Central New York's Water Authority

AMWA 2017 SUSTAINABLE WATER UTILITY MANAGEMENT AWARD APPLICATION

PART I: UTILITY PROFILE

1. **Does your utility provide drinking water only or combined drinking water/wastewater?** Drinking Water Only
2. **What are your water sources, i.e., groundwater, surface water, desalination, etc.?** OCWA draws from two surface water sources – Lake Ontario, the Eastern-most Great Lake and Otisco Lake, the Eastern-most Finger Lake. Some additional water is purchased from the City of Syracuse, whose surface water source is the next Finger Lake west of Otisco - Skaneateles. The City of Syracuse operates under a Filtration Avoidance Determination (FAD), while all OCWA source lake water is filtered.
3. **Characterize your climate, i.e., arid, tropic, etc.** Central New York is in the northern temperate zone, humid continental climate, characterized by large seasonal temperature differences over four seasons, including cold, snowy winters and warm, humid summers. Precipitation is well distributed throughout the year, although extreme weather events have been on the rise; particularly more intense storms with strong winds year-round, and variable and aberrant winter temperatures.
4. **Does your utility have watershed management responsibilities?** Yes, OCWA plays a role in the protection of the Otisco Lake watershed, and in respect to Great Lakes policy for Lake Ontario.
5. **Is your utility a wholesaler, retailer or combination?** Combined retail and wholesale
6. **Are you a stand-alone utility or part of a municipal organization?** OCWA is an authority; a public benefits corporation under New York State Authorities Law.
7. **What is your governance structure?** OCWA is overseen by a five-member, part-time (paid) board appointed by the Chair of the County Legislature. The Authority is subject to audit by the New York State Comptroller.
8. **What is your population served?** OCWA serves a population of approximately 500,000 through 102,000 residential and commercial accounts in 40 municipalities, predominantly in Onondaga County, and in portions of four other Counties in Central New York. The OCWA system has substantial excess capacity. Average daily production is 38 million gallons (60 million gallons peak), of 74 million gallons of production capability.
9. **What is your annual budget?** OCWA's 2017 Budget is $44,000,000 as summarized in Part III.
10. **Other relevant profile information?** Effective January 1, 2017, Metropolitan Water Board (MWB), the Onondaga County wholesale drinking water agency, was consolidated with OCWA, its largest customer as a means of delivering greater government efficiency and financial sustainability. This action was also taken, in part, as a pilot for other consolidations under consideration in the community. MWB's operations were exclusively wholesale treatment, transmission and storage systems from Lake Ontario, put in service in 1967 to expand regional capacity for economic growth. MWB's ability to maintain and invest in its water infrastructure assets was impacted by the ebb and flow (mostly ebb) of politics and County budget constraints. MWB's water infrastructure assets have been leased to OCWA, who will operate, maintain and make future capital investment in the system. Under the Authority structure, OCWA has greater autonomy to assure proactive and consistent asset management, and thus safe, sustainable and cost-effective drinking water service to the region. All MWB employees were transferred to OCWA. The consolidated agency has 170 FTE employees and has achieved appropriate staffing through retirements, in the first six months of consolidated operation.

OCWA received the AMWA Platinum Award in 2013. This 2017 application outlines the many initiatives that have been implemented as a means of continuous improvement for an innovative and sustainable water utility.

PART II: SUSTAINABILITY MISSION/POLICY STATEMENT

SUSTAINABILITY HERITAGE

OCWA has a long-standing and ongoing commitment to utility triple-bottom-line sustainability. This commitment was institutionalized during 2008 and 2009 with the implementation of the 7G Program, which established the following Mission: *OCWA is dedicated to organizational and behavioral changes that will protect and preserve the environment, and reduce demand on natural resources in a sustainable and measurable way.*

Initiated through a year-long facilitated effort that enjoyed the full support and participation of the Board and Executive Team, and engaged expanding groups of OCWA employees. '7G' was established to align with seven generation stewardship, a concept that urges the current generation of humans to live and work for the benefit of the seventh generation into the future. This philosophy of responsibility and respect originated with the Iroquois – a regional Native American Confederacy - which uses this perspective to consider whether the decisions they make today will benefit their children seven generations into the future.

'7G' created a utility-wide awareness that has been expanded and integrated, on an ongoing basis. Starting in 2010, MWB leadership also advanced the integration of innovative sustainability initiatives and other workplace culture changes.

As a result of the recent merger, best practices from both organizations are being evaluated and deployed.

