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Leading the Way to a Just Transition for Water

How the US Government Should Manage the Central Valley Project to Improve Equity and Climate Resilience

Background

The planning for the Central Valley Project (CVP) began over a century ago and its core infrastructure was built over 75 years ago.¹ As its major facilities age and climate change-driven hydrologic extremes strain its capacity, it is time for a full accounting and allocation of the Project's costs and impacts, both to Tribes and disadvantaged communities, and to the environment. Under the Biden administration, the Department of Interior (Interior) and its Bureau of Reclamation (Reclamation) are taking actions to promote racial equity and environmental stewardship.² However, those actions have not yet been applied to the CVP, which is Reclamation's largest project in the Country.

"The CVP includes 20 reservoirs, with a combined storage capacity of nearly 12 million acre-feet; 8 power plants and 2 pumping-generating plants, with a combined capacity of approximately 2 million kilowatts; 2 pumping plants; and approximately 500 miles of major canals and aqueducts."³ Its contracts exceed 9 million acre-feet of water, more than twice the amount of water contracted by the State Water Project, and roughly equivalent to the entire Colorado River allocation for California, Arizona, Nevada, and Mexico.⁴ CVP contractors include the largest agricultural water districts in the state, such as the Westlands Water

¹ See: <https://www.usbr.gov/mp/cvp/about-cvp.html>, accessed May 11, 2023.

² See: <https://www.doi.gov/advancing-environmental-justice>, accessed May 11, 2023.

³ See: <https://www.usbr.gov/mp/cvp/about-cvp.html>, accessed May 11, 2023.

⁴ CVP contracts are described as exceeding 9 million acre-free (CAS Section 2.4), and a review of a CVP spreadsheet indicates total contracts of 9.5 million acre-feet, including 400,000 acre-feet for wildlife refuges. State Water Project contracts total slightly more than 4.17 million acre-feet. (See: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/State-Water-Project/Management/SWP-Water-Contractors/Files/2308-2023-SWP-allocation-increase--100-dist-final-042023a.pdf>, accessed May 11, 2023, for a breakdown. For the Colorado River, the lower basin states (CA, AZ, NV) are allocated 7.5 million acre-feet, and Mexico receives 1.5 million acre-feet, for a total of 9 million acre-feet. See: <https://crsreports.congress.gov/product/pdf/r/r45546>, accessed May 11, 2023, for a description of Colorado River allocations and management.

District, Glenn-Colusa Irrigation District, Central California Irrigation District, and Oakdale Irrigation District, along with large urban systems, including the Santa Clara Valley Water District, which serves Silicon Valley, Fresno, the largest city in the Central Valley, and the East Bay Municipal Utilities District, which serves the East Bay.

This report describes the foundational inequities in the CVP's operation and cost allocation models and the social, economic, and environmental consequences of those ongoing inequities. It also provides recommendations for how to align the CVP with the administration's Justice40 principles⁵ and how to make it more resilient to increasing climate extremes. In addition, it contains suggestions for improving transparency and accountability for management and oversight responsibilities, including contract terms, economic analyses, and water conservation plans.

A Foundation of Injustice

The CVP, like other Western water delivery projects, operates based on doctrine of water rights enshrined through the judicial branch and upheld by the executive and legislative branches of government. The water rights prior appropriation doctrine has been summarized by the phrase, "first in time, first in right," which corresponds to the temporal priority system for water use.⁶ The system is unsuited to a society grappling with how to address systemic racism and climate change.⁷ Beyond the unjust water rights system itself, however, the CVP exacerbates inequities through contract terms, cost allocation methodologies, and lack of oversight. The federal government's deals with the senior water rights holders (the Settlement and Exchange contractors) entitle the contractors to no-cost water and preferential contract terms.⁸ Moreover, the CVP's cost allocation

⁵ See: <https://www.whitehouse.gov/environmentaljustice/justice40/>, accessed May 11, 2023.

⁶ See: <https://www.watereducation.org/aquapedia/water-rights-california>, accessed May 11, 2023, for a brief description of California water rights law.

⁷ As a Civil Rights complaint filed with USEPA documents, the Western water rights system enshrines historical injustice and creates continuing harms to Tribes, communities, and the environment. See: <https://www.restorethedelta.org/2022/12/16/civil-rights-complaint-seeks-us-epa-oversight-of-ca-state-water-board-bay-delta-ecological-crisis-harms-california-tribes-and-delta-ej-communities/>, accessed May 11, 2023, for an overview and link to the formal complaint.

⁸ Bureau of Reclamation, California-Great Basin Region, "Central Valley Project Water Contracts." No-cost "base flows" delivered to the Settlement and Exchange contractors total over 20 percent of total CVP contract allocations.

methodology excludes its externalities, specifically its impact on riverine ecosystems, which are more diminished than ever due to dewatering and climate change. The following sections detail these systemic injustices.

