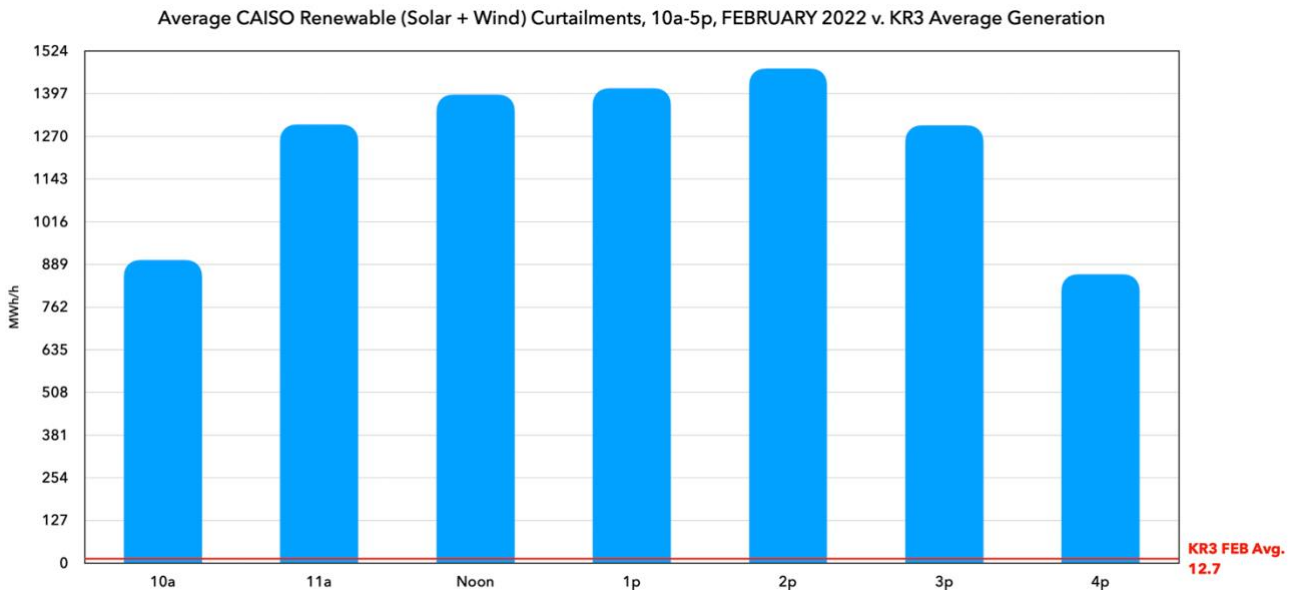
As shown above, the energy produced by KR3 is not needed during the hours of 10am and 5pm in February, March, April and May. The curtailments of renewable occur at a scales of *twenty to sixty times* the *maximum* amount of power KR3 is theoretically able to generate. Looking at KR3’s *actual* production raises those scales even higher.

We’ll compare the historical average monthly rates of production for KR3 against the curtailment imposed between the hours of 10am and 5pm in 2022. We’ll start with

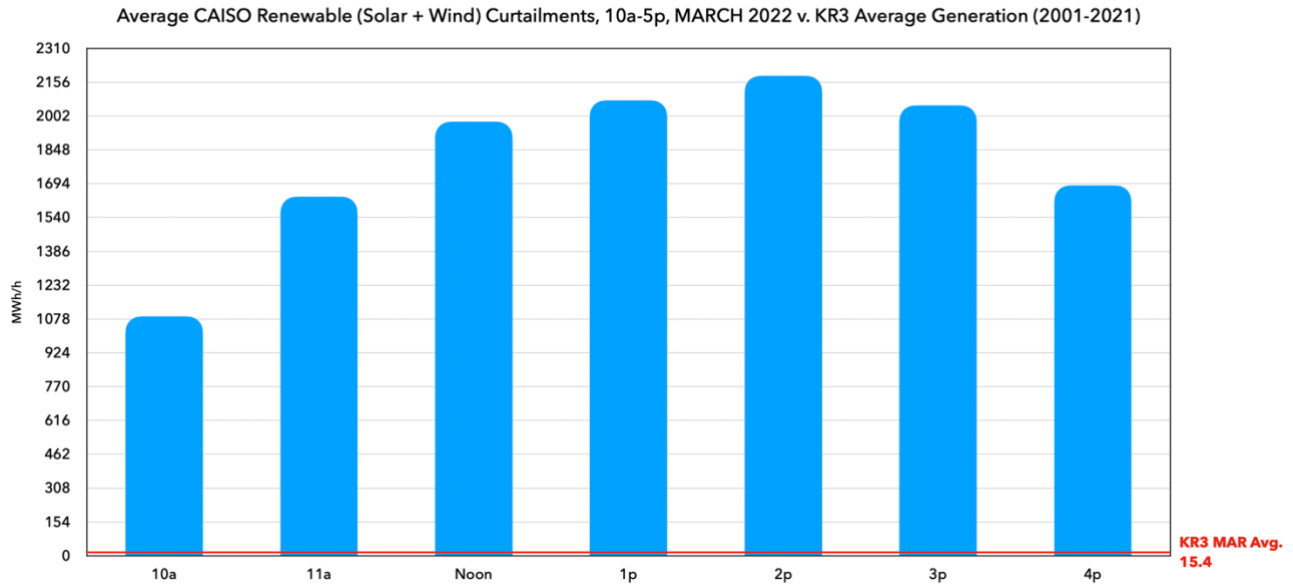
January. One can see that curtailments between 10am and 4pm are more than 20 times greater than KR3's average rate of generation (9.4 MW) for that month. Again, the horizontal scale lines represent *ten-fold multiples* of KR3's monthly average rate of production:



