city of CINCINNATI
Interdepartment Correspondence Sheet

June 14, 2017

FOR YOUR INFORMATION

To: Mayor and Members of Council

From: Harry Black, City Manager HB

Subject: Smart Cities Update

Currently, the City Administration has numerous projects underway in order to lead the way in becoming a smarter, more innovative city, exceeding the expectations of residents. These initiatives cut across the entire organization and are not possible without the continued direction, support and guidance from the Mayor and City Council.

What follows is a summary.

Overview

I. **Smart Cities RFQ/RFP.** Through a recently released RFQ/RFP the City is facilitating a plan to implement 5G and wireline broadband systems throughout the city (see attached). This procurement seeks to build on the collaborative success achieved in the small-cell guidelines recently adopted and aims to leverage the City's infrastructure and the public rights-of-way to establish a technologically-neutral platform for new and innovative services that will continue to fuel the City's economic growth.

The goal is to identify potential contractors with demonstrated expertise in designing, constructing, and deploying broadband wireline and Wi-Fi, and other wireless telecommunication systems. The mission is to create useful, cost effective solutions that bridge the digital divide and open doors to future innovations benefiting residents and businesses.

II. **Performance Management.** The City has embraced performance management as a means to utilize data and technology to inform decisions making City operations more efficient and to enhance customer service. This has been accomplished through a suite of initiatives including the creation of the Office of Performance & Data Analytics, the Innovation Lab, CincyStat and the use of performance management agreements with each City department.

III. **CincyInsights.** Several local governments have embarked on open data initiatives. While these initiatives are useful to a certain subset of "tech savvy" users, many without such expertise are unable to realize much benefit. CincyInsights takes traditional open data portal datasets and converts them to easily usable, colorful and navigatable dashboards for anyone to use. Additionally, CincyInsights helps City departments improve performance and deliverability through daily real-time updates and interactive data visualizations. Check out the dashboards here:

https://insights.cincinnati-oh.gov/stories/s/Cincinnati-INsights/s59x-yqy3

IV. **Apps.** Some of the other innovative technologies implemented by the City include a customer service app (Fix it Cincy!) and system (5916000.com) allowing residents to submit service requests directly to City departments using GPS and accompanying documents electronically. The app has proven widely popular, and effective. See here: http://www.cincinnati-oh.gov/cityofcincinnati/cincinnati-city-hall-mobile/

V. **CAGIS Enhancement.** Cincinnati is fortunate to have the Cincinnati Area Geographic Information System (CAGIS) program, which provides a sophisticated, integrated platform for multiple agencies to analyze, plan and deliver services efficiently. All infrastructure assets (Water lines, Sewer lines, streets assets, property parcels to name a few) are maintained real time within the system and provides a strong foundation for many smart-city initiatives. The CAGIS shared enterprise system also provides the City with a strong foundation to develop innovative smart city applications and programs involving data analysis, visualization, detecting trends and models for predictive analysis and proactive responses.

All land development activities including urban planning, permitting, code enforcement, licensing and inspections are automated and daily agency business is conducted in the CAGIS system. This enables communication, coordination and collaboration between multiple agencies for effective service delivery and innovative solutions. Users are able to track a variety of data online like the progress of land development projects in real time or research neighborhood code enforcement issues. Another example is the Construction Coordination program tracking right-of-way projects where the City has saved substantial repaving costs with an effective multi-agency program utilizing CAGIS.

VI. **Smart Sewers.** The Greater Cincinnati Metropolitan Sewer District is pursuing a Smart Sewers initiative in order to reduce overflows to creeks and rivers at a lower cost than traditional "green" or gray" solutions. The project is anticipated to save tens of millions of dollars in the long-term, ultimately benefitting ratepayers (see attached).

VII. **Smart Water Meters.** Greater Cincinnati Water Works utilizes "Smart" water meters that can be read via radio, allowing utility workers to cut down on service delivery time by not having to physically visit each meter.

VIII. **Emergency Response Deployment.** The City utilizes automatic vehicle location (AVL) dispatch for all Fire and EMS vehicles, as well as AVL location for our snow plows and street sweepers. This allows the City to best manage assets in the field based on real-time physical location, which is a crucial functionality for first-responders.

IX. **Drones.** The City has begun pursuing drones in order to assist in City operations, including as an aid in maintaining water infrastructure. The City has developed citywide regulations for how drones should be regulated as they are used as part of City operations (see attached).

Conclusion

With your continued support and guidance, our goal is to become the best managed local government in the nation. As we pursue these Smart Cities initiatives some of our efforts are more visible than others. For example, the use of a drone to service water infrastructure is something that makes us more efficient and effective, but not something that the average resident will likely ever take note of.

Conversely, other initiatives are working to improve customer service and widely noted. These would include the Fix it Cincy! app and the CincyInsights dashboards (now receiving over 10,000 hits a month). These technologies allow users to interact with information immediately impacting their lives. From the Snow Plow Tracker to reporting potholes, CincyInsights gives users the opportunity to take an active part in their community while also providing them with essential information that can impact their neighborhood, commute and livelihood.