Section I: Flawed Economic Analysis and Cost Allocation

Reclamation's fiscal management of the CVP is governed by multiple statutes and executive directives.⁹ Reclamation has published two cost allocation studies (CAS) in the last 50 years, one in 1975 and another in 2020.¹⁰ These CAS are meant to divvy up CVP costs among contractors and to identify costs borne by the federal government. The CAS allocates costs across the eight authorized purposes of the CVP (Water supply for irrigation (agriculture)¹¹; water supply for municipal and industrial use (M&I); commercial power generation; flood control; water quality; recreation; navigation; and fish & wildlife enhancement) by "identifying and assigning all project costs that provide only one project benefit to the appropriate project purpose (separable costs), and then equitably distributing those costs that provide benefits to more than one purpose (joint costs) among authorized project purposes."¹²

At first glance, the cost allocation methodology seems reasonable. However, a closer analysis reveals that it contains several critical flaws and omissions that decrease and distort the actual costs of the CVP. The biggest omission is the environmental damage caused by the CVP. The damage includes destruction of fish species and habitat, which impacts Tribes, commercial and recreational anglers, and the public that values healthy ecosystems. It also includes impacts to communities and infrastructure, such as dry wells and road and canal damage from subsidence that occur due to over pumping of groundwater directly related to CVP operations. Because CVP contractors do not pay for these externalities

⁹ In addition to multiple statutes passed by Congress, Reclamation is also subject to adherence with Principles and Guidelines for Water Resources Projects issued by the White House Council on Environmental Quality. See: <https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/PandG>, accessed May 15, 2023. Furthermore, the statutes authorizing the CVP specify that the CVP is subject to state law and regulation. See: <https://crsreports.congress.gov/product/pdf/R/R45342/13>, pages 13-14, accessed May 11, 2023.

¹⁰ See: <https://www.usbr.gov/mp/cvp/cvp-cost-allocation.html>, accessed May 15, 2023.

¹¹ While Reclamation uses the term irrigation, this report uses agriculture instead to emphasize that CVP water is being used for agricultural production.

¹² 2020 CAS, Executive Summary, page 2. Accessed from: <https://www.usbr.gov/mp/cvp/docs/cvp-final-cost-allocation-study-2020.pdf>, May 15, 2023.

(externalized costs), their payments to Reclamation do not reflect the full cost of the water they receive. Moreover, the externalized costs are generally borne by government (e.g., taxpayers). For example, California uses bond funds and allocations from its general fund to pay for ecosystem mitigation and restoration projects.¹³

As a result of this effective subsidy, CVP contractors' investment decisions diverge from what is economically efficient and in the public interest. The shift for many Agriculture contractors to greater acreage of tree nuts provides an illustrative example. Nut trees (almonds, walnuts, pistachios) require significant volumes of water to establish and once established they cannot be removed without major economic losses. Nuts were highly profitable due to global market dynamics (and marketing), but also because water was underpriced.¹⁴ Since the Settlement and Exchange contractors receive large baseline quantities of CVP water at no cost, their business decisions lead to even greater distortions. For example, rice, a water-intensive global crop best suited to tropical and sub-tropical climates, is grown in the Sacramento Valley.¹⁵ The aggregate results of individual business decisions are ongoing environmental and social harms. One way for Reclamation to stop this cycle is by internalizing the externalities through assigning costs to contractors through their Agriculture and M&I rates.

Furthermore, Reclamation has previously been criticized for clandestinely and inappropriately subsidizing state planning efforts to build new conveyance facilities for the State Water Project, which is operated jointly with the CVP.¹⁶

¹³ See: <https://lao.ca.gov/Publications/Report/4633>, accessed May 15, 2023, for a description of the billions of dollars proposed for habitat and ecosystem management included in the Resources and Environmental Protection Agency budgets.

¹⁴ See: <https://www.bloomberg.com/graphics/2023-wall-street-speeds-california-groundwater-depletion/>, accessed May 15, 2023, for a detailed investigation into short-term/high-return investments into California agriculture. See: <https://www.cdfa.ca.gov/Statistics/>, accessed May 15, 2023, for statewide info on crops and revenues. In 2021, tree nuts (almonds, pistachios, and walnuts) accounted for 17.5% of total agricultural income.

¹⁵ See: <https://watershed.ucdavis.edu/project/agricultural-production-water-use-and-employment#&gid=1&pid=1>, for a chart of crop acreage and water use. Also, see: <https://www.latimes.com/california/story/2021-08-29/rice-farmers-water-rights-drought-california>, accessed May 15, 2023, for a description of how senior water rights holders in the Sacramento Valley receive water allocations they use to grow rice for export even during drought years.