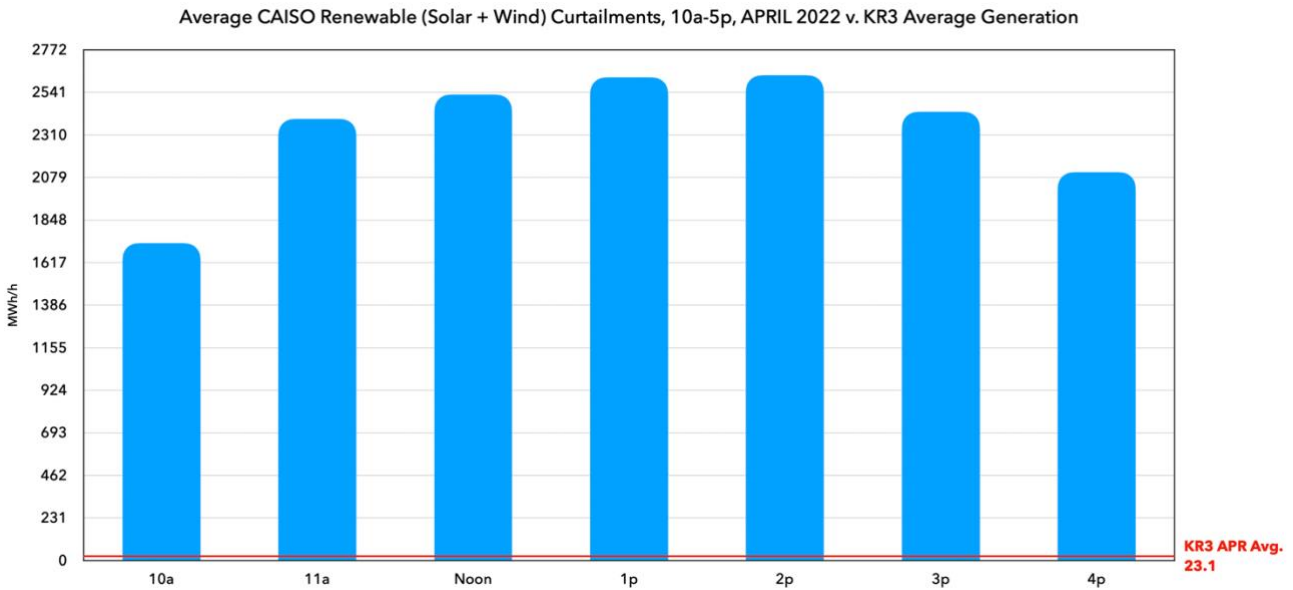
In February, renewable curtailments skyrocket, while KR3 eeks out a little more power (12.7 MW rate). Curtailments during the relevant hours that month were more than *sixty to one hundred times* larger than KR3's production:



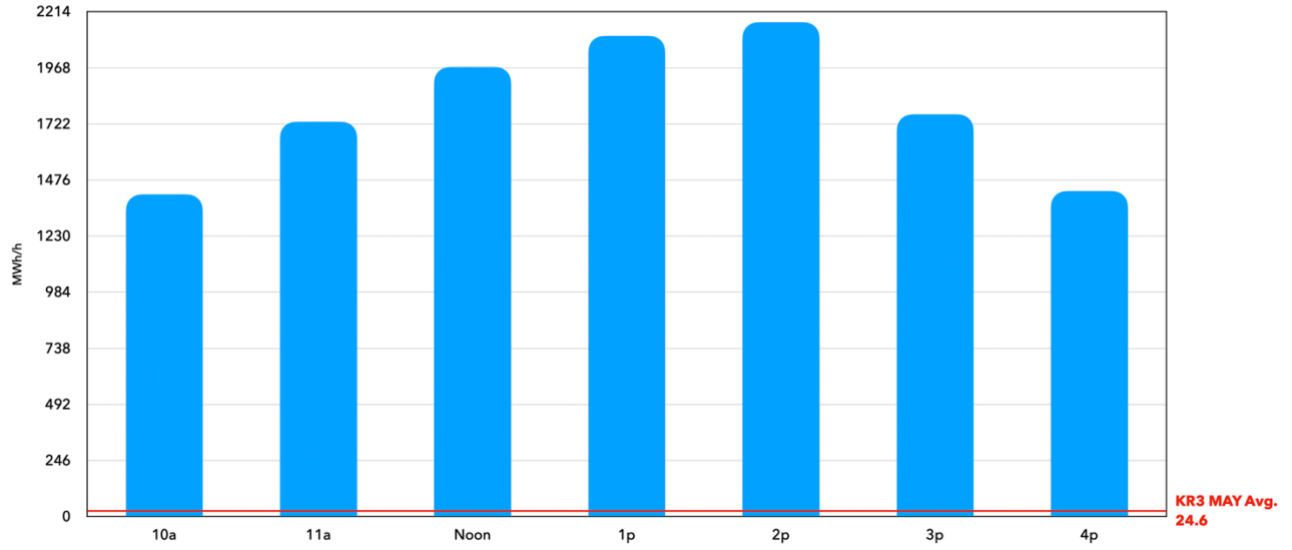
Even as KR3 increased its rate to 15.4 MW in March, curtailments again went higher, sidelining wind and solar in amounts *seventy to one hundred forty* times larger than KR3's rate of output:



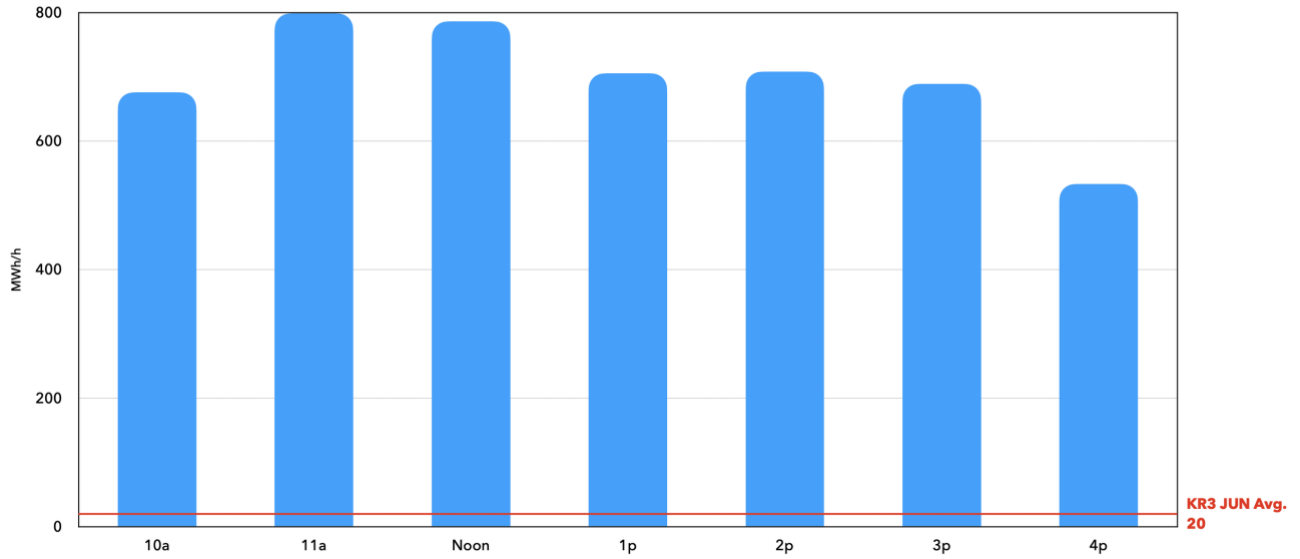
We'll play out the string from here to round out the rest of 2022:



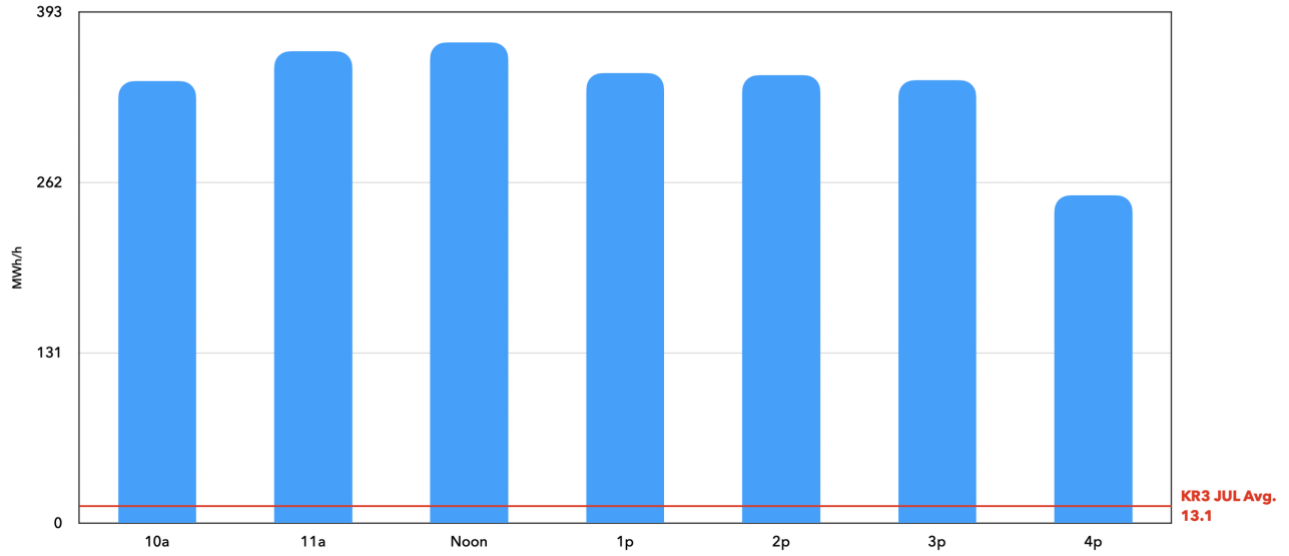
Average CAISO Renewable (Solar + Wind) Curtailments, 10a-5p, MAY 2022 v. KR3 Average Generation



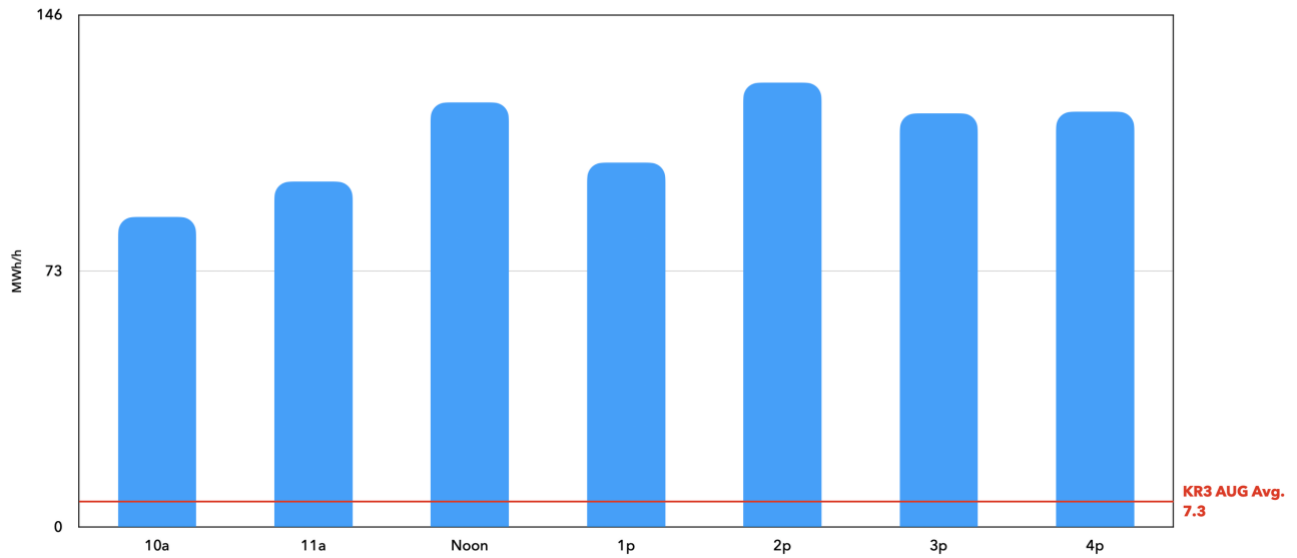
Average CAISO Renewable (Solar + Wind) Curtailments, 10a-5p, JUNE 2022 v. KR3 Average Generation



