

# **Bridging the Governance Gap**

## **Strategies to Integrate Water and Land Use Planning**

**Public Policy Research Institute  
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**Collaborative Governance Policy Report #2**

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**NOTE: This review draft is being distributed for  
comment, corrections, and additions.**

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**THANK YOU FOR YOUR REVIEW!**

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## PREFACE

The mission of the Public Policy Research Institute is to equip and assist people to use collaborative approaches to sustain communities and landscapes. To help achieve this mission, the Institute produces *Policy Reports* to help inform and invigorate policy discussions about the use of alternative public processes to prevent and resolve natural resources disputes. To ensure that the *Policy Reports* are relevant, the Institute partners with appropriate organizations involved in formulating, administering, and otherwise influencing public policy.

This report, *Bridging the Governance Gap: Strategies to Integrate Water and Land Use Planning*, builds on work done in partnership with a number of organizations. Institute staff presented preliminary findings on this subject to the 2005 annual meeting of the American Planning Association, the Nevada Chapter of the American Planning Association, a senior executive seminar for western state planning directors sponsored by the Lincoln Institute of Land Policy, the Council of State Governments-*WEST* (the association of western state legislators), and the annual Public Land Law conference at the University of Montana.

The Institute has been in further discussions about these issues with leaders of the Western Governors Association, the Western Planning Association, and the Western Interstate Region of the National Association of Counties.

While this *Policy Report* does not represent official policy of any of these organizations, the Institute's research has benefited a great deal from participating in the ongoing dialogue about this important topic and it is

hoped that this report will enrich and further the discussion.

While much of the public attention to population growth and water supply issues focuses on the western United States, this report recognizes that the disconnect between land use and water planning affects communities throughout the country. The Public Policy Research Institute is pleased to offer this *Policy Report* in the hope of informing policy makers, planners, and concerned citizens about the roots of the land use-water disconnect, highlighting strategies to integrate land use and water planning, and exploring options to improve land use and water governance to address the pressures of growth and assure sustainable water supplies for the future.

Thanks to Douglas Kenney, Dan Tarlock, Lora Lucero, and Scott Coulson for their valuable help in developing the ideas described here and for reviewing earlier drafts of this *Policy Report*. A different and more detailed treatment of the subject appears in the Spring, 2006, issue of the *Public Land & Resources Law Review*, included in the list of resources at the end of this report.

## INTRODUCTION: THE GOVERNANCE GAP

Historically, land use and water planning have occurred separately from one another in most parts of the United States. State agencies responsible for water resource management strive to make water available to satisfy all projected demands, with an emphasis on encouraging economic development. For their part, local authorities have assumed that water will be available to satisfy their growing needs.

Increasingly, however, local officials must consider whether they will have enough water in the future. In some cases, existing uses are depleting finite water supplies, raising questions about their future reliability. Elsewhere, the high social, environmental, and economic costs of obtaining water to meet rising demands are forcing officials to think about how they might better integrate land use and water supply planning to make the best use of limited resources.

This *Policy Report* provides background on the governance gap between water and land use planning, summarizes emerging strategies to achieve this integration, and suggests options to improve land use and water governance to address the pressures of growth while assuring sustainable water supplies for the future.

## A SHIFTING LANDSCAPE

Water and land use decisions take place within the context of a dynamic landscape, in every sense. Dramatic changes in population growth patterns and lifestyle choices bring new and different demands for (and impacts on) land and water. Moreover, heightened public concerns

about the consequences of land and water decisions have resulted in new laws that require additional disclosure and protective measures. Understanding these factors is an important first step in appreciating governance challenges and the need for more integrated land and water strategies in the future.

People are drawn to scenic, warm parts of the country. As demonstrated by information gathered in the U.S. Census, most of the fastest growing states are those with the most limited water supplies. (See box below.) So far, lack of water has not prevented any urban areas from expanding, but cities such as Las Vegas face formidable physical and political obstacles in their continuing efforts to meet future demands. Moreover, despite high-profile urban conservation programs, the trend is toward higher per-capita water use, largely due to highly consumptive landscaping around suburban homes and office parks.