STRATEGIC ALIGNMENT

OCWA's long-standing Vision has been: To be Central New York's Water Purveyor of Choice. Since that vision has been achieved in many ways, the Board is reviewing a proposed update to this vision: *Through sustainable and innovative advancements, OCWA will continue to earn community-trust, and national-recognition in the drinking water industry, for delivering the highest quality water, sustainably, securely, and at the lowest responsible cost to the ratepayers and the environment.*

Similarly, OCWA's Mission is being updated by the Board. Currently the Mission states: As a Public Benefit Corporation created by the New York State Legislature, OCWA's primary purpose is to supply water to the residents and businesses in the Central New York Region for the improvement of their health, welfare and prosperity, in a manner protective of the resource and environment. Furthermore, as the Authority has no power to tax and is financed solely by the revenues from the sale of water and related services to its customers, OCWA will operate and maintain a work environment the strives for employee excellence and encourages personal development which will ultimately result in the Authority providing good, reliable, potable water and other related services at competitive and reasonable rates. The proposed revision is: *OCWA's Mission is to protect the public health, safety and economic vitality of the Central New York region through the supply of safe, reliable cost-efficient drinking water and fire protection, in a sustainable and resilient manner that preserves and optimizes our water resources, system assets, and our environment, and with a commitment to employee respect, development and excellence.*

In summary, OCWA is committed to continuous improvement and industry innovation that leads to financial, environmental and social sustainability.

PART III: FINANCIAL MANAGEMENT

OCWA 2017 BUDGET SUMMARY	
REVENUES:	
WATER REVENUES	42,868,668
MISC. REVENUES	1,071,214
INVESTMENT INCOME	88,380
TOTAL REVENUES	**44,028,262**
EXPENSES:	
LABOR & BENEFITS	19,016,480
ALL OTHER EXPENSES	13,963,983
NET OPERATING EXPENSES	32,980,463
BOND INTEREST EXPENSE	2,470,317
OTHER INTEREST	5,010
DEPRECIATION & AMORTIZATION	6,370,016
TOTAL FIXED EXPENSES	8,845,343
TOTAL EXPENSES	**41,825,806**
NET INCOME BEFORE CAPITAL CONTRIBUTIONS	**2,202,456**
+ CAPITAL CONTRIBUTIONS	1,800,000
CHANGE IN NET ASSETS	4,002,456
+ NON-CASH CHARGES - INCLUDES DEPRECIATION & AMORT PLUS OPEB	8,389,016
- BOND PRINCIPAL ALLOCATION AND LEASE PAYMENTS	3,192,184
CHANGE IN NET ASSETS (CASH BUDGET)	**9,199,288**
CAPITAL BUDGET TOTAL	**11,381,226**
AMOUNT OF CAPITAL BUDGET FUNDED BY RESERVES	2,181,938

ACTION LEADERS FOR FINANCIAL SUSTAINABILITY

OCWA and Metropolitan Water Board (MWB) merged operations on January 1, 2017, to create efficiencies that will benefit customers and the community. This consolidation has long been contemplated and is one of the first major local agency mergers, leading the way for further consideration of similar meaningful, efficiency-driven consolidations. Prior to this historic initiative, both agencies have been proactive in their implementation of advanced technology and balanced asset management programs to replace end of life equipment with energy efficient infrastructure and optimize the life of new and aging assets, using international best practices.

WATER RATE SETTING PHILOSOPHY AND PRACTICES

OCWA must maintain tight control of rates to remain competitive for the economic benefit of the community and pocketbooks of residents; to allow the community to attract new industry and maintain existing, and to show sensitivity

to low income residents. Over the last twenty years, OCWA has grown to over 100,000 accounts, serving a population of nearly 500,000, predominantly through the acquisition of smaller municipal systems. While consolidation efficiencies will not eliminate rate increases, they will reduce them; continuing to make the region's water competitive and affordable, in balance with necessary, planned and on-going system investment. In addition, the OCWA/MWB consolidation will contribute to energy and operational optimization, freeing funds for cash investment in future infrastructure improvements. Although always in consideration, apples-to-apples comparison of rates between water utilities is challenging. A water utility with a low current rate may have huge capital costs looming, or lower water treatment or pumping costs inherent to their system characteristics. Regardless, OCWA's rates must remain competitive.

OCWA rate structure was revised in 2014, based on a cost of service study completed by an experienced consultant. At that time the Residential Block Rates were inverted from declining to increasing rates as a means of incentivizing water conservation. To forecast rates, OCWA projects ongoing O&M and Capital Costs and incorporates those costs into its annual budget and 20-year plan. Rates are reviewed annually, and changes are approved by the Board, based on current financial information and the rolling 20-year forecast. While the Board recognizes capital improvements are a continuous process and that capital demands are never-ending, the capital component of the 20-year plan is reviewed and adjusted to moderate rate increases. Rate stabilization and other reserve allocations allow for the mitigation of potential larger rate increases.

OCWA's 20-year plan is the primary long range planning tool and is updated annually. Various metrics and benchmarks help track the condition of systems. Assets are managed using Maximo software to prioritize expenditures using likelihood of failure (LoF)/consequence of failure (CoF) ratings.

OCWA always budgets for more than the amount of depreciation of assets. Capital work that would be considered normal and ongoing is cash funded each year. Revenue bonds are issued to fund those large capital projects that are not cash funded. Ongoing Capital Reinvestment currently averages $10 million/year. MWB's Capital Program is being integrated into OCWA's, but it is anticipated that the merger cost savings will reduce the impact to rates.

