



Filling the Gap

Commonsense Solutions for Meeting Front Range Water Needs Executive Summary



Building and improving on the State Water Supply Initiative 2010, this well-written report outlines a strategy for economically meeting Front Range municipal water demands to 2050 while protecting Front Range streamflows and avoiding further West Slope diversions.



—Chuck Howe,
Professor Emeritus of Economics,
University of Colorado, Boulder



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Preface: Planning for Colorado's Water Future

Folks in Colorado have plenty to be thankful for—and water is right at the heart of it all.

Colorado's millions of people, its landscape, its fish and wildlife, and its farms and factories all depend on water. Coloradans place great value on this scarce resource. Whether it falls from the sky as rain or snow, and whether it ends up as part of an ear of corn, a bottle of beer, or instream habitat for trout, water is essential to Colorado's exceptional quality of life.

Sustaining Colorado's lifestyle and economy demands that we preserve the state's waterways. Healthy rivers and streams support a diversity of fish, wildlife, and ecosystems, and draw residents and visitors to the state's world-famous natural areas. Colorado's rivers provide gold-medal trout fisheries and whitewater recreation, and are focal points for urban greenways in communities from Fort Collins to Durango and from Steamboat Springs to Pueblo. Healthy waterways are key to Colorado's outdoor tourism industry, which injects billions of dollars into the economy each year, and to attracting new businesses to the state. All

of this is at risk, however, unless decision-makers in Colorado shift to more innovative, balanced approaches for supplying water to a growing population while sustaining Colorado's rivers and streams.

Colorado is a semi-arid state that receives average annual precipitation of only 16 inches. Many rivers and streams are badly depleted as a result of dams and diversion structures that deliver water to farms, factories, and cities. Developing additional water supplies to provide for a growing population threatens to further stress rivers and streams, preventing them from adequately providing their important environmental and biological functions.

Colorado's Water Conservation Board (CWCB) and Interbasin Compact Committee (IBCC), local communities, and citizens' roundtables at the river basin level are engaged in a water supply planning process known as the Statewide Water Supply Initiative (SWSI). The SWSI effort is intended to answer the important questions of how much water Colorado will need in the future and how these needs can be met. The most recent SWSI report—titled *SWSI 2010*—forecasts the need to provide an additional 365,000 acre-feet of water by 2050 to the fast-growing municipal and industrial sectors along the Front Range of the South Platte River Basin.

Faced with this projected need, the CWCB and IBCC, together with several basin roundtables, are devising plans for meeting the 2050 Front Range demand. Four strategies are being considered—Identified Projects and Processes (IPPs), increased water conservation, transfer of irrigation water from the agricultural sector to municipalities, and large-scale diversions of water from Colorado's Western Slope to the Front Range. Scenarios for meeting new needs are being developed based on implementation of varying levels of each of the four strategies. Unfortunately, too much attention in this planning effort falls on old, 20th century tools for supplying water—large dams and diversions, pumps and pipelines, and other

structural projects that are often environmentally damaging.

As stakeholders in the planning process, Western Resource Advocates, Trout Unlimited, and the Colorado Environmental Coalition recognize the importance of preparing for our water future. However, we are also concerned that many traditional water supply strategies have resulted in adverse impacts to rivers and streams and their associated environmental, recreational, and economic values. Rather than continuing old patterns, 21st century water development must account for instream flow needs, minimize the adverse environmental impacts of water supply strategies, and even improve stream flows or other environmental conditions on streams that are already depleted. These new challenges require new ways of thinking and new tools.

In a 2005 report called *Facing Our Future: A Balanced Water Solution for Colorado*, we articulated a proactive approach for meeting water needs in the South Platte and Arkansas River Basins while protecting Colorado's environment and quality of life. *Facing Our Future* highlighted cost-effective and common-sense opportunities for growing municipal areas to meet future water needs through water conservation, reuse, and sharing agreements with irrigators. We laid out a set of principles that must guide decisions regarding new water supply in this state.