### Fastest-Growing Metropolitan Statistical Areas in U.S., 2000-2003

Greeley, CO (16.8% change)  
St. George, UT (15.2%)  
Las Vegas-Paradise, NV (14.6%)  
Naples-Marco Island, FL (14%)  
Stockton, CA (12.3%)  
Bend, OR (12.2%)  
Gainesville, GA (12.1%)  
Riverside-San Bernardino-Ontario, CA (11.9%)  
Cape Coral-Ft. Myers, FL (11.6%)  
McAllen-Edinburg-Pharr, TX (11.6%)

At the same time, public attitudes toward water and the environment have shifted dramatically in recent decades. Historically, the federal government subsidized water supplies, especially in West. Federal budget restraints have lessened the federal role,

increasing both the responsibilities and costs borne by states and local governments. Increasingly, environmental costs are factored into water supply decisions as well, making it more difficult to rely on new infrastructure alone to solve water supply challenges.

Facing these dual challenges, cities increasingly turn to the market to purchase water already developed for agricultural irrigation, or invest in conservation and wastewater re-use technology. Some cities in coastal areas are exploring options for desalination of ocean water. The search for “new” water is no longer limited to looking upstream for a suitable dam site, or drilling a deeper well.

Complicating the water supply picture, global climate change offers a new set of challenges to water supply planners. For example, western states may see decreased snowpacks and increased precipitation in the winter, with a change in streamflow patterns making it difficult to meet water demands in the dry summer and fall months. Legal frameworks currently in place to allocate resources in interstate rivers lack the flexibility necessary to deal with such large-scale changes in baseline environmental conditions.

## **WATER AND LAND USE PLANNING: THE HISTORICAL DISCONNECT**

The fundamental disconnect between water and land use planning arises from the separate legal bases for each area of governance. Water allocation is primarily the responsibility of state governments, while land use planning is within the authority of local officials. Generally speaking, water planning is subordinate to land use planning. That is, water planners

seek to obtain water in order to meet the demands of expected population growth; local land use planners do not constrain development in response to limited water supplies. It is important to understand these distinct legal authorities before considering options to bring the two closer together.

## **WATER: MANAGED BY THE STATES, DISTRIBUTED LOCALLY**

Historically, states have taken the lead in water allocation and management. Distinct rules for water allocation in the eastern and western states reflect different precipitation levels, land use patterns, and other traditions. Eastern states adopted the riparian rights approach, a rule based on shared use of streamflows by owners of adjacent lands. In the drier western states, a rule based on the principle of “first come-first served” developed into what is now known as the prior appropriation doctrine. Importantly, the prior appropriation doctrine separates water rights from land ownership. A few states retain a combination of these two principles, sometimes called a hybrid system of water rights.<sup>1</sup>

State water administrators preside over complex systems of water rights, in some cases lacking full quantification of thousands of water claims. For their part, the federal government and Indian tribes participate in the state administrative regimes through their assertion of reserved water rights—claims that date back to the establishment of national forests, national

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<sup>1</sup> This summary provides only the barest introduction to the complex administration of water rights. For more information, see Bates, et al., *Searching Out the Headwaters: Change and Rediscovery in Western Water Policy*, in the “Resources” listed at the end of this report.

parks, and other federal withdrawals, as well as the creation of Indian reservations through treaty negotiations.

Groundwater remains a far less regulated resource than surface water, although again its use is under the authority of state water management agencies. In many cases, groundwater is available for use by overlying landowners, through what is basically a rule of capture. Some states have developed rules that recognize the shared nature of groundwater, and impose limits on groundwater pumping aimed at limiting the impact on other users. Many states require that “tributary” groundwater (hydrologically connected to surface water such as a stream) be managed as part of the surface water rights system. Proving such a connection can be difficult, given the complex geology of most aquifers.

In most cases, private domestic wells are exempt from any state controls, other than a requirement that the state be notified when a well is drilled. This lack of regulation—and, frequently, lack of information about the extent of groundwater extraction—is becoming a problem in rapidly growing rural and exurban areas throughout the country. In some cases, counties approve low-density housing developments in areas with limited or declining water tables, leaving homeowners with the expensive proposition of deepening their wells or installing cisterns and paying for water delivery.

State agencies responsible for water resource allocation often engage in planning efforts to ensure long-term supplies for their residents. They have historically focused on maximizing their residents’ access to water supplies and fostering economic development. State water planning seldom considers the value choices

raised by competing demands for water or engages in dialogue about the desired future conditions of public resources affected by water use.

