NACWA 2014 Excellence in Management Recognition Program
Metro Wastewater Reclamation District, Denver, CO

Product Quality

The Metro Wastewater Reclamation District's (Metro District or District) Robert W. Hite Treatment Facility (Hite Facility) discharges treated effluent to the South Platte River. The South Platte is a heavily-used water source and due to water rights and related diversions the Hite Facility's reclaimed water makes up as much as 85 percent of the flow in the River for as much as six months of the year. The District's effluent limits are set equal to the water quality standards to protect aquatic life, downstream drinking water supplies, and recreational and agricultural uses in this effluent-dominated environment.

The Metro District anticipates receiving a NACWA Peak Performance Platinum Award for 2013. This accomplishment is particularly significant as the District's South Secondary Complex has undergone extensive construction modifications of operating treatment facilities over the past several years to comply with much stricter nitrogen removal limits that become effective January 1, 2015, while existing unit processes have remained in service. The District is on track to be in full compliance with those new limits.

In addition to producing effluent that meets all discharge requirements, the Metro District has integrated habitat improvements in the South Platte River into the permit development process with regulatory agencies. These improvements are defined in a phased series of projects that include the development of habitat features such as riffles, snags, and spur dikes to improve aquatic life habitat. The approach is defined in a Memorandum of Understanding with the U.S. Environmental Protection Agency (EPA) and the District is compliant with all elements of the MOU. Ongoing monitoring efforts have documented long-term improvements in the water quality of the River and improved the aquatic health of the River.

The Metro District produces Class B Exceptional Quality Biosolids that are 100 percent recycled through the District's beneficial reuse program that relies on land application at private farms and the District-owned METROGRO Farm (Farm). The District maintains a waiting list of private farmers in eastern Colorado who want to receive the District's biosolids.

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Financial Viability

In order to meet the Metro District's statutory obligations, bond covenants, Board policies and requirements, and to ensure the District continues to meet financial obligations and maintain its strong financial position, District management developed a 10-year cash flow model which is updated annually. The Board of Directors has a long-range philosophy of establishing stable and predictable rate increases. In developing the District's 2014 Adopted Budget, the 10-year cash flow model used included the following projected annual rate increases:

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
4.5%	5.0%	5.0%	5.0%	6.0%	6.0%	5.0%	5.0%	5.0%	5.0%

Based on the10-year cash flow model, management proposes–and the Board of Directors approves–the District's Budget on an annual basis. Despite necessary increases in staffing, materials and fuel, outside consulting costs, and support expenses, the 2014 Budget includes an operating expense budget just 3.5 percent higher than the 2013 operating expense budget. The District's operating expenses and favorable variances to budgets were as follows for 2011 through 2013:

	2011	2012	2013
Operations & Maintenance (O&M) Budget	$58.5 million	$59.5 million	$61.6 million
Actual Expenditures	$55.9 million	$58.1 million	$60.0 million
Favorable Variance	4.5%	2.4%	2.6%

The Metro District's Board of Directors has also instituted policies to ensure the District meets financial obligations and maintains a strong financial position. Board policies related to reserve balances include but are not limited to:

	2011	2012	2013
O&M Revenue Fund (90 days operating expenses plus $1 million)	$15.6 million	$16.1 million	$16.7 million
General Fund (90 days operating expenses)	$14.6 million	$15.1 million	$15.7 million
Sewer Connection Charge Account	$23.8 million	$26.5 million	$25.0 million

The Metro District performs ongoing, continuous capital expenditure planning that includes updating Facility Plans every 5 years. The District's 2013 Facility Plan integrates and prioritizes regulatory-driven projects, capacity needs, and rehabilitation/replacement of aging infrastructure for a 20-year planning period with recommendations for treatment optimization and reductions in planned expenditures. The District maintains a Fixed Asset Replacement (FAR) Program that includes a separate fund and ensures aging infrastructure is replaced prior to failure, incorporating technologies to reduce long-term operating costs.

The Metro District has a sophisticated Capital Project Management Program that complements the Facility Planning process through which hundreds of potential capital projects are evaluated and planned for over a 10-year period and are included in the 10-year cash flow model.

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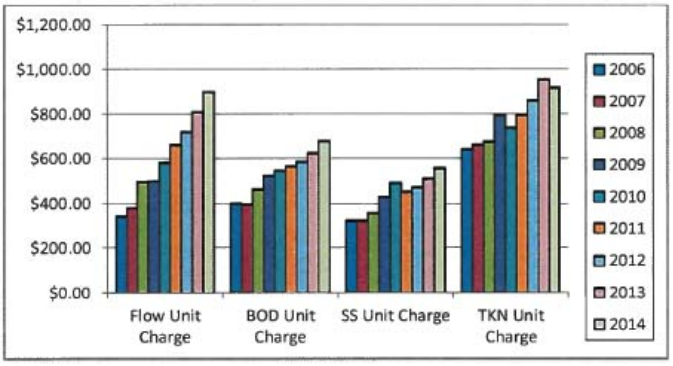
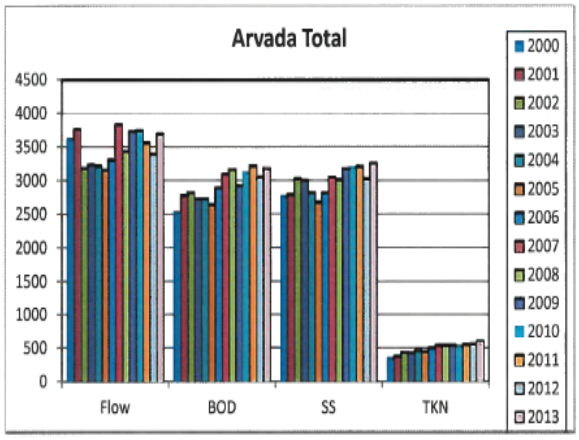
Customer Satisfaction

The Metro District's customers are the 60 local governments ("Connectors") that contract with the District either directly or indirectly for wastewater transmission and treatment service. Of those 60 Connectors, 22 are Member Municipalities with representation on the District's 36-member Board of Directors. The Board meets monthly and holds semi-annual workshops with District staff to allow for in-depth discussion of important issues. The Board also has an annual budget workshop in March to begin the process of developing the next year's budget.

The Metro District charges its Connectors for wastewater transmission and treatment based on the actual quantity and quality of wastewater conveyed to the District for treatment. The single biggest customer satisfaction challenge the District faces is adequately explaining to its Connectors why wastewater rates are increasing. Wastewater is metered and sampled for each Connector, and the District's budget is allocated to unit charges for flow and pollutant loadings. As the District's capital improvement needs have increased over the last several years, the unit charges – or cost to treat wastewater – have also increased.



Metro District staff meets regularly with Connectors' Boards and staff, and solicits Connector input annually on projections of future wastewater flows and anticipated new development within the service area. All Connectors are provided an annual explanation of the District's budget and their annual payments for the coming year. The District has found that providing a history of flows and loadings helps Connectors understand the impact of growth and the natural variability in wastewater.



The Metro District's outreach to Connectors related to their annual payments has resulted in a better understanding of the District's Annual Charges for Service and has increased Connectors' confidence in the District's ability to accurately assess charges.

In addition to the Metro District's extensive customer service outreach, the District participates in mutual aid agreements to deal with emergencies in Connector jurisdictions, maintains an emergency call list to provide notice of upsets at District facilities, and has worked with Connectors to put in place interconnect agreements to protect environmentally sensitive areas within the District's service area from sanitary sewer overflows.

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Employee and Leadership Development

The average tenure of the 360 employees at the Metro District has remained at 14+ years for the past two decades. The District has experienced great success in attracting and retaining talented employees due, in part, to the collaborative selection process, flexible scheduling, and a pay for performance compensation philosophy. Additionally, in recent years, the career development resources available to employees have been the focus of many communication initiatives. Employees have received training in how to have a career development discussion with their supervisor. Supervisors, in turn, have received training in how to respond to such queries, how to mentor, and how to be a resource for their staff regarding career development.

The Metro District launched a series of formalized succession planning initiatives from which efforts to attract, develop, motivate, lead, and retain its workforce have become an ongoing process imbedded in the day-to-day operation. The three-part assessment included (1) review of existing documents such as the annual budget, organizational charts, training reports, and other documents; (2) interviews with employees from all levels of the organization to gain an overall perspective of the organization's culture; and (3) comparison of the existing processes with those of public/private sector benchmarks and best practices. Five recommendations were identified from this analysis:

1. Create a formal District Leadership Success Profile
2. Design and deploy cross-functional Talent Review processes
3. Design and deploy Career Development processes
4. Refine and deploy succession planning tools and accompanying processes
5. Create and deploy formal processes for transitioning people into new roles

Metro District staff has taken guidance from the recommendations and accompanying narratives in the assessment to better provide direction and support to employees for growth and development. For example, the District Manager and Department Heads identified eight characteristics that form the basis for selection and development of future District leaders:

Creativity – Cross Functional Perspective – Dedication to the District – People Management – Effective Collaboration – Integrity – Practicing Inclusion – Track Record of Results

The Metro District also took guidance from the assessment and has added a section to its Performance Appraisal documents for both an employee and supervisor to suggest and discuss desired training, classes, and personal goals for development and career aspirations.

Career development is defined as an organized approach used to match employee goals with organizational needs in support of workforce development initiatives. Career development at the Metro District includes one-on-one coaching sessions, a tuition reimbursement program, participation in conferences and professional organizations, training and development courses, employee input into job descriptions, a reference library, a defined Performance Appraisal process, a job posting system for internal candidates, and a Leadership Success Profile.

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Operational Optimization

The Metro District supports a culture of continual improvement that results in new concepts and approaches being considered at all business levels. This approach is evident through capital planning, infrastructure construction, and daily operations in the organization.

In 2012/2013, the Metro District undertook a major planning effort that evaluated infrastructure improvements to meet its capacity, regulatory, and business needs. A key consideration of the plan was meeting future effluent phosphorus limits. The process engaged the contribution of engineering, the operating departments, and industry experts to develop a phased approach to biological phosphorus removal in the near term and advanced phosphorus removal in the long term. The near-term approach begins with implementation of an innovative side-stream enhanced biological phosphorus removal concept conceived and demonstrated at full-scale by District staff. The demonstration provided confidence in infrastructure planning that resulted in capital cost savings in excess of $60 million compared to a conventional biological phosphorus removal configuration. The approach also will provide opportunity for long-term reduced chemical, power, and resource requirements.

The Hite Facility's South Secondary Complex is undergoing a major improvements project that involves construction of a new biological nutrient removal facility. The work requires existing unit processes to remain in service during construction, which introduces complexities relative to day-to-day operations. The Metro District implemented two concepts to minimize operational impacts. The first was a Process Optimization and Troubleshooting Team that includes operations staff, engineering staff, design consultants, and contractors. The team forecasts process interruptions due to construction activities and identifies collaboration and coordination opportunities to minimize impacts to effluent quality, operations stability, and cost. The second concept is the use of a coordinated near-term maintenance and construction schedule to identify potential impacts to operations. This allows District staff at all levels to evaluate the potential for conflicts between multiple work efforts and leverage opportunities, such as process shutdowns, to simultaneously meet maintenance and construction needs. These efforts have helped facilitate side-by-side operational efficiency, construction scheduling, and discharge permit compliance.

Optimization is a fundamental tenant of the Metro District's approach to clean-water utility operations and includes regular identification, evaluation, and reporting of opportunities. The District also maintains an embedded technical group devoted to enhancing operations; typical activities include best-practices audits, process modeling to identify efficiency opportunities, technology pilot testing, annual operating plans, and identifying performance metrics. The District actively participates in industry-level activities to move innovation into practice such as the Water Environment Foundation (WEF)/Water Environment Research Foundation (WERF) Lift Program. In 2013, the District was honored to be acknowledged jointly with MWRD-Chicago with the WERF Excellence in Innovation Award for evaluation of deammonification technologies. The incorporation of this technology into the near-term planning for the Hite Facility will provide opportunity for optimization related to effluent quality and costs.

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Infrastructure Stability

The Metro District ensures infrastructure stability through coordination of asset replacement capital planning and recurring maintenance activities to provide efficient and timely condition assessment, repair, rehabilitation, and replacement.

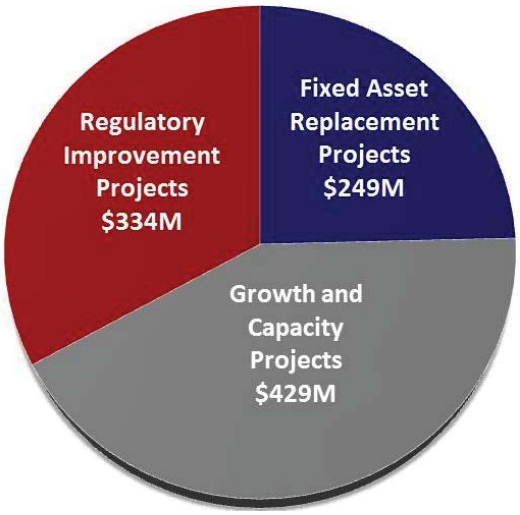
The Metro District maintains a comprehensive interceptor system inspection and maintenance program that includes:

- An annual surface inspection of critical structures and facilities.
- A closed-circuit TV (CCTV) inspection program that evaluates the condition of a least 10 percent of the interceptor system annually. Interceptor system operators take field notes regarding interceptor condition during CCTV inspections.
- The District's Engineering Department reviews (1) all CCTV inspections and field notes and (2) annual interceptor rehabilitation projects included in the Capital Expenditure Schedule (CES) to rehabilitate interceptors, manholes, and other facilities found to be in poor condition.
- A preventative maintenance program that includes routine interceptor sewer cleaning plus more frequent cleaning, based on past experience, for specific areas within the system, such as areas with known problems due to root intrusion and/or grease or grit build up.

This information is documented in a GIS system that allows easy access to condition information over time, auditing, and coordination with other spatial information such as capacity.

The Metro District's annual budget process includes a complete evaluation/update of the CES, including the fixed asset and equipment replacement schedule. A Fixed Asset Register and Replacement Fund Model are used to forecast funding needs; fixed asset replacements are reviewed in Facility Planning activities and capital project definitions. A dedicated Fixed Asset Replacement Fund provides funding for the fixed asset replacement projects. The District expects to spend approximately $249 million for asset replacement projects for the next ten years.

The Metro District's maintenance workgroup sets an annual goal for at least 80 percent of maintenance work performed to be planned maintenance. In 2013, this goal was exceeded with 90.3 percent of the work being planned. Priority One (emergency) work orders were at 1.9 percent in 2013; this compares favorably to the District's goal of less than 5 percent.



Asset replacement projects account for 25 percent of future capital expenditures over a 10-year period

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Operational Resiliency

The Metro District maintains extensive policies to ensure its financial, operational, and environmental strength, and actively participates in the Colorado Water/Wastewater Agency Response Network, known as CoWARN. The District also maintains procedures for responding to emergencies at the Hite Facility or within the District's transmission system. The District maintains a National Incident Management System (NIMS)-compliant emergency response plan and routinely exercises elements of the plan. The District also has dedicated security and safety organization functions to proactively address the core elements of operational resiliency.

In September 2013, Colorado experienced regional flooding resulting from unprecedented rainfall. Like many utilities, flooding impacted Metro District operations and threatened the infrastructure. The District activated several elements of its emergency response plans to monitor the flooding and in response to critical threats to lift stations and interceptor sewers. Subsequent emergency responses (1) provided physical responses to damaged facilities, (2) secured the damaged perimeter, (3) notified key stakeholders and the community, and (4) funded response and restoration efforts. Business recovery activities provided capability to continue wastewater transmission and treatment operations.

Bank erosion on the District's east boundary with Sand Creek; erosion came within 90 feet of the Hite Facility's Disinfection Building.

Long-term repairs were planned and initiated, and the Metro District coordinated with regional emergency agencies and FEMA on recovery efforts. The District also evaluated its response and modifications that would improve response to future events. Throughout the flooding event, the District maintained compliance with its discharge permit.

The Metro District routinely evaluates its emergency systems. In 2013, the District implemented a shelter-in-place system at the Hite Facility after an evaluation determined this to be a more effective response to potential threats on the District. The system includes 25 emergency shelters on the plant site that can provide protection to hazardous material emergencies until the danger has passed or first responders provide assistance. The system includes automatic notifications to improve the clarity of direction provided to employees, contractors, and visitors.

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Community Sustainability

Renewing Earth's Resources

Metro Wastewater Reclamation District Sustainability Approach

METRO WASTEWATER RECLAMATION DISTRICT

Vision Statement:
Provide Local, State, and National Leadership by Optimizing Resources to Supply Clean Water for Current and Future Generations

Sustainability Goals:

Environmental
- Portfolio Approach to Balance Impacts from Power, Natural Gas, Water, Chemical Use
- Incorporate Sustainable Principles into Facilities
- Enhance Water Quality and Continue Environmental Stewardship of the South Platte River
- Limit Greenhouse Gas Emissions Whenever Possible and Feasible
- Balance Competing Environmental Priorities

Economic
- Optimize Power, Natural Gas, Water, Chemical Use
- Maximize Resource Recovery and Provide Flexibility to Market Changes
- Maintain Flexibility for Processes to Meet Future Regulations
- Cost-Effective for Customers

Social
- Be an Asset to the Community
- Be a Leader in Sustainability
- Mitigate Odors
- Raise Awareness of Environmental Stewardship (Air Quality / Water Quality / Green House Gas Emissions)
- Form Partnerships to Contribute to Sustainable Community Development

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Water Resource Adequacy

As a clean water utility, the Metro District does not have a direct role to play in meeting the regional water resource needs; however, the South Platte River is an important water supply for many communities. The reclaimed water from the District's Hite Facility makes up as much as 85 percent of the flow in the River for as much as six months of the year. Ensuring that reclaimed water meets all water quality standards for the protection of drinking water supplies is critical to meeting regional water resource needs.

The Metro District also plays a key role in regional water reuse efforts. The City of Aurora, a District Member Municipality, has operated its Sand Creek Water Reclamation Facility (SCWRF) for decades to produce nonpotable water for landscape irrigation, which reduces the need to develop new potable water supplies. The SCWRF diverts Aurora wastewater prior to its discharge to the District's system, treats the water for nonpotable uses, and discharges all solids residuals of its treatment process back to the District's system for further treatment and beneficial reuse. The SCWRF also relies on the District as a backstop if it experiences upsets in its operations and is unable to meet the water quality requirements of its nonpotable uses or surface water discharge.

Denver Water, the largest municipal water supplier in the region, operates a source water pump station for its Water Recycling Plant at the Hite Facility. Denver Water intercepts final reclaimed water from the Hite Facility and conveys it for additional treatment and use as nonpotable water for industrial uses, landscape irrigation, and water features in several Denver parks. Denver Water has identified recycled water as a key component of its Integrated Resource Plan for meeting its water resource needs in the future.

Finally, the City of Aurora has completed its Prairie Waters Project approximately 26 miles downstream of the Hite Facility. The Prairie Waters Project relies on natural stream process to further purify reclaimed water from the Hite Facility, pumps the water from the South Platte River with a series of pumps set 300 feet back from the River channel using stream bank filtration to further purify the water, stores it in aquifer recharge and recovery facilities located in Weld County, Colorado, and then conveys it for additional treatment as a potable water supply at the Peter Binney Water Purification Facility. The Prairie Waters Project is a key component of Aurora's water supply, and recent discussions with other water providers in the region have resulted in the creation of the Water, Infrastructure, and Supply Efficiency (WISE) Partnership to use excess capacity in the Prairie Waters Project as a renewable water resource to jurisdictions in the region that currently rely on non-renewable groundwater.

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Stakeholder Understanding and Support

The Metro District communicates with its stakeholders through a number of communication methods. The District is a founding member of the Colorado Water Quality Forum (a statewide, ad hoc organization that meets bi-monthly to discuss water quality issues) and of the South Platte Coalition for Urban River Evaluation (SP CURE), which facilitates coordinated water quality monitoring and assessment among various wastewater, stormwater, drinking water, and conservation organizations in the greater Denver metropolitan region. The District is a member of the Colorado Foundation for Water Education and annually supports tours focused on the South Platte River. Other communication methods include personal discussions, presentations to groups, media alerts, and website updates.

Metro District staff participates in a number of local and regional water festivals; gives presentations to school groups; business organizations; conservation organizations; downstream water users; economic development counsels; and local government boards, councils, and commissions. The District also provides tours of the Hite Facility to school groups (middle school and above), civic organizations, citizen advisory councils, conservation groups, and various other organizations.

In 2009, the Metro District began planning for the construction of its first satellite facility, the Northern Treatment Plant (NTP). The NTP Program spurred the development of a more formalized outreach program to ensure community support for this important project.

The NTP Communication Team (CT) is responsible for planning, managing, and executing all stakeholder and public outreach throughout delivery of the NTP Program. The CT Lead is the primary interface between the Program and regulatory agencies, Connectors, and other stakeholders. Below is a summary of outreach efforts undertaken from 2009 through 2013:

- Developed and maintained a stakeholder database to facilitate continual, targeted outreach throughout planning, design, and construction.
- Developed and implemented a *Communication Plan* (updated annually) to provide a framework for keeping internal and external stakeholders informed about the NTP Program. Planned outreach includes:
    - Semi-annual Program Plan and monthly Progress Reports.
    - Semi-annual key stakeholder newsletters.
    - Over 1,000 monthly pipeline construction postcards mailed to nearby residents.
    - NTP Hotline regularly updated with pertinent NTP Program information.
    - Regular meetings with key stakeholders.
    - Internal communication posters relaying key NTP Program information.
    - NTP website regularly updated with pertinent NTP Program information.
- Members of the CT presented to numerous City Council/County Commission meetings in support of NTP Program permits and Intergovernmental Agreements. Every approval received to date has been unanimous.

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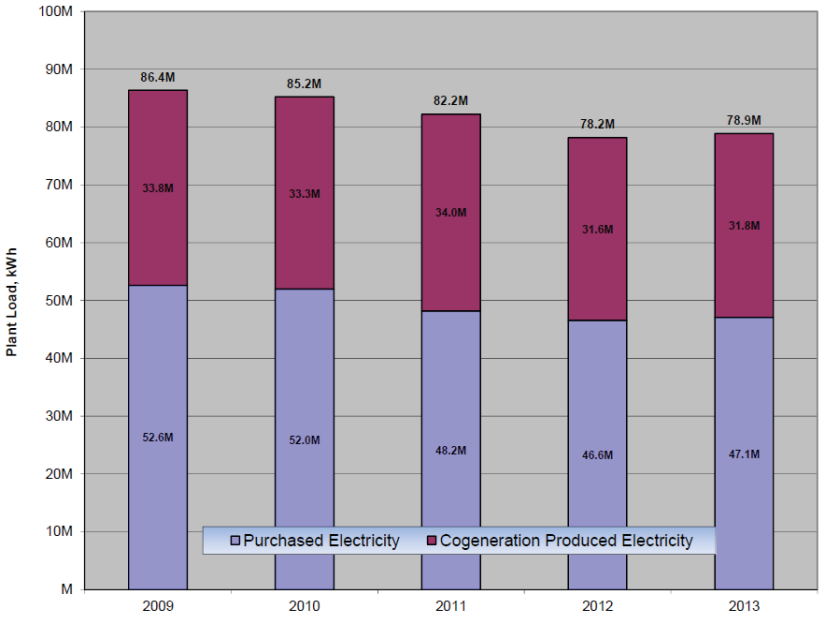
Energy Management

The Metro District has approached electricity management activities from several different perspectives, with the common goal of reducing power needed to produce clean water. Major activities include (1) cogeneration to self-generate a significant amount of electricity needed at the Hite Facility, (2) participation in local electric utility process efficiency programs, and (3) implementation of District initiatives targeted to reduce electricity consumption.



Over the past five years, these efforts have resulted in decreased power usage at the Hite Facility (illustrated above), at a time when the number of customers served by the Metro District continues to increase. Cogeneration is an important component of the District's energy efficiency approach, using turbines to burn methane produced in digestion to generate electricity and industrial-grade process hot water. Combined with power conservation efforts, continued emphasis on cogeneration allows the District to self-produce 40 percent of its power needs.

The Metro District is participating with Xcel Energy, the local electrical utility, in a formal Process Efficiency Program to identify conservation opportunities. The Program included an audit to identify opportunities based on the District's facilities and performance compared to industry standards. The improvements range from treatment process changes and integration of new technologies to installation of high-efficiency motors and lighting. The potential opportunities have been prioritized, with economic payback being one of the primary considerations. The program includes cost-sharing components based on the type and timing of improvements, thereby increasing the value of these changes to the District ratepayers.

Metro District staff has also implemented a variety of initiatives targeted at energy conservation. One example is focused on secondary treatment where several discrete efforts combined to reduce aeration power usage for secondary treatment – the single largest power use on the plant site. A key component of the effort was implementing an aeration control system that monitors ammonia real-time in the treatment train and then uses an algorithm to identify the dissolved oxygen required to meet treatment process goals. Minimizing the dissolved oxygen requirements reduced aeration blower usage and thereby electricity consumption.

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Pretreatment

The Metro District's Pretreatment Program includes sufficient legal authority to regulate the discharge of pollutants from non-domestic sources; adequate staffing, funding, and procedures to operate the program; technically based local limits, including Best Management Practices, as required; and an enforcement response plan.

The Metro District developed procedures to (1) identify and locate all industrial users; (2) identify the character and volume of pollutants contributed by industrial users; (3) sample and analyze effluent from industrial users, conduct surveillance activities, and evaluate slug discharge potential; (4) receive and evaluate industrial waste monitoring reports and other notices; (5) investigate noncompliance and initiate enforcement procedures in cases of noncompliance; (6) notify industrial users of applicable pretreatment standards and hazardous waste requirements; and (7) comply with public notification requirements for industries found to be in significant noncompliance (SNC).

Categorical industries and other significant industrial users (SIUs) are issued wastewater discharge permits to ensure the industry's compliance with discharge requirements. These industries are required to conduct ongoing self-monitoring, submit compliance reports, and correct noncompliance (if applicable). The Metro District issues Zero Discharge Permits to all zero-discharge categorical facilities and Perchloroethylene Advisories to dry cleaners, "perc" suppliers, and recyclers to ensure these facilities are aware of pretreatment requirements and prohibitions related to their specific process operations. The District has established policies for the proper disposal of unused pharmaceutical drugs; the prohibition of discharges from cooling towers, boilers, and heating and cooling systems treated with molybdenum-containing water treatment chemicals, and the reduction or elimination of discharges containing nonylphenol.

The Metro District conducts inspections and environmental monitoring of all permitted SIUs and performs monitoring beyond that required by pretreatment regulations. The District also conducts environmental monitoring at the publicly owned treatment works influents and numerous locations throughout its service area. This data allows the District to track program effectiveness and promotes investigation of any anomalies or increases in pollutants of concern.

The Metro District had 53 permitted dischargers in 2013. Of those, 30 percent were in 100 percent compliance with all pretreatment requirements; 21 percent were in noncompliance with effluent limitations; 17 percent were in noncompliance with reporting requirements; and 19 percent were in noncompliance with other permit requirements. Over the past three years, the District has issued 169 enforcement actions and assessed $55,900 in penalties.

In 1992, the Metro District established a program to recognize dischargers achieving 100 percent compliance and demonstrating a commitment to environmental excellence. These dischargers are formally recognized at an annual ceremony where they are presented with a Gold Award (1 year) or Platinum Award (5 consecutive years). Pretreatment staff from local jurisdictions, the EPA Region VIII, and the State are also invited to the awards ceremony.

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Biosolids

For more than 30 years, the Metro District has relied on the production, marketing, and sales of METROGRO® brand fertilizer as its chief biosolids management strategy. The District's Biosolids Reuse Policy, adopted in July 2004, states the District is to beneficially reuse biosolids generated from the treatment of wastewater, except when necessary to meet operational or emergency situations.

The Metro District produces an Exceptional Quality Class B biosolids product. During the three-year period of 2011 through 2013, the District used two biosolids management options for recycling 100 percent of its biosolids: land application on either privately owned agricultural property or the District's 52,000 acre Farm, and (2) the use of a private composting company.

100% Beneficial Reuse					
Year	Biosolids Produced (dry tons)	Land Application (dry tons)			Composting (dry tons)
		METROGRO Farm	Private Farms	Total Acres	
2011	26,589	8,212	16,467	13,179	1,910
2012	27,026	9,294	15,964	15,222	1,768
2013	26,068	2,518	21,892	13,965	1,658

The Metro District has land-applied biosolids to privately owned agricultural sites since 1980 and to the Farm since 1993. The District maintains good relationships with the private farmers who are very supportive of the District's biosolids land application program. The purchase of the Farm for dedicated land application provides the District with a sustainable, long-term option for the biosolids management program. The District is also one of the largest utilities in the country using in-house resources for permitting all application sites, transporting the biosolids to each site, spreading the biosolids on the land, and incorporating the biosolids into the soil.

The Metro District has in place a proactive public participation and outreach program to communicate about District actions and to involve interested parties in its biosolids management activities. This program includes quarterly meetings with interested parties and annual meetings with the Farm neighbors. The most recent initiative included the implementation of a Field Day at the Farm which is open to the public, and development of a Wastewater and Renewable Resources teacher in-service course in cooperation with Colorado School of Mines. Since 2005, the District has maintained a certified Biosolids Management Program, as part of the program developed by the National Biosolids Partnership.

The Metro District actively participates in biosolids research with State and federal partners such as the Natural Resource Conservation Service (NRCS), United States Geological Survey, and Colorado State University (CSU). Currently, a project to determine the plant available phosphorus in biosolids produced during biological phosphorus removal is underway with CSU to preserve the long-term viability of agricultural land application in Colorado.

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Water Quality Protection on a Watershed Basis

A primary goal of the Metro District is water quality protection on a watershed basis. Beginning in the late 1980s, the District developed a water quality model for the 26-mile reach of the South Platte River beginning upstream of its discharge and continuing downstream to the end of the regulatory segment. Beginning in 2006, this model was expanded to include another 10+ mile reach of the River to capture the entire length of the effluent dominated reach. The model captures upstream water quality, tributaries, diversions, groundwater contributions, and discharges by multiple regulated entities in addition to the District. It has been recognized by the Colorado Water Quality Control Division and the EPA Region VIII as the water quality assessment for the watershed and the basis for all permitting.

The water quality model is supported by an extensive water quality monitoring and assessment program. The Metro District conducts bi-weekly sampling of the South Platte River, bi-weekly sampling of Barr Lake and Milton Reservoir (monthly during the winter), quarterly monitoring of 22 groundwater wells co-located with the stream sampling sites, annual biological (fish and macro invertebrates) sampling, and annual physical habitat evaluations. In addition to these regular monitoring programs, staff also conducts special studies, including sampling the River to the Nebraska border seven times every summer, occasional sampling of ditches to determine the water quality of inflows to the lakes, and seasonal testing for pesticides and trace organic compounds conducted in conjunction with the EPA. The District also conducts 30-hour studies to document diurnal variations in water quality to support the River water quality model.

The Metro District was a founding member of the Barr Milton Watershed Association (BMW Association) created to address water quality issues in two reservoirs downstream of the Denver metropolitan region. Currently, both reservoirs are listed as impaired for pH and dissolved oxygen standards for the protection of aquatic life as a result of nutrient over-enrichment. There are a number of clean water utilities, stormwater management agencies, and agricultural and industrial sources in the watershed. In 2012, the BMW Association cooperated on the completion of a pH Total Maximum Daily Load (TMDL) and dissolved oxygen TMDL addendum and submitted the document to the Colorado Department of Public Health and Environment for approval and submission to the EPA Region VIII. The EPA approved both TMDLs in June 2013.