

City of Traverse City, MI

Contract & Partnership Renewal Opportunity:
Wastewater Treatment Plant O&M

August 9, 2021

Agenda

History and Milestone Achievements

Why Jacobs?

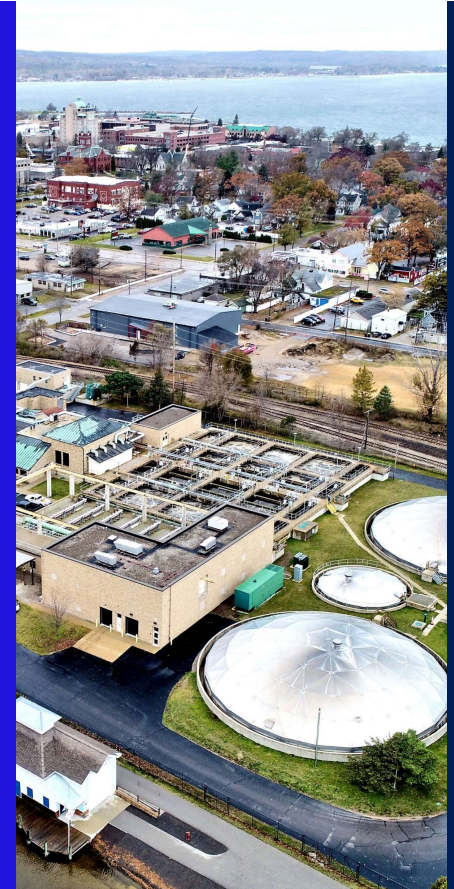
Potential Early Renewal Value-Adds



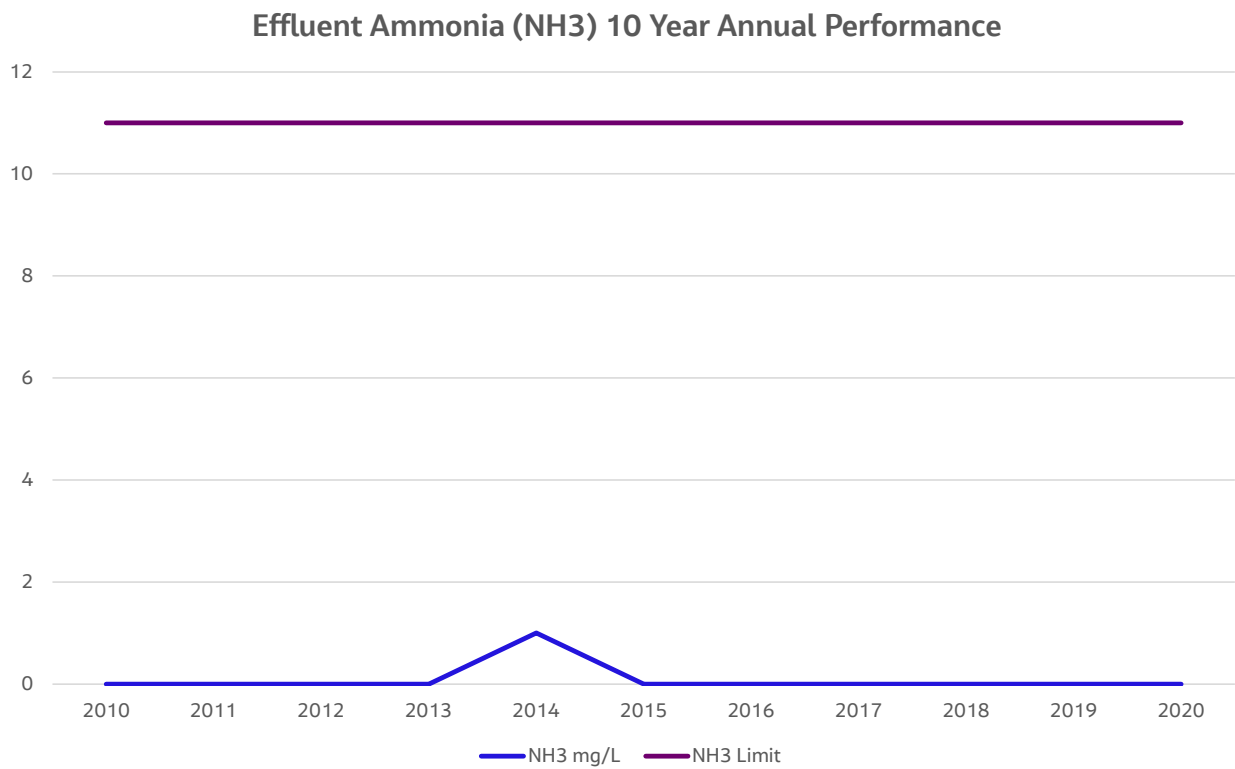
Partnership History & Milestone Achievements

