February 26, 2024

Internal Revenue Service
P.O. Box 7604
Ben Franklin Station
Washington, DC 20044

Submitted Via Federal Rulemaking Portal:
https://www.regulations.gov

RE: Proposed Rulemaking for Section 45V Credit for Production of Clean Hydrogen (REG-117631-23)

Dear Ladies and Gentlemen:

We are writing to you as the developers of Adams Fork Energy, the lowest production cost, and largest, negative carbon intensity hydrogen/ammonia project in the world. TransGas Development Systems, LLC has a new draft Permit to Construct, from the West Virginia Division of Air Quality, Department of Environmental Protection[1] to construct and operate a complex of up to six Haldor Topsoe 6000 Ton Per Day ATR ammonia plants that will be capable of producing 36,000 (thirty six thousand) Tons per day - or over 13 million tons per year of negative carbon intensity ammonia produced from a local methane source, the recovery and use of which is treated by the US EPA as emissions avoidance, and in the R&D GREET Model it reduces, rather than increases, carbon intensity. We anticipate first production from the complex in 2027.

This is a project that can break ground this year.

The project site is under long-term lease from the Mingo County Redevelopment Authority and sits atop one of the world's premier saline aquifers, allowing for on-site carbon sequestration, utilizing the facilities' excess exothermic steam for compression. No grid power will be used, so we are not dependent on any interconnection queue. The site is proximate to the largest freshwater mine pool in the eastern United States, which provides virtually unlimited 51 degree cooling water, eliminating the need for air cooled condensers. The site sits adjacent to one of the largest railroad companies in the country and is close to a second major railroad.

The site is a former mountain top mine site, that has been studied and scrutinized by regulators and reclaimed over the last 50 years and, with its surrounding resources and infrastructure, is one of the best sites for an industrial complex anywhere. It will serve a local community that has served America for over a century, mining coal that made the steel that built the Panama Canal and powered America's 20th Century industrial revolution. It will provide jobs for the heirs and families of those that have been long forgotten in our country's coal heartland by providing a plethora of new jobs in the burgeoning low carbon Hydrogen/Ammonia economy that will help shape and decarbonize the world over the next century. The people of Mingo County West Virginia

[1] WVDEP Public Meeting Slidedeck re Adams Fork Feb 21 2024 . Also attached in Appendix.

deserve fairer regulations – more consistent with the Congressional language and intent, than what you have proposed.

The Project was conceived and is led by someone involved in the hydrogen economy since inception in 1971 as an engineering student at Cornell University working under the tutelage of Professor Arthur Ruoff, the father of the hydrogen economy. It was Professor Ruoff who led America's effort to beat the Soviet Union to become the first country to produce Metallic Hydrogen and to find a solution for the "hydrogen embrittlement" of metals that will need to be used to build the pipelines that will eventually carry Hydrogen to the far corners of the country and world.

Flandreau Santee Sioux Tribe, in collaboration with its proposed channel partner, TransGas Development Systems, LLC, provides comments on the proposed regulations pertaining to the credit for production of clean hydrogen (clean hydrogen production credit) and the energy credit, as established and amended by the Inflation Reduction Act of 2022, respectively.

By way of introduction, **Flandreau Santee Sioux Tribe** is a federally recognized Indian tribe ("FSST") with its headquarters located in the community of Flandreau, South Dakota. FSST is a recognized tribal and community leader in South Dakota and is known for its tribal economic development and its strong advocacy of tribal sovereignty in the national arena. **TransGas Development Systems, LLC** ("TGDS"), is a New York based limited liability company that specializes in the development of complex projects as strategic solutions for entities, including governments, seeking to accelerate economic growth through green energy solutions that afford them greater autonomy and sustainability.

FSST and TGDS are developing a clean ammonia project known as **Adams Fork Energy** ("AFE") that will be the biggest, cleanest, and most advanced such project in the United States. Adams Fork Energy ("AFE"), distinguished by its unique configuration of including coal mine methane in its fuel to produce clean ammonia using an Autothermal Reforming ("ATR") process that captures 99.3% of CO_2 emissions, had anticipated eligibility for the maximum clean hydrogen tax credit. This expectation was based on the careful technology-neutral drafting of section 45V, with the section's reliance on carbon intensity as the arbiter of which projects should and should qualify for the credit. However, the draft regulations appear to deviate from the legislation's intention to "not pick winners", potentially disqualifying projects such as AFE's from accessing the maximum credit level any time soon, or at all. This is a project that has its permit to start now to make a meaningful contribution this decade to energy security, decarbonization of the economy, fulfilling the United States' 2030 global methane pledge, and fostering jobs and economic growth in Appalachian West Virginia within this decade.

1. AFE Background

AFE is in the process of developing a clean ammonia project in Mingo County, West Virginia. This project will utilize local coal mine methane and coal bed methane as fuel sources. If constructed, the project will offer the significant benefits within this decade:

- *Local Economic Benefit* - Utilizing Appalachian resources, the project will create jobs and generate ongoing economic benefits, particularly for the Appalachian region, and Mingo County in particular. It is in a Justice40 disadvantaged community;

- *Ultra-low Carbon Intensity* – Anticipated to achieve a carbon intensity of less than 0.45kg_CO_2/kg_H_2);

- *Permit Acquisition* – TGDS has a draft minor source emissions permit from the West Virginia Department of Environmental Protection (WVDEP) , we anticipate enabling immediate construction commencement on up to six plants sized at approx. 2.1 million tons per annum each;

- *Energy Self Sufficient* – AFE plant will not be connected to the power grid. It will employ cogeneration utilizing exothermic steam, with no emissions. Further, the plant will utilize on-site mine pool water at 51°F to facilitate geothermal cooling, without requiring additional energy or cooling tower infrastructure;

- *Energy Security* – By using local inputs and making output available locally, the project significantly enhances the energy security of the United States consistent with the goals of the Inflation Reduction Act; and

- *Supports US Global Methane Pledge* – This project contributes to the United States' commitment to the Global Methane Pledge of reducing methane emissions by at least 30% by 2030. It addresses the methane emissions from coal mines, which the US EPA estimates accounts for about 8% - or 52 million metric tons – of annual US methane emissions, more than either the oil or gas industries. As the EPA and DOE announced on Feb 9th 2024[2] in their "whole of government approach" to reduce methane emissions, *"Methane is a climate "super pollutant" that is more potent than carbon dioxide and responsible for*

[2] https://content.govdelivery.com/accounts/USDOEOFE/bulletins/389a8d2

approximately one third of the warming from greenhouse gases occurring today." AFE can reduce fugitive methane coal mine methane emissions quickly.

2. Exclusion of ATR of Coal Mine Methane pathway from 45VH2-GREET Model

AFE was encouraged by the passage of section 45V, particularly due to its drafters' deliberate emphasis on carbon intensity as a measure of eligibility. This focus shifts the evaluation of ammonia and hydrogen cleanliness from a subjective "color" scale to a more objective carbon intensity scale. Projects such as AFE, with a carbon intensity below 0.45, should not be excluded from the highest tier of clean hydrogen production credit by the Internal Revenue Service ("IRS") merely because of combustion of a carbon atom. Congress did not express a preference for any particular hydrogen production technology- this neutral approach should be mirrored by the IRS in its regulatory implementation.

Under the current 45VH2-GREET model, AFE is unable to qualify for any clean hydrogen production credit, as the model does not include a pathway for ATR of Coal Mine Methane ("CMM") with potential Carbon Capture and Storage ("CCS"). Moreover, the ambiguity and uncertainty surrounding the Provisional Emissions Rate ("PER") process exacerbate the issue. This process requires substantial commitment of time and expenditure by a developer – in the tens of millions of dollars - without any assurance of the Department of Energy ("DOE") authorizing the expected emissions rate. Consequently, a project using ATR of CMM does not have a clear path to determining its eligibility for clean hydrogen production credits, a hurdle not encountered by other technology pathways. This not only contradicts the technology-neutral drafting of section 45V, but it hinders the timely implementation of a significant source of energy security and decarbonization.

We are concerned the exclusion of CMM from the 45VH2-GREET model may not stem from a scientific basis provided by Argonne National Lab ("ANL"), but rather from a policy decision by a government agency. Notably, the CMM module is included in the R&D GREET Model. Additionally, ANL's website https://greet.anl.gov/list.php indicates that the study titled "Life Cycle Analysis of Coal Mine Methane Capture and Utilization" is scheduled for publication in August 2024. A further link, https://greet.anl.gov/publication-lca_coal_ch4_cu, suggests a publication date of September 30, 2024. These dates, while inconsistent, were included on the relevant webpages just prior to publication of the proposed regulations. Previously, this study was anticipated on these websites to be published in 2023, and the reason for this change remains unclear.

3. Conflating CMM with other gas supplies

We are concerned that the draft regulations are missing a critical opportunity to enhance energy security and support substantial decarbonization. This is due to the draft regulations treating "fugitive gas" the same as landfill gas and renewable natural gas in section IX of the guidance. In the case of CMM as a fugitive gas, this is a significant mistake.

The IRS' decision to postpone rulemaking for fugitive gas projects effectively subjects these projects to prolonged regulatory uncertainty. Based on the dozen questions included in this section in anticipation of rulemaking, the concern appears to be ensuring that such emissions are accurately measured and accounted for, to preclude ***gaming***. Yet CMM is different in kind to landfill gas and renewable natural gas ("RNG") – it is emitting today and not being captured, in large amounts, and causing pollution and contributing to climate change – today. Removing CMM emissions as quickly as possible – given it contributes such a large proportion of CO2e emissions today – must surely be an overarching priority, separate from concerns about *gaming* of landfill gas and RNG emissions. IRS has the opportunity to establish a clean hydrogen pathway for CMM now under the 45VH2-GREET model, while continuing to develop appropriate regulations for RNG and landfill gas in future iterations.

4. Three Pillars

For clarity, AFE has no objections to the three pillars methodology applying to CMM supply. However, we would propose that with respect to CMM, additionality be determined at the borehole level, rather than at the mine level, to encourage investment of the necessary capex to capture the otherwise-leaking-to-the-atmosphere CMM. AFE intends the CMM supply to be additional to current usage, to be used every hour of the day, and to be local with a direct connection into the AFE plant. AFE intends to be completely "off the grid" for power supply, making its own energy for running the plant. This is described in further detail in our WVDEP permit application (enclosed).

5. Provisional Emissions Rate Process

Without an applicable hydrogen production pathway in the 45VH2-GREET model, a project using ATR of CMM such as AFE would -have to choose whether to pursue the PER procedure as outlined in paragraph 1.45V-4, knowing full well, that without the inclusion of CMM in the 45VH2-GREET Model it would be an exercise in futility. To do so, the applicant must submit a PER petition with its tax return in the first year of H_2 production. That requires AFE to obtain an emissions value from DOE setting out its

analysis, as well as AFE's request. According to the guidance, this process commences on April 1, 2024, with specific procedures to be defined by DOE. In particular, the guidance provides that:

> *"Proposed §1.45V-4(c)(5) would also provide that an applicant may request an emissions value from the DOE only after a front-end engineering and design (FEED) study or similar indication of project maturity, such as project specification and cost estimation sufficient to inform a final investment decision, has been completed for the hydrogen production facility."*

This stipulation creates a challenging circularity for developers without an applicable hydrogen production pathway in the 45VH2-GREET model in acquiring a DOE emissions value. No such developer would feasibly invest tens of millions of dollars just to become eligible to obtain a DOE emissions value, especially when DOE's discretion in determining that emissions value remains the significant variable. This additional, uncertain step, which is not required for projects designated by the IRS to have an applicable hydrogen production pathway in the 45VH2-GREET model, unfairly and unwisely limits the types of projects and sponsors that can access the 45V clean hydrogen production credit and substantially undercuts the production of fuels that will cut carbon emissions by end users. Further, it means that a clean hydrogen pathway that reduces existing methane emissions consistent with this administration's policies and international commitments, and can help support deep decarbonization, is for practical purposes being precluded from accessing the clean hydrogen production credit.

6. Carbon Capture

Regarding carbon capture and sequestration, AFE is concerned that this is another area where the IRS has designated a particular technology – with multiple references to "carbon capture equipment" – rather than a carbon intensity score, to determine suitability. Relying on carbon intensity score is consistent with section 45V itself. For example, an alternative method of sequestering carbon, with suitable stringent verification procedures in place satisfactory to DOE and IRS, should not be precluded from being an input in determining the carbon intensity score, just because it isn't "equipment". For example, verified soil sequestration of carbon on a permanent basis should not be precluded from determining the carbon intensity of hydrogen production, and has the added benefit of not requiring a Class VI well permit application process.

Conclusion

We respectfully request the Internal Revenue Service to consider specific revisions to the proposed regulations under Section 45V and the 45VH2-GREET model. We

encourage the IRS to better align the regulations with the technology-neutral intent of the Inflation Reduction Act and to facilitate the development of projects that will significantly contribute to energy security and decarbonization.

- **Inclusion of a Hydrogen Production Pathway for CMM in the 45VH2-GREET Model:** AFE urges the IRS to incorporate a clear and viable hydrogen production pathway for CMM, directly connected to negative carbon intensity ammonia and or hydrogen projects, within the 45VH2-GREET model. This inclusion will ensure that projects like AFE, which significantly reduce methane emissions and contribute to decarbonization, are not unfairly precluded from accessing the clean hydrogen production credit.

- **Broadening the Scope for CCS Methods:** We recommend that the IRS broaden the criteria for acceptable carbon sequestration methods to include alternatives beyond carbon capture equipment. Methods like verified soil sequestration should be recognized for their contribution to reducing the carbon intensity of hydrogen production. This approach follows Section 45V's emphasis on carbon intensity rather than specific technologies.

With these revisions, IRS will not only adhere more closely to the intent of Section 45V but also enable the realization of critical projects that advance the goals of energy security, economic development, and environmental sustainability.

We appreciate the opportunity to submit these comments and look forward to a constructive dialogue towards refining these regulations for the betterment of all stakeholders involved.

February 26, 2024

Respectfully.

FLANDREAU SANTEE SIOUX TRIBE

DocuSigned by:

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Anthony Reider, Tribal President

TRANSGAS DEVELOPMENT SYSTEMS, LLC

Adam Victor, President and CEO

CC: PA:LPD:PR (REG-117631-23)

February 26, 2024

Appendix

Slidedeck - Public Meeting concerning TransGas Development Systems, LLC Ammonia Production Facility

Public Meeting

concerning

TransGas Development Systems, LLC

Ammonia Production Facility

February 21, 2024

West Virginia Division of Air Quality
Virtual Public Meeting

Presentation Outline

- Introduction
- Permitting Process
- Project Overview
- DAQ Documents
- What Happens Next?
- Summary and Contact Information

National Air Quality Strategy:
Permitting in Context

Clean Air Act: EPA Mandate to Protect Public Health and Welfare

Science

National Ambient Air Quality Standards (NAAQS)

State & Federal Rulemaking

State (SIP) and Federal Air Quality Rules

New Source Permitting Process

Specific Facility Requirements (NSR Air Permit)

Inspections

Compliance with Permit and Air Quality Rules

Permitting Programs

- "Pre-construction" Permits
  - Minor Source Program (45CSR13)
  - Major Source in Attainment Areas (45CSR14)
    - "Prevention of Significant Deterioration" (PSD)
  - Major Source in Non-Attainment Areas (45CSR19)
- Post-Construction Operating Permit Program
  - Title V Process
    - Major Source (Permit) vs. Minor Source (No Permit)
    - 45CSR30

Minor Source Permitting Program

- **Applicable to new "minor sources" of air pollution**
  - **Definition of major/minor is dependent on source type and location**
  - **"Chemical Process Plants": 100 tons/year threshold (per pollutant – not GHGs)**
  - **Administered under West Virginia Legislative Rule 45CSR13**
- **45CSR13 Permitting Process: What it does do:**
  - **Determine/enforce compliance with state/federal air quality rules and regulations**
  - **Determine/enforce compliance with facility's air emissions**
  - **Provide framework of public notification/participation**
- **45CSR13 Permitting Process: What it does <u>not</u> do:**
  - **Require a full Environmental Impact Statement (EIS)**
  - **Address Greenhouse Gases (GHGs) or other non-regulated emissions**
    - **Hydrogen and Ammonia are NOT regulated pollutants**
  - **Require a cumulative impact analysis that includes nearby sources**
  - **Take into consideration any other important but non-air quality benefits/impacts such as jobs, property values, traffic, zoning, national energy issues, economics of project, infrastructure, archeology, etc.**

Comment Period Extension

- **Based on Reasonable Interpretations of Statutory Language**
- **State Code: Article 5. AIR POLLUTION CONTROL, §22-5-1. Declaration of policy and purpose.**
  - **". . . to assure the economic competitiveness of the state by providing for the *timely processing* of permit applications. . ."**
- **West Virginia Legislative Rule 45CSR13, §45-13-5.7(a)**
  - ***"The Secretary shall issue a permit for all construction or modifications and operation of a stationary source within a reasonable time not to exceed ninety (90) calendar days, after the date the Secretary determines the application is complete. The Secretary may extend this time by thirty (30) calendar days to allow for public comment..."***

Non-Regulated Emissions

- **Greenhouse Gas Emissions (GHGs)**
  - Includes various compounds including Carbon Dioxide (CO_2)
  - Defined as having a Global Warming Potential of 1
  - Is not directly harmful or toxic to humans (humans exhale CO_2)
  - Not regulated under 45CSR13 but is under certain conditions of 45CSR14
  - No statutory authority to mandate CCS or emission limits under a minor source permit.

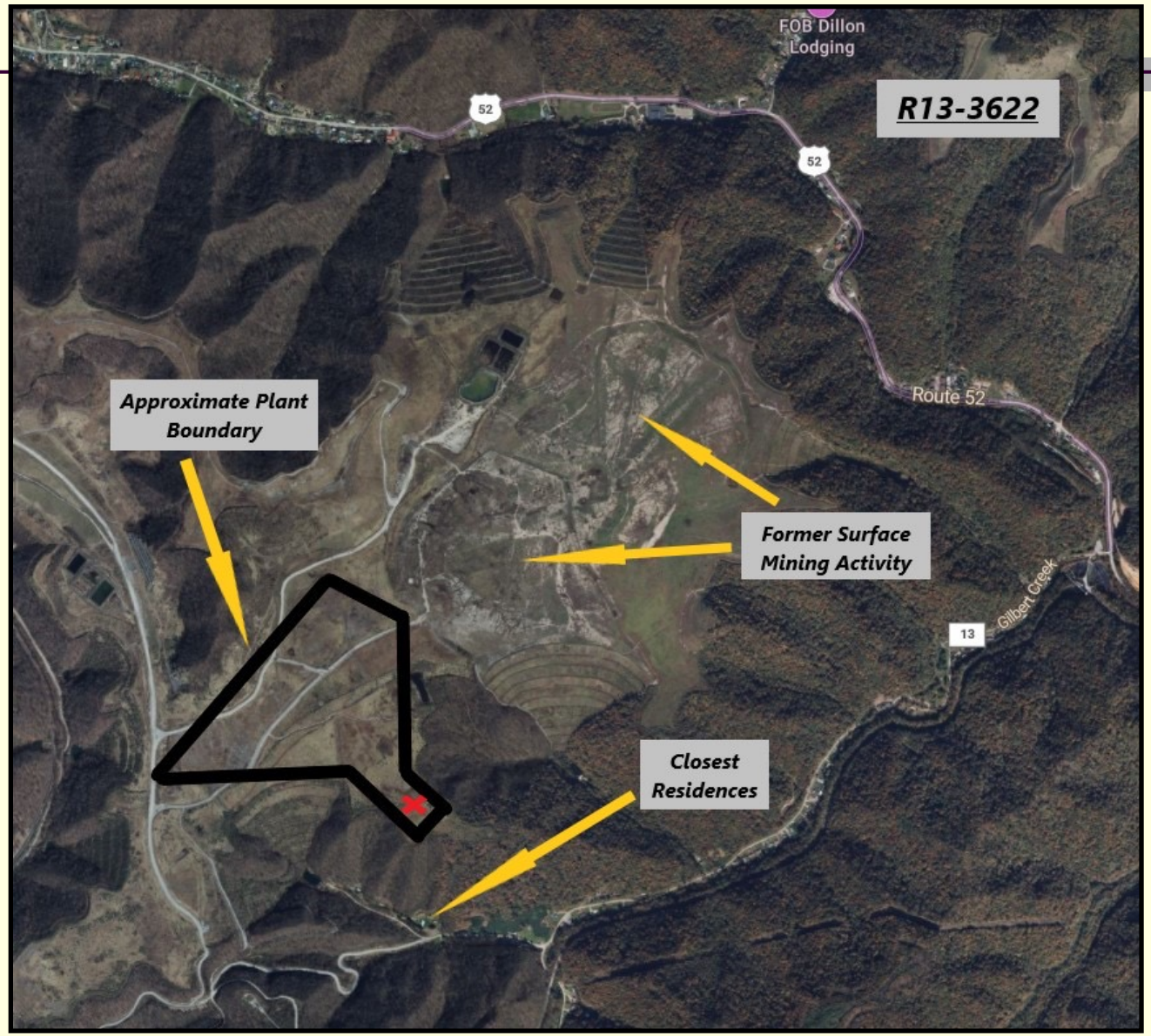
- **Ammonia**
  - Chemical Compound is NH_3.
  - Strong odor and a respiratory and eye irritant
  - Non-carcinogenic and not defined as a Hazardous Air Pollutant
  - Many natural sources and commercial product sources
    - Main industrial source is farming.
  - Not regulated under 45CSR13 but can be addressed as a potential source of odor if warranted or as a performance indicator (ammonia slip)
  - Lighter than air disperses readily, not highly flammable, and not a high explosive risk.

Summary of DAQ Review

- TransGas Application (R13-3622) Submitted: June 30, 2023
- Application Submitted as a minor source (45CSR13)
- TransGas Legal Advertisement: October 11, 2023
- DAQ Public Advertisement: January 3, 2024
  - Preliminary Review Complete: Draft Permit/Fact Sheet Available
  - 30-Day Comment Period – Now Extended
  - Comments/Public Meeting Request Received
- Comment period was extended until 5:00 on February 28, 2024.

TransGas Plant Location

TransGas Plant Location



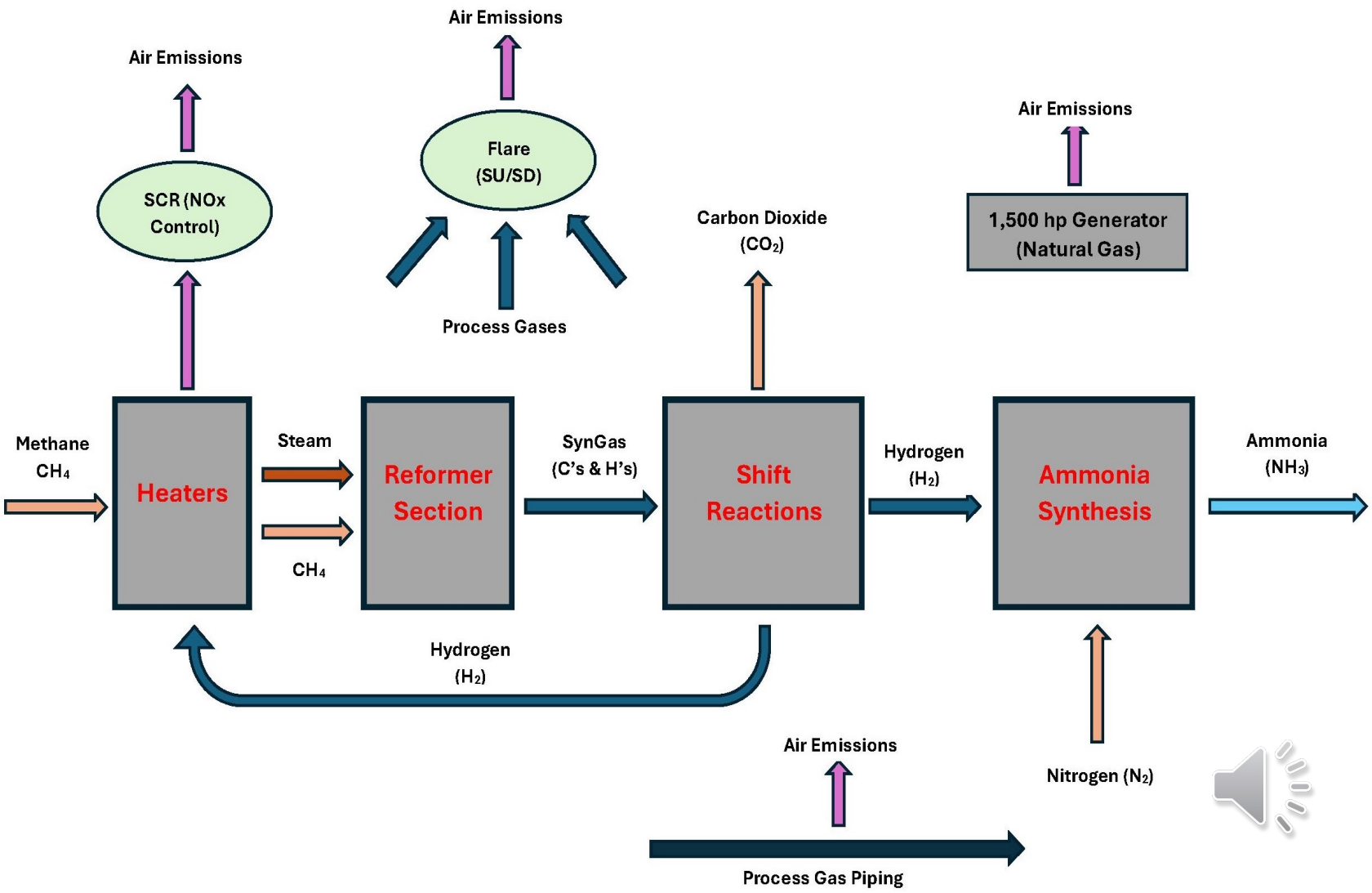
TransGas Plant Location

View of proposed location of Ammonia Manufacturing Plant looking west-northwest. Six units would be spread out from the field in front of picture out to the reclaimed ridgeline in the distance.

TransGas Project Overview

- **Mingo County Facility: Ammonia Production Plant**
- **Same site as Coal-to-Liquids Facility permitted (2010) but not constructed (R13-2791)**
- **Feedstock Natural Gas → Hydrogen → Ammonia**
  - **Consists of 6 identical modular units: each 6,000 metric tons/day (~6,600 tons/day)**
  - **Plant Maximum Capacity of ~36,000 metric tons/day**
  - **Uses "Autothermal Reforming (ATR)" to break down methane into Hydrogen & Carbon**
  - **Hydrogen combined with Nitrogen to create Ammonia (NH_3)**
  - **Ammonia chilled and piped off-site as a liquid**
- **All individual pollutant emissions (excluding GHGs) below 60 tons/year**
  - **Facility-wide emissions based on all 6 plants operating continuously year-round.**
  - **NO_x emissions highest at ~ 53 tons/year**
  - **CO emissions at ~ 14 tons/year**
  - **All other pollutants < 1.0 ton/year**
  - **HAP emissions are nominal, almost all from natural gas-fired generator**
- **Detailed information in the permit application and engineering evaluation/fact sheet**

TransGas Process Flow Diagram



WVDAQ Documents

- **Engineering Evaluation/Fact Sheet**
  - **Rationale document for Preliminary Determination.**
- **Draft Permit**
  - **Includes operating restrictions, emission limitations and monitoring, recordkeeping and reporting requirements.**
  - **Enforces the potential-to-emit (PTE) upon which we based our Preliminary Determination to approve.**

Engineering Evaluation/Fact Sheet

- Administrative information.
- Description of proposed facility/emission units.
- Discussion of emission calculations.
- Quantifies proposed emissions per pollutant.
- Applicability and compliance with federal regulations and state air quality rules.

Draft Permit

- Facility-wide requirements
- Specific unit requirements:
  - Limitations and standards
    - Production Capacities
    - Operating Requirements
    - Fuel specifications
    - Control technology requirements
  - Monitoring requirements
  - Performance testing and compliance requirements
  - Recordkeeping/Reporting requirements

What Happens Next?

- **Comment period scheduled to conclude at 5:00 on Wednesday, February 28, 2024.**
- **Prior to a final determination, the DAQ will evaluate and respond to timely comments that are relevant to air quality issues.**
- **DAQ will make a final determination pursuant to the requirements §45-13-5.7.**
- **The final determination will be available in same locations as Engineering Evaluation/Fact Sheet and Draft Permit.**

Summary

- TransGas is proposing to build an Ammonia Manufacturing Facility in Mingo County.
- DAQ has made a preliminary determination that the proposed construction is properly defined as a minor source and will meet all applicable state rules and federal air quality regulations.
- Engineering Evaluation/Fact Sheet and Draft Permit have been available for review since publication of the legal advertisement (January 3, 2024).
- DAQ will continue to accept public comments until 5:00 on Wednesday, February 28, 2024.
- DAQ will evaluate and respond to all timely public air quality-related comments.
- DAQ will make a final determination on this permitting action and make this determination and any related documents available at that time.

Contact Information

West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304

Phone: (304) 926-0499, extension 41271

Attention: Joe Kessler
joseph.r.kessler@wv.gov

https://dep.wv.gov/daq/permitting/Pages/NSR-Permit-Applications.aspx