

Contents

Chapter 7 Water Transfers.....	7-1
Water Transfers in California.....	7-2
Oversight of Water Transfers in California.....	7-3
Potential Benefits of Water Transfer.....	7-3
Potential Costs of Water Transfers.....	7-4
Major Issues Facing Water Transfers.....	7-4
Balanced Approach to Regulating Transfers.....	7-4
Maintaining Agricultural Productivity.....	7-4
Environmental Concerns.....	7-4
Using Limited Duration Transfers for Long-term Demands.....	7-4
Economic Concerns.....	7-5
Quantifying Uncertainties and Effects on Others.....	7-5
Need for More Integrated Management of Water Resources.....	7-6
Infrastructure and Operational Limits.....	7-6
Recommendations for Water Transfers.....	7-6

Page left blank for two-sided printing.

Subgroup: Improve Operational Efficiency and Transfers

Chapter 7 Water Transfers

A water transfer is defined in the Water Code as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer or exchange of water or water rights.¹ Many transfers, such as those among contractors of the State Water Project or Central Valley Project, do not fit this definition. A more general definition is that water transfers are a voluntary change in the way water is usually distributed among water users in response to water scarcity.

Transfers can be between water districts that are neighboring or across the state, provided there is a means to convey and/or store the water. Water transfers can be a temporary or permanent sale of water or a water right by the water right holder; a lease of the right to use water from the water right holder; or a sale or lease of a contractual right to water supply. Water transfers can also take the form of long-term contracts for the purpose of improving long-term supply reliability. Generally, water is made available for transfer by five major methods:

- 1) Transferring water from storage that would otherwise have been carried over to the following year. The expectation is that the reservoir will refill during subsequent wet seasons.
- 2) Pumping groundwater (groundwater substitution) instead of using surface water delivery and transferring the surface water rights.
- 3) Transferring previously banked groundwater either by directly pumping and transferring the banked groundwater or by pumping the banked groundwater for local use and transferring surface water that would have been use locally.
- 4) Making water available by reducing the existing consumptive use of water through crop idling or crop shifting or water use efficiency measures.
- 5) Making water available by reducing return flows or seepage from conveyance systems that would otherwise be irrecoverable.

Groundwater banks consist of water that is “banked” during wet or above average years. The water to be banked is provided by the entity that will receive the water in times of need. Although transfers or exchanges may be needed to get the water to the bank and from the bank to the water user, groundwater banks are not transfers in the typical sense. The water user stores water for future use; this is not a sale or lease of water rights. It is typical for fees to apply to the use of groundwater banks.

Water exchanges are typically water delivered by one water user to another water user; the receiving water user will return the water at a specified time or when the conditions of the parties to the agreement are met. Water exchanges can be strictly a return of water on a basis agreed upon by the participants or can include payment and the return of water. The water returned may or may not be an “even” exchange. Water can be returned on a one-for-one basis or other arrangement, e.g., for each acre-foot of water received, two acre-feet (AF) are returned.

Water transfers are sometimes seen as merely moving water from one beneficial use to another. However, in practice many water transfers become a form of flexible system reoperation linked to many other water management strategies including surface water and groundwater storage, conjunctive management, conveyance efficiency, water use efficiency, water quality

¹ Temporary water transfers, Section 1728 of the California Water Code, have a duration of one year or less. Long-term water transfers, Section 1735 of the California Water Code, have a duration of more than one year.

improvements, and planned crop shifting or crop idling. These linkages often result in increased beneficial use and reuse of water overall and are among the most valuable aspects of water transfers. Transfers also provide a flexible approach to distributing available supplies for environmental purposes.

Water Transfers in California

For a comprehensive history of water transfers in California, see the California Water Plan Update 2005. Budget cuts to the water transfer program did not allow for the same level of detail in the 2009 Water Plan update as appeared in the 2005 Update. Fortunately, the water transfer information, e.g., mixes of buyers and sellers as listed in the 2005 Update, has remained essentially the same. Anecdotal evidence suggests that the percentage of agricultural buyers is increasing. Permanent crop, for example, almond plantings, has increased in California. During water shortages growers of permanent crops are brought into the water market to keep these crops alive, often averting a loss of production.

