

Summary

Project:	Arlington County Biosolids Upgrade	
Subject:	Biosolids Advisory Panel Meeting	
Date:	Tuesday, June 22, 2021	
Location:	Webex	
Attendees:	John Bloom, C2E2 Sandra Borden, Crystal City Civic Association Mary Glass, Arlington County Civic Federation Paul Guttridge, Aurora Highlands Civic Association Joan McIntyre, EcoAction Arlington Claire Noakes, C2E2 Peter Robertson, Fiscal Affairs Advisory Commission	Tom Broderick, Arlington County Water Pollution Bureau Katie O'Brien, Arlington County Department of Environmental Services Lisa Racey, Arlington County Water Pollution Bureau Mary Strawn, Arlington County Water Pollution Bureau Brian Balchunas, HDR Rahkia Nance, HDR Megan O'Reilly, HDR Jessica Snead, HDR Samantha Villegas, Raftelis

Agenda

1. Introductions/Icebreakers
2. Your Role as a Stakeholder
3. Recap: Where Are We Now?
4. Regional Solution
5. Mission/Vision/Purpose
6. Program Status
7. Process
8. Biogas Utilization Evaluation
9. Site Plan Development
10. Next Steps

Welcome and Introductions (S. Villegas and T. Broderick)

Samantha Villegas opened the meeting and greeted attendees. Tom Broderick thanked attendees for participating in the group and said their input is valuable. He described the program as an exciting manifestation of a shift in the industry from preventing pollution to recovering resources that are part of the waste stream in sanitary sewage.

Samantha shared details of how to use the WebEx virtual meeting platform.

The Arlington County and HDR team introduced themselves. The members of the advisory panel introduced themselves by sharing their name, occupation, how long they have lived in Arlington, and the group they represent.

Your Role as a Stakeholder (S. Villegas)

After an icebreaker activity, Samantha reviewed the role of the group as an advisory panel, outlined the process moving forward for quarterly meetings, and encouraged panel members to share the updates they learn with their respective organizations.

Recap: Where Are We Now? (M. Strawn)

Mary Strawn summarized the previous work completed and current status of the program. As part of the previously completed Solids Master Plan, the project team, with key input from the stakeholder group, chose anaerobic digestion and thermal hydrolysis as the preferred technology that best meets the needs of Arlington County. The County hired HDR in December 2020 to assist with refining the open issues from the Master Plan and to assist with implementation of the program.

Regional Solution (M. Strawn)

A joint study with DC Water found that the Blue Plains Advanced Wastewater Treatment Plant thermal hydrolysis/digestion facility could not be used as a regional facility within its current capacity. The agencies agreed to formalize a resiliency approach between utilities with similar processes.

Mission, Vision, Purpose (M. Strawn)

Mary then reviewed the mission, vision and purpose of the program and explained that energy and sustainability are key concepts that will continue to be considered as the program moves forward.

Program Status (M. Strawn)

Mary gave an update on current work. The team is focused on completion of the Facilities Plan, which will define the “what” and “how” of the program. This work is expected to be finished early next year. This will be followed by implementation (design and construction) which will likely continue through 2028.

Process (B. Balchunas)

Brian Balchunas explained key process aspects of the program:

- Thermal hydrolysis - a process that uses high temperature and pressure to sterilize pathogens and more efficiently break down residuals.
- Anaerobic digestion – a biological process that breaks down biodegradable material and produces stabilized biosolids and biogas.
- Biogas utilization – the beneficial use of biogas at the plant or off-site.
- Class A Exceptional Quality biosolids – the final product regulated by the state that can be used in gardens, farms, lawns, etc., to enhance soil by slowly releasing nutrients.

Biogas Utilization (B. Balchunas)

Brian discussed the options being evaluated for biogas utilization: on-site use to generate electricity and heat in engines or as renewable natural gas that could be injected in the pipeline or used as vehicle fuel in transit buses in place of fossil fuel-based natural gas. Brian presented diagrams that quantified the amount of heat and energy produced for the different options. For the option generating on-site electricity, internal combustion engines could produce about 1.5 megawatts of electricity (40 percent of what the plant uses). For the option where the gas is upgraded to renewable natural gas, all biogas would be used off site. This option would require the plant to buy the same amount of power and to purchase natural gas to run the steam boilers for the thermal hydrolysis system. Details of biogas utilization evaluations will be presented at future Advisory Panel meetings.

Site Plan Development (B. Balchunas)

Brian noted the team is in the beginning stages of evaluating facilities and have identified areas that need to be demolished and some areas that will be reused. There will eventually be renderings of what the facility will look like.

Next Steps

Samantha will contact the panel in August 2021 for information about the next meeting, which will include a presentation of recommendations from the Arlington County team. The team anticipates advancing the biogas utilization analysis, the emissions study, and having more information on site layouts. The Q&A and slides from this meeting will be posted to the project website.