Additionally, the outcomes of the Smart Cities broadband initiative are exciting and likely to be highly visible. It is expected access to free or cheap WiFi will be greatly enhanced while leveraging new uses for existing infrastructure as we look to "light up" sidewalks, telephone poles and even fire hydrants.

We will continue to track progress as progress continue and will provide additional updates.

Attachments

March 21, 2017

FOR YOUR INFORMATION

To: Mayor and Members of City Council

From: Harry Black, City Manager HB

Subject: Smart Cities/Broadband Network Procurement

Today the City released a Request for Qualifications ("RFQ"), which is the first part of a two-step procurement process, to begin the process of operationalizing the City's smart-cities vision.

The term "smart cities" is often defined in different ways. To Cincinnati, a "smart city" means one that puts infrastructure and other assets to work in collaboration with private industry to make ubiquitous, high-speed broadband internet access available and affordable to residents and businesses while also enabling the overall market place with developing commercial and community uses that foster enhanced commerce and public benefit.

This was made clear last year, when City Council took the initial steps towards realizing the vision that Cincinnati become a smart-cites visionary. Specifically, the Mayor and City Council adopted forward-thinking guidelines for streamlining and fast-tracking small cell installations in the right-of-way. Those guidelines, developed in collaboration with the wireless industry and the City's experts, welcomed and facilitated rapid deployment of 5G and beyond technology on City infrastructure enabling advanced broadband services and ushering in the Internet of Things ("IoT")[1].

This procurement seeks to build on the collaborative success achieved in the small-cell guidelines adopted by the Mayor and City Council and aims to leverage the City's infrastructure and the public rights-of-way to establish a technologically-neutral platform for new and innovative services that will continue to fuel the City's economic growth, while also generating public benefits.

Procurement Process Outline

The goal of this procurement is to identify potential contractors with demonstrated expertise in designing, constructing, and deploying broadband wireline and Wi-Fi, and other wireless telecommunication systems. The mission is to create useful, cost effective solutions that bridge the digital divide and open doors to future innovations benefiting residents and businesses.

This procurement will take place in two principal phases. Today's RFQ represents the first phase, in which the City invites respondents to submit their Statement of Qualifications ("SOQs"). In the second phase, the City intends to invite the most qualified and innovative respondents based, on the SOQs, to respond to a Request for Proposals ("RFP") from which the City may award a contract.

The RFQ phase is designed to accomplish two principle goals: (1) to educate the City regarding the best available ideas, options and technologies to achieve goals; and (2) to identify the most qualified, innovative respondents to build, operate and maintain one or more broadband networks in partnership with the City.

[1] The Internet of Things ("IoT), as defined by Oxford Dictionaries, is the interconnection via the Internet of computing devices embedded in everyday objects, enabling them to send and receive data.

As this procurement unfolds, please keep in mind that City procurement guidelines prohibit respondents from contacting members of City Council or any City employees outside the formal RFQ procedure. Accordingly, City staff and members of Council should refrain from communications with potential RFQ respondents now that this competitive process has begun. The City Administration anticipates a very competitive process and it is important to the integrity of the process that it be conducted in strict accordance with City procurement guidelines. Contacts from potential respondents regarding the RFQ should be reported to the City's Chief Procurement Officer.

The attached presentation will be presented at the Education and Entrepreneurship Committee today at 2 pm.

This memorandum is for informational purposes only; no Council action is required. The Administration will provide regular updates as this process progresses.

Attachment

city of CINCINNATI

BROADBAND SYSTEMS DEPLOYMENT THROUGHOUT CINCINNATI: SMART CITIES INITIATIVE PHASE 1

Education & Entrepreneurship Committee
Tuesday, March 21, 2017 at 2 p.m.
Harry Black, City Manager

Smart Cities Brand

SMART CINCY

Agenda

- Background
- What is “Smart Cities?”
- Project Goals
- Preliminary Project Scope
- Procurement Process
- Questions

SMART CINCY

Background

- In 2016, Council took first steps towards realizing Cincinnati's smart-cities vision.
- Council Passed CMC 719, "Wireless Communication Facilities" Guidelines:
  - Authorized streamlining and fast-tracking small cell installations in the public rights-of-way.
  - Facilitates rapid deployment of broadband systems on City infrastructure for all service providers.
  - Guidelines were collaboratively developed with the wireless industry and the City.

SMART CINCY

What is "Smart Cities"

- The term lacks a formal definition, and means different things to different people.
- **To Cincinnati, "smart cities" means**
  - Working collaboratively with private industry.
  - Leveraging its assets to facilitate deployment of wireline and wireless communication facilities.
  - Making high-speed broadband Internet access available and affordable to residents, businesses and visitors.

SMART CINCY

Project Goals

- **Through a public–private partnership, revenue-sharing model, the goals of this project are to:**
  - Build on the collaborative success achieved in the wireless communication facilities guidelines adopted by Council.
  - Leverage the City's infrastructure and the public rights-of-way.
  - Establish a technologically-neutral platform for new and innovative services that:
    - Fuels the City's economic growth;
    - Improves public safety;
    - Powers efficient governance; and
    - Spans the digital divide.