Each year hundreds of water transfers occur in California. The majority of these transfers are between agricultural water users in the same hydrologic basin and do not require review by public agencies. These transfers are governed by the water rights held by the water district and are a matter of internal allocation adjustments by water district members.

During 2005 and 2006, California experienced a relatively wet period and water users had the opportunity to store some excess water in groundwater banks for future withdrawal. Many of these reserves were tapped in 2007 because of dry hydrology. In 2008 continuing dry conditions prompted the purchase of approximately 230 thousand acre feet (TAF) of water from northern California agriculture. Governor Schwarzenegger declared drought in 2009 and tasked DWR to establish the 2009 Drought Water Bank (Water Bank). The amount of water demanded from the Water Bank exceeded the approximately 80 TAF available. Some of the limitations to the Water Bank are due to operational restrictions on the State Water Project (SWP) and Central Valley Project (CVP) to store and later convey transfer water to the end user.

Operational restrictions, imposed by biological opinions, have affected the Water Bank's ability to purchase water. Pumping restrictions have essentially limited pumping transfer water from the Delta to July through October. Transfer water from crop idling and crop substitution becomes available beginning in May. In some situations, particularly for Sacramento River diverters, required environmental releases make holding transfer water in Shasta reservoir for future delivery impossible. As a result, about 40 percent of the water made available for transfer was not deliverable to the buyer. In this circumstance, the price of the transfer water nearly doubled. Water becomes so expensive and so much is lost that buyers are not willing to purchase the transfer water from crop idling or shifting. Water transfer proponents are seeking creative ways to deal with the present pumping restrictions. The viability of water transfers as a water management tool and the amount of water they can provide is an unknown until Delta issues are settled.

The Environmental Water Account (EWA) was established by the California Bay-Delta Authority (CALFED) in the Record of Decision signed in August 2000. EWA provided for pumping curtailments at SWP and CVP facilities with no net water cost to water users downstream of the Delta. From 2001 to 2006, EWA operational assets averaged 82 TAF, with a range of 0 to 150 TAF in a given year. EWA negotiated an average of 60 TAF per year of component 1 water in the Yuba Accord. The Yuba Accord agreement runs to 2015 with a possible extension to 2025. The factors in the above paragraph have severely affected how EWA

has been operated in the past. In the foreseeable future, the component 1 water made available will be used to offset SWP water lost from the recent Delta biological opinions.

Oversight of Water Transfers in California

Transfers that alter point of diversion, place of use, or purpose of use to a water right most often require the approval of the State Water Resources Control Board. Transfers that incur the use of State, regional or a local public agency's facilities require that the facility owner determine that the transfers not harm any other legal user of water, not unreasonably affect fish and wildlife, and not unreasonably affect the overall economy of the county from which the water is transferred.²

DWR and USBR have developed draft Water Transfer White Papers to help transferors develop bona fide transfers under the Water Code. These draft White Papers are revised as needed and posted on DWR's Web site at www.water.ca.gov/drought/bank.

As the water transfer market has matured, the buyers and northern California sellers have begun to develop better mechanisms to respond to concerns over potential transfer effects on local water users and the environment. Water transfer proposals are generally designed to avoid harm issues. Continued research and study of Northern California aquifers is necessary to fully understand how those aquifers can safely supply water during times of drought. The studies must be a joint effort of State, federal, and local government as well as other interested parties.

Local leadership and initiative are also needed to implement water transfers. Water transfers are typically proposed by local water agencies and can benefit from local community involvement in the development of these proposals. Some counties have passed local ordinances to regulate groundwater extraction for water transfer purposes. With adequate public notice, disclosure of proposals and meaningful public participation, local communities can best assess their area's water demand and supply and determine if there is potential for transferring water outside of the local region.