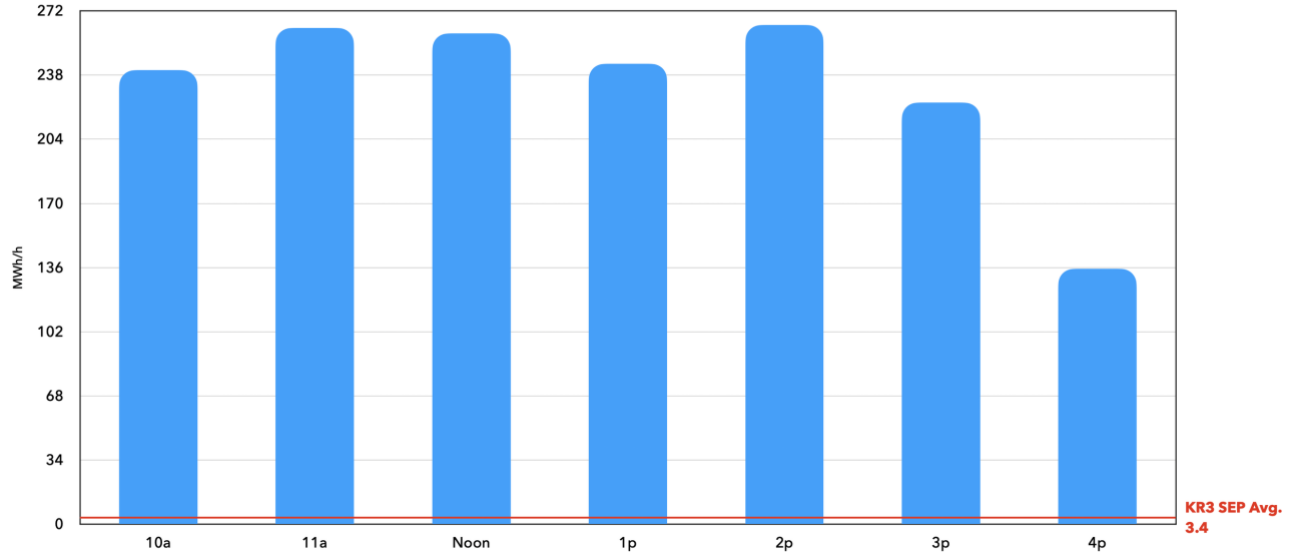
Average CAISO Renewable (Solar + Wind) Curtailments, 10a-5p, JULY 2022 v. KR3 Average Generation



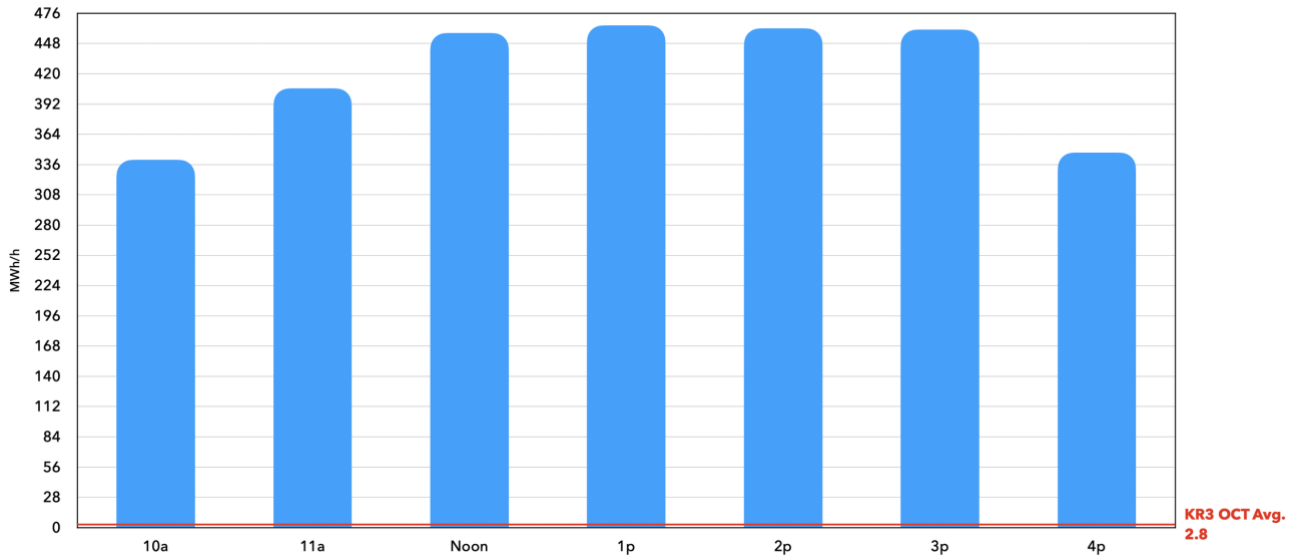
Average CAISO Renewable (Solar + Wind) Curtailments, 10a-5p, AUGUST 2022 v. KR3 Average Generation

