Managing for Change:
Modernizing California's Water Governance

Little Hoover Commission

August 2010

State of California

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Dear Governor and Members of the Legislature:

California is living with a water governance structure created in a different time for a different purpose. The water governance system in place for the last 40 years gives priority to agricultural and urban users, even as new laws and court actions in the decades since have required allocating more water to the environment and to endangered species, a reallocation that the current system is not capable of handling. California needs a new water governance model that recognizes this reallocation and manages existing supplies and plans for future needs in ways that anticipate a growing population, support a thriving economy and accommodate a healthy environment.

The key functions needed to create this governance model already exist, but they are spread out in different parts of the government. Water rights administration and water planning and management, located together in most other western states, are separate in California because the Department of Water Resources, in addition to its management and planning roles, also operates the State Water Project. Water rights administration and enforcement are part of the State Water Resources Control Board, located in a separate agency. The board's role in regulating the State Water Project complicates its ability to coordinate water rights with water supply management under the Department of Water Resources. These functions need to be located together.

The Department of Water Resources was created more than 50 years ago to design, plan and build the State Water Project. That far-sighted goal was achieved – more than 40 years ago. California still needs far-sighted and ambitious planning, but within the department, the statewide water management and planning functions conflict with the more immediate needs of operating the State Water Project to deliver water to its 29 contractors that include water districts serving 23 million Californians. Contractors understandably want the department's priority to be the water project. To the degree that outsiders perceive that the project sets the department's agenda, the department loses credibility in its efforts to drive permanent improvements in water conservation and water use efficiency, strategies fundamental to reallocating the resource. These functions need to be separated for both to be successful.

The State Water Project is laboring under the contracting and personnel requirements designed for state government, not for an enterprise that faces competition for employees and energy supplies and needs to be available around the clock. Restrictions on hiring, purchasing spare parts and paying competitive wages needed to retain skilled workers have reduced the project's efficiency and reliability. With contractors that cover the maintenance and operating costs of storing and delivering water, the project is

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not like other state infrastructure assets. Its operation is not a typical state department activity and should not be treated like one. The state should remove it from the Department of Water Resources and create a publicly owned water authority for it, one run by an independent board charged with representing not only the project's customers, but the interests of the state as a whole. This would position the project to more closely integrate its operations with the federal Central Valley Project. The fact that California has two water projects is an accident of history. The federal government's Central Valley Project initially was envisioned as a state project; the two projects ultimately should be merged into a single system under state ownership.

Relocating the project would allow a reorganization that brings together water rights administration, planning and management into a new Department of Water Management. Combining these functions, together with the instream flow analysis group from the Department of Fish and Game, would give the state the ability to develop a comprehensive and credible strategy for water management and planning that focuses on maximizing existing supplies and influencing demand to wring the greatest overall benefits from our water – for our cities, our farms and our environment.

The water reform legislation signed in November 2009 acknowledged that change was long overdue. The new laws put in place policies aimed at reviving the Delta and improving the reliability of the state's water supplies, implementing aggressive urban conservation targets and tightening water rights accounting and enforcement. The governance changes the Commission recommends are essential to achieving the hard-won goals of the 2009 water reforms.

Among the reforms was the revival of the California Water Commission to oversee a now-delayed $11.1 billion water bond package. The water commission members have been appointed, and despite the delayed bond proposal, there is much work for them to do. California has authorized more than $20 billion in bond borrowing for resources-related projects, many only vaguely described in ballot language. Billions of dollars of that bond money has yet to be awarded. To ensure that this borrowing is invested wisely to deliver lasting benefits, the newly revived California Water Commission should be made independent and charged with overseeing resources-related bond spending, both in the Natural Resources Agency as well as resource bond-funded programs in other agencies. The taxpayers who will be repaying these bonds must be confident that the borrowing prioritizes projects with the largest returns and that the departments that spend the money are accountable for the results.

Three years of drought have shown us what permanent water scarcity might look like. California has to make better use of the water it has, which means changing patterns of behavior and expectations of plenty that have built up over decades. California must take the next step and modernize its water governance structure to give the 2009 legislative reforms their best chance for success.

Sincerely,

Daniel W. Hancock
Chairman

MANAGING FOR CHANGE:
MODERNIZING CALIFORNIA'S WATER GOVERNANCE

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Executive Summary: A New Governance Structure

California needs a structure for water governance that has planning and management of the state's valuable water resources as its core mission. Such a structure is essential for California to address the supply challenges ahead while supporting its environment, accommodating its population growth and ensuring the conditions that allow its economy to thrive.

In 2009, the governor and Legislature enacted bold reforms that will require coordinated actions to reduce urban water use, help bolster the Sacramento-San Joaquin River Delta's environmental health and improve water supply reliability for water users who depend on the Delta.

The 2009 reforms were aimed at helping the state adjust to the reality that water supplies will no longer grow as surely as the state's population or its economy. The new laws make clear that both the state and regional governments play indispensible roles in achieving permanent change in how Californians use water. They also recognize that greater water conservation by urban users can expand supply through savings. Likewise, a more developed water transfer system that encourages growers to direct water to its most beneficial use will improve agricultural water use efficiency.

California's conflicted water governance structure, however, will impede progress in achieving these policy goals. Key functions at the state level are not aligned in a way that will allow California to adequately manage and plan for the future, or the full potential of these water reforms.

Currently, functions that need to be closely coordinated are dispersed among separate departments in California's government. Water planning and management in the Natural Resources Agency's Department of Water Resources are separate from water rights accounting and enforcement in the State Water Resources Control Board located in the California Environmental Protection Agency. Instream flow recommendations that should be used to determine supply are developed by both the Department of Fish and Game and the State Water Resources Control Board, and are separate from planning and management in the Department of Water Resources. Bond spending on

natural resource programs operated by these departments is not well-coordinated and oversight is diffused. The presence of the State Water Project within the Department of Water Resources and the administrative requirements it must fulfill, represent a conflict to important stakeholder groups and undermine the effectiveness of the department's management and planning activities.

The state lacks the comprehensive view of water use and demand needed for meaningful management and long-term planning. As a result of the state's confusing water governance structure, California cities and growers face increasing risk to their water supply, as environmental needs are not fully factored into water rights administration and enforcement, in some cases contributing to declines of endangered species.

For California to successfully manage the water it has and make useful plans for its future, water planning, management, rights and enforcement need not only to be located together, but fully integrated. This will require coordinating planning and management with regulatory responsibilities. Though this has raised some concern, it is essential to ensuring these functions are informed by a cohesive set of data on water supply, demand and use. It also is essential to ensuring the functions are guided by a comprehensive strategy on developing new sources of water supply and maximizing the benefits that can be derived by every gallon.

Planning for Uncertainty

In both urban and agricultural arenas, state government has an important role in ensuring that water is put to its most beneficial use, by creating incentives to use water more wisely and preventing waste. It also has a responsibility for consistently implementing and enforcing existing laws and gathering the data and directing research to reduce gaps in information on water use and supply.

The past three years have been a period of tremendous flux, resulting in a huge increase in the level of uncertainty about what to expect. Certainly, a driver in the past three years has been drought, which resulted in severe drops in water supplies. The drought forced growers to idle acreage and California cities to impose stiff water conservation measures, and it sharply reduced the amount of unimpaired flow of water to Delta habitat and wildlife needs.

The fundamental source of uncertainty has been the reallocation of water to the environment over time through legislation. This reallocation has

proceeded haltingly, in no small part due to the state's inability to develop a comprehensive approach to water management and planning. Lack of funding has played a role in the state's lack of capacity, as has lack of political will to enforce existing laws, leading to reallocation through litigation. Environmentalists, as evidence that this reallocation has been incomplete, point to the population collapse of endangered fish species, which forced the shutdown of commercial salmon fishing off the California coast for two consecutive seasons.

The decline in the populations of endangered smelt and salmon sparked litigation that led to Delta pumping restrictions, exacerbating the impact of the drought on farmers. The restrictions were imposed, lifted, then re-imposed and lifted. This increased the uncertainty surrounding water deliveries through the pumps, and raised new questions about the sturdiness of the Endangered Species Act that formed the basis of the federal court litigation.

The influence of the federal court as the central player in California's day-to-day water management underscores the need for the state to develop and execute an overarching statewide strategy for water planning and management that can address and resolve critical issues before they reach the courts. As California has seen time and again, failure to do so leaves state government vulnerable to having courts impose legal solutions that may not best serve the state's overall needs or advance its goals. Despite the courts' best efforts, policy driven by litigation very often reflects the objectives and priorities of those with access to the courts to the exclusion of those stakeholders who do not.

Litigation will be a part of water governance regardless of structure. Uncertainty, likewise, will always be a part of the operating environment. To the extent the state can provide greater consistency, transparency and accountability through a more cohesive and focused water governance structure, the state can reduce legal and regulatory uncertainty in some areas and develop tools to respond to uncertainty in others, such as water supply. Central to this effort will be gathering data on water use and supply, as well as more focused research on the causes of fish population declines.

This requires a comprehensive approach to water supply management, one that integrates water supply assessment, water use and water rights, and the data collection that is foundational to these functions. While complete knowledge is impossible, more information can reduce uncertainty, and with it, the grist for conflict.

The state's ability to fulfill these roles, however, is hindered by an out-of-date governance system, one that does not adequately prioritize or

integrate the importance of water supply planning and management with water rights accounting and enforcement.

A Centralized Approach for Water Management

Based on expert testimony, extensive input from advisory groups, interviews and research over the course of a year, as well as past Commission examinations of Delta governance and of the state and regional water boards, the Commission recommends restructuring planning, management and oversight of the state's water resources into a centralized Department of Water Management within the Natural Resources Agency.

The Commission's recommendations build upon the policy foundation established by the significant water reform legislation package enacted in 2009 and are designed to create a modern governance structure to achieve the goals of the 2009 water reforms.

The new Department of Water Management should be the lead state agency for all water planning, management and water rights accounting activities. It would be California's key contact point for local and regional government agencies and districts for water use, planning and management. Likewise, it would be the primary contact for federal agencies, such as the U.S. Bureau of Reclamation, the Army Corps of Engineers, the Fish and Wildlife Service and the National Marine Fisheries Service. An important goal of the reorganization is to simplify and improve the state's relationship with the federal government.

The core of the new department should be the planning and management functions currently housed in the Department of Water Resources, most importantly Delta and Statewide Management and Integrated Regional Water Management, but also the department's flood protection and dam safety functions. The new department must take advantage of potential gains in efficiency that can only be achieved at the state level, such as developing strategies to further integrate and optimize the operations of state and federal surface storage facilities and developing new ways to build groundwater storage into a statewide water plan.

Integrating Water Rights with Water Management

In addition to planning and management, the Department of Water Management should have the responsibility of accounting for and administering water rights and enforcing water rights laws and regulations, as is common in other western states. These functions currently are under the State Water Resources Control Board. This

would enable the state to improve planning, better track progress on water conservation and efficiency, and improve the state's ability to develop incentives to change the way Californians use water.

Bringing together planning and management with water rights administration also would help streamline the water transfer process, which ultimately could direct more agricultural water to its most beneficial use, relieve pressure on growers who face chronic shortages and create a funding source for growers to invest in water conservation and water efficiency technology.

Greater integration of water planning and management with water rights administration also would allow the state to better track water use and demand, which are critical to planning for future supply needs. The ability to more accurately track use and demand requires a standard approach to determining instream flow needs for wildlife and habitat, a function now located in both the Department of Fish and Game and the State Water Resources Control Board. Once instream flow needs have been determined for important rivers and streams, the ability to measure water use through the system of water rights reporting – together with more vigorous enforcement of water right permit and license conditions – eventually would reduce illegal diversions and ensure that diverted water is put to reasonable and beneficial use.

The new California Department of Water Management, through its scientific research, water supply analysis and water management programs, would support the activities and goals of the new Delta

Sacramento-San Joaquin Delta Reform Act of 2009

For years, the state's water debate has focused on the Sacramento-San Joaquin Delta, the crisis of its accelerating environmental decline and the threat to its ability to supply water to much of the state. The politics and litigation surrounding the Delta's crisis left little room for a broader view of the state's water needs.

This started to change when the 2007 Delta Vision Task Force Strategic Plan concluded that statewide conservation strategies to reduce reliance on the Delta as a water supply were central to its environmental stabilization. Legislators advanced policies for both the Delta and for statewide measures in a 2009 package of water laws that marked the biggest reforms since the Porter-Cologne Water Quality Control Act of 1969.

The new water policy of the state of California is to reduce future reliance on the Delta through a statewide strategy of investing in improved regional supplies, conservation and water use efficiency. Each region that depends on water from the Delta watershed is required to improve its self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects and improved coordination of local and regional water supply efforts.

Specifically, the 2009 reforms established goals for urban water conservation, repealed reporting exemptions for Delta water users, increased water use reporting, strengthened water rights enforcement and required the State Water Board to develop instream flow criteria for the Delta in 2010 and develop timetables and cost estimates for assessing instream flow criteria for key watersheds that feed the Delta by 2012.

Source: California Water Code. Section 39, Division 35, 85021.

Stewardship Council, taking a statewide perspective to complement the council's Delta focus. A key bridge will be the role of the Delta water master, a position created as part of the 2009 water reforms. Currently, the Delta water master is designed to be a part of the State Water Resources Control Board. As envisioned by the Commission's reorganization, the Delta water master would join the Department of Water Management as part of the shift of the Division of Water Rights to the new department, and in doing so, also would link the Delta water master, if indirectly, to the existing water master program now in the Department of Water Resources.

Water Reforms Create Water Master for the Delta

The Legislature established the Delta water master as part of the 2009 water reforms. The position was invested with a high degree of independence within the Delta to implement and enforce existing water rights laws as well as permits, licenses and decisions issued by the State Water Resources Control Board. Within the defined area of the Delta, the Delta water master has the authority to require monitoring and reporting of water use, as well as the authority to approve temporary urgency changes in conditions on water rights permits or licenses. The Delta water master also has the authority to issue a notice of proposed cease-and-desist orders for illegal or unauthorized water diversions. As part of its responsibilities, the Delta water master will provide reports to the State Water Board and the Delta Stewardship Council.

Typically, water masters as assigned to regulate watersheds or basins where there has been an adjudicated finding that all available water has been appropriated. The Department of Water Resources established the water master program in 1924 to ensure water was allocated according to established water rights as determined by court adjudications or agreements by an unbiased, qualified person, with the aim of reducing water rights litigation and civil lawsuits.

The Department of Water Resources has eight full-time field water masters in northern California, who regulate up to 200 water diversions. The department also serves as water master for two southern California groundwater basins.

Sources: State Water Resources Control Board. Also, Department of Water Resources. Also, California Water Code. Section 39, Division 35, 85021.

By consolidating functions that currently exist in different departments, and in one case, a different agency, the Department of Water Management will be able to organize programs that serve state level functions and separately, programs that create incentives for regional change in urban and agricultural water use.

Water Management. The state's existing water management programs should continue to focus on research and data collection and build on the existing research efforts on urban and agricultural water use efficiency and conservation. This group already collects data on water supply through a combination of state and federal river and stream gauges, reservoir-level monitoring, snow pack measurements and climate assessments used for irrigation management services.

The instream flow unit from the Water Branch of the Department of Fish and Game should be added to this group. The instream flow unit is responsible for establishing how much water must remain in a stream or river to meet habitat needs, a process that takes into account natural flow variations as well as various species' reproductive cycles. Also included should be instream flow assessment activities now in the State Water Resources Control Board.

Moving the Division of Water Rights to the Department of Water Management would allow data on water use from annual water right permit holders to be used to build a more detailed understanding of how and where water has been used, important for water management. The 2009 water reform

legislation increased the reporting requirements and reporting frequency for water rights holders as well as increased penalties for failing to report or for filing inaccurate reports. Water use reports now can be made electronically, enabling the Division of Water Rights to build a database that can be analyzed more easily. The data collection group should serve as a data repository to leverage and support the work of the other entities, such as the University of California's Water Resources Center archives.

Though the new legislation requires triennial reporting, currently, little is known about water use by riparian rights holders, except in cases where, through a formal process, a stream or river's watershed has been declared fully appropriated. To the degree that diversions by riparian rights holders represent a sizeable portion of the water used in some watersheds, properly managing supply and planning for current and future needs would benefit from a more complete analysis of when this water is diverted and in what amount.

At the state level, even less is known about groundwater use, though research has shown that groundwater overdraft is a major problem, resulting in higher pumping costs, damage to connected streams, increased salt levels and, in coastal areas, salt water intrusion. Under the 2009 water legislation, local agencies are required to monitor the elevation of their groundwater basins, though there is no requirement for monitoring or tracking groundwater pumping. If the local agencies do not set up monitoring programs or fail to report groundwater elevations,

Key Functions of Department of Water Management

Water Management	Water Rights Administration	Water Planning
▪ Measuring water supplies and water use throughout the state. ▪ Ensuring efficient use of existing storage capacity. ▪ Environmental and scientific research and analysis, including instream flow analysis. ▪ Data collection to support irrigation management. ▪ Flood protection. ▪ Dam safety. ▪ Facilitating water transfers.	▪ Tracking how much water has been committed to users through water right permits and licenses. ▪ Enforcing the water right permit system to prevent illegal or unauthorized use. ▪ Issuing water right permits or changing existing permits where un-appropriated water has been demonstrated to exist. ▪ Ensuring water transfer applications meet water right permit conditions.	▪ Anticipating future needs and developing programs to reduce water use and increase water use efficiency. ▪ Developing storage strategies to increase future supply flexibility, including reoperation of existing state and federal facilities. ▪ Developing the California Water Plan. ▪ Overseeing the Integrated Regional Water Management program and other grants and loan programs.

the state can step in to implement a program. The new law also requires the state to establish a priority schedule for monitoring groundwater basins and review groundwater elevation reports, as well as make recommendations to local entities to improve the monitoring of programs. Under the reorganization, these groundwater assessments would be part of water management.

Water Rights Administration. A key component of managing available water supplies is accounting for how much water has been committed to water users. As in other states, this is handled through a system of water rights. In California, this activity is administered by the Division of Water Rights in the State Water Resources Control Board.

One group in this division collects data on water use by water rights holders, processes applications for water rights and changes in existing permits and licenses. Another group is responsible for investigating water rights violations, such as unauthorized use or illegal water diversions. Data on water use should be integrated into the water management group's supply analysis activities. The process of accounting for how much water use has been authorized under post-1914 appropriative water rights and claimed under other water rights would be organized under the water rights administration. This function also would include the administrative process of reviewing applications for water rights permits and licenses and petitions for changes. Enforcement activities should be organized into an office of enforcement, separate from the application processing activities and data collection, and insulated from programs designed to change water use patterns.

The Commission's recommendation relocates the Division of Water Rights into the new Department of Water Management so that data on water use and water supply and analysis of instream flow needs can be more easily and routinely integrated into decisions on issuing or adjusting water rights permits and licenses.

In California, the amount of water that rights holders are authorized to use is far greater than the average annual amount of surface water. This puts a premium on knowing how much water rights holders actually use as well as how much water is available. More closely linking data collection and analysis of water use and water availability with water rights administration will increase the ability of the water rights system to manage demand according to established sustainable supply.

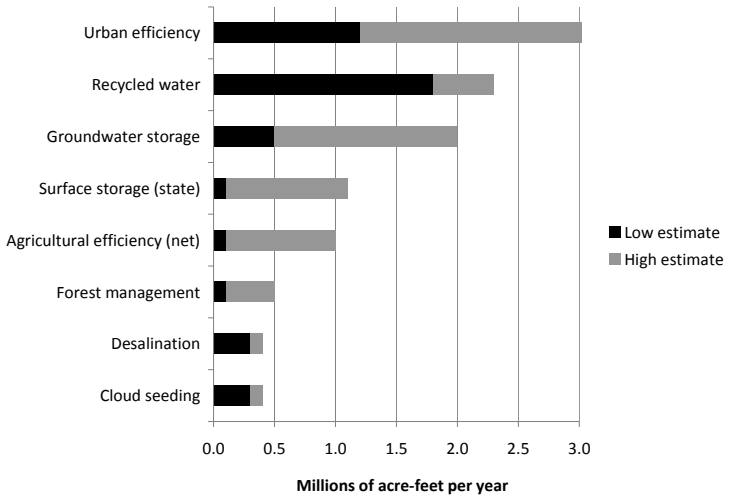
As part of the reorganization, water rights permit and license applications and change petitions should be handled administratively, with a process for public input, using hearing officers and, for appeals, administrative law judges.

Water Planning. In water planning, the new department should focus on statewide supply strategies to complement its programs at the regional level in order to reduce water use and extend existing supplies through recycling.

The new department should extend and refine the Integrated Regional Water Management process that began a decade ago within the Department of Water Resources. This effort should incorporate groundwater management and storage strategies into a broader look at how the state can best use existing state and federal surface storage. Over the past few years, the department's grant and loan programs have been refocused, where possible, to build on the model of successful regional planning processes that address supply issues and develop strategies to increase conservation, protect groundwater and meet mutual infrastructure needs.

The integrated planning strategy recognizes that creating new water supplies requires a portfolio approach and that different tactics work to varying degrees in California's vastly diverse regions.

Potential Sources of New Supply



Source: California Department of Water Resources. 2010. Bulletin 160-09.

The state has started using bond money to leverage local funding to encourage local governments and agencies to work together to define their water management objectives and priorities, coordinate investments for greater efficiency, as well as improve collaboration with diverse interest groups. This strategy helps to spread best practices as well as to create responses to local needs that fit local conditions.

The program's long-term success will depend on the state developing a more sustainable funding source.[1] The bond money has been slow to be awarded, in part because budget delays and the global credit crisis impeded bond sales in 2008-09, but also because of the time needed to develop the guidelines and grant criteria, and the lack of an overall investment strategy for the department's bond spending.

Based on past experience, the Department of Water Resources estimates that an investment of $1 billion in the Integrated Regional Water Management program could produce water supply benefits of 1.2 million acre feet a year, as well as other benefits for water quality, the environment, flood protection and other regional objectives.[2]

While the state can help local efforts to change water use, there are some state-level actions which have the potential to produce immense benefits for California as a whole. The state can increase the amount of water available for use and better perform its environmental protection role by managing California's state and federal reservoirs as a single system, and optimizing their operations to maximize storage. The process would require working with regional groups to integrate groundwater storage into a broader state strategy.

Under the Commission's proposed reorganization, the Department of Water Management would continue the state's investigations of storage strategies, including re-engineering reservoir operations to increase the flexibility of existing state and federal storage capacity.

Expanding the Role of the California Water Commission

In its June 2009 report, *Bond Spending: Expanding and Enhancing Oversight*, the Commission recommended the state revive and reconstitute the California Water Commission as the California Natural Resources Commission and charter it with prioritizing and overseeing bond-funded programs currently managed within the California Natural Resources Agency.

The water reform legislation enacted in the fall of 2009 re-formed the California Water Commission as part of a proposed water bond ballot measure. Now that its members have been appointed, the water commission should be given oversight responsibilities for the resource-related general obligation bonds. These bonds include those approved by voters in 2002 and 2006 as well as previous bond programs that have not issued already authorized bonds for programs in the Natural Resources Agency and other resource-related programs funded by bonds,

such as water quality improvement bonds in State Water Board programs or drinking water improvement bonds administered by the Department of Public Health.

The commission should award bond-funded grants and loans based on a prioritized list of proposed projects and programs that improve water supply, water quality, water conservation, water use efficiency and integrated regional water management planning and implementation. The commission should ensure that the programs funded through the bonds have strategic plans for the planned spending, that projects proposed for funding are ranked by priority, as done for bond-funded transportation projects by the California Transportation Commission, and that all bond-funded projects have performance measures and publically available progress reports.

The California Water Commission also should have the front-end role of setting guidelines for minimum qualifications and competitive criteria for Integrated Regional Water Management plans, which would separate the actions of developing the guidelines from administering the grant and loan programs, an activity that would reside with the Department of Water Management. The commission should work with the Department of Water Resources to further transition to funding for integrated plans from single-purpose funding programs, or require requests for money from single-purpose funds to be consistent with an approved, broader plan.

The Department of Water Resources also should work with regional partners to develop outcome measures so that the department can assess the effectiveness of its bond outlays and add to its library of best practices, when warranted.

An Independent State Water Project

One obstacle to locating the Division of Water Rights within the existing Department of Water Resources is the department's operation of the State Water Project. Locating the Division of Water Rights in the same department that holds a sizeable percentage of California's water rights permits and licenses would present a conflict that would undermine the state's ability to credibly administer and enforce water rights. Water rights and water resources previously had been located together until the 1956 reorganization that created the Department of Water Resources, and separately, a Water Rights Board, which eventually was merged with the State Water Quality Control Board to become the State Water Resources Control Board.

California's existing governance structure for water planning and management reflects the priorities of the past. The Department of Water Resources was created more than 50 years ago to plan, design and construct the State Water Project, then and now California's biggest infrastructure project. Now complete, the project functions as a utility and no longer fits in the Department of Water Resources, where it dominates the agenda of a state department that also is responsible for water planning and management and where these dual missions often conflict.

Additionally, the project is struggling to maintain its operational efficiency as it is increasingly constrained by the structure and requirements of operating within a state department. Civil service rules and contracting requirements hinder the project's ability to hire and retain skilled employees, perform needed maintenance and purchase key inputs, such as electric power, at the most competitive prices. When restrictions on pumping were in place, the availability of the project's pumps was a critical issue. To the extent that the department could not, because of maintenance or repair issues, make full use of its facilities during the windows of time when pumping was allowed, the project's effectiveness in meeting obligations to water users was diminished. Unlike other large state infrastructure assets, the project has a steady and reliable revenue source more than adequate to cover its maintenance and operating costs. The project is immensely important to the state's economy and quality of life and it should be maintained and staffed to ensure it is able to meet its many obligations.

The Commission recommends that the state create a separate organizational structure to operate the State Water Project as a state-owned entity with an independent board whose members represent the interests of the state as a whole, including a robust economy and the "reasonable and beneficial" water use that the state constitution requires.

The water rights permits and licenses held by the Department of Water Resources should be relocated with the project. This would remove the structural conflict to joining the water rights function and the water planning and management functions while also allowing the new Department of Water Management to have independent regulatory oversight of the project through the added perspective of statewide management and planning. Such a structure should provide it with the operational flexibility enjoyed by the water districts that are its customers for water as well as its competitors for employees and electricity.