In that pages that follow, we build on the smart water supply principles established in *Facing Our Future* and—employing updated and widely accepted data—offer a realistic, balanced water supply portfolio that meets the projected needs in the South Platte Basin's Front Range communities while protecting Colorado's waterways, economy, and quality of life. As we describe, by developing select structural water projects, implementing increased water conservation and water reuse projects, and integrating agricultural and municipal water supply systems to allow for increased sharing arrangements, the Front Range of the South Platte Basin can meet its 2050 water needs at a reasonable

cost without environmentally damaging water supply developments. The Front Range should pursue the strategies we recommend now, as they all have an important role to play in meeting our future water needs.

Just as we once put down the divining rods and found new ways for providing water supplies, today we must look beyond old ways of thinking and find

innovative tools to meet new challenges. The time is now for the state of Colorado and local water providers to embrace new water supply strategies that meet our consumptive water use needs while sustaining the non-consumptive, instream flows that keep our rivers and streams healthy. The methods and ideas laid out in this report should guide choices that are made as we embark on this new era of water supply.



Tubers enjoy the Yampa River near downtown Steamboat Springs. Photo: Matt Stensland/Steamboat Pilot and Today.



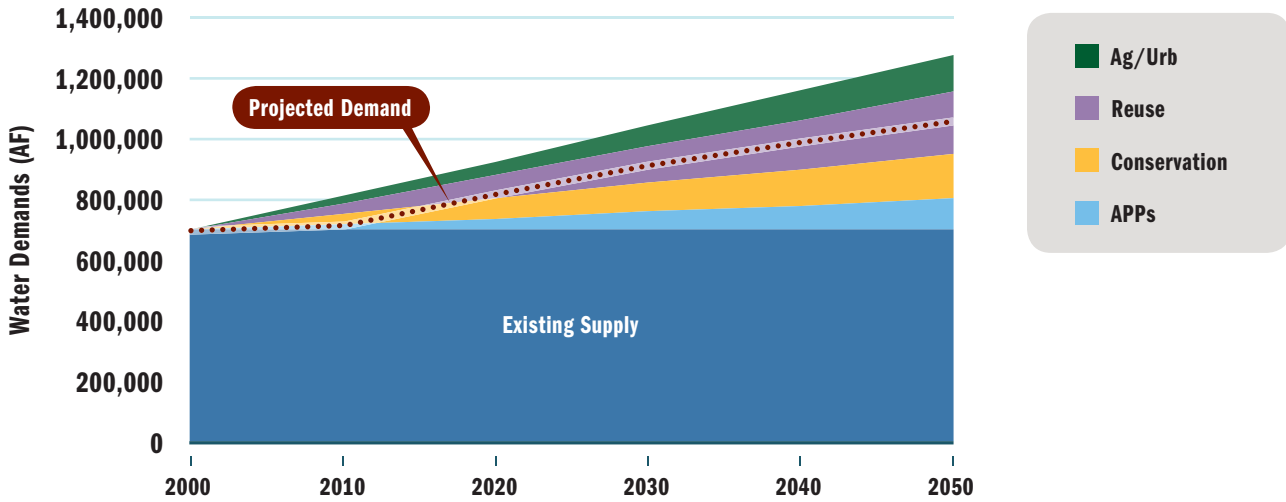
We will not successfully solve 21st Century water management challenges in Colorado using 19th and 20th Century institutions and approaches. This is especially true in our State where heightened competition for over-allocated water resources by individual users or sectors is increasingly unproductive – there is not enough water! The use of multi-objective portfolio approaches is considered to be one of the most constructive options we have available if we are to protect and enhance environmental values while providing adequate and reliable water services to municipalities, industries, and farms.



—Peter Binney, Director of Sustainable Infrastructure, Merrick & Company, former Director of Aurora Water

FIGURE ES 1 OUR PORTFOLIO FOR MEETING FRONT RANGE WATER DEMANDS.

Our balanced portfolio of water supply strategies more than fills projected needs in South Platte Basin Front Range communities while protecting Colorado's environment.



While current planning efforts still lean towards traditional measures for supplying water, Colorado can chart a new, innovative path forward that protects our rivers, streams, and local communities.



Majestic bull elk in spring velvet.



A fine catch.

Executive Summary



Growing Water Demands

Nearly 70% of Colorado’s population is concentrated on the eastern side of the state in the South Platte River Basin along the “Front Range”—a band of cities and communities located immediately east of the Rocky Mountains. According to state projections, the population of the 11 Front Range counties of the South Platte Basin is projected to grow by 2.5 million people between 2008 and 2050, for a total of close to 5.8 million residents by 2050.