¹⁶ Office of the Inspector General, US Department of Interior, "The Bureau of Reclamation was not Transparent in its Financial Participation in the Bay Delta Conservation Plan," September 2017.

Notwithstanding that Reclamation had no reasonable basis for providing any financial assistance for the Delta tunnels proposal, those costs should have been allocated to the CVP contractors. It is unclear if this deficiency has been addressed in the cost allocation for the current Delta tunnel proposal. Regardless, the CAS should reflect contractor obligations to pay a fair share for environmental reviews and other planning documents related to CVP capital projects and operational needs.

Another foundational flaw in the CAS is the exclusion of intergenerational equity and climate resilience from Reclamation's infrastructure investment framework. This exclusion is reflected in a CVP discount rate of 3.25 percent.¹⁷ In the environmental economics field, there is broad consensus that discount rates above 1 percent for long-lived infrastructure do not adequately value the impacts of climate change on future generations.¹⁸ A further critical omission is the lack of assessment and allocation of costs for infrastructure repair due to CVP operations. For example, the CAS does not include the full costs to repair the Friant-Kern canal, which has been damaged by land subsidence caused by over pumping of groundwater.¹⁹ Moreover, as climate change increases hydrologic extremes, the flood control benefits of CVP facilities are likely undervalued, and contractor payments to maintain effective flood control operations should be recalculated.

Under shortage conditions, the CVP's water allocation rules create significant costs. As a review of the 2012-2016 drought determined, CVP contractors that had their entire allocations cut sued Reclamation, leading to discord and court costs.²⁰ Furthermore, additional groundwater pumping exacerbated the impacts of land subsidence and dry domestic wells. Future droughts, made more severe by climate change, will undoubtedly create more strife. None of these shortage

¹⁷ Central Valley Project, Final Cost Allocation Study, Economic Benefits Analysis Appendix, page 2.

¹⁸ See: <https://grist.org/article/discount-rates-a-boring-thing-you-should-know-about-with-otters/>, accessed May 15, 2023, for a description of debates in the environmental field around the use of discount rates.

¹⁹ See: <https://sjvwater.org/farmers-who-helped-sink-the-friant-kern-canal-reject-a-fee-to-pay-off-their-share-of-the-fix/>, accessed May 15, 2023, and <https://water.ca.gov/News/News-Releases/2022/Jan-21/Friant-Kern-Canal-Groundbreaking>, accessed May 15, 2023, for descriptions of the damage and cost allocation issues associated with repairing the canal.

²⁰ Sugg, Zachary P., "An Equity Autopsy: Exploring the Role of Water Rights in Water Allocations and Impacts for the Central Valley Project during the 2012-2016 California Drought," resources, February 13, 2018. Accessed from: www.mdpi.com/journal/resources .

management and impact costs are included in the CAS and, while Reclamation published a study in 2014 evaluating how climate change is impacting CVP operations, all options but one included major new investment in expanded reservoir storage (i.e., enlarging Shasta Lake) and new Delta conveyance (i.e., tunnels) and only looked at economic benefits and costs to contractors.²¹

Within both the Agriculture and M&I benefit-cost accounting in the CAS there are assumptions with no justification. In the Agriculture section, the CAS assumes that all land fallowing is a negative cost and attributes avoided land fallowing due to CVP water deliveries at \$40.12 per acre.²² Thus, Reclamation treats loss of irrigated land as an unequivocal bad outcome. However, even agriculture-funded think tanks, such as the Public Policy Institute of California, have published reports concluding that total irrigated acreage in California will decrease by at least 500,000 acres, while others have argued that the total will need be closer to 2-3 million acres (out of a total of 9 million).²³ Moreover, some farmland that is converted to alternative uses, such as solar energy generation, can result in a net economic benefit even without accounting for ecosystem benefits from greater river flows.²⁴ This unsubstantiated bias in the CAS overstates the benefits of the CVP and perpetuates unsustainable agricultural irrigation.

In the M&I section, the CAS assumes that urban water systems will eschew conservation in all but the driest of years and the conservation will not count as new supply.²⁵ California's increasingly intense droughts and state policy responses emphasizing additional conservation directly contradict these assumptions. California adopted laws requiring new 2030 conservation goals in 2018²⁶ yet the 2020 CAS does not reference that legislation. In consequence, the CAS overstates urban demand and inflates the benefits of CVP deliveries.

²¹ Bureau of Reclamation, Central Valley Integrated Resource Plan, November 2014, Section 7.

²² Central Valley Project, Final Cost Allocation Study, Economic Benefits Analysis Appendix, page 15.