Some states do not conduct statewide water planning at all. Maryland, for example, leaves long-term water supply planning to its river basin commissions, which only cover portions of the state.<sup>2</sup>

Importantly, many critical water decisions occur at the local level, as municipal and regional water suppliers seek and hold water rights that enable them to ensure consistent deliveries into the future. While state agencies may be responsible for large-scale planning, the long-range plans of these local water suppliers play a key role in determining where water will come from and where it will be used in the future.

## **LAND USE: A LOCAL CONCERN**

In contrast with water rights administration, land use decisions occur at the local level, though often under state law guidance. A community’s long-term vision is set out in its comprehensive (or general) plan, a policy document intended to guide specific land use decisions in the future. The comprehensive plan thus provides a blueprint for growth, defining the parameters within which development should be allowed and articulating priorities for community amenities. Unlike water law, land use planning explicitly embraces public values beyond a single resource use. Land use regulations place considerable restrictions on the exercise of private property rights for the benefit of the larger

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<sup>2</sup> See the comparative analysis of Maryland, Florida, New Jersey, and Oregon in Cohen, *Water Supply as a Factor in Local Growth Management Planning in the U.S.*, in the Resources section below.

public interests identified in the comprehensive plan and in other public documents.

Several aspects of the comprehensive plan relate closely to water planning. First, the plan typically assumes full build-out of available land in predicting population numbers, which are in turn used by water suppliers to forecast future demands. Second, the comprehensive plan includes a water infrastructure element, looking at the facilities necessary to serve projected development.

The comprehensive plan is implemented through land use decisions specific to particular areas and proposed developments. Typically a development permit is conditioned on a certification of water availability, which may be issued by the local utility or a state agency administering water rights.

Increasingly, development is allowed even in the face of uncertain water supplies. For example, outside the highly regulated “Active Management Areas” of Arizona’s most developed cities are numerous fast-growing communities in which development is proceeding in spite of documented insufficient groundwater to serve their domestic wells.

## **POLICY OPTIONS TO BUILD LINKAGES**

Despite the obvious relationship between land use decisions and water supply planning, the separate institutions governing each have proven difficult to integrate. This section outlines some promising areas of reform in state water policy, municipal water supply planning, and in the water resource component of land-use decision making.

## **STATE WATER POLICIES**

### **► Efficient Water Use**

State water policies have been changing in the past several decades, encouraged by the factors outlined above to use water resources more efficiently, allowing voluntary transfers of water to more highly valued uses. Voluntary reallocation will be a major factor in meeting the demands of many growing urban areas. In some cases, urban water suppliers can pay irrigators to install more efficient water delivery systems, allowing the saved water to be diverted for domestic needs while preserving agricultural operations. More often, urban demands trump agricultural water uses in the marketplace, and farmland is rapidly being retired around fast-growing areas such as Colorado’s Front Range.

### **► Public Interest in Water**

State agencies responsible for water resource planning see increased interest from citizen groups and other stakeholders, consistent with the nature of water as a public resource and the duty of the state to ensure protection of diverse public interests in water. Open, participatory decision processes could offer the opportunity for a meaningful deliberation about the long-term tradeoffs and value choices inherent in water planning decisions, although this is far from the reality in most state water planning.

In rare cases, courts have used the public interest principle to limit cities’ reach for water, concluding that the projected urban demands do not justify the impacts of diverting water from streams and aquifers. The legal basis of the “public trust doctrine” is beyond the scope of this report, but is

described in several of the publications listed in the Resources section.<sup>3</sup>

### ► Physical Management Options

Technological advances allow more creative water management strategies, and will help meet growing and changing water demands. For example, when state laws support conjunctive management of surface and groundwater, water suppliers capture excess surface water and store it underground, to draw upon during the drier times of year. In some cases, this stored water can be exchanged for other water users' surface water supplies, allowing needs to be met without construction of new dams and pipelines.

Other technological advances have encouraged serious pursuit of desalination in coastal cities such as San Diego and wastewater reclamation and re-use in cities such as Denver.

### ► Collaborative Initiatives

Prompted by recurring droughts, better information about historical hydrological conditions, and emerging knowledge of global climate change, water managers are beginning to explore flexible institutional arrangements to ensure water supplies in a less certain future. Interstate water banks, water leasing, drought contingency plans, and other initiatives suggest that more cooperative approaches—while not yet the norm—may provide part of the answer to regional water supply challenges.

In some cases, diverse groups of stakeholders are inventing new forms of

governance based on river basin and watershed coordination.<sup>4</sup> In many cases, these new partnerships are authorized by legislation and spelled out in formal agreements. The specifics of how to work together across state and other jurisdictional lines are constantly evolving.