Traverse City + Jacobs = Historic 30-year Partnership

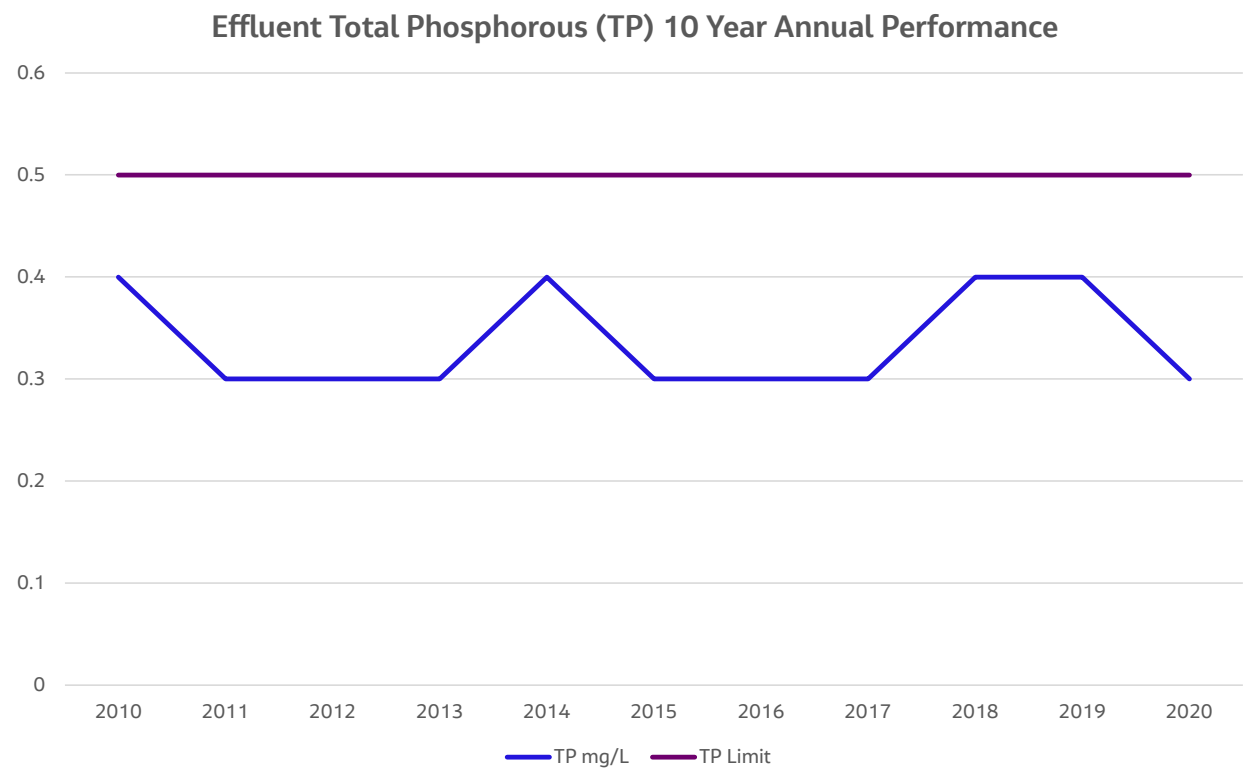
OVER 2.1 BILLION GALLONS
of wastewater were treated at the
TCRWWTP in 2019-2020, producing
a high-quality effluent that met and
for many parameters, exceeded permit
requirements for waterway protection.



