Ohio University (OU) Voinovich School of Leadership and Public Service

US Department of Energy Office of Environmental Management Portsmouth/Paducah Project Office Financial Assistance Grant DE-EM0005270

Collaborative Efforts to Inform DOE EM Cleanup, End State Configuration, and Accelerated Property Transfer at the PORTS facility in Pike County, Ohio

Site Repurposing Continuation and Ongoing Technical Assistance, Public Outreach, Education, and Engagement for Property Transfer and Future Use

Budget Period 1 (BP1) October 1, 2022 – September 30, 2023

Combined Activities Report September 30, 2023

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THE FACILITY AT PIKETON, OHIO

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# Budget Period 1 (BP1) October 1, 2021-September 30, 2023 Combined Activities Report

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#### **Purpose and approach**

The Site Repurposing Continuation and Ongoing Technical Assistance, Public Outreach, Education, and Engagement for Property Transfer and Future Use activities serve the DOE EM cleanup mission in several ways. These activities expand data utilization with site stakeholders at PORTS and in the region to enhance information-based decision making when determining viable future-use options for the site and site assets, so that cost savings/cost avoidance may be realized by DOE as cleanup efforts continue. These activities contribute to informing the end-state configuration for the site and may expedite the transfer of real property for reindustrialization, thus supporting DOE's efforts to reduce the EM footprint at PORTS. Throughout this report, the terms 'property' and 'property transfer' will refer to the transfer of real property (i.e., real estate) to the DOE-designated community reuse organization, the Southern Ohio Diversification Initiative (SODI). Grant activities also support the site reindustrialization efforts being led by SODI.

Ohio University's role in the site repurposing and ongoing outreach activities is to serve the public interest by acting as an independent, credentialed broker of data and other information; by convening, facilitating, and assisting collaborative partners and interested parties--including government, business, and community entities--with information sharing and partnership building; by brokering relationships with private sector developers who are potential future tenants; and, along with collaborators, by employing data-driven decision processes to ensure efficacious planning for site future-use endeavors. These efforts are responsive to the stated future-use preferences of the public at large in the four-county region near the site as identified during various DOE and Ohio University public engagement efforts.

Site repurposing and ongoing outreach activities were carried out in the form of a collaborative effort among Ohio University (OU), DOE, the local community reuse organization known as the Southern Ohio Diversification Initiative (SODI), site contractors, and national experts. As the activities were carried out, progress updates and/or conversations were held with stakeholders such as the Site-Specific Advisory Board (SSAB) (when requested); local, state, and federal elected officials; county, regional, and statelevel economic development professionals; private sector interests; national experts; community leaders; and/or the public at large.

The work is part of the Ohio University PORTS future Program that focuses activities in the areas of public engagement, training, outreach, and Science, Technology, Engineering, and Mathematics (STEM)

education; ecology, hydrology, and site environment field work; site readiness, Geographic Information Systems (GIS), and data analysis; economic modeling/economic impact and workforce analysis; industry discovery; and partnership building. Grant activities create public value and serve the public interest in one or more of the following ways including informing site cleanup and future use planning; providing cost savings/cost avoidance for cleanup; facilitating the transfer of property to reduce the DOE EM footprint; leveraging public assets of the PORTS site and the region to create regional economic stability; and providing regional youth with STEM education opportunities related to the site and/or emerging STEM-related occupations.

#### **Background**

The U.S. Department of Energy's former Portsmouth Gaseous Diffusion Plant (PORTS) near Piketon, Ohio has been an important economic player in the Pike, Scioto, Ross, and Jackson County region for many decades. This fact has impacted the region's socio-economic profile. As the decommissioning and decontamination process continues at the PORTS site, it is expected that this transition period will lead to further changes in the region's socio-economic profile including the creation of socio-economic stressors as well as growth opportunities. The extent to which decision-makers can minimize transitional stress and maximize the economic prospects for the region hinges greatly upon the cleanup and transfer of the PORTS site and site assets for other economic use.