Changed Conditions Require New Model

Preparing California to thrive in an uncertain water future will require a strategy that employs multiple approaches at multiple levels of government. The state can best lead this effort with a focused Department of Water Management that is responsible for water management, planning and water rights administration.

The name of the new department is intended to reflect its more focused mission. Organizing water management, accounting and planning functions in the same department is designed to improve clarity, efficiency and accountability and reduce the distrust and uncertainty caused by the existing dual missions of the Department of Water Resources.

In recommending the reorganization to create the Department of Water Management, the Commission emphasizes that its goal is to position California to meet its current and future water challenges and, under one management team, align the functions needed to lead change.

The structure for the new department of Water Management should not be considered permanent, as should no governance structure. Though the changes the Commission is recommending are overdue, new policy directions and unforeseen developments very well could require new approaches.

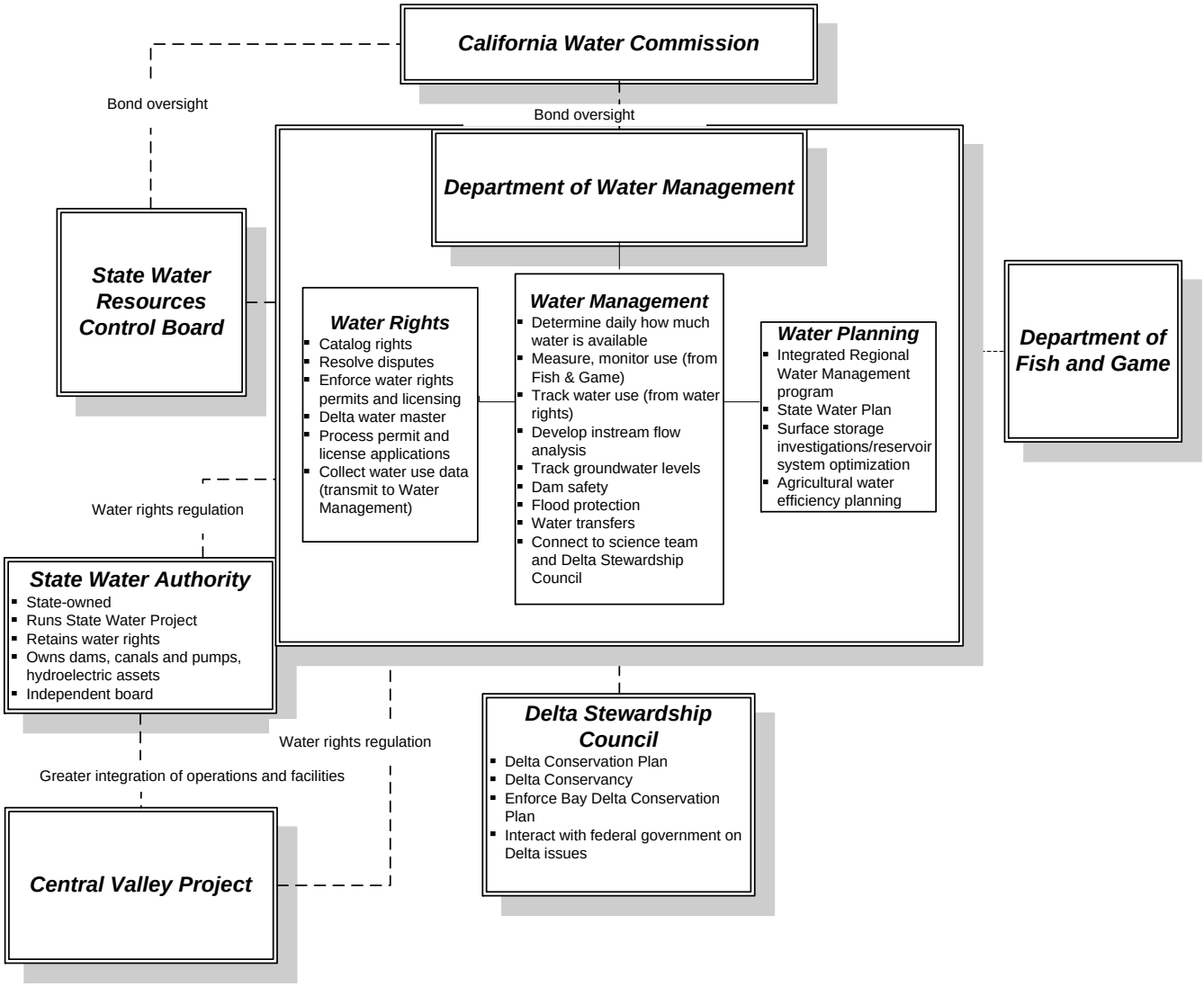
In the following chapters, the Commission examines the existing state governance structure and makes specific recommendations focused on strengthening and clarifying water governance. "Key Roles Not Aligned" assesses the functions that should be brought together into the Department of Water Management. "The State Water Project: An Enterprise Within Government" looks at the issues of operating the State Water Project within the Department of Water Resources and makes recommendations for change.

The Commission has found in this study and in its previous work that strong leadership and vision can make up for weak structure. A strong structure, however, generally cannot make up for weak leadership to consistently produce improved outcomes. Strong governance, however, can provide the accountability, transparency and efficiency to ensure that leaders are answerable for poor performance.

California's leaders came together to pass a historical package of water reforms in 2009. The process provided a valuable education for our Legislature. The governance recommendations in this study are aimed at

ensuring the Legislature's 2009 reforms achieve their goals. California's leaders must act before the political will forged in 2009 disappears.

Model Creates Comprehensive Approach to Water Governance



Recommendation 1: To improve transparency, accountability and efficiency for distinct water functions within the current Department of Water Resources, the governor and Legislature should integrate water rights administration and accounting with water use planning and management functions, and separate these functions from water supply and delivery operations. Specifically, the governor and Legislature should:

- ❑ Create a new Department of Water Management under the leadership of a department director within the Natural Resources Agency. The new department should consolidate management and planning functions of the Department of Water Resources with the Water Rights Division of the State Water Resources Control Board and the instream flow group of the Water Branch of the Department of Fish and Game. The department should be the lead agency for:
  - ✓ Collecting and monitoring data on water use and establishing benchmarks for water availability for both current and long-term environmental, agricultural and urban needs. It should coordinate its work with the Delta Stewardship Council's Independent Science Board to develop a greater understanding of how instream flows interact with other threats to endangered species.
  - ✓ Managing current supply and demand by:
    - o Incorporating current system management functions from the Department of Water Resources.
    - o Making greater use of data on water use, through water rights reporting and water availability through instream flow analysis, to balance environmental needs and the needs of other water users.
    - o Expanding operating relationships with the U.S. Bureau of Reclamation and Army Corps of Engineers to enhance more integrated use of reservoirs and conveyance systems.
  - ✓ Accounting, administration and enforcement of water rights by:
    - o Processing water right permits, licenses and petitions administratively with the use of hearing officers.
    - o Enforcing conditions of water right permits and licenses.
    - o Creating a panel of administrative law judges with experience in water rights law to hear administrative appeals.
  - ✓ Planning for future supply and demand by:
    - o Implementing the State Water Plan and developing strategies for further managing demand by providing technical expertise and incentives to regions to develop regionally integrated water plans for increased conservation and greater efficiency.

- Developing strategies for more efficient and integrated use of existing federal, state and local water infrastructure to maximize supply within environmental constraints.
- Prioritizing where infrastructure improvements can add the greatest system flexibility, efficiency or enhancement of ecosystem health.

✓ Managing bond-funded grant and loan programs related to water supply, conservation, efficiency and integrated regional water management planning, including development of performance measures to assess outcomes.

✓ Increasing economic efficiency and system flexibility through a streamlined water transfer process.

✓ Overseeing dam safety and maintenance.

✓ Taking responsibility for flood control and flood project integrity and inspection, levee repairs and floodplain management.

Recommendation 2: The California Water Commission should provide oversight of all natural resources bond expenditures, including current bond programs and future voter-authorized bonds in the Natural Resources Agency as well resource bond-funded programs in other agencies.

❑ The commission should oversee natural resources bond-funded expenditures and assess and publicly report outcomes of bond-related spending.

❑ The commission should award bond-funded grants and loans based on a prioritized list of proposed projects and programs that improve water supply, water quality, water conservation, water use efficiency and integrated regional water management planning and implementation.

❑ The commission should, with the assistance of a representative stakeholder advisory committee, develop criteria and guidelines for grant and loan programs, such as the Integrated Regional Water Management program, that are funded through bond borrowing.

Recommendation 3: The governor and Legislature should create a separate, independent publicly owned entity, the California Water Authority, to operate the State Water Project and other current functions related to or influenced by the project's operations to improve transparency, efficiency and accountability. The new entity should work to further integrate its operations with those of the federal Central Valley Project, with the ultimate goal of merging the two systems under state ownership. In establishing the new entity, the state should:

- ❑ Create an independent oversight board, whose members represent the perspectives of statewide interests critical to the project's operations as well as the project's impact on the environment. The board should be manageable in size, and members should be able to serve full terms, with the option to be reappointed to an additional term. Board members should elect their own chair. Candidates should be nominated through a stakeholder process. The governor should appoint the members who must be confirmed by the Senate.
- ❑ Allow the entity to raise money through revenue bonds for infrastructure improvements, to be repaid by revenues from project operations.
- ❑ Encourage the entity to increase operational integration with the Central Valley Project, including re-operation of storage facilities to advance co-equal goals of water reliability and ecosystem health.
- ❑ Encourage the entity to pursue contracting opportunities with local water distribution districts and joint powers authorities where such arrangements create demonstrable value to the state and water users.
- ❑ Allow the entity to create its own job classifications and compensation structures that are competitive with comparable jobs in California water and power districts in order to attract, retain and develop high-quality personnel essential to maintaining project reliability.
- ❑ Enable the entity to enter into contracts that allow it to be fully competitive in short-term and long-term electricity markets.
- ❑ Require the entity to release an annual report to the public, with details on its annual budget, long-term capital plans, outstanding debt, operating expenses and revenues.
- ❑ Make the entity responsible for:
  - ✓ Operating the State Water Project to meet the co-equal goals of ecosystem health and water supply reliability.
  - ✓ Operating the State Water Project according to the terms and conditions of its water right permits.

- ✓ Storing, conveying and delivering water to contractors in the most cost-effective manner consistent with the long-term sustainability of the State Water Project.
- ✓ Maintaining reservoirs, dams, canals, pumps and other infrastructure assets essential to providing system reliability.

Introduction

In this study, the Little Hoover Commission focused on how California organizes the functions of water supply, planning, management and accounting. From the start, the goal was to take a statewide view of California's water resources activities and recommend a governance structure that could position California and Californians for the decades to come. The focus deliberately was on statewide governance, in part because of the already intense focus on the Sacramento-San Joaquin River Delta and also because of the Commission's view that the Delta's problems could not be resolved without a stronger, more accountable water governance structure for the state as a whole.

The Little Hoover Commission has examined California's water governance several times over the years. In 1965, just a few years after its inception, the Commission examined the use of boards and commissions within the Resources Agency, and identified issues regarding areas of responsibility and conflict among governing bodies that still resonate today.

More recently, at the request of Governor Schwarzenegger, the Commission studied the role of the California Bay Delta Authority and CALFED Bay-Delta Program, issuing recommendations to strengthen Delta governance in its 2005 report, *Still Imperiled, Still Important; The Little Hoover Commission's Review of the CALFED Bay-Delta Program*. In the years since, many of the Commission's recommendations have been implemented and have figured into the discussions of the Delta Vision Blue Ribbon Task Force, created by the governor to develop a strategic plan for the Delta. The work of Delta Vision established the path that led to a package of water reform laws signed in November 2009, California's most substantial water reforms since the landmark Porter-Cologne Water Quality Act of 1969. The policy initiatives enacted by the new laws form the starting point for the Commission's recommended structural changes, which the Commission believes are fundamental to the policies' chances for success.

In 2008, the Commission undertook an assessment of the relationship of the State Water Resources Control Board and the nine Regional Water Quality Control Boards and made recommendations for improving transparency and accountability in how the state pursues its clean water goals. During that study process, the Commission looked at the State

Water Board's role in administering water rights, but chose not to focus on this function to better concentrate on recommendations to strengthen the boards' ability to improve water quality. The study, *Clearer Structure, Cleaner Water: Improving Performance and Outcomes at the State Water Boards,* was released in January 2009.

As the water boards study neared completion, the Commission's attention was drawn to rulings in the Federal District Court in Fresno concerning efforts to protect endangered Delta smelt and salmon and the resulting constraints imposed on the operations of the Department of Water Resources' State Water Project and the U.S. Bureau of Reclamation's Central Valley Project. The Commission concluded that a broader study of state water governance was warranted to look beyond the immediate crisis in the Delta. The goal was to recommend a governance model that would allow the state to determine its water future on its own, by managing its water assets and planning for its future needs, rather than running the risk of having conditions imposed on the state from the outside that might fail to serve California's long-term needs.

In framing this study, the Commission focused on how to improve governance, although through its study process, the Commission necessarily examined important water policy issues to inform its analysis and recommendations.

Among these policy issues were conveyance solutions for the Delta, debate about the U.S. Endangered Species Act and federal biological opinions and California's complex water rights system. The Commission recognizes that the Endangered Species Act is an imperfect law, though it reflects a societal consensus that has been codified into federal law and has withstood substantial challenge. California's water rights system, developed when the state was vastly different, likewise is not without flaws. It does, however, exist within a legal framework that provides balance and the potential to evolve, given state constitutional protections against waste and unreasonable use and case law enunciations of the public trust doctrine.

In this study, the Commission makes no recommendations on conveyance alternatives for the Delta, only to reiterate the Commission's previous conclusion that the status quo is unsustainable. At risk are the important agriculture regions of the San Joaquin Valley, the Central Coast and Southern California, as well as fresh water supplies for 23 million people in major urban areas and the businesses where many of them work. The Commission also recognizes the extent to which conditions outside of the Delta determine conditions in the Delta, and

that any true solution to the Delta's problems must take this into account.

The Study Process

This study began in April 2009. The findings and recommendations in this report are based on written and oral testimony presented in four public hearings, several advisory committee meetings, a staff tour of the State Water Project facilities in the Delta, additional review by the Commission's Water Governance Subcommittee and extensive staff interviews.

The Commission used the first hearing on April 23, 2009, to learn about the landscape of California water management. Experts offered overviews of issues surrounding the state's water supply and the demands on it, and issues leaders should consider in planning for the future.

The second hearing, held on June 25, 2009, highlighted the governance models of two other western states, Arizona and Utah. Like California, these states are home to large, federally sponsored water projects. In contrast to California, however, their systems are run by independent public bodies that are separate from state government. The Commission also learned about the operations of the state Department of Water Resources and the federal Central Valley Project, and heard testimony on governance issues from the perspective of a major State Water Project contractor – the Metropolitan Water District of Southern California.

The third hearing, held on September 24, 2009, built on the discussion of water project governance and water management. The Commission heard testimony on how the State Water Project could be governed if it was no longer part of the Department of Water Resources. This included a discussion of research on independent utility governance structures and testimony on integrated water management and water planning and governance.

At the final hearing, held on January 28, 2010, the Commission heard testimony on the Bay Delta Conservation Plan process, groundwater issues and storage opportunities as well as the barriers to and the benefits of water transfers.

During the study process, the Commission's subcommittee held a series of advisory meetings to explore policy areas and complex governance questions with the help of stakeholders. These topics included water rights administration and enforcement; governance issues involving the

State Water Resources Control Board; agricultural water efficiency opportunities and water transfers; alternative governance structures for the State Water Project; and, the potential for greater water conservation.

In February 2010, Commission staff toured the State Water Project facilities in the Delta with Department of Water Resources senior management. The group observed the operations of several key elements of California's water infrastructure, including the Harvey O. Banks Pumping Plant, the Clifton Court Forebay, the Bethany Reservoir and the California Aqueduct.

The Commission's water governance subcommittee met on January 13 and May 26, 2010, in public meetings to review staff work and provide guidance on the report process.

Throughout the study, Commission staff received valuable input through extensive interviews and meetings from experts in water management and environmental sustainability, current and former state water and environmental managers as well as independent academic, legal and policy experts. The Commissioners greatly benefited from the contributions of all who shared their expertise, though the findings and recommendations in this report are the Commission's own.

Hearing agendas, written testimony submitted electronically for each of the hearings, as well as this report are available online at the Commission Web site, www.lhc.ca.gov. The Commission hearings are archived on the California Channel, accessible at www.calchannel.com.

Background

California's current water governance structure has been shaped by explosive growth, early and abiding involvement of the federal government and climate disparities that concentrate deliveries of annual surface supply at one end of the state and demand at the other.

The state's system of water rights is stamped by the need to impose order on how water was used, first by miners in search of mineral wealth during the Gold Rush, then by farmers intent on developing the agricultural promise of California's rich soils. Later, moving water from where it fell to where it could be profitably employed gave rise to not one, but two massive water projects. One run by the federal government, the other operated by the state, the projects boast pumps and hydroelectric plants and aqueducts that collect rain and mountain snow run-off and deliver it to growers and cities stretching from the Sacramento Valley to San Diego and Riverside counties. California's continuing economic and population growth subsequently gave rise to an awareness that such growth must be balanced with protecting the environment to preserve a quality of life many had taken for granted.

Between 1956 and 1969, California developed a water governance structure to foster the state's phenomenal development, and to temper the effects of that development to ensure long-term sustainability, setting an example that the nation would follow.

The water governance structure in place now is the result, largely unchanged since 1969. In the four decades since, California has experienced a significant evolution in where and how people live, how they make their living and how they use water. At the same time, the environmental impact of California's growth, and especially the effect of the water projects, has become more clearly understood, though there is not total agreement as to the remedies.

Given the experience of the past century, there is little evidence that change will cease. Regarding water governance, the challenge for California's leaders is determining how state government can better anticipate change in ways that enhance the state's world class economy, accommodate population growth and preserve environmental quality, all despite highly variable deliveries of water.

Three years of drought have given many Californians an appreciation for what long-term water scarcity might look like. Drought is a recurring motif of the state's water story. Surface supplies, in the form of rain and snow, show a history of wide swings, often from year to year. Demand is growing, though agriculture water use is expected to decline and urban use has grown more slowly than population growth.[3] California's population, now at 38 million, is expected to grow to 59.5 million by 2050,[4] even as surface water supplies, at best, will be static.[5] State and federal laws and regulations regarding endangered species make a compelling case that more water will have to be set aside at times to support habitat and wildlife. Legislation passed in 2009 sets as policy goals repairing the Delta ecosystem and improving water reliability for those who depend on the Delta as a conveyance system.

With the most recent drought came an unprecedented degree of uncertainty, a pervasive sense of flux that has persisted even as precipitation returned in 2010 to normal levels. The heightened uncertainty exacerbated the distrust that has been the enduring hallmark of California's water wars. The drought may have ended, or the rains of 2010 may have been a temporary respite. The Delta as an ecosystem continues to decline. The populations of endangered smelt and salmon continue to shrink, though the argument grows as to cause, degree and culpability: Delta pumping by the water projects, urban and agricultural runoff, invasive species as predator and food supply, incompletely treated municipal wastewater. The CALFED truce now a memory, warring parties have returned to the courtroom. There, a series of federal court rulings have cast doubt on the sturdiness of the U.S. Endangered Species Act and, for a period, effectively put the day-to-day pumping operations of the state and federal water projects in the hands of a federal judge.[6]

Despite the acrimonious climate, the Legislature assembled a package of water reforms, which Governor Schwarzenegger signed into law in November 2009. As the litigation and legislation moved forward, a steering committee made up of environmental groups and urban and agricultural water users joined together to start the process of developing the Bay Delta Conservation Plan, which would employ a new approach to comply with the Endangered Species Act that could both stabilize the Delta's ecosystem and guarantee water deliveries to 23 million Californians and some of the world's most fertile farmland.

Plans and Action at Different Levels of Government

In the earliest days of statehood, California's leaders saw the importance of a statewide role for water planning, and in 1850 assigned newly

appointed State Surveyor General Charles J. Whiting the responsibility for water development.[7]

It was the federal government, however, that undertook the first investigation of the state's water resources, when President Ulysses S. Grant commissioned Colonel B.S. Alexander and the U.S. Army Corps of Engineers in 1873 to survey the state. The report recommended a system of canals that would deliver water from the Sacramento River to the San Joaquin Valley.[8]

State and federal planning continued through the turn of the century, as California's population grew and leaders in Sacramento and in Washington, D.C., recognized the need to control flooding in the Sacramento Valley, improve navigation and the potential for using reservoirs to store Sacramento River water for later use.

By 1921, California's leaders became interested in developing a state water plan, and the Legislature directed the state engineer to come up with a comprehensive plan that incorporated flood control, water conservation, storage, distribution and irrigation. The first plan was delivered in 1923, and led to a blueprint for the Central Valley Project, authorized by the Legislature in 1933. Due to the Great Depression, the state could not finance the project and turned to the federal government, which took it on as a federal public works project. Construction started in 1939 on the federal Central Valley Project, which eventually included Shasta Dam as its biggest reservoir in the north and an aqueduct and canal system that opened up the fertile and arid San Joaquin Valley to a scale of agriculture never before seen.

Not until the 1950s was California to embark on a water project of its own, one designed primarily for fast-growing populations in Southern California. Its newer pumps, located not far from the federal pumps outside of Tracy, were able to handle far more capacity. Also larger was the California Aqueduct, which for much of its length runs nearly parallel to the Central Valley Project's Delta-Mendota Canal. Among other distinctions, California's State Water Project is the nation's biggest state-run water project, while the Central Valley Project is the largest federal water project in which all the parts – the water and the end users – exist entirely within the boundaries of a single state. Many argue this removes the federal imperative to own and operate the Central Valley Project, a view bolstered by its inception as a state project.

By the time the State Water Project was approved in 1959 through the Burns-Porter Act, major California urban areas, Los Angeles,

California's Water Systems

Source: California Department of Water Resources. March 30, 2010. "California Water Plan Update 2009."

San Francisco and Oakland, had developed their own water supply systems. Each had its own aqueduct that delivered water from, respectively, the Owens River, the Tuolumne River and the Mokelumne River to its businesses and residents. Southern California added a second aqueduct in 1941 from the Colorado River.

The result today is a decentralized state supply system, in which various pieces interact in a coordinated fashion while other pieces, such as the East Bay Municipal Water District and the San Francisco Public Utility Commission, remain independent and autonomous. The Central Valley Project and the State Water Project coordinate pumping and dam releases and share operation of some canals and reservoirs.

In size and complexity, the federal project dwarfs the State Water Project, with more reservoirs, dams and power plants. The federal government has rights to 17 million acre-feet of water storage in 10 reservoirs it owns on several rivers. Its largest reservoir, Shasta Lake, holds 4.6 million acre-feet, which compares to 3.5 million acre-feet in the State Water Project's Lake Oroville.

Built in the 1960s and 1970s, the State Water Project provides water to 23 million Californians as well as to 755,000 acres of agriculture. Where the Central Valley Project is rich in storage and hydropower, the State Water Project has greater conveyance capacity – 701 miles of canals, tunnels and pipelines – and more than twice the designed pumping capacity at its Harvey O. Banks Pumping Plant compared to the Central Valley Project's nearby C.W. "Bill" Jones Pumping Plant outside of Tracy.

Urban areas below Bakersfield are entitled to 70 percent of the water shipped through the state project, while agriculture is entitled to about 30 percent, though for many years, the Metropolitan Water District did not take its full share, leaving more water available for agricultural use. Some water from the state project is diverted at the Delta for Solano and Napa counties as well as for San Francisco Bay Area cities. By contrast, agricultural users account for the greatest share of the water moved through the federal Central Valley Project, which delivers water not only to the west side of the San Joaquin Valley, but also to the valley's eastside as far south as Bakersfield through the project's Friant-Kern Canal.

The two projects share use of the San Luis Canal, built as a state-federal effort, as well as the San Luis Reservoir, which is owned by the federal government. Plans have been approved to connect the Central Valley Project's Delta-Mendota Canal with the California Aqueduct south of the pumping plants with a federally sponsored intertie where the aqueducts are less than 500 feet apart.

The State Water Project has been financed through a total of $6.4 billion in revenue and general obligation bonds. Once paid off, about 96 percent of the total project construction costs will have been paid by contractors, the rest paid by the state to cover the costs of fish, wildlife and recreational enhancements connected to the water project facilities, with some federal money contributed for flood control benefits. The project's annual revenues are roughly $1 billion, producing a small surplus, which is put toward capital expenditures.[9] Of the $943,000 in projected annual costs, operations, maintenance and replacement costs account for an estimated $666,000, of which roughly a third is energy costs associated with moving water around the state. The remaining costs are principal and interest payments on the bonds. The project's single largest contractor is the Metropolitan Water District of Southern California, which by contract is entitled to just over half of the project's annual deliveries.[10]

The construction cost of the Central Valley Project was $3.4 billion.[11] Contractors to the Central Valley Project pay for 84 percent of the project's annual costs, including debt principal repayment. The rest is covered by taxpayers for such benefits as flood prevention, fisheries enhancement, recreation and navigation. The project costs allocated to the San Joaquin Valley water supply portion of the Central Valley Project total of $1.2 billion, of which more than 21 percent has been repaid.[12] Westlands Water District is the Central Valley Project's largest customer, with contracts entitling it to more than 1.1 million acre feet a year.

Contracting Out Operations and Maintenance

Unlike in Utah or Arizona, where the federal government sponsored and financed large water projects then handed them off to separate entities to operate them, the U.S. Bureau of Reclamation has retained management of the Central Valley Project. It has, however, entered into a series of operating contracts with water districts that have banded together as joint powers authorities. As a result, the federal project, from its Delta pumps south, is maintained and operated by contractors, notably the San Luis and Delta-Mendota Water Authority, which operates the federal project from the Sacramento River through the Delta Cross Channel in the northern end of the Delta, south to the San Luis Reservoir Operations, the Mendota Pool and the San Luis Drain. Since 1992, the authority, made up of 29 water districts, has taken on an increasing level of operational responsibility for the federal project, and now operates pumps, key canals and reservoirs.[13] Other joint powers authorities, such as the Friant Water Authority and the Tehama-Colusa Canal Authority, run canal systems that deliver water to member districts. Today,

260 U.S. Bureau of Reclamation employees are directly involved in operating the federal project.

The State Water Project is run almost exclusively by state employees of the Department of Water Resources, the exception being the project's Coastal Branch, which is operated and maintained by the Central Coast Water Authority, made up of cities and water districts in San Luis Obispo and Santa Barbara counties.