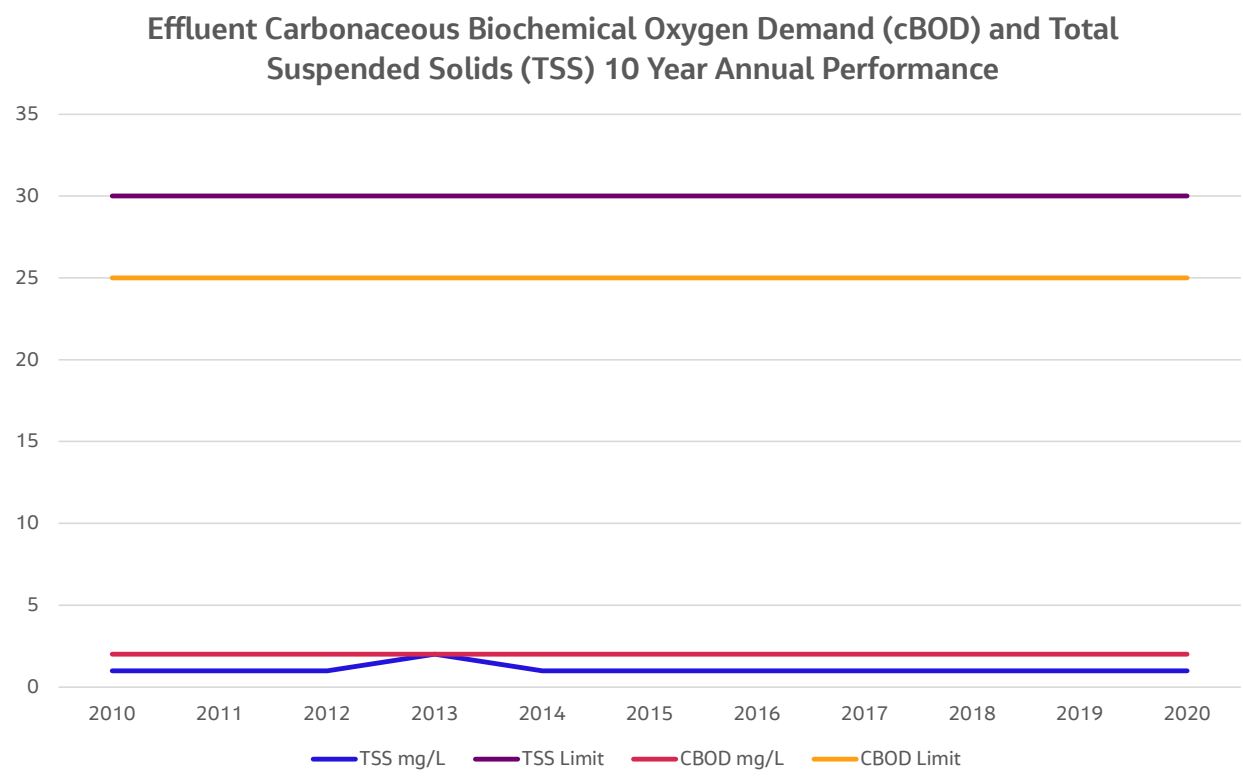
10 Year Treatment Performance



10 Year Treatment Performance



10 Year Treatment Performance



RFP Issued Competitive O&M Re-bids

Early 1990s

- Traverse City selects Jacobs for O&M of regional WWTP
- Completed \$1.5-million WWTP upgrade
- Added UV disinfection

