LESSONS LEARNED FROM SOUTHERN CALIFORNIA'S INTEGRATED RESOURCES PLAN

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INTRODUCTION

In California, few topics in state history have generated as much controversy and vitriol as water. For more than a century, it was well known that when anyone mentioned water in California, it was best to prepare for a spirited argument, a bitter lawsuit, or worse. North vs. south, agricultural vs. urban, environment vs. development -- these are just a few of the positionings into which California water issues often fall.

In the past, planning for Southern California's water supply was fairly straight-forward with the major focus on the construction and operation of water distribution facilities. However, as the demand for water increases and the attendant competition for cost-effective supplies continue, water supply planning must evolve to incorporate non-traditional solutions. The Metropolitan Water District of Southern California (Metropolitan) is the region's imported water supply wholesaler. Its historical role was to develop, store, treat, and distribute imported water from Northern California and the Colorado River to the southern coastal counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura in order to meet supplemental needs. Metropolitan is made up of 27 public member agencies which provide water directly to individual customers or wholesale the water to other retail water providers (private and public). With a service area of over 5,100 square miles and a current population of over 16 million, Metropolitan is one of the largest public water agencies in the world. The region's total water supplies include locally developed or financed resources, such as groundwater and surface reservoir production, recycled water, and surface supplies imported from the Owens Valley and Mono Basin by the City of Los Angeles. This locally developed water represents about one-half of the region's total demand, with the remaining supplies provided by Metropolitan.

Existing firm water supplies are projected to, at best, remain constant and, at worst, decline over the next ten years. Furthermore, future demands are expected to increase due to continued population growth of about 200,000 persons each year until 2020. If no action to improve local and imported water resources occurs, the region could experience significant water supply shortages once every other year (or 50 percent of the time). Of course this level of reliability would be unacceptable. Southern California's $500 billion a year economy ranks 9th in the world and is very dependent on a reliable water supply. As a result, Metropolitan, its member agencies, and representatives from other resource agencies and the public embarked on an unprecedented Integrated Resources Planning (IRP) process. The purpose of this process was to develop a coordinated resources plan (Plan) that would meet the region's multiple objectives well into the future through an open and participatory decision-making process. The challenge of the IRP was that each of Metropolitan's member agencies has different interests, concerns, and economics. Some agencies have plentiful groundwater resources and rely on Metropolitan only during peak periods or for replenishment of groundwater supplies; some agencies rely almost exclusively on Metropolitan for all of their consumptive demands; and some agencies are more balanced and rely on Metropolitan for about one-half of their demands. Complicating matters even more are the groundwater basin management agencies, which are not controlled by Metropolitan or its member agencies. These agencies regulate how much groundwater can be produced. With so many layers of water institutions and bureaucracy, developing consensus and a coordinated approach to solving the region's water problems was no easy task.

THE PROCESS

It began simply, with water agency technicians meeting around a table on a monthly basis beginning in June of 1993. But by the time the IRP process was finished, over 100 individual meetings, public forums, assemblies, and briefings had been held. In all, nearly 1,500 people had participated in Metropolitan's IRP process—coming from the business, environmental, civic, and water communities.

The consensus reached in Metropolitan's IRP came about because of the commitment and stamina of the participants, who continued to be involved over the course of the three year process. Most faithful was the IRP Workgroup, a committee of about 45 water professionals from Metropolitan's member agencies and groundwater management agencies. Meeting on a monthly basis, and sometimes even bi-monthly during the program development phase, these individuals made a significant commitment of time and energy, reviewing and analyzing the detailed technical evaluations prepared by staff and serving as the technical steering committee for the IRP process. Their comments and recommendations shaped the framework of the IRP and provided leadership for the decisions that had to be made by all of the individual member agencies.

The water agency professionals were not the only ones involved, the public was involved as well. During the entire IRP process, Metropolitan held a total of six public forums throughout the District's service area. Representatives from the business, environmental, agricultural, governmental, and water communities participated. Over 450 people participated in these day-long sessions, designed to solicit reactions to the preliminary results from the IRP and to obtain additional guidance. Participants were divided into small facilitated breakout groups to address specific questions and to have their input recorded.

