

JUST TRANSITIONS IN THE DELTA

Bringing public voices into climate adaptation and salinity management strategies for the Delta through future scenario planning.

2024 PRESS KIT 3/7

ABOUT JUST TRANSITIONS

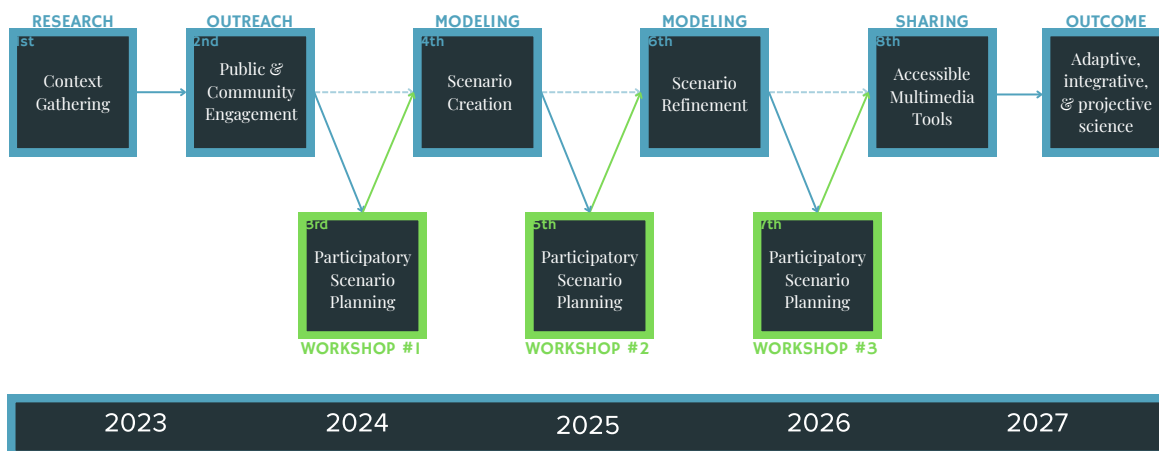
The term **Just Transition** is utilized in the domains of climate, energy, and environmental justice and refers to efforts to reduce inequity in modern society. This project seeks to advance such transitions by democratizing science and decision-making in the Delta through inclusive public processes of co-design and co-production. It seeks to provide opportunities for all communities potentially affected by policy and planning outcomes to play a substantive role in identifying the questions, defining the methods, and evaluating the results of planning processes that will inform efforts to adapt to a rapidly changing world.

ABOUT PARTICIPATORY SCENARIO PLANNING

Participatory scenario planning (PSP) is a "bottom-up" approach that involves working directly with public communities and contributors to create and evaluate future scenarios for a particular place. Scenarios can be understood as models and depictions of possible futures and the pathways through which they could manifest. Participants in this research process will work alongside experts in science, engineering, design and community engagement to negotiate the complexities of management systems in the Delta.

OUR APPROACH & TIMELINE

Over a four year timeline, the research team will embark on multiple cycles of public engagement with interviews, surveys, and workshops (1,2). Each cycle of public engagement will generate a suite of future scenarios that will then be vetted and simulated by state of the art modeling systems (3,4). Once these models are constructed, the research team will return to public participants for further refinement and development (5,6,7). This iterative, co-learning process is integral to the co-design approach of this project with the goal of collaboratively constructing future strategies that are both adaptive and accessible to audiences not previously included in decision making (8).



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2024 PRESS KIT 4/7

FREQUENTLY ASKED QUESTIONS

Who is funding this project? What are the motivations and agendas?

This project is made possible through the University of California's Multicampus Research Programs and Initiatives (MRPI) grant. MRPI awards are granted to system wide, cross-campus, collaborative research projects that promote innovative research and cutting edge discoveries, with significant importance to the state of California, its people, its environment and economy. The project is focused on a co-design approach, implemented through a just transition framework, wherein equity in decision making and access to shared learning are critical to the project.

Is this project part of the conveyance tunnel campaign?

No. This project has no bearing on nor relationship to the proposed conveyance tunnel campaign or any variation of such agency conducted activity. As an independently funded exploratory research project it does however invite the development of future scenarios that may incorporate conveyance systems as a means of testing such endeavors against alternative management strategies as informed by the priorities of public participants.

What is the risk to public participants?

How will you protect privacy & honor competing viewpoints?