#### Leveraging foundational public engagement activities

Site repurposing continuation and Ongoing Technical Assistance, Public Outreach, Education, and Engagement for Property Transfer and Future Use activities for Budget Period 1, build upon site repurposing and outreach activities conducted with 3161 funding (federal funds focused on benefits to workers) during 2013-2015 and previous work under previous grants. These activities also build upon findings from Ohio University's original DOE grant work under the public outreach task completed in 2011. Under the outreach task, Ohio University conducted a 15-month, broad-based, grass roots, public participation process in Pike, Scioto, Ross, and Jackson Counties to identify the community's future-use preferences for PORTS. Community participants in outreach activities included residents, economic development entities, environmental groups, nonprofits, businesses, governmental interests, and many other stakeholders in the four counties near the PORTS reservation.

To inform the design of the outreach project, OU conducted qualitative research that included interviewing key site stakeholders; conducting four focus groups with members of the public; administering a regional telephone survey to gain information about residents' opinions on major problems facing local communities and residents' awareness/knowledge of the site and cleanup efforts; and gathering residents' preferences for possible site future uses. Results from this qualitative research were used to design Community Visioning Teams that further broadened opportunities for public involvement at a more in-depth and focused level. Future use scenarios were developed by community participants in County Visioning Teams and voted on by the public at large at numerous public events and online. County Visioning Teams were provided summary findings from the qualitative research, data on the site and site assets, cleanup plans, and reports that detailed environmental conditions on the site. Throughout the visioning process, participants reviewed and discussed the data and used this input in creating their future use scenarios. The full outreach report can be found here: https://www.portsfuture.com/public-outreach-and-public-outreach-report/

Public voting on future use preferences occurred online and in-person at public events throughout the region from July 15, 2011-September 30, 2011. A total of 1,141 people voted on the nine scenarios. Each person could select 1-3 scenarios as preferred options for future use consideration for PORTS. Results of the multiple-choice voting, with the top four scenarios highlighted in red font, are as follows:

Scenario Name	<b>Total Votes</b>
Nuclear power plant	495
Green energy production	475
Industrial park	421
National research and development	418
Warehousing, distribution, and transportation hub	179
Training and education facility	160
Metal recovery facility	152
Multi-use southern Ohio education center	143
Greenbelt	131

Scenario preferences obtained through the public voting activities were reported to site stakeholders and the final outreach task report was submitted to the US Department of Energy, Office of Environmental Management, Portsmouth/Paducah Project Office, DOE PORTS site officials, and the PORTS-SSAB for their consideration in informing cleanup and risk reduction decisions. These results served to inform subsequent site repurposing activities.

# Site repurposing activities history and evolution

# 2013-2015

Staff from OU, SODI, DOE, and relevant site contractors met regularly and engaged in activities to achieve the collaborative goals of informing DOE EM cleanup, end-state configuration, and accelerated property transfer at PORTS. Efforts focused on identifying viable options for best leveraging the site and site assets and identifying related industrial sectors that could be recruited as future tenants of a reindustrialized PORTS reservation. The energy sector was vetted in-depth and the potential to attract energy-related businesses to locate at the site appears to be extremely favorable. Due to southern Ohio's long-standing ties to energy industries, the ability to develop and strengthen an energy cluster in the region will be enhanced with the site cleanup, transfer, and reuse. During 2014, the President and CEO of the International Economic Development Council (IEDC) met with the collaborative group to discuss strategies for site reindustrialization in the top three identified potential future use sectors that include energy, advanced manufacturing, and transportation/logistics. The IEDC President, in his role as an OU Voinovich School Senior Fellow, continued to provide expert input and guidance to grant activities as requested and in-person, usually twice per year, until his retirement in 2022.

To gather meaningful input from energy industry leaders and state and regional economic development professionals, a regional energy sector roundtable was held in May of 2014 to further inform site reuse planning in this area. The roundtable discussion focused on identifying opportunities to develop energy sector businesses at the PORTS site in the form of Public-Private Partnerships (P3s). Ohio University designed the roundtable concept in conjunction with IEDC and other national experts and in consultation with several energy industry leaders who were interviewed by telephone. This information resulted in a concept paper that guided the materials developed for the session, the participant recruitment, and the facilitation design for the roundtable.