Questions

Question	Response
How much energy will be produced?	For the onsite electricity generation option, internal combustion engines could produce approximately 1.5 megawatts of electricity, the equivalent of what approximately 1,000 average households use. For the renewable natural gas options, the facility would produce enough natural gas to fuel the current Arlington Transit bus fleet.
Does the state of research on per- and polyfluoroalkyl substances (PFAS) in biosolids cast any shadow over long-term use of biosolids?	This is an important issue for the water and wastewater industry and the science is in its early stages. The Virginia Department of Environmental Quality is monitoring the issue and is taking a risk-based approach. Arlington County does not generate PFAS and source control measures may be important. We are monitoring this issue closely and will adapt to any changing regulations. We will update the Advisory Panel as information becomes available.

Question	Response
What amount of hormones/pharmaceuticals/ plastics will runoff from the land applied biosolids into local streams?	The upgrades will include fine screens (5 mm) to remove plastics. The team will research further and report out at future Advisory Panel meetings on the fate of contaminants of emerging concern in biosolids and their potential for runoff from land applied biosolids.
There is a neighborhood concern about burning biogas to produce electricity. The previous emissions study showed that without any emissions controls, power generation exceeded EPA limits for some constituents at the fence line.	Using biogas to generate electricity is just one of the options being considered in the analysis. Emissions are part of the overall evaluation and as more details are finalized, updated emissions modeling will be presented to the Advisory Panel at future meetings. All emissions sources will be approved and permitted by DEQ and proper emissions controls to ensure regulatory compliance will be designed into the project. A 'worst case scenario' emissions analysis is being completed for baseline modeling purposes but does not reflect an actual implementation strategy that is under consideration.
Will presentation materials be posted on the website?	Yes.
Is the 1.5 megawatts of energy from diesel engines or boiler electricity generation?	The 1.5 megawatts would be generated from an internal combustion engine burning the biogas generated from the process. No diesel will be consumed in this scenario.
What is the British Thermal Unit (BTU) rating of the biogas?	The raw biogas will be around 600 BTU per cubic foot. If this is upgraded to renewable natural gas, the heating value would be around 1,000 BTU per cubic foot, similar to natural gas.
Will there be business case evaluations for the options?	Yes, we are developing both financial and non-financial analyses of the options, including revenue generated, costs avoided, and quantification of the value of greenhouse gas. A key component is the generation of renewable identification numbers (RINs) through the Renewable Fuel Standard (RFS) program, administered by EPA. Obligated parties, such as petroleum refiners, under the RFS program are required to comply through blending renewable fuels into transportation fuel or by obtaining RINs. RINs are traded on an open market.
Is there a need for biogas storage?	The existing transit operations have storage onsite. The need for additional storage at the

Question	Response
	WPCP will be evaluated as discussions with third parties continue.
Would it be possible to provide resiliency to other Arlington facilities that are currently using diesel engines for backup electricity? Could Arlington facilities use this gas during emergency conditions?	Directly using this gas at other facilities is not economical because of the cost for infrastructure and transportation. But resiliency at the plant will be increased by injecting into the pipeline, as the existing emergency generators are dual fuel.
Is the cleaning process for bus gas the same for engines?	The process for cleaning gas for the buses would require full upgrading, including carbon dioxide removal, to match the heat value of natural gas. Carbon dioxide removal is not required for using the gas in engines.
Is the team looking at hard-to-electrify sectors that need renewable natural gas?	The renewable fuel program is currently focused on selling renewable natural gas for vehicle fuel, as that is a requirement of the Renewable Fuel Standard program.
What are the environmental implications of the emissions of various pollutants? How does that compare with natural gas? Are there other possible pollutants and where's the ability to minimize the amount of pollutants? How does this compare to electric buses and the implications to surrounding neighborhoods? Is the future adaptability of the gas utilization method to changing conditions being considered?	The team will continue to review options during the emission study and will share data at a later time. Emissions modeling for regulated air pollutants is ongoing for each of the gas utilization alternatives. There is no intent to change the schedule for bus electrification based on the availability of biogas. Future flexibility of the gas utilization method is being considered.
Is the Combined Heat and Power scenario only based on putting in new generators? (Can the methane be used in the County's existing emergency generators?)	The plan only includes installing new generators. The plant's existing generators would still require diesel and site constraints would prevent taking advantage of heat recovery.
Is there an option to put in solar panels?	The County's energy team determined that our off-site warehouse at 2900 S Eads St was the most suitable for solar panels; however, it was determined to be impractical at this time. The potential for solar panels at the plant is an evaluation independent of the biosolids upgrade.
What is the team thinking about in terms of making biosolids available for Arlington residents?	The County is very excited about potentially making the biosolids product available to Arlington residents. County parks staff are interested in using biosolids for landscaping. We will need to explore options for availability and distribution.
Has there been an analysis of floating solar panels next to the plant in Four Mile Run?	That area is managed by the U.S. Army Corps of Engineers. It is outside the purview of the plant and the County.

Question	Response
Can the plant be rebuilt in a way that mitigates flood risk?	Stormwater control will be a component of the design. The location of the site that the new solids facility will be on is outside of the 500-year floodplain. Most new facilities will be located on the north side of the facility, which is at a higher elevation.
Will you be considering architectural treatments to improve the visual aspects of the new facilities?	This will be considered in the site design.
Will you be considering adding new trees and vegetation along the plant's perimeter?	This will be considered in the site design.