Potential Benefits of Water Transfer

For receiving areas, water transfers have the potential to improve economic stability and environmental conditions that would otherwise deteriorate with water scarcity. Sellers can use the compensation from transfers to fund beneficial activities, although there is no guarantee that benefits to the seller will benefit the source area as a whole. Compensation from most transfers involving agricultural water goes directly to the participating landowner, who may choose to reinvest into the farming business. In some cases, compensation goes to water districts, which can use the income to reduce water rates, improve facilities, or improve environmental conditions. For example, Western Canal Water District used proceeds from drought water bank sales to remove diversion dams and reconfigure its canals to reduce impacts on threatened spring-run salmon. Transfers by regional water agencies can provide additional resources to benefit the entire community. For example, the Yuba County Water Agency has used over \$10 million from the proceeds of water transfers over the past several years to fund needed flood control projects.

² California Water Code Section 1810 et seq. specifies the requirements that must be met in order for DWR and other regional and local agencies to allow use of their conveyance facilities. Also, Water Code Sections 386, 1702, 1706, 1727, and 1736 follow common law and establish similar requirements for changes in water rights. Strictly speaking, economic issues are required to be evaluated only in water transfers where State or local agency water conveyance facilities are used. However, economic impacts that are associated with physical changes to the environment may require analysis under the California Environmental Quality Act (CEQA).

Potential Costs of Water Transfers

The direct costs of completing a water transfer include more than just the price of water to the seller. Additional direct costs to the buyer include conveyance, storage, and treatment costs. Sale prices reflect the cost to make the water physically available for transfer and, in some cases, the additional monitoring or mitigation needed to protect the environment or other legal water users. The buyer typically arranges for transferred water to be conveyed to their area of use. Conveyance costs can be significant; there are conveyance losses that lessen the amount of water actually delivered to the receiving area.

Major Issues Facing Water Transfers

Balanced Approach to Regulating Transfers

Some stakeholders worry that State laws and oversight of water transfers may not be adequate to protect the environment, third parties, public trust resources, and broader social interests that may be affected by water transfers. In particular, this concern applies to water transfers involving pre-1914 water rights, which are not subject to regulation by SWRCB, long-term transfers, and transfers that involve pumping groundwater, crop idling, or crop shifting. Conversely, there is also concern that efforts to more heavily regulate water transfers may unnecessarily restrict many short-term, intra-regional transfers that have multiple benefits during temporary supply shortages and that have little likelihood of direct or indirect impacts. The key issue is how to balance these concerns to allow water transfers to continue as a viable water management strategy while having mechanisms to minimize effects on others.

Maintaining Agricultural Productivity

Because most water transfers are agricultural, a key challenge is to prevent the destabilization of California's agricultural productivity and economy from excessive agriculture water transfers. One safeguard is in California Water Code 1745.05 stating the amount of water made available by land fallowing may not exceed 20 percent of the water that would have been applied or stored by the water supplier without a public hearing.

Environmental Concerns

Environmental consequences of transfers could occur in three places: the area from which water is transferred, the area through which water is conveyed and the area to which water is transferred. Cumulative effects of short- and long-term transfers could have impacts on habitat, water quality, and wildlife caused by substituting groundwater for surface water, changing the location, timing, and quantity of surface diversions, reducing agricultural return flows to wildlife areas, or changing crop patterns through crop shifting or idling. For example, rice growing areas could have significant secondary benefits as wildlife habitat. Transfers that involve crop idling in these areas could either harm or benefit wildlife depending on implementation. Transfers that involve increased groundwater pumping also raise concerns over groundwater overdraft and the long-term sustainability of groundwater resources. In addition, long term water transfers that induce new urban development in the receiving area may have environmental impacts.

Using Limited Duration Transfers for Long-term Demands

There is a concern that transfers of limited duration are being used for long-term demands. For example, transfers under the Environmental Water Account, Central Valley Project Improvement Act, and related programs are designed to improve environmental conditions. Because these transfers rely in part on public funding that may not exist every year, they may not provide long term protection for the environment. There is also a concern that urban areas may use limited

duration transfers to accommodate additional development with water supplies that are not sustainable. Finally, there is a concern that agricultural users may rely on limited duration transfers to supply crops, such as orchards, that cannot be easily scaled back during droughts.