The roundtable was well-attended and included representation from private industry, economic development, government, national level consultants, PORTS-SSAB, DOE, SODI, and site contractors. The Energy Sector Roundtable revealed key insights regarding the most feasible energy industries to pursue including bio-chemicals (polymers, plastics, other); waste recycling/waste transformation (waste heat, municipal waste, anaerobic digestion, methane combustion, other); metals recycling; energy generation, energy storage and micro-grids; biofuels/bio-products; and coal alternatives (carbon capture and use, carbon capture and sequestration, clean coal, coal to liquids, RD&D, other) with an emphasis on

employing an 'E3 approach' of harmonizing utilization of environmental resources to develop energy and provide economic benefit to the region.

During the winter of 2014-2015, Mike Zimmer Esq., an attorney, international energy business development expert, and Ohio University Voinovich School and Russ College of Engineering and Technology Executive in Residence, authored an industry profile paper that discussed top energy sector industries viable for siting at PORTS. The paper can be viewed here:

# https://www.portsfuture.com/wp-content/uploads/2019/03/PORTSfuture-Energy-Sector-PORTS-Campus-White-Paper.pdf

In February of 2016, Dr. Benjamin Cross P.E., Principal of NuSynergy Energy LLC, Ohio University Voinovich School Executive in Residence and formerly Senior Advisor for the Clean Energy Directorate at the Savannah River National Laboratory, authored a white paper on establishing an Appalachian Regional Energy Cluster. This white paper provides an overview of business (industry) clusters and discusses why the establishment of an Appalachian Regional Energy Cluster is considered a prerequisite for enhancing the viability of locating an Integrated Energy System-Closed Loop Manufacturing (IES-CLM) complex at the US Department of Energy PORTS site. The white paper can be viewed here: <a href="https://www.ohio.edu/ce3/resources/upload/CE3-Appalachian-Regional-Energy-Cluster-White-Paper-Feb-2016-FINAL.pdf">https://www.ohio.edu/ce3/resources/upload/CE3-Appalachian-Regional-Energy-Cluster-White-Paper-Feb-2016-FINAL.pdf</a> These papers served to guide subsequent grant activities related to site repurposing.

#### 2016-2021

Site repurposing activities were informed by and built upon the previous efforts cited above. At the request of the local community reuse organization, the Southern Ohio Diversification Initiative (SODI), OU site repurposing activities were directed to focus on supporting the development of an Integrated Energy System/Closed Loop, advanced Manufacturing (IES-CLM) complex at PORTS and align with insights garnered throughout previous site repurposing grant work. An IES-CLM complex will attract and expand industries in the region, leverage coal and shale resources in additive manufacturing applications, create jobs, and grow the southern Ohio economy.

This strategy includes employing a multi-disciplinary cluster approach for regional development utilizing the PORTS campus as one element of a regional economic diversification strategy. This approach is employed based on the notion that clusters develop across a geographic area and businesses provide synergy across/among each other, which will enhance cluster growth. This cluster approach was consistent with stated public preferences for site reuse cited above. Additionally, during this time, southern and eastern Ohio had been tagged as potential areas in which to site billion-dollar petrochemical industries that are related to the shale boom in Ohio and western Pennsylvania. The PORTS site has the infrastructure capacity to serve as a major petrochemical (petchem) industry hub. Since that time, the plans for the facility in eastern Ohio that would launch a regional petrochemical industry were tabled and the PORTS reindustrialization efforts are focused on decarbonized and zero carbon energy production and sustainable manufacturing related to other industry sectors.

Another burgeoning industry across the nation and especially in Ohio relates to data centers which consume vast amounts of electricity. Again, the PORTS infrastructure and interconnection to the PJM national grid positions the PORTS site to be an ideal location for a central hub for electricity generation, transmission, and distribution for decades to come. The DOE PORTS site is widely viewed as a major regional asset that can greatly enhance efforts to develop several regional clusters in the areas of energy, advanced manufacturing, transportation/logistics, and power generation, transmission, and distribution and thus the site could be reindustrialized in these areas to enhance the economic viability of the region for many future generations of Ohioans.

