



Environmental Protection

Michael R. Bloomberg, Mayor
Carter H. Strickland, Jr., Commissioner

North River WWTP: Cogeneration & Electrification Project Public Information Session, CB9 Executive Committee Meeting (June 13, 2013)

The following questions were raised at the Public Information Session held for the project at Broadway Housing–583 Riverside Drive (at 135th Street), New York, NY 10035–in conformance with the draft Public Participation Plan (PPP) prepared April 2013 for the New York State Department of Environmental Conservation (DEC) Title V Air Permit Modification. Invitations for this Public Information Session were mailed to the PPP contact list on May 29, 2013, and newspaper notices for the meeting appeared in the Columbia Spectator on May 22, 2013 and in El Diario/La Prensa on May 30, 2013. Members of the public and of the CB9 Executive Committee meeting were in attendance, where the project team gave a presentation about the North River Wastewater Treatment Plant (WWTP) Cogeneration and Electrification project.

The main concerns and questions stemmed predominantly from the audience members not being familiar with the various sewage treatment operations that occur at the North River WWTP plant, or how the WWTP works. They felt we should have better explained how the plant functions, wastewater is treated and what existing equipment is used in the process and then introduce the project. These concerns and questions were addressed during the presentation.

During and after the presentation, the following questions were raised:

Question 1: Can you please explain the cogeneration process, in a way that is easier to understand?

Response: Cogeneration, also known as combined heat and power, is a process that uses fuel (in the case of the proposed cogeneration equipment at the North River WWTP, a combination of natural gas and digester gas) to generate electrical power and heat. The power and heat generated can be used in various processes onsite at the North River WWTP. Onsite power generated by cogeneration is more efficient than purchasing power from the utility grid. The power grid traditionally produces power at 30-40 percent efficiency depending on the mix of fuel. Additionally, there are transmission losses which average about 5 percent of the power produced. The cogeneration plant can produce power at up to 80 percent efficiency with no significant transmission losses since the heat generated in the power generation process will displace heat generated by the boilers.

Question 2: What do the acronyms NO_x, CO₂, SO_x, VOC, PM₁₀, PM_{2.5}, and GHG stand for?

Response: These acronyms were in the presentation and can be found in the project Fact Sheet, and are defined as follows:

- NO_x = Oxides of nitrogen
- CO₂ = Carbon Dioxide gas
- SO_x = Oxides of Sulfur
- VOC = Volatile Organic Compounds
- PM₁₀ = Particulate matter that is 10 microns in diameter or less
- PM_{2.5} = Particulate matter that is 2.5 microns in diameter or less
- GHG = Greenhouse Gas (i.e., gasses that trap heat in the atmosphere)

GHGs relevant to this plant include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and water vapor (H₂O).

Question 3: Please explain the bar charts in the presentation. The bar charts were not easy to understand.

Response: The bar charts in the presentation depicted the comparison of the baseline amounts of different air pollutants emitted by fuel combustion at the North River WWTP before the project is implemented versus the amounts anticipated with the North River WWTPs' new cogeneration and electrification equipment in place, and the associated decreases in the various pollutant emissions that would result from the new equipment. In summary, all air emissions from the plant will be reduced.

The following reductions in pollutant emissions are anticipated as a result of implementing the proposed Cogeneration & Electrification project at the North River WWTP:

- NO_x = emission reductions of approximately 64 percent;
- CO (Carbon Monoxide) = emission reductions of approximately 67 percent;
- VOC = emission reductions of approximately 68 percent;
- PM₁₀ = emission reductions of approximately 25 percent;
- PM_{2.5} = emission reductions of approximately 44 percent; and
- GHG = emission reductions of approximately 27 to 49 percent.

Question 4: How do the digesters work?

Response: Wastewater is generated in the community and collected through a series of collection piping (sewers) and is treated at the plant through a series of treatment processes. The treatment process separates fats, oils, and grease (collectively known as residuals), grit (sand and other fine debris), and solids (sludge) from the liquid stream. The residuals and grit are sent to landfills. The liquid stream is further processed to remove harmful levels of pollutants before being discharged to a receiving water body. The sludge is sent to the digesters for processing. Digesters use anaerobic bacteria that process the sludge and convert a majority of the solids to methane gas, carbon dioxide, and other minor constituents. The digester gas will be used in the engines to generate power and the solids are removed from the site via boat to be dewatered and disposed of.

Question 5: How much energy of the plant is generated by digester gas?

Response: It is anticipated that approximately 1/3 of the gas used in the engines is from the digester gas. The remainder is from natural gas.

Question 6: What is done with the sludge that is produced by the North River WWTP? Where does the sludge go? By how much will the sludge disposal from WWTP be reduced?

Response: The sludge is collected at the North River WWTP. The sludge will continue to be removed from the North River WWTP by boat, for transfer to a DEP dewatering facility. A 10-20 percent reduction of solids in the sludge is anticipated.

Question 7: Does the North River WWTP have a dewatering system?

Response: No.

Question 8: How much digester gas is left after the cogeneration processes is done? Where does the remaining digester gas go?

Response: It is anticipated that under normal operating conditions, nearly all of the digester gas will be utilized. The small fraction of gas that cannot be used will be combusted in a flare.