Economic Concerns

Short term, out-of-county transfers created through extensive crop idling can reduce production and employment of both on-farm and secondary economic sectors resulting in reduced tax revenues and increased costs for farmers who are not participating in the transfer. Extensive idling of crops that resulted in unemployment of low wage laborers could be considered unfair treatment under the State's environmental justice policies (see Government Code Section 65040.12). In addition, reduced revenues could affect local governments disproportionately with potential impacts to spending on a wide range of services provided by local government. Long-term transfers could result in similar impacts even though the amount of fallowed land may be less. For long-term transfers, impacts to other elements of the local community (schools, businesses, etc.) may be more widespread and severe. Transfers of surface water that are replaced by increasing groundwater pumping may drop groundwater levels and increase the pumping costs to other groundwater users, and may contribute to groundwater overdraft.

State law generally requires that water transfers not unreasonably affect the overall economy of the county from which the water is transferred (referred to as source areas). However, there is potential for some economic disruption to source areas depending on the source of transferred water, the amount of water transferred, and the duration of the transfer. While there is no evidence that recent water transfers have had long-term negative economic impacts to source areas, there is a concern that source areas could experience long-term economic impacts if transfers become more widespread. Water scarcity can also cause economic impacts, both where the shortage occurs and far beyond. Water transfers can help reduce water scarcity in areas receiving transfers, thereby helping to avoid job losses and secondary economic impacts in these areas.

Quantifying Uncertainties and Effects on Others

Transfers, especially those where water is moved long distances, are limited by several factors, including access to and physical capacity of conveyance systems, environmental and water quality regulations, evaporation, evapotranspiration, and seepage along the flow path, linkages between surface water and groundwater movement and use, and other factors difficult to quantify or anticipate. For example, those who traditionally relied on return flows from upstream areas as a source of supply are concerned about being affected by changes in timing and quantity of flows resulting from water transfers or water conservation measures. Quantifying the actual water savings from crop shifting and crop idling is particularly difficult because only the consumptive use by the crop is transferable in most cases. There is a risk that estimates of the water supply benefits from the transfer to the water system (estimates of "real water") will be inaccurate and that the transfers have unintended consequences to other water users, local economies, or the environment. A key challenge is to improve methods for quantifying these uncertainties and to include adequate monitoring and assurances when implementing water transfers. Monitoring is particularly critical for transfers that obtain water from crop idling, crop shifting, water use efficiency measures, or by increasing groundwater use. Information may be needed on historical and current land use and water use, groundwater levels, land subsidence, water quality, environmental conditions, and surface water flows.

Need for More Integrated Management of Water Resources

In California, authority is often separated among local, State and federal agencies for managing different aspects of groundwater and surface water resources. Several examples highlight this: 1) SWRCB has jurisdiction for appropriative water rights dating from 1914, but disputes over appropriative water rights dating before 1914 are settled by the court system; 2) Similarly, SWRCB has jurisdiction over groundwater quality, but disputes over groundwater use are settled by the court system ; 3) County groundwater ordinances and local agency groundwater management plans often only apply to a portion of the groundwater basin, and those with overlapping boundaries of responsibility do not necessarily have consistent management objectives. Failure to integrate water management across jurisdictions makes it difficult to develop transfers with multiple benefits, provide for sustainable use of resources, identify and protect or mitigate potential impacts to third parties, and ensure protection of the legal rights of water users, the environment, and public trust resources.

Infrastructure and Operational Limits

The ability to optimize the benefits of water transfers depends on access to and the physical capacity of existing conveyance and storage facilities. For example, when export facilities in the Delta are already pumping at full capacity, transferable water cannot be moved. This occurred in 2003 when the Metropolitan Water District of Southern California (MWDSC) negotiated water transfers with growers in the Sacramento Valley but was unable to move water through the Delta where the conveyance system was flowing full, or to store the water in Lake Oroville, which filled with late spring rain. The ability to convey water is also an important aspect of water transfers between the Imperial Irrigation District and the San Diego County Water Authority, which requires access to the Colorado River Aqueduct owned and operated by MWDSC.