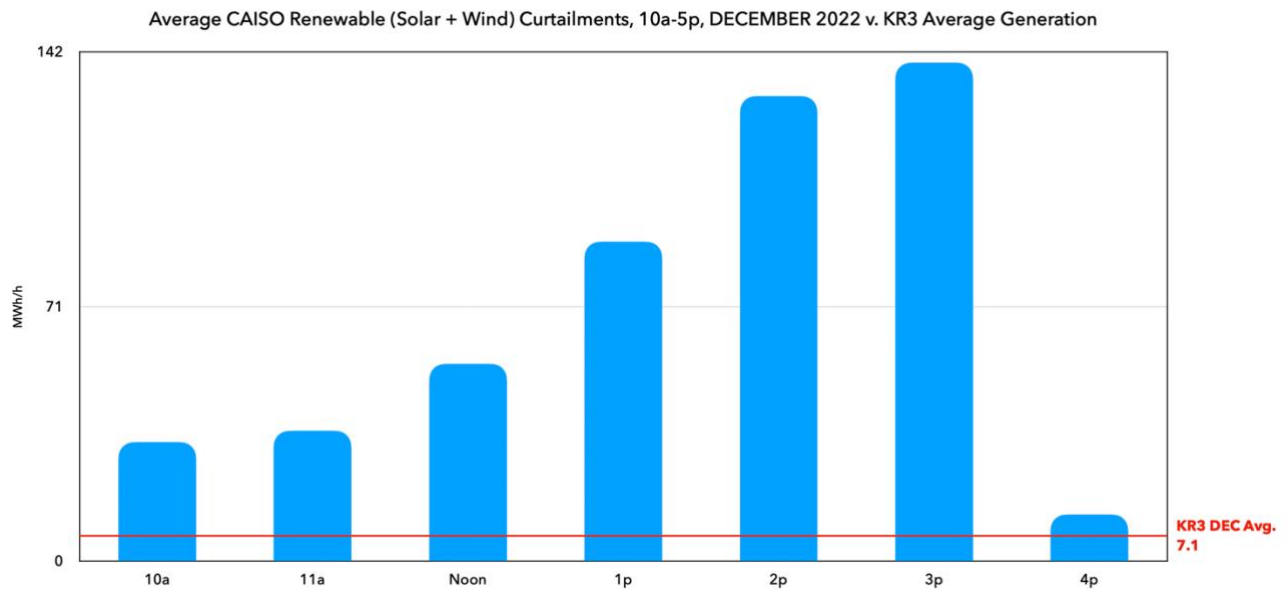
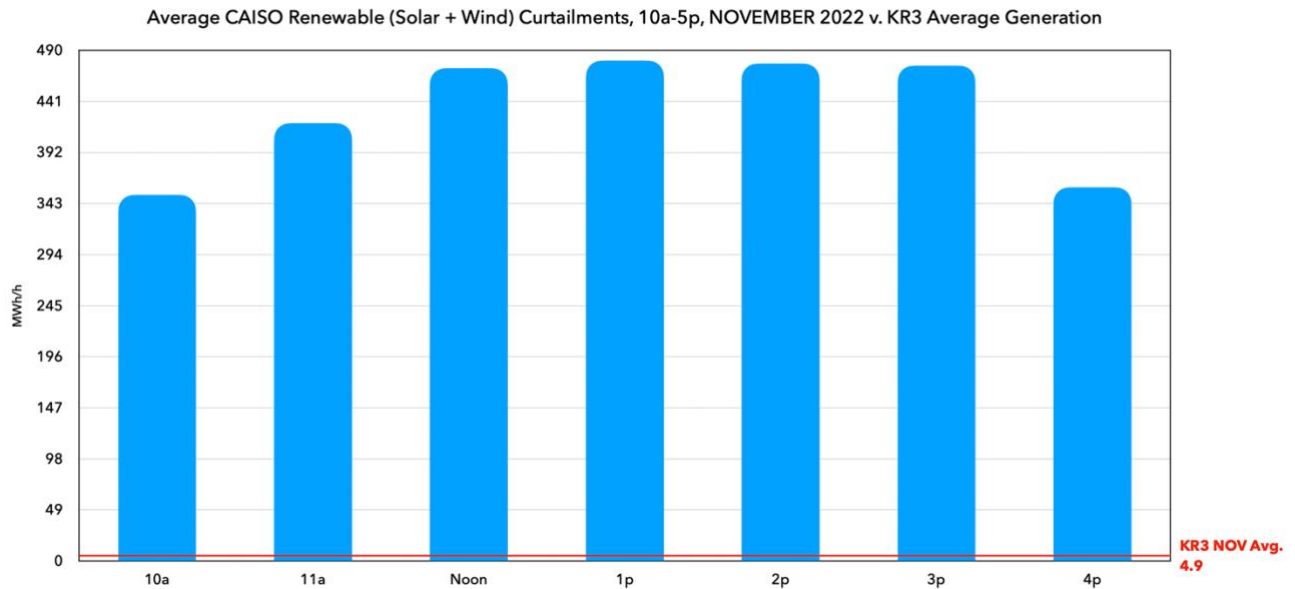


Average CAISO Renewable (Solar + Wind) Curtailments, 10a-5p, SEPTEMBER 2022 v. KR3 Average Generation