2004

City completes \$31-million plant upgrade including newest and largest membrane bioreactor (MBR) in North America; upgrades designed by Jacobs

2006

American Council of Engineering Companies (ACEC) and Society of Professional Engineers recognize Traverse City and Jacobs for engineering excellence

2007

U.S. Environmental Protection Agency Region 5 Best Operated and Maintained Facility Award

2012

Renewed O&M partnership

Traverse City partnership timeline

Worked with GE Water Technologies and operating team to replace and upgrade three membrane filtration units in the MBR

2015

Renewed O&M partnership

2016

Completed upgrades to pumping equipment and infrastructure; replaced membrane cassettes in MBR train 4

2017

Traverse City and Jacobs receive Michigan Water Environment Association Large Facility Safety Award

2019

- Replaced and installed new membranes in treatment trains 7 and 8
- Collaborated with Michigan State University and Arizona State University to monitor COVID-19 in wastewater influent

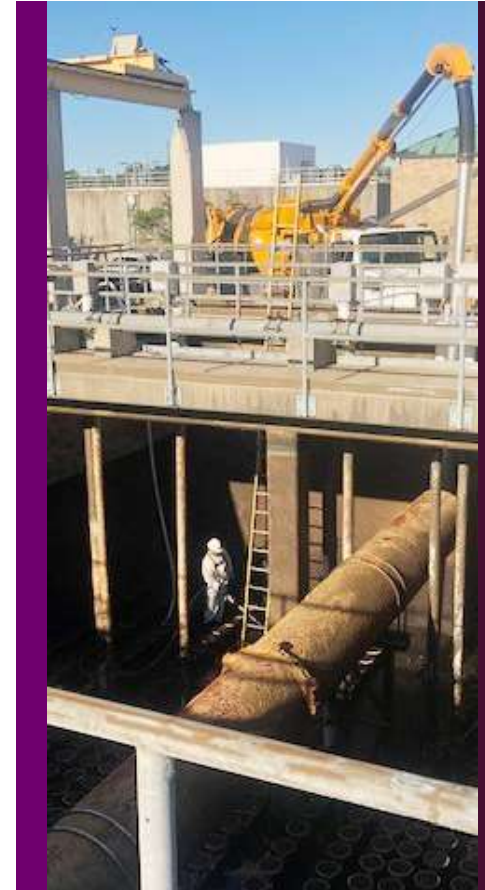
2020

Why Jacobs?

Supporting the City's goals for sustainability



- Reused roughly 28 million gallons of plant effluent reducing the demand on City water
- Biosolids reuse through land application
- Reduced the amount of natural gas use by using methane gas generated by the anaerobic digesters to heat the digesters and the administration building
- Reuse of plastic carbon canisters and use of activated carbon from coconut shells for odor control



Supporting the City's goals for sustainability



- Upgraded 80 lighting fixtures in 2019-2020 with LED lighting as they failed
- Recycled 180 gallons of used oil
- Nitrile glove recycling instead of sending them to the landfill
- Install new EV charging station at WWTP to convert fleet to electric
- Evaluate Bio P removal and new monitoring technology viability at WWTP to reduce ferric usage



Benefits of having Jacobs as your OM partner

- Cost effective, risk mitigating service delivery for more than 30 years
- Engineering & Operations Management sustainability leader who can help the City achieve its renewable energy & carbon neutrality goals
- Continuity of Operations during Construction
- Deep, diversified bench of qualified O&M, technical and engineering resources
- Partner vs contractor approach, including a willingness to invest
- Continuous improvement and innovation
- We listen and align our goals to the City's

