



**Testimony of
Vincent Sapienza
New York City Department of Environmental Protection
before the
New York City Council
Committee on Environmental Protection**

November 25, 2019

Thank you Chair Constantinides and members of the Committee on Environmental Protection for the opportunity to testify today. I am Vincent Sapienza, the Commissioner of the Department of Environmental Protection (DEP). I am joined today by Jane Gajwani, the Director of the Office of Energy at DEP and Anthony Fiore, the Deputy Commissioner of Energy Management at DCAS.

We appreciate the importance of this hearing topic, "Effectively utilizing water resources for energy generation, safety, and conservation." As you know, DEP owns and operates the country's largest water and wastewater utility; safely delivering more than a billion gallons of clean drinking water every day to about half the population of New York State and treating over 1.3 billion gallons of wastewater each day at one of our 14 Wastewater Resource Recovery Facilities (WRRF). Our department's purpose is to keep all New Yorkers healthy by providing clean drinking water and safely processing wastewater. We are dedicated to water and energy conservation and are diligently expanding our capacity to generate green energy.

Demand Management Program

Water conservation, or demand management, is a critical program at DEP. Since 2013, DEP has achieved savings of more than 10 million gallons of water per day (MGD). In June 2018, DEP released One Water NYC: 2018 Water Demand Management Plan, highlighting DEP's success in implementing water conservation projects across the city and Upstate with our wholesale customer utility partners. Over the past six years, DEP has implemented several demand management initiatives, such as installing efficient toilets and spray showers in city properties and by offering discounts to residential customers on new, efficient toilets. We also launched voluntary Water Challenges with hotels, restaurants, hospitals, and universities, as well as our own wastewater resource recovery facilities. Since the release of the 2018 Water Demand Management Plan, DEP has continued to build on past success, using established partnerships to identify and implement new conservation projects, and to continue ongoing programs to ensure that we reach our water conservation goals. Not only does this program help to optimize our water supply, it also reduces wastewater flows, as well as the energy and greenhouse gas emissions associated with pumping and treating water and wastewater.



Hydropower in the Water Supply System

Hydropower is an important piece of our clean power portfolio, which also supports economic development in the host municipality and generates revenue for New York City. In addition to the upcoming Cannonsville Hydropower Plant, there are already four hydropower plants in operation in our water system, with a rated capacity of nearly 58 MW of power in total. We are studying the feasibility of building micro-hydro systems at appropriate locations.

DEP is moving forward with projects at two sites that were identified in the 2013 report titled *Evaluation of Hydroelectric Potential*. The first site is the Croton Lake Gate House in Westchester. We have received Excel grant funding from DCAS to assess the feasibility of installing a small hydroelectric turbine at this location. The second is the Catskill-Delaware Interconnection at Shaft 4 in Ulster County. We are advancing the design of turbine technology at this site, where water from the Delaware Aqueduct can be moved into the Catskill Aqueduct.

Our upstate water supply is actually “electricity positive,” in that the amount of hydroelectric power exceeds the amount of electricity purchased from the grid for water supply operations. The projects we are developing now will further increase this positive balance.

Other Renewable Power Supply Systems

As we have discussed at previous hearings, DEP is working on a comprehensive energy and carbon neutrality plan. We utilize traditional renewable systems, such as solar photovoltaic, hydroelectric, and wind; we are currently exploring the feasibility of geothermal and other zero-emissions systems as well. The largest solar installation on a city-owned property (1.3 MW) is on a DEP WRRF on Staten Island. We are working with DCAS on a power purchase agreement to install nearly 5MW of solar canopies above the process tanks at the Wards Island WRRF, and, if successful, plan to roll out similar installations across the remainder of our WRRFs going forward. We also have several small and mid-size systems in Brooklyn and Staten Island, and are designing additional installations on an ongoing basis. We have installed four small-scale wind turbines in three boroughs: two in Queens, one in Brooklyn, and one in Staten Island. We plan to install more solar and small-scale wind turbines and are evaluating the feasibility of large-scale turbines, as well.

One of our most valuable strategies for achieving carbon and energy neutrality goals and power resiliency efforts is the utilization of the biogas we produce through the wastewater treatment process. Biogas (also called digester gas) can be used to generate heat and electricity. Our greatest opportunity to achieve energy neutrality is to increase the generation and use of this resource.



Today, we have achieved nearly 30% beneficial use of our digester gas. That number will jump to 60%, with the upcoming completion of three projects: Newtown Creek's gas conditioning system, an engine efficiency retrofit at Owls Head, and the North River's cogeneration system.

DEP produces 3.6 billion cubic feet of biogas annually and beneficially uses some of this gas for power and heating purposes on-site at the WRRFs. Since 2016, we have been incorporating municipal food waste into the digestion process to generate additional biogas and are currently diverting over 150 tons per day of food waste. I am proud to say that DEP has the largest post-consumer food waste co-digestion system at a WRRF in North America, and we have become a national leader in the area of food-waste-to-energy.

As we noted this past February, DEP has partnered with National Grid to construct a biogas conditioning system on-site at Newtown Creek. This will send DEP's biogas into a nearby natural gas pipe to heat local residences and businesses.