SMART CINCY

Preliminary Project Scope

- **Initial Phase:**
  - Make infrastructure in the downtown Cincinnati core available for a wireline and/or wireless network.
    - The downtown has ducts, conduits and access to more than 370 poles that can serve as the backbone for a network
- **Future Phases:**
  - Envisioned as multiple, concentric, overlapping, high-capacity, broadband network rings installed throughout the City's neighborhoods on new and existing infrastructure.

SMART CINCY

Procurement Process

- **Goal of the Procurement**
  - Identify one or more respondents meet the following:
    - Demonstrated capabilities, experience, and qualifications in designing, constructing, and deploying broadband wireline and Wi-Fi networks and other wireless telecommunication systems;
    - Share the City's vision of collaboration and innovation; and
    - Share the City's values of net neutrality and digital inclusion.

SMART CINCY

Procurement Process

Procurement will be undertaken in two phases:

1. **Request for Qualifications ("RFQ"):**
   - City invites respondents to submit their Statement of Qualifications ("SOQs")
2. **Request for Proposals ("RFP")**
   - City invites the most qualified and innovative respondents based on their SOQs to participate in RFP phase
   - City reviews proposal(s) submitted in response to the RFP and awards one or more contracts

SMART CINCY

Questions for the team?

Patrick Duhaney
Chief Procurement Officer

Andrew Garth
Chief Counsel for Transportation and Major Infrastructure

Dr. Jonathan Kramer
Telecom Law Firm - Advisor

SMART CINCY

city of CINCINNATI

Interdepartment Correspondence Sheet

December 21, 2016

FOR YOUR INFORMATION

To: Mayor and Members of City Council

From: Harry Black, City Manager HB

Subject: Smart Sewers

I am passing along the attached information about the MSD Smart Sewers initiative, which aims to utilize the latest technologies to garner service enhancements and reduces the financial burden on ratepayers.

METROPOLITAN SEWER DISTRICT of greater CINCINNATI

Date: December 21, 2016

To: Harry Black, City Manager

From: Gerald Checco, Director

Copy: Sheila Hill-Christian, Assistant City Manager

Subject: MSD Building Smarter Sewers to Save Money for Ratepayers

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This memo details the Metropolitan Sewer District of Greater Cincinnati's (MSD) plan to create a "smarter sewer" system to help reduce sewer overflows into our creeks and rivers at a lower cost than gray and green infrastructure solutions.

This smart sewer system is anticipated to save tens of millions of dollars in capital investments in projects to control sewer overflows and is MSD's best chance of reducing spending and ultimately costs for its ratepayers.

Like many wastewater utilities across the nation, MSD is faced with an unfunded Consent Decree (federal mandate) to keep raw sewage mixed with stormwater out of local waterways when it rains.

In an effort to make this massive public works program more affordable to customers, many of whom are living below the poverty level, MSD began looking for new and creative ways to use what it already had in the ground.

Over the last two years, MSD has been working to develop a smarter sewer system that uses the existing sewer system more efficiently and effectively.

For example, when it rains in one part of Cincinnati, the interceptor sewers in that location may be full, but other areas where it hasn't rained may have lots of available capacity.

This approach allows MSD to store flows inside large interceptor sewers, storage tanks, and high-rate treatment facilities in different parts of the sewer system using sensors to measure flow levels and gates and valves to direct the flows. The entire system is controlled by a SCADA computer system. This helps keep sewage in the pipes and out of our creeks.

In early 2015, MSD deployed its new smart sewer system in the Mill Creek basin, which covers the central portion of Hamilton County.

Within the first several weeks of operation, the technology was used to store flows at a high-rate treatment facility, avoiding 1.4 million gallons in sewer overflows at a location nearly 11 miles away.

The cost savings results from not having to build as many new capital projects to reduce the overflows, such as larger sewers and storage tanks. Gray infrastructure in particular is very expensive and takes a long time to plan and construct.

Early data shows that smarter sewers cost about $0.01/gallon of overflow volume reduced, as compared to about $0.23/gallon for green stormwater controls and about $0.40/gallon for larger pipes and storage tanks.

South Bend, Ind. recently invested in a similar technology, which is projected to reduce its Consent Decree spending by about 27%.

Since first launched, this technology has reduced sewer overflows by more than 400 million gallons.

MSD would like to advance this technology, known officially as Wet Weather Optimization, in other MSD basins. The utility would also like to invest in a new operational project to upsize the underflow pipes between local sewers and interceptor sewers in the Mill Creek basin to allow interceptor pipes to hold even more flow.

This practical technological innovation is featured in the Fall/Winter 2017 edition of *Sustain Magazine*, published by The Kentucky Institute of the Environment and Sustainable Development (see attached PDF of the article).

