

Integrating Master Planning With Strategic Long-Term Goals

Strategic master planning for water, wastewater, and storm water involves fully integrating technical, organizational, financial, and institutional issues to develop creative, effective, long-term alternatives and solutions. Identifying key linkages and synergistic opportunities provides the greatest flexibility for responding to existing and future regulations at the least cost.

This approach combines long-term capital improvement facilities planning with organizational design and effectiveness in day-to-day decision making. The first priority in this process includes reviewing mission, goals and objectives, information flow, decision mapping, and responses to outside pressures and interferences. This visioning process results in the alignment of organizational and stakeholder interests, goals, and directions.

Gap analyses are conducted to identify differences between performance and level-of-service goals and to develop the best strategies to close the gap. These analyses must consider both qualitative (organizational culture, customer perceptions) and quantitative (benchmarking data) information to be effective.

Using applied decision analysis is another essential element to the strategic master planning process. Applied decision analysis includes the use of state-of-the-art computer software applications to identify, develop, and evaluate planning scenarios. The applied decision analysis enables the continuing optimization of the strategic plan. It also allows for the evaluation of scenarios under changing constraints and priorities.

Stakeholder and public involvement is critical for the success of strategic master planning. The public involvement process is based on organizational behavior and "win-win" economic decision theory and facilitates clear communication among participants.

Our Experience

Carollo is a leader in the development of award-winning, comprehensive master plans for wastewater agencies facing a variety of complex issues. Within the past 15 years, Carollo has prepared wastewater master plans or facility plans for more than 50 wastewater treatment facilities and completed collection system planning for over 70 agencies. We have also provided master planning services for municipal

Sacramento
Regional County
Sanitation District,
Sacramento,
California
20-Year Strategic
Wastewater
Master Plan.



utilities with wastewater treatment facilities ranging in capacity from 1 to 300 mgd.

Carollo offers a full range of water system planning, water treatment plant evaluation, and treatment pilot study services. Water and infrastructure master planning has been an integral aspect of Carollo's experience for more than six decades. Many of our long-term client relationships began with long-range planning projects.

In the past 15 years alone, we have provided planning services for over 70 municipal clients and completed water treatment plant evaluations for over 100 facilities treating a wide variety of surface water supplies in 25 different states. These projects have involved water supply and resource evaluations, water quality and treatment analyses, area characteristic studies, water conservation alternative evaluations, resource alternative studies, user evaluation studies, and financial analyses. Using this information, we have completed water and infrastructure management plans.

We have the our ability to successfully simplify complex technical, legal, regulatory, and institutional issues to provide clear, concise, cost-effective, and implementable recommendations. Projects range from small planning studies to comprehensive regional master plans. These plans address process and collection system reliability, flexibility, and operational issues. Our professionals provide cost-effective solutions which utilize existing facilities to the greatest extent possible and limit treatment alternatives and capital expenditures to the most reliable and easy-to-implement options.

Case Studies

The Carollo team worked with regulators and downstream agencies to develop workable effluent and receiving water requirements for the Sacramento Regional County Sanitation District's 20-year Strategic Wastewater Master Plan. Master planning scenarios were developed with the objective of accommodat-

"Dedicated to creative, responsive, quality solutions for those we serve."

ing anticipated regulatory and growth requirements, and optimizing existing facilities while embracing new technologies.

For the City of Phoenix's Strategic Water Master Plan, the goal was to provide a comprehensive strategic master plan incorporating the concepts of source development, conservation, reuse, water quality, and system reliability and flexibility. Carollo appraised existing and possible future sources of water to meet projected requirements, analyzed usage trends and management techniques, reviewed conservation concepts and reuse plans and presented general guidelines for source economy and a reasonable reduction in demand.

Carollo developed a flow-and-load-triggered implementation strategy for the Fresno-Clovis Wastewater Reclamation Facility that allowed for "just in time" construction, rather than a strict timetable to trigger expansion projects.

Carollo completed a Long-Range Master Plan for the City of Ashland, Oregon. Complicating the planning process were often conflicting issues such as curbing growth, protecting the public's safety, providing opportunity for economic development, sustaining the quality of life, maintaining local control, and being environmentally responsible. Key project issues included identifying emergency scenarios and goals, evaluating water conservation measures, addressing water rights and jurisdictional issues, assessing reclamation and reuse benefits, and evaluating funding options.

The Carollo team performed an integrated water resources analysis to integrate the water supply and wastewater facilities decisions for the Cities of Reno, Sparks, and Washoe County, Nevada. This analysis for the Wastewater Reclamation Facilities Strategic Master Plan identified several linkages, including TDS and water conservation, that affect the overall capacity and operating costs of both water and wastewater systems. Carollo also established watershed and water quality models to evaluate the benefits of reducing nonpoint source loadings for development of revised total maximum daily loads (TMDLs) for the Truckee River and water quality impacts in Pyramid Lake.

Our tasks for the Wastewater Reclamation Facilities Strategic Master Plan also included establishing a governance structure to provide representation from the three client agencies, establish an equitable decision-making process, and provide a forum for communicating a consistent set of goals/objectives to the various policy makers and stakeholders in the region.

Innovative Tools

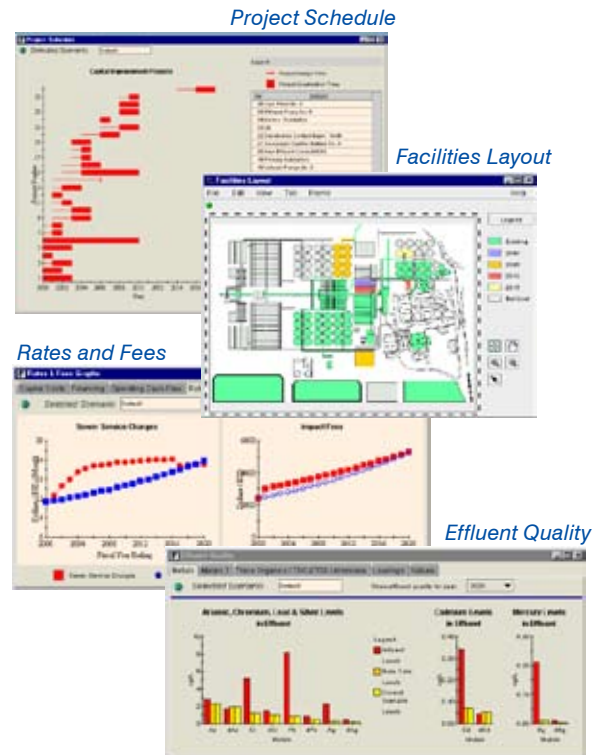
Master Plan Manager

Carollo developed Master Plan Manager to guide treatment plant planners and managers through the development of master plan scenarios, and to provide critical information for making informed decisions in managing water, wastewater, and water resources.

This software package allows the user to select a set of master planning options from a Strategy Table. Master Plan Manager incorporates these selections into a master plan scenario and within minutes displays capital improvement plan results including financial, environmental, stakeholder, and other critical planning information.

Key features of Master Plan Manager include:

- ▼ Four- to six-week development periods for planning scenarios reduced to just minutes.
- ▼ Demographic, financial, engineering, and stakeholder models incorporated into one comprehensive solution.
- ▼ Options for growth rates, service area expansion, water conservation, source control, biosolids recycling/disposal, water reuse and watershed management options.
- ▼ Graphical user interfaces that are easy to use and understand.



CIP schedule, facilities, financial, and effluent quality outputs.