Public participation in this research project is completely voluntary. As this project attempts to mediate and facilitate the tradeoffs between competing interests in the Delta, strong viewpoints are anticipated over the course of all forms of public engagement. Specific to public workshops, our team is trained and prepared to facilitate a safe space for all contributors. We have developed ground rules and mediation strategies in anticipation of potential conflict, real or perceived. In regards to personal privacy, all personal views shared or expressed within interviews and surveys are kept anonymous through a strict protocol of coding and redacting any explicit or implicit personal information.

To learn more about our measures to protect personal privacy and ensure anonymity visit our consent form [here](#). To learn more about our measures to mitigate conflict, please see our ground rules [here](#).

What is the benefit to public participants?

Participation in this project enables contributors to envisage future scenarios with novel and distinct strategies for managing the Delta estuary system. This collaborative ability to generate alternative futures is paramount in the context of a Delta system and its decision makers that currently have no alternatives to the status quo.

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2024 PRESS KIT 5/7

FREQUENTLY ASKED QUESTIONS

What purpose will this project serve?

The Just Transitions project attempts to facilitate ongoing public engagement in Delta planning and decision making while also evaluating two distinct research topics: 1) Adaptive strategies for managing salinity in the Delta through participatory scenario planning and 2) Trust and capacity building through collaborative and shared learning. The scenario strategies (and the associated modeling and visualizations) will be put forward as holistic, adaptive, and alternative science that can inform future policy and planning efforts at multiple levels of governance. The evaluation of trust and capacity building will provide a novel framework for evaluating public planning and decision making through speculative and collaborative design processes. Both efforts advance public planning methods through the lens of equitable engagement and provide future decision makers a pathway to building public consensus through iterative forms of imagining, modeling and evaluating potential future scenarios for the Delta.

Will this project look at extreme weather patterns outside of historical records? How will this be developed, modeled, and explored?

A critical element of this project is to deliver sound science through state-of-the-art climate modeling and forecasting that can be presented to project participants. This advanced technical work depends on collaborative access to agency technologies and operational standards while also developing novel workflows that can realistically portray climate extremes not present in historical records. Crafting such climate models and corresponding hydrodynamic models requires the design, evaluation, and implementation of a hybrid approach. As the project unfolds, our science experts will test such approaches and vindicate a workflow that modifies modeling conventions with synthetic modeling projections that are responsive to the current climactic extremes.

Is this project part of the Delta Stewardship Council's Delta Adaptation plan?

No. This research project is a separately and independently funded research project. However, the project research team is aligning their efforts with the Delta Stewardship Council's public engagement strategies for the Delta Adaptation plan. Specifically, the Just Transitions research team is building on the DSC's salinity management workshop series from 2023-2024 as a way to further collaborative engagement with public audiences. The projects are unfolding in tandem with distinct goals but with shared strategies.

DRIVERS OF CHANGE

The following categories all impact and influence salinity changes in the Delta.



LANDSCAPE & ENVIRONMENTAL CHANGES

The Sacramento-San Joaquin Delta is situated in a strongly seasonal climate that is prone to multi-year dry periods punctuated by occasional wet years. As witnessed during the last several years, the ongoing cascade of extreme-weather events is aggravated by the growing symptoms of climate change.

- **Extreme wet and extreme dry years:** California's unusually high variability in precipitation combined with ongoing warming could produce more intense drought, and in some cases, magnified floods.
- **Sea-level rise:** Global warming will produce higher sea-levels, which will push saltwater further into the Delta. Sea-level rise will amplify drought impacts of saltwater intrusion and exacerbate storm impacts that produce excessive inundation of Delta levees, islands, and surroundings.
- **Climate warming & heat waves:** Warmer air temperature increases the atmospheric "thirst" for water, affecting agricultural production and recreation. Warming water temperature creates a hazard for aquatic species and ecosystems.
- **Bathymetry:** Changes to the geometry of Delta channels, such as widening and deepening waterways, and their connections to each other affect salinity; increased channel size increases freshwater quantity requirements to counteract salinity intrusion.
- **Subsidence:** The loss of peat soils has led to many Delta islands decreasing in land elevation (below sea-level), which increases flood risk and potential salinity intrusion.
- **Tidal marsh restoration:** Restoration of marsh habitat inherently changes water flow throughout the Delta. These restoration projects can both increase or decrease salinity, based on factors such as location and geometry.

POLICIES & REGULATIONS

Delta policies and regulations are legally-binding rules that control how water is managed. These are created by various governmental agencies, including at the local, state, and federal levels.