An information video about this technology can also be viewed at:
https://www.youtube.com/watch?v=XSwQqMBH6lg

METROPOLITAN SEWER DISTRICT of greater CINCINNATI

Necessity is the Mother of Invention: MSD of Greater Cincinnati's Use of Technological Innovation to Lower Costs for Customers

Jack Rennekamp
Deb Leonard
Gina Marsh

"A crow perishing with thirst saw a pitcher, and hoping to find water, flew to it with delight. When he reached it, he discovered to his grief that it contained so little water that he could not possibly get at it. He tried everything he could think of to reach the water, but all his efforts were in vain. At last he collected as many stones as he could carry and dropped them one by one with his beak into the pitcher, until he brought the water within his reach and thus saved his life."[1] Moral of the story? Necessity is the mother of invention.

Like the crow in this Aesop fable, the Metropolitan Sewer District of Greater Cincinnati (MSD) was pressed to find a solution to a knotty issue: how to make a $3.2 billion Consent Decree to reduce combined sewer overflows (CSOs) more affordable to its customers in an urban area with high rates of poverty.

As a Midwestern utility serving more than 200,000 households and commercial users, MSD turned to a technological innovation as practical as adding pebbles to a pitcher of water: using the existing collection and treatment system to reduce CSOs instead of building expensive new infrastructure.

Historical Background

Like other "legacy city"[2] sewer utilities across the United States, MSD negotiated a settlement agreement (Consent Decree) with the U.S. EPA, Ohio EPA, and ORSANCO[3] to reduce combined sewer overflows (CSOs) and eliminate sanitary sewer overflows (SSOs) by making wet-weather capacity improvements to its sewage collection and treatment system. This unfunded federal mandate was put into effect in 2002 and 2004. During a typical year, about 11 billion gallons discharge from more than 200 CSO outfalls along local rivers and streams in Cincinnati and Hamilton County. One of these waterways is the Mill Creek, an industrialized and channelized urban waterway running through the central City that was once critical to the city's and county's early residential and commercial development. In 1997, it was designated by American Rivers as the "most endangered urban river in North America."[1]

MSD's $3.2 billion Consent Decree is structured to eliminate specified SSOs, to reduce the volume of CSO discharges, and to adjust the utility's ability to treat wet weather flows in the system, approximately 40% of which is a combined system. Improvement in water quality is an optimal by-product of this effort. MSD's Phase 1 series of Consent Decree projects are designed to provide sufficient volumetric capacity where needed, to provide variable stormwater source control to reduce the CSOs when and where possible, and to improve the ability to treat wet weather flows that reach the end-points of the system. These end-points are comprised of three river-based wastewater treatment facilities that were initially constructed between 1953-1961 during one of the first phases of sewage treatment in the middle Ohio River Valley. Phase 2 of the Consent Decree will be developed in 2017 and implemented after 2018.

The MSD Consent Decree enforces criteria for getting to "clean," with the specifics outlined by a U.S. District Court-approved wet weather improvement plan (WWIP). Re-inventing and re-invigorating Hamilton County's 188-year-old sewer system to comply with modern pollution control requirements is not only technically challenging – as most sewer assets are complex networks of buried pipes – but fiscally exasperating as well. The improvements delivered as a result of MSD's Consent

Decree WWTP are publicly financed expenditures, paid for by sewerage services costs (rates), that create questions of equity for all rate-payers.[2] The Cincinnati Standard Metropolitan Statistical Area has a 14% rate of urban poverty among its residents (30% within the center city of Cincinnati), including crisis levels of childhood poverty in its center city. Consent Decree costs have spawned a need to innovate technologically.

The Innovation

Sewers and wastewater management and the civil engineering behind its processes are nothing new in a historical context. So, use of the term "innovation" in this industry is rather odd for what is basically a 2,000+ year old technology. After all, there are only so many ways that humans can transport and treat their waste products in an urban setting in ways that have not been used before throughout history: pits and channels, chemical and biological treatment, membrane filtration, aeration, flocculation, and incineration, UV disinfection, interceptor sewers, flow monitors, combined sewer overflow controls, SCADA monitoring and controls and deep-tunnel storage. The historical goal of sewage control in American cities is to find the "ultimate sink" (or way to deal with urban wastes), the perfect confluence of technology and ability to modify and control the environment to suit human ends and protect human health.[3] But what if the innovation is not in new devices, but a combination of existing technologies in ways that have not yet been used? What if the outcome, the "invention," is to make the sewer system more useful and able to respond to rapid changes in flow through its pipes without taking away human control and accountability?