Additional workshops and discussion sessions were held for Metropolitan's member agencies and subagencies to help design the local water management programs. Dubbed "Focus Groups," these sessions were aimed at obtaining the feedback of retail water agency managers who would have the responsibility of implementing whatever programs were designed for conservation, reclamation, and groundwater storage. Held during the summer of 1995, the five Focus Groups met three times to provide input on the program implementation issues.

The final piece of the process was a formal consensus process known as the "American Assembly," a concept pioneered by Dwight Eisenhower in the 1950's. In two-day events involving more than 150 people for each assembly, Metropolitan's Board Members and senior-level staff, as well as representatives from Metropolitan's member agencies, retail water providers, and groundwater management agencies convened in an open and participatory process not unlike that of a constitutional convention. After detailed discussions in individual breakout groups occurred, discussions took place in a plenary summary session. Then, the tenets agreed upon by all participants were fashioned into an "Assembly Statement," representing the consensus of those present.

A cornerstone of the IRP decision-making process, the Assemblies also represented the first time that all of the water leaders in southern California had come together to discuss critical water issues. A total of three regional Assemblies were held during the IRP process. The first Assembly was held in October of 1993 to discuss general principles of regional roles and institutional arrangements, affordability, financing, and resource development. The second Assembly was held in June of 1994 to discuss alternative resource mixes, member agency equity issues, financing and implementation. Finally, the third Assembly was held in March of 1995 to ratify the IRP Preferred Resources Plan, principles for local water management programs and conservation, and a commitment to regional interdependence. The same participants attended all three Assemblies, thus providing continuity and direction for the IRP process.

THE METHODOLOGY

One of the most interesting aspects of Southern California's IRP process was its reliance on technical evaluations and the desire of Metropolitan's Board of Directors and the member agency managers to have the IRP grounded in sound analytical approaches. Throughout the three year process, senior-level water managers and Board members spent hundreds of hours formulating evaluation criteria, reviewing analyses, and recommending course of actions. During the process, over $1.5 million was spent on developing the evaluation methodology and computer models needed for the IRP analyses. The overall technical approach can be summarized as follows:

1. Develop objectives for the IRP (reliability, cost, environmental protection, etc.)
2. Develop evaluation criteria to measure the success of achieving the objectives
3. Identify all possible resource options to meet the desired objectives
4. Develop compatible combinations of resource options into overall strategies

5. Evaluate alternative strategies (as a whole) in meeting desired objectives
6. Iterate as necessary.

Objectives and Criteria

The objectives for the IRP included: (1) meeting the desired reliability goal; (2) minimizing overall costs and rate impacts; (3) meeting the water quality requirements; and (4) incorporating environmental and institutional constraints. The adoption of the region's supply reliability goal was the initial step for the IRP. However, this reliability goal was subject to revision depending on the outcome of the evaluations. If, for example, the costs of achieving the reliability goal were too high, the process would iterate back to the reliability goal for adjustment. The criteria for measuring the success of achieving the objectives included: (1) probability and magnitude of supply shortages over time; (2) present value costs and rate increases resulting from overall resource strategy, using least-cost planning principles; (3) water quality evaluations of salinity; and (4) risk assessment of individual resource options, taking into account environmental impacts and institutional barriers.

Resource Options and Compatible Strategies

Possible resource options were identified during the first phase of the IRP process. Based on initial supply reliability evaluations, overall resource targets were developed for different hydrological scenarios (i.e., wet, normal, dry, and critically dry years). For example, it was estimated that about 2.8 million acre-feet of additional dry year water resources would need to be developed by year 2020 in order to meet the reliability goal. Resource options included: (1) additional imported supplies from the State Water Project (SWP) and Colorado River Aqueduct (CRA); (2) additional local water recycling; (3) additional groundwater recovery, treatment of contaminated groundwater supplies; (4) additional groundwater storage, using surplus imported supplies conjunctively to store water for dry years; (5) voluntary water transfers from willing sellers to willing buyers; (6) additional water conservation; and (7) ocean desalination. These resource options were ranked in terms of their total unit costs (dollars per acre-foot) and their risk. Risk was incorporated by either limiting the available supply for each option (given a cost estimate) or by increasing the cost estimate in order to obtain a "risk-free" investment. These adjustments were done in order to objectively compare each resource option. Figure 1 presents the results of the cost and risk assessment for the available options.