While we continue to look for opportunities to use traditional renewable energy systems, one of our top priorities is increasing the volume of biogas produced at our facilities and beneficially using all of that gas to offset fossil-derived fuels.

Proposed Legislation

Before my colleagues and I take your questions, I want to comment briefly on the bills being considered today.

Intro. 417 institutes a financial incentive program to award up to \$1000 to anyone who provides information to DEP that leads to the test and detection of a leaking tap. While we appreciate the Council's recognition that leaking taps are important, we do not believe that this incentive program is necessary. We believe the current system is sufficient. During the last fiscal year, more than 99% of the 3,000 leaks on private water services were called in to the 311 complaint line, with DEP responding in an average of 12 hours. It is already in property owners' interest to promptly report such leaks to limit damage to their assets.

Intro 419 would require DEP to undertake projects to generate, capture, and utilize energy from the City's water supply, wastewater resource recovery facilities, and natural bodies of water. This bill would amend the 2012 law that led to the creation of the *Evaluation of Hydroelectric Potential report* to require that similar reports be produced once every ten years. DEP can have such an evaluation produced every ten years, though we should note that the evaluations are not likely to change significantly unless there are technological breakthroughs.

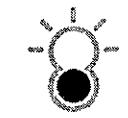
Intro 834 would require that DEP use potable water hoses during capital projects. We have verified that DDC, which manages the City's water main capital projects, implemented this policy in 2017. DEP follows this procedure for our own repair projects. DEP supports the policy's continuation.



Intro 1182 relates to the Department of Citywide Administrative Services (DCAS). This bill would require the City to identify and report on vacant or underutilized municipal properties, including closed-and-capped solid waste landfills and brownfields, that would be suitable for renewable energy generation. DCAS is supportive of conducting a study that would elucidate City properties that may be able to host renewable energy. The City owns approximately 12,500 tax lots of which about 5,900 are classified as 'vacant' by the Department of Finance Building Classification system. Of these 5,900, about a thousand have limited use for any purpose, because they comprise interior or accessway lots that are either extremely small or are used as pedestrian thruways. From the remaining 4,800, about 2,100 are regulated as waterfront, wetland or mapped streets.

DCAS believes that a comprehensive, study will illuminate, which of the remaining 2,700 'vacant' tax lots are capable of hosting renewable energy generation technology, and will also help us determine which lots are truly in a current and future state of underutilization. Being able to distinguish those tax lots that are going to be unused or underutilized for the indeterminate future as compared to those that have some future use plan can help DCAS and other agencies focus their efforts on developing in-City renewable energy generation potential. We look forward to working with Council on these bill and on the larger efforts of increasing the share of clean, renewable resources that power our City.

Thank you for this opportunity to testify on this important topic. My colleagues and I are happy to answer any questions that you have.



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Written Testimony for
New York City Council
Committee on Environmental Protection
November 25, 2019

By
Frank V. Zammataro
CEO & Founder, Rentricity Inc.
175 Varick Street, New York City

Regarding

Int 0419-2018 - A Local Law to amend the administrative code of the city of New York, in relation to generating, capturing and utilizing energy from city's water supply, wastewater treatment systems and natural bodies of water

Chairman Constantinides and Members of the Committee. Thank you for this opportunity to testify regarding Intro 419, an important piece of legislation that will support an important part to the renewable energy and sustainability plans for the citizen of New York City. Rentricity supports this effort and hopes to help expand New York City's energy recovery in-pipe hydropower activities.

To reiterate from my previous testimony given in 2011, processing potable water and wastewater is extremely energy intensive, consuming ~4% of the United States electricity production. The cost of pumping and treating water represents about one-third of a water or wastewater facilities' operating budget.

The NYC DEP's aging water distribution infrastructure continues to be a candidate for energy recovery, now called a "qualifying conduit hydropower facility" under the Hydropower Regulatory Efficiency Act of 2013. First, it is important for the NYC DEP and Committee to understand that this federal law eliminates virtually all oversite by the Federal Energy Regulatory Commission (FERC) for sites that have no environmental impact which includes both drinking and wastewater pipelines as well as any industrial processing operations served by the agency including large breweries and food processors. The law provides for a "short form" declaration of intention to be submitted to FERC and eliminates



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all future administrative reporting requirements typically associated with more traditional dam-based hydropower facilities.

Secondly, Rentricity has engaged EPA on a number of occasions to consider the value of qualifying conduit in-pipe hydropower facilities as an important enhancement to water infrastructure. I am happy to report that these projects are eligible for low interest loans under the EPA's State Revolving Fund program available for New York City from the EPA Region 1 offices.

Third, I would like to add some new thoughts beyond the committee's current efforts on the discretionary consideration on future water or wastewater projects.

Making your water system "Energy Recovery Ready"

Rentricity has developed a series of standard designs for drinking water regulator vaults that can also create clean electricity. As water operators upgrade infrastructure, there is an opportunity to make the infrastructure smarter and more sustainable. This is especially important for operators seeking to support local community environmental goals and those who wish to take advantage of new state and federal infrastructure funding programs.