Elsewhere, cross-jurisdictional cooperation may occur on a more ad-hoc basis, as is evidenced by a February, 2006, agreement among the seven states whose use of the Colorado River is governed by a 1922 compact which significantly overestimated the water available for allocation. The plan (which still must be approved by federal authorities) would allow fast-growing Las Vegas to reach across state lines to lease water to meet short-term urban needs while working to obtain reliable permanent water supplies from within Nevada.

## LOCAL WATER PLANNING

### ► Realistic Population Projections

Local planners base their water demand projections on population forecasts. A recent study of water and land use planning in Colorado identified the population projection process as a critical intersection of land use and water planning—and an unrealized opportunity to question the assumptions that often lead to aggressive pursuits of water with little or no consideration of the tradeoffs of growth, alternative future scenarios, or whether current residents are ready and willing to pay for the infrastructure necessary to

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<sup>3</sup> See, e.g., Bates, et al., *Searching Out the Headwaters*; Arnold, *Wet Growth*; and McKinney, "Linking Growth and Land Use to Water Supply," all included in the Resources section at the end of this report.

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<sup>4</sup> See, e.g., the Platte River Endangered Species Partnership ([www.platteriver.org/](http://www.platteriver.org/)) and the CALFED Bay-Delta Program (<http://calwater.ca.gov/AboutCalfed/CALFEDProgram.shtml>).

support projected growth.<sup>5</sup>

The process of developing growth projections could form the basis for a productive, coordinated regional dialogue, but this rarely happens.

### ► **Realistic Cost Forecasts and Pricing**

Urban consumers seldom pay the full cost of the water they use. Similarly, urban suppliers historically have enjoyed considerable subsidies in water delivery systems, but this era is drawing to a close as the federal government withdraws from its dominant role as water provider. Some consumers are already facing steep increases in water prices to reflect the costs of building new delivery pipelines and other infrastructure.

Local water planners could do a better job of forecasting the full cost of obtaining water to meet projected demands, and thus help citizens make more fully informed decisions about the costs of new development. In the future, water prices more likely will include the social and environmental costs that until now have been borne by society at large as externalities.

### ► **Regional Coordination**

Similar to population projections, municipal water supply planning often occurs in a fragmented manner, each local supplier looking separately for reliable supplies, often in competition with its neighbors. Forced by economic necessity—and occasionally by legal mandate—local water suppliers are increasingly reaching across jurisdictional boundaries to pool their resources and thus make better use of

developed supplies.

For example, the City of Aurora, Colorado, recently reached an agreement to purchase water from neighboring Denver to meet needs during times of drought. Such regional cooperation might seem like an obvious strategy for adjacent communities, but the negotiations mark a significant change in an historically competitive relationship.

### ► **Conservation Measures**

Water suppliers recognize that the least expensive source of “new” water is in more efficient use of existing water supplies. Consumers are encouraged to use less water for daily activities through water metering, tiered pricing (charging more per gallon for heavy water users), subsidies for conservation measures, and public education programs.

Residents of Las Vegas, for example, can claim monetary rewards for converting irrigated lawns for less water consumptive plantings. The City of Santa Fe, facing serious limitations in its water supplies, requires developers to install new efficient toilets in existing homes before obtaining permission to build new homes.

While much has been accomplished through existing conservation programs, the full scope of potential savings remains unrealized.

## **INTEGRATED LAND USE AND WATER PLANNING**

### ► **Watershed-sensitive Planning**

Planners and local government officials are increasingly addressing the watershed-wide impacts of local land use decisions. Some

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<sup>5</sup> See Coulson, *Locally Integrated Management of Land Use and Water Supply*, in the Resources section below.

examples include development setbacks to protect sensitive streams and riparian vegetation, aquifer recharge initiatives, and clustered development to minimize impervious surfaces (streets, parking lots, and other hard surfaces that prevent precipitation from flowing into the soil).

Watershed-sensitive planning means looking ahead at future land use (and water) decisions, providing guidelines, and expressing priorities to ensure that critical landscape features are not destroyed when growth inevitably occurs.

### ► **Water Availability Review**

Some states and municipalities require an examination of whether projected water demands can be met by available supplies prior to approving proposed development.