Question 9: Can you describe how improved digestion will generate more gas?

Response: The digestion process utilizes bacteria to break down solids collected at the wastewater treatment plant in much the same way that the bacteria in our stomachs breakdown the food we eat. As the bacteria consume the sludge methane gas is produced. Improved control of the temperature and mixing of sludge during the digestion process helps the bacteria do their job and in turn produce more gas.

Question 10: What types of gas is released into the stacks?

Response: Gas is combusted prior to entering the stacks. What is left over is mainly biogenic carbon dioxide (that is, carbon dioxide produced by living organisms) and heat along with a small percentage of uncombusted material. Further permit information can be found on the New York State Department of Conservation (DEC) website (www.dec.ny.gov).

Question 11: Explain Tri-fuel and Duel fuel engines?

Response: Tri-fuel engines are designed to operate on three types of fuel. The existing tri-fuel engines at the North River WWTP can be run on #2 fuel oil, natural gas, and digester gas. The existing tri-fuel engines require the use of #2 fuel oil at all times. The proposed dual fuel engines would run on either natural gas and/or digester gas, eliminating the use of fuel oil for these engines.

Question 12: Are these special engines?

Response: The engines are spark-ignited, natural gas reciprocating engines that are typically used at power generating facilities.

Question 13: What impact will the increased use of natural gas have on the gas delivery system? In particular, will construction in the community streets be required?

Response: The existing gas delivery system has sufficient capacity to meet the needs of the plant. No additional work on the delivery system is anticipated.

Question 14: Will the plant operation/production stop or slow down as a result of the engine replacement? Will there be any Interruptions?

Response: No. The plant will continue to operate without interruption. The replacement of the existing equipment with the new equipment will be done in stages, one engine at a time, to insure uninterrupted operation of the North River WWTP. The replacement of the existing engines would also not result in any decrease in capacity of the North River WWTP.

Question 15: Will the effluent change due do the replacement of engines?

Response: No. The effluent from the North River WWTP will continue to operate within the existing permitted discharge limits.

Question 16: Will our waterways (Hudson River) be affected?

Response: The improvements to the North River WWTP will not affect the discharges from the plant. They will remain the same as they are now; the effluent limits will stay the same with the proposed project.

Question 17: Is this project overseen by State or Federal agencies?

Response: Yes, wastewater treatment plants are governed by the Clean Water Act and the Clean Air Act, which is administered by the U.S. Environmental Protection Agency. In New York, enforcement authority has been delegated to the DEC.

Question 18: Explain the Title V permit.

Response: The Title V Air Permit is issued by the DEC for the operation of the North River WWTP's engines and other equipment, to regulate and establish limits on the air emissions from the plant.

Question 19: Did this project occur because of the fire which occurred at the North River WWTP last year?

Response: No. The feasibility study was underway when the fire occurred.

Question 20: Is Con Edison ready to meet and work with this new cogeneration and electrification project?

Response: Yes, we regularly meet with Con Edison to discuss the project.

Question 21: Is Con Edison upgrading to a similar system, are they also converting to natural gas? Using it to generate power as well?

Response: Con Edison does not generate electricity. Their primary operation is the delivery of energy to customer's homes and/or businesses. For those customer's that buy electricity from Con Ed, Con Ed purchases that electricity from generators on behalf of their customers.

Question 22: How will it affect the Riverbank State Park?

Response: Currently, the Riverbank State Park's and the North River WWTP's electrical system is tied together in such a way that certain maintenance activities by either party can cause interruption to the other's service. This project will separate that service so one parties maintenance activities has no effect on the others.

Question 23: Will the Park have similar improvements?

Response: All work is anticipated in the North River WWTP. There is no work anticipated in the park.

Question 24: Where will the old/existing engines go after replacement? Will they be discarded to Landfill?

Response: Disposal of the old engines would typically be the responsibility of the Contractor that would be removing them and installing the new engines. Typically this would include the remediation of any hazardous materials associated with the engines) and if there is a salvage value, the contractor would recover that money. Any salvage value recovered by the Contractor would be included in the bid price for the work. They will be dismantled and removed from the WWTP. No specific reuse plans for the components of the engines has been identified at this time. It is anticipated that these materials, which are predominantly metal, would be recycled. It is not anticipated that the engines would go to a landfill.

Question 25: Could the old/existing engines be donated to the Board or to the community (for use in art projects, or as industrial art)?

Response: As stated in the response to Question 24, the existing engines will become the property and the responsibility of the Construction Contractor, with the residual salvage value of the engines used to offset part of the cost of the project. However, the Community may submit a Cultural Reuse plan that addresses among other things:

- end use purpose,
- location and agreement with property owner for siting,
- insurance,
- funding for decontamination, relocation and on-going care.

The plan would need to be approved by the DEP, the Department of Citywide Administrative Services, the Mayor's Office of Cultural Resources and the Comptroller. The plan would need to be submitted and approved prior to the construction contract being bid (12/2014).

Question 26: Will there be a follow up presentation, informational meeting to the other Board # 9 Members?

Response: After the project is fully designed and if the Community Board requests an update DEP would be pleased to participate in another meeting. *