The Energy Recovery Regulator Vault (ERRV®) includes all the classic appurtenances required to manage flow and/or pressure for a water distribution zone, but now includes the flanges, by-pass piping and equipment to recovery energy from the pressure typically dissipated by the flow control (FCV) or pressure regulator valve (PRV). The PRV or FCV stay in-line and are ready for operation if required, but now a by-pass loop will bring a turbine generator and control system into operation to generate clean electricity while maintaining the required pressure and flow downstream of the vault.



rentricity

The inclusion of the bypass loop/turbine generator-control package will NOT interfere with the primary mission of supplying water to residential or industrial/commercial customers. Operations (startup, normal operation and shutdown of the turbine generator) will be transparent to water operations. Proper protection against mechanical overpressure is provided by sequenced control system response and a backup surge relief valve.

For drinking water systems, all mechanical system components can be provided with materials independently certified to NSF 61/372 safe/low lead standards. Rentricity and its supplier/partners hold these certifications with ANSI certified testing agencies accepted by Federal and State EPAs.

The electrical/control portion of the system is designed to the appropriate portions of the National Electric Code (NEC). The main cabinet is designed and fabricated to UL508A standards. It includes protection equipment that complies with electric utility standards for distributed generators. 480 v - three phase power can be ported behind a customer's main electrical meter to existing switchgear or interconnected to the electric utility's grid. The operator always has the ability to control and operate the system. Features are included to afford the ability to operate the system both locally and remotely. Information about the status of the system can be provided in a variety of formats and can easily interface with typical SCADA systems or wirelessly.

The idea is to make water infrastructure "**ready for energy recovery**" equipment and to create the standards in the vault design process at the drawing board to accomplish this goal over the lifetime of a water distribution system.

I appreciate your time spent reading this, and your inclusion of my testimony in the Committee's deliberations. If you require any further information, please do not hesitate to contact me at frankz@rentricity.com or 732.319.4501. Thank you.

Written Testimony of John Suloway

On behalf of

The National Hydropower Association

Before the

New York City Council
Committee on Environmental Protection

Regarding

Int. 419-2018 - A Local Law to amend the administrative code of the city of New York, in relation to generating, capturing and utilizing energy from city's water supply, wastewater treatment systems and natural bodies of water

November 25, 2019

Introduction

Good afternoon Chairman Constantinides and members of the Committee. I am John Suloway, and I am pleased to be here to discuss Int. 419-2018, a bill proposed by the Chairman to promote conduit power projects as part of the City's municipal water supply and other systems.

To begin, let me provide you a little bit of information on my background. I have spent 40 years in the energy sector, with experience in energy and transmission project development, licensing, and environmental research. Most of that time was with the New York Power Authority (NYPA). I retired from NYPA at the end of 2014, serving at the time as Vice President of Project Development, Licensing & Compliance.

I now serve as Senior Energy Regulatory Advisor for Gomez and Sullivan Engineers, DPC, a water resources and environmental science firm that works in the hydropower sector in New York and throughout the northeast. I appear before you today in my capacity as a member of the Board of Directors of the National Hydropower Association (NHA).

NHA is a national association dedicated to advancing U.S. hydropower resources, including conventional hydropower, pumped storage, conduit power and marine energy. NHA represents more than 240 companies, from Fortune 500 corporations to family-owned small businesses, including conduit power project developers seeking to deploy the very technology that this bill seeks to promote.

My main message to you is this: conduit power presents a largely untapped opportunity to add clean, renewable generation to municipal water supply systems and other conveyances in furtherance of climate goals and grid reliability objectives.

These projects, whether they be installed in water supply pipes, wastewater treatment systems, irrigation canals or others, can provide predictable and reliable renewable power, with almost no additional impacts. In fact, adding new hydropower generating equipment maximizes the public benefits of this existing infrastructure. This point is recognized and exemplified in the Hydropower Regulatory Efficiency Act of 2013 and updated through the America's Water Infrastructure Act of 2018 to create a new hydropower category, appropriately named "Qualifying Conduit Facilities". This legislation allow for small and medium-sized conduit hydroelectric projects (< 40 MW) to receive full federal approval from the Federal Energy Regulatory Commission (FERC) in only 30 days. Congress and FERC recognized the benign nature of these projects on the environment in relation to their potential contributions across the United States to reach our national energy goals.

This is a win-win for the City. Renewable electricity production increases. Carbon emissions are reduced. Costs associated with water delivery are offset. New, distributed, renewable generation provides reliable and predictable power to the local electric grid.

Diving a bit deeper into the climate benefits of hydropower, I note that New York City has committed to reducing its greenhouse gases 80 percent by 2050. Like other jurisdictions seeking to reduce their carbon emissions profile, to reach this level, every kilowatt hour of renewable

generation will be needed. That includes generation from small, distributed conduit hydropower projects. The bill before you today provides another tool to attain the City's ambitious, yet achievable, emissions reduction targets.

As such, NHA is pleased to support the bill and urges the Council to move expeditiously on its approval.

Hydropower and New York

I would like to take a quick moment to step back and review our state's history utilizing its hydropower resources - as promoting conduit power opportunities builds off a long, proud hydropower tradition.