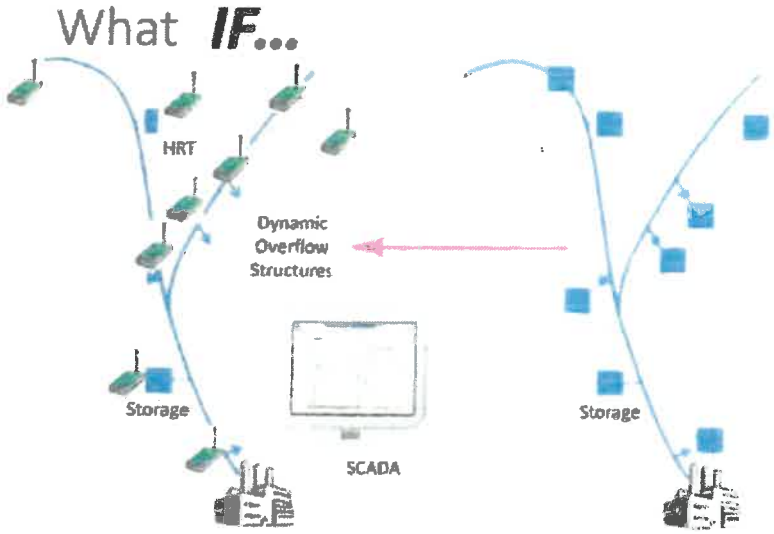
To that end, MSD is developing a smart sewer system that uses existing infrastructure combined with "real-time" controls, including sensors, gates and a computer-controlled monitoring system (Wet Weather SCADA). These "real time controls" are a paradigm shift in wastewater management: instead of only building bigger pipes, deeper storage tunnels, or new treatment plants, the utility can use, store, or divert excess flows to existing sewer lines, storage tanks or treatment facilities that have available capacity, thus reducing CSOs into local streams and rivers. South Bend, Ind. recently invested in a similar technology, which is projected to reduce its Consent Decree spending by 27%. MSD's new system is anticipated to save tens of millions of dollars in capital investments in Consent Decree projects.

How it Works

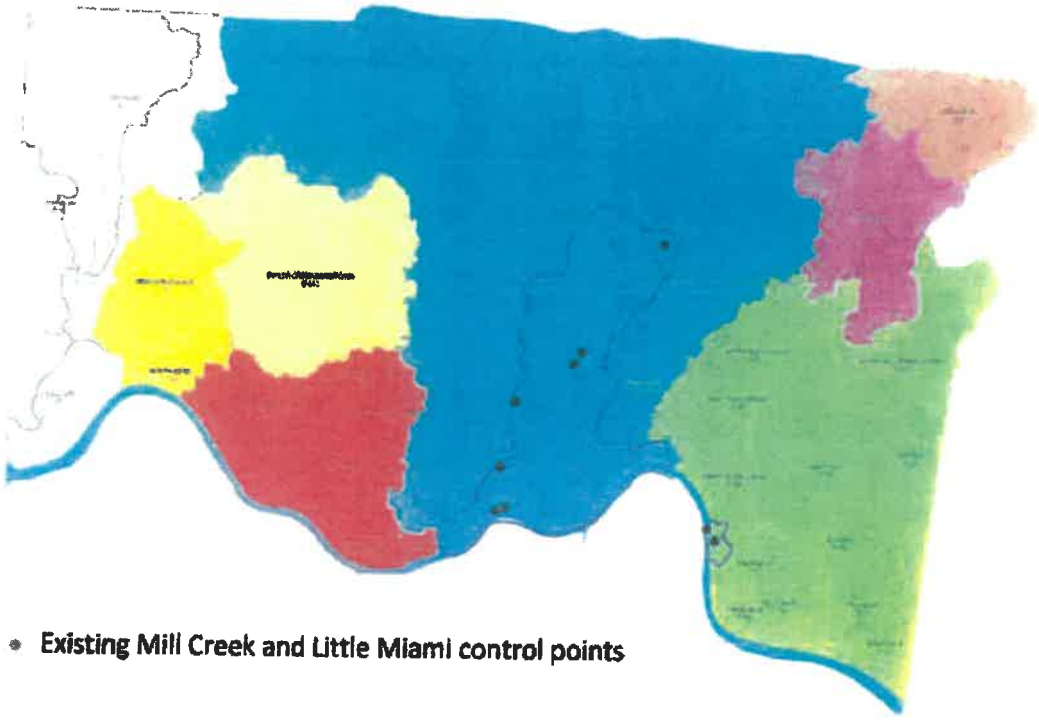
MSD sought to identify new ways to maximize capacity, repurpose existing sewer pipe, and develop a robust and dedicated SCADA control system to better effect the control of CSOs than traditional methods of static weirs and dams, and more costly measures like deep tunnels. MSD began by asking such questions as: "What if we could use all available capacity in our pipes before overflows occurred?" and "What if we could use an unused storage tank to reduce overflows many miles away?" MSD recognized that its best opportunity in managing a "dumb" system was to make it "smart:" to innovate by turning upside-down the traditional uses of sewer infrastructure and re-thinking the best use of its existing infrastructure. What if over 100 miles of interceptor and large diameter trunk sewers and several wet weather facilities, linked to a modern remote command and control SCADA system, could maximize the conveyance and treatment capabilities of this extensive infrastructure during rain events? Rather than manage system problems during wet weather, what if the paradigm was shifted, leveraging technology to operate the MSD collection system as an extension of the receiving treatment plant? Dynamic adaptability and flexibility would augment – and maybe even supplant – a static sewer system that was continually expanded over the last 100 years.

If a sewer collection system was to become "smart" and innovatively operated like a treatment plant, MSD would need to possess real-time command and controls to monitor, evaluate, and operate/control sewage flows throughout its pipe network. MSD created such a system through advanced, reliable, and low-cost cellular-based remote monitoring technology, installing over 140 sensors to "see" what's happening in the system. MSD also gave the new system a "brain" consisting of a new SCADA-based system platform on which it is building the visualization and analytic tools, similar to what is used to monitor and control treatment plant processes.