These resource options were grouped to form compatible resource strategies or mixes, which can then be evaluated in terms of their overall effectiveness in meeting the desired objectives. Initially, three broad resource strategies were developed as alternatives. All three alternatives were structured to meet the same level of reliability and were judged based on their overall costs and rate impacts, water quality, and environmental and institutional risks. The strategies included: (1) a maximized local supply development mix; (2) a maximized import supply development mix; and (3) an intermediate mix, balancing local and imported supplies.

Evaluation Results

The lowest cost alternative was the maximized import strategy, while the most expensive alternative was the maximized local strategy. The maximized local strategy also had the most negative impacts to water quality due to higher levels of salinity. The maximized import strategy had the greatest environmental impacts to fisheries and habitat, while the maximized local strategy had the least environmental impacts. Both the maximized import and maximized local strategies had to overcome the most institutional barriers. Based on the principle of diversification, the intermediate strategy best minimized overall risk. Although not the least-cost plan, it achieved the reliability and water quality objectives in a cost-effective manner and had rate impacts which were acceptable.

THE CONCLUSIONS

Through the consensus process, the intermediate strategy was ratified as the basis for the preferred resources plan for Southern California. This Plan represents a diversified approach, balancing local and imported water resource development with demand-side management and required infrastructure improvements in order to meet the present needs now and into the future. Figure 2 presents a breakdown of the resources included in the IRP for the year 2020, under a dry weather year.

The IRP has already had an impact. First, Metropolitan's 10-year capital improvement plan was reduced, from over $6 billion to $3.9 billion. Second, the IRP sent a clear signal to Northern California that Metropolitan was serious about its commitment to manage its local supplies and to implement conservation programs in order to reduce reliance on imported supplies. As a result of this heightened awareness, a landmark agreement was reached on the operations and environmental regulations of the most controversial state resource—the Bay-Delta estuary. After decades of unproductive politics as usual, the agreement calls for managing the environmentally sensitive Bay-Delta system based on science and sound management principles. This Accord has been hailed by federal regulators, environmentalists, water managers, and business leaders as a model for consensus.

Finally, one of the most important outcomes of the IRP is the increased awareness and coordination between the major water stakeholders in Metropolitan's service area. In addition to providing a vehicle for developing the "components" of the IRP, the participatory process also helped "invest" the participants in the final outcome and gave them a better perspective of each other's concerns. While all parties did not agree on every element, the overall result represented the collective consensus of the group. Most importantly, the IRP process was ratified and the framework for systematic evaluations was accepted.

LESSONS LEARNED

Is IRP for everyone? That is a difficult question to answer because IRP can mean so many things. Is IRP least-cost planning? Yes. Is IRP total water management? Yes. Is IRP a new way of involving major stakeholders in the decision-making process? Yes. Does an IRP have to be as extensive as Southern California's? No. In order for an IRP to be successful it is important to first identify the objectives. The objectives will justify the extent of the IRP. The other important aspect of the IRP is to identify the major stakeholders and fully understand their needs and their positions. Although IRP is an open and participatory process (this distinguishes it from traditional least-cost planning), it is important that the process be structured. Involving major stakeholders and the public

is a difficult undertaking, and without structure can lead to years and years of getting nowhere. A professional facilitator should be used throughout the process to help guide the participation. A strong analytical methodology and technical approach is also critical for the success of an IRP. This is a slow and continuous process. At first, many will not understand the complex issues and analysis that is the basis for the IRP. However, the use of advanced presentation techniques can help guide the stakeholders. Start the technical information simple. Build slowly to the concepts that ultimately need to be shown. In Metropolitan's case, by the end of the process, very technical information that often appears in text books were used successfully. Finally, the strength of any IRP is its flexibility and dynamic nature. Even with the most sophisticated analysis and technology, conditions will change in the future. The strength of an IRP is its ability to adapt to those changes. An IRP will has to remain a dynamic process, re-evaluated and re-adjusted at least every five or so years. The participatory process should continue even after the IRP is over, in order to obtain feedback on implementation problems and needed mid-course corrections.

THE AUTHOR

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Figure 1.
Resources Ranked by Cost

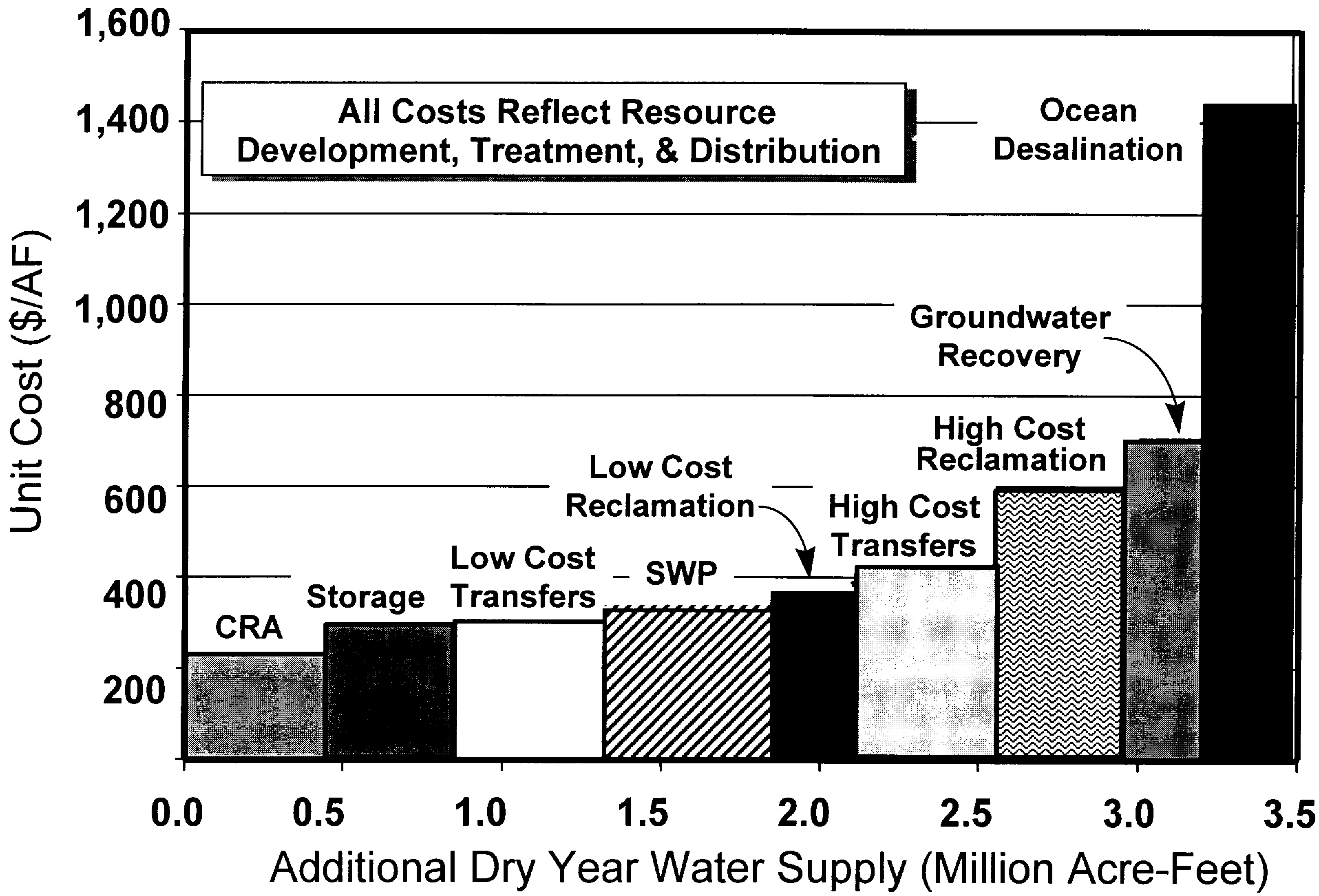

Figure 2.
Summary of Resources Included in IRP Preferred Resource Mix