Hydropower has provided electricity to New York State since the first generating plant opened at Niagara Falls more than 100 years ago. New York is the largest hydroelectric power producer east of the Rocky Mountains and in 2018 was third largest hydropower generating state, representing 11 percent of total U.S. hydropower generation. More than 300 hydroelectric generating stations - large and small - connect to the state's electric grid, meeting approximately 17 percent of the state's total electricity demand.

And it was some of these very hydropower projects, following the massive August 2003 East Coast blackout, that served as the base for restoring power to millions of Americans. This event demonstrated yet again for policymakers and the public the reliability benefits hydropower provides to the New York system and beyond.

Hydropower is the foundation of the State's, and the City's, renewable energy usage. Not only is it a carbon-free resource itself, but hydropower is a force multiplier as its grid services also function to integrate greater amounts of additional variable renewable generation. The path to carbon free flows through hydropower. Hydropower compliments wind and solar – when the sun goes down and the wind stops blowing hydropower keeps carbon free electricity flowing on the grid. The City has a great opportunity to build off of this legacy by supporting these new conduit power applications, as proposed by the bill.

New York Conduit Power Opportunities

In 2012, Gomez and Sullivan Engineers in association with HANDS-ON! Hydro and O'Brien & Gere conducted a study for the New York City Department of Environmental Protection (DEP) to identify sites in the DEP's water and wastewater system with the greatest hydroelectric potential. Thirty-six sites representative of the greatest hydroelectric potential in the system were screened. Sites were evaluated based on criteria related to constructability, electrical demand, operability and economic factors. The top twelve sites were analyzed further to match up the best turbine technologies to site-specific characteristics. Six sites that represented the best electric generation potential and different parts of the system were advanced through an economic analysis. Two of the six sites appeared to appear to be economically feasible, while two others have marginal economics. It was recommended that the DEP continue to monitor the development of turbine technology and their costs along with market factors that may influence the price of electricity in conjunction with the environmental benefits that may be realized from any future development.

The point of this and other studies is to identify sites within the system that can be developed and there definitively are sites that can be developed. This bill provides the impetus to take these studies and implement the best ideas. The NHA supports the development of the hydroelectric potential of New York City's resources.

NHA recognizes the challenges of implementing new ideas and taking risk even with a reliable and proven technology such as hydropower. The City of New York might consider joining the expertise and experience of in-conduit hydropower developers and vendors with the knowledge and expertise of the DEP staff in a pilot program to develop the best sites. The City of New York might issue a request for proposals to the develop the sites with the most potential and to encourage the broadest range of innovative hydropower technologies. The experts at DEP could evaluate the merits of these proposals and recommend the best for potential funding. The lessons learned in a small group of successful pilot projects could lead to large scale hydropower program and significant benefits for the City of New York.

Conclusion

Hydropower has been providing clean, reliable and low-cost power to New York families and businesses for over a century and these new, small, conduit project opportunities are primed to add to that contribution, while also playing a new role in meeting the City's climate policy objectives.

I thank the Committee for providing me the opportunity to highlight the benefits of new conduit power projects as part of the City's municipal water supply and other system and to share NHA's support for Chairman Constantinides' bill.

I look forward to answering any questions you may have.



November 25, 2019

Mr. Costa Constantinides
Committee Chair
New York City Council Committee on Environmental Protection
City Hall Park,
New York, NY 10007

Subject: Written Testimony of Matthew Swindle, Chairman and Chief Executive Officer of NLine Energy, Inc., Before the New York City Council Committee on Environmental Protection Regarding Int. 419-2018 - A Local Law to amend the administrative code of the city of New York, in relation to generating, capturing and utilizing energy from city's water supply, wastewater treatment systems and natural bodies of water

Dear Chairman Constandinides and members of the Committee:

I am pleased to submit this written testimony regarding Int. 419-2018, promoting conduit hydroelectric projects to help meet New York City's ambitious clean energy goals.

By means of introduction, I am Matthew Swindle, Chairman and Chief Executive Officer of NLine Energy, Inc., an energy recovery development company focused on sub-five-Megawatt conduit hydroelectric project development. NLine Energy partners with municipalities across the United States to assist with the assessment, feasibility, design, permitting, interconnection, management, financing, funding, startup and commissioning of conduit hydroelectric projects. As of November 2019, NLine Energy is responsive for over 32-percent of the Nation's conduit hydroelectric projects since 2013.¹ NLine Energy also exclusively represented over 430 municipal water agencies through the Association of California Water Agencies (ACWA) as the sole, approved hydropower developer.² As of November 2019, NLine Energy represents over 90-perceent of California's conduit hydroelectric development. Our company is one of the few companies in the nation focused solely on conduit hydroelectric technologies, development, policies, regulations and we have amassed deep experience in this field. Additionally, I Chair the Small Hydro Council for the National Hydropower Association. With that, we feel very qualified to comment on this matter.