We are more than an operator

99.98%
Jacobs' Environmental Compliance Record is one of Best in the Industry

>20 years of exceptional environmental compliance

Only integrated O&M, engineering and consulting services operator

Unmatched full-service capabilities among O&M competitors

2020
Engineering News-Record
#1 Wastewater Firm

Unrivaled water and wastewater experts

2020
Engineering News-Record
#2 Water Treatment Plant Firm

98%
contract renewal rate since 2013

Excellent service results in low contract turnover

#1
Wastewater/ Water DBO Firms in North America

Expertise integrating operability into design and construction

Among the **50** Best Companies to Work for

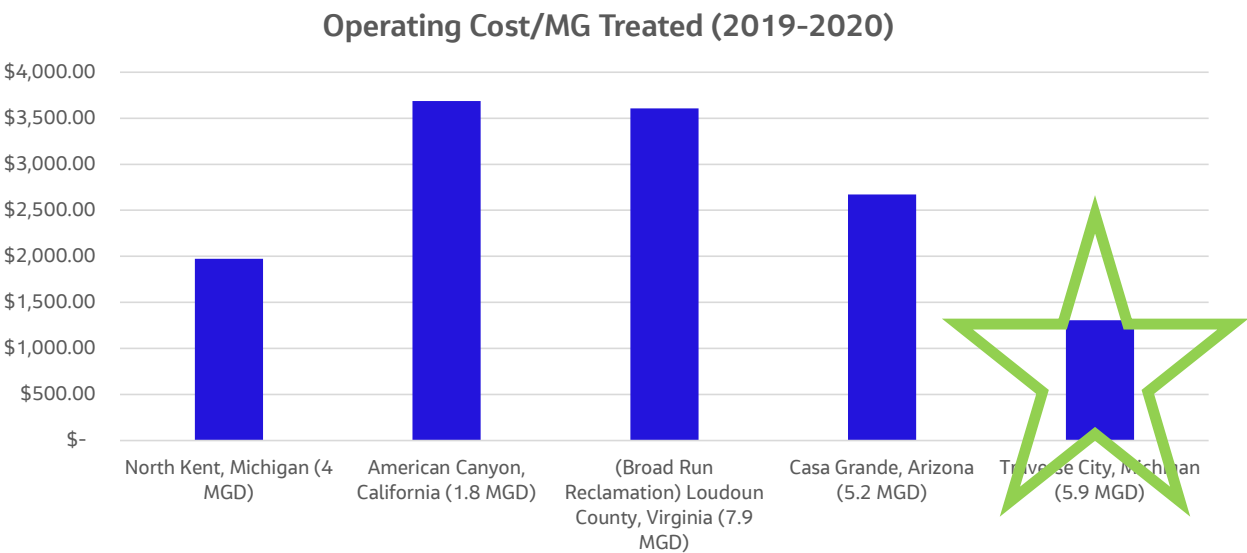
High employee retention from job satisfaction

FOR 9 YEARS
Ranked by Ethisphere as one of the World's Most Ethical Companies

A partner committed to transparency and ethics

Benchmarking study confirms cost effective service delivery

Membrane Treatment Facilities 2019-2020 Budgeted Operating Costs



* Does not include debt service or capital expenditures

Additional cost-savings delivered to Traverse City

Area of Focus	Description	Estimated Savings
Biosolids Hauling	Jacobs funded install of flow metering for the biosolids loadouts provided a more accurate measurement of what is being hauled. Savings achieved in just three biosolids hauls (3x per year over 5 years)	\$45,000
Aeration Basin	Reduced cost of aeration basin maintenance & cleaning (self-performing vs contracting with a 3 rd party)	\$58,000
Membrane bioreactor back pulse pump repair	Using vibration analysis for early detection of maintenance needs prior to catastrophic failure	\$19,000
Odor Control	Devised a way to replace just the carbon in the Phoenix Odor Control building canisters, instead of replacing entire canisters themselves.	\$15,000 every 18 months
Methane Gas Reuse	Used to heat the digesters and the administration building, reducing the use of natural gas at the facility.	Estimated savings unknown