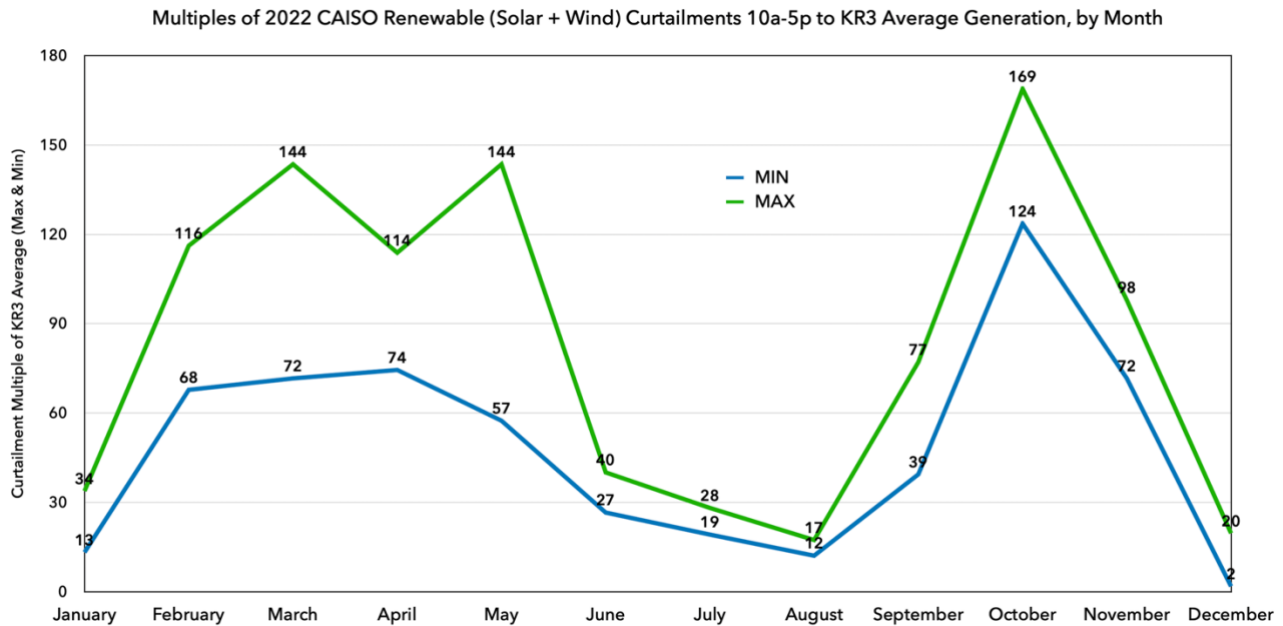


Average CAISO Renewable (Solar + Wind) Curtailments, 10a-5p, OCTOBER 2022 v. KR3 Average Generation





The following chart summarizes the preceding charts with the minimum and maximum multiples of renewable curtailments between 10am and 5pm by month against the KR3 average rate:



These figures show that the energy KR3 produces between 10am and 5pm is not useful to society from February through May and September through November. It makes no sense to dewater the Wild and Scenic North Fork Kern during those hours when 57 to 169 times the generating power of KR3 is available from renewable sources (wind + solar) to replace it but are sitting on the bench instead. Given the incredible phenomenon of curtailment, it is important to know how the market has valued Edison’s energy production.

Criterion (5) – Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.

As noted above, generation of energy at KR3 is a contributing cause of the socially disfavored phenomenon of curtailment system wide. It is imperative to know how the local market has valued KR3’s production over the past three years to reaffirm or rebut the inference that there are certain times of day during certain months of the year when production at KR3 is not socially beneficial — *i.e.*, where the need for power is *de minimis* or even negative. If those times exist, there may be an opportunity to enhance flows at little to no cost on the developmental side of the equation.

This study would also tie directly with the “flow travel times” portion of the existing study plan. Under the current license, project operations are curtailed on occasion for recreational mitigation between the hours of 10 a.m. and 5 p.m. Do those times line up with the social need for power? The question requires an inquiry into the time it takes for an increase or decrease in the diversion at Fairview to alter generation output — flow travel time — and then an effort to match those results with this proposed study, which would point to optimal times from society’s perspective for the curtailment of generation at KR3.

This study's results could also inform license conditions such as bubbles of increased flow for the environment, aesthetics, or public health. It would also faithfully describe the "need for power" — the developmental portion of the agencies' delicate balancing act — for the public and governing agencies at an early stage.

Criterion (6) – Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

The study is simply to gather data Edison possesses and report it in a usable spreadsheet (Excel) for the public to inspect. This methodology is not meaningfully different than that used in WR-2.

Criterion (7) – Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

No alternative studies of this nature have been proposed. This is a purely desktop study. This data is directly in Edison's purview, and it can be obtained and reported in-house. Being familiar with CAISO curtailment data, we estimate the task to take no more than 5 hours at a cost of \$750.

Criterion (8) – Describe any material changes in the law or regulations applicable to the information request has occurred.

None known.

Criterion (9) – Describe why the goals and objectives of any approved study could not be met with the approved study methodology.