Conduit hydropower is simply recovering the embedded or wasted energy in man-made water conduits, making existing water infrastructure more energy efficient. This increased efficiency is achieved by harnessing waste pressure, in combination with water flows, to generate mechanical and electrical renewable power that can be used to offset on-site electric use or sold to the grid operator under a standard agreement (e.g. Power Purchase Agreement). The technologies used for these applications can

¹ FERC Qualifying Conduit Facilities Tracker, November 2019

² ACWA Approved Preferred Provider, 2010-2019

be upward of 120 years old, as well as a new breed of technologies that are modular, smart, and cost-effective. These technologies have no impact on environmental, cultural, societal aspects of the project and are considered "benign." Further, conduit hydroelectric projects are designed and operated in a manner that does not materially affect existing water operations. Renewable power generated from these sites provides reliable, predictable, and consistent power generation that supports the local electric distribution grid, whereby other renewable technologies do not.

In my review of the pending legislation, I offer the following recommendations to supplement existing testimony and assist with your ultimate decision:

- Any past conduit hydroelectric feasibility assessments that are over two years old are likely obsolete. There have been significant technology updates in the conduit hydroelectric space which offer cost-effective and reliable technologies.
- Amend the current draft legislation to specific "ANSI-61 compliant" technologies vice "NSF-61 certified" technologies. NSF-61 Certified technologies is an incorrect term, places excessive burden on technology providers, and will dramatically limit applicable technologies. ANSI-61 compliant technologies is the national standard for potable water applications.
- Consider establishing a "tiger team" concept incorporating all of the essential stakeholders needed to evaluate, permit, administer, and approve conduit hydroelectric projects. This central coordination group will ensure timely deconfliction across multiple City organizations to include Con Edison, a key partner for interconnection.
- Consider development grants and no or low-interest loans for conduit hydroelectric projects.
- Consider Public-Private partnerships to maximize pending federal legislation renewable tax attributes.

Conclusion

New York City has committed to reduce its greenhouse gases 80-percent by 2050 and spends almost 1 billion dollars annually on energy. Conduit hydroelectric projects are one of many solutions to help the City reduce greenhouse emissions, while simultaneously reducing energy costs through renewable power generation.

NLine Energy enthusiastically supports this endeavor as New York City continues to provide leadership in the clean energy space. I am happy to answer questions and provide additional context at the Committee's request.

With Warm Regards,



Matthew Swindle
Chairman and CEO

Cc: Samara Swanston

TESTIMONY OF THE REAL ESTATE BOARD OF NEW YORK TO THE COMMITTEE ON ENVIRONMENTAL PROTECTION OF THE NEW YORK CITY COUNCIL CONCERNING INT. 419

November 25, 2019

The Real Estate Board of New York (REBNY) is the City's leading real estate trade association representing commercial, residential, and institutional property owners, builders, managers, investors, brokers, salespeople, and other organizations and individuals active in New York City real estate. REBNY thanks the Council for the opportunity to testify on using the city's water supply and land to support the generation of renewable energy.

BILL: Intro No. 419-2018

SUBJECT: A Local Law to amend the administrative code of the city of New York, in relation to generating, capturing and utilizing energy from city's water supply, wastewater treatment systems and natural bodies of water

SPONSORS: Councilmember Costa Constantinides

Int. 419 would amend the New York City administrative code to require that any equipment used in the generation or capture of energy from the city's water supply, wastewater systems and natural bodies of water be certified safe for drinking water.

REBNY shares the Council's concern for public health and agrees with the measure to ensure that any turbines or equipment used for renewable energy production not harm the water supply. In addition to safety, we ask the proposal also address water pressure. Generating energy from water flow by definition will decrease the pressure. To avoid changes in service volume, we propose the legislation text be updated to read "...and would not negatively impact the safety of drinking water [and will not decrease the delivery pressure beyond a de minimus extent]."

Additionally, we believe the proposal could be further improved by expanding the type of energy captured or generated from the water supply from electrical to electrical and thermal.

#

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A Voith and Siemens Company

22 November 2019

New York City Council
Committee on Environmental Protection

Subject: Written Testimony of Voith Hydro Inc. regarding Int. 419-2018

Dear Chairman Constantinides and Committee Members,

Voith Hydro is grateful for the opportunity to offer our testimony in support of NYC Int 419-2018, a bill proposed by the Chairman to promote conduit power projects as part of the City's municipal water supply and other systems.

Voith Hydro has been supplying hydroelectric power equipment in the United States for more than 140 years. In fact, we supplied some of the original turbines for the power facilities at Niagara Falls near the turn of the 20th century. Hydropower technology continues to evolve today, and the legislation proposed in Int. 419-2018 would utilize innovative and reliable hydropower technology to take advantage of energy that is available from the water and wastewater flowing under and around the City of New York. Voith Hydro's U.S. operations are headquartered in York, Pennsylvania and includes about 400 of our engineering, manufacturing, installation and service staff as well as our corporate management and administrative support functions. In addition, it is home to our more than 200,000-square-foot manufacturing facility dedicated to manufacturing hydroelectric generating equipment.