²³ See: <https://www.ppic.org/wp-content/uploads/policy-brief-the-future-of-agriculture-in-the-san-joaquin-valley.pdf>, accessed May 15, 2023, and <https://onthepublicrecord.org/>, for views on how much agriculture may (and should) shrink due to climate change.

²⁴ See: <https://www.law.berkeley.edu/wp-content/uploads/2016/05/A-PATH-FORWARD-May-2016.pdf>, accessed May 15, 2023.

²⁵ Central Valley Project, Final Cost Allocation Study, Economic Benefits Analysis Appendix, page 31.

²⁶ See: https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/california_statutes.html, accessed May 15, 2023.

The ratesetting policies are also due for an update. The agricultural ratesetting policy was adopted in 1988 while the M&I policy was adopted in 1995.²⁷

Applying these flawed assumptions, the CAS concludes the present value benefits for agriculture are \$16 billion and those for M&I are \$6.5 billion.²⁸ These values make the CVP seem like a project that delivers incredible benefits. Unfortunately, the CAS obscures the true costs of the Project, preventing equitable cost allocation and prudent investment decisions.

Section II: Inadequate Management, Oversight, and Transparency

Recent actions by federal agencies demonstrate that they are capable of respecting Tribal sovereignty in water management decisions. On the Colorado river system, Tribes have had a voice in negotiations over allocation reductions and commitments for the federal government to support Tribal water development.²⁹ In California, the Winnemem Wintu tribe entered into a co-management agreement with federal agencies working to restore native salmon above Shasta Dam, which is part of the CVP.³⁰

However, Reclamation has not made Tribal sovereignty and cultural practice an element of the CVP. Indeed, water for Tribes is not one of the authorized purposes of the CVP. Moreover, as noted above, the CAS does not include any impacts to Tribes in its economic analysis. This is a glaring omission that is inconsistent with the stated justice goals of Biden administration.

Domestic Use and Environmental Justice

Some CVP contractors provide water for Municipal and Industrial (M&I) uses. They are subject to M&I rates and terms. However, some CVP agriculture contractors also provide water for M&I. The Westlands Water District, for example,

²⁴ See: <https://www.usbr.gov/mp/cvpwaterrates/rate-process/overview.html>, accessed May 15, 2023.

²⁸ Central Valley Project, Final Cost Allocation Study, Economic Benefits Analysis Appendix, pages 27 and 42.

²⁹ See: <https://www.latimes.com/environment/story/2023-01-30/colorado-river-in-crisis-tribes-push-for-change>, accessed May 15, 2023.

²⁹ See: <https://www.latimes.com/environment/story/2023-05-04/tribe-california-salmon-agreement>, accessed May 15, 2023.

³⁰ See: <https://www.fresnobee.com/fresnoland/article254077153.html>, accessed May 15, 2023.

provides water to the communities of Cantua Creek and El Porvenir, and charges a high price for the water.³¹ During drought periods, water bills skyrocket, leaving many households unable to pay. While M&I deliveries accounted for only 1.4% of Westlands total water sales in 2020³², nothing in the CVP contract with Westlands requires ensuring that basic domestic needs are met. Furthermore, CVP contracts do not include any responsibility for contractors to support domestic supplies during dry and critically dry years, leaving the state to provide emergency drinking water to communities and households whose wells go dry. This lack of regard for human health is a hallmark of CVP management and it needs to change.

Water Conservation Plans

As part of the Reclamation Reform Act of 1982, Interior was required to direct CVP contractors to submit water conservation plans. When the Central Valley Project Improvement Act (CVPIA) passed in 1992, Congress included additional language directing Interior to review those plans for adequacy and to update the plan criteria every three years.³³ Interior has not adequately fulfilled this responsibility, nor does it provide easy public access to the plans and its evaluations. In fact, there is no online record that Interior has ever found a CVP contractor's water conservation plan to be inadequate. This lack of oversight is another example of how Interior and Reclamation have not adapted their operations to mitigate climate change impacts, despite clear statutory direction. This is an instance where Congressional oversight is warranted and overdue.

Ecosystem Restoration

While the CVPIA was intended to provide ecosystem restoration within CVP operations, its results have been woefully inadequate. Iconic fish species have continued in decline, drought impacts to communities and the environment have been devastating, and agricultural production has continued to generate short-term profits with no regard for the consequences of excessive water use.³⁴ Moreover, the ecosystem restoration projects are mainly paid for the federal

³¹ See: <https://www.fresnobee.com/fresnoland/article254077153.html>, accessed May 15, 2023.

³² See: <https://wwd.ca.gov/wp-content/uploads/2022/04/2019-2020.pdf>, accessed May 15, 2023.

