

***Energy Communities Alliance  
Case Study – Portsmouth Gaseous Diffusion  
Site***

**August 5, 2022**



# Notice

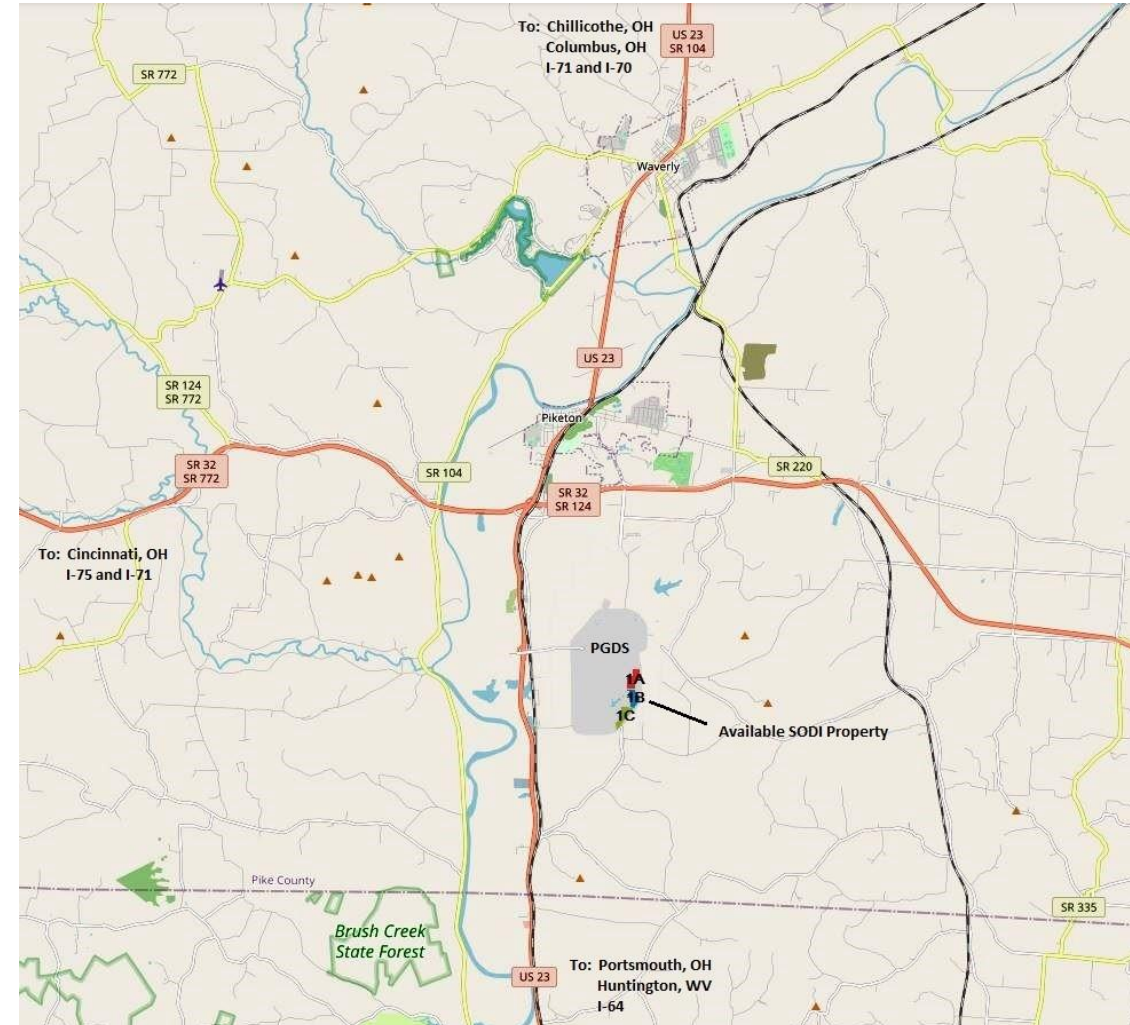
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# ***Panelists***

