

Fiscal Pulse

Mary Webb 416.866.4202
mary.webb@scotiabank.com

Andrew Gorsky 416.866.4525
andrew.gorsky@scotiabank.com

California's Extended Drought and the Policy Consequences

- **Evidence backs longer-term remediation to pace historic short-term measures.**

The importance of fresh water conservation is affirmed by recently released NASA satellite data from 2003 to 2013. The data indicate groundwater withdrawal exceeding replacement for 21 of the earth's 37 largest aquifers. Among the 13 aquifers noted as stressed is California's Central Valley aquifer system. Coincidentally, the State is now suffering one of the most serious droughts on record, exceeding the severity of its 1987-92 drought. Washington has responded with US\$110 million for drought and wildfire assistance for the Pacific Coast States, adding to the US\$190 million allocation under the interagency National Drought Resilience Partnership. Projects using federal funding include repairing watersheds and limiting wind erosion, with the side benefit of temporary jobs for workers displaced by the economic impact of the drought.

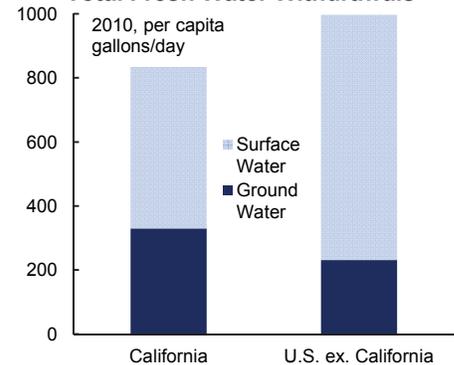
Though California's total fresh water usage per capita is well below the national average (*chart 1*), State measures this spring break new ground. Anticipating a fifth year of drought, an April 1st Executive Order requires a mandatory 25% statewide cut in potable urban water use. In the past, California has urged voluntary action such as targeted irrigation and rain water collection and offered a range of rebates to incent behavior, from assistance for shifting to water-efficient indoor appliances to aid in replacing grass with drought-tolerant plants. These voluntary conservation measures, however, are now judged inadequate given that water savings since July 2014 provided only half of the 20% target. Required cuts for urban water suppliers range up to 36%, the latter applying to areas with high water use last summer. Commercial, industrial and institutional properties not served by a water supplier must document a 25% water saving or limit outdoor irrigation to no more than two days per week.

In recent years, the share of California's water utilities relying upon tiered water rates to deter heavy water usage has climbed to two-thirds. A critical complication, therefore, is a District Court of Appeal's decision in April that a town's rising block rates violate *Proposition 218*, a 1996 ballot-box measure prohibiting services fees above actual service costs. In subsequent discussion, several high-income communities have indicated their willingness to pay sharply higher prices to obtain more water.

A further source of legal action is California's restriction of farmers' water usage, warning of rising constraints if the drought persists, despite some farmers holding senior water rights dating back over a century. California's prolific farmers are heavy water users, in contrast to most households (*chart 2*). Faced with decreasing surface water allotments, leaving acreage fallow is a common practice and farmers were wary of planting this spring and subsequently losing their harvests because of water shortages. Farmers also have relied increasingly upon pumping groundwater, which has climbed from less than 40% of Central Valley farmers' water usage to well over 50%, exacerbating the subsidence of land and the sinkholes extending miles. In the Sacramento-San Joaquin River Delta, about half of the farmers have voluntarily cut their water usage by 25% to avoid further limits during the growing season. California allows water for hydro-power as long as it is

Chart 1

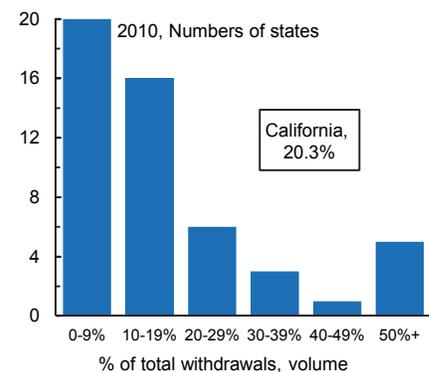
Total Fresh Water Withdrawals



Source: United States Geological Survey.

Chart 2

Household Fresh Water Withdrawals



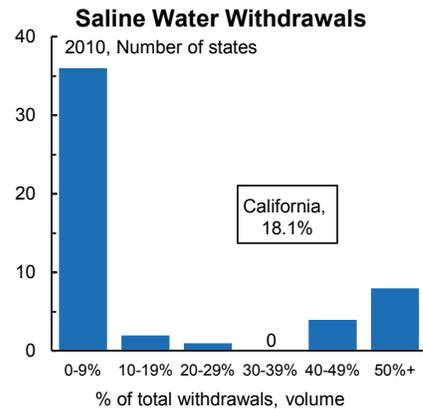
Source: United States Geological Survey.

returned to the river, and thermoelectric power relies upon saline water (*chart 3*).

While stiff, the State's current short-term measures pale in contrast to the required longer-term adjustments. High-ticket repairs already are needed for bridges, roads and other infrastructure damaged by the rate of land subsidence shifting higher again. Subsidence was a very serious issue during the late 1960s and it did not slow until the 1970s when California completed a massive canal system to deliver water to Central Valley farmers to reduce their reliance on groundwater. Other potential investments, such as a new \$1 billion desalinization operation in Carlsbad, also are costly.

A number of technical measures, such as more rigorous monitoring of surface and ground water use, are possible. Policy options include a Water Trade Clearing House and a framework facilitating more active water exchanges. California has lagged other States in groundwater regulation, but legislation in September 2014 authorizes local agencies to develop and enforce groundwater sustainability plans, with oversight from State agencies. The long timeline — five to seven years for local agencies to develop their plans and until 2040 for to fully implement them — may have to be revisited.

Chart 3



Source: United States Geological Survey.

Scotiabank Economics

Scotia Plaza 40 King Street West, 63rd Floor
Toronto, Ontario Canada M5H 1H1
Tel: 416.866.6253 Fax: 416.866.2829
Email: scotia.economics@scotiabank.com

This report has been prepared by Scotiabank Economics as a resource for the clients of Scotiabank. Opinions, estimates and projections contained herein are our own as of the date hereof and are subject to change without notice. The information and opinions contained herein have been compiled or arrived at from sources believed reliable but no representation or warranty, express or implied, is made as to their accuracy or completeness. Neither Scotiabank nor its affiliates accepts any liability whatsoever for any loss arising from any use of this report or its contents.

™ Trademark of The Bank of Nova Scotia. Used under license, where applicable.