The approved studies do not touch on the issue of CAISO market pricing of KR3 generation.

Criterion (10) – Describe why the request was not made earlier.

This request was made earlier — on three occasions: as an information request in our comments to SD1⁸⁷, which we reiterated in our comments on SD2⁸⁸, and once again in our comments to the RSP⁸⁹, where we wrote:

The California Independent System Operator [“CAISO”] creates and regulates the California energy market. Through its pricing mechanisms, the CAISO market signals 24/7/365 through its prices whether power generation is highly valuable to the grid (by offering high prices), moderately valuable to the grid (moderate prices), or marginally valuable to the grid (low prices). It even signals when power generation is harmful to the grid by offering negative prices.

Edison participates in the CAISO market, bidding the power produced by KR3 into the “day ahead” market.⁹⁰

The Federal Power Act, as interpreted by the Commission, charges it with balancing the noneconomic value of recreation against the economic value of power generation and designing a license that is best adapted to the project given the relative strength of these competing values.

One obvious metric of the economic value of power generation to our society is the prices reflected on CAISO’s market. If there are various times of day, days of the week, or month of the year, in which generation is marginally or negatively valued, the case for favoring noneconomic values such as recreation and the environment in the Commission’s delicate balancing analysis may be relatively enhanced. Knowing how Edison’s generation of power has been valued by the CAISO market — which is about as fair an indicator of that power’s social utility can be — is the starting point in evaluating whether there are times its energy is only marginally useful or even disfavored by our contemporary energy market.

For these reasons, we request that the Commission direct Edison to provide by April 31, 2023, the record of its bids into the day-ahead CAISO market from 2017 to 2022 in Excel spreadsheet format on its relicensing website for stakeholders and the managing agencies to examine and evaluate as a necessary condition of moving forward with the pre-application process.

We ask that the Commission act on our current request, which has been reduced to three years, given its silence on our prior requests. The effort required for this study is small

⁸⁷ KRB PAD/SD1 Comments at 130. Available: https://www.kernriverboaters.com/s/KRB_PAD_COMMENTS_FINAL.pdf

⁸⁸ KRB PSP/SD2 Comments at 134. Available: https://www.kernriverboaters.com/s/KRB_SD2_PSP_COMMENTS.pdf

⁸⁹ KRB RSP Comments at 28. Available: https://www.kernriverboaters.com/s/KRB_RSP.pdf

⁹⁰ Dan Keverline, KR3 Managing Operator, 10FEB2021 TWG

but its importance, as shown by the numerous “solar glut” comments elicited in this proceeding, is large.

Criterion (11) – Describe whether significant change has occurred in the project proposal, or significant new information material to the study objectives has become available.

Not known.

Criterion (12) – Describe whether good cause exists for this request.

Good cause exists in that this proceeding is supposed to result in a meaningful balance between developmental and nondevelopmental values. Managing agencies and stakeholders need salient information on both — not only to understand the current need for power provided by the project, but also to identify times of the day or year when modified or new license conditions are especially feasible. There is no more objective metric for the social utility of this project’s energy than the CAISO market’s valuation of it. We asked for this data during the study design process, it is important information all interested parties should have, and it is not an onerous request — good cause exists to provide it.

KRB ISR Meeting Summary, Comment

At the October 17, 2023 ISR meeting, the meeting facilitator exhorted participants several times to “write it down” and submit their comments and requests to FERC.

At the end of the meeting, the facilitator suggested Edison provide the rules for new and modified study requests in the meeting summary. Edison consultant Jillian Roach agreed.

The above exchange is not reflected in the meeting summary.

In fact, Edison did not provide the rules in the ISR summary; rather, it merely provided a citation to them, noting that they required good cause. (SCE ISR Meeting Summary Cover Letter.)

Of course, more is required for study requests at this stage — especially new studies — than good cause. (18 CFR § 5.15, subd. (d) & (e).)

Edison did not provide the rules as promised, it merely cited them, and did so in a potentially misleading manner, as if good cause were all that was required. As such, some stakeholder requests may not comply with the letter of the rules.

Considering this, we ask the Commission to examine the substance of stakeholder requests liberally. As indicated at the outset of this document, Edison’s employees and consultants are the only persons making the case for this diversion, and they are paid with money earned from that diversion. “Money speaks for money.” The money made from encumbering this river is used to speak for the continuation of the encumbrance; the river itself — the case for un-encumbering it, or at least lessening the degree of encumbrance — gets none of it. The highest use of this public resource can only be obtained if governing agents use their authority to remediate that gross imbalance in resources.

Respectfully submitted,

//s// ED

Elizabeth Duxbury, President

//s// JLP

José Luis Pino, Vice President

//s// BD

Brett Duxbury, Secretary-Treasurer

DATED: December 11, 2023

To see what is in front of one’s nose needs a constant struggle.

— George Orwell