

LMOP & Natural Gas STAR Webinar

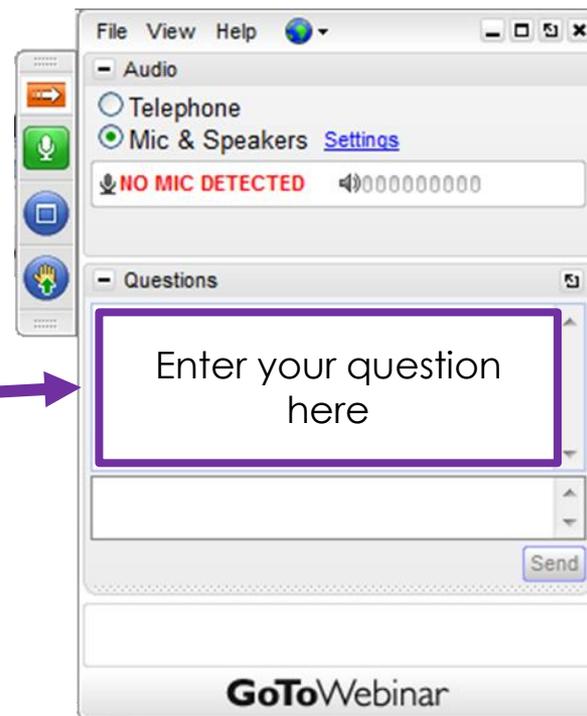
Franklin County Landfill Gas to Pipeline
Renewable Natural Gas Energy Project

June 14, 2018



Reminders

- All participants (except speakers) are in listen-only mode
- Questions submitted during the webinar will be reviewed at the end of the webinar
 - Type a question here
- If you are experiencing technical difficulties, please let us know using the Questions pane on the right side or contact Jay Gallo at 203-687-9432



Welcome and Webinar Overview

- Agenda
 - Jay Hopper, Vice President of Business Development, Aria Energy
 - Mike Anderson, Director of Supply Development, NiSource Gas Distribution
- Question and Answer
- Wrap Up



Franklin County
Landfill Project
Webcast
June 14, 2018

- Aria Energy is the largest producer of Renewable Natural Gas (RNG) in North America
- Aria processed over 50 Billion Cubic feet of landfill gas in 2017
- This resulted in reducing CO2 equivalent emissions by 14 Million tons or 28 Billion pounds in 2017
- Aria has built more than 50 landfill gas to energy projects to date and currently has 9 projects in development or construction



SWACO Project Origins

- Aria's process of developing the Franklin County project:
 - Negotiated the rights to all landfill gas under a long term contract
 - Negotiated a long term contract for the output of the plant for 20 years
 - Approached Columbia of Ohio for an interconnect



Pipeline Interconnect

- Required 5 miles of new pipeline to the plant
- Plant output must meet Columbia gas quality specifications
- Aria transports plant's gas on Columbia's system to delivery points required by RNG buyers
- Columbia installed a meter station at the interconnection point to monitor volumes and quality
- Columbia and Aria personnel work together to ensure that the RNG that is put in the pipe meets or exceeds all requirements of Columbia's system
- When the RNG plant has a problem, the plant will automatically send output gas to a flare until the plant is ready to start producing conforming gas again.



- Columbia gas transportation tariff includes a component for infrastructure recovery
- Columbia agreed to pay for the portion of the new pipeline that would be recovered in the tariff rate
- This allowed the project to only pay upfront for the incremental cost of the pipeline



Keys to a Great Relationship

- Columbia's willingness to work with Aria in a very constructive way to first protect their system but to do what they can to work with our plant
- Columbia's willingness to work with the plant financially on rates within their approved rate structure
- A great relationship and constant communication to coordinate daily operations



Columbia Gas of Ohio, Inc.

Franklin County Landfill Project
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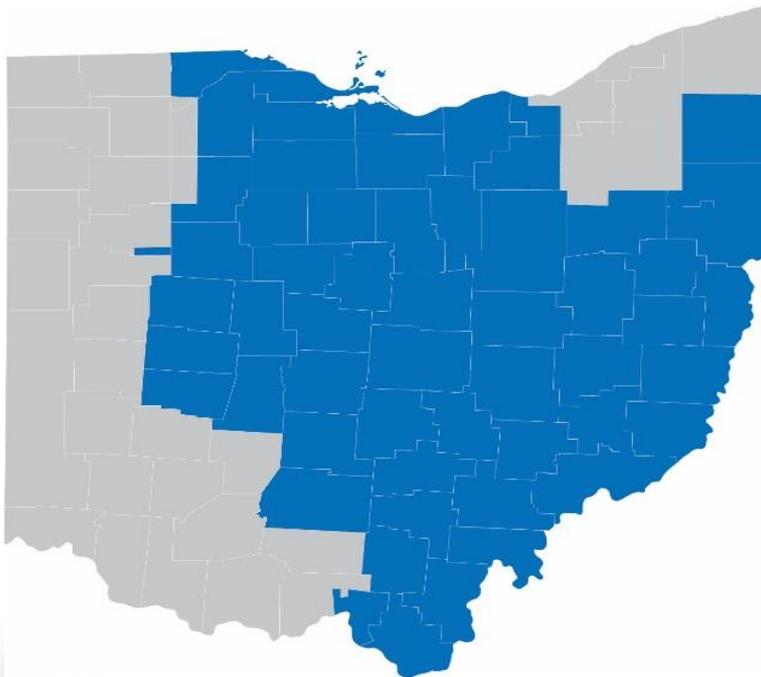
Agenda