³³ Central Valley Project Improvement Act (public law 102-575), Section 3405.

³⁴ See: <https://www.npr.org/2023/04/07/1168595658/california-salmon-fishing-shut-down-low-stock>, accessed May 15, 2023.

government instead of the CVP contractors³⁵, which is yet another way that the contractors are insulated from the consequences of their water use. Restoration costs for the Trinity River alone are estimated at \$340 million or greater.³⁶

Lack of Transparency

While Reclamation makes the CAS and other CVP fiscal documents available on its website, transparency for several of the elements discussed here that make the CVP inequitable is lacking. The CVP contracts, ability to pay assessments, water conservation plans, and adequacy reviews are not available without use of a Freedom of Information Act request or a visit to Reclamation's Sacramento, CA office. Likewise, it is difficult to ascertain how Reclamation's costs for the CVP water delivered to the Settlement and Exchange contractors at no cost to them is spread across the other CVP contractors. Finally, it is also challenging to find information on how much it may cost to maintain the CVP infrastructure over time. CVP infrastructure faces multiple risks, including seismic events, reservoir sedimentation, and subsidence, and Interior and Reclamation owe the public and Congress a transparent assessment of how they intend to allocate the costs of risk management.

Recommendations section

These recommendations would build equity, respect for Tribal sovereignty, and climate resilience into the CVP and support a culture of transparency at Reclamation.

Recommendation 1: Redo the Cost Allocation Study to Incorporate Equity, Environmental Mitigation, and Climate Resilience

A revised CAS should attempt to quantify the ongoing environmental impacts of the CVP and allocate those costs to the contractors. The criteria for the allocation should include quantity of deliveries, geographic location (e.g., South of Delta contractors should pay more due to the impacts from CVP pumping operations), nexus to groundwater depletion, quality of water conservation plans, and contribution to food security (e.g., contractors growing tree nuts, rice, and

³⁵ Central Valley Project, Final Cost Allocation Study, Economic Benefits Analysis Appendix, Chapter 4.

³⁶ Letter from Hoopa Valley Tribe to Shalanda Young, Director, Office of Management and Budget, March 7, 2023.

alfalfa for export should pay more). In addition, until their senior water rights are eliminated, the Settlement and Exchange contractors should pay more due to the legacy of their subsidized deliveries and the impacts of their preferential water allocations during times of shortage. The new CAS should also estimate the cost of repairing infrastructure damaged by over pumping (via subsidence) and allocate those costs to the contractors that use that infrastructure. (Neither the federal nor the state governments should entertain proposals to bail out the responsible parties using taxpayer funds).³⁷

The CAS should also assign costs for managing climate extremes. These include levee fortification to protect lives and property from extreme precipitation (like we have experienced in 2023), reservoir maintenance, and provision of domestic and environmental supplies during severe and extended droughts. Quantifying and allocating these costs now can avoid catastrophic impacts and costs as hydrologic extremes increase in frequency.

A second way the CAS can address climate resilience is by modifying cost factors and assumptions within the analysis. The CVP discount rate should be lowered consistent with intergenerational equity best practices. At a minimum, it should be set equal to the discount rate for other infrastructure projects as established by the White House Office of Management and Budget in Circular A-94.³⁸ Reducing the discount rate would help ensure that Reclamation does not over-value proposals for infrastructure development (i.e., raising Shasta Dam) relative to their environmental impact over time.

The CAS should also remove unsupported assumptions about agricultural and urban water use. The impact of land fallowing should evaluate both costs (to farmers) and benefits (to communities and society) depending on the agricultural productivity of the land, the types of crops being grown, the use of the land after fallowing, job losses and gains, and environmental enhancement from increased in-stream flows. This type of analysis would be fairer and more accurate than the current CAS calculus that assigns every acre of land fallowed a negative economic impact. On the urban side, the CAS should incorporate increased water conservation into estimates of need for and benefits from CVP

³⁷ See: <https://sjvsun.com/ag/hurtado-pulls-bill-to-repair-sinking-canals-after-legislators-yank-funding/>, accessed May 15, 2023, for an example of one such bill that was not passed.

³⁸ See: <https://www.whitehouse.gov/omb/information-for-agencies/circulars/#budget>, accessed May 8, 2023.

water. Also, if Reclamation moves to full cost pricing, its M&I contractors are likely to purchase less water overall to keep costs down. The CAS assumption that M&I contractors will only reduce CVP purchases during extreme droughts should be removed. Finally, the CAS allocation of M&I costs should be informed by Reclamation's adequacy review of the contractors' water conservation plans (see Recommendation 3).