These new residents will drive demand for additional municipal water supply. Accounting for “passive” reductions in per capita use as old and inefficient appliances and fixtures are gradually replaced over time, demands for the 5.8 million residents and industry along the Front Range will be approximately 1.06 million acre-feet in 2050—an increase of 365,000 acre-feet annually compared to today’s water needs.

While current planning efforts still lean towards traditional measures for supplying water—dams and diversions, pumps and pipelines, and other structural projects—Colorado can chart a new, innovative path forward that protects our rivers, streams, and local communities.

Our Water Management Portfolio for Meeting Future Needs

This report explores four water supply strategies—acceptable planned projects, water conservation, reuse, and voluntary water sharing with the agriculture sector. As stewards of Colorado’s

rivers and natural heritage, Western Resource Advocates, Trout Unlimited, and the Colorado Environmental Coalition believe it is imperative for water planning to account for instream flow needs and to minimize the adverse environmental impacts of water supply strategies. In the pages that follow, we offer our view of a water supply scenario that more than fills projected needs in South Platte Basin Front Range communities while protecting Colorado’s environment and economy (Figure ES-1). Importantly, our portfolio meets future needs without the large, costly, and environmentally damaging transbasin diversions that have been a hallmark of traditional water supply planning.

Acceptable Planned Projects

There is a subset of the state’s Identified Projects and Processes (IPPs) that we could accept if designed and implemented pursuant to our smart principles. In this report, we refer to these projects as Acceptable Planned Projects (APPs). The APPs include Chatfield Reservoir Reallocation, Halligan Reservoir Enlargement, Seaman Reservoir Enlargement, Gross Reservoir Expansion, Windy Gap Firming Project, Rueter-Hess Reservoir Expansion, Beebe Draw Aquifer Recharge, and East Cherry Creek Valley’s Northern Project.* These APPs, collectively, can provide 102,000 acre-feet of new supply annually.

Conservation

Published literature and the Colorado Water Conservation Board’s (CWCB) studies indicate that

* Western Resource Advocates, Trout Unlimited, and the Colorado Environmental Coalition are engaged in the environmental review process and related discussions to ensure adequate mitigation is included for these projects.

per capita water use can be significantly reduced over the next 40 years through existing conservation techniques, practices, and technology. A 34% reduction in per capita demand—the CWCB’s “high” conservation strategy—would result in a reduction of 362,000 acre-feet of water demand annually by 2050. Achieving the conservation savings for a high conservation strategy will require sustained efforts by water providers and local governments, and may require state legislation, but it is cost-effective and will not compel lifestyle changes or modification to landscaping far beyond what currently exists in many communities. Only active water conservation savings could be used to meet new demands—256,000 acre-feet of the 362,000 acre-feet total. If 60% of the active savings are dedicated to meeting future needs, 153,000 acre-feet of new water supply will be made available annually by 2050.

Reuse

The Metropolitan Water Supply Initiative (MWSI) concluded that by 2030, reuse by Front Range cities would amount to 138,700 acre-feet of water annually, and that future plans for reuse beyond

2030 for the Denver area alone would total about 171,000 acre-feet per year. By maximizing exchange opportunities and substitution plans, significantly increasing both direct and indirect reuse, and constructing the WISE and Prairie Water’s Projects, the South Platte Basin will have an estimated 199,000 acre-feet of reuse water available annually to meet new demands in 2050.

Ag/Urban Cooperation

Municipal water supplies can be increased with financial benefit to the agricultural community through the use of systems integration and voluntary ag/urban sharing arrangements, like rotational land fallowing, interruptible supply agreements, and water leasing. The MWSI estimated that there is as much as 495,000 acre-feet of agricultural water available upstream of Greeley for sharing with South Platte municipalities. Assuming the physical and administrative structures are put in place, we believe 25% of the 495,000 acre-feet could be shared with cities under innovative arrangements that do not require permanently drying irrigated acreage, thus producing approximately 120,000 acre-feet of new supply annually.