TRACKING FINANCIAL PERFORMANCE

In addition to Budget Variance reporting, OCWA's monthly Board Financial Report reflects four primary metrics for Financial Performance:

- **Bond Rating** - OCWA's current bond rating is Aa3 with a positive outlook, based on Moody's rating, dated October 17, 2016. The rating has remained the same, although the "positive outlook" was added in this most recent review.
- **Debt Service Coverage** - OCWA's Debt Service Coverage was 2.32X at the end of 2016. This reflects consistent increases since 2013, with a 28% improvement over that period and approaching Fitch's AA median goal.
- **Debt per Customer** - Compared to Fitch's AA median of $1,934, and comparably sized water utilities nationally, at $589 OCWA's Debt per Customer as of January 31, 2017, reflects highly responsible debt management while maintaining proactive capital investment.
- **Days of Cash on Hand** – This metric indicates financial flexibility to pay near-term obligations, and as of December 31, 2016, provides for 172 days. While this falls below Fitch's AA median of 398, the trend for this metric has improved consistently over the past 7 years, nearly tripling since 2009.

The Board annually reviews OCWA's status on 11 metrics considered key by Fitch Ratings. OCWA is compared to the medians for AA rated, Northeast Region, Medium sized utilities and utilities of all credits. OCWA's status on those metrics has shown continued improvement.

Typical of drinking water utilities, OCWA's annual revenues and expenditures are variable due to unplanned maintenance and changing weather conditions which impact both demand and maintenance costs. OCWA has therefore begun to adapt O&M budgets to account for required response to more frequent extreme weather events.

OPTIMZATION OF EXTERNAL FUNDING

As a result of the merger and ongoing energy initiatives, OCWA will receive over $5 million in grant funding from New York State Department of State and National Grid Electric Utility incentive programs. These funds will mitigate initial consolidation transition costs and offset costs for in-progress, energy-related capital improvements.

MEASURING SUCCESS FOR CONTINUOUS IMPROVEMENT

OCWA tracks a variety of key performance indicators and metrics for operational and financial optimization. These currently include:

Operational:

- Water Main Breaks
- Billed meter consumption on a categorized basis (Industrial, Municipal, Commercial, Residential)
- Reference Meter Consumption
- Meter Ratio
- Unaccounted for water
- Number of incoming calls/Number of outgoing calls
- Number of calls taken per CSR/Number of abandoned calls
- Number of payments processed
- Number of leak letters sent
- Accuracy of Meter Reading
- Number of Meter Readings per Meter Reader
- Monthly Meter Transaction Report
- Meter Reading Incentive Program
- Development and Training hours/employee

Financial:

- Average Residential Water Bills
- Average Monthly, Quarterly, Annual Water Revenues (All categories, Industrial, Municipal, Commercial, Residential)
- Top 10 Sales Accounts – Industrial & Municipal
- Accounts/employee
- Accounts Receivable Turnover Rate
- Water Revenue per 1,000 gallons billed
- Total Operating Expenses per Customer
- Chemical costs per 1000 gallons: The completion of the Water Storage Master Plan and EPA LT2 compliance has resulted in a reduction of chemical costs throughout the Ontario system.

The Comprehensive Asset Renewal and Energy Program (CARE) initiated by MWB and well-underway at the time of the merger (described in Part V), will deliver advanced technology with strategic dashboards that will provide more meaningful data and metrics in an even more timely manner. These Key Performance Indicators (KPIs) were developed

CARE KPIs		
EUM Attribute	**KPI Name**	**KPI Description**
Product Quality	Flow Compliance	Amount of time that flow is delivered within defined targets.
	Pressure Compliance	Amount of time that pressure is within defined targets at major points within the system such as pumping stations and tanks.
	Turbidity	The amount of time that the MWB meets turbidity goals for both finished water and filter effluent
	Analyses/MG	The total number of water quality analyses performed per MG treated (Count of LIMS Analysis/Totalized FW
Operational Optimization	Water Age	The elapsed time between when water leaves the treatment process to the when it arrives at predetermined points in the transmission system (meter locations and tank outlets).
	Energy Consumption	Total amount of electrical energy used (kWh)
	Daily Water Production	The total amount of water treated in a day (MG).
	Peak Daily Water Production	The maximum daily flow rate (MGD or equivalent)
	Energy use per volume water treated	The amount of energy used to treat a unit of water (kWh/MG).
	Energy use per volume water pumped	The amount of energy used to pump a unit of water (kWh/MG) at each PS.
	Production Efficiency	Ratio of raw water taken into treatment to treated water produced.
	Non-Revenue Water	Ratio of treated water produced to water sent to customers.
	On Peak/Off Peak Ratio	Ratio of water pumped during on-peak electrical demand hours vs. off-peak electrical demand hours.
	Average Utility Rate	Running average of the commodity cost of electricity at each station ($/kWh) weighted for actual use.
	Wire-to-Water efficiency	The ratio of the water horsepower provided to the electrical horsepower supplied to the pump drive motor.
	CT compliance	The amount of time (%) that MWB meets established CT targets.
	WTP Online	The amount of time (%) that the WTP is online (RW run time).
Financial	Energy cost per volume water treated	The cost of electricity divided by the volume of water treated.
	O&M Costs Per volume water treated	The cost of operations and maintenance, less energy and chemical costs, divided by volume of water treated.
	Chemical Costs Per Volume Water Treated	The cost of chemicals, divided by volume of water treated.
	Actual vs. Budget Performance	Actual Expenditures compared to the budget, by major program area.
	Over Time Costs	The costs of overtime.
Infrastructure	Planned maintenance ratio by hours (percent).	The percent of maintenance work hours that are spent on planned/preventive maintenance work.