The two projects coordinate activities, particularly dam releases and pumping activities, to manage a range of objectives, including exports, flood control, salinity levels and water temperature through a Coordinated Operating Agreement signed in 1986. Daily operations are coordinated through adjacent control rooms at a joint operating center in suburban Sacramento.[14]

Attempts to Merge the Water Projects

The U.S. Bureau of Reclamation and the California Department of Water Resources are the main actors in operating the Central Valley Project and the State Water Project. A host of other agencies, state and federal, also are involved, often in regulatory roles. The projects often must fulfill different requirements to meet similar laws, such as the state and federal endangered species acts.

Driven by a desire for greater efficiency and operational control, and later by the hope that a unified approach could make regulatory compliance less complicated, California's leaders have repeatedly tried to merge the two water projects. The first run at the federal project was made in the late 1930s, when then-Governor Culbert Olsen wrote U.S. Interior Secretary Harold Ickes, proposing the state run the unfinished federal project, as the state had no project of its own at the time.[15] (See Transfer Attempts Timeline, Appendix C.)

The most recent attempt was made in 1992, by then-Governor Pete Wilson after six years of drought. Governor Wilson saw the state control of the federal system combined with the State Water Project as the only way to manage California's water in a way that could meet competing demands of agriculture, cities and the environment. For a time, Governor Wilson's proposal fared better than his predecessor's at the federal level, but the idea lost political support and sponsorship under the incoming Clinton Administration. Environmentalists worried that state control would mean less attention to the Central Valley Project's environmental issues, such as salinity drainage in the San Luis District. California cities with municipally owned electric utility districts, such as

Sacramento and Santa Clara, feared they could lose their advantageous contracts for the power generated by the Central Valley Project's hydroelectric plants, given the state project's need for outside power. Others expressed concern about how the outstanding debt on the federal project would be apportioned. The Clinton Administration focused on other priorities and the proposal lost momentum.[16]

Others have proposed moving control of the State Water Project out of the Department of Water Resources, at least as the department is set up today, and the issue is under active review. In 2004, the California Performance Review, a vast assessment and proposed reorganization of government programs, recommended the water project be managed by one division of a state infrastructure department. Had the proposal gone forward as written, the Water Division of the Infrastructure Department would have taken on the operation of the State Water Project, as well as the functions of the California Water Commission and the work of the Bay Delta Authority.

Department of Water Resources

The State Water Project is operated by the California Department of Water Resources, which was created as part of a sweeping reorganization in 1956 to launch the planning and the design of the project.

Prior to the 1956 reorganization, water planning and management had been organized as the Division of Water Resources under the Department of Public Works. The division had performed planning duties for the State Water Resources Board, which moved into the new department. The role of the state engineer, then located in the Division of Water Resources, and many of its authorities (with the exception of its water rights duties) were subsumed into the new and powerful role of Department of Water Resources director. The California Water Commission was revived by statute in 1957 to conduct an annual review of the progress of construction on the new project and report its findings to the Legislature. The bulk of its work done with the completion of the project, the commission lapsed, only to be periodically reconstituted. Legislation in 2009, as part of a broader package of water reforms, revived the commission for the purpose of overseeing a proposed $11.14 billion water bond package.
After the 1957 reorganization, the new department's biggest planning task for the next two decades was the design and construction of the State Water Project.

While the State Water Project remained in the construction phase, planning for its various pieces continued to be a major task for the

department's engineers. As the project progressed, the tasks and staff needed to operate the project grew in size as more sections of the project came on line. Most of the construction on the State Water Project ended in the early 1970s. Planning and managing the state's water resources took on a broader set of tasks as continuing growth in water demand put a premium on managing the available supply and planning for future needs, not for just the people and regions served by the project, but for the state as a whole.

Today, the Department of Water Resources' duties are split between water planning and management, and operating the now-completed State Water Project. The project accounts for 1,965 of the department's employees, roughly 69 percent.

The department retains its role as the state's lead water planning agency, and much of the planning activities complement its work operating the State Water Project. The department's water management and planning role, as well as its public safety role in flood planning and prevention, intersect with project activities.

In the department's water management role, it measures water supply and estimates future supplies by assessing the annual climate, the snowpack, river flows and dam levels. It also has a substantial set of environmental and science responsibilities, to restore, maintain and enhance habitat to mitigate the impacts on the environment of the State Water Project. Its scientists conduct, manage and coordinate research into fish, wildlife and water quality in the Delta, working with others, including the Department of Fish and Game and the Interagency Ecological Program.

The department holds water rights representing 31 million acre-feet of water, reflecting its role in operating the State Water Project. The department's water management group also is responsible for complying with water right permit and license conditions set by the State Water Resources Control Board for water quality and salinity in the Delta and the Suisun Marsh.

In its public safety role, the Department of Water Resources is the lead state agency on levee repair and Central Valley flood prevention and planning. During flood emergencies, it is in charge of preventing the loss of life and property damage. The department's public safety responsibilities also include dam safety. Department engineers and geologists inspect more than 1,200 dams to insure they are properly operated and maintained, and review and approve plans for new construction to prevent dam failure.

In its planning role, the Department of Water Resources updates its blueprint for California's water future every five years. The plan has grown in depth and sophistication and now functions as a strategic plan for water management, evaluating water supplies and assessing agricultural, urban and environmental uses to quantify the gap between known supplies and uses. Known officially as Bulletin 160, the water plan released in 2010 evaluates options for meeting the state's future water needs.

The Office of Water Use Efficiency and Transfers, which provides expertise to local agencies and individuals to help them improve water conservation, reclamation and reuse, also has a role in water planning. The office operates the California Irrigation Management Information System, which collects climate data from 120 stations and transmits the data to landscape and crop managers to improve irrigation efficiency. This group also conducts research on improving agricultural water use efficiency.

Water Rights: Allocating Supply, Tracking Use

An important consideration for water governance is the system for deciding who gets to use the state's available water and how much they get to use. Surface water is allocated in California through a system of water rights that includes several classes of rights, from pueblo rights predating the Gold Rush, to riparian and appropriative rights established after California became a state in 1850.

Conservation: 2009 Reforms Focus on Urban Users

The 2009 water reforms recognized the huge potential for savings through urban water conservation, not only in water, but in avoided energy costs associated with delivering imported water and avoided treatment costs. The law seeks urban water conservation of 20 percent by 2020. Water experts believe that urban conservation strategies could save as much as 2.8 million acre feet a year in gross terms, which does not include water returned to the system through runoff, groundwater recharge or treated wastewater discharge.

Southern California cities already have demonstrated how urban areas can change water use through concerted conservation efforts. Over a decade, strategies employed by the Metropolitan Water District, together with a change in the region's economy, resulted in a 405,000-acre-foot drop in water use by 2005, even with the addition of another 2.4 million residents. The region was forced to reduce its water use, but it had the freedom to design its own strategies to achieve those savings. In this, however, the state and federal government played important supporting roles, providing money to help Los Angeles replace water it would no longer be able to take from the Mono Basin.

In 2009, the State Water Board forced the Sonoma County Water Agency to cut back its water use by 25 percent to ensure water was available for spawning Russian River salmon and steelhead. The county was able to reduce its diversions from the Russian River by 35 percent from 2004 levels through conservation and recycling. The results of the conservation drive, together with the realization that increased supplies from the Russian River were unlikely, prompted the Sonoma County Water Agency in 2009 to shelve a long-planned $600 million water supply project and withdraw its permit application to the State Water Board for additional Russian River water.

Sources: Public Policy Institute of California. December 2009. "California Water Myths." Page 7. Also, Grant Davis, interim general manager, Sonoma County Water Agency. June 18, 2010. Interview.

The State Water Resources Control Board is responsible for administering water rights and reviewing and assessing applications for new rights as well as changes in water rights conditions, but only for part of the water that is allocated though the administrative water rights system. Surface water diverted by holders of riparian rights or appropriative rights secured prior to 1914 are not required to seek permits or licenses for their water use, though every three years, they are required to report the amount they use to the board.

The board also is the lead state agency for enforcing water rights law, seeking to stop violations such as unauthorized use or illegal diversions, a responsibility that extends to all forms of water rights.

Prior to the 1956 reorganization, the Division of Water Rights had been located in the old Department of Public Works alongside the Division of Water Resources. As part of the reorganization, water rights administration and enforcement moved to a

Improving Beneficial Use of Agricultural Water

Agriculture accounts for as much as 80 percent of annual water use in California each year, roughly 30 million acre feet on nearly 10 million acres, leading many to see the industry as a major source of potential savings. Water experts, however, estimate that only as much as 800,000 acre feet of the water applied to fields or orchards could be saved through conservation, as much of the water that is applied that is not used by plants soaks into aquifers or runs off and is available for use by someone else. Improving water use efficiency, for instance, by installing drip irrigation systems, may not reduce overall water use, as more accurately applied water may be taken up by crops, increasing yields. Generally, once conservation steps have been taken, the only way to reduce agricultural water use is to fallow fields or take orchards out of production. For the grower, these are economic decisions, based on crop mix and value, expected revenues and the cost of water and other inputs.

Compared to costs faced by urban water users, water costs for many growers is quite low, particularly for growers with long-term contracts through the Central Valley Project. Given low water costs, growing even low value crops can be profitable, if not economically efficient. Transfers are an important mechanism to increase the beneficial use of agricultural water, allowing willing sellers to direct water to buyers who can put it to higher value use. For farmers purchasing low cost water, it is a way to increase the value of water by selling its use to someone willing to pay more for it. In California, transfers within water basins are fairly routine, but transfers out of a basin, and transfers requiring the use of State Water Project facilities, require time-consuming review by both the Department of Water Resources and the State Water Resources Control Board. This review is aimed at ensuring the transferring partner has rights to the water proposed to be transferred, that the water to be transferred otherwise would have been consumed, that no other water user would be damaged by the transfer, and that the transfer conforms to environmental regulations. Though the board's Division of Water Rights gives transfer applications highest priority, the process often extends past the time when growers have to make planting decisions, a situation made worse for north-to-south transfers by restrictions on Delta pumping.

Growers and communities dependent on groundwater often oppose transfers out of concern that growers who have sold and transferred surface water will use groundwater in its place, depleting local groundwater stocks. Butte County, for example, has passed a law requiring all transfers to be approved by the county, which transfer advocates say will inhibit the development of an efficient water market. To the extent the new groundwater level monitoring law fails to generate adequate information, more self-monitoring and reporting of groundwater use at the local level by growers may allay concerns of groundwater-using neighbors, a process the state can help through sharing technological expertise and Integrated Regional Water Management incentives.

Sources: Legislative Analyst's Office. October 20, 2008. "California's Water, An LAO Primer." Also, Baryohay Davidoff, Department of Water Resources. October 22, 2009. Interview. Also, Little Hoover Commission Advisory Committee Meetings. November 17, 2009, and January 18, 2010. Also, Lynn Barris, farmer, Butte Environmental Council. Written comments. Also, Benjamin F. Carter, grower, Sutter County. Written comments. Also, Gregory Thomas, president and CEO, Natural Heritage Institute. Written comments. Also, Byron Buck, then-interim executive director, State and Federal Water Contractors Agency. Written comments.

new appointed board, in recognition of the conflict that would exist between the new department, which would hold the water rights for the State Water Project, and the entity issuing those water rights permits and regulating them.[17] The creation of a separate State Water Rights Board severed the function of water rights administration and accounting from the functions of management and planning for water resources that had co-existed with the Division of Water Resources up to that time.[18] This sets California apart from most other western states, which have water rights administration and water resources planning organized within the same department or agency, in some instances with water rights overseen by a state engineer. In none of those states, however, does a state Department of Water Resources operate a massive state water project.

In 1967, the Legislature merged the State Water Rights Board and the State Water Quality Control Board to form the State Water Resources Control Board. The 1969 Porter-Cologne Water Quality Act laid out the merged board's formal mission, explicitly linking water rights to water

California Water Rights

California's water rights system is different from that of every other western state, complicating efforts to integrate water rights administration into an overall water supply strategy. During the Gold Rush, state leaders adopted the riparian rights structure, based on English common law. Riparian rights give a landholder the right to use water flowing past the property, but only the water that would naturally flow in the stream. Water diverted under a riparian right cannot be stored or used on land not contiguous to the river, and the rights remain with the property when it is sold. Miners swarming over California's gold fields, however, quickly staked claim to water just as they did to the mineral rights of the land they were mining, diverting water through flumes and canals to where they needed it, often far from the stream or river in which it originated.

In posting notice to their claim on the water, they established the beginnings of California's "first-in-time, first-in-right" appropriative rights system, which set up a hierarchy of rights for multiple diversions from an existing stream. The California Supreme Court recognized this system in law in 1885, creating a dual-right system that exists today. As development and agriculture grew, more water was diverted under both riparian and appropriative rights, leading to conflict as miners and farmers who lacked riparian rights took what they wanted, posting their claims, but not asking for permission from any formal authority.

As the process became increasingly chaotic, and riparian rights holders sought to exert control as more people appropriated water for their own use, the state in 1913 formed a State Water Commission, which established a formal permit process for appropriating surface water and requiring permit holders to comply with certain conditions, including that the water be put to beneficial use. The new system applied only to water right permits sought and approved beginning in 1914. The state lacked a formal inventory of riparian rights holders' claims and pre-1914 appropriative right holders' claims, many of which were filed in county courthouses. After the 1913 reforms, appropriative rights were administered by the state engineer, which later became part of the Division of Water Rights within the Department of Public Works.

The 1913 reforms retained the "first-in-time, first-in-right" principle, giving senior appropriative rights holders priority over junior water rights holders. Riparian rights were superior to both and did not have the requirement that diverted water be put to beneficial use. A 1926 Supreme Court ruling gave broad discretion to riparian rights holders over how they used water. This sparked a backlash in the form of a 1928 initiative amending the California Constitution to state that all state waters must be put to reasonable and beneficial use and waste should be prevented.

Source: State Water Resources Control Board. Also, Department of Water Resources.

quality. The combined board now is located within the California Environmental Protection Agency.

State leaders historically have not invested heavily in water rights administration or record keeping and, until the 2009 water legislation, had shown little enthusiasm or willingness to budget for stringent enforcement of water rights laws. The board cannot initiate investigations of water rights violations on its own; instead, it responds to complaints that have been filed and information produced as part of an investigation into a complaint. This situation has been seen variously as a reflection of the state's seemingly ample supply, the political power of water rights holders or the fact that California's water did not flow to a neighboring state, freeing it from the need for a close accounting for the who and how of water use.

Compared to other western states, California has little data at the state level on how water is used outside of the water delivered to the state and federal projects, which together account for less than 6 million acre feet of the average annual 40 million acre feet used by agriculture and urban residents and businesses.[19]

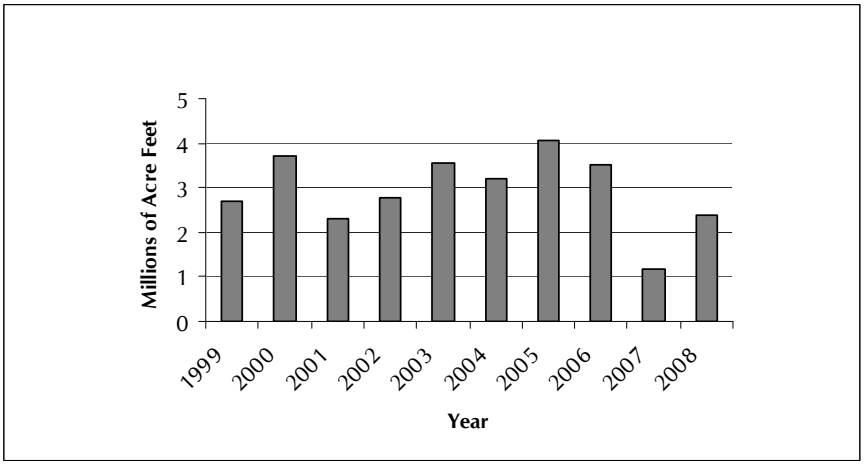
Complicating the state's ability to account for water use is that over the years, through existing claimed rights and permitted water appropriations, the state has committed at least five times California's average annual surface supply to holders of various categories of water rights,[20] according to the water boards' 2008 strategic plan update. Some of this amount represents permits for the water to initially fill the new reservoirs of the State Water Project and Central Valley Project and essentially represents a one-time use. And some can be accounted for by the double-counting of the same molecule of water used by more than one permit holder, as irrigation runoff or treated wastewater is reused by a permit holder downstream. The total represents some combination of what is described as "paper water" and "wet water."

Advocates for water rights reform argue that the paper allocation figures are far too low, considering the scarcity of information on riparian and pre-1914 appropriative rights.[21] "We strongly believe that a water rights structure that gives out more water than actually exists needs to be improved," Linda Sheehan, executive director of the Coast Keepers Alliance, wrote the Commission.

Another indication of the difference between the amount of water that has been promised and the amount regularly available is seen in the aggregated maximum amount of water that state contractors can request – 4.17 million acre feet[22] – and the amount they have been allocated each year. Between 1996 and 2008, allocations averaged

2.9 million acre-feet,[23] well below the 4.17 million acre-feet maximum that contractors are eligible to export.

Exports Vary Based on Rainfall



Source: Department of Water Resources.

The board does not review or issue permits or licenses for two large classes of water rights, riparian rights and appropriative rights issued prior to 1914; records establishing these rights are not centrally collected. Much of the state's records on post-1914 appropriative water rights permits exist only in paper form, an estimated 12.5 million documents. These records have begun to be scanned into a new electronic database, where they can be searched individually through a mapping software program. Scanned statements of water use, filed annually by appropriative rights holders and triennially by riparian rights holders, also can be viewed on an individual basis, and the searchability of the system is steadily improving. The current format, of individual scanned documents, however, is not amenable to easily aggregating or sorting data by location or time period, complicating any computerized data analysis, and preventing anything more than an annual look at water use.

The State Water Resources Control Board's Division of Water Rights is implementing a new reporting system (eWRIMS, or electronic Water Rights Information Management System) that allows water rights holders to file their statements electronically, which will improve the Division of Water Rights' capacity to track and analyze annual water use, as long as use is accurately reported. The new system is building its electronic database as new reports are filed. New requirements will increase electronic reporting to quarterly from annually.

How Much Water Do Fish Need?

The California Water Code requires the State Water Board to consider instream flow needs of fish and wildlife habitat when evaluating permit applications.[24] Instream flows refer to the amount of water left in a natural stream channel to support existing aquatic wildlife and other riparian wildlife and habitat. The amounts vary according to season and different species' spawning needs.

A separate code, the Public Resources Code, requires the Department of Fish and Game to develop a list of high-priority rivers and streams and to conduct assessments of instream flow requirements that reflect "minimum flow levels need to be established in order to assure the continued viability of stream-related fish and wildlife resources."[25] The Public Resources Code directs the Department of Fish and Game to transmit these requirements to the State Water Board, which according the Water Code, then considers the recommendations when evaluating water right permit applications and change petitions.

Although the board has considered protests to permit applications and change petitions from Fish and Game based on the department's instream flow recommendations, in practice, it has been rare for the board to adopt the department's recommendations in full.[26] For

Groundwater Not Regulated by State

Unlike all other western states with the exception of Texas, California does not regulate the use of groundwater at the state level, leaving a large portion of the state's water supply beyond the state's ability to directly manage its use. The idea of state regulation of groundwater is controversial, and efforts to require monitoring or reporting of groundwater use to state agencies have been successfully resisted. To a large degree, groundwater is treated as legally distinct from surface water. Hydrological engineers have found that the connections between surface water and groundwater are far more complex than state law would imply and are finding that groundwater overdrafts can dry out streams even when wells are far from the stream. Overdrafting results when more water is taken from an aquifer than is replenished, either naturally or through injection. Actions by the State Water Resources Control Board and by courts reflect growing awareness of these connections, made more explicit by advances in technology that provides a better understanding of underground water flows.

In California, groundwater accounts for about a third of the water used each year by growers and households, more in dry years. About one in three Californians relies solely on groundwater for his or her needs.

California uses more of its groundwater than any other state and overdrafts as much as 1.4 million acre feet in a normal year. In some areas of the state, overreliance on groundwater has led to subsidence, the deterioration of drinking water quality and, in coastal areas, seawater intrusion.

Overdrafts have created the potential for an estimated 9 million acre feet of storage. Some water districts and local governments are taking advantage of this to implement recharge projects and water banking operations.

With the approval of the Legislature, some local jurisdictions, notably in Southern California, have developed and implemented their own groundwater monitoring and pumping regulations. Many groundwater basins have been formally adjudicated, a process that establishes strict protocols for groundwater use. In other counties, fear that water transfers would lead to groundwater depletion has led to county ordinances limiting water transfers.

In Arizona, severe overdrafting of aquifers in urban areas led to a 1980 overhaul of the state's groundwater regulation, and the adoption of "Active Management Zones," which implemented monitoring and measuring of groundwater and placed strict regulations on how groundwater is used.

Sources: Vicky Whitney, Deputy Director, Division of Water Rights, State Water Resources Control Board. "Conjunctive Use in California." American State Water Engineers Fall Conference 2006. Maurice Hall, Senior Hydrologist, California Water Program, The Nature Conservancy. January 28, 2010. Testimony to the Commission. Also, Elizabeth Rieke, consultant, Resources Legacy Fund Foundation. January 28, 2010. Testimony to the Commission. Also, Ellen Hanak, Jay Lund, Ariel Dinar, Brian Gray, Richard Howitt, Jeffrey Mount, Peter Moyle, Barton "Buzz" Thompson, Public Policy Institute of California. October 23, 2009. "Myths of California Water – Implications and Reality." West-Northwest Journal of Environmental Law and Policy, Vol. 16, No. 1, Winter 2010, University of California Hastings School of the Law.

many permit applications and change petitions, instream flow analysis does not exist and no protests are filed.

The state's understanding of species needs and interactions and the technology used for measuring and analysis have changed substantially from the time the department started investigating flows necessary for sustaining fish populations and other wildlife in the 1980s. This has produced a wide variation of reliability across the department's flow recommendations over the period.

One water expert familiar with the Lower American River in Sacramento County said the flow requirements contained in the department's 1986 evaluation would have emptied Folsom Lake's cold water pool by the end of summer, leaving little cold water to provide for salmon spawning in the fall and winter.[27]

In past years, the department has been hobbled in its ability to conduct such analysis by lack of staff and funding, a situation the Legislature has acknowledged explicitly in statute.[28] This led to a 2007 lawsuit by the California Coast Keepers Alliance that sought compliance with instream flow analyses requirements as outlined in the Public Resources Code. As part of the settlement, Fish and Game created an Instream Flow Program in its Water Branch in 2008 and pledged to upgrade its analysis. In its 2009 annual report, the department's Instream Flow Program noted that it was working "to build trust in the underlying science and performance of the studies so that study results are considered valid, credible and useable."[29]

While instream flows are an important factor in the health of fish populations and surrounding ecosystem, more water alone does not guarantee the recovery and sustainability of threatened or endangered species. This reality is illuminated by the Public Policy Institute of California in its 2009 paper, "California Water Myths."[30] Though fish do need water, also important are factors such as appropriate temperature and water quality, including nutrient, sediment and contaminant levels. Habitat, both for endangered species as well as their food sources, also is critical, whether gravel stream beds, or shady deep pools. This has implications for how rivers and the Delta are maintained. For steelhead and salmon, ocean conditions as well play a critical role.

In August 2010, the instream flow discussion took on a new dimension when the State Water Resources Control Board released its findings on Delta instream flow criteria. As part of the 2009 water reforms, the Legislature directed the water board to develop instream flow criteria for the Delta for flow levels necessary to protect public trust resources, including endangered species, using the best available science. The

criteria are to be used to inform the Delta Stewardship Council's planning process and the Bay Delta Conservation Plan process. The board found that to provide this level of protection required leaving for the environment:

- 75 percent of unimpaired Delta outflow from January through June,
- 75 percent of unimpaired Sacramento River inflow from November through June, and
- 60 percent of San Joaquin River inflow from February through June.

Meeting these flow levels would necessarily mean a reduction in other uses of the water, such as in-Delta use for farming, as well as exports for agriculture and urban use in areas served by the state and federal water projects.

"Restoring environmental variability in the Delta is fundamentally inconsistent with continuing to move large volumes of water through the Delta for export. The drinking and agricultural water quality requirements of through-Delta exports, and perhaps even some current in-Delta uses, are at odds with the water quality and variability needs of desirable Delta species," the report said.

The report specifically did not consider other public interests in Delta water, such as diversions for agriculture and cities, and the law makes clear that the results are for advisory purposes and are not to be used as the basis for regulatory action. The criteria, stated as a percentage of natural or "unimpaired" flows, also did not account for other measures that could improve ecosystem health, such as reducing urban or agricultural run-off or reducing the influence of invasive species.

Such findings, which drew on the expertise of State Water Board scientists as well as experts from the Department of Fish and Game and the University of California, Davis, underscore the difficulty in achieving the co-equal policy goals of ecosystem health and water supply reliability set out in the 2009 water reforms.

Separately, the Legislature has requested that the State Water Resources Control Board take on instream flow responsibilities for specific purposes, requesting the board develop a set of policies and guidelines for flows for North Coast rivers and, also as part of the 2009 water reform legislation, to develop cost estimates and schedules for instream flow criteria for watersheds feeding the Delta by 2020.

Instream Flows Part of Broader Science Effort

The science that supports instream flow analysis is part of a broader scientific effort spread across the Department of Fish and Game, the Department of Water Resources and the State Water Board, as well as the Delta Stewardship Council's Delta Science Program and the Interagency Ecological Program, which coordinates various state and federal efforts, as well as work done by non-governmental organizations and universities.