- Who is Columbia Gas of Ohio
- Columbia's Involvement with the Franklin County Landfill Project
- Opening Conditions / Thresholds for Consideration
 - Gas Quality
 - Local Distribution System Absorption Capability
 - Distribution System Construction Costs and Considerations
 - Volumes and Pressure
- Transportation Options
- Development of application to receive FERC authorization to deliver gas into Interstate Transportation system
- LDC Tariff Considerations
 - Gas Quality
 - Transportation Services
- Construction Activities
- Performance to Date

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Who is Columbia Gas of Ohio

- Largest of seven LDCs owned by NiSource
- Provides service to over 1.4 million customers in 61 of Ohio's 88 counties and over 700 communities.
- Distribution main mileage of over 20,000 miles



Regulatory Environment

- Annual Infrastructure Replacement Program (IRP)
- Regulatory mechanisms to support community investment
- Public policy provides tools supporting investment for economic development and deferral of pipeline safety costs

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Columbia's Involvement with the Franklin County Landfill

- **Long Term involvement with the Solid Waste Authority of Central Ohio**
 - Periodic discussions with SWACO over 5-8 year period prior to Aria's involvement
 - Long term interest by SWACO to capture landfill gas resource
 - Lacked commercial understanding of natural gas delivery options prior to Aria's involvement

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Opening Conditions and Thresholds for Consideration

- **Reliability of nearby Residential Customers of Primary Importance**
 - Gas Quality Concerns
 - Potential for unmixed gas stream from project to enter residential distribution systems drives need for real time monitoring of gas quality
 - Columbia spent significant time researching Gas Chromatograph and controls systems to assure quality of gas entering its system
 - Remote control capability via 24/7 centralized Gas Control center: Remote shut-in, start-up
 - Applicable tariff provisions to manage gas quality specifications
 - Columbia's long-term history of low-volume, low-pressure Appalachian supplies provided invaluable assistance in progressing project.
 - Local Distribution System Absorption
 - Given projected production volumes that could exceed 3,500 Mcf/d Columbia needed to model delivery volumes to assure year-round market absorption/operating conditions to manage deliveries
 - Line Extension Provisions
 - Columbia's line extension policy allows credit from planned throughput in determining level of customer contribution to needed connection facilities
 - Volumes and Pressure
 - Deliveries from the Franklin County Landfill Project enter a high pressure (365# MAOP) system requiring significant coordination with Aria.

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Transportation Options

- Over long-term involvement with SWACO Columbia had evaluated several different delivery options to the interstate pipeline grid.
 - Dedicated pipeline with direct connection to interstate pipeline
 - Displacement through distribution system
 - On-system delivery options

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Development of FERC Application

- Delivery by Columbia to Interstate Transportation System requires NGPA Section 311 authorization
 - Review of Section 311 rules and requirements is critical to filing success
 - Requires filing of Rates and Charges and a Statement of Operating Conditions (Tariff)
 - Rates and tariffs filed with and approved by a state Public Utilities Commission can satisfy these filing requirements
 - Service provided to Aria is not a typical transportation service provided by Columbia and required considerable review to ensure its satisfied FERC requirements
 - While Columbia's 311 application was rather simple it nonetheless required a nine month approval process

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LDC Tariff Considerations

- Gas Quality
 - Tariff Provisions.
 - Gas delivered shall be commercially free from oil, water, air, salt, dust, gum, gum forming constituents, harmful or noxious vapors, or other solid or liquid matter which might interfere with its merchantability or cause to or interfere with the proper operation of lines, regulators, meters or other equipment of Columbia or its customers.
 - The gas delivered shall not contain in excess of:
 - One percent (1%) by volume of oxygen
 - Seven (7) pounds of water per million cubic feet at standard temperature and pressure (14.73 psia and 60° F)
 - Four percent (4%) by volume of nitrogen
 - Two percent (2%) by volume of carbon dioxide
 - Five percent (5%) by volume of combined carbon dioxide and nitrogen
 - Twenty-five hundredths (0.25) grains of hydrogen sulfide per hundred cubic feet
 - Twenty (20) grains of total sulfur per hundred cubic feet.
 - Total heating value of not less than nine hundred sixty-seven (967) btu per standard cubic foot and shall have a Utilization Factor of 1300 plus / minus 6%. Additionally, the Company is not obligated to accept gas which it believes may adversely affect the standard of public utility service offered by the Company, or gas which it believes may adversely affect the operation of the gas-burning equipment of its customers.