Recommendation 2: Stop Honoring Senior Water Rights and Eliminate the Subsidized Base Flows for the Settlement and Exchange Contractors

The initial agreements the federal government reached with the Settlement and Exchange contractors are now nearing 100 years old and it is past time that they become subject to new terms in the interests of equity, food security, and climate resilience. The two core elements that must be changed are priority and subsidized water provision. While the statutory and judicial precedent underlying the priority system is extensive, it is not inviolable. As Interior's proposals for managing increasingly scarce Colorado River flows demonstrate, the water rights priority system must be balanced against Reclamation's need to maintain infrastructure (e.g., power generation at Hoover Dam), the need to maintain treaty obligations (with Tribes and Mexico), and the public health risk of inadequate water for Arizona's major cities (Phoenix and Tucson).³⁹ Moreover, Reclamation is obligated to comply with California law regarding public trust stewardship and the prohibition against waste and unreasonable use of water.⁴⁰ If Reclamation determines that the use of water by the Settlement and Exchange contractors is inconsistent with state law, it would have a basis for eliminating their priority water allocations. Finally, given Congress' broad authority and precedential Supreme Court decisions regarding the Commerce Clause of the US Constitution, it is conceivable that Congress could pass a law regulating water use (through regulation of agricultural production) by the Settlement and Exchange contractors.⁴¹

³⁹ See: <https://www.usbr.gov/ColoradoRiverBasin/SEIS.html>, accessed May 15, 2023, for Reclamation's analysis of current Colorado River management options and environmental impacts.

⁴⁰ See: <https://www.watereducation.org/aquapedia/public-trust-doctrine>, accessed May 15, 2023, and California Constitution, Article X, Section 2.

⁴¹ See: https://en.wikipedia.org/wiki/Commerce_Clause, accessed May 15, 2023, for discussion of major Supreme Court rulings, especially *Wickard v. Filburn*, 317 U.S. 111 (1942), which relates to government regulation of agricultural production.

Reclamation also has strong grounds for ending the subsidized water deliveries to the Settlement and Exchange contractors. Providing them with no-cost base flows has demonstrable negative impacts that frustrate compliance with other statutory directives, such as compliance with the Endangered Species Act, and creates obstacles to upholding Tribal sovereignty. Terminating the base flows would also be consistent with the intent of the CVPIA, which aimed to restore environmental balance in the operation of the CVP.⁴²

One way Reclamation could achieve cost equity is by setting an expiration date for the provision of base flows. Within US law and policy, the concept of time-limited rights is well established. In the field of intellectual property, for example, exclusive rights to profit from one's intellectual labor (e.g., copyrights and patents) are granted for a specified time period. Afterwards, the inventions revert to the public domain. Although using water is not the same as inventing a piece of art or a machine, the concept of private benefit reverting to public benefit after time is applicable. The Settlement and Exchange contractors have enjoyed their private benefit and now it is time for the public benefit that will accrue by eliminating the subsidy.

Another option for building equity into the CVP cost model is to treat the legacy water rights like an estate and impose a steep tax (like an estate tax) every 25-30 years (e.g., every generation). Water rights, whether held in trust or via a business, comprise assets that are passed down (through families/trusts) or acquired (through business ownership) and should be subject to taxation to prevent wealth hoarding. The federal government and several states impose estate or inheritance taxes to ensure intergenerational wealth is not shielded from taxation.⁴³ Imposing higher taxes on legacy water rights may also reduce environmentally damaging short-term profiteering by limiting the size of the returns investors can achieve. As an April 2023 investigative report by Bloomberg demonstrated, investors have pursued short-term returns from excessive groundwater pumping with no consideration for the environmental and social consequences.⁴⁴ Environmental stewardship and well-regulated financial markets both require government to limit harmful investment and ownership arrangements. In the

⁴² Central Valley Project Improvement Act (public law 102-575), Section 3402.

⁴³ See: https://en.wikipedia.org/wiki/Estate_tax_in_the_United_States, accessed May 15, 2023.

⁴⁴ <https://www.bloomberg.com/graphics/2023-wall-street-speeds-california-groundwater-depletion/>, accessed May 15, 2023.

absence of strong regulatory and tax policy, reckless and monopolistic behavior abounds, leaving the public (taxpayers) to ultimately pay.⁴⁵

Recommendation 3: Standardize all CVP contracts to include requirements for domestic supply provision and full cost rates

All CVP contracts that include water for M&I, whether directly or indirectly through an agricultural contract (e.g., Westlands Water District) should have requirements ensuring provision of safe, accessible, and affordable water for domestic use. These requirements would conform with federal law (Safe Drinking Water Act) and state law (Human Right to Water Act) intended to achieve universal access to safe drinking water. Moreover, by setting limits on what agricultural contractors can charge for M&I, Reclamation could promote water affordability for disadvantaged communities. Revised contracts should also place responsibility for domestic well supplies on CVP contractors whose operations include groundwater pumping. This mandate would support implementation of California’s Sustainable Groundwater Management Act and build equity into CVP operations.