As the Commission noted in its 2009 study on the state and regional water boards, the state has significant potential for better coordinating and focusing its research, as well as cataloging the results. In that report, the Commission recommended creating a Water Science Advisory Board for the State Water Resources Control Board, as well as a Water Data Institute that would act as a state library for water quality and water supply data.

Though more research certainly is warranted, it is unrealistic to believe that more research will ever entirely eliminate dispute about the causes of the environmental decline of the Delta and the degree to which each individual contributing factor is responsible for the decline of fish populations. Pumping plays a significant role in the population declines, as does the loss of habitat both in the Delta as well as upstream, both the result of project activities. But so do changes in the Delta's salinity dynamics, which have bolstered populations of invasive species that serve as food for endangered smelt and salmon as well as invasive species, such as the striped bass, that are predators. Also playing roles to a degree subject to considerable debate are insufficiently treated municipal wastewater and urban and agricultural runoff. Both pumping activity and salinity can be influenced by the activities of the state and federal projects, primarily through the timing and level of dam releases and water exports.

"For the last four decades California has been in the uncomfortable process of trying to merge its water rights and distribution system with an overlay of later-developed environmental laws. … When environmental harm goes beyond what the legal system is willing to tolerate, we have the situation the federal and state projects are in today, which is for all practical purposes, key decisions about how to operate pieces of our water system to comply with the law are being made by the courts."

Cynthia Koehler, Senior Consulting Attorney, Land, Water & Wildlife Program, Environmental Defense Fund

At times, these activities have created conflict between agencies charged to move water and agencies charged to protect water quality and wildlife habitat and fisheries. These conflicts sometimes are worked out through the regulatory process, as when the State Water Board puts conditions on water rights permits and licenses held by the State Water Project and the Central Valley Project. Often they are taken to court, as when environmental groups, contractor or grower groups sue the Department of Water Resources or the State Water Board for failing to enforce existing laws or regulations

or for differences in interpretation of those laws and regulations.

The lack of certainty and the dearth of data create ample opportunity for dispute over how much water is available and which party is entitled to it. During wet years, enough water is available to supply all needs. The lack of data and the failure of different parts of government to work together mean that, during dry years, the state does not have a ready grasp of how much water is available to meet the demands of water districts with contracts to purchase water, non-project water rights holders with legitimate claims to water and the environment, which has water needs recognized in state law.

Biological Opinions, Litigation and Project Operations

The contentiousness surrounding the science of water supply is nowhere better seen than in the U.S. Endangered Species Act cases that have been underway since 2004 in a Federal District Court in Fresno. In response to continued declines of the populations of Delta smelt and Chinook salmon, a coalition of conservation, fishing industry and tribal interests challenged the federal government's "biological opinion" on the Operations Criteria and Plan for how the Department of Water Resources and the U.S. Bureau of Reclamation managed the State Water Project and the Central Valley Project in compliance with the U.S. Endangered Species Act. Federal District Court Judge Oliver Wanger in 2008 rejected biological opinions from two federal fisheries agencies, saying they violated the U.S. Endangered Species Act, as they allowed the projects to operate even as they contributed to the decline of endangered salmon and Delta smelt. The judge said the biological opinions failed to use the best available science or account for the effects of climate change, and in doing so, failed to protect the endangered species.

Responding to the court's request, the two agencies, the National Oceanic and Atmospheric Association for the salmon and steelhead opinion, and the National Marine Fisheries Service for smelt, submitted new biological opinions. The new opinions called for extensive habitat restoration and sweeping changes in how the projects were operated. Opposition was immediate and, amid growing political pressure, the National Academies of Science was requested to independently assess the new opinions. The resulting report provided grist for the arguments on both sides and in subsequent court proceedings, the judge said the federal agencies failed to take into account the impact on humans of reduced water exports aimed at protecting endangered fish species. During the winter of 2010, restrictions on pumping were lifted then reinstated in response to a series of court rulings regarding the biological

opinions. Judge Wanger in May 2010 issued an injunction against the biological opinions' pumping restrictions through the end of June 2010. Judge Wanger's ruling on the merits of the biological opinions is expected in late summer of 2010.

The litigation has led to considerable uncertainty on the part of growers regarding how much water they should expect, and on the part of environmentalists about how the court's interpretation of the U.S. Endangered Species Act would affect project operations and their impact on fish populations.[31]

Bay Delta Conservation Plan and 2009 Reforms

The Bay Delta Conservation Plan is an attempt to develop a broader strategy to meet the requirements of the Endangered Species Act and the California Natural Communities Conservation Planning Act, one that goes beyond a species-by-species approach to protecting wildlife. Participants include water districts, state and federal fisheries agencies, environmental groups, as well as state and federal water agencies and environmental agencies. Once completed, the plan would be the basis for issuing endangered species permits that would allow the operation of the state and federal water projects, specifically, exporting water from the Delta through the pumps. The plan would implement a long-term conservation strategy for restoring the Delta over a period of 50 years.

During 2009, the continuing drought, litigation that restricted pumping and recognition of the Delta's vulnerability to collapse kept parties to the Bay Delta Conservation Plan talks at the table, even though outside the negotiations, some of the parties were on opposite sides of ongoing court cases.

It was against this backdrop that legislators set to work on proposed laws that ultimately became a package of water reforms that would incorporate water conservation, storage, Delta rehabilitation and water rights in an attempt to develop an integrated strategy to California's water issues. Failing to adopt the reforms in regular session, lawmakers were able to pass a package of linked bills in special session, which Governor Schwarzenegger signed in November 2009. The package represented the biggest water reforms since the signing of the Porter-Cologne Water Quality Act in 1969.
The package consisted of four policy bills and a bond proposal:

- ***Delta Stewardship Council:*** SB 7X 1 (Simitian, Steinberg) establishes a framework to achieve the co-equal goals of providing a more reliable water supply to California and restoring and

enhancing the Delta ecosystem. The bill created the Delta Stewardship Council as the primary governance agency, replacing the California Bay Delta Authority, to develop a Delta Plan and ensure that the Bay Delta Conservation Plan and other state and local actions were consistent with that plan. The bill requires the State Water Resources Control Board and the Department of Fish and Game to develop instream flow criteria for the Delta by 2010 and for major watersheds of the Delta by 2012.

- ***Groundwater Monitoring:*** SB 7X 6 (Steinberg) requires local agencies to monitor the elevation of their groundwater basins to better manage the resource during normal water years and drought conditions. The Department of Water Resources is given the responsibility of setting up a priority schedule and providing local assistance. If the local entities fail to comply, the department is responsible for establishing a program for them.
- ***Statewide Water Conservation:*** SB 7X 7 (Steinberg) requires the development of agricultural water management plans and requires urban water agencies to reduce statewide per capita water consumption 20 percent by 2020. The law also requires agricultural water suppliers to measure water deliveries and adopt a pricing structure for water customers based at least in part on quantity delivered and to submit Agricultural Water Management Plans beginning December 31, 2012, that include information on efficiency measures they have undertaken and plan to undertake.
- ***Water Use and Reporting:*** SB 7X 8 (Steinberg) aims to improve accounting of the location and amount of water diversions under appropriative water rights as well as riparian and pre-1914 appropriative rights. The bill removes an exemption from reporting water use by in-Delta water users and assesses civil liability and monetary penalties on diverters who fail to submit the required reports, and who make willful misstatements, or who tamper with monitoring equipment. The bill also appropriates $3.75 million for the State Water Resources Control Board for staff positions for water diversion reporting, monitoring and enforcement.
- ***Water Bond:*** SB 7X 2 (Cogdill) proposes an $11.14 billion general obligation bond for the November 2010 ballot to provide money for a variety of water infrastructure and projects to improve ecosystem health and water supply reliability, and revived the California Water Commission to oversee bond spending. Major categories are Delta sustainability, water supply reliability and statewide water system improvement, including surface and

groundwater storage. In August 2010, the bond proposal was pulled from the November 2010 ballot.

This legislative package sets the policy framework for the Commission's analysis and recommendations on the structural reforms needed to implement these policies and plan for California's future water supply and delivery needs.

Key Roles Not Aligned

California needs a water department focused on planning and managing the state's water supply and demand. Its functions should include assessing supply, tracking water use, and accounting for whether that water use is authorized by existing water rights.

On the supply side, the department should focus on water supply management, planning and water rights administration to develop strategies to develop new sources of supply, as well as make the most efficient use of existing state and federal reservoirs and aqueducts and underground storage opportunities.

On the demand side, in its planning and management functions, the department should work as a catalyst and guide to implement ways for agricultural, urban and suburban areas both to use water more intensively and to use less of it. The state can do this through its existing Integrated Regional Water Management program and incentives for agricultural water users to implement water-efficiency methods, by streamlining the water transfer process and by better tracking water use to ensure it meets water right permit conditions as well as reasonable and beneficial use requirements.

New legislation on water conservation, water use reporting, water rights enforcement and a request that the State Water Board develop instream flow criteria for the Delta makes clear that the state now puts a high value on actions that, to be successful, must be coordinated and integrated.

The problem for California is that the water governance structure that exists at the state level is not aligned in such a way that will allow the state to adequately manage and plan for the future. Water planning and management in the Department of Water Resources is separate from water accounting in the State Water Resources Control Board, and the instream flow recommendations that could help determine available supply are the responsibility of the Department of Fish and Game. Though the Department of Fish and Game by statute has the responsibility for developing instream flow recommendations, the Legislature separately has asked the State Water Board to develop instream flow policies and guidelines for North Coast rivers and more recently, directed the State Water Board to develop instream flow criteria

for environmental and public trust needs for the Delta. Both efforts are being undertaken separately from planning and management. Within the Department of Water Resources, planning and management activities suffer from inconsistent funding and compete for attention with the often more immediate operational function of running the State Water Project.

In Water Resources, Dual Roles Conflict

The Department of Water Resources is the main state agency for determining available water supply and tracking how water is used, responsible for determining annual water allocations for water contractors and for programs aimed at changing the way Californians use water.

Structural Issues Remain

The case for a new Department of Water Resources was made by an Assembly committee in early 1956, which found that California's water, flood control, water planning and control of major upcoming water delivery projects warranted better administration and organization.

"The State's present water administration, which, by its very nature, is characterized by overlapping authority, confused lines of responsibility, fragmented functions, and uncoordinated policies, is incapable of carrying out a program of this kind effectively and efficiently," the committee wrote. "Our present lack of organization creates confusion in a situation that demands unity. It encourages buck-passing instead of fixing responsibility. It delays the development of new water supplies while the demands for water multiply as a result of population increases and an expanding economy. Finally, it fails to provide the kind of framework that is required if the State is to secure the benefits of unified, integrated, and responsible administration of its water resources. California must act now if serious water shortages are to be avoided in the future."

More than 50 years later, many of the concerns the committee identified remain.

Source: Assembly Interim Committee on Government Organization. February 8, 1956. "A Department of Water Resources for California."

The department uses snowpack measurements, stream and river gauge readings and reservoir levels, among other tools, collected for reporting purposes through the California Data Exchange Center. Some data are collected in real time, others through daily readings that can be supplemented by data collected by federal agencies such as the U.S. Bureau of Reclamation and the U.S. Geological Survey. The data is most rich where demand and public safety needs are high – in the Central Valley and in other flood-prone areas. Most streams, however, lack gauges.[32] A sizeable amount of near real-time data on water use is available in the delivery records to the contractors of the federal and state water projects. In addition, the department is able to estimate water use through a number of modeling tools, such as tools that measure cropping patterns and use known climate and soil conditions to extrapolate the amount of water consumed producing a given crop.[33] Much of this activity is located in the department's Division of Planning and Local Assistance.

A major part of the state's management and planning efforts is built around the incentive-based Integrated Regional Water Management program in the Department of Water Resources. Through the program, the department promotes a broad range of strategies to reduce water use and to develop new, sustainable sources of supply, such as recycled wastewater, and using storm water to replenish aquifers. It does so by encouraging regions to submit plans for permanently changing their water use and awarding grants on a

competitive basis both for planning and, separately, implementing viable approved integrated regional water management plans.

The program, like the State Water Plan, is funded largely through bond borrowing, starting in 2002 with Proposition 50, and extended through Proposition 84 in 2006. The program was formalized in the Water Code in 2008, through legislation that set out a general definition of an integrated regional water management plan as well as an outline for the department for required Integrated Regional Water Management program guidelines.[34]

Until bond measures explicitly tied money to specific programs in the State Water Plan, the plan had been considered by many in the water community simply a well-crafted inventory, or situation update, that lacked a strategy or political support for implementation. The plan may see more intensive use through implementation of the 2009 water reform legislation, with its focus on urban and agricultural conservation and water use efficiency.

Building a budget or a sustainable set of programs on bond proceeds adds a large element of uncertainty to the state's ability to drive change in how water is used at the regional level, especially when bond sales are disrupted, as they were in 2008 and 2009 due to the state's budget problems and the global credit crisis. One result is a greater dependence on the more certain revenues provided by the State Water Project contractors, leading to the perception that the project's needs tend to drive the department's agenda, particularly when bond money is scarce.[35]

At just over $1 billion a year, the project's revenues are roughly 10 times the General Fund contribution to the Department of Water Resources for planning and managing existing assets and programs. In periods when bond money is scarce, the department staff resources are shifted to backlogged work needed for the State Water Project.[36] The arrangement provides welcome flexibility for the department, though it reinforces a sense of dependency on the project.

Water contractors, other water agency managers, current and former Department of Water Resources employees and environmental advocates note an inherent conflict in the department's dual roles.[37] In one role, the department operates as a water utility for the benefit of customers who deliver water to agricultural, municipal and industrial customers. In the other role, the department plans for the state's long-term needs

Flood Protection Part of Mission

The role of flood protection is built into both the Department of Water Resources' management and planning functions. Flood protection requires coordination with the management of water supplies and monitoring precipitation, river and stream flows and reservoir levels, as well as planning, to ensure land is available for flood plains. This mission dates to the early days of the department after severe Northern California flooding in 1955 showed the need for a statewide approach to flood prevention and flood management.

Source: Department of Water Resources. www.water.ca.gov

and manages existing supplies, finding ways for farms, businesses and cities to conserve water or be more efficient. In its planning and management role, the department seeks to encourage the use of less water. In its water project role, the department is managing expectations of project contractors, who typically seek as much water as is available, an amount that rarely equals the maximum amount they are allowed to request in their contracts.

For flood protection, the Department of Water Resources at times releases water to make room for snow melt, even when the water cannot be moved to contractors or in shared storage south of the Delta for later irrigation or urban use. At other times, the department releases water for salinity control in the Delta and for other environmental needs, which, depending on the timing of the releases and whether Delta pumps are allowed to operate, may or may not benefit water contractors. The timing of much of its pumping operations has been determined by court rulings regarding the applicability of federal fisheries agencies' biological opinions on what actions are needed to protect endangered salmon and Delta smelt.

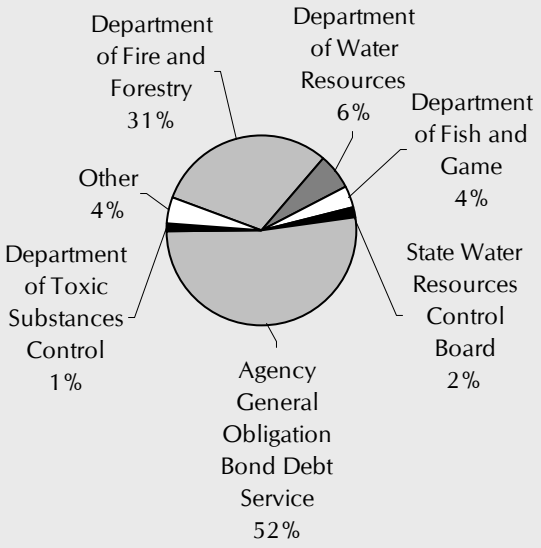
"The existing governance structure places the management of the State Water Project within the Department of Water Resources, which has other statutory statewide obligations including Delta levee, water planning, flood control and power purchasing," Roger Patterson, assistant general manager for the Metropolitan Water District of Southern California, told the Commission. "The burden on DWR's ability to balance these multiple functions has the potential to compromise decisions that could be made in the best interest of the project, in addition to the level of effort devoted to it. This places DWR's

Bond Debt and Resources Spending

Much of the General Fund allocation to departments in the Natural Resources Agency is devoted to paying down general obligation bond debt. Of the General Fund's contribution to the Natural Resources Agency in Fiscal Year 2008-09, 36 percent went to paying down the agency's general obligation debt service. In the proposed 2010-11 budget, general obligation bond debt service accounted for $929 million, or more than half of the agency's aggregated $1.8 billion budget.

According to the Legislative Analyst's Office, General Fund support for the Department of Water Resources has declined 74 percent from its peak in 2000-01. General Fund support for the State Water Resources Control Board fell 66 percent during the same period. In lieu of General Fund support, the departments rely more heavily on fee revenue and bond-funded expenditures.

Governor's Proposed General Fund Expenditures - Resources and Environmental Protection



Source: Legislative Analyst's Office. March 2010. "The 2010-11 Budget."

contractual obligations to secure and deliver water as an advocate for its water customers in conflict with its broader resources agency obligations."[38]

Environmental advocates note the same conflict, if from a different perspective. They say the department's desire to meet its water delivery obligations and satisfy contractors has come at the expense of statewide planning and a healthy ecosystem, for example, as when pumping activities or timing of reservoir releases harm endangered species or when its efforts to reduce water use conflict with pressure for greater water deliveries. This contention is at the heart of the litigation that has been playing out in federal court.[39]

A half century after it was created, the Department of Water Resources is struggling to balance its planning and management roles with its water delivery obligations. The structure created to launch the State Water Project no longer fits the project's needs nor those of the project's customers, the state water contractors. Additionally, the combination does not allow the state to focus on guiding and coordinating the kinds of regional water management strategies that will allow its farmers and cities to meet their future needs.

Water Rights Tied to Quality, Not Managing Supply

After the Division of Water Rights and the Division of Water Resources were separated in 1956, water rights were administered by an independent entity, the State Water Rights Board. In 1967, the Legislature merged the State Water Rights Board and the State Water Quality Control Board to explicitly recognize the link between water rights and water quality. The combined board is located within the California Environmental Protection Agency. In enforcing water quality regulations, the newly combined board had the ability to use its consolidated authority to make conditions for water rights permits and licenses to achieve clean water goals, in the process, effectively making water rights regulation an enforcement mechanism for improving water quality. This relationship has been particularly important for the nine regional water quality control boards, which lack the authority on their own to condition water rights to implement water quality goals, and must rely on the authority of the state board.[40]

Management Lacking in Agency Structure

In its assessment of the Resources Agency, the California Performance Review noted that "legitimate resource management functions are not within the Agency at all. Water rights are currently managed by the Water Resources Control Board within Cal-EPA. This confuses the distinct issues of managing water rights and keeping water clean. It also prevents water rights management from being integrated into a larger examination of the use of California's natural resources."

Source: California Performance Review. 2004. "A Government for the People for a Change: Form Follows Function."

The merger, however, further distanced water

Court Gives Board Wide Authority

A 1986 California Court of Appeal ruling, known as the Racanelli Decision, is a widely cited articulation of the State Water Resources Control Board's substantial authority to use its water rights regulatory powers to enforce water quality standards. In the ruling on the board's ability to set conditions on water diversions to achieve Delta salinity standards, the justices urged the board to take a broader view of its powers, and focus not just on the water rights of the state and federal water projects, but on upstream diverters as well. The court also reminded the board of its wider responsibilities regarding water rights:

"The water quality objectives were based on the unjustified premise that upstream users retained unlimited access to upstream waters while the projects and the Delta riparians were entitled only to share the remaining water flow. Taking the larger view of the water resources in arriving at a reasonable estimate of all water uses, an activity well within the board's water rights function, is also essential to fulfill the boards' water planning obligations."

Source: *United States v. State Water Resources Control Board*. 1986. 182 Cal.App.3rd 82.

rights administration and regulation from water management and planning, which earlier had been housed together in the Division of Water Resources under the old Department of Public Works. In other western states, such as Washington, Oregon, Arizona, Nevada and Idaho, water rights administration and enforcement and water resources planning and management are part of the same government unit, allowing coordination and integration of water management strategies.

In California, the merging of the water rights and water quality functions came against a backdrop of growing environmental awareness and recognition that then-existing development and industrial practices had a detrimental impact on the environment and on Californians' quality of life.[41] This rising environmental awareness led to the 1969 Porter-Cologne Water Quality Act, which laid out the legal rationale for linking water rights and water quality regulation, and later, served as a model for the federal Clean Water Act of 1972.

In the years since the merger, federal clean water mandates drove funding increases for water quality activities and empowered enforcement.[42] Resources devoted to water rights and attendant enforcement authority failed to keep pace. One result is that the State Water Board's system for accounting for and enforcing water rights has been slow to modernize.[43] Another is that the process of issuing water rights permits and licenses is not structurally connected to the process of determining how much water was actually available, a situation that one observer likened to a person writing checks without ever balancing the check book. Though the board has the dual goals of protecting and allocating state waters, it has not taken a broad view of its role in allocating water in the context of managing supply, as is done in other western states, or, as a landmark 1986 California Count of Appeal decision indicated, to fulfill its water planning obligations.[44]

Over time, the state's lack of investment in information technology and in the Division of Water Rights' administrative and enforcement personnel has contributed to a disparity of unknown size in the amount of water the state has promised to water rights holders and what they actually use. It also has created a significant backlog in permit and license applications,[45] a problem compounded by delays introduced by the board review structure.[46]

State Has Over-Allocated Water

The State Water Board is struggling to reconcile the amount of water the state has committed through existing claimed rights (largely those represented by riparian rights and pre-1914 appropriative rights) and permitted water appropriations authorized by the board – the face value or "paper water" – with the amount of water that is actually being used by rights holders, or the amount of water covered by "wet water."

The state board recognized the challenge it faces in reconciling what has been committed to what is available in its Strategic Plan Update 2008-2012, particularly as it considered the need to determine, before approving new stream diversions, whether unallocated water was available and how much was needed for instream uses:

"Water right permits and licenses include terms that not only limit how much and during which season water can be diverted, but also require minimum flows to bypass the point of diversion to protect fish and wildlife habitat. A significant challenge for the state in ensuring that water is fairly and equitably allocated and used is that existing claimed water rights, in combination with current permitted water appropriations, amount to at least five times California's average annual surface water supply. Given that disparity, the problem facing the State is how to equitably balance the needs of water rights holders and instream flow requirements."[47]

Some of the face-value amount represents permits for the water needed to initially fill the new reservoirs of the State Water Project and Central Valley Project and essentially represents a one-time use. And some can be accounted for by the double-counting of the same molecule of water used by more than one permit holder, as irrigation runoff or treated wastewater is reused downstream.

Still, the state lacks a detailed statewide picture of how much water is being used and where, a situation not helped by the separation of supply assessment and administering the review of water rights applications and accounting for water use. This presents the potential for conflict in the event that water rights holders seek to exercise the full face amount of their rights and insufficient water is available to meet this demand. As the board noted, the problem is compounded by the need to ensure minimum flows to protect fish and wildlife habitat.

Prior to the adoption of new penalties for failure to report water use accurately, the Division of Water Rights estimated that about 30 percent of the permit holders under its jurisdiction did not file annual reports.[48]

Water Governance Structures in Western States

	Water Project	Water Rights	Water Planning	Groundwater
California	State project managed by Department of Water Resources; federal project managed by U.S. Bureau of Reclamation	Allocated by State Water Resources Control Board	Department of Water Resources responsible for planning	Unregulated
Arizona	Central Arizona Water Conservation District (elected board) manages	Allocated by Department of Water Resources	Department of Water Resources responsible for planning	Regulated by Department of Water Resources, under Groundwater Management Act
Utah	Being constructed by U.S. Bureau of Reclamation and Central Utah Water Conservancy District; with an appointed board	Division of Water Rights, led by state engineer, administers rights and maintains records	Division of Water Resources creates plans, oversees collaborative processes with other agencies	Regulated by Division of Water Rights, led by state engineer
Colorado	None	Established through a water court	Colorado Water Conservation Board and Division of Water Resources	Governed by the Groundwater Management Act of 1965
Nevada	None	Regulated by Department of Conservation and Natural Resources, Nevada Division of Water Resources; state engineer is water rights administrator	Developed by Department of Conservation and Natural Resources, Nevada Division of Water Planning	Regulated by Department of Conservation and Natural Resources, Nevada Division of Water Resources, state engineer is water rights admin
Oregon	None	Surface, ground water rights administered by Water Resources Department	Water Resources Department has Oregon Water Supply and Conservation Initiative, other planning	Considered under public ownership, generally not available to property owners without permit
Montana	None	A water court and the Department of Natural Resources and Conservation share authority	State Water Plan and Water Resources Division	Regulations vary based on Controlled Groundwater Areas
New Mexico	None	State engineer allocates; permits must show offsetting measures to keep supply whole	State engineer oversees State Water Plan and monitors coordination of it with regional plans	Managed conjunctively with surface water where connected; managed separately where aquifers only
Wyoming	None	State engineer's office is responsible for appropriation, distribution and management. The state engineer joins with four division superintendents to form the Wyoming Board of Control	State Water Plan	State engineer's office is responsible for appropriation, distribution and management. The state engineer joins with four division superintendents to form the Wyoming Board of Control
Washington	None	Department of Ecology decides water right applications	Department of Ecology oversees rights, quality and resources	Permit required, except in exempt cases

Source: Dennis Strong, Director, Utah Division of Water Resources. Personal communication. Also, Chris Finlinson, Central Utah Water Conservancy District. Personal communication. Also, Sid Wilson, retired General Manager, Central Arizona Project. Personal communication. Also, John D'Antonio, State Engineer, State of New Mexico. Personal communication. Also, Western States Water Laws. Water Rights Fact Sheets. www.blm.gov/nstc/WaterLaws.

Additionally, many of the reports that are filed often are unreliable, as the Water Code gives permit holders rights only for the water they have used, which creates an incentive to report the full face value amount listed on their permits to protect their rights. Less is known about actual water use by two groups of rights holders that are not regulated by the water board: Riparian rights holders and holders of pre-1914 appropriative rights have the right to divert more than 200 million acre-feet a year.[49] Together, these two categories account for an estimated 38 percent of all surface water use authorized, though records of actual use are incomplete. Until the new law went into effect in 2010, these rights holders faced no penalty for failing to report.