Highly qualified, award winning team of professionals embedded in the community deliver for Traverse City with a deep national bench



Jacobs' Shane Wyatt and Art Krueger (City Director of Municipal Utilities) accepting award



Jacob's Lane Peterson accepts award

CYBERX (Now Microsoft Azure Defender)

PREDICT

Proactive exposure analysis
Predict attacks
Baseline systems

PREVENT

Harden and isolate systems
Divert attackers
Prevent incidents

Continuous Monitoring and Analytics

RESPOND

Remediate/make change
Design/model change
Investigate/forensics

DETECT

Detect incidents
Confirm and prioritize risk
Contain incidents

**Potential Value Adds as your
partner for a long-term renewal**

Proposed Value-Add items 10-year contract offer

Value-Added Component	Jacobs Investments & Discounts to be amortized over 10-yr contract term
Blower Upgrade / Replacement	\$250,000
Digester Gas Reuse Study	\$150,000
Upgrade to LED Lighting	\$100,000 in provided labor
Engineering Services Discount	Up to \$250,000 of services @ 8.5% discount
Solar Study	\$20,000
Annual Innovation Workshops	\$200,000 (\$20,000/y)
Predictive Maintenance / AM (WTP)	\$50,000 annual value

Value-Add Items in Detail

Aeration Blower Upgrade & Replacement

Scope

Jacobs to engineer, purchase and install 1 blower, including associated mechanical and electrical modifications.

Cost to be amortized over the term of the new contract.



Savings & Benefits to the City

- ✓ Electricity usage ~\$9k/yr (\$102K total cost reduction)
- ✓ Reduces annual electrical usage by more than 100,000 kwhr/yr helping to reach City electrical goals
- ✓ Improves operational controls to improve treatment removal efficiency and reliability
- ✓ Provides risk mitigation on future electrical rate increases by reducing consumption
- ✓ Replaces 33+ year old existing equipment well beyond useful life

BEFORE



AFTER



Digester Gas Reuse Study

Scope

Provide engineering support to evaluate feasibility of selling digester gas to DTE and determine options to maximize digester gas production.

Cost of implementation not included in this phase.

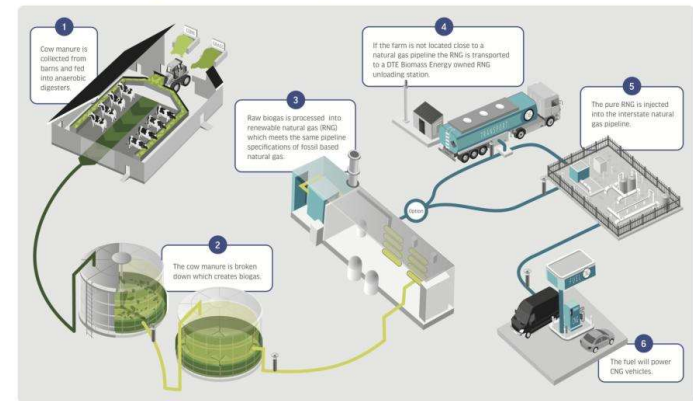
Savings & Benefits to the City

- ✓ Greenhouse gas reduction
- ✓ Source of revenue for the City
- ✓ Balance environmental sustainability and economics for all stakeholders
- ✓ Take a holistic approach (liquid, solids: thickening, digestion)
- ✓ Develop a fresh look that explores new operational options
- ✓ Address the key issue of redundancy of digesters
- ✓ Evaluate business case for decisions with updated economic, sustainability, and infrastructure criteria



How DTE Biomass Energy creates renewable natural gas (RNG)