- **Bay-Delta Plan and D-1641:** The Bay-Delta Plan delineates water quality standards, set into regulation by the State Water Resources Control Board's Water Right Decision 1641.
- **Temporary Urgency Change Petitions (TUCPs):** TUCPs are requests made by those with Delta water rights to impermanently alter the standards delineated in the Bay-Delta Plan in the interest of protecting assets. This includes actions to amend water quality standards to protect wildlife.

TECHNOLOGY & INFRASTRUCTURE

Physical interventions to the Delta can inhibit salinity intrusion if managed optimally.

- **Levees:** Levees are structures along the edges of land that prevent flooding, if maintained properly. Failure of levees will lead to intense flooding.
- **Barriers:** Emergency drought barriers, such as hard-rock barriers, often parse out sections of the Delta to temporarily inhibit salinity intrusion.
- **Operable gates:** Operable gates are structures that can be opened or closed to control the flow and direction of water within the Delta. The Delta Cross-Channel and Suisun Marsh Salinity Control Gates are examples of operable gates.

WATER RIGHTS & EXPORTS

Water rights determine who has access to Delta water, and how much water they have access to convey. Water exports are water quantities that are diverted from the Delta for use in other regions.

- **Reservoir operations:** Decisions on pumping water through the Delta (including via the Central Valley Project and State Water Project) constantly alters the amount of freshwater in the Delta.
- **In-Delta diversions:** In-Delta Diversions are uses of water within the Delta that consume freshwater from intakes. The main in-Delta diversions for the Sacramento-San Joaquin Delta are utilized for agricultural practices.

MANAGEMENT STRATEGIES

The following strategies can proactively influence salinity changes in the Delta.



LANDSCAPE & NATURE-BASED

Interventions that restore ecological processes and functions within the Delta can also impact salinity.

- **Marsh restoration:** Rebuilding and rehabilitation of tidal marshes affects the geometry of the waterways, which can change the tidal and directional flows of Delta water.
Example: *Franks Tract Futures* project
- **Subsidence reversal:** Methods used to build soil and land elevation on reclaimed (leveed) lands that have sunk below sea-level. Reducing flood vulnerability of these lands reduces risks for potential salinity intrusion.

TRADITIONAL 'HARD' ENGINEERING

Physical interventions within the Delta can change the directional flow of water and can prohibit saline intrusion into freshwater flows.

- **Barriers:** Permanent or emergency installed drought barriers separate sections of Delta waterways and can minimize the mixing of high-salinity water with freshwater.
Example: Rock barriers
- **Operable gates:** Structures placed across sections of the Delta's waterways at strategic locations, which open or close to control the flow and direction of water in the Delta.
Examples: The Delta Cross-Channel and Suisun Marsh Salinity Control Gates
- **Tunnel and conveyance systems:** These systems convey freshwater through the Delta (in engineered channels or underground tunnels) for export to other areas of California.
Example: The Delta Conveyance Project

POLICY & REGULATORY CHANGES

Policies and regulations control how water is used and managed. They are created by governmental agencies at the local, state, and federal levels and are always subject to change and revision.

- **Potential changes in water rights:** California has a complex water rights system that dates back to the colonial era. There are many calls for reform of water rights, as well as considerable resistance to make changes. What changes might be made are highly uncertain.
Examples: The California Water Board's consideration of changes to senior/pre-1914 water rights, and the voluntary agreements negotiated between state and other agencies.
- **Indigenous sovereignty:** California's many Native American Tribes (over 160) have historically been excluded or intentionally marginalized through the creation of the state's water rights system and water infrastructure. Many tribes are asserting their water rights, which is changing water rights policy generally.
Examples: CA Department of Water Resources' creation of the Tribal Communications Committee and the Tribal Water Summits.
- **Reoperation of reservoirs:** When and how much water is released from the state's water project reservoirs has a major impact on Delta salinity. Current research and decision-making focuses on how water reservoir operations might be changed to reconcile water demands, ecological needs, and potentially reduced water supply due to climate change.
- **Changes in salinity standards and Temporary Urgency Change Petitions (TUCPs):** TUCPs are requests to relax water quality standards, including salinity levels, on an impermanent basis. Additionally, these petitions can allow for less water released from reservoirs in order to maintain reserves. These petitions are often applied during extreme droughts.
- **Reduced demand:** Decreasing freshwater exports for agricultural and municipal purposes relieves strain on the amount of freshwater that is needed to flow into the Delta.