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LDC Tariff Considerations

- Transportation Services
 - Nomination Requirements
 - Systems Compliance
 - Banking and Balancing Services
 - Adherence to Operational Orders

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Construction Activities

- Line Extension Agreement based on 4” coated steel line to transport contract volume
- Columbia upgraded line size as pipeline scheduled to be a part of long-range HP loop system
- Required bore of Interstate 71 to access existing distribution network.
- Majority of pipeline path fairly typical
- Construction of meter station required extensive research and engineering work as it is not a typical LDC customer station given pressure, gas quality and operational monitoring and remote control capabilities

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Operations to Date

- Beyond what might be considered typical start-up issues system has operated smoothly and generally according to design.

Questions

Wrap Up

- Today's slides will be posted on the LMOP and the Natural Gas STAR websites
- Please complete the poll questions
 - We appreciate your feedback

www.epa.gov/LMOP

www.epa.gov/natural-gas-star-program

An official website of the United States government.

EPA United States Environmental Protection Agency

Environmental Topics Laws & Regulations About EPA Search EPA.gov

Landfill Methane Outreach Program (LMOP)

CONTACT US SHARE

What is landfill gas (LFG)?

Learn the basics about Landfill gas, including how it is collected and treated for use as a renewable energy resource.

- Webinars and Events
- LMOP Listserv
- Publications and Tools

LANDFILL METHANE OUTREACH PROGRAM

An official website of the United States government.

EPA United States Environmental Protection Agency

Environmental Topics Laws & Regulations About EPA Search EPA.gov

EPA's Voluntary Methane Programs for the Oil and Natural Gas Industry

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Methane Challenge Program

Learn how oil and gas companies are making and tracking ambitious commitments to reduce methane emissions.

- Register today for a landfill gas to pipeline RNG webinar on June 14
- Join us for a Transmission and Storage Technology Transfer Workshop on June 7
- Natural Gas STAR reporting for 2017 methane emissions reductions is now open

Sign Up for EPA's Listservs

LMOP Listserv



EPA LMOP & Natural Gas STAR Webinar - Franklin County Landfill Gas to Pipeline RNG Project

This is a reminder to sign up for the U.S. EPA Landfill Methane Outreach Program (LMOP) and Natural Gas STAR Program webinar about the Franklin County landfill gas (LFG) to renewable natural gas (RNG) energy project. The webinar is being held on **Thursday, June 14, 2018 at 2-3pm EDT** and will provide an overview of this successful project that upgrades LFG into pipeline quality RNG for vehicle fuel.

In February 2014, the Solid Waste Authority of Central Ohio, in a public-private partnership with Aria Energy, established a landfill gas to RNG project at the Franklin County Landfill in Grove City, Ohio. The project was expanded in 2015 to process 6.8 mmscfd of LFG. The LFG is collected, processed, and refined at Aria's high-Btu gas upgrading facility. From there, it is injected into a Columbia Gas of Ohio (a NiSource company) pipeline for sale in the vehicle fuel markets.

Two speakers--representatives from the project developer and the natural gas utility--will share their perspectives on how they collaborated to successfully develop the project.

- **Jay Hopper** – Vice President of Business Development, Aria Energy, LMOP Partner, has developed more than 50 LMOP projects.
- **Mike Anderson** – Director of Supply, Columbia Gas of Ohio, Natural Gas STAR Partner.

www.epa.gov/lmop/landfill-methane-outreach-program-listserv-messages

Natural Gas STAR Program Listserv



EPA's Natural Gas STAR and Methane Challenge Programs are pleased to host a Technology Transfer Workshop, "**Transmission and Storage: Partner Experiences in Methane Emission Mitigation**" on **Thursday, June 7, 2018** at Dominion Energy's facility in Glen Allen, Virginia. The workshop will feature two session discussions by Natural Gas STAR and Methane Challenge Partners about their experiences implementing voluntary actions to reduce methane emissions and a moderated service provider roundtable panel showcasing innovative equipment and technologies to reduce methane emissions.

Vendor Exhibit Opportunities. A limited number of table-top exhibit spaces are available free of charge on a first come, first served basis. Please check the website to learn how to reserve a space.

Register Today! Online registration is required. Registration is available now and will remain open through 2 pm EST, May 30, 2018. Onsite and day-of registration will not be available.

Participation in the workshop is free and there is no registration fee for attendees. Learn more and [register](#) now!

[www.epa.gov/natural-gas-star-program/forms/Natural Gas STAR](http://www.epa.gov/natural-gas-star-program/forms/Natural%20Gas%20STAR)

Thank you!

Please reach out with any questions or comments

Kirsten Cappel

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Landfill Methane Outreach Program

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