While Voith Hydro is well-known for providing some of the largest hydroelectric turbines and generators in the world (including those at New York's Robert Moses Hydroelectric Power Plant and the Grand Coulee Third Powerhouse), Voith Hydro also supplies some of the smallest hydroelectric generating equipment like our modular StreamDiver and PipeRunner units. The Voith PipeRunner is particularly suited to deliver the renewable energy benefits this proposed legislation would enable. Voith's in-pipe hydro technology is proven and reliable. Voith has successfully delivered and commissioned more than 30 units in applications in European and Asian water treatment and sewage water plants, water distribution (e.g. exchange of pressure relief valves) and run-of-river hydro (i.e. harvesting ecological flows or use of residual heads in conduits). The system is

designed for higher flows and lower heads (up to 25 m) compared to typical Pumps-as-Turbine technologies (PAT). The PipeRunner system comes in three different standardized sizes (S-, M- and L-type) to cover a wider range of applications from a few kilowatts up to 250 kilowatts.

It currently does not hold the NSF/ANSI 61 certification in the U.S.; however, its design is compliant with the provisions of ANSI 61, and it has been in use in similar applications around the world. As such, we strongly suggest that the legislation be modified to include equipment that is "compliant" with the provisions of NSF/ANSI 61 rather than "certified" to the NSF/ANSI 61 standard. The certification requirement could significantly limit the number of options available to the City in the near term.

The PipeRunner turbine generator equipment is supported by IEC or ANSI electrical control and protection equipment for grid-synchronized operation as well as islanded operation in case of remote production and consumption.

We have included several figures and photos below indicating typical applications of the PipeRunner technology.

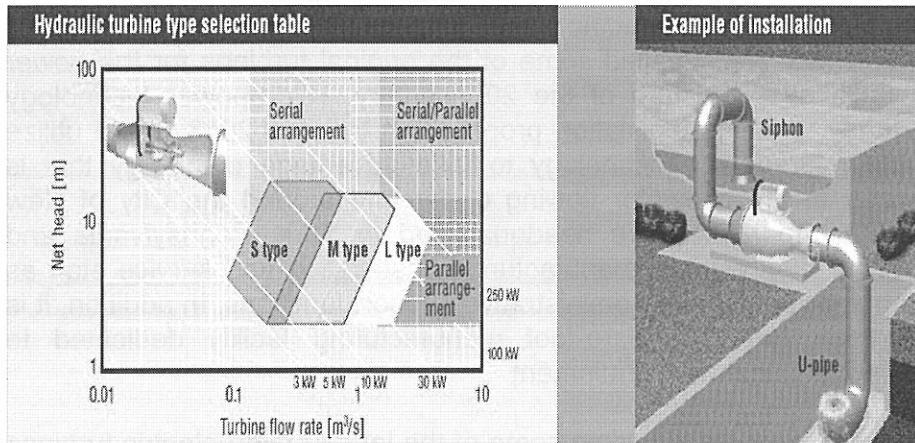
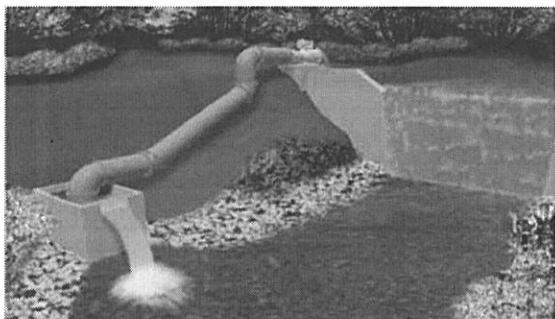


Figure 1: Voith PipeRunner - Application Range of the standard sizes

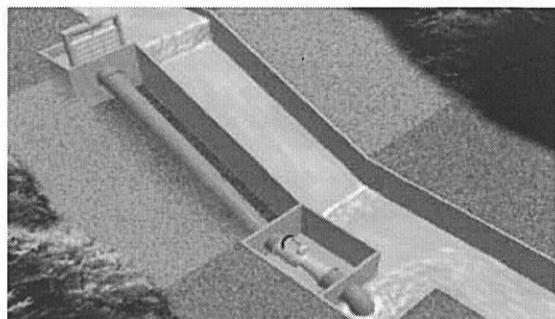
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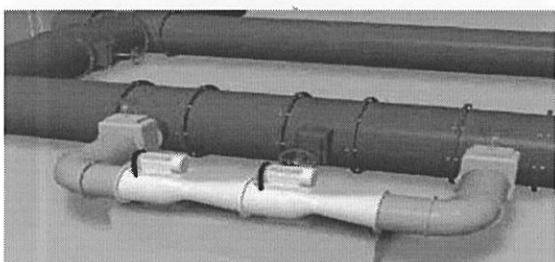
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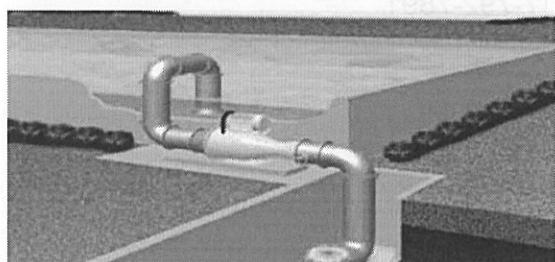
To sustainable discharge: Dam, Weir