In California, for example, two laws enacted in 2001 require: (1) written verification of the availability of water before cities and counties may approve subdivisions of 500 or more units; and (2) assessment of water supply for large residential, commercial, and industrial developments, as part of the environmental impact reports prepared under the California Environmental Quality Act.

Arizona and New Mexico also require “assured water supply” evaluations. New Jersey, like many states, simply requires that development approval be conditioned on a determination of adequate water supply, but provides no definition of “adequacy.”

Florida requires each municipality to adopt a ten-year Water Supply Facilities Work Plan, which must project the local government's needs for at least a ten-year period, identify and prioritize the water supply facilities and source(s) of water that will be needed to

meet those needs, and include capital improvements identified as needed for the first five years. This “concurrency” review requirement effectively integrates land use and water supply planning, although it does not impose as strict an evaluation or balancing requirement as the California model.

State legislatures could facilitate integrated water and land use planning by strengthening the requirements for a water resources element in comprehensive plans. For example, they might require that such plans identify the known supplies of water for future development, quantify the demand that would result from projected population growth, and analyze how demand will be met by available supplies (or what additional water will have to be obtained). This level of analysis at the broader planning stage may prove more useful than asking for assurances that water is immediately available once a particular development is under consideration. It would be particularly useful if the land use planners worked in close cooperation with water planners in this exercise in long-term thinking.

Water adequacy issues also arise when municipal growth outruns available water supplies or the infrastructure to deliver water to new users. In some instances, local governments have taken measures to limit new development when faced with inadequate water supplies. Courts have upheld temporary growth moratoria when services (infrastructure) are not available to deliver water to meet projected demands.<sup>6</sup> Generally speaking, however, limited water availability seldom restricts urban growth.

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<sup>6</sup> For a detailed discussion of the legal issues raised by growth limits and moratoria, see Tarlock and Van de Wetering, “Western Growth and Sustainable Water Use,” in the Resources section below.

## ► Consistency Review

Integrated water and land use planning may require state law changes to require a meaningful “consistency” review as part of the land-use decision process. In other words, when local decision makers consider a proposed development, they not only take into account the reliability of available water, but also look at whether the steps that would be necessary to obtain that water would be *consistent* with other land use and environmental laws and policies—including those governing endangered species, water quality, open space protection, and instream flow programs.<sup>7</sup>

Consistency review places a single land use decision into its larger social and environmental context, to prevent surprises, and to ensure that overarching public priorities are not consigned to “death by a thousand cuts.”

## CONCLUSION

This *Policy Report* describes the historical disconnect between state-directed water supply planning and locally administered land use decision processes. Despite the obvious relationship between where and how people live and the water they need to do so, our institutions have not encouraged decision makers to think about land and water use in the same processes. This approach is less and less acceptable as we become increasingly aware of the high costs of obtaining “new” water to accommodate growth.

The initiatives profiled in this report offer ideas for how to integrate considerations of water resources into land use planning, as well as examples of state water and land use policy reforms that may encourage more integrated approaches in the future.

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<sup>7</sup> For a detailed description of the consistency doctrine, see Tarlock and Lucero, “Connecting Land, Water, and Growth,” in the Resources section below.

## SELECTED RESOURCES

Craig Anthony Arnold, ed., *Wet Growth: Should Water Law Control Land Use?* (Envtl. Law Inst., 2005).

Sarah Bates, David Getches, Lawrence MacDonnell & Charles Wilkinson., *Searching Out the Headwaters: Change and Rediscovery in Western Water Policy* (Island Press, 1993).

James R. Cohen, *Water Supply as a Factor in Local Growth Management Planning in the U.S.: A Review of Current Practice, and Implications for Maryland* (Univ. Maryland, Urban Studies and Planning Program, 2004).

Scott E. Coulson, *Locally Integrated Management of Land-Use and Water Supply: Can Water Continue to Follow the Plow?* (thesis prepared for Master of Urban and Regional Planning, University of Colorado at Denver, 2005).

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U.S. Census, *Population Change in Metropolitan and Micropolitan Statistical Areas: 1990-2003* (Sep. 2005), available at [www.census.gov/prod/2005pubs/p25-1134.pdf](http://www.census.gov/prod/2005pubs/p25-1134.pdf).

U.S. Environmental Protection Agency, *Growing Toward More Efficient Water Use: Linking Development, Infrastructure, and Drinking Water Policies* (undated report), available at [www.epa.gov/smartgrowth](http://www.epa.gov/smartgrowth).