Reclamation should also modify all CVP contracts to include reimbursement for environmental externalities. Congress could catalyze this change by modifying the definition of “full cost” adopted in the Reclamation Reform Act (RRA) of 1982 to include environmental and social impacts.⁴⁶ In addition, Congress could direct Reclamation to equitably allocate the costs of CVPIA restoration projects, such as those required for the Trinity River as specified by CVIPA Section 3406(b)(19) and 3406(b)(23).⁴⁷ Even without Congressional action, however, Reclamation could update its ratesetting policies, which were last updated in 1988 (agriculture) and 1995 (M&I) to incorporate environmental externalities. Making contractors pay for the true costs of the water they receive should, as discussed above, reduce harmful short-term investments. It would also shift

⁴⁵ A good example is the 2007-8 global financial crisis, which was precipitated in part by deregulation of financial markets. See: <https://www.stlouisfed.org/on-the-economy/2017/may/why-didnt-bank-regulators-prevent-financial-crisis>, accessed May 15, 2023, for an analysis of the pre-conditions, including deregulation, that precipitated the crisis.

⁴⁶ Reclamation Reform Act of 1982 (public law 97-293), Section 202, paragraph 3.

⁴⁷ These costs, estimated at \$340 million, are the subject of a lawsuit filed by the Hoopa Valley Tribe against the Interior Department. See: <https://www.latimes.com/california/story/2022-10-31/hoopa-valley-tribe-sues-over-water-contracts-in-california>, accessed May 28, 2023.

environmental remediation costs from Reclamation (e.g., taxpayers) to the contractors (e.g., businesses) that are responsible for the impacts through their water use.

Recommendation 4: Honor Tribal Sovereignty and Incorporate Tribal Co-Management

Both Reclamation and Congress should take steps to repair legacies of dispossession and discrimination against Tribes that are perpetuated through the CVP. Reclamation should incorporate Tribal co-management as an operating principle for all waterbodies impacted by the CVP. Tribes that lost access to land and fisheries through the construction of CVP facilities should be invited to co-manage restoration and monitoring projects. The agreement with the Winnemem Wintu to co-manage fisheries recovery on their lands above Shasta Dam provides a model for other agreements between federal agencies and Tribes. In addition, Reclamation and other federal agencies should give more weight to Tribal input on infrastructure investment plans and environmental reviews. For example, the US Army Corps of Engineers' Final Environmental Impact Statement on the proposed Delta Conveyance Project should reflect the strong Tribal opposition to the project.⁴⁸

Congress can facilitate Tribal involvement in CVP decisions through passing legislation adding Tribal uses (i.e., use of sacred sites, cultural functions, and subsistence fishing) as one of the authorized purposes of the CVP and directing the Secretary of the Interior to consult and draft co-management agreements with all Tribes impacted by CVP facilities. Even if Congress doesn't act, however, Reclamation may incorporate Tribal practices into CVP operations via compliance with California Tribal beneficial use requirements under development by the State Water Board.⁴⁹ Tribes throughout the Western US have been sidelined from water management decisions for too long. The Biden Administration can demonstrate leadership by prioritizing Tribal interests in all Reclamation projects.

⁴⁸ Tribal opposition to the proposed Delta Conveyance Project is reflected in comments submitted on the Draft Environmental Impact Statement as well as in the Civil Rights complaint filed with USEPA. See: <https://www.restorethedelta.org/2022/12/16/civil-rights-complaint-seeks-us-epa-oversight-of-ca-state-water-board-bay-delta-ecological-crisis-harms-california-tribes-and-delta-ej-communities/>, accessed May 11, 2023.

⁴⁹ See: https://www.waterboards.ca.gov/tribal_affairs/beneficial_uses.html, accessed May 15, 2023.

Recommendation 5: Conduct Rigorous Adequacy Review of Water Conservation Plans

While the water conservation planning requirements in the RRA and the CVPIA provide a foundation for making water conservation a central tenet of the CVP, the lack of meaningful implementation is an indictment of the true priorities of Reclamation and the CVP contractors. Interior is supposed to conduct adequacy review of the plans, but there is no publicly available information regarding the frequency of plan submission and adequacy review or whether any plan was ever found to be inadequate. The RRA also authorized and directed the Secretary of Interior to:

enter into memorandums of agreement with those Federal agencies having capability to assist in implementing water conservation measures to assure coordination of ongoing programs. Such memorandums should provide for involvement of non-Federal entities such as States, Indian tribes, and water user organizations to assure full public participation in water conservation efforts. (Section 210).