- Kevin Shoemaker – Project Director and Legal Counsel, Southern Ohio Diversification Initiative (SODI), Piketon, OH
- Jennifer Chandler – Chair of the Scioto Valley-Piketon Area Council of Governments, Piketon, OH
- Matt Snider - Enrichment Operations Plant Manager, Centrus Energy Corporation, Piketon, OH
- Mark Denton – Project Manager and Infrastructure/Demolition & Decommissioning SME, Orano Federal Services LLC, Charlotte, NC
- Ryan Henderson – Characterization and Licensing SME, Southern Nuclear Development, Birmingham, AL

# Portsmouth Gaseous Diffusion Site Profile

- Located in Piketon, Pike county, Ohio
- Pike county population is 27,088 (2020 census); one of the least densely populated counties in Ohio
- Largest current employer is DOE-EM operations and D&D contractors
- Workforce characteristics are union steel workers, construction trades, and agriculture
- Older workforce is known for being experienced in nuclear operations and D&D, younger workforce is known for small part manufacturing and agriculture
- Community's history with the DOE is 70 years of supporting contractors being the primary employer for fuel enrichment with transition to D&D and continued commercialized nuclear fuel production



# Portsmouth Story

- Site Facts
  - 3700-acre reservation near Piketon, OH
  - 1200-acre centrally developed area
  - 750-acre controlled access area
  - Former NRC Certificate of Operation for the gaseous diffusion plant
  - Two NRC licenses for Centrus centrifuge enrichment facilities & operations
  - DUF6 Transport Cylinder recovery/cleaning operations
  - D&D activities until late 2030's
  - Operations and Site Mission Support (OSMS) contractor

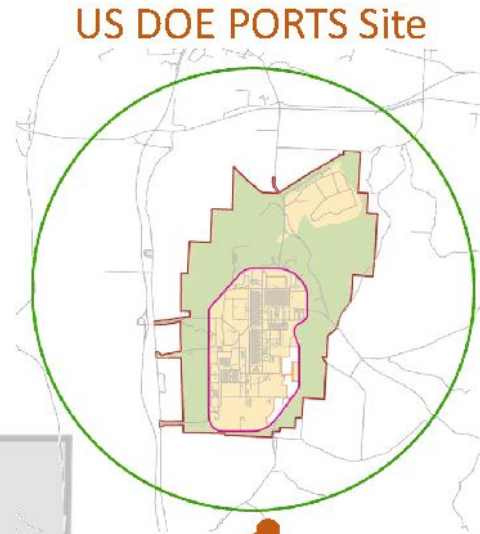


# Community Perspective



## FRONTLINE COMMUNITY MEMBERS

- Village of Piketon
- Seal Township
- Scioto Township
- Scioto Valley Local School District
- Pike County Health Department
- Pike County Board of Commissioners



PIKE  
COUNTY,  
OHIO

# *Community Perspective*

- How to identify the FRONTLINE Community:
  1. Emergency Planning Zone – the entities inside that zone are directly impacted by:
    - a) The environmental burden created by nuclear and chemical operations;
    - b) Emergency evacuation due to hazardous releases, and;
    - c) The tax exemption status of DOE owned properties.
  2. Project's Physical Footprint – This includes the property boundary, easements and effluent discharge points that may extend beyond the Emergency Planning Zone.
- Why is the FRONTLINE Community different from the other stakeholder communities ?
  1. The frontline community bears the highest risk.
  2. The positive economic impacts are experienced region wide, but the negative environmental impacts and loss of property tax revenues are specific to the frontline community.
  3. The stigma of nuclear waste negatively affects the frontline community's ability to achieve economic diversity.

# Community Perspective

- The benefits of a Council of Governments for the Frontline Community:
  1. Collective evaluation of opportunity costs that come with certain types of projects;
  2. A strong, unified voice to advocate for an economic benefit that is equivalent to the environmental burden, and;
  3. Single point of contact for project sponsors to ensure streamlined coordination.
- The members of the SV-PA COG are:
  - ✓ *Working together in an organized way that **guarantees the frontline community a seat at the table.***
  - ✓ *United to support development on and around the US DOE PORTS Site **while simultaneously promoting the health and wellness of our community.***
  - ✓ *Positioned to respond to the needs of project sponsors with public infrastructure, a pipeline of qualified workers, and informed engagement with the public.*