Under the new legislation, those rights holders are required to make an initial statement of water use, and then file updates every three years. Records establishing water rights for these riparian and pre-1914 appropriative rights holders have not been centrally collected; many are located in courthouses around the state.

The State Water Resources Control Board's Division of Water Rights is implementing a new reporting system that allows water rights holders to file their statements electronically, which will improve the Division of Water Rights' capacity to track and analyze annual water use, as long as use is accurately reported. The new system is building its electronic database as new reports are filed. New requirements will increase the frequency of electronic filing to quarterly reports from annual reports.

Board Structure Slows Process

Processing permits and petitions to change permit conditions is a slow process, with elapsed time from application to permit often taking more than a decade. This pace results in part because of Division of Water Rights staffing limits, but also requests for extensions by applicants and a lack of information about instream flows needed to support habitat and wildlife.[50]

In the case of contested applications and petitions, delays are often the result of the board process. The board has a practice of encouraging parties to settle differences before taking action,[51] which can lead to years of procedural wrangling that often fails to resolve issues, sometimes leading to litigation.[52] The delays can produce uncertainty for the applicants, who may be basing investment or other business decisions on the outcome of the process, as well as harm to the environment, as when continued unauthorized diversions cause the stranding of spawning endangered species.[53] (See Water Rights Hearing Process, Appendix F.)

As of June 2010, the Division of Water Rights had a backlog of 430 permit applications and 602 petitions for permit changes. The division has been able to work down its backlogged permit applications by 40 percent from a peak of 719 in October of 2003. The number of pending petitions has not been similarly reduced, though staff has worked down the backlog from a recent peak of 640 petitions in March 2010. The division received 60 new permit applications and 105 petitions during the 12-month period, suggesting that the backlog may take some time to eliminate. By contrast, the number of outstanding complaints is rising, to just over 100 in June 2010 from 40 at the beginning of 2004.[54]

The Legislature, in AB 2121, passed in 2004, took aim at the backlog. Focusing on the growing number of unprocessed applications and petitions in the North Coast region, the law said the "delays are inappropriate, and they produce regulatory uncertainty for the water user community and the conservation and fishing communities."[55] In response to a critical 2005 evaluation by the Bureau of State Audits, the Division of Water Rights said that staffing levels and disruption caused by the introduction of a new fee structure contributed to the problem.[56] For the protested North Coast permit applications and change petitions, the delays have been exacerbated by a lack of instream flow analysis.

The backlog has frustrated even board members, who say the current process for having board members review so many water right permit applications and change petitions is one reason for the backlog.[57] The process requires board members to sit as hearing officers on such cases, and can result in rehearings before the full five-member board. The board's process of review, public comment and rehearing, appropriate for permits or petitions in critical habitat areas or for permits representing a large amount of water, is not appropriate for cases involving much smaller water diversions, board members and water rights attorneys told the Commission.[58] The process adds uncertainty to the regulatory process, affecting investment decisions, regional planning efforts and attempts to protect endangered species.

Other western states, such as Washington, Oregon, Arizona and Idaho, have addressed this issue by processing water rights permits through an administrative process, sometimes with hearing officers or administrative law judges. Utah, Nevada, New Mexico, Colorado and Wyoming employ the use of a state engineer to make the determination. In Colorado, disputes over water rights led the state in 1969 to develop a system of water courts within its state court system, one water court for each of the state's seven major river basins. Water judges, appointed by the Colorado Supreme Court, have jurisdiction over the determination of

water rights, as well as the use and administration of water in the state.[59]

Though California's 2009 water legislation should help increase the frequency and accuracy of water use reporting, the state still lacks a system to accurately track water use statewide, or to connect that information into regular planning and management as is done in other states.[60]

Budget, Performance Measures Prioritize Quality

Within the State Water Resources Control Board, the Division of Water Rights represents only a small part of the board's activities, especially within the context of the activities of the nine Regional Water Quality Control Boards. The State Water Board's budget and staffing reflect the far larger role of improving water quality and enforcing water quality regulations. The water rights division's 104 authorized positions for Fiscal Year 2009-10 represent just 7 percent of the combined boards' overall staff of 1,564, while its budget of $14.2 million for the same period accounts for 2 percent of the boards' total budget of $748 million.[61] An assessment of spending at the state board level, separate from the regional boards, shows that water rights activities are funded at about a third of the level of water quality efforts.

In developing and posting performance measures in its annual performance reports for 2008-09 and 2009-10, the board has developed an extensive list of targets for basin planning, restoring impaired waterways, monitoring surface water quality and enforcement of wastewater regulations. The annual reports, however, list no performance targets or measures for water rights or water supply. The best accounting for the activities of the water rights division comes in the form of updates from the board's executive director submitted for regular board meetings and in monthly tallies of how many permit and petition applications have been filed and how many staff has processed.

Instream Flows Split Across Two Agencies

In managing water supply, if a credible accounting of water rights is central to assessing how much water has been committed to various water users, then credible instream flow assessments are equally critical to determining how much water actually is available for various purposes at any given time.

AB 2121 recognized this in 2004, requiring the State Water Board to adopt principles and guidelines for maintaining adequate instream flows in coastal streams on the North Coast, a process completed in May 2010.

The 2009 water reform legislation reinforced the policy by directing the water board to develop instream flow criteria for the Delta in 2010, and to develop schedules and cost estimates for instream flow studies for "high priority rivers and streams" feeding the Delta by 2012. The instream flow criteria for the Delta are to be delivered to the Delta Stewardship Council for use in developing the Delta Plan. [62]

The laws that put the onus on the State Water Board reflect that the existing process has not worked well. This process requires the state water board to rely on information and analysis supplied by a separate department in a different agency, the Department of Fish and Game in the Natural Resources Agency.

The 2009 water reforms underscore that the governor and the Legislature understand that instream flow analysis is central to improving the environmental health of the Delta. The legislation, however, also leaves unclear accountability for what is required and which agency is responsible for producing instream flow analysis going forward and, beyond the purposes of developing the Delta Plan, how such information should be used.

Russian River Proceedings

The dilemma faced by the State Water Board in issuing water right permits in the absence of sufficient information about instream flow needs can be seen in concentrated form in proceedings that have played out in the Russian River watershed over the past 13 years. Residential development in Sonoma and Mendocino counties, as well as the region's burgeoning wine industry, have put pressure on the Russian River and its unregulated tributaries, reducing water available for the spawning of endangered Coho salmon and threatened Chinook salmon and steelhead. A vineyard practice of diverting water from streams to spray young grapes for frost protection added to the problem when vineyards, ahead of a threatened frost, could divert large amounts of water at the same time, drying up creeks and stranding fish.

Conservation groups have successfully made the case that there is not enough water to satisfy both the needs of endangered salmon and allow current water use practices to continue. They forced the state board to investigate illegal and unauthorized water use, leading the board to contact many water users to ask them to apply for water right permits or face enforcement action. The groups have filed protests to water right permit applications and permit change petitions until instream flow requirements can be established. At the same time, federal fisheries agencies have urged the State Water Board to take action to protect salmon and steelhead.

More than 250 water right permit applications and petitions for permit changes were pending, many for more than a decade, while the State Water Board developed a set of policies and guidelines for establishing instream flows needed for the Russian River watershed. The final policy, developed with the input of conservation groups, the wine industry, the Department of Fish and Game and federal fisheries agencies, were approved in May 2010. For the most part, the board has refrained from taking enforcement action against the water users who have applications pending, though it did order water agencies in Sonoma and Mendocino counties to substantially cut their water use as the board seeks a stakeholder-driven solution to manage diversions and storage without stranding fish.

Sources: Division of Water Rights, State Water Resources Control Board. August 15, 1997. "Russian River Watershed: Proposed Actions to be taken by the Division of Water Rights on Pending Water Right Applications within the Russian River Watershed." Staff report. Also, California Department of Fish and Game and National Marine Fisheries Service. June 17, 2002. "Guidelines for Maintaining Instream Flows to Protect Fisheries Resources Downstream of Water Diversions in Mid-California Coastal Streams." Also, California Water Code, Sections 1259.2 and 1259.4, Chapter 943. 2004. Also, Trout Unlimited and Peregrine Chapter of the National Audubon Society. October 27, 2004. Petition to State Water Board, et al. Also, National Oceanic and Atmospheric Administration. February 19, 2009. Letter to the Division of Water Rights, State Water Resources Control Board. Also, Grant Davis, Sonoma County Water Agency. June 17, 2010. Interview.

Unresolved is how the "criteria" will be applied, or how they mesh with the recent release of principles and guidelines for instream flows in the water board's Russian River proceedings. This is an area where California needs statewide consistency, so that approaches to instream flow analysis do not differ by region. The situation begs for standardization of the process of how instream flow requirements are determined, as well as standardization of definitions and priority-setting for the various efforts of developing "criteria," "recommendations," "requirements" and "standards."[63]

Though greater instream flow analysis is needed if the State Water Board is to pare its permit and petition backlog, it also is likely that instream flow needs, once identified and quantified, could increase the workload on the water rights system in the form of protests to water rights permit applications and petitions, as well as to challenges of existing permits. Without a change in the water board's current approach to resolving such cases, the existing backlog likely would grow.

The inability of the state's various water actors to develop adequate and consistent instream flow analysis and establish adequate flow conditions for water rights permits has contributed to significant delays in other water rights cases, including the extended Yuba River proceeding. In a complaint filed in 1988, fisheries groups contended that instream flow requirements contained in a 1965 agreement between the Department of Fish and Game and the Yuba County Water Agency were not adequate to protect the flow needs of fish. The board took 13 years to deliver a decision. Subsequent litigation stretched out the process, but led to a negotiated settlement among the parties, outside of the board process, that produced the Yuba River Accord, which the board approved in 2008, 20 years after the initial complaint was filed.[64]

The board still has not acted on its 1990 determination that existing flow requirements in the lower American River were not adequate and laid out a process to modify the water right permit held by the U.S. Bureau of Reclamation, which operates Folsom Dam, part of the Central Valley Project. In this case, the board would be able to take advantage of the considerable progress made developing a flow standard for lower American River steelhead and fall-run Chinook salmon by the Water Forum, a coalition of water districts, local governments, developers and builders, environmental groups and agricultural groups. The groups joined the forum, created by the city and county of Sacramento, after recognizing that negotiation was the only way to solve the region's water supply and environmental challenges and address significant groundwater overuse.[65]

A Unified Approach to Water Management

The functions for determining state water supply, tracking use of that supply, managing existing supplies and planning for future water needs are spread out over different departments and agencies. Given the uncertainty surrounding future supply and increasing demand driven by a growing population, California needs to pull together the functions of determining and managing supply to develop a comprehensive assessment of its water supply options and opportunities. Knowing more about what water is available, how it is used and how it can be stored are fundamental to developing a comprehensive management and planning strategy. Better and more timely information about where, when and how water is used will help the state recognize change as it happens and more quickly address its consequences.

The ability to build a comprehensive understanding of how water is used, assessed against more clearly defined instream flow requirements, also will help the state enforce water rights laws, preventing waste and unreasonable use, and protecting the threatened wildlife species and water users who are abiding by the terms of their water rights from unauthorized or illegal water diversions by others.

This requires uniting the functions of water supply assessment, management and planning with water rights accounting, water use data collection and water rights enforcement. The ability to collect accurate and timely water use information collected through water rights reporting is essential to the state's ability to manage existing supplies and plan for the future. The ability to use that information to prevent unauthorized or illegal water use is critical to managing supply, especially when considering that more water has been committed through water rights than actually exists.

California needs a water governance structure that combines water supply assessment and water accounting together with water management and planning into a new Department of Water Management. The department should be responsible for water use planning and management, water supply measurement and monitoring, and water use accounting and enforcement. This structure would consolidate the non-project functions of the Department of Water Resources with the Division of Water Rights currently located within the State Water Resources Control Board and the instream flow unit of the Water Branch now in the Department of Fish and Game as well as any instream flow activities within the State Water Board. Uniting these functions as part of one department would increase coordination, accountability and transparency. It also would better position the state

to address supply challenges currently not possible within today's decentralized and disjointed structure.

To allow for the integration of water rights accounting and enforcement with water planning and management, and to improve the operational efficiency and availability of the State Water Project, the state should separate the function of operating the project from planning and management functions.

Uniting water rights and water planning and management functions not only would increase efficiency and coordination among functions, it would enhance clarity, allowing the Legislature and other bodies responsible for oversight to more easily assess the state's activities in terms of performance and resource needs. The consolidation also should improve accountability to the public, especially those critical of the state's current disjointed approach, one that separates related functions and fails to link budget resources to stated policy goals.

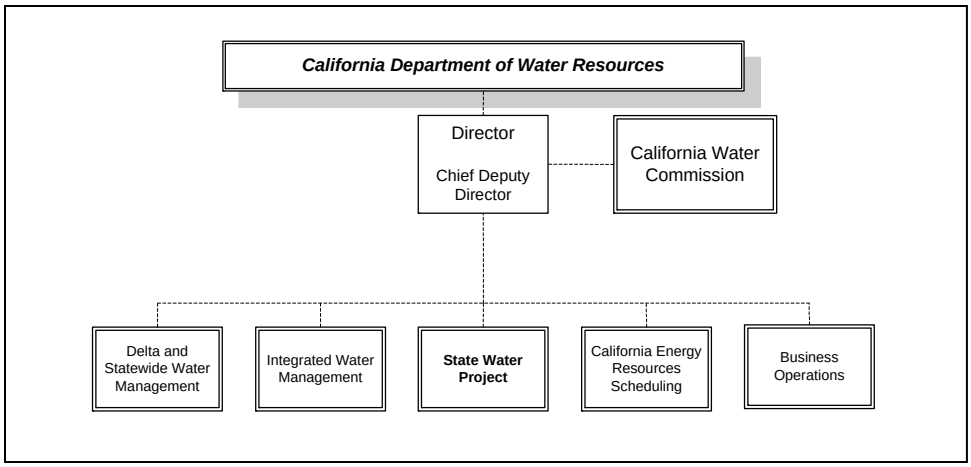
Determining How Much Water is Available

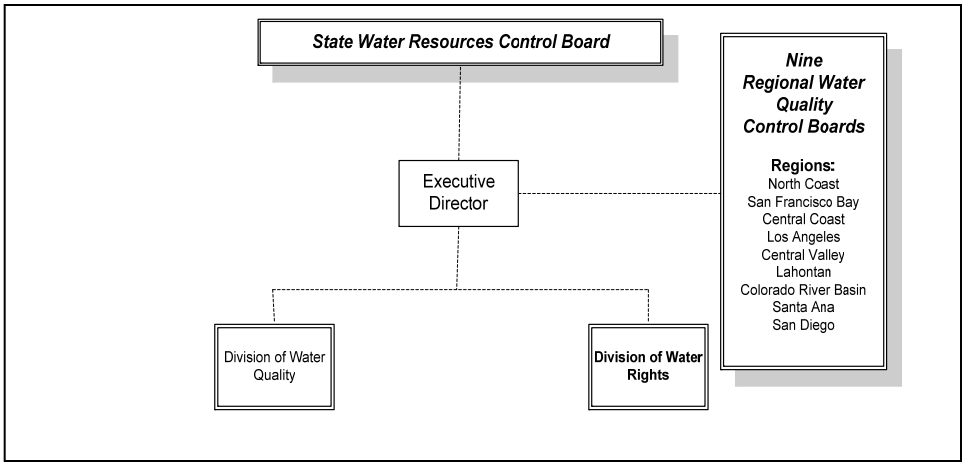
The Department of Water Management's water supply assessment function should include the river and stream gauge data collection that supports the present Department of Water Resources' California Data Exchange Center, as well as the state climatologist and the state meteorologist. It uses data collected by others, such as the U.S. Geological Service, and benefits from outside research efforts, such as the ongoing work at the University of California, Davis. Researchers there have created a hydroengineering-economic model of California's water resources, dubbed CALVIN, that takes a statewide perspective on water supply and water use. The model is continuously refined to integrate new technology, such as satellite imagery of California cropping patterns.[66]

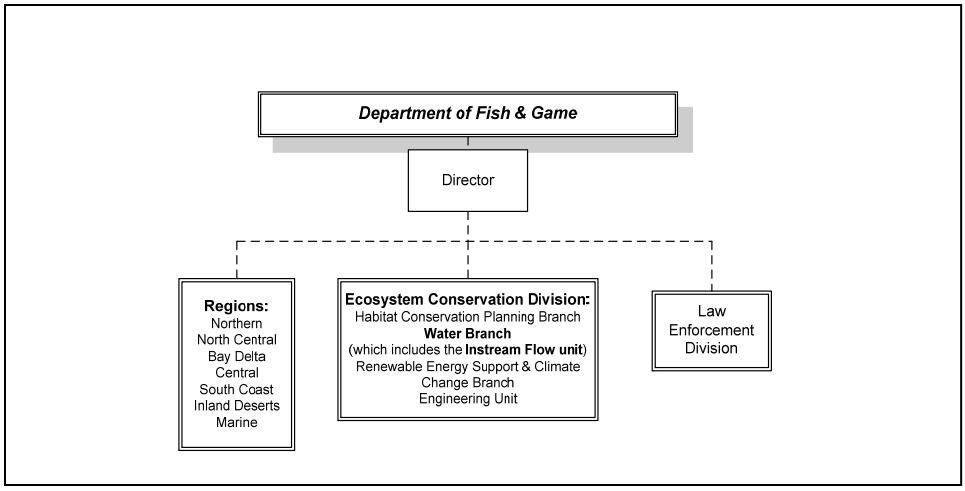
Information gathered from the reporting of groundwater basin levels would be collected by this unit as well, as required by the 2009 legislation, SB 7X 6. The department's water supply assessment function also should include instream flow analysis to determine how much water is required for environmental needs.

Organizing instream flow analysis in one place also provides the opportunity to standardize the research process of developing instream flow recommendations, building on the Department of Fish and Game's expertise as well as the knowledge the State Water Board has developed through its recently released watershed model for the Russian River watershed.

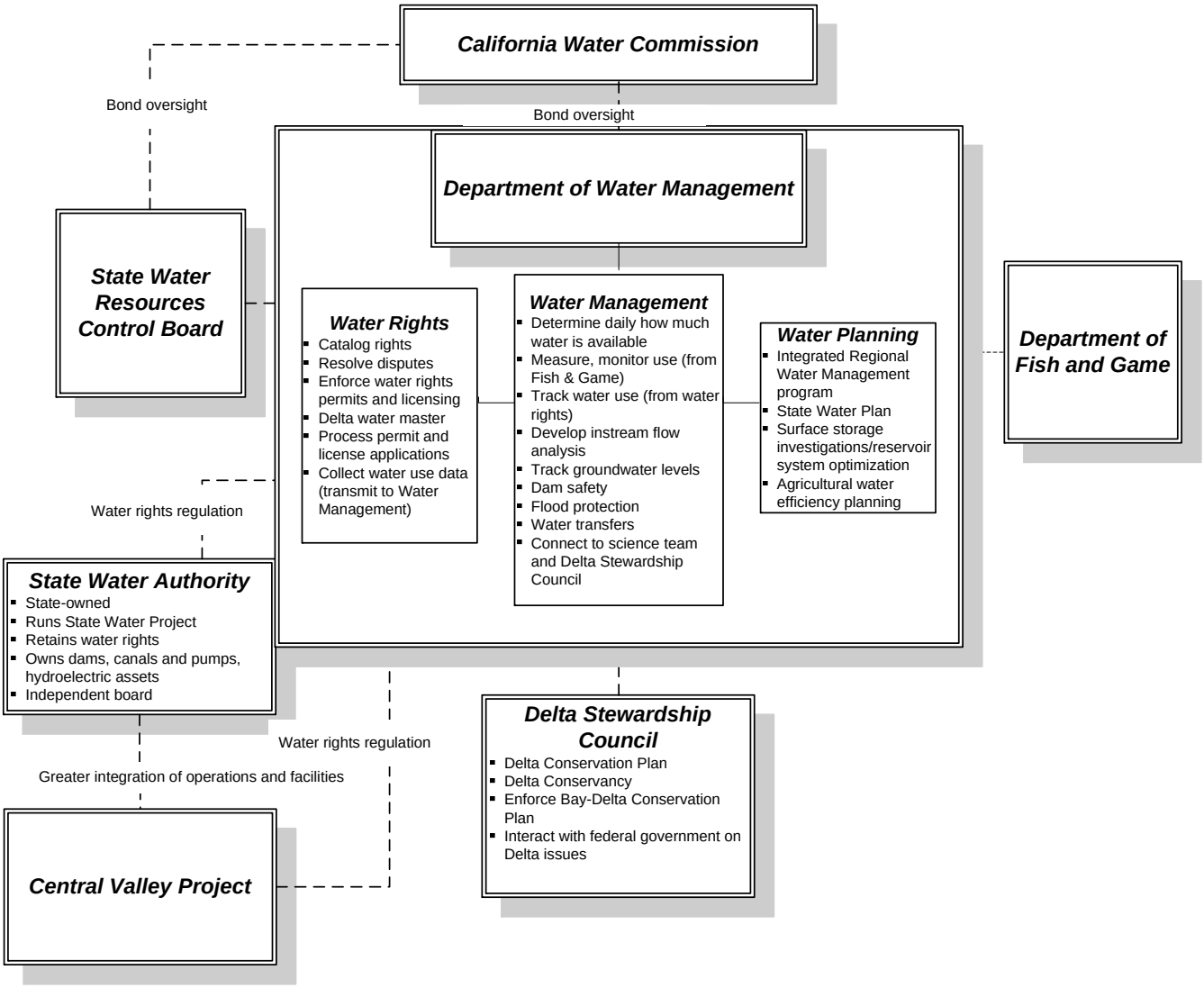
California's Existing Water Governance Structure







Model Creates Comprehensive Approach to Water Governance



A unified supply measurement group that includes instream flow analysis should work closely with the Delta Stewardship Council to provide data and analysis to inform the council's decision-making. This group also would rely on the Delta Independent Science Board as a check on the quality of its work. The board, which was carried over from the CALFED program, operates under the Delta Stewardship Council.

Linking Water Obligations to Supply

Linking the function of water supply assessment to a standardized approach to instream flow analysis will help determine how much surface water is available on a sustainable basis. Such information is essential to determining whether new diversions from a stream or river should be approved and setting conditions for existing water rights permits when necessary.

The liability side of the ledger, however, will remain uncertain as long as the state lacks a clear picture of California's water obligations – the amount of water that rights holders of different classes legitimately can claim for use.

This uncertainty undermines confidence in the state's ability to effectively manage its water. The absence of a true accounting of potential claims to water in a given river system and the lack of up-to-date assessments of instream flow needs raise the question of how the state can issue new water right permits or approve petitions for additional diversions.[67] The process of determining the answers to these questions can benefit by coordinating the efforts from within the same department.

New requirements for water use reporting should help the state establish a record for each rights holder that eventually can be used to determine which rights holders have an active claim to water and which claims have lapsed through disuse.

Requiring riparian rights holders to report their water use or face penalties, combined with other reporting changes, also will help refine state estimates of water use, as may new penalties for inaccurate reporting and failing to report water use. Eventually, the state should be able to match this information with the data gathered by satellite on cropping patterns to improve its estimates of water use, and at some point, may be able to independently determine the accuracy of self-reported water use. Extensive data exists on water used by state and federal water project contractors because their diversions are metered and reported and most must conform to allotments set by the state.

Deliveries to water district contractors' members are metered, though water users have expressed reluctance to making the data public.[68]

This reluctance is one reason California has been slow to adopt water measurement technology already in place elsewhere in the West. The technology for measuring and monitoring water use is improving constantly. Simple technology, such as the meters required by Oregon as a condition of some new water right permits, is becoming more widely available. Other technology, such as a satellite-based water use monitoring system used in Kansas, is becoming far more sophisticated.

Based on testimony and an assessment of other western states, the Commission believes that the process of reconciling the amount of water committed to rights holders with how much can be supplied on a sustainable basis best can be tackled by moving water rights accounting functions into the Department of Water Management, where it can be more closely linked to the function of water supply assessment. This structure would be similar to those used in other western states and one found in California prior to 1956, when the Division of Water Rights and the Division of Water Resources were located together in the Department of Public Works.

Streamlining the Water Right Permit Process

The State Water Board's water rights division has worked to reduce its backlog, despite a reduced staff and a cumbersome process of board review. Water board members and others have suggested that the board could further shrink the backlog through a more expedited review process, in which permits for relatively small amounts of diversions could be reviewed and acted upon by one or two board members with legal backgrounds who act as hearing officers.[69] Given provisions for rehearing for protested water right permit applications, this would avoid the necessity of a full board review.

Others have suggested that the board could reduce its permit backlog and create more time for board-level policy discussions by allowing hearing officers to review and decide on permit and petition applications. Richard Roos-Collins, legal director of the Natural Heritage Institute, has suggested that the hearing officers set tight timetables for hearings and require applicants and other parties to make their arguments quickly and limit remarks to issues not already in the written file.[70]

Mr. Roos-Collins' recommendation was echoed by others during the study. The Commission made a similar recommendation in its January 2009 report, *Clearer Structure, Cleaner Water: Improving Performance and Outcomes at the State Water Board*, to create a panel of

administrative law judges to hear appeals of regional board water quality permit decisions.[71]

For the new Department of Water Management, the Commission recommends streamlining review and action on water right permit applications and petitions for changes by handling them through an administrative process, with a public hearing process with set timetables. The process would be overseen by a staff hearing officer. This would allow the department to hear testimony and solicit public input. The department water rights enforcement group should be separate from its water rights permitting group and separate from grant and loan programs aimed at changing water use. Water rights enforcement staff would investigate complaints of violations, make a finding and, depending on the level of violation, take administrative action or, for more serious violations, set the matter for a hearing before a hearing officer. The finding could be appealed to an administrative law judge and, from there, the superior court system. In Arizona, some water rights violations are handled administratively and include the use of hearing officers, while others, such as surface water rights violations, are taken directly to the Arizona Superior Court.[72]

Joining the functions of water rights administration and accounting to the functions of supply assessments and planning and management would increase the likelihood that decisions on water rights would be made from a perspective that recognizes not only needs of the applicant, but the watershed as a whole, as well as opportunities created by integrated water management, such as other potential sources of supply.

The State Water Board has used its ability to place conditions on water rights permits and licenses to address major water quality issues, as when it required the state and federal projects to adjust their releases and pumping operations to control salinity in the Delta. The board uses its ability to condition water rights permits to establish flow levels in water quality cases when developing total maximum daily loads measures, the process used to decrease contamination levels in polluted water bodies. The Division of Water Rights, as well as water quality advocates, including Mr. Roos-Collins, have expressed concern that separating the water rights function from the State Water Board's water quality role would diminish the board's ability to enforce Clean Water Act requirements and undermine the Porter-Cologne Water Quality Act.

The Commission recognizes this concern. The problem potentially could be rectified if the Legislature were to require that water quality decisions be made explicitly binding on water rights, as long as a provision for appeal remained.

Four decades of water quality advances have demonstrated the value of water quality enforcement; the State Water Board's ability to condition water rights permits has played a critical role in that success. During that time, however, the role of water rights as a basis for a credible water accounting system has failed to develop in California. This has left the state ill-prepared for a future marked by dynamic swings in annual water supply, the need to devote more water to the environment and increased potential for conflict over how much water rights holders, individually and collectively, can claim.

The board's custom of allowing water users to continue diversions while their permit applications and petitions are pending, coupled with delays involved in completing reviews of applications and petitions, weaken the possible deterrent effect that enforcement actions for unauthorized or illegal diversions might have. Speedier attention to these applications will help, as will expedited enforcement for failure to report water use or deliberately filing an inaccurate report.

To meet the water needs of California's future and maximize the potential benefits of the November 2009 water law reforms, the state must reorganize its water governance structure to create a statewide strategy to improve water supply and delivery, increase water conservation and water use efficiency and protect and enhance ecosystem health.

More Bond Oversight Needed

Bond money for integrated regional management plans has been authorized through Proposition 50, passed in 2002, and Proposition 84, passed in 2006. Proposition 50 authorized $500 million for integrated regional management plans, split evenly between the Department of Water Resources and the State Water Resources Control Board. That money has been awarded. Proposition 84 authorized $1 billion for integrated regional water management plans and grants solely through the Department of Water Resources. Very little of that amount has been awarded, though more than $476 million of the total has been appropriated, with plans to award up to $350 million by the end of the year. Roughly $470 million remains for future appropriation for local assistance grants for integrated regional water management programs.

These plans, when successful, can produce permanent changes in the way that regions use water. Creating a long-term obligation for taxpayers through bond borrowing is justified if the investment of borrowed money creates lasting benefits. The state's role of managing and planning for California's future water use, however, is not a one-time investment, but part of the ongoing business of government and, as

such, requires a sustainable funding source, either through fee revenue, General Fund support or special fund support.

The Commission previously has expressed concern about the state's use of bond borrowing to fund on-going operations, such as the predictable outlays associated with the State Water Plan. In the Commission's 2009 report, *Bond Spending: Expanding and Enhancing Oversight*, the Commission recommended reviving the California Water Commission and charging it with prioritizing and overseeing bond-funded programs currently within the National Resources Agency.

The bond spending report as well as the Commission's January 2010 report, *Building California: Infrastructure Choices and Strategy*, urged the state's legislative leaders to be more assertive in oversight and for the administration as well as the Legislature to be more strategic in how it prioritized and financed infrastructure investments.

In May 2010, the Joint Legislative Audit Committee directed the Bureau of State Audits to examine bond spending by the Department of Water Resources over the past five years in response to a report by the Legislative Analyst's Office that noted the increased amount of money available to the department through successive bond offerings.

The 2009 water reform legislation brought back the California Water Commission and gave it oversight responsibility for water bonds proposed for the November 2010 ballot. Now that its members have been appointed, the commission should be given oversight of existing bond spending in the Resources Agency as well as resource bond-funded programs in other agencies to ensure that spending is consistent with voters' intentions, that investments with the borrowed money provide lasting results and that spending is coordinated to avoid duplicative efforts and waste.

Recommendation 1: To improve transparency, accountability and efficiency for distinct water functions within the current Department of Water Resources, the governor and Legislature should integrate water rights administration and accounting with water use planning and management functions, and separate these functions from water supply and delivery operations. Specifically, the governor and Legislature should:

- Create a new Department of Water Management under the leadership of a department director within the Natural Resources Agency. The new department should consolidate management and planning functions of the Department of Water Resources with the Water Rights Division of the State Water Resources Control Board and the instream flow group of the Water Branch of the Department of Fish and Game. The department should be the lead agency for:

- ✓ Collecting and monitoring data on water use and establishing benchmarks for water availability for both current and long-term environmental, agricultural and urban needs. It should coordinate its work with the Delta Stewardship Council's Independent Science Board to develop a greater understanding of how instream flows interact with other threats to endangered species.
- ✓ Managing current supply and demand by:
  - o Incorporating current system management functions from the Department of Water Resources.
  - o Making greater use of data on water use, through water rights reporting and water availability through instream flow analysis, to balance environmental needs and the needs of other water users.
  - o Expanding operating relationships with the U.S. Bureau of Reclamation and Army Corps of Engineers to enhance more integrated use of reservoirs and conveyance systems.
- ✓ Accounting, administration and enforcement of water rights by:
  - o Processing water right permits, licenses and petitions administratively with the use of hearing officers.
  - o Enforcing conditions of water right permits and licenses.
  - o Creating a panel of administrative law judges with experience in water rights law to hear administrative appeals.
- ✓ Planning for future supply and demand by:
  - o Implementing the State Water Plan and developing strategies for further managing demand by providing technical expertise and incentives to regions to develop regionally integrated water plans for increased conservation and greater efficiency.
  - o Developing strategies for more efficient and integrated use of existing federal, state and local water infrastructure to maximize supply within environmental constraints.
  - o Prioritizing where infrastructure improvements can add the greatest system flexibility, efficiency or enhancement of ecosystem health.
- ✓ Managing bond-funded grant and loan programs related to water supply, conservation, efficiency and integrated regional water management planning, including development of performance measures to assess outcomes.
- ✓ Increasing economic efficiency and system flexibility through a streamlined water transfer process.

- ✓ Overseeing dam safety and maintenance.
- ✓ Taking responsibility for flood control and flood project integrity and inspection, levee repairs and floodplain management.

Recommendation 2: The California Water Commission should provide oversight of all natural resources bond expenditures, including current bond programs and future voter-authorized bonds in the Natural Resources Agency as well resource bond-funded programs in other agencies.

- ❑ The commission should oversee natural resources bond-funded expenditures and assess and publicly report outcomes of bond-related spending.
- ❑ The commission should award bond-funded grants and loans based on a prioritized list of proposed projects and programs that improve water supply, water quality, water conservation, water use efficiency and integrated regional water management planning and implementation.
- ❑ The commission should, with the assistance of a representative stakeholder advisory committee, develop criteria and guidelines for grant and loan programs, such as the Integrated Regional Water Management program, that are funded through bond borrowing.

The State Water Project: An Enterprise Within Government

The State Water Project is a billion dollar water collection and delivery enterprise critical to the quality of life and economic well-being of 23 million Californians in cities and farms from the San Francisco Bay Area, through the San Joaquin Valley to the Central Coast and Southern California.

Its 29 contractors include agricultural water districts and urban water agencies, the biggest being the Metropolitan Water District of Southern California, a consortium of 26 cities and water districts from Ventura County south to San Diego County and east to San Bernardino and Riverside counties.

The project is operated by the Department of Water Resources, created in 1956 to bring the dream of a state water system to reality. A half-century later, much has changed, and the governance structure established to design and construct the water project no longer is appropriate for the task of running it. The water districts that have thrived because of the project now have developed management and operating capacity of their own.

Many government agencies exist to provide public goods and services that otherwise would not be supplied, the costs covered by taxpayers who may not directly benefit. By contrast, the costs of maintaining and operating the State Water Project are paid directly by the contractors that benefit. Although the project additionally provides such public goods as recreation and flood protection, in terms of the services it delivers, it can be considered a utility in a functional, if not legal sense, an entity that operates in a competitive arena for many of its inputs, but especially skilled employees and energy.

Unlike the federal government's Central Valley Project, which has contracted out much of its operating tasks to joint powers authorities formed by water districts, the State Water Project remains largely a state government operation.

The previous chapter discussed the conflict within the Department of Water Resources between its water planning and management functions

and the function of operating the project. Within the project itself, however, the state faces the conflict of its mission to operate the project at high levels of performance and its obligation to meet the administrative requirements of being a part of state government. This has renewed and recast discussions about whether the State Water Project should be moved out of the Department of Water Resources, a discussion intensified by the 2009-2010 furloughs of project employees and the state's budget uncertainty.

For the project's managers, and for its customers the water contractors, the project is straining to operate as a state department, within the state's hiring, procurement and contracting rules.

The areas of greatest concern are in hiring and retaining trained employees, procurement of spare parts for maintenance and repair, and entering into short-term contracts where advantageous, for the electricity needed to power the project's pumps and valves.

With the exception of the operations of the Coastal Branch, the State Water Project is run by employees of the Department of Water Resources. Though the costs of the State Water Project are covered by revenues from state water contractors, the project is subject to the same hiring restrictions as most other state departments and furlough requirements. Unlike many state departments however, the project is expected to provide service seven days a week, 24 hours a day.

The project's business operations – developing contracts with customers, creating budgets, hiring, determining pay and job classifications, purchasing equipment and supplies such as power – all are subject to the regular protocols that apply to the rest of the Department of Water Resources, and are subject as well to the requirements of the state control agencies – the Department of Finance, the State Personnel Board, the Department of Personnel Administration and the Department of General Services.

Purchasing power is an important consideration for the State Water Project, which generates only 20 percent of its energy needs. As California's largest power user, the state must buy power in competitive markets to supplement what the project produces. By contrast, the Central Valley Project makes more electricity than it consumes, which it sells to the Western Area Power Administration, a marketing arm of the U.S. Department of Energy.

Constraints Limit Project Efficiency

State managers and the project's contractors have told the Commission of their concerns that personnel practices dictated by state civil service rules and contracting protocols required by state procurement policies are diminishing the project's efficiency at a time when many of its physical assets, such as its giant pumps near Tracy and its hydroelectric plant at Lake Oroville, are wearing out. Environmental restrictions create additional operating constraints that, with greater staffing flexibility, project operators could manage more efficiently.

While they were in effect, court-imposed limits on pumping in the south Delta narrowed the window within which the project could move water from the Delta to the California Aqueduct and make deliveries to the San Joaquin Valley, Southern California and to Bay Area cities. The reduced opportunity to schedule pumping put a premium on operational availability of the project's facilities. At the same time, the combination of deferred maintenance and repair and vacancies caused by high staff turnover and retirements – fueled by pay differentials with nearby water districts – reduced the project's operational availability from a peak of 93 percent in 2004 to 85 percent through July 2009, according to an internal department analysis. When the project had the clearance to move water, it did not always have the operational availability to make the most of the opportunity, Ralph Torres, Department of Water Resources deputy director for the State Water Project, told Commission staff.[73] His concerns were echoed by water contractors who add that out-of-date job classifications and pay scales further tie the hands of project operators.[74]

A departmental pay analysis of skilled trade workers through the rank of supervisor showed a gap of up to 54 percent with competing water districts, such as the Metropolitan Water District of Southern California. The same analysis showed that the average level of experience has dropped from the department's preferred 15 years in field divisions and now ranges from five to eight years.

"Workers can, and have, gone straight down the road to do virtually identical jobs for a lot more money," Mr. Torres told the Commission. Less than two miles from the State Water Project's Banks Pumping Station is the Central Valley Project's C.W. "Bill" Jones Pumping Plant, operated by the San Luis Delta-Mendota Canal Water Authority under contract to the federal Central Valley Project.

Contractors told Commission staff that the state's four-year apprenticeship program – which costs the state up to $400,000 in

training costs for each employee – attracts candidates to the project, and attracts contractors to the trained workers once they have completed their apprenticeship.[75] As examples of the operational costs of deferred maintenance and slowness of the procurement process, contractors point to outages of hydroelectric units at Oroville and the delay of more than two years to replace the computer communications system that links the project's activity of equipment at each location, a problem exacerbated by the current system's age and lack of spare parts.

Procurement requirements also increase the delay in purchasing replacement parts, such as the giant valves used in the pumps at the Banks Pumping Station, which because of their size and special application, have few manufacturers. Added delays further reduce the pumps' operational availability.

In testimony to the Commission, Lester Snow, then-director of the Department of Water Resources, detailed two additional ways in which the State Water Project, in its enterprise role, is put at a disadvantage by state administrative rules designed for all other state agencies:[76]

- As California's largest single consumer of energy, and the state's fourth largest producer of hydroelectric power, the State Water Project is a significant player in electric energy markets. Meeting power needs constitute a major part of managing the project. When the department's 30-year transmission interconnection agreement with Southern California Edison was expiring, the department renegotiated a new agreement for another 30 years. The Department of General Services denied the 30-year term and required the Department of Water Resources to contract for five years, on the basis that new opportunities could develop or new players could enter the market during that time. This reflected the control agency's unfamiliarity with the transmission business, Mr. Snow testified, given the small likelihood that another entity would, on a speculative basis, invest heavily to build parallel transmission lines to bid for the state's contract, as rates are reviewed and approved for reasonableness by the Federal Energy Regulatory Commission. The contract expires in 2010, requiring Department of Water Resources staff to begin the bid process again.
- Separately, the Department of Water Resources, because of contract negotiating conditions, is locked out of key electronic trading markets that would allow the state to buy and sell electric power on a spot basis as its needs demanded, costing the state an estimated $5 million a year. On a real-time basis, the problem is compounded by the limited number of participants outside the electronic exchange, Mr. Snow testified.

The application of state administrative rules and procedures on the State Water Project can increase delays and missed opportunities with little regard to the implications for those paying the bills, the contractors and ultimately all California water users. This has the further consequence of separating decision-making from risk, as procedures designed for internal administrative control do not have to consider the operational demands of serving external customers, or the costs of failing to do so, according to testimony from Roger Patterson, assistant general manager for the Metropolitan Water District, whose members account for roughly half the project's revenues each year.[77]

The administrative conditions that dictate how the project operates are a point of contention for the contractors, Laura King Moon, assistant general manager of the State Water Contractors, testified to the Commission:

> "Administering the SWP in today's changed environment has resulted in a heavy burden on DWR personnel and management. Although the SWP contractors completely fund all the water supply portions of capital and operations and maintenance activities related to the SWP through direct payments made under their contractors with DWR, the SWP is still subject to all personnel, contract and management requirements placed on other state departments that rely solely on taxpayer money from the General Fund. This has negatively impacted the ability of DWR to adequately staff and operate the SWP."[78]

When the State Water Project started deliveries in the 1960s and had the lead in expertise and set the bar for operational sophistication, this was understandable, as few local water agencies had the experience or ability to contribute to operations and maintenance. In the decades since, however, these local agencies have developed considerable expertise in running large systems of their own. Large water districts have built canals and reservoirs and developed groundwater storage and buy and sell electricity for their own needs. They also have created information technology systems to track water use at the household and business level and bill for service and collect payments, often for millions of customers. During the same period, the state's capabilities have eroded.[79]

In some cases, contractors have developed in-house capacity for some work that can benefit the project. The Department of Water Resources, for example, contracts with the Metropolitan Water District's machine shop for some services, saving the state the overhead costs of maintaining duplicative capacity.

"No longer do local water agencies wait idly by for the state or federal governments to take the lead in building massive water projects for their benefit. Examples of this are Diamond Valley Reservoir constructed by Metropolitan Water District of Southern California and Los Vaqueros Reservoir constructed by Contra Costa Water District. No longer is it necessary for large infrastructure projects to be centrally operated, managed, or maintained," Ms. Moon testified.

In an effort to improve efficiency, contractors formed the State Water Contractors Authority as a joint powers authority under state law to assist the Department of Water Resources with managing its contracting and personnel constraints.

Placed as it is in the Department of Water Resources, the State Water Project is not able to best serve the needs of its contractors and their customers or the public good of the state as a whole. The governance structure that was established for planning, design and construction of the State Water Project is more than five decades old and, while it may have been appropriate for those tasks, the structure no longer fits the needs of the project, or the needs of Californians, now that it is in operational mode. The project's mission is of broad public interest to all Californians, not just to those who receive water through the project, as the project's reliable and efficient operation is central to the state's economy and quality of life of its citizens.

The current structure also does not serve the state's mission of water management and planning to meet California's current and future water needs. The functions of water management and planning at times are at odds with the department's water storage and delivery obligations. More often, the immediate needs of the operating function make it difficult to focus on the longer-term need for water planning.

The presence of the project within the department presents an obstacle to integrating water rights accounting and administration into a comprehensive approach to planning and management, such as that found in most other western states.

The past 50 years have seen tremendous changes in society, the environment and in the technology available to manage and operate complex systems. If California is to ensure the success of the State Water Project, it must recognize that the current structure is unsustainable, and prevents the state from uniting other functions essential to managing California's water resources and planning for its future. California's leaders must engage in the discussion of the current structure's shortcomings and consider options that both enhance the

project's reliability and performance, and allow for a comprehensive approach to water planning and management.

Creating an Independent State Water Project

The Commission recommends separating the water operations function of the State Water Project from the Department of Water Resources' functions of planning and water management through the establishment of a state-owned water authority to operate the project. The project's reservoirs, dams, canals, pumps and power plants from Lake Oroville to Riverside County should remain the property of the state. These assets were financed through general obligation bonds and their continued control by the state benefits the broad public interest in California's economy and quality of life, which include the project's role in flood prevention and recreation, and its impact of its operations on the environment. The project should remain state-owned as a special purpose entity, though the new entity's management should be released from the state government hiring, job classification, procurement and contracting rules. Such rules have been developed for state departments to safeguard taxpayer money. They are not cost-effective for a competitive, contractor-funded enterprise whose efficiency and reliability are critical to California's economy and quality of life, and where contractors can be relied upon to demand efficiency, accountability and transparency. The argument has been made that the contracting and personnel issues could be resolved by modernizing the administrative requirements short of forming an independent entity. This remedy, however, would not resolve the conflict within the Department of Water Resources between its planning and management functions and its operations function of running the project.

Such a reorganization also would remove the existing conflict between the Department of Water Resources' statewide obligations for water management, planning and flood protection, and its more focused obligations to contractors, Metropolitan's Mr. Patterson told the Commission.[80]

Establishing the project as an independent state-owned water entity would allow the project to hire as needed, and offer pay levels sufficient to attract and keep skilled employees and move quickly to address maintenance backlogs and repairs, increasing operational availability. It also would create greater flexibility in contracting, whether for replacing spare parts for which few sources exist, hiring consultants for short-term needs or making plans for significant system upgrades or expansions. Contracting guidelines that recognized the importance of cost-effectiveness and system reliability could allow the project to develop

more efficient energy purchasing strategies, including tapping real-time electric power markets, which could save money and enhance power reliability. Improving project efficiency and operational availability would address operational concerns about water reliability from the project side. Separating the project from the planning and management functions would allow the new Department of Water Management to focus on those tasks, increasing the department's ability to address water reliability.

Separating the operations of the project also could enhance transparency, making clear to the Legislature and taxpayers the true cost of running the project and, separately, the full costs of the planning, water use management, flood protection and dam safety services provided by the Department of Water Resources. The Legislative Analyst's Office has repeatedly recommended putting the full extent of the project's books into the department's formal budget for legislative review, in part to settle a long-running question of how costs are allocated for non-contractor related expenses related to the project, such as the recreational use of the project's reservoirs, environmental protection and flood prevention. The State Water Contractors have expressed interest in having a greater say in how spending decisions are made. Supporters of the department's non-project activities privately express the concern that, absent the State Water Project and its contractor revenues, the department's resources might be too little to sustain a long-term strategy of changing how California uses water. The sensitivity surrounding the subject is all the more reason for openness.

Operating as a separate entity, the project would hold the water rights currently held by the Department of Water Resources. This represents a tremendous asset for the new entity, as well as an accountability mechanism that would allow the state to use water rights regulation to ensure the new entity operates according to its permits and licenses and makes reasonable and beneficial use of a public good. The new Department of Water Management would retain responsibility for recreation and other non-contractor related uses of State Water Project facilities, as well as flood protection and dam safety.

The department should interact with the project by integrating its planning and management roles with its water rights administration and enforcement role. The State Water Project regularly has issues involving its water rights come up before the State Water Board, often in regard to water quality, specifically regarding Delta salinity. The department, in measuring supply and determining instream flow needs, would be establishing water availability criteria within which the project would have to operate. Analogously, the project would have to operate within the water quality requirements set by the State Water Board. A key

Department of Water Management player in this relationship would be the Delta water master, the position established in the 2009 legislation, who in the existing governance structure, represents a link between the State Water Board and the Delta Stewardship Council.

Independent Governance for State Water Project

A number of options exist for what form the legal entity should take for an independent State Water Project, and the Legislature has the ability to create a new form should none of the existing examples prove acceptable. Both the Central Utah Project and the Central Arizona Project are run by special districts, which are structured slightly differently to reflect differences in project histories and missions.

The Central Utah Project is governed by the Central Utah Water Conservancy District, which is a political subdivision of the State of Utah. The district contracts with the federal government and acts as a water wholesaler to cities and agencies. The district, which represents the citizens of a 10-county region, has responsibility to plan, design, construct, operate and maintain project facilities. It also administers and facilitates water sales and is the party responsible for repaying the federal government for the reimbursable costs of the Central Utah Project.[81] The project also is subject to the oversight of the Utah Reclamation and Conservation Commission, a federal commission created by the 1992 Central Utah Project Completion Act to provide funding for the project and to balance water delivery and environmental interests.[82]

The Central Arizona Water Conservation District is a public improvement district set up as a municipal corporation, with the similar goals of constructing, operating and managing the Central Arizona Project and repaying the federal government. Unlike California's State Water Project, the Central Arizona Project was built to deliver Colorado River water to just three counties in which the state's population was concentrated, as well as the region's significant agriculture industry.[83]

The independent State Water Project entity could take other forms, such as a public authority, including a revival of California's State Water Project Authority, special districts and government corporations. Sarah Bates, a water resources specialist at the University of Montana's Center for Natural Resources and Environmental Policy, emphasized in her study of governance options for the State Water Project that policy-makers, in distinguishing among forms, should focus on desired characteristics, such as independence of control, board membership and organizational authority.[84]

The State Water Project functions as a utility, and often is described as such, though legally, as Ms. Bates points out, a utility is substantively quite different. In general, a utility delivers a public service and is given monopoly status by law in return for serving all customers in a given defined area and charging reasonable, non-discriminatory rates. In California, investor-owned utilities, and their rates, are regulated by the California Public Utilities Commission, a body whose jurisdiction does not extend to the State Water Project.

More important than a specific legal form is the issue of independence for the State Water Project entity. The membership of the project's board should represent the interests of the state as a whole, rather than reserving seats for specific areas of expertise or special interest. Members should be appointed by the governor, confirmed by the Senate and be allowed to serve full terms and be eligible for reappointment. Board members should serve overlapping terms to ensure institutional continuity and to bolster board autonomy.

The Commission examined several governance models, including those of the Central Arizona Project, governed by elected members from three counties served by the project, and the Central Utah Project, which is governed by the Central Utah Water Conservancy District, made up of 18 trustees representing a balance of 10 rural and urban central Utah counties. The Commission also took into consideration its studies of the California Bay Delta Authority and CALFED in 2005, and the state and regional water boards in 2009.

In testimony and interviews, the state water contractors recommended that customers of the project be represented on the board, much as member water districts serve on the Metropolitan Water District Board. Given the decades of disputes and criticism from environmentalists and others about how the water project has been operated, this option appears ripe for generating further conflict. Creating specific board positions that represent different stakeholder perspectives also has been proposed. Left in place, however, such structures can encourage a board to focus on a parochial agenda and inhibit its ability to adapt to broader societal changes. Such a structure also creates the potential for polarization, a problem that already afflicts much of the water debate.

One model that appears to have particular relevance for California is the governance structure used by the California Independent System Operator (ISO), which operates 80 percent the state's wholesale high-voltage electricity grid. The structure was created during California's energy crisis after the Federal Energy Regulatory Commission rejected the state's existing Independent System Operator governing structure as insufficiently independent of energy market participants. Today, the

California ISO has a board of five members, appointed by the governor and confirmed by the Senate. When there is a board opening, the ISO Board of Governors hires a nationally recognized search firm to develop a slate of candidates for an open board position. The candidates then are ranked by a formal representative stakeholder group. The list of candidates, along with the ranking, then is forwarded to the governor.[85]

Closer State-Federal Coordination of Projects

An independent state-owned water project also would have more flexibility to contract with the kind of joint powers authorities that now operate much of the Central Valley Project, such as the San Luis and Delta-Mendota Water Authority or, to the north, the Tehama-Colusa Canal Authority. The Department of Water Resources already has explored such arrangements through its contract with the Central Coast Water Authority to operate and maintain much of the project's Coastal Branch Aqueduct. The authority, formed in 1991 to help finance, finish and operate the 116-mile branch off the California Aqueduct, is made up of water agencies and cities in San Luis Obispo and Santa Barbara counties.

Good Governance for State Project

A governance structure for an independent State Water Project should have the following attributes:

- Sufficient institutional independence from the Department of Water Resources to operate more competitively in the utility market, outside state agency contracting and personnel requirements;
- Governing board empowered to provide policy and management oversight, with members who have experience with issues arising in project operation and who are dedicated to the project's broad public mission;
- Regular and organized input from stakeholders (including, but not limited to, the State Water Contractors) through a broadly representative stakeholder advisory committee and/or stakeholder nomination process to choose governing board members; and,
- Regular and organized input from independent experts through special focus advisory boards to address highly technical aspects of operations, marketing and regulatory compliance.

Sources: Sarah Bates, Senior Associate, Center for Natural Resources and Environmental Policy, University of Montana. March 4, 2010. "California State Water Project Governance Options, review draft." Also, Sarah Bates. September 24, 2009. Written testimony to the Commission.

A new joint powers authority formed in 2009, the State and Federal Contractors Water Agency, in recognition of the shared interests of state and federal contractors in the Bay Delta Conservation Plan. The members also recognize the joint powers authority's potential as a legal entity capable of offering the same kind of operating relationships to the State Water Project as federal water contractors currently provide for the Central Valley Project.

Through a Coordinated Operations Agreement signed in 1986, the Department of Water Resources and the U.S. Bureau of Reclamation have increasingly coordinated the operations of the two project's various facilities, most importantly, coordinated dam releases and Delta pumping to meet Delta water quality standards and flow objectives, as well as operations of the San Luis Reservoir and San Luis Canal. The agreement also allows the state project to move water for the Central Valley Project

and for the Central Valley Project to sell water to the State Water Project.[86]

While the agreement has increased operational and institutional coordination, the projects could benefit from closer strategic coordination to meet longer term needs or broader objectives. Some of these possibilities are outlined in the State Water Plan's system reoperations discussion, which explores ways to "reoperate" reservoirs and dams to achieve multiple goals. In this, the state can take advantage of conjunctive storage strategies being developed at the local level, such as the work being done by the Nature Conservancy, or the demonstration project underway with Glenn-Colusa Irrigation District and the Natural Heritage Institute to rethink how the Central Valley Project's Lake Shasta and the State Water Project's Lake Oroville hold reservoir water that otherwise would have to be released for flood control purposes. The project, supported by the Department of Water Resources and the U.S. Bureau of Reclamation, has been looking at ways, through a basin-wide integrated water management plan, to link use of Lake Shasta and Lake Oroville to the local groundwater system, with the tri-fold goal of increasing supply reliability and flexibility, reducing the threat of groundwater overuse and providing water for environmental restoration.

Pursuing such strategies requires coordination of the two projects as well as an integrated view of water system needs and conditions, including comparative evaporation rates, available surface water, groundwater basin capacity and the level and timing of surplus Delta outflows. This could help develop a shared strategy for greater interconnections between the two projects, operationally as well as physically, such as planning for additional intertie between project works in the San Joaquin Valley to facilitate transfers and storage.

At an administrative level, the state could advance the integration of the two systems – and streamline the water transfer process – by permanently combining the place of use designations for the State Water Project and the Central Valley Project for transfers for the San Joaquin Valley, particularly for water transfers within the valley.

Conjunctive Management of Surface and Groundwater

Coordinating reoperation plans with the integrated regional water management planning programs in the Department of Water Management could allow enhanced reservoir management to incorporate groundwater storage as well. The Nature Conservancy is interested in whether water made available from reoperating Folsom Dam or Oroville Dam can be used to recharge a south Sacramento County aquifer. Recharging the aquifer when water is available during non-irrigation months could provide additional storage at a cost lower than new surface storage.

With proper planning and incentives, such conjunctive storage strategies could be extended to replenishing aquifers that support important habitat conditions as well. The Cosumnes River near Sacramento offers a vivid example of the situation. There, the Nature Conservancy and a coalition of partners are working to protect and restore riparian habitat and the Chinook Salmon run. Raising groundwater levels could help reestablish the connection between the southern Sacramento County aquifer and the Cosumnes, which would allow the "rewetted" river to flow earlier in the rainy season, reducing impediments to successful Chinook spawning.

Sources: Maurice Hall, Senior Hydrologist, California Water Program, The Nature Conservancy. January 2010. Written testimony to the Commission. Also, Rachel Hersh-Burdick. 2008. "Effects of Groundwater Management Strategies on the Greater Sacramento Area Water Supply." Thesis submitted in partial satisfaction of the requirements for the degree of Master of Science 2008 in civil and environmental engineering, Office of Graduate Studies, University of California, Davis.

The State Water Board approved a temporary measure in 2009[87] at the request of the Department of Water Resources and the U.S. Bureau of Reclamation to alleviate shortages for growers who had seen their project allocations reduced. The state could further enhance system efficiency by allowing water to be pumped from either the state's Banks Pumping Station or the nearby Central Valley Project's Jones Pumping Plant, depending on which station at the time had excess capacity, as long as the actions complied with the existing environmental protections.

Ultimately, One System

The creation of an independent state-owned water authority should put the project on the path to ultimately merging the two water projects into one system under state control, as envisioned by project architects in its earliest days and repeatedly since. Such a combination would require an act of Congress to allow the title of the Central Valley Project assets to pass to the state. The Commission heard compelling testimony on the difficult issues involved in such a merger, including apportioning the remaining debt and managing the liability of the environmental damage caused by drainage of salts and other contaminants in the San Luis Drain and the cost of environmental remediation. Donald Glaser, Mid-Pacific regional director for the U.S. Bureau of Reclamation, which oversees the Central Valley Project, also pointed to the concerns that were raised by municipal utilities in Sacramento and Santa Clara, which purchase electric power generated by the Central Valley Project, during California's early-1990s merger attempt under Governor Pete Wilson. They expressed the fear that a merger with the State Water Project, a major consumer of electric power, might put their supplies at risk.[88]

Existing contracts and regulatory responsibilities would have to be honored and, though the complexity of such a combination should not be underestimated, the state would accrue significant benefits over time, Metropolitan Water's Roger Patterson told the Commission.[89] The benefits of combining systems include the ability to consolidate activities, including infrastructure operation and investment, giving the state's water managers the

State Water Project Structure

In testimony to the Commission, Lester Snow, then-director of the Department of Water Resources, summarized considerations for creating a new governance structure for the department and the State Water Project that emerged from an internal study of options for addressing limitations of the current structure on project operations.

- At a minimum, a new governance structure should be responsive to the unique (to state government) SWP requirements of utility operation in the areas of human resources and contracting;
- The multi-purpose benefits of the SWP include water supply, energy supply, water quality, recreation, flood control, and fish and wildlife enhancement which may need to be balanced in any alternative governance structure;
- Given the complexity and integration of the SWP supporting infrastructure within DWR, a phased approach to any alternative governance structure would need to be investigated and impacts to other programs of state importance assessed;
- As general obligation bonds and other public financing were used for the construction of the SWP, the benefits derived must benefit the people of California. This public trust obligation of the SWP must continue and be retained in any form of governance; and,
- Assignment of water rights to DWR for the development of the SWP must be retained by the State as these rights preserve the public interest.

Source: Lester Snow, then-director, Department of Water Resources. June 25, 2009. Written testimony to the Commission.

ability to create and implement a long-term strategy that takes into account all of the water project assets in California, whether reservoirs, dams, pumps or aqueducts.

A full merger also would simplify the process of working with multiple state and federal government agencies, as well as improve regulatory efficiency and effectiveness through the consolidation of water rights, which could aid further streamlining of water transfers. A merger would enable the consolidation of administrative staffs and allow the state to standardize contracts to suppliers, allowing the state to price water at levels that encourage the most efficient practices, eliminating price disparities among like users in the state and federal projects and shrinking the Central Valley Project's operating deficit.

DWR Staff and Roles Intertwined

Breaking the State Water Project out of the Department of Water Resources would require considerable thought and preparation. In addition to funding issues is legitimate concern from within the department that it would not be able to attract engineering and other specially trained professionals without the draw of the project, as well as the concern that it would lose the flexibility to pull people from different departments during emergencies, such as flooding. Separating operating functions from planning and management also would reduce career development opportunities – and the richness of understanding – gained by moving through different assignments within a larger department.

In his testimony, Mark Cowin, then-deputy director for integrated regional planning, said the current structure allows matrix-team approaches to such projects as purchasing and managing lands for flood projects or using lands set aside for State Water Project mitigation purposes to achieve optimal Swainson's hawk habitat. On such projects, the department can quickly draw on a wide variety of expertise across divisions. Such opportunities could be lost if the project were made independent.

In written testimony, Mr. Cowin expressed concerns that making the project independent would diminish the Department of Water Resources' organizational stability, given the department's uncertain bond funding:

> "Currently, as new programs and projects are implemented, staff with appropriate expertise and qualifications may move easily between divisions to take on a higher priority assignment. As programs and projects wind down, staff may be incorporated into a

> variety of other ongoing, funded projects. With the current level of inconsistency in funding for DWR programs, removal of the SWP could lead to instances where qualified staff cannot be identified in a timely manner to carry out high priority programs, or layoffs are necessary when programs end."

Such issues could be addressed through changes in the state's human resources policies and by establishing a consistent source of state funding to replace diminishing General Fund contributions and inconsistent general obligation bond proceeds, Mr. Cowin said.

Also a complication is that, as the State Water Project grew, its needs were integrated into work performed through the existing staff structure. Staff levels grew to accommodate the additional work, though the structures did not necessarily change. In many units, such as the one that measures the water content of Sierra snowpack, there is no easy delineation between work done for the project and work that contributes to the department's management and planning operations, Department of Water Resources Deputy Director Ralph Torres said.[90]

Department of Water Resources senior managers already have been exploring how different governance structures could address the limitations the project faces while preserving the overarching public interest responsibilities the department has as the state's water resources manager.[91]

As difficult as the transition would be, it is clear to the Commission that the State Water Project, as currently structured and managed, is unsustainable. Leaving water project operations within the Department of Water Resources only preserves the conflicts with the department's other roles and complicates efforts to make the project more efficient and reliable. The status quo also prevents the closer linkage of water rights accounting and water planning and management, and foregoes opportunities to forge closer operational ties with the Central Valley Project and the contractor-organized joint powers authorities which operate much of the project.

Recommendation 3: The governor and Legislature should create a separate, independent publicly owned entity, the California Water Authority, to operate the State Water Project and other current functions related to or influenced by the project's operations to improve transparency, efficiency and accountability. The new entity should work to further integrate its operations with those of the federal Central Valley Project, with the ultimate goal of merging the two systems under state ownership. In establishing the new entity, the state should:

- ❑ Create an independent oversight board, whose members represent the perspectives of statewide interests critical to the project's operations as well as the project's impact on the environment. The board should be manageable in size, and members should be able to serve full terms, with the option to be reappointed to an additional term. Board members should elect their own chair. Candidates should be nominated through a stakeholder process. The governor should appoint the members who must be confirmed by the Senate.
- ❑ Allow the entity to raise money through revenue bonds for infrastructure improvements, to be repaid by revenues from project operations.
- ❑ Encourage the entity to increase operational integration with the Central Valley Project, including re-operation of storage facilities to advance co-equal goals of water reliability and ecosystem health.
- ❑ Encourage the entity to pursue contracting opportunities with local water distribution districts and joint powers authorities where such arrangements create demonstrable value to the state and water users.
- ❑ Allow the entity to create its own job classifications and compensation structures that are competitive with comparable jobs in California water and power districts in order to attract, retain and develop high-quality personnel essential to maintaining project reliability.
- ❑ Enable the entity to enter into contracts that allow it to be fully competitive in short-term and long-term electricity markets.
- ❑ Require the entity to release an annual report to the public, with details on its annual budget, long-term capital plans, outstanding debt, operating expenses and revenues.
- ❑ Make the entity responsible for:
  - ✓ Operating the State Water Project to meet the co-equal goals of ecosystem health and water supply reliability.
  - ✓ Operating the State Water Project according to the terms and conditions of its water right permits.

- ✓ Storing, conveying and delivering water to contractors in the most cost-effective manner consistent with the long-term sustainability of the State Water Project.
- ✓ Maintaining reservoirs, dams, canals, pumps and other infrastructure assets essential to providing system reliability.

Conclusion

California's current water governance structure leaves the state ill-positioned for the challenge of managing its water resources in an era of unpredictable supply, population growth and the legal and political reality that more water will have to be devoted to the environment.

To assure California's quality of life and support a healthy economy and environment, the state needs a department focused solely on managing and planning California's water resources and future needs.

California must make better use of the water it has, which means changing patterns of behavior and expectations of plenty that have built up over decades. Change is difficult, rarely undertaken voluntarily, but metropolitan areas such as Los Angeles and Orange County demonstrate how urban areas can adapt and prosper, despite water constraints, just as growers in the Westlands Water District in the San Joaquin Valley have found ways to profit by making the most of uncertain water supplies.

Creating a Department of Water Management would allow the state to bring together now-separated functions to lead state-level efforts and guide regional efforts to make better use of existing supplies and better manage demand. These functions include planning and management now in the Department of Water Resources, instream flow analysis from the Department of Fish and Game and the water rights administration and enforcement from the State Water Resources Control Board, as well as the board's instream flow assessment activities directed by the Legislature.

As the Commission has found in many of its previous studies, California as a government lacks the capacity to collect important information, in this case, about water supply and water use. The state's water managers and water planners have no way to construct a comprehensive picture of how much water the state has, how much is being diverted and how that water is being used. The responsibilities for collecting this information are located in different parts of the government. Where the information exists, it is not readily shared or synthesized in a way that can inform decision-making. Though the 2009 water reforms were designed to improve the situation, the state does not know how much water is being

diverted by a large category of water rights holders, or how much groundwater is used each year and lacks a comprehensive assessment of how much water should remain in streams to support habitat and wildlife. Credible and effective water management and planning require a modern approach to inventory, a capacity California lacks. The reorganization the Commission recommends would bring together the state's existing data collection systems with the expectation that analysis of the combined databases would begin to build an overall picture of the state's water resources.

The Department of Water Management needs to better analyze information to build confidence and trust, and to create momentum for change. The state will never be able to predict long-term water supply, and legal challenges regarding rights and usage will most certainly persist. However, better collection and use of water data will create a more realistic picture of the state's water needs and water use and allow policy-makers to make more informed and transparent decisions.

The 2009 water reforms, if implemented well, will help reduce both urban water use through ambitious conservation goals and agricultural water use through incentives to conserve and implement water efficiency methods. Increasing the value of water can drive change, and more extensive use of water transfers is one way to increase the value of low-cost agricultural water, as well as to add flexibility to the system. A smoother, more efficient transfer process would allow growers in one part of the state to sell conserved water to users elsewhere, on a short-term or long-term basis. First, the state needs to overcome very real barriers, including the physical barrier of a damaged and dysfunctional Delta, administrative hurdles that stretch out the approval process, and the very real trust issues surrounding the fear of losing groundwater.

California's water governance has suffered from a lack of consistent funding. The state's reliance on bond funding for what should be considered fundamental, ongoing responsibilities of government is unsustainable, and given the interest costs incurred by such a strategy, both an inefficient use of public money and unfair to future taxpayers who will be paying off the bonds. Finding money for the ongoing operations of this new department understandably is a sensitive issue, particularly in the state's current budget situation. Still, the governor and Legislature must devise a funding mechanism – either through General Fund allocations, a fee system or some other system – that provides fair, consistent, predictable and transparent funding for its water planning and management responsibilities.

In lieu of a sustainable funding source, the state has relied on borrowing for much of its resources and environmental protection activities. Since

1996, the voters have authorized more than $20 billion in resources-related bond borrowing. Of that amount, more than $3 billion has yet to be appropriated. Almost none of the $1 billion authorized under 2006's Proposition 84 for integrated regional water management planning has been spent, though more than $470 million has been appropriated and much of that amount should be awarded by the end of the year. Today, debt service for general obligation bonds accounts for half of the General Fund's $1.8 billion contribution to the budgets of the Resources Agency and the Environmental Protection Agency.

The state's ability to finance long-term projects through borrowing rests on voters' confidence that the money will be spent wisely. California's leaders created the Water Commission for a proposed bond package that since has been delayed. Given the amount of resources-related bond debt already authorized, the state should charge this newly revived commission with oversight of the existing resources bond programs, whether located the in the Natural Resources Agency or elsewhere.

In the Department of Water Resources, insufficient funding for planning and management has created a dependency on the State Water Project for stability. The department was created through a reorganization to design, plan and build the project. Now, however, project construction is completed, and while the activities of operating the project are intertwined with the department's other activities, the mission of operating the project is often at odds with the department's planning and management goals. This conflict is reason enough to separate the operations of the project from the department's planning and management functions. Because the department holds water rights for the project, the state cannot join water rights administration and enforcement to water planning and management, another reason for relocating the project.

The third pertains to the operations of the project itself and their appropriateness for a state department run according to state administrative hiring and contracting rules. Such rules are necessary for most state departments to ensure fairness and to safeguard taxpayer dollars. Increasingly, however, they have contributed to the declining efficiency of the project, slowing the department's ability to do regular maintenance, make needed repairs or buy electric power at advantageous rates. Outdated job classifications, pay and hiring restrictions have hampered the department's ability to promote and retain skilled employees, leading to a loss of workforce experience and expertise and, in some cases, leaving project facilities shorthanded.

When environmental restrictions on pumping limited the project's ability to export water from the Delta, operational limitations imposed by staff

or maintenance issues created serious concerns about the project's ability to serve water users, which include 23 million Californians, businesses in major urban areas and growers in important agricultural regions. Uncertainty remains about what restrictions might be applied to future pumping activity, as do concerns about the project's operational availability.

The project no longer fits within the department built for its creation. To best serve the needs of its customers, and to serve California's broader flood protection, quality-of-life and environmental needs, the project should be relocated to a publicly owned special entity run by an independent board. This will allow the project to fulfill its mission and give the state's planning and management functions the autonomy to fulfill their equally important mission.

The water legislation of 2009 represented the biggest reforms since the landmark Porter-Cologne Water Quality Act 40 years earlier. California's water governance system has not changed in four decades and now is obsolete. Making the most of the legislative reforms will mean creating a governance structure capable of implementing them. The current governance structure was designed in a different time for different needs. Despite the difficulties involved, California's leaders must modernize the state's water governance structure to meet the needs of the future.

Appendices & Notes

- ✓ ***Public Hearing Witnesses***
- ✓ ***Public Meeting Participants***
- ✓ ***Transfer Attempts Timeline***
- ✓ ***2009 Water Legislation***
- ✓ ***Table on Governance Models***
- ✓ ***Water Rights Hearing Process***
- ✓ ***Glossary***
- ✓ ***Notes***

Appendix A

Public Hearing Witnesses

Public Hearing on Water Governance
April 23, 2009

Phillip Isenberg, Chair, Delta Vision Blue Ribbon Task Force

Laura King Moon, Assistant General Manager, State Water Contractors

Cynthia Koehler, Senior Consulting Attorney, Land, Water & Wildlife Program, Environmental Defense Fund

Jay Lund, Professor of Civil and Environmental Engineering, University of California, Davis

Jonas Minton, Water Policy Advisor, The Planning and Conservation League

Public Hearing on Water Governance
June 25, 2009

Sandra Fabritz-Whitney, Assistant Director, Water Management Division, Arizona Department of Water Resources

Ron Milligan, Operations Manager, Central Valley Operations Office, U.S. Bureau of Reclamation

Roger Patterson, Assistant General Manager – Strategic Water Initiatives, The Metropolitan Water District of Southern California

Lester Snow, then-Director, California Department of Water Resources

Dennis Strong, Director, Utah Division of Water Resources

Sid Wilson, General Manager, retired, Central Arizona Project

Public Hearing on Water Governance
September 24, 2009

Sarah Bates, Senior Associate, Center for Natural Resources and Environmental Policy, University of Montana

Mark Cowin, then-Deputy Director, Integrated Water Management, Department of Water Resources

Donald Glaser, Regional Director, Mid-Pacific Region, U.S. Bureau of Reclamation

Dean Misczynski, Retired Director, California Research Bureau

Richard Roos-Collins, Director of Legal Services, Natural Heritage Institute

Public Hearing on Water Governance
January 28, 2010

Byron Buck, Interim Executive Director, Federal-State Water Contractors Agency

Maurice Hall, Senior Hydrologist, California Water Program, The Nature Conservancy

Richard Howitt, Chair, Department of Agricultural and Resource Economics, University of California, Davis

Jonathan Parker, General Manager, Kern Water Bank Authority

Elizabeth Ann Rieke, Consultant, Resources Legacy Fund Foundation

Appendix B

Public Meeting Participants

Advisory Committee Meeting on Water Rights
June 30, 2009

Andrew Sawyer, Assistant Chief Counsel, State Water Resources Control Board

Vicky Whitney, Deputy Director, Division of Water Rights, State Water Resources Control Board

Advisory Committee Meeting on Water Rights
August 18, 2009

Byron Buck, interim Executive Director, State and Federal Contractors Water Agency

Dominic Dimare, Principal, Dimare, Van Vleck & Brown

Richard Frank, Executive Director, Center for Law, Energy and the Environment, University of California, Berkeley

Zeke Grader, Executive Director, Pacific Coast Federation of Fishermen's Association

Cynthia Koehler, Senior Consulting Attorney, Land, Water & Wildlife Program, Environmental Defense Fund

Michael Machado, Farmer, Consultant and Former State Senator

Tim O'Laughlin, Principal, O'Laughlin & Paris

Jason Peltier, Chief Deputy General Manager, Westlands Water District

Mark Rentz, Director of Regulatory Affairs, Association of California Water Agencies

Richard Roos-Collins, Director of Legal Services, Natural Heritage Institute

Andrew Sawyer, Assistant Chief Counsel, State Water Resources Control Board

Stuart Somach, Principal, Somach, Simmons & Dunn

Vicky Whitney, Deputy Director, Water Rights Division, State Water Resources Control Board

Carl Wilcox, Branch Chief, Water Branch, Department of Fish and Game

Leo Winternitz, Delta Project Director, The Nature Conservancy

Advisory Committee Meeting on Governance Models
September 23, 2009

Steve Arakawa, Manager, Bay-Delta Initiatives Program, Metropolitan Water District of Southern California

Sarah Bates, Senior Associate, Center for Natural Resources and Environmental Policy, University of Montana

Zeke Grader, Executive Director, Pacific Coast Federation of Fishermen's Association

Phil Isenberg, Principal, Isenberg/O'Haren Government Relations

Laura King Moon, Assistant General Manager, State Water Contractors

Cynthia Koehler, Senior Consulting Attorney, Land, Water & Wildlife Program, Environmental Defense Fund

Ralph Torres, Deputy Director, State Water Project, Department of Water Resources

Brent Walthall, Assistant General Manager, Kern County Water Agency

Craig Wilson, Manager, Statewide Water Programs, Water Branch, Department of Fish and Game

Advisory Committee Meeting on Water Rights and Water Quality
October14, 2009

Brian Gray, Professor, University of California Hastings College of Law

Richard Roos-Collins, Director of Legal Services, Natural Heritage Institute

Gary Wolff, Executive Director, StopWaste.Org

Advisory Committee Meeting on Water Conservation
November 18, 2009

Dave Bolland, Senior Regulatory Advocate, Association of California Water Agencies

Byron Buck, interim Executive Director, State and Federal Contractors Water Agency

Baryohay Davidoff, Chief, Office of Water Use Efficiency and Transfers, California Department of Water Resources

Lloyd Friar, Chief Executive Officer, L^2 Science

Peter Gleick, President, Pacific Institute for Studies in Development, Environment and Security

Todd Manley, Director, Government Relations, Northern California Water Association

Gus Meza, Senior Conservation Specialist, West Basin Municipal Water District

Linda Sheehan, Executive Director, California CoastKeeper Alliance

Mike Wade, Executive Director, Agricultural Water Management Council

Greg Young, Principal, Tully & Young Inc.

Advisory Committee Meeting on Water Transfers
January 27, 2010

Lynn Barris, Farmer, Butte Environmental Council

Thaddeus Bettner, General Manager, Glenn-Colusa Irrigation District

Dave Bolland, Senior Regulatory Advocate, Association of California Water Agencies

Byron Buck, interim Executive Director, State and Federal Contractors Water Agency

Ben Carter, President, Central Valley Flood Protection Board

Curtis Creel, Assistant General Manager, Kern County Agency

Joe Grindstaff, Deputy Secretary for Water Policy, Natural Resources Agency; Director, California Bay Delta Authority

Dean Messer, Chief of Water Transfers Office, Department of Water Resources

Marvin Meyers, Chief Executive Officer, Meyers Farming

Al Montna, Chief Executive Officer, Montna Farms

Roger Patterson, Assistant General Manager – Strategic Water Initiatives, Metropolitan Water District of Southern California

Andrew Sawyer, Assistant Chief Counsel, State Water Resources Control Board

Linda Sheehan, Executive Director, California CoastKeeper Alliance

Vicky Whitney, Deputy Director, Water Rights Division, State Water Resources Control Board

Richard Howitt, Chair, Department of Agricultural and Resource Economics, University of California, Davis

Dan Masnada, General Manager, Castaic Lake Water Agency

Martin McIntyre, General Manager, San Luis Water District

John Woodling, Executive Director, Sacramento Groundwater Authority

Greg Young, Principal, Tully & Young Inc.

Appendix C

Transfer Attempts Timeline

Central Valley Project transfer attempts History of previous efforts to turn over project to state of California	
1800s – early 1900s	***1891 – 1919:*** U.S. Geological Survey notes imbalance of water supply and water use and proposed federal construction of a statewide water development plan. The plan included diversion of water from the Sacramento River to the San Joaquin Valley. ***1921:*** State Legislature authorizes state engineer to prepare a comprehensive plan for development of all the state's water. Preliminary plan reported in 1923.
1930s	***1931:*** State Water Plan is issued. Not adopted by state until 1941. ***1933:*** State Legislature authorizes CVP as first unit of State Water Plan. Creates the California Project Authority. ***1934:*** State unable to fund project, requests federal construction. ***1935:*** U.S. secretary of the interior issues finding of feasibility. President Roosevelt grants relief funds and officially establishes CVP as a U.S. Bureau of Reclamation project. ***1937:*** Construction begins on Contra Costa Canal, with first deliveries in 1940. ***1939:*** Governor Culbert Olson wrote letter to Secretary of the Interior Harold Ickes, proposing state operation of CVP. Ickes is not very receptive.
1940s	***1945:*** Opponents to Bureau of Reclamation raise controversy relating to congressional policies of reclamation law under which CVP operates. Proposals for state takeover are introduced in state Legislature and Congress, but are not enacted. ***1947 – 1949:*** Joint Legislative Committee on Water Problems issues reports critical of reclamation policies and favorable to state control of CVP.
1950s	***1951:*** Official studies of the legal and financial feasibility of state purchase are resumed. State Water Authority gets approval to issue bonds for CVP purchase and new construction. ***1952:*** A major report on acquiring CVP is issued and the state Legislature appropriates $10 million for down payment and additional studies. ***1953:*** A separate proposal was advanced in the form of a congressional bill calling for Bureau of Reclamation to contract with state for operation and maintenance, but retain ownership. ***1954:*** Increased opposition to state purchase develops because of fear of reduced or eliminated subsidies. Governor Goodwin Knight expresses opposition and California congressional delegation expresses desire for expanded federal CVP.
1970s	***1973:*** DWR Director Gianelli expresses some interest in state takeover and a brief report is submitted to him, but no further action is taken.
1980s	***1982:*** DWR completes a reconnaissance report on state operation at request of the chairperson of the California Water Commission. ***1986:*** Assemblyman Isenberg introduces AB 2010, directing DWR to enter into negotiations to own or operate all or part of CVP. ***1988:*** DWR Director Kennedy states the coordinated operating agreement has improved cooperation between state and Bureau of Reclamation.
1990s	***1992:*** Governor Pete Wilson writes letter to Secretary of the Interior Manuel Lujan, proposing state control and operation of CVP. Lujan is receptive and negotiations begin.

Source: Bureau of Reclamation.

Appendix D

2009 Water Legislation

Delta Stewardship. SB 7X 1 (Simitian, Steinberg) established a framework to achieve the co-equal goals of providing a more reliable water supply to California and restoring and enhancing the Delta ecosystem. The bill created the Delta Stewardship Council as the primary governance agency, replacing the California Bay Delta Authority, with the main tasks of:

- Developing a Delta Plan to guide state and local actions in the Delta.
- Developing performance measures for the assessment and tracking of progress and changes to the health of the Delta ecosystem, fisheries, and water supply reliability;
- Determining if a state or local agency's project in the Delta is consistent with the Delta Plan.
- Determining the consistency of the Bay-Delta Conservation Plan with the co-equal goals.
- Ensuring that the Department of Fish and Game and the State Water Resources Control Board identify the water supply needs of the Delta estuary for use in determining the appropriate water diversions associated with BDCP by 2010 and instream flow criteria of major Delta water sources by 2012.

Groundwater Monitoring. SB 7x 6 (Steinberg) required that local agencies monitor the elevation of their groundwater
basins to better manage the resource during normal water years and drought conditions. The bill:

- Requires the Department of Water Resources to establish a priority schedule for the monitoring
- of groundwater basins and make recommendations to local entities to improve the monitoring programs.
- Requires the department to assist local monitoring entities with compliance.
- Allows local entities to determine on a regional basis how best to set up a groundwater monitoring program to meet local circumstances.
- Provides that if the local agencies fail to implement a monitoring program or fail to provide the required reports, the department may implement the groundwater monitoring program for that region and the local agency may loses eligibility for grants.

Statewide Water Conservation. SB 7X 7 (Steinberg) requires the development of agricultural water management plans and requires urban water agencies to reduce statewide per capita water consumption 20 percent by 2020. In addition, the law:

- Requires urban water suppliers to set an interim urban water use target and meet that target by December 31, 2015 and meet the overall target by December 31, 2020.
- Requires agricultural water suppliers to measure water deliveries and adopt a pricing structure for water customers based at least in part on quantity delivered, and, where feasible, implement additional measures to improve efficiency.
- Requires agricultural water suppliers to submit Agricultural Water Management Plans beginning December 31, 2012 that include information on efficiency measures they have undertaken and plan to undertake.

- Bars state grant funding for urban or agricultural water supplier not in compliance with the requirements of this bill relating to water conservation and efficient water management.
- Requires DWR, the State Water Resources Control Board, and other state agencies to develop a standardized water information reporting system to streamline water reporting.

Water Use and Reporting. SB 7X 8 (Steinberg) is aimed at improving accounting of the location and amount of water diversions under appropriative water rights as well as riparian and pre-1914 appropriative rights. Specifically, the bill:

- Removes an exemption from reporting water use by in-Delta water users.
- Redefines the types of diversions that are exempt from the reporting requirement.
- Assesses civil liability and monetary penalties on diverters who fail to submit the required reports, and for willful misstatements, and tampering with monitoring equipment.
- Appropriates previously authorized bond money for projects that reduce dependence on the Delta, flood protection and reducing the risk of levee failure, as well as grants for stormwater management and developing or implementing National Community Conservation plans.
- Appropriates $3.75 million for the State Water Resources Control Board for staff positions for water diversion reporting, monitoring and enforcement.

Water Bond. SB 7X 2 (Cogdill) proposed an $11.14 billion general obligation bond for the November 2010 ballot to provide money for a variety of water infrastructure and projects to improve ecosystem health and water supply reliability. Major categories included:

- Delta sustainability: $2.25 billion
- Water supply reliability: $1.4 billion
- Statewide water system operational improvement: $3 billion (eligible projects include surface and groundwater storage)
- Groundwater Drought relief: $455 million
- protection and water quality: $1 billion
- Water recycling and conservation: $1.25 billion
- Conservation and watershed protection: $1.79 billion

Appendix E

Table on Governance Models

The following is a chart from "California State Water Project Governance Options," a March 4, 2010, report by the Center for Natural Resources and Environmental Policy at the University of Montana. Sarah Bates, a senior associate with the center, presented her draft findings to the Commission at an advisory committee meeting and a hearing in September 2009.

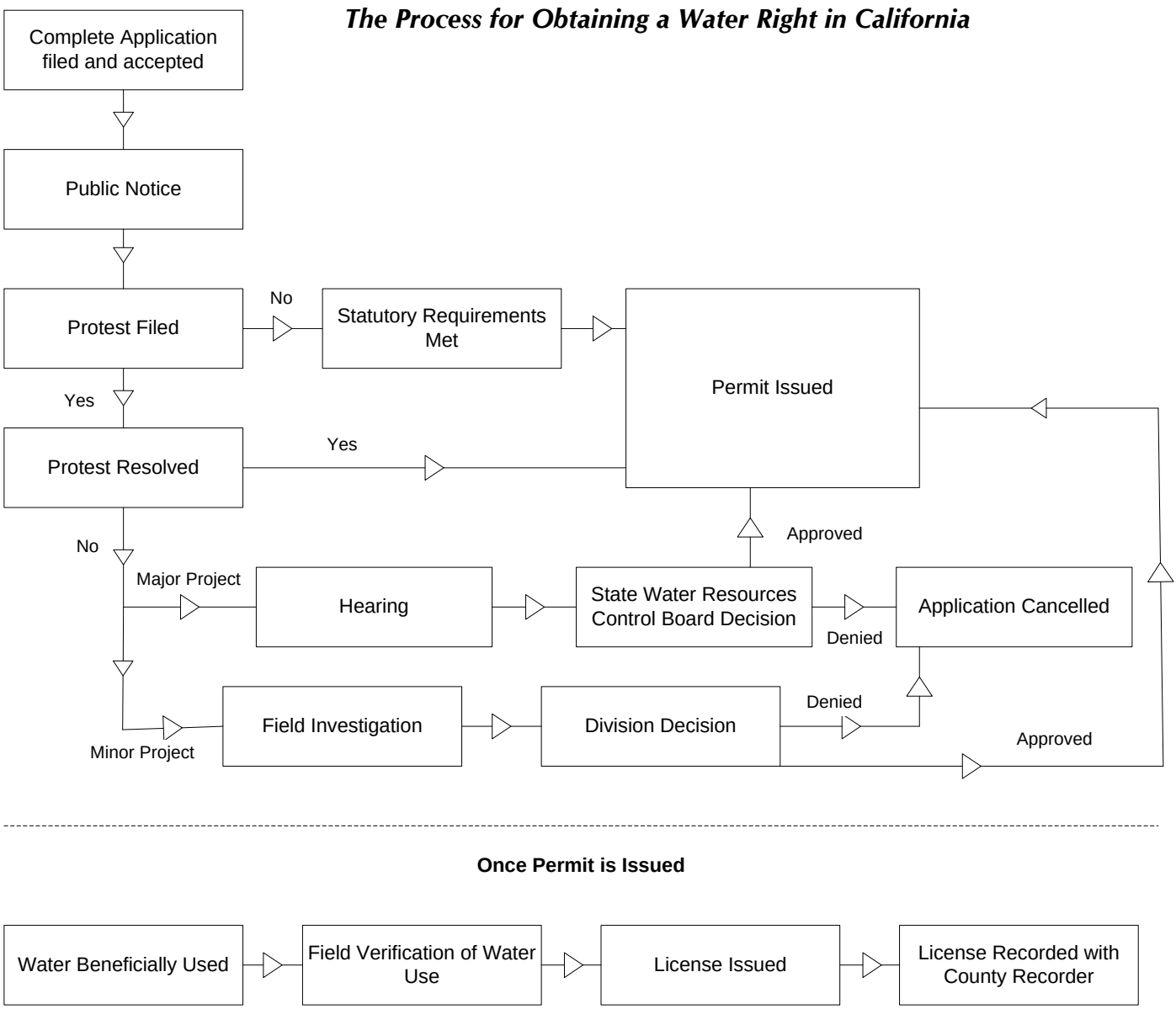
	Southern California Public Power Authority	**California Independent System Operator**	**Central Arizona Water Conservation District**	**Central Utah Water Conservancy District**	**Tennessee Valley Authority**	**Northern Colorado Water Conservancy District**	**Denver Water**
Type of Entity	**Joint powers authority**	**Nonprofit public benefit corporation**	**Municipal corporation, subdivision of the state of Arizona**	**Political subdivision of the State of Utah**	**Public corporation, wholly owned by the federal government**	**Quasi-municipal entity, subdivision of the State of Colorado**	**Municipal corporation, operated as an independent entity of the City and County of Denver**
Board Composition	12-member Board of Directors	5-member Board of Governors	15-member Board of Directors; weighted voting based on county population	18-member Board of Trustees	9-member Board of Directors	12-member Board of Directors	5-member Board of Water Commissioners
Board Selection	Members represent each of the member entities	Appointed by Governor, confirmed by Senate	Elected by voters in county of residence Vacancies filled by Governor's appointment	Appointed by Governor, confirmed by Senate	Appointed by President, confirmed by Senate	Appointed by District Court Judges in judicial districts within NCWCD boundaries	Appointed by Mayor of Denver, described as "non-political" in by-laws
Nomination Process	None; members serve in ex officio capacity	Independent search firm provides qualified candidates for review by 36-member Nomination Committee; committee submits 4 candidates for each open seat	Nonpartisan candidates obtain signatures to appear on ballot in general election in one of CAP's three service counties	County commissioners submit 3 nominees per open trustee position	Sole discretion of the President to make nominations	Residents can apply for openings	None specified. Board members must be over 25 years old and residents of Denver

	Southern California Public Power Authority	California Independent System Operator	Central Arizona Water Conservation District	Central Utah Water Conservancy District	Tennessee Valley Authority	Northern Colorado Water Conservancy District	Denver Water
Board Service	Undefined; linked to employment at member entity	3-year terms, unlimited renewals	6-year terms No compensation	4-year terms	5-year terms	4-year terms $2,400 annual compensation	6-year terms $600 annual compensation
Board Authority		Management oversight Trading rules for energy grid	Management oversight Execute contracts and legal documents Establish revenue bonding program	Management oversight Approve rules for water management and delivery	Management oversight Strategic planning	Management oversight Hold and transfer water and water rights as necessary for operation of facilities	Management oversight Set water rates Personnel decisions Contracting authority
Board Oversight	Direct oversight by member entities	Calif. Electricity Oversight Board; Federal Energy Regulatory Commission	U.S. Dept. Interior oversees allocation of CAP water and changes to CAP delivery contracts		Audits conducted by presidentially appointed U.S. Inspector General to oversee TVA; oversight hearings by U.S. House Trans. & Infrastructure Comm., Senate Env't & Public Works Comm.	District Court may remove a director, but may not review water allocation decisions	Annual audits by City and County of Denver

	Southern California Public Power Authority	**California Independent System Operator**	**Central Arizona Water Conservation District**	**Central Utah Water Conservancy District**	**Tennessee Valley Authority**	**Northern Colorado Water Conservancy District**	**Denver Water**
Board Meetings		At least every six weeks					Twice per month Open and public
Stakeholder Participation		Stakeholders Affairs group			15-member Planning Advisory Panel		10-member Citizens Advisory Committee
Associated Entities		Market Survey Committee (experts)	Arizona Groundwater Replenishment District	Utah Reclamation Mitigation and Conservation Commission; Utah Water Conservation Advisory Board			

Appendix F

Water Rights Hearing Process



Source: State Water Resources Control Board.

Appendix G

Glossary

Acre foot: A measurement of volume that is equal to one foot of water across a 66-foot-by-660-foot area. Roughly 365,000 acre feet of water can supply one to two average families of four for a year.

Aquifer: A pool of water under ground that may be fed by a nearby stream or river or by percolating surface water.

CALFED Bay-Delta Program: A collaboration established in 2003 of federal and state agencies that was charged with shoring up water supplies and Delta levees, improving water quality and restoring the ecosystem.

Central Valley Project (CVP): The 500-mile federal water storage and conveyance system that supplies water to 3 million acres of water and 2 million urban customers. Construction began in 1933. It is sponsored and managed by the U.S. Bureau of Reclamation and provides flood protection and recreation.

Department of Water Resources (DWR): The state agency that is charged with many of California's water supply management functions and with the operation of the State Water Project.

Diversion: The act of drawing water from a river or stream.

Instream flow: The amount of water left in a stream or river to support fish and wildlife habitat.

Integrated Regional Water Management: An approach to water management among local government organizations in which the agencies coordinate projects and plans. Programs are funded through bond money and local matches.

"Paper water": The amount of water represented by the face amount of an appropriative water right or by existing claims by other rights holders.

Pumping restrictions: Court-ordered restrictions on Delta water exports through the state and federal pumping stations designed to prevent harm to endangered fish species.

Salt water intrusion: The movement of salt water into freshwater aquifers.

State Water Project (SWP): The 701-mile state system of reservoirs, dams, hydroelectric generators, canals and aqueduct that delivers water to 23 million people and 755,000 acres of farmland. It is operated by the Department of Water Resources.

State Water Resources Control Board: The state regulatory board that is responsible for allocating and enforcing surface water rights in California and for developing and implementing water quality regulations.

U.S. Bureau of Reclamation: The federal agency that sponsors and manages the Central Valley Project.

Water districts: Local agencies that supply surface water to customers.

"Wet water": The amount of water actually used by those with water rights or existing claims to water.

Notes

1. Note: Proposition 50, passed in 2002, approved $500,000 for competitive grants, to be awarded through a coordinated effort by the Department of Water Resources and the State Water Resources Control Board. Proposition 86, passed in 2006, provided $1 billion for Integrated Regional Water Management planning and implementation. Proposition 1E, passed the same year.
2. Mark Cowin, then-Deputy Director, Integrated Water Management, Department of Water Resources. September 24, 2009. Testimony to the Commission. Also, Legislative Analyst's Office. October 2008. "California's Water, An LAO Primer." Page 38.
3. Legislative Analyst's Office. October 2008. "California's Water, An LAO Primer." Page 38.
4. California Department of Finance. July 2007. "Population Projections for California and Its Counties 2000-2050, by Age, Gender and Race/Ethnicity."
5. California Department of Water Resources. 2010. California Water Plan. Also, Delta Vision Blue Ribbon Task Force. October 2008. Strategic Plan.
6. John Ellis, Fresno Bee. May 28, 2010. "Judge hands a victory to water users in smelt battle."
7. United States Bureau of Reclamation. History of the Central Valley Project. http://www.usbr.gov/history/cvpintro.html
8. California Department of Water Resources. History of the State Water Project.
9. Lester Snow, then-Director, Department of Water Resources. June 25, 2009. Written testimony to the Commission.
10. Metropolitan Water District of Southern California.
11. Government Accountability Office. December 18, 2007. "Bureau of Reclamation: Reimbursement of California's Central Valley Project Capital Construction Costs by San Luis Unit Irrigation Water Districts." http://www.gao.gov/products/GAO-08-307R.
12. Delta Vision. September 18, 2008. "Overview on Central Valley Project Financing, Cost Allocation, and Repayment Issues, ENTRIX." Consultant reports.
13. San Luis & Delta-Mendota Water Authority. http://www.sldmwa.org/about_sldmwa.htm
14. Ron Milligan, Operations Manager, Central Valley Operations Office, U.S. Bureau of Reclamation. June 25, 2009. Written testimony to the Commission.
15. Donald Glaser, Regional Director, Mid-Pacific Region, U.S. Bureau of Reclamation. September 24, 2009. Oral testimony to the Commission.
16. Elliot Diringer, San Francisco Chronicle. September 12, 1992. Donald Glaser. See endnote 15. Also personal communication. September 3, 2009.

17. Assembly Interim Committee on Government Organization. February 8, 1956. "A Department of Water Resources for California; Report of the Assembly Interim Committee on Government Organization." Page 18. Note: "There is an inherent conflict in the roles of the State Engineer as planner and builder of projects on the one hand and adjudicator of water rights on the other."

18. Assembly Interim Committee on Government Organization. February 8, 1956. "A Department of Water Resources for California; Report of the Assembly Interim Committee on Government Organization." Page 42. Note: "The major portion of the State's activities relating to the investigation, conservation, control, and utilization of water are conducted by the Division of Water Resources. The principal functions of this agency are summarized below: collection of basic data on stream flow and ground water; action upon applications to appropriate un-appropriated water; determination of existing water rights; administration of the watermaster program; maintenance and operation of certain units of the Sacramento River Flood Control Project; regulation of the safety of dams, other than those constructed and operated by the Federal Government; review of federal reports and investigation of water quality problems. During recent years there has been increasing emphasis on the planning function of the division, and much of the work in this connection has been conducted on behalf of the State Water Resources Board and the Water Project Authority."

19. Legislative Analyst's Office. See endnote 3.

20. State Water Resources Control Board. September 2, 2008. Strategic Plan Update, 2008-2012.

21. Linda Sheehan, Executive Director, California Coastkeeper Alliance. August 19, 2009. Letter to Commission.

22. Ralph Torres, Deputy Director, State Water Project, California Department of Water Resources. June 22, 2010. Notice to State Water Project Contractors. http://www.water.ca.gov/swpao/docs/notices/10-11.pdf

23. Department of Water Resources. SWPAO – Water Deliveries. http://www.water.ca.gov/swpao/deliveries.cfm.

24. California Water Code, Section 1257.5.

25. California Public Resources Code, Sections 10000-10005.

26. Donald Koch, Director, Department of Fish and Game. May 27, 2008. Letter of transmittal, Flow Recommendations to the State Water Resources Control Board: "The attached flow recommendations should not be implemented by the SWRCB without further investigation and consideration of all supporting information that would identify constraints or limitations that qualify each recommendation. In addition, as noted on each recommendation, some studies were done many years ago using early methods."

27. Leo Winternitz, Delta Project Director, The Nature Conservancy. April 29, 2010. Interview with Commission staff.

28. California Fish and Game Code, Section 710. Also, California Fish and Game Code, Section 710.5, added in 2000, and California Fish and Game Code, Section 710.7,

added in 2002. Note: The Legislature finds and declares that the department has in the past not been adequately funded to meet its mandates. The principal causes have been the fixed nature of the department's revenues in contrast with the rising costs resulting from inflation, the increased burden on the department to carry out its public trust responsibilities, and additional responsibilities placed on the department by the Legislature. This lack of funding has prevented proper planning and manpower allocation. (1978)

29. Note: The new unit has been working with the state water board, as well as federal agencies and other groups, coordinating staff from the department's engineering and fisheries branches as well as regional board staff.

30. Ellen Hanak, Jay Lund, Ariel Dinar, Brian Gray, Richard Howitt, Jeffrey Mount, Peter Moyle, Barton "Buzz" Thompson, Public Policy Institute of California. December 2009. "California Water Myths."

31. Note: In May 2010, U.S. Secretary of the Interior Ken Salazar and Commerce Secretary Gary Locke announced plans to develop a single, integrated biological opinion for salmon and smelt as well a new scientific initiative that could be used for water project operations by 2011.

32. Victoria Whitney, Deputy Director, Division of Water Rights, State Water Resources Control Board. June 30, 2009. Testimony to Commission Advisory Committee.

33. Department of Water Resources. March 30, 2010. "California Water Plan Update 2009." Analytical tools.

34. SB 1 (Perata). Statutes of 2008.

35. Jonas Minton, Water Policy Advisor, The Planning and Conservation League; Lester Snow, then-Director, California Department of Water Resources; Mark Cowin, then-Deputy Director, Integrated Water Management, Department of Water Resources. April 23, June 25, September 24, 2009. Testimony to the Commission.

36. Lester Snow, Director, Department of Water Resources. June 25, 2009. Written testimony to the Commission.

37. Laura King Moon, Assistant General Manager, State Water Contractors; Jonas Minton, Water Policy Advisor, Planning and Conservation League; Cynthia Koehler, Senior Consulting Attorney, Land, Water & Wildlife Program, Environmental Defense Fund. April 23, 2009. Written testimony to the Commission.

38. Roger Patterson, Assistant General Manager – Strategic Water Initiatives, The Metropolitan Water District of Southern California. June 25, 2009. Written testimony to the Commission.

39. Jonas Minton, Water Policy Advisor, The Planning and Conservation League; Cynthia Koehler, Senior Consulting Attorney, Land, Water & Wildlife Program, Environmental Defense Fund. April 23, 2009. Testimony to the Commission.

40. Victoria Whitney, Deputy Director, Division of Water Rights, State Water Resources Control Board. December 31, 2009. Personal communication.

41. Richard E. Howitt, Jay R. Lund, Kenneth W. Kirby, Marion W. Jenkins, Andrew J. Draper, Pia M. Grimes, Matthew D. Davis, Kristen B. Ward, Brad D. Newlin, Brian J. Van Lienden, Jennifer L. Cordua, Siwa M. Msangi, Department of Agricultural and Resource Economics, Department of Civil and Environmental Engineering, University of California, Davis. August 1999. "Integrated Economic-Engineering Analysis of California's Future Water Supply." Executive Summary. http://cee.engr.ucdavis.edu/faculty/lund/CALVIN/Report1/Chapter2.pdf

42. Little Hoover Commission. January 2009. "Clearer Structure, Cleaner Water: Improving Performance and Outcomes at the State Water Boards."

43. California Bureau of State Audits. December 17, 2003. Report 2003-102, "Water Quality Control Boards: Could Improve Their Administration of Water Quality Improvement Projects Funded by Enforcement Actions." Also, California Bureau of State Audits. March 23, 2006. Report 2005-113, "State Water Resources Control Board: Its Division of Water Rights Uses Erroneous Data to Calculate Some Annual Fees and Lacks Effective Management Techniques to Ensure That It Processes Water Rights Promptly." Also, California Bureau of State Audits. August 21, 2007. Report 2007-504, "State Water Resources Control Board Follow-Up: The Division of Water Rights Has Reviewed and Updated Much of the Data It Uses to Calculate Its Annual Fees but Has More to Do to Institute Management Techniques That Could Aid in Processing Water Rights Promptly."

44. *United States v. State Water Resources Control Board.* 1986. 182 Cal.App.3rd 82.

45. California Bureau of State Audits. See endnote 43. Also, interviews with Division of Water Rights staff. Also, State Water Resources Control Board. 2008. Strategic Plan Update 2008-2012.

46. Richard Roos-Collins, Director of Legal Services, Natural Heritage Institute. September 24, 2009. Written testimony to the Commission. Also, Art Baggett, Vice Chairman, State Water Resources Control Board. June 2, 2009. Interview with Commission staff. Also, Commission Advisory Committee meeting. August 18, 2009. Also, Commission Advisory Committee meeting. October 14, 2009.

47. State Water Resources Control Board. September 2, 2008. Strategic Plan Update 2008-2012.

48. Victoria Whitney, Deputy Director, Division of Water Rights, State Water Resources Control Board. June 30, 2009. Testimony during Commission Advisory Committee meeting.

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Conservation League, and Leo Winternitz, Delta Project Director, The Nature Conservancy. Interviews with Commission staff.

52. David Nawi and Jeannette MacMillan. July 2008. "Authority and Effectiveness of the State Water Resources Control Board." Report for Delta Vision Blue Ribbon Task Force. http://deltavision.ca.gov/ConsultantReports/David_Nawi.pdf

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58. See endnote 46.

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62. SB X7 1 (Simitian). Bill text.

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64. David Nawi and Jeannette MacMillan. See endnote 52. Page 30.

65. David Nawi and Jeannette MacMillan. See endnote 52. Page 32.

66. Department of Civil and Environmental Engineering, University of California, Davis. California Value Integrated Network (CALVIN). http://cee.engr.ucdavis.edu/faculty/lund/CALVIN/ProjectHandoutNew.pdf

67. Linda Sheehan, Executive Director, California CoastKeeper Alliance. August 19, 2009. Letter to Commission. Note: "We strongly believe that a water rights structure that gives out more water than actually exists needs to be improved."

68. Commission Advisory Committee meeting. August 18, 2009.

69. Arthur Baggett, Vice Chairman, State Water Resources Control Board. Interview with Commission staff.

70. Little Hoover Commission Water Rights Advisory Committee meeting. August 18, 2009.

71. Little Hoover Commission. 1965. "The Use of Boards and Commissions in the Resources Agency." Regarding the State Water Rights Board, the Commission explored the idea of a part-time board and suggested the use of "professional 'hearing officers,' " to develop the record and submit findings and recommendations for board review and action.

72. Arizona Department of Water Resources. 2008. Compliance and Enforcement Manual. Page 20.

73. Ralph Torres, Deputy Director, California Department of Water Resources. February 23, 2010. Delta tour for Commission staff.

74. Roger Patterson, Assistant General Manager, Metropolitan Water District of Southern California. June 25, 2009. Written testimony to the Commission.

75. William Brennan, Executive Director, Central Coast Water Authority, et al. July 1, 2010.

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77. Roger Patterson, see endnote 74.

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85. Nancy Saracino, General Counsel, Corporate Secretary, California Independent System Operator. July 6, 2009. Personal communication. Also, California ISO Corporate

Governance Principles. www.caiso.com. Also, Petition for Declaratory Order to the Federal Energy Regulatory Commission from the California Independent System Operator, Docket No. ER05 –. http://www.caiso.com/docs/2005/05/13/2005051314225720106.pdf.

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88. Donald Glaser, Mid-Pacific Regional Director for the U.S. Bureau of Reclamation. September 3, 2009. Personal communication.

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