	Planned maintenance ratio by cost (percent).	The percent of maintenance costs that are spent on planned/preventive maintenance work.
	Work Order Backlog	The number of open work orders.
	Equipment Uptime (Availability)	The percentage of the time that a piece of equipment or group of equipment is in a fully operational state (running or available). 100 x (hours of critical component availability/total
Community Sustainability	Gross Direct Green House Gas Emissions	The gross greenhouse gas emissions from treatment and pumping operations.

through a collaborative workshop process that engaged internal stakeholder and industry experts, and align with Effective Utility Management attributes.

ASSET MANAGEMENT PROGRAMS OPTIMIZE LIFE-CYCLE COSTS

PROGRAM-BASED ASSET MANAGEMENT

OCWA has a series of Asset Management Programs that are tracked through Maximo with GIS data (ESRI). In contrast to 'projects,' programs drive continuous improvement through the collaborative engagement of people throughout the organization. OCWA programs include:

- Right-of-Way Clearing: Outsourced and self-performed
- Valve Exercise and Replacement: Dedicated Crew
- Pump Station Condition Assessments: Prioritized through Maximo scoring
- Hydrant Maintenance: Dedicated Crew. This program received high marks from ISO in June of 2017.
- Watershed Inspection: See Part IV
- Tank Inspection and Painting
- Meter Replacement: Residential replaced on a 15-year schedule; Large Commercial and Industrial, annually.

Other examples of proactive, continuous improvement programs include OCWA's Back-up Power program, providing fixed or rolling generators at all critical locations. OCWA's next major (capital) program is the Water Treatment Assurance Program (TAP), advancing to Phase II design later in 2018 (see Part IV). This multi-year/phased program will provide necessary improvements to the Ontario Water Treatment Plant and assure compliant water quality into the future. These strategic, proactive programs distinguish OCWA from many other water utilities around the Country.

INNOVATION: MAXIMO STRUCTURED VULNERABILITY ASSESSMENT

Maximo is used for management of OCWA's Continuous Vulnerability Assessment (VA) Program, which exceeds EPA and NYS DOH requirements for VA/Emergency Response Planning. This program is being expanded from security vulnerability to include extreme weather event vulnerability and response planning for utility resilience. Assessments also include changes in safety protocols to respond to extreme weather events.

INNOVATION: DRONE PHOTO AND VIDEO ASSET INSPECTION

Starting in April of 2017, OCWA launched its drone inspection program starting with aerial tank inspections, and quickly expanding to watershed monitoring and management, pipe breaks and leak detection. Further discussion of the Drone Program follows in Part IV.

PART IV: ENVIRONMENTAL STEWARDSHIP

BASELINE INITIATIVES

OCWA's 7G Green Team and Onondaga County/MWB's Environmental Sustainability Action Committee (ESAC) and Capital Project sustainability innovations laid the groundwork that initially focused on, and created baselines from which to measure success in, the following areas:

- Transportation
- Energy Conservation/Optimization
- Supply Chain Resources and Standards
- Water Conservation
- Recycling/Waste Reduction
- Asset management
- Integration of green building practices into all capital projects
- Technology deployment
- Employee engagement, including training and development

OCWA sustainability efforts continue to reduce energy use and related emissions, drive overall fleet efficiency, encourage purchase of sustainable products, and recycle, reuse and responsibly dispose of materials from office supplies to hazardous material and construction debris, as well as scrapping of hydrants and iron pipe. OCWA also collects all electronic waste at a centralized location to assure proper disposal. These baseline initiatives have been the impetus for broader environmental sustainability innovation.

The County's Climate Action Plan, tracks reduction of greenhouse gas emissions by department/agency, and County-wide.

PARTNERSHIP FOR SAFE WATER

Both OCWA-operated Water Treatment Plants have received Director's Awards from the American Water Works Association Partnership for Safe Water – Treatment (OCWA's Otisco plant for 19 years running), and in 2017 OCWA joined the Partnership's Distribution program.

CLIMATE IMPACTS: DIFFERENT SOURCES, DIFFERENT SOLUTIONS

Central New York is water rich, and the Summer of 2017 is trending to emphasize that point, with continuous days of rain, and heavy storms, following a winter of heavy snowfall and spring runoff, leading to elevated lake levels and flooding, even along the vast shoreline of Lake Ontario. The impact of this rainy season has had an adverse effect on water sales, so in combination with the fact that OCWA has substantial excess production capacity – nearly twice average demand - water conservation advocacy, at times, seems counterproductive. Regardless, OCWA participates in the EPA Water Sense program and maintains an awareness of the impacts of potable water use on sanitary water conveyance and wastewater plant operations and infrastructure.

OCWA's source lakes are very different in their characteristics, and these differences result in very different water quality management issues.