Unprecedented unknowns and uncertainties are ahead for Colorado’s water resources. The Colorado Environmental Coalition, Trout Unlimited, and Western Resource Advocates are right. All the players in water decisions, from users to regulators, must think anew and create new procedures and laws to deal with these uncertainties. The days of traditional flow projections and ‘heaven help the hindmost’ mitigation plans are over!

—George B. Beardsley, Denver Water Board Member 2004 to 2009, Municipal Water District Director, and Agricultural Irrigator



Colorado can chart an innovative path forward that differs from the traditional approach of building large dams and pipelines to meet the Front Range’s growing water needs.

Recommendations

Planning for Colorado’s water future is at a critical juncture. The SWSI process presented an abundance of information regarding water supplies, and the basin roundtables and IBCC are engaged in discussions about what the “next steps” should be. We believe Colorado can chart an innovative path forward, one that differs from the traditional approach of building large dams and pipelines to meet the Front Range’s growing water needs.

The portfolio of APPs, conservation, reuse, and ag/urban sharing described in this report, which is

based on conservative assumptions, would produce 200,000 acre-feet of water in excess of the Front Range’s 2050 demands. While each strategy has its individual trade-offs, our portfolio does not require additional, large-scale, environmentally damaging transbasin diversions to the Front Range from the Western Slope.

Based on rigorous data analysis, this report offers several key recommendations that water planners and policy makers should consider carefully in forging Colorado’s water future:

Recommendations

- Close the projected Front Range “gap” with balanced strategies that are more cost-effective and environmentally friendly than transbasin diversion projects.
- Protect Colorado’s rivers, streams, and lakes as an integral part of any future water development strategy. Non-consumptive uses of water—for fishing, whitewater recreation, and other uses—are worth billions of dollars annually to our state economy and are critical to the quality of life in this state.
- Pursue only those Identified Projects and Processes that can be constructed and operated according to the “smart” principles delineated in this report.
- Implement more aggressive water conservation strategies. Conservation is often the cheapest, fastest, and smartest way to gain “new” water supply, and many Front Range utilities have significant opportunities to boost their existing water conservation efforts.
- Listen to Front Range homeowners, who consistently express a willingness to adopt enhanced conservation measures in order to protect rivers and other mountain resources.
- Maximize the role of water reuse in meeting the future needs of Colorado’s residents, and work to improve public perception and acceptance of reuse projects.
- Cooperate with agriculture on voluntary water sharing agreements that benefit both municipalities and the agricultural community without permanently drying irrigated acres. Alternatives to “buy and dry” transfers present the best opportunities for our future.

By following these recommendations, Colorado can more than meet the future water needs of its northern Front Range communities while minimizing impacts to the state’s rivers and streams.

The Smart Principles

Western Resource Advocates, Trout Unlimited, and the Colorado Environmental Coalition recommend that future water supply management and development efforts adhere to a set of basic, smart principles. We offer these principles as a guide to assure protection of rivers and other natural resources against damage that often results from structural water supply projects. The smart principles are:

- 1 — Make full and efficient use of existing water supplies and reusable return flows before developing new diversion projects.
- 2 — Improve use of existing water supply infrastructure by integrating systems and sharing resources among water users to avoid unnecessary new diversions and duplication of facilities.
- 3 — Recognize the fundamental political and economic inequities and the adverse environmental consequences of new transbasin diversions.
- 4 — Expand or enhance existing storage and delivery before building new facilities in presently undeveloped sites, and expand water supplies incrementally to better utilize existing diversion and storage capacities.
- 5 — Recognizing that market forces now drive water reallocation from agricultural to municipal uses, structure such transfers, where possible, to maintain agriculture and in all cases to mitigate the adverse impacts to rural communities from these transfers.
- 6 — Involve all stakeholders in decision-making processes and fully address the inevitable environmental and socioeconomic impacts of increasing water supplies.
- 7 — Design and operate water diversion projects to leave adequate flows in rivers to support healthy ecosystems under all future scenarios, even if water availability diminishes in the future as a result of climate change or other factors.



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Trout Unlimited's mission is to conserve, protect and restore North America's coldwater fisheries and their watersheds.



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Colorado Environmental Coalition works to protect Colorado's environment by educating and mobilizing citizens, providing technical and organizing assistance to environmental organizations and other allies, and uniting and supporting them in coalitions that defend and preserve Colorado's natural heritage and quality of life.