In early 2015, the District deployed its new Wet Weather SCADA system covering Mill Creek, its largest service basin. MSD is now able to guide wet weather control based on flow predictions and real time data, detect some instances of

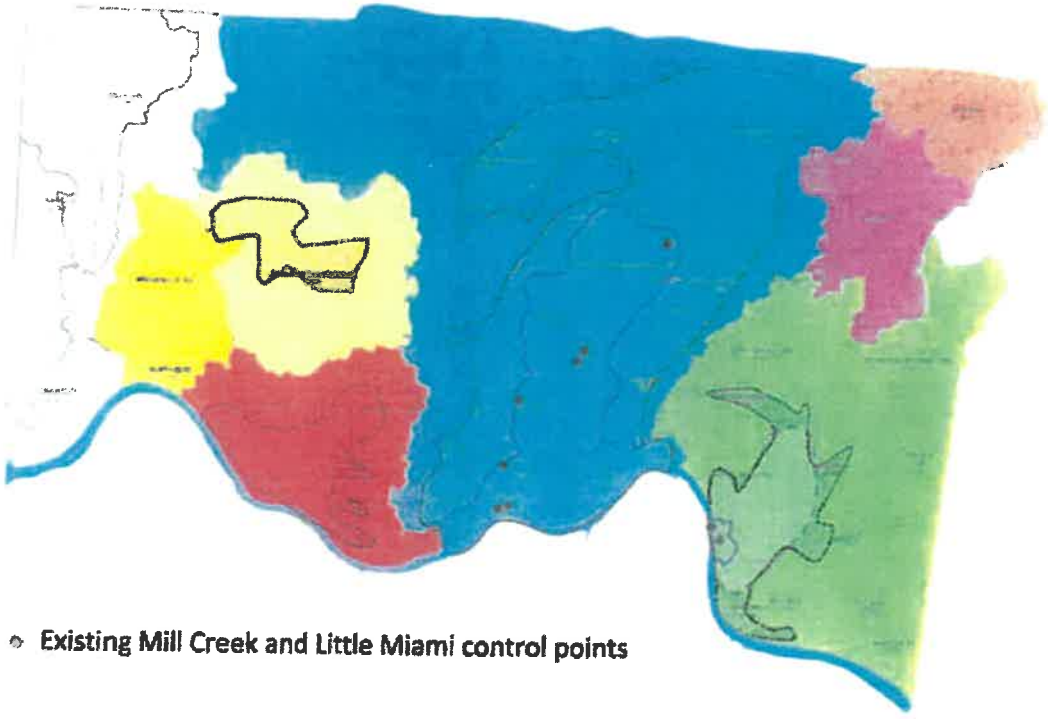


Wet Weather SCADA System Coverage June 2015



- Existing Mill Creek and Little Miami control points

Wet Weather SCADA System Coverage June 2016



- Existing Mill Creek and Little Miami control points

river intrusion, and provide advanced alerts to operations and maintenance staff. This connectivity leveraged tying the existing wet weather control facilities developed under the Consent Decree into the new Wet Weather SCADA system.

This transformational technology provided real-time observation of the District's wastewater system over a large geographic area. Within the first several weeks, it was used to manage storage tank dewatering at a wet weather facility, avoiding 1.4 MG in overflow at a location nearly 11 miles away. It was also relied on to isolate large volumes of river intrusion during a period of Ohio River flooding, allowing the MSD treatment plant operators to direct the more concentrated wastewater to the plant for treatment. By limiting the intake from areas with higher river intrusion, the water temperature intake at the receiving plant also rebounded, resulting in more effective BOD treatment.

Added to this matrix of smart system command and control is an opportunity to dynamically maximize and re-purpose the MSD wastewater collection and treatment system to serve new ends: to develop an interactive – rather than reactive – system that will enable its static components to change the physical status at various points in the system, the ability to make a change in the physical system that modifies the hydraulic conditions, and thereby stores, conveys or treats more sewer flows.

Summary

Like Aesop's crow, MSD was faced with what seemed like an insurmountable problem and invented or innovated its way to a new, more affordable solution.

MSD's identification of technological innovation to manage wastewater evolved through a need to comply with its federal Consent Decree with scarce local resources. Its use of real-time controls allowed MSD to maximize its capital assets, both those that were required under the Consent Decree and those that were part of an existing system, creating a next level evolution of the traditional sewer system designed to collect wastewater through gravity and treat sanitary flows at a system endpoint. It allowed for on-going development of an adaptive sewer system that, while nearly 200 years old, is still able to serve the needs of its customers, grow to allow changing development to succeed, and be able to help in controlling costs of Consent Decree improvements. And, it recognized the reality that "legacy city" sewerage utilities can and must still protect the public health and the environment in an era when the sunk costs of the existing system must continue to be of value in order for it to fulfill its duty.