To open channels: Irrigation canal, River



To mid-point of piping: Waterworks, Industrial water



To water tank: Sewage, Factory utility

Figure 2: Typical Application types and arrangements of the PipeRunner system

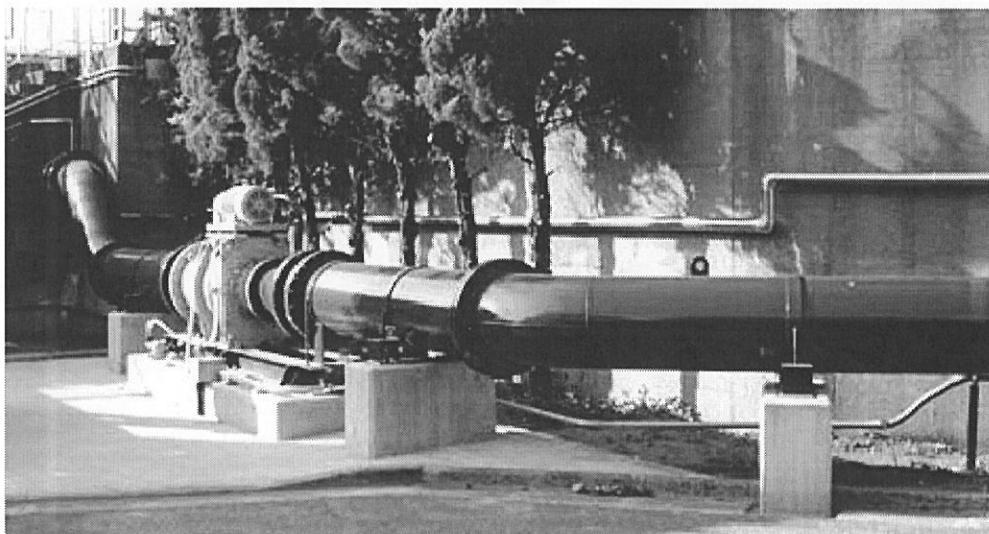


Figure 3: Picture of a typical site installation (Sewage water treatment plant).

VOITH

Thank you again for the opportunity to provide our testimony in support of the proposed legislation Int 419-2018 as noted above to amend the administrative code of the City of New York, in relation to generating, capturing and utilizing energy from the City's water supply, wastewater treatment systems and natural bodies of water. We look forward to further correspondence with City personnel when this legislation is ratified and begins to move the dial towards New York City's renewable energy goals. Please do not hesitate to contact me for additional information on this testimony or on this topic.

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Sincerely,

Atkinson, Carl

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Carl
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Testimony to Committee on Environmental Protection

by Georgi Page of 350Brooklyn

11/25/2019

I am a member of 350Brooklyn, an all-volunteer community organization working to address the climate crisis and achieve climate justice through local action. We promote the sustainable energy sector, oppose the fossil fuel industry, and educate and activate our community.

350Brooklyn is a local affiliate of **350.org**, a global grassroots organization.

350 Brooklyn supports Int. **1182-2018** and we urge the city council to pass this bill. The bill would require, every three years, the submission of a report identifying all vacant and underutilized municipally-owned sites that would be suitable for the development of renewable energy, including an assessment of the feasibility of renewable energy generation on that location.

We feel that such a requirement is an important first step toward the increasingly urgent task of building a sustainable, local, and clean energy system so desperately needed in response to the climate crisis and the systematic environmental injustices embedded into our current energy system.

While the broader environmental, health, economic and logistical rationales for moving toward 100% renewable energy and away from fossil fuels are well-established, New York City has additional imperatives.

From an energy generation perspective, there is a long-term need for solar and other renewable energy generation if we are to meet our CLCPA target of eliminating greenhouse gas emissions by 2050. Continued fossil fuel emissions - some of which are currently generated by power plants throughout the city's low-income neighborhoods - will increase adverse health effects among the general population but especially in communities that already lack adequate resources. Moreover, we are in agreement with the Sierra Club's Atlantic Chapter and in solidarity with Canada's indigenous communities who have for decades suffered the impacts of hydropower development: imported hydropower is NOT a clean or acceptable alternative to these dirty and harmful sources of energy.

An alternative to these dirty power systems is more distributed, renewable solar, wind and microgrid power sites. Such projects have the potential to not only generate energy, but generate jobs in 21st Century industries. Because of their distributed nature, community-level renewable energy systems are also an important building block for NYC's resilience, which depends on developing diverse sources of energy. The development of renewable energy generation facilities in underused municipal space is entirely aligned with the ONE NYC 2050 Plan for Sustainability and Resilience, and we feel this bill is the first essential step to get us there.

All that is lacking is our commitment and an increased sense of urgency. Though New York City has acknowledged our climate emergency with a declaration, the symbolic gestures alone are not enough. A September 22nd report by the UN Climate Action Summit's Science Advisory Group has determined that there is still a giant and glaring 'emissions gap'. The gap is the difference between "where we are likely to be" based on our current targets, and "where we need to be". The report warns that our "current level of ambition needs to be roughly **tripled** to align with the 2°C limit and must be increased around **fivefold** to align with the 1.5°C limit."¹ We are leading, but we are still behind.

We do have great hopes for the framework provided for in the CLCPA, but the timeline gives the New York State Climate Action Council two full years to create it. In the meantime there are some clear opportunities that we cannot afford to lose. Bill **1182-2018** is one of them.

Thank you.



Written Testimony for
New York City Council
Committee on Environmental Protection
November 25, 2019

By
Frank V. Zammataro
CEO & Founder, Rentricity Inc.
175 Varick Street, New York City

Regarding

Int 0419-2018 - A Local Law to amend the administrative code of the city of New York, in relation to generating, capturing and utilizing energy from city's water supply, wastewater treatment systems and natural bodies of water

Chairman Constantinides and Members of the Committee. Thank you for this opportunity to testify regarding Intro 419, an important piece of legislation that will support an important part to the renewable energy and sustainability plans for the citizen of New York City. Rentricity supports this effort and hopes to help expand New York City's energy recovery in-pipe hydropower activities.

To reiterate from my previous testimony given in 2011, processing potable water and wastewater is extremely energy intensive, consuming ~4% of the United States electricity production. The cost of pumping and treating water represents about one-third of a water or wastewater facilities' operating budget.

The NYC DEP's aging water distribution infrastructure continues to be a candidate for energy recovery, now called a "qualifying conduit hydropower facility" under the Hydropower Regulatory Efficiency Act of 2013. First, it is important for the NYC DEP and Committee to understand that this federal law eliminates virtually all oversite by the Federal Energy Regulatory Commission (FERC) for sites that have no environmental impact which includes both drinking and wastewater pipelines as well as any industrial processing operations served by the agency including large breweries and food processors. The law provides for a "short form" declaration of intention to be submitted to FERC and eliminates



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all future administrative reporting requirements typically associated with more traditional dam-based hydropower facilities.

Secondly, Rentricity has engaged EPA on a number of occasions to consider the value of qualifying conduit in-pipe hydropower facilities as an important enhancement to water infrastructure. I am happy to report that these projects are eligible for low interest loans under the EPA's State Revolving Fund program available for New York City from the EPA Region 1 offices.

Third, I would like to add some new thoughts beyond the committee's current efforts on the discretionary consideration on future water or wastewater projects.

Making your water system “Energy Recovery Ready”

Rentricity has developed a series of standard designs for drinking water regulator vaults that can also create clean electricity. As water operators upgrade infrastructure, there is an opportunity to make the infrastructure smarter and more sustainable. This is especially important for operators seeking to support local community environmental goals and those who wish to take advantage of new state and federal infrastructure funding programs.

The Energy Recovery Regulator Vault (ERRV®) includes all the classic appurtenances required to manage flow and/or pressure for a water distribution zone, but now includes the flanges, by-pass piping and equipment to recovery energy from the pressure typically dissipated by the flow control (FCV) or pressure regulator valve (PRV). The PRV or FCV stay in-line and are ready for operation if required, but now a by-pass loop will bring a turbine generator and control system into operation to generate clean electricity while maintaining the required pressure and flow downstream of the vault.



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The inclusion of the bypass loop/turbine generator-control package will NOT interfere with the primary mission of supplying water to residential or industrial/commercial customers. Operations (startup, normal operation and shutdown of the turbine generator) will be transparent to water operations. Proper protection against mechanical overpressure is provided by sequenced control system response and a backup surge relief valve.

For drinking water systems, all mechanical system components can be provided with materials independently certified to NSF 61/372 safe/low lead standards. Rentricity and its supplier/partners hold these certifications with ANSI certified testing agencies accepted by Federal and State EPAs.

The electrical/control portion of the system is designed to the appropriate portions of the National Electric Code (NEC). The main cabinet is designed and fabricated to UL508A standards. It includes protection equipment that complies with electric utility standards for distributed generators. 480 v - three phase power can be ported behind a customer's main electrical meter to existing switchgear or interconnected to the electric utility's grid. The operator always has the ability to control and operate the system. Features are included to afford the ability to operate the system both locally and remotely. Information about the status of the system can be provided in a variety of formats and can easily interface with typical SCADA systems or wirelessly.

The idea is to make water infrastructure "**ready for energy recovery**" equipment and to create the standards in the vault design process at the drawing board to accomplish this goal over the lifetime of a water distribution system.

I appreciate your time spent reading this, and your inclusion of my testimony in the Committee's deliberations. If you require any further information, please do not hesitate to contact me at frankz@rentricity.com or 732.319.4501. Thank you.

THE COUNCIL THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 1182-2018 Res. No. _____

in favor in opposition

Date: 11/25/2019

(PLEASE PRINT)

Name: Georgianna L Page-Smith
Address: 1620 Union St, Brooklyn, NY 11213
I represent: 350 Brooklyn
Address: _____

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Appearance Card

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in favor in opposition

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I represent: NHA OSSIAN 6
Address: _____

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in favor in opposition

Date: 11-25-19

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Name: Vincent Sapienza
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I represent: NYC DEP
Address: 59-17 Junction Blvd.

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Address: 59-17 Junction Blvd.

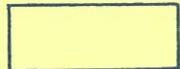
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Name: ANTHONY FIORE

Address: NA

I represent: DEPARTMENT OF CITYWIDE ADMIN SERVICES

Address: 1 YENTRE STREET

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