DTE



THE ROAD TO FLEET GREENING

FLEET OWNERS WORLDWIDE ARE UNDER PRESSURE TO DECARBONIZE THEIR OPERATIONS. HOWEVER, FLEET ELECTRIFICATION FACES SIGNIFICANT TECHNICAL AND MARKET CHALLENGES, AND OWNERS MAY BE CHALLENGED BY THE VISION AND COORDINATION NEEDED TO SUCCESSFULLY TRANSITION TO GREEN. BECAUSE TRANSPORTATION DECARBONIZATION REPRESENTS A FUNDAMENTAL REBALANCING OF THE ENERGY ENVIRONMENT, SUPPLY CHAINS, AND INVESTMENT REQUIREMENTS, CAREFUL APPROACHES ARE NEEDED IN LARGE CITIES AND SMALL TOWNS, ACROSS ALL SECTORS OF TRANSPORTATION. TO ADDRESS THESE CHALLENGES AND ADVANCE DECARBONIZATION GOALS, WE START BY CONSIDERING A FEW KEY ISSUES.



Upgrade to LED Lighting

Scope

Replace remaining 488 fixtures with LED lighting, including all necessary supply modifications to support LED.

Materials paid for via Repairs Budget over the term of the contract.

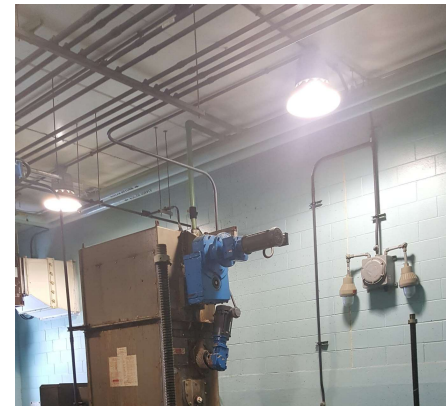


Savings & Benefits to the City

- ✓ Reduced electricity usage / cost
- ✓ The Jacobs delivery team to provide an estimated \$100K worth of labor over the term of the new contract at no additional cost to the City

(Value estimate based on competitive 3rd party quote received from Windemueller Engineers)

Upgraded Aeration Basin Lighting



Upgraded Fine Screen Room Lighting

Engineering Services Discount

Scope	Savings & Benefits to the City
Clearly defined process for utilization of Jacobs consulting engineering support, including: <ol style="list-style-type: none">1. preferred client rate schedule to be used for pricing new work includes an overall 8.5% discount;2. separate, clear Task Order process for improved project management & accountability.	<div><div>✓ Preferred pricing schedule for up to \$250,000 in client identified engineering services</div><div>✓ Streamlined access</div><div>✓ Clear, managed process</div></div>

NOTE: 8.5% applied to Jacobs standard rates / multiplier for engineering services.

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A photograph of a middle-aged man with a beard, wearing a white hard hat, safety glasses, and a high-visibility yellow safety vest over a white shirt. He is holding a blue tablet computer and looking down at it. The background is a blurred outdoor construction site with trees and a fence.

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© Jacobs 2019

Solar Study

Scope

Update 2016 study; include options for external project analysis. Pricing and incentives have changed.

Possible enduring Innovation Workshop topic

Savings & Benefits to the City

- ✓ Identification of opportunities to leverage solar energy within WWTP and City limits
- ✓ Discuss and assist the City with prioritization of options identified through the study

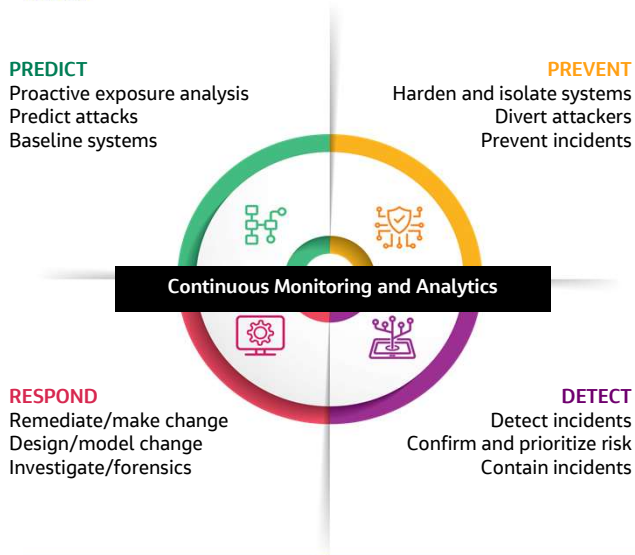


Cybersecurity Upgrades

Scope

Jacobs Cybersecurity Specialist on call as needed.