The authors of the article are City of Cincinnati employees working at the Metropolitan Sewer District of Greater Cincinnati. The Sewer District is a State of Ohio county sewer district, that is based upon a collaborative arrangement between 43 Greater Cincinnati municipalities, townships, villages, and the County of Hamilton, and is situated in the southwest corner of the state. It is managed by the City of Cincinnati's Department of Sewers under a 50-year agreement with Hamilton County, executed in 1968.

Jack Rennekamp is the Sewer District's Assistant Superintendent for Legislation Services and its historian. He specializes in the history of 20th century American politics and law, culture, and urban systems, and taught American History at the University of Cincinnati prior to joining the City of Cincinnati.

Deb Leonard is part of the Sewer District's communications and community engagement group, managing print and social media. She previously worked for Environmental Quality Management, Inc. as their Communications and Community Engagement Manager and has Accreditation in Public Relations (APR) with the Public Relations Society of America.

Gina Marsh is the Sewer District's Director of Government and Public Affairs. She previously served as its General Counsel, and as an Assistant City Solicitor for the City of Cincinnati Department of Law. As of press time, Ms. Marsh has left City of Cincinnati employment and is currently executive director of a Cincinnati non-profit human services collaborative.

References

1 Aesop's Fables, "The Crow and the Pitcher," http://www.aesopfables.com/cgi/aesop1.cgi?1&TheCrowandthePitcher&&crowpitc2.ram

2 As defined by the International City/County Management Association, "legacy cities" are "former industrial powerhouses and urban economic hubs rich with history and culture dotted throughout the Northeast to the Great Lakes regions that experienced dramatic decline through the 1980s." See http://icma.org/en/icma/knowledge_network/blogs/blogpost/1436/New_Strategies_for_Revitalizing_American_Legacy_Cities. Also see A. Mallach and L. Brachman, Regenerating America's Legacy Cities, 2013, Cambridge: Lincoln Institute of Land Policy. Approximately 772 urban communities across the U.S. contain "legacy" sewers infrastructure, mainly located in the Northeast, Great Lakes regions, and Pacific Northwest.

3 Ohio River Valley Water Sanitation Commission. Chartered by the 74th U.S. Congress in 1936 and ratified in 1948, ORSANCO was a mid-20th century multi-state effort at water pollution control, and a forerunner to U.S. environmental protection efforts that led to the U.S. Environmental Protection Agency in 1970. ORSANCO, First Annual Report, 1948-1949, 1949, Cincinnati.

city of CINCINNATI

Interdepartment Correspondence Sheet

August 22, 2016

FOR YOUR INFORMATION

To: Mayor and Members of Council

From: Harry Black, City Manager HB

Subject: Administrative Regulation No. 71 – Drones

Today, the attached administrative regulation was issued guiding the City's anticipated, but not yet planned, use of drones as part of City operations.

No drones are in use at this time; however, there is interest among a few departments in exploring the use of this new technology to enhance efficiency, public safety and customer service. As such, the Administration wants to ensure full transparency at every step of the process, including this early stage of consideration.

The City Manager's Office and Law Department worked with feedback from City departments to create the new administrative regulation. As we pursue utilization of this technology, it is likely this regulation will be updated to reflect changes, as well as lessons learned.

Technology improvements are re-shaping every aspect of our society. Think of the manner in which smart phones are changing how business is conducted throughout the world.

As I have repeated on multiple occasions municipalities, like all large organizations, must adapt to new and emerging technologies, or they risk becoming obsolete. As drones are becoming common place we must consider the potential benefit to our organization.

For example, they have the potential to, in a few hours, collect large amounts of useful information related to water service delivery that may take a person, or crew of workers, days to collect through conventional methods. In addition, drones potentially will be used to assess dangerous situations in lieu of first responders putting themselves in physical danger.

As we proceed with exploring this new technology, it is critically important the practices and procedures are controlled centrally and we are completely transparent with the policy makers and general public throughout, including public records retention. This is the purpose of the attached regulation, which goes into effect today.

We look forward to continued public engagement on this issue as we continue our work to lead the way in making Cincinnati the best managed local government in the country.

Attachment

city of
CINCINNATI

Date: August 10, 2016

To: City Manager Harry Black

From: Paula Boggs Muething, City Solicitor

Copy: Terry Nestor, Deputy City Solicitor
Drew Marksity, Assistant City Solicitor

Subject: Proposed Administrative Regulation No. 71 – Drones

Following the July 5, 2016 meeting about the City's use of drones, CPD, CFD, MSD, and GCWW sent to Law descriptions of their intended uses of drones. Departments provided varying degrees of specificity, and each department's use was different from that needed by other departments. After analyzing the submissions, the Law Department's opinion is that a single, detailed policy for drones – a single process or set of rules for acquisition, training of staff, and obtaining FAA approval – is not necessarily feasible and would not be particularly helpful.

In addition to the variety of intended uses, departments also seem to have varying understanding of the current regulations applicable to drones. It seems clear that what is needed is a policy requiring consultation with the Law Department, as well as Purchasing, before departments take any actions with regard to drones.

We have therefore drafted an Administrative Regulation that prohibits departments from proceeding on their own and requires centralization of the process. Please let me know if you agree with this approach, if you would like any changes to the draft regulation, and if you have any questions on this matter.