However, these memoranda, if they do exist, are not publicly available. This lack of transparency calls into question whether there has ever been anything but the most perfunctory adherence to the statutory direction and indicates the need for additional Congressional oversight. Moreover, the CVPIA added requirements for Interior to establish adequacy criteria for the water conservation plans and to update those criteria at least every three years. (CVPIA, Section 3405(e)(1)). It is unclear, however, how rigorous the adequacy reviews are because Reclamation published notices of the reviews in the federal register but does not make the plans or the adequacy reviews available on its website.⁵⁰

Water conservation is a key element of climate resilience. Along with numerous other studies, Reclamation's Integrated Resource Plan (IRP) for the CVP recognizes the need for additional conservation from CVP contractors. Reclamation must fulfill its mandated role to assess adequacy of contractors' water conservation plans and build increased water conservation into CVP financial and operational models. One way Reclamation can successfully achieve its responsibilities

⁵⁰ See: <https://www.federalregister.gov/documents/2020/09/21/2020-20719/central-valley-project-improvement-act-water-management-plans>, accessed May 15, 2023, for an example of how Reclamation makes it difficult to access documents.

is by partnering with organizations with demonstrated regulatory and analytical expertise. In California, the State Water Board has implemented multiple conservation regulations and is developing long-term conservation standards for urban water systems. At the federal level, the Environmental Protection Agency has staff with knowledge of water conservation program design. Moreover, there are non-governmental organizations and academic institutions with significant expertise that could support implementation of the RRA Section 210 directive. (Reclamation's traditional partners, such as the contractors and California's Department of Water Resources, are generally uninterested in pursuing aggressive conservation measures). Reclamation should also explore changing its organizational structure and staffing to create more management and leadership positions for people with scientific and policy knowledge related to climate change, conservation, equity, and environmental economics.

Recommendation 6: Increase Transparency

As described above, critical documents related to the CVP are not publicly available on Reclamation's website. Moreover, neither the CAS nor other reports provide clarity on how Reclamation intends to allocate infrastructure investment costs for existing CVP facilities, such as the Friant-Kern canal. A further problem is that Reclamation's environmental analyses, including its IRP and the DEIS for the current proposed Delta tunnel project do not address the socioeconomic impacts of CVP operations decisions.⁵¹

Reclamation should be held accountable for these deficiencies and directed to remedy them. While the courts may force Reclamation to cure the environmental review compliance failures, more oversight from Congress and Interior is needed. It could include direction from the Interior Secretary to make more documents available and ensure compliance with White House Office of Management and Budget and Council on Environmental Quality guidelines for fiscal and environmental analysis, and Congressional hearings on cost estimates and cost allocation methodologies. As Western water challenges intensify, more information must be made available to the public.

⁵¹ See: <https://www.restorethedelta.org/wp-content/uploads/NRDC-DEIS-Comments.pdf>, accessed May 15, 2023, for critiques of how the DEIS for the Delta Conveyance Project fails to analyze socioeconomic impacts.

Conclusion

When future historians evaluate climate change response within the US, one of the places they will likely focus is management of water resources. The CVP, with its massive water delivery infrastructure, will be an example of a system analyzed for whether the federal government acted proactively and decisively to forestall catastrophic impacts. Researchers will also assess how cost burdens were allocated and the associated effects at the community, regional, and societal levels.

As climate change impacts intensify, Interior and Reclamation have a limited window to make changes to foster resilience using an equity lens. Owing to crisis, that process has begun for the Colorado River system. It should not take a crisis of similar magnitude for Interior and Reclamation to act on the CVP. By instituting the recommendations in this report, and with appropriate Congressional action, the Biden administration can walk the talk of environmental justice for water.

This assessment was written by Max Gomberg

Max Gomberg is an independent consultant working with California-based and national advocates on water affordability and climate equity. In July 2022, he resigned from his position as conservation and climate change manager at the State Water Resources Control Board (Water Board) due to a lack of urgency and political will to confront climate change. In his resignation letter, he wrote: “Witnessing the agency’s ability to tackle big challenges nearly eviscerated by this Administration has been gut wrenching. The way some of you have simply rolled over and accepted this has also been difficult to watch.”

During his tenure at the Water Board, Mr. Gomberg led development of water conservation, access, affordability, and climate change policies across California. Under his leadership, the Water Board developed a statewide plan for low-income water rate assistance, acquired \$1 billion for water debt relief, adopted a comprehensive climate change mitigation and adaptation policy, and implemented regulations to reduce urban water use. Mr. Gomberg has over 15 years of water policy experience and holds a BA from the University of Chicago and a Masters in Public Policy from UCLA.