Assist the City with strategy development and maintenance for continued protection and awareness.



Savings & Benefits to the City

- ✓ Reduce / Eliminate the vulnerabilities that cyber attacks exploit.
- ✓ Ensure the integrity of process control systems
- ✓ Protect sensitive utility and customer information
- ✓ Reduce legal liabilities if customer or employee personal information is stolen; and
- ✓ Maintain customer confidence.
- ✓ Jacobs Regional Cybersecurity expert available as part of the extended Regional Support Team

Annual Innovation Workshop

Scope

Annual workshop with Jacobs industry leaders and subject matter experts to review and discuss Traverse City-specific water and wastewater treatment facility management approaches, based on your goals and priorities. Topics for each workshop identified and chosen by the City.

Client experience:

"The Annual Innovation Workshop was very informative, and it was amazing how much information was packed into 8 hours. It was like attending a WEFTEC workshop in your own backyard with all the presentations custom made for your facility."*

– Firooz Fath-Azam, South Huron Valley System Manager

Savings & Benefits to the City

- ✓ Keep city at the forefront of industry w/ up and coming technology reviews, trends lessons learned and alternative approaches
- ✓ Continuous improvement
- ✓ Identify & share innovative operational enhancements
- ✓ Efficiency identification
- ✓ Capital planning inputs & prioritization



EXAMPLE: Innovation Workshop Topics

- I. Alternative Solutions for 3rd Party Biosolids Handling
- II. New/Emerging Regulations
- III. Grit Removal Technologies
- IV. Process Efficiencies
- V. Stormwater Management Utility Formation
- VI. Conveyance
 - a) I&I
 - b) Communications
 - c) GIS/CMMS Solutions
- VII. Pollution Liability (insurance, etc.)
- VIII. Laboratory Quality Assurance

Electric Vehicle (EV) Charging Station

Scope

Design and install one EV charging station at the City WWTP

Savings & Benefits to the City

- ✓ Jacobs shares electric fleet goals with the City
- ✓ Available to both City and Jacobs vehicles



Aligning and Supporting the City's Goals for the Future

City Goals	Jacobs Alignment & Support
Water-Related Infrastructure Strategic Goal: Address the impacts of high water levels and the needs of underfunded and aging stormwater infrastructure	<ul style="list-style-type: none"> ✓ Discounted engineering option for infrastructure upgrade / replacement ✓ Innovation Workshop to discuss ways to address ✓ Periodic (PdM) Maintenance program to extend the life of an protect both new and existing assets for longest life
Tax Revenue Strategic Goal: Evaluate new sources of local revenue.	<ul style="list-style-type: none"> ✓ Gas reuse study yields options and considerations for potential new revenue steam ✓ Enduring topic for consideration at annual Innovation Workshops
Green Initiatives <ul style="list-style-type: none"> • Investing in green initiatives for a more sustainable future • at least two sustainability projects per year through 2027 • creating a plan to become "carbon neutral before mid-century" 	<ul style="list-style-type: none"> ✓ Gas reuse provides the City with multiple options for energy reuse and reduced carbon impact ✓ New, best-in-class blower for lower energy use and more efficient operation ✓ LED Lighting for less energy use ✓ Solar study to identify solar power opportunities ✓ Enduring Innovation Workshop Topic ✓ EV charging station





Jacobs

Challenging today.
Reinventing tomorrow.