Administrative Regulation *No. 71*

City of Cincinnati

Date: August 22, 2016

Office of the City Manager

Approved: Hs Bod

Subject: **City of Cincinnati Unmanned Aerial System (UAS) Policy**

PURPOSE

The purpose of this Policy is to establish guidelines for the use of any unmanned aerial system ("UAS"), also known as a "drone," by departments of the City of Cincinnati. In the operation of a UAS, departments are required to comply with current federal law, specifically Federal Aviation Administration ("FAA") regulations, and any state laws for operation of a UAS. However, it is the purpose of this Policy to also establish requirements to ensure that departments understand which laws and regulations are applicable to their proposed UAS use and comply with City ordinances and policies in the acquisition and use of a UAS.

PURCHASE OF UAS – ACCORDING TO CITY PURCHASING POLICIES

Departments may purchase a UAS only in coordination with the Purchasing Department, after discussion of the proposed use of the UAS with the Law Department as described below. A UAS is the same as other tools, machinery, vehicles, and other products which the City from time to time acquires for governmental uses. Therefore, the purchase of a UAS must adhere to the rules governing procurement of other goods for departmental use. Departments may not simply choose a UAS and purchase it.

CONSULTATION PRIOR TO OPERATION OF UAS

Departments shall not operate a UAS without first consulting the Law Department to describe the intended use. Before using a UAS, it is necessary to determine whether the department must obtain a public Certificate of Waiver or Authorization (COA) from the FAA. The regulations governing operation of UASs and those who operate them are new. They are likely to continue to change. Former proposed regulations, policy statements, and discarded informal policies of the FAA have led to the dissemination of much inaccurate information about the rules for UAS operation. Departments that are acquiring and operating a UAS must check with the Law Department regarding which rules apply to the proposed operation.

NEED FOR PUBLIC COA

A government entity does not need a public COA if it operates a small UAS within the parameters for recreational, non-commercial uses:

- Pilots pass a test and are vetted by the TSA;

- UAS weighs under 55 pounds;
- UAS kept in sight;
- Flight under 400 feet;
- Daytime only operation;
- Speed no higher than 100 mph;
- No operation above people;
- Operator cannot be in a moving vehicle;
- No carrying hazardous materials.

For any operation outside of these limitations by a City department, a public COA is necessary. Any of the operating limitations listed above can be waived by the FAA with proper request and permission. Obtaining a COA will usually be the correct course of action to provide flexibility to departments in their use of a UAS. For example, departments may need to use a UAS at night, to fly it over people, and to fly the UAS to a location where the operator does not maintain visual line-of-sight of the UAS.

PRIVACY CONSIDERATIONS

In the development of any UAS program it is imperative to consider and limit potential infringement on the privacy of citizens. While some appropriate government uses of a UAS may potentially impinge on the privacy of some citizens, the City of Cincinnati will consider citizens' privacy interests before, during and after operation of a UAS.

Prior to operation, departments will consult with the Law Department to ensure all applicable local, state and federal regulations are adhered to when intended operation of a UAS could potentially infringe on the privacy of citizens.

PUBLIC RECORDS

Prior to deploying any UASs, departments will consult with the Law Department to create, implement and publish UAS records policies consistent with local, state and federal regulations related to public records retention in order to properly retain public records and protect the personal information of citizens.

OBTAINING UAS SERVICES – RFP, RFQ PROCESSES NECESSARY

If appropriate and cost-effective, departments can choose to contract with a third party to operate a UAS to meet the needs of the department through an appropriate procurement process. This approach could be appropriate when a department has particular mission needs that might be met by using a UAS, but it is difficult to know exactly how effective a UAS would be. Rather than committing to purchasing a UAS, obtaining the necessary federal approval, and training and qualifying personnel to pilot the equipment, hiring a third party may be appropriate. Like with the purchase of UASs, choosing a service provider to operate a UAS for a department is subject to the same rules as acquisition of services in other contexts. Departments may not simply choose a service and hire them; they must adhere to the appropriate process, consulting the Purchasing Department as necessary.

PROHIBITIONS

City employees are prohibited from any of the following activities with regard to UASs:

- Bringing a personally owned UAS to the workplace;
- Using a personally owned UAS while on duty for the City;
- Operating a UAS for work without being qualified to operate by the FAA;
- Using a City-owned UAS for any purpose other than a work purpose;
- Removing a City-owned UAS from the workplace, except for the purpose of taking the UAS to a location where it will be used for a work purpose.

NO DETAILED POLICY OR FLEET REGULATION

Because departments' needs for a UAS may vary greatly, and because the types of UASs and the manner in which those UASs will be used will vary, at this time the City will not create a more detailed policy with restrictions and parameters for the use of UASs by departments. If a department identifies a need for a UAS, the Administration will assist and support the department as much as possible. The consultation and communication required before taking action is to ensure all of the following: (1) compliance with all City policies and procedures, and with state and federal regulations; (2) sharing of information, including successes and challenges, between City departments; (3) knowledge of what assets are available to the City, both in terms of total UASs in the City's possession and of which personnel have skills, knowledge, and experience with those UASs.