# ***Southern Ohio Diversification Initiative (SODI)***

## **Overview**

- SODI is the Community Reuse Organization (CRO)
- SODI owns 80 acres and is anticipating transfer of additional 240 acres by the end of 2022
- Due to the DOE's operations and investment over the past 70 years, the Portsmouth Site provides a unique environment for acceptance of advanced nuclear technology
- Serves as coordinator with current DOE mission, DOE tenants and contractors and potential developers
- SODI is Site Reuse Deployment Guidance Project's recipient
  - Project is DOE-NE Funding Opportunity Grant with cost share
  - Awarded December 30, 2020, and planned to end December 29, 2022, but project team seeking No-Cost Extension approval for limited activities in 2023
- Challenges



# *Portsmouth's Enrichment History*

- Diffusion Plant Enrichment began in the 1950s in the midst of the Cold War supporting national defense initiatives and commercial nuclear energy by producing very highly enriched uranium (VHE)
- In the 1960s, VHE was suspended, and lower assays were enriched to support the U.S. Navy Nuclear fleet and commercial nuclear energy power plants
- By the 1990s, the plant's primary mission was to produce low-enriched uranium (LEU) between 3% and 5% for use in the commercial nuclear energy power plants
- In 2001, the plant began to operate in "Cold Standby" which meant that it could resume full operations within 18-24 months and in 2006 transitioned to "Cold Shutdown"
- On June 6, 2012, the final enrichment process cell was shutdown
- Centrus, under a lease from the DOE, has NRC approved licenses to operate both LEU and High Assay Low Enriched Uranium (HALEU) gas centrifuge enrichment
- For more insight,  
see [Portsmouth Gaseous Diffusion Plant Virtual Museum \(portsvirtualmuseum.org\)](https://portsvirtualmuseum.org)

# ***New Story: Site Reuse Deployment Guidance Project***

## **Project Overview**

- Evaluate and document the challenges and benefits in reuse of an existing nuclear facility undergoing decommissioning for the siting and construction licensing of an advanced reactor (AR)
  - 1) Leverage lessons-learned from the initial U.S. public-private efforts on recent new plant licensing of both light water and advanced reactors to accelerate and improve the economics of site reuse
  - 2) Revise reactor siting and licensing guidance regarding advanced reactors and site reuse
    - Revise EPRI’s siting guide titled “Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Power Generation Facilities”
  - 3) Generate Plant Parameter Envelope (PPE) and Early Site Permit Application (ESPA) for advanced reactors
  - 4) Provide a guide for the assessment of site infrastructure and Decontamination and Decommissioning (D&D) methods for reuse of existing site facilities and services
    - Also applicable to coal-to-nuclear transitions
  - 5) Support SODI in reutilization efforts of the Portsmouth Site for advanced reactor placement
    - Portsmouth Gaseous Diffusion Plant (PORTS) is proxy example utilized in PORTS-specific Plant Parameter Envelope and Early Site Permit Application templates for advanced reactor developer use
  - 6) Project team to support SODI in reuse outreach



# ***New Story: Site Reuse Deployment Guidance Project***

## **Project Team**



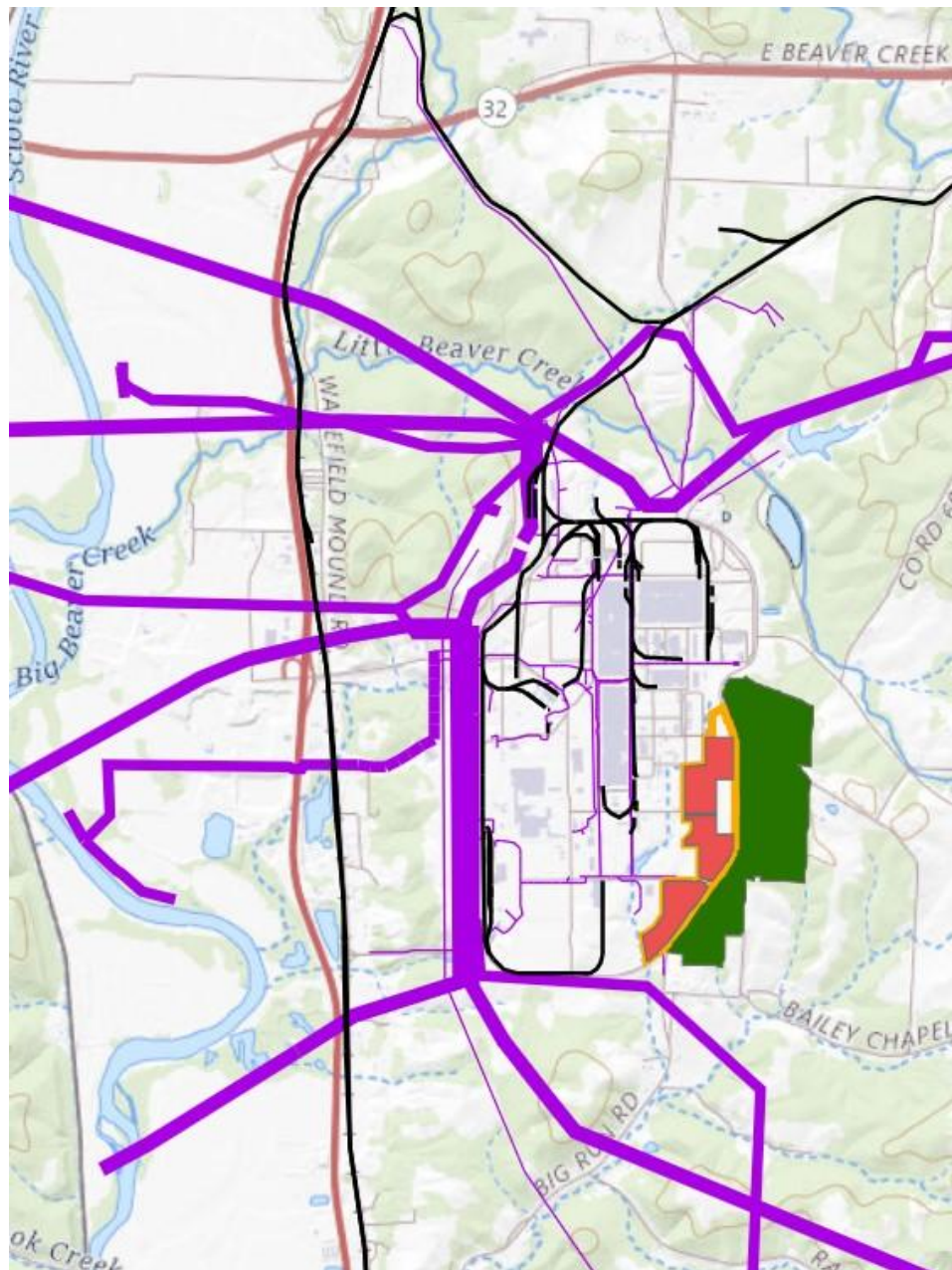
# ***New Story: Site Reuse Deployment Guidance Project***

## **Infrastructure Assessment Considerations for DOE Site Reuse**

- Existing site-related services are often highly valuable but overlooked infrastructure
  - SODI as Community Reuse Organization
  - On-Site Emergency Response Organization
  - Site-wide engineering configuration control
  - Site-wide environmental and radiological monitoring program and equipment  
with ***historical data***
- Existing trained labor pool is of high value if kept recently employed
- Existing rights-of-way for electrical transmission and buried pipelines serving the site are very valuable due to the time and expense of procuring new rights-of-way
  - Utility supplies within the site boundaries and facilities often removed in D&D process
- Remaining utility services need to be assessed to determine feasibility for reuse to future developers
  - Need to compare remaining capacity, cost of operations and potential future needs
- Transportation pathways and corridors (road, rail, barge) typically of high value to overall reindustrialization, but may or may not be of value to potential developers

# Portsmouth Gaseous Diffusion Site

For a PORTS interfacing map, go to:  
<https://ohio.maps.arcgis.com/apps/webappviewer/index.html?id=fe14a57f8ccb48d4875cbfbcb17e0271>



## On-Site Rail Lines

## High Transmission Lines

## SODI Parcel 1 Property

- 80 acres available now

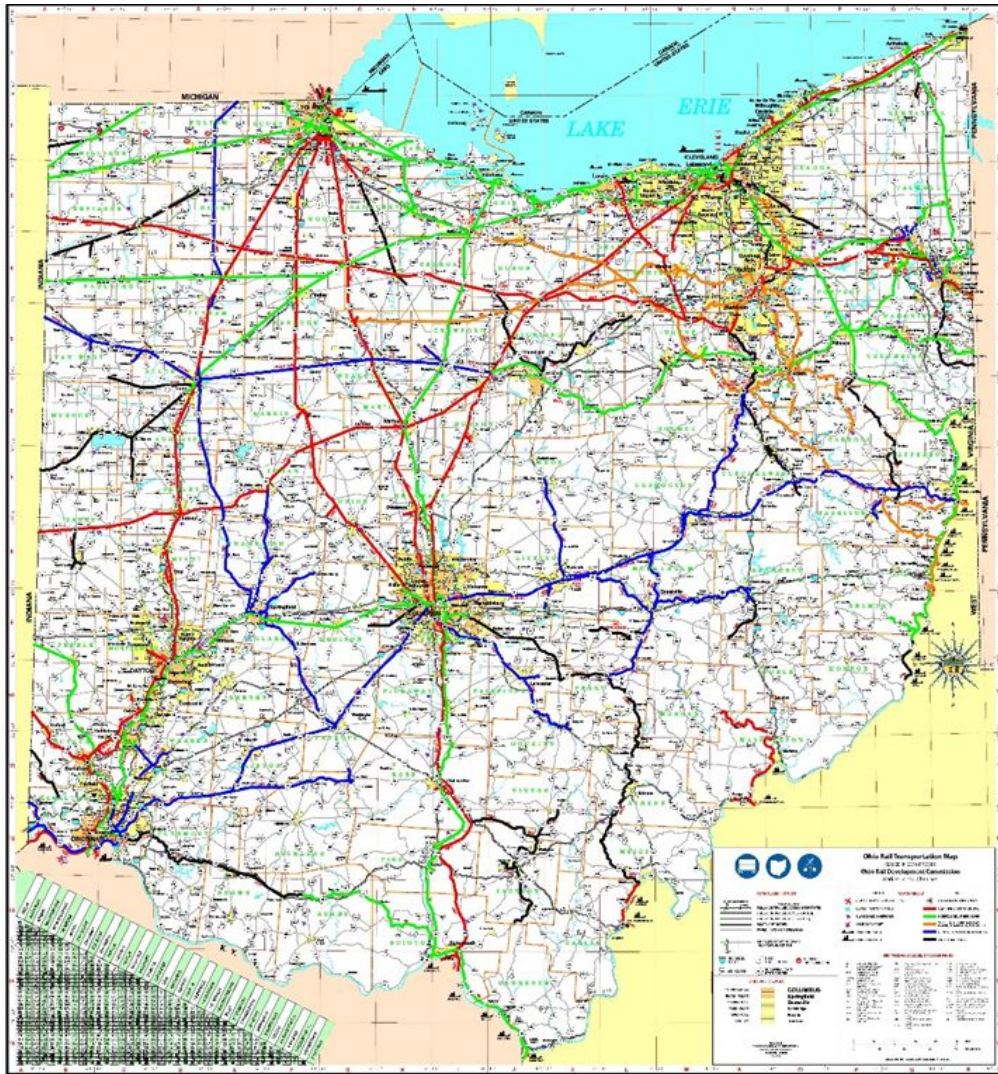
## SODI Parcel 2 Property

- 200+ acres available by end of 2022

## Other information:

- SODI can transfer property by sale or lease agreements
- Property transferred from DOE to SODI after environmental remediation, characterization and approval by Ohio Environmental Protection Agency
- DOE provides indemnification for future environmental hazards

Norfolk-Southern, CSX Rail and Genesee & Wyoming (via NS and CSX interchange agreements)



Usable barge access ?



On-Site Fire Station



Emergency Response Operations Center

On-Site Hospital



# ***New Story: Site Reuse Deployment Guidance Project***

## **D&D Methods and Cost Comparison**

- A Site's Record of Decision is negotiated between DOE-EM, State EPA organization, public representatives, and sometimes Federal EPA organization
  - The Record of Decision sets overall D&D methods, exposure levels, release limits and time frame of activities
- Potential stakeholders need to interact with DOE-EM very early in the Record of Decision process to positively impact potential site reuse
  - Ideal situation is presenting detailed business plan encompassing specific site reuse objective(s), workforce transition plan, desired infrastructure and facilities with acceptable condition of transfer, and financial investment/operations plan.



# ***New Story: Site Reuse Deployment Guidance Project***

## **Characterization Data and NRC Licenses**

- NRC wants recent characterization data generated after D&D disturbance is complete and under a NQA-1 quality assurance program for reusable property considered for an NRC license application
  - Radiological, hazardous materials, geophysical, metrological, demographic data
- Need to do assessment of DOE characterization data for:
  - Availability
  - Represents current conditions
  - Quality assurance program attributes that characterization program performed under
  - Representative to specific property for reuse
- Recommendation:
  - Use old and recent characterization report summaries to generate a scope of work for performing a new characterization program
  - Development the “new” characterization program scope of work
  - Review the scope of work with the NRC for adequacy
  - Perform the characterization scope of work with little to no variations

# ***New Story: Site Reuse Deployment Guidance Project***

## **Demographic Data Source Discovery**

- Ohio University Voinovich School of Leadership and Public Service assists SODI
- The Site Reuse Deployment Guidance Project learned that many universities have routine access to state and national census data and routinely generate data for “public service” entities using educated graduate students and data programs being developed for “public service” release or commercialization
- Ohio University Voinovich School of Leadership and Public Service did the projects demographics for its Portsmouth Site Early Site Permit Application template saving months and thousands of dollars
  - Maintains “PORTSfuture” website – see <https://www.portsfuture.com/>
- **Recommendation: Use your local state universities for demographic data !**

# *What's Next*

## **Potential Clean Energy Supporting Stakeholders**

- **Current Stakeholders:**
  - Centrus Energy Corporation and high assay low enriched uranium (HALEU) fuel demonstration
  - DOE operations for DUF6 and DUF4 (for HALEU) production
- **New Stakeholders:**
  - Clean Energy Park Host including hydrogen generation, natural gas decarbonization, self-sufficient electricity generation, process-related production of commercial chemical supplies via clean energy
  - SMR Developer for supplier of industrial heat-loop and production of SMR equipment
  - SMR Developer for multi-unit electrical power generation
  - Electric Vehicle Battery Clean Energy Recycling (black-mass metals recovery only via clean process)
  - Low-Level Radioactive Waste Processing Operator

# What's Next



FOR IMMEDIATE RELEASE

Monday, May 16, 2022

Contact: Daniel van Hoogstraten, [daniel@remingtonroadgroup.com](mailto:daniel@remingtonroadgroup.com)

## **Southern Ohio Diversification Initiative Announces Major Step Forward for Reindustrialization Project, Job Growth Efforts in the Ohio Valley**

*Following More than a Decade of Work and Collaboration, Agreement with Newpoint Gas Marks Milestone in Green Energy and Manufacturing Initiative*

PIKETON, OH – In a significant step forward for a major reindustrialization project that aims to reinvigorate manufacturing and the economy in the Ohio Valley and Central Appalachia, the Southern Ohio Diversification Initiative (SODI) today announced that Newpoint Gas, LLC has signed a Letter of Intent for option and right of first refusal to purchase land where the project will be located.

The project – the reindustrialization of the former Portsmouth Diffusion Plant (PORTS) facility near Piketon, Ohio – will be the foundation of the Ohio Valley “Green Energy and Manufacturing” Initiative (GEM). GEM is a bipartisan, labor-focused, functioning public-private partnership that is the result of a 12-year effort to establish a transformational economic development strategy coordinated under the leadership of SODI and Ohio University’s Voinovich School of Leadership and Public Service.

“The Ohio Valley Green Energy Manufacturing Initiative represents a unique, generational opportunity to reinvigorate communities that have been left behind as energy production and manufacturing shifted over the last several decades. The agreement with Newpoint Gas is a monumental step toward realizing that



# What's Next

**Newpoint Gas, LLC**  
Innovative Oil & Gas Solutions



**OHIO**  
UNIVERSITY

**FOR IMMEDIATE RELEASE**

August 1, 2022

## **Newpoint Gas and Babcock & Wilcox Sign Teaming Agreement on Pike County Ohio Hydrogen Production and Sustainable Manufacturing Facility**

*Agreement Marks Significant Milestone in Effort to Reindustrialize Former Portsmouth Gaseous Diffusion Plant*

**PIKETON, OH** – In a milestone for a major clean energy and manufacturing project that aims to reinvigorate manufacturing and the economy in central Appalachia, Newpoint Gas today announced that Akron, Ohio-based Babcock & Wilcox (B&W) (NYSE: BW) has agreed to serve as a foundational technology partner in support of Newpoint's h<sub>2</sub>Trillium Energy and Manufacturing (h<sub>2</sub>TEAM) complex. The h<sub>2</sub>TEAM complex will serve as the anchor development project to launch a larger reindustrialization vision at the site of the U.S. Department of Energy's former Portsmouth Gaseous Diffusion Plant (PORTS) facility near Piketon, Ohio.

Newpoint has committed to building the \$1.51 billion integrated energy decarbonized hydrogen and closed loop manufacturing facility at the Pike County site. In the construction phase, h<sub>2</sub>TEAM expects to bring 2,900 jobs and generate over \$520 million in local economic impact. In the long term, the project will add 220 operations and maintenance jobs and over \$420 million annually to the economy in central Appalachia.

"B&W is a leader in advancing solutions for the world's clean energy transition, and we're pleased at the opportunity to provide our innovative BrightLoop™ hydrogen production technology to help create a

## **Babcock & Wilcox to Provide Advanced Hydrogen Generation, Combustion and Decarbonization Technologies for Clean Energy Project in Ohio**

Posted August 1, 2022

- B&W will team with Newpoint Gas, supplying BrightLoop™ hydrogen generation and decarbonization technology and BrightGen™ combustion technology for groundbreaking project
- Babcock & Wilcox subsidiary will provide construction services
- B&W technology will allow plant to produce hydrogen, isolate carbon dioxide and create clean, near-zero emissions energy

(AKRON, Ohio – August 1, 2022) – Babcock & Wilcox (B&W) (NYSE: BW) announced today that it has signed a teaming agreement with Newpoint Gas to serve as a foundational technology partner, and provide advanced hydrogen generation, decarbonization and combustion technologies for the redevelopment of the former U.S. Department of Energy Portsmouth Gaseous Diffusion Plant site near Piketon, Ohio.

B&W will supply its BrightLoop™ technology to produce hydrogen and isolate carbon dioxide for storage and will supply a steam generator utilizing the company's BrightGen™ hydrogen combustion technology to produce clean, near-zero emissions energy. Babcock & Wilcox Construction Co., LLC will provide construction and installation services.

When complete, the \$1.51 billion h<sub>2</sub>Trillium Energy and Manufacturing (h<sub>2</sub>TEAM) complex will operate as an integrated energy decarbonized hydrogen and closed-loop manufacturing facility, generating clean hydrogen and capturing carbon dioxide for long-term storage or beneficial use.

"We look forward to working with Newpoint and its partners on this innovative and groundbreaking clean energy project," said Joe Buckler, B&W Senior Vice President of Clean Energy. "B&W is a global leader



# Q & A

## Contacts for additional information

- General Feedback: Kevin Shoemaker at [sodilaw@outlook.com](mailto:sodilaw@outlook.com)
- Scioto Valley-Piketon Area Council of Governments: Jennifer Chandler at [JenniferLChandler@icloud.com](mailto:JenniferLChandler@icloud.com)
- Centrus Energy Corporation, Portsmouth Enrichment Operations:  
Matt Snider at [snidermd@centrusenergy.com](mailto:snidermd@centrusenergy.com)
- SODI & Portsmouth Gaseous Diffusion Site: Kevin Shoemaker at [sodilaw@outlook.com](mailto:sodilaw@outlook.com)
- Infrastructure & Reuse: Mark Denton at [mark.denton@orano.group](mailto:mark.denton@orano.group)
- EPRI Siting Guide Revisions: Andrew Sowder at [asowder@epri.com](mailto:asowder@epri.com)
- Plant Parameter Envelope (PPE) & Early Site Permit Application (ESPA) Templates:  
Ryan Henderson at [rdhender@southernco.com](mailto:rdhender@southernco.com) &/or  
Jason Redd at [jpredd@southernco.com](mailto:jpredd@southernco.com)