Beginning January 2021, under the Biden Presidential Administration, national energy and economic development strategies abruptly shifted to focus on clean energy production and sustainable manufacturing which aligns perfectly with the Integrated Energy System-Closed Loop Manufacturing (IES-CLM) strategy for PORTS. This dramatic shift in national focus was instigated out of necessity to employ an 'all-hands-on-deck' approach to combatting the rapidly worsening climate crises by developing ways to reduce  $CO_2$  emissions in the areas of power generation, manufacturing, and transportation. Our site reindustrialization efforts expanded to include private sector developers to produce decarbonized energy inputs via development of clean hydrogen to power for electricity and blue hydrogen for manufacturing and transportation. We retain our partnership with a regional solar energy developer as well as with private companies who conducted a siting study to determine assets at the site that are aligned with attracting advanced nuclear small modular reactor projects in the future. With these core energy producer partners, we are remaining steadfast to our articulated vision of engaging in an 'all of the above' energy strategy in our IES-CLM development.

#### 2021-present

Collaborative site repurposing efforts between OU and SODI to launch an Integrated Energy System-Closed Loop Manufacturing complex have been branded as the "Ohio Valley Green Energy and Manufacturing (GEM)" initiative. Branding of the site reindustrialization efforts has enabled PORTS future and our partners to differentiate the future opportunities of the site for private sector companies from the ongoing federal cleanup mission. Core GEM partners include OU, SODI, Ohio organized labor steering committee of labor leaders in the state, Newpoint Gas LLC, Oklo, and other advanced nuclear reactor stakeholders. GEM also works closely with other energy producers and manufacturing interests. GEM has established a solid relationship with US DOE headquarters and maintains regular contact with senior advisors to the Secretary of Energy and with the Office of Environmental Management leaders to provide updates on progress and opportunities as appropriate.

GEM efforts continue to be widely socialized throughout the SODI 4-county footprint, throughout the Ohio Appalachia region, and at the state and federal levels. GEM continues to enjoy widespread support as we continue to engage with many types of stakeholders. One of the most impactful aspects of GEM is the ongoing involvement of Ohio organized labor leaders who serve as our labor steering committee. The steering committee meets regularly with the GEM team and the committee has been very active in engaging with industry prospects and with identifying labor-friendly private financing for GEM project developers. Additionally, this group continues to engage in robust advocacy for GEM with elected leaders at the state and federal levels and with US DOE headquarters. Our joint work with this committee has enabled GEM to establish strong bipartisan support at the federal level for the site reindustrialization vision and representatives from the offices of Ohio's US Senators Brown and Vance and Congressman Wenstrup regularly attend our meetings and events. Current core site reindustrialization partners are depicted below in figure 1.

# PORTS SITE REINDUSTRIALIZATION

#### Ohio Valley Green Energy and Manufacturing

A bipartisan, labor-aligned, functioning public-private partnership for an all-of-the-above energy strategy and sustainable manufacturing



Figure 1-Current core site reindustrialization partners

GEM continues to be active with various regional and national groups that have a nexus to GEM efforts including:

- Energy Communities Alliance (ECA)-Ohio University remains involved as a non-voting member with the Energy Communities Alliance to keep apprised of policy and priorities of this group. ECA serves to inform and advance the needs and requests of host communities and local governments that are adjacent to or affected by US DOE facilities.
- American Manufacturing Communities Collaborative (AMCC)-A group of leading manufacturing development organizations across the United States, AMCC's mission is to create and strengthen an alliance of communities with regional economic development initiatives underway. AMCC's work is dedicated to achieving sustainability through economic growth, improved environmental performance, and the creation of inclusive well-paid jobs to create new opportunities and equity within a revitalized American manufacturing base.
- BlueGreen Alliance (BGA) national and Ohio offices-The BlueGreen Alliance brings together labor unions and environmental organizations to address environmental challenges by developing commonsense solutions to create and maintain quality jobs to build a clean, thriving, and equitable economy. Key objectives of BGA include activities that will result in clean jobs, clean infrastructure, and fair trade. BGA works to facilitate conversations among environmentalists, union members, and other stakeholders, designs and informs public policies, and educates labor union members and environmentalists about the economic and environmental impacts of climate change and the job-creating opportunities that can be a part of deploying environmental protections. BGA also educates the public on these issues and advocates for practical solutions.
- Appalachian Energy Future (AEF)-An industry-led alliance designed to accelerate the transition to a clean energy future through the formation of public and private partnerships across borders and industry sectors in Ohio, Pennsylvania, and West Virginia. AEF strives to move toward a more sustainable energy future by employing innovative technologies for energy production that will provide high-quality jobs and strengthen our national prosperity.