Otisco Source: Warmer temperatures and wet conditions have the potential to advance concerns for harmful algal blooms (HABs) and contribute to rapid growth of aquatic species, resulting in greater impacts and damage to water quality, particularly in shallower surface water sources such as some Finger Lakes, including Otisco. It should be noted, there have not been HAB contamination concerns to date. OCWA's enjoys long-standing partnerships with community (Otisco Lake Preservation Association) and regulatory (New York State Department of Environmental Conservation and Onondaga County Department of Health) stakeholders to responsibly partner in management of the watershed - 38.8 square miles, excluding the reservoir surface.

Annually, OCWA Summer Aides go door to door (seven days a week) to each residence in the Otisco Lake watershed to communicate the importance of watershed management, check septic systems, and interview residents on changes in contiguous practices and fuel storage. During these visits, OCWA personnel also distribute a brochure prepared by the Otisco Lake Preservation Association (OLPA) regarding boating and invasive species concerns for their lake. In addition, each year, one-third of the watershed properties septic systems are dye tested. In winter months, OCWA staff conduct agricultural interviews to determine changes in farming practices, and assess concerns. See more regarding Otisco Lake partnerships in Part V.

Ontario Source: The Lake Ontario intake, shared with the City of Oswego, is approximately one mile from shore and 50' deep, in a lake that is often rough and adequately turbulent, such that many concerns of smaller, more shallow lakes do not apply. For Lake Ontario, which serves as the source lake for many communities, large and small, in the US and Canada, the watershed issues are related to policies deliberated throughout the Great Lakes.

AGGRESSIVE WATER LOSS DETECTION

OCWA has a robust audit and leak detection program to compare water pumped within each water system to billed water. Through SCADA reporting, technicians identify higher flow trends and text information to distribution crews to direct leak detection and repair efforts. In addition, OCWA has a designated leak detection crew, working nights to identify and repair leaks in advance of reported leaks. OCWA is now participating with Partnership for Safe Water – Distribution Program to further validate reductions in main break frequency.

HEAVY LIFT: REDUCING PUMPING ENERGY COSTS AND EMISSIONS

OCWA's Otisco Lake system is predominantly gravity fed from the higher lake elevations into the distribution system. The Ontario system is energy intensive as required to convey water an additional +/-400' from lower lake elevations to centralized storage facilities – tanks ranging from 15 million to 30 million gallons - and back-up water supply connections to the City of Syracuse, as required by their filtration avoidance agreement with NYS DOH. To do so requires a series of robust, electricity consuming pumping facilities, which have been in operation for 50 years.

Comprehensive Asset Renewal and Energy Program (CARE)

In 2012, MWB, with the input of stakeholders, including OCWA, initiated the Comprehensive Asset Renewal and Energy Program (CARE) to replace end of life equipment with premium energy-efficient equipment and technology innovation. The program is projected to deliver 25% energy savings and create additional operational efficiencies. Work is underway under a Professionally-Led, Design-Build, Energy Performance Contract (EPC), intended to deliver the desired energy savings faster, at a lower cost, and with the opportunity to select equipment based on Life Cycle Cost rather than exclusively low bid. CARE incorporates advanced technology that will allow real-time analytics of system hydraulics and water quality parameters; industry-leading innovation that, through better management of key performance indicators (KPIs), will guide optimization of system operations and asset management. The initial pilot Pump Station process and facility improvements were completed in conjunction with the Terminal Tank Project (see below) and resulted in energy savings of 20% and a National Grid utility incentive of $132,000.

Water Utility Energy Challenge (WUEC)

AWWA, through the sponsorship of The Great Lakes Protection Fund, has challenged Great Lakes water utilities to reduce their pumping system emissions, particularly mercury. The challenge program offers innovative software, PEPSO (Pollutant Emission & Pump Station Optimization) and LEEM (Locational Emission Estimation Methodology) and associated support, to encourage competing utilities to reduce their electric utility-based emissions, through day-ahead predictions, over the period of one year. Six water utilities were chosen to compete for cash prizes and the distinction of being an emissions reduction leader.

https://www.awwa.org/resources-tools/water-and-wastewater-utility-management/water-utility-energy-challenge.aspx

Onondaga County's Climate Action Plan, through the Environmental Sustainability Action Committee and the Office of Environment, tracks greenhouse gas emissions, by department and agency, County-wide. MWB has participated in the program since its inception. At that time, Water Environment Protection, MWB and Facilities were the top energy users within County operations. Annual budgeting for energy costs took into consideration market pricing, projected use/reductions and demand response payments.

INNOVATION: TRIPLE BOTTOM LINE (TBL) CAPITAL PROJECTS

OCWA Capital Projects are viewed through an integrated sustainability lens. Although projects have not pursued full-fledged certification, United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) and ISI Envision criteria have been used to drive project sustainability considerations. Examples of TBL Projects include:

Terminal Pumping and Tank Site - $30,000,000 Compliance, Asset Renewal and Energy Optimization Program

- Completion of Water Storage Realignment Master Plan and EPA LT2 compliance
- Sustainable design and construction methods that included:
    - Innovative green stormwater management
    - No off-site trucking of excavation soil
    - Recycled and reused materials
    - Wetland and site restoration using low-maintenance, native plant material
    - Daylighting
- Resulted in 20% energy savings
- Deployed Alternative Energy: 1.3 MW roof-top solar array though a power purchase agreement
- Stand-by generation for improved system resilience

Comprehensive Asset Renewal and Energy Program (CARE) - $14,000,000 Energy Performance Project

- As described above

Treatment Assurance Program (TAP), Ontario Water Treatment Campus Process and Facility Improvements – upcoming $40-50,000,000 Project

- Phase 1 Security and Building Shell Improvements completed 2016. Building shell improvements will set the stage for reduction in HVAC system loads and resultant energy savings. Security improvements remedy site (exterior) vulnerabilities. Subsequent phases will address interior security systems.
- 2.6 MW ground-based solar array

INNOVATION: ALTERNATIVE ENERGY

OCWA has nearly 4 MW of solar energy in operation at two sites, installed through power purchase agreements (PPA). PPA's allow the utility to avoid project capital cost. The utility pays an agreed upon cost for energy over the term of the contract.

INNOVATION: OCWA Unmanned Aircraft System (UAS) Program

OCWA is utilizing unmanned aircraft systems (drones) to quickly and safely take aerial photos of assets. Drones are highly maneuverable and can capture a wide range of angles at varying heights and distances, with greater safety and lower cost than self-performed, professional or traditional aerial inspection. The drone's high-resolution camera allows for complete coverage and a high level of detail. OCWA's system includes:

Equipment: DJI Phantom 4 Professional UAS (unmanned aircraft system)
Software – DJI Go 4, Map Pilot, Drone2Map, ArcGIS Pro

Current Uses:

Tank/infrastructure inspections: With drone technology, even large tanks can be seamlessly photographed in under 20 minutes with high definition images for maintenance or repair assessment. It's a game changer. Photography of tanks can also be used to coordinate cellular infrastructure mounted on OCWA assets.

Surface water quality monitoring: Starting in summer of 2017, OCWA is participating in a multi-agency program to research and monitor biological activity in Otisco lake. The "Early Detection and Rapid Response for Invasive Species" program, in partnership with the Otisco Lake Preservation Association (OLAP), will utilize drone-enabled aerial photography to identify potential areas of algal blooms and invasive aquatic species.

Project planning and construction monitoring: Site photos from various aerial perspectives allow project planners and engineers to review the entire project area, and to asses site risks and design options.

Future uses:

OCWA is exploring other potential uses for UAS such as interior tank inspections, thermal imagery for leak detection, security monitoring and storm damage assessment.

In Late June, OCWA teamed up with the ESRI software company, the industry leader in Geographical Information System (GIS) software applications, to produce high definition orthomosaic imagery of large areas of interest. This imagery can

be used for monitoring surface conditions of OCWA's source lakes. The high-definition imagery allows water quality managers to monitor the growth, migration and distribution of algal blooms and invasive aquatic species at different points in time and make more timely decisions regarding source water management. OCWA has just started to scratch the surface of drone mapping abilities. In addition to orthomosaic imagery, ESRI's software allows for the creation of digital elevation and hillshade models. These models give OCWA professionals detailed insight into watershed conditions such as wetlands or runoff.

International Collaborations

Current technologies exist to modify OCWA's UAS with thermal imaging cameras. Such imaging can provide insight that the naked eye cannot detect. There are currently a handful of water utilities which have implemented pilot programs to use thermal imaging for leak detection with some success. Anglian water in the UK has successfully identified a large leak in a residential area using thermal aerial photography. Thermal imaging techniques however have their limitations and the applications are still being explored.

PART V: SOCIAL RESPONSIBILITY

COMMITMENT TO COMMNUITY COLLABORATION

OCWA AND MWB's bold collaboration represents full commitment to the community to continue as an effective and efficient water utility, worthy of the customers' trust to protect the public health; to function reliably and safely, to drive economic vitality and to be financially sustainable – in both directions.

COMMUNCATION

OCWA strives to communicate the Value of Water and the complexity and importance of our work to the local community through many outlets, to provide a better understanding of how OCWA operates, and advanced notice of capital program impacts. OCWA employees also participate with, and contribute to, the larger water industry community through participation in AMWA, AWWA and APWA. Various communications and engagement initiatives include:

- Regular interaction with Elected Officials to inform and educate in advance of capital project impacts and rate changes
- Partnership with economic development agencies in pursuit of economic sustainability through business retention and attraction, despite wastewater infrastructure challenges
- Community Engagement and Education, including tours and presentations to area colleges and continuing education programs, sponsorship of Leadership Greater Syracuse participants, and annual participation in the Citizen's Academy, to provide a better understanding of our regional water assets
- Deep collaborations with Higher Education on grant proposals, research, capstone projects and internships

  RESILIENCE LEADERSHIP: An example of innovative higher education collaboration is OCWA's participation as a Practitioner representative in the National Science Foundation funded Urban Resilience Extreme (UREx) Sustainability Research Network, led by Arizona State University. The Network is comprised of 10 cities - in the US and Latin America - including Syracuse, with Syracuse University as academic partner. The group meets annually, on a rotation through each of the partner cities, to share climate resilience planning, modeling and strategies that address practical/financial, environmental and social impacts of extreme weather events. (https://sustainability.asu.edu/urbanresilience/)

In addition, OCWA participates annually with the United Way of Central New York, Salvation Army, Interreligious Food Consortium, American Heart Association Go Red for Women and J.P. Morgan Corporate Challenge.

WATERSHED PROTECTION – OTISCO LAKE

Otisco Lake is the eastern-most of the eleven Finger Lakes (long and narrow like fingers, formed by glacial retreat) in Upstate New York. It is 5.4 miles long and .75 miles wide – 2048 acres of surface area. With an average depth of 33' and a maximum depth of 66,' it one of the shallowest of the Finger Lakes. Otisco Lake is affected by nonpoint source pollution from agriculture, residential land use and streambank erosion. Pollution from these sources includes pesticides and fertilizers, sedimentation from erosion and poor tillage practices, and runoff from septic systems, lawns and construction sites. The lake is also inhabited by zebra mussels, milfoil and other invasive species, and is vulnerable to Harmful Algal Blooms (HAB) as have occurred in other shallow Finger Lakes. OCWA operates and maintains a dam and intake on the northern end of the lake, where zebra mussel mitigation systems are installed and effective. The protection of the Otisco Lake water shed is addressed through a high-functioning collaboration between, OCWA, Onondaga County Department of Health, the Onondaga Soil and Water Conservation District, New York State Department of Environmental Conservation (DEC), including the newly created Finger Lakes Watershed Hub, and the Otisco Lake Preservation Association (OLPA), a non-profit organization with a mission to preserve the health, beauty, and welfare of Otisco Lake – not only today, but for future generations (http://www.otiscolakepreservation.com/). These organizations work together to maintain the integrity of Otisco Lake and its watershed.

OLPA collaborations include:

- Providing a brochure distribution by OCWA during biannual watershed inspections
- Annual clean-up to prevent inappropriate disposal that could end up in Otisco Lake
- OCWA employee participation in 5K Shuffle fundraiser
- Invasive Species Rapid Response and Control Plan
    - OCWA in-kind support through laboratory testing and boat launch access

OCWA watershed rules and regulations, including development actions, distances, etc. are approved by New York State and enforced by Onondaga County Department of Health. OCWA is also a member of the Syracuse Onondaga County Planning Agency (SOCPA) development review committee, providing non-binding development review and feedback.

OCWA has provided land to DEC for public boat launch for public fishing access and, at its dam site, allows DEC enforcement officers and Onondaga County Sheriffs to store and launch boats.

A GREAT LAKE – LAKE ONTARIO

Lake Ontario is the eastern-most Great Lake. It is 193 miles long and 53 miles wide – 7340 square miles – with an average depth of 283' and a maximum depth of 802'. It is the lowest mean elevation of all of the Great Lakes at 243' with a drainage basin covering 24,720 square miles. The low mean elevation creates the need for pumping for conveyance of water to the elevation of Onondaga County, which creates a high energy demand for the Lake Ontario system. Great Lake water quality management is an international topic addressed by various research and policy groups, such as the Great Lakes Research Consortium, which includes SUNY ESF and Syracuse University, the EPA Great Lakes Water Quality Agreement and the Great Lakes Basin Compact, by which the Great Lakes states and provinces implement commitments under the Great Lakes–St. Lawrence River Basin Sustainable Water Resources Agreement. Overall, Lake Ontario water quality is high. Since the 1970's, MWB has compiled the preeminent Lake Ontario Monitoring Report annually. This report tracks Lake Ontario water quality parameters and trends and continues to bear witness to sustained water quality. Lake Monitoring Reporting will continue under OCWA operations.

The Ontario intake is shared with the City of Oswego by means of a permanent easement granted by the City to MWB in 1996. The City and MWB have shared the cost of periodic intake cleaning to remove zebra mussels and associated debris. Material matters related to the shared intake are addressed by the Joint Committee, with representatives appointed by Onondaga County and the City of Oswego.

To reduce greenhouse gas emissions, particularly mercury, in the Great Lakes Basin, AWWA and its program funder, the Great Lakes Protection Fund, have created the Water Utility Energy Challenge and OCWA has been selected to be a competitor. The program runs from April 2017 to April 2018 and uses innovative software – PEPSO and LEEM to provide day-ahead predictions that can allow timing of operations in a manner that will reduce energy and emissions.

PARTNERSHIP FOR SAFE WATER

Both Otisco and Ontario Water Treatment plants have received Director's Awards from the American Water Works Association Partnership for Safe Water (Otisco plant for 19 years running). In 2017 OCWA is pursuing the companion credential for the Partnership's Distribution program.

COMMITMENT TO CUSTOMERS

A water utility has a symbiotic relationship with its customers. We need each other to survive. OCWA is acutely aware of its responsibility to assure value to residential, commercial, industrial and municipal customers.

RESIDENTIAL CUSTOMERS

Most customers have little choice in respect to their public drinking water supplier. Despite that, OCWA takes customer satisfaction very seriously. The most recent Customer Interest and Awareness Survey was conducted in late 2015. Overall, 52% of respondents have a Very Favorable impression of OCWA and 89% have either a Very Favorable or Somewhat Favorable impression, with only 4% in any unfavorable category. 84% feel OCWA's 'product' is either good or excellent. 95% have confidence that their drinking water is safe, while 97% believe OCWA's reliability is either good or excellent. These results reflect a high level of confidence from our residential customers.

To maintain this confidence, OCWA has implemented an Enhanced Lead Monitoring Program. OCWA is conducting an inventory of 'utility-side' services for all service materials used, including lead. In addition, a 'customer-side' service material inventory program is underway. This program combines customer service personnel observations with customer self-reported service line material through OCWA's Lead Service Line Survey. The program was piloted in early 2017 with all customers for be surveys throughout the summer of 2017.

INDUSTRAIL CUSTOMERS

It stands to reason that OCWA's largest customers are some of the area's largest employers, so their satisfaction and success are critical to the economic stability of the region. OCWA's highest usage industrial customers, such as Anheuser- Busch, Solvay Paperboard, Crucible Specialty Steel and Clinton's Ditch Cooperative Company, express their confidence in a high-quality water supply that reduces their internal water treatment costs, and is a factor in their choice to operate in Central New York despite other business challenges. OCWA's industrial customers are discerning, sophisticated and conscientious water consumers. They consistently assert their satisfaction with OCWA as a reliable supplier of their "primary ingredient." One of OCWA's largest industrial customers recently wrote:

"We depend on it [water] for our survival as a business and they [OCWA] have never let us down. OCWA has been a valuable partner to our operations and consistently delivers:

- Exceptional water quality, that meets or exceeds other water utilities nationally

- Cost competitive rates that, in turn allow us to be competitive
- Reliable conveyance of their product in a manner that assures our daily operations without interruption
- Proactive communications on proposed system maintenance and improvements, and rate changes, to allow for impact planning"

MUNICIPAL WHOLESALE CUSTOMERS

In addition to retail customers, OCWA is a wholesale supplier to the Towns of DeWitt and Clay. Over the last 30 years, many municipal customers have converted from wholesale to distribution customers, most recently the Town of Camillus, with 6500 accounts. These municipalities have chosen to turn over operations to OCWA for billing and customer service, compliance, risk management, training, maintenance and capital improvements, versus the option of managing their own systems. OCWA's performance and reputation have made this an easy choice.

COMMITMENT TO EMPLOYEES

We cannot deliver sustainability in any respect without the development and sustainability of our human assets. OCWA's employees keep drinking water clean, safe and flowing, and make sure resources are used wisely. They have the single greatest impact on our financial viability and are the face and voice of OCWA to our customers. It is work with purpose and impact, but too often water and wastewater utilities struggle to attract and retain quality contributors. OCWA is represented by two unions: Teamsters and Civil Service Employees Association (CSEA), and maintains good relations with these unions. As a result, OCWA is seen as a desirable employer offering highly competitive wages and salaries, combined with New York State retirement benefits, within a safety-driven workplace. In addition, OCWA provides extensive industry and credential training, as well as funding of degree programs. Employees are encouraged to participate in leadership roles in local and national industry associations. Within the combined organization 63% have been employed for 10 years or more and 27% have been employed for 20+ years. OCWA's reputation as a quality employer is so strong, that when the MWB employees were informed of the merger, their response was enthusiastically, "When can we start!" The merger has also resulted in the opportunity for younger employees to advance as other employees retire. In fact, this has been a key element of the consolidation plan and benefits. At the time of the merger, OCWA had a significant percentage of employees approaching retirement, while MWB had many employees who were new to the field, especially Water Plant Operators. All OCWA and MWB employees were retained, and the combined workforce has been 'rightsized' in short order through attrition as a result of retirements. New employees brought a diversity of strengths and skillsets, and now have greater opportunity for advancement than within the smaller MWB organization.

RECOGNITION

Both MWB and OCWA have received numerous individual and utility awards, including:

- Department of Health Local Water Taste Contest winner - 3 consecutive years (MWB)
- NYSAWWA Safety Award - 3 consecutive years (OCWA)
- NYSAWWA Energy/Sustainability Project of the Year (OCWA & MWB)
- American Public Works Association – Project of the Year (OCWA & MWB)

PART VI: CONTACT INFORMATION AND APPLICATION CHECKLIST

Application Contact: I. Holly Rosenthal, Deputy Executive Director

Onondaga County Water Authority (OCWA)

315-455-7061 x-3181

hrosenthal@ocwa.org

__X__ E-mail the completed application in pdf format to peterson@amwa.net.

__X__ E-mail a 250-word summary of the main achievements described in the application (in a .doc file) to peterson@amwa.net.

Press Contact name: Jeff Brown, Public Affairs Officer

315-455-7061 x-3115

jbrown@ocwa.org

__X__ E-mail a high-resolution head and shoulders color photograph of the utility executive to be featured with the award, identified with name and title.*

__X__ E-mail two or three high-resolution, color photos of activities, personnel or facilities related to the main achievements, with descriptive captions in a separate Word document.*

* Please send high-resolution, 300 dpi photos in jpg format to peterson@amwa.net. Please **do not** embed photos in word or pdf files. Contact Carolyn Peterson (202-331-2820, peterson@amwa.net) if you have questions.