Recommendations for Water Transfers

- 1) Since local government and water agencies have the lead role in developing and implementing water transfers, they should:
 - a) Develop groundwater management plans to guide implementation of water transfers that increase groundwater use or that could impact groundwater quality.
 - b) Implement monitoring programs that evaluate potential specific and cumulative impacts from transfers, provide assurances that unavoidable impacts are mitigated reasonably, and demonstrate that transfers comply with existing law.
 - c) Evaluate and implement regional water management strategies to improve regional water supplies to meet municipal, agricultural, and environmental water demands and minimize the need to import water from other hydrologic regions.
 - d) Provide for community participation when identifying and responding to conflicts caused by transfers they are a party to.
- 2) State and federal agencies, in addition to implementing State and federal law, should assist with resolving potential conflicts over water transfers when local government and water agencies are unable to do so and when there are overriding State or federal concerns.
- 3) State and federal agencies continue to gain consensus on how best to implement water transfers. The following actions are on-going and should be continued and improved:

- a) Preparing programmatic and site-specific CEQA/NEPA documents and other technical assistance for inter-regional transfers.
- b) The SWRCB, DWR, and DFG must consider whether the transfer is likely to harm public trust resources, such as fish and wildlife, and must protect trust resources whenever feasible. The SWRCB and DWR, after considering all available information, including CEQA documents or other environmental documents and the input of DFG, may put conditions on transfer to protect trust resources. If the SWRCB or DWR find that proposed transfer will cause undue harm to trust resources, they may (1) add terms to avoid the harm, (2) the SWRCB may deny the petition, or (3) DWR may deny the use of its facilities. In many cases, transfers will not result in harm to public trust resources.
- c) Under Section 1802 of the Fish and Game Code, DFG must exercise its responsibilities as trustee for the resources of the State with jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species.
- d) Improving conditions in the Delta and identifying and reducing statewide conveyance limitations.
- e) Streamlining the approval process of State and federal agencies for water transfers where approvals are required while protecting water rights, the environment, and local economic interests.
- f) Working with agencies proposing water transfers that move water through the Delta to monitor and evaluate short-term, long-term, and cumulative effects that could impact the condition of the Bay-Delta ecosystem. This is being accomplished through the Bay Delta Conservation Plan.
- g) Refining current methods on how to identify and quantify water savings for transfers using crop idling, crop shifting, and water use efficiency measures. This is being accomplished through a collaborative process that considers methods developed by others.
- h) Developing, with interested parties, acceptable ways to identify, lessen, and distribute economic impacts from transfers that use crop idling and crop shifting.
- i) Providing financial assistance for local and regional groundwater management activities that promote sustainable and coordinated use of surface water and groundwater. This is being accomplished through the Sacramento Valley Water Management Program.
- j) Seeking consensus among interested parties about the role of water transfers as a water management strategy while identifying and preventing or mitigating potential impacts to other water users, third parties, the environment, and public trust resources.
- k) Improving coordination and cooperation among local, State, and federal agencies with different responsibilities for surface water and groundwater management to

facilitate sustainable transfers with multiple benefits, allow efficient use of agency resources, and promote easy access to information by the public.

- l) Developing water transfer policies that balance the ability of agriculture to provide water for transfers on a limited periodic basis to help with temporary water scarcity so that transfers do not destabilize agricultural productivity and economic benefits.
- m) Facilitating cooperation among agencies proposing water transfers and regulatory agencies to obtain multiple benefits from proposals. For example, transfers intended for urban or agricultural use may also be scheduled to enhance flows for aquatic species in areas between the seller and buyer.
- n) Implementing water transfers, when a State or federal agency is serving as a purchaser, in cooperation with local partners, consistent with State water and environmental laws, and at a fair price.