- Ohio Manufacturers Association (OMA)-A member-supported, member-driven, and member-focused trade group that is comprised of manufactures in the State of Ohio who strive to protect and grow Ohio manufacturing. OMA provides services in the areas of legislative and regulatory policy advocacy, workforce support, energy, manufacturers' marketplace, and provides general information relevant to Ohio manufacturers.
- ReImagine Appalachia-A diverse consortium of stakeholders in the Ohio, Pennsylvania, and West Virginia geographic area that joined together to define and advocate for environmentally responsible economic development opportunities to advance economic prosperity for the region. Their blueprint was developed at the grassroots level and their advocacy has great impact at regional, state, and federal levels.

# **Site Reindustrialization Industry Partners**

#### Industry partner: Newpoint

The GEM initiative's primary industry partner planning a project rollout in the near-term is Newpoint Gas LLC. Newpoint has deemed their project the " $h_2$  Trillium Energy and Manufacturing ( $h_2$ TEAM) Complex" and will be developing a \$1.585B clean hydrogen fueled energy and manufacturing hub. The complex will be located on clean or remediated land DOE EM has already deeded to SODI with additional land needs submitted to SODI and, via parcel requests from SODI, to the US Department of Energy Office of Environmental Management Portsmouth/Paducah Project Office. The Newpoint launch will be privately financed and will pursue a loan guarantee via the DOE Federal Loan Program Office.

The project enjoys solid regional support and is an environmentally sustainable, labor-focused, clean power generation and manufacturing initiative operating in the "Heart of Appalachia." Newpoint repeatedly states that the development of the project is largely based on the successful 13 + year joint effort by Ohio University's Voinovich School of Leadership and Public Service PORTSfuture Program and the Southern Ohio Diversification Initiative (SODI) to establish this transformational reindustrialization and economic development strategy.

tH<sub>2</sub>Power supports the US goals to reduce carbon emissions, captures the Department of Energy Clean Hydrogen & Carbon Sequestration Incentives, creates long-term clean energy jobs in Central Appalachia, and intends to provide exceptional returns to its investors. Newpoint's project is focused on the production of decarbonized hydrogen utilizing natural gas as the feedstock. The decarbonized hydrogen will be used in the production of clean ammonia, and clean metallurgical grade silicon. These two commodities will be sold to offtake entities who utilize ammonia and silicon in their productions processes, thus enabling 'downstream decarbonization' to be realized.

Building on the region's extensive power distribution and transport infrastructure, h<sub>2</sub>TEAM supports the following low-carbon production processes:

- 500 MT/day Clean Hydrogen with Carbon Sequestration Power Generation and Ammonia Feedstock.
- 240 MW Clean Hydrogen-Fueled Power Generation Silicon Production and Power Sales to Grid.
- 350 MT/day Clean Ammonia Supporting the Production of Sustainable Fertilizer.
- 200 MT/day Clean Silicon Sustainable Feedstock in the Production of Aluminum, Steel, Solar Panels.
- Future expansion includes Hydrogen Storage, R&D of clean low-carbon fuel production processes, and low-grade-waste-heat-recovery for large-scale organic produce production.

Significant economic impacts and union job creation will result from this project. IMPLAN Analysis conducted by Ohio University estimates:

Construction Phase Economic Impact - \$346,711,099 and an estimated 1,900 union jobs. Long-Term Operations & Maintenance - \$198,818,583 per year and an estimated 237 ongoing jobs. Project points of interest:

- Core Project Team: Newpoint, Babcock & Wilcox, J.W. Didado, and CDM Smith.
- Parcel 1- 80 acres purchase process began September 2023 for \$1.6M.
- Parcel 3-~17 acres to be transferred and available for purchase estimated early 2024.
- Parcel 4- ~150 acres to be transferred and available for purchase estimated late 2024.
- Equity financing recruitment activities are in process.
- Due diligence activities and beginning the application for DOE Loan Guarantee is underway.

Newpoint is creating a holding company that will continue to amass resources for Newpoint and their partners to launch a multi-state decarbonized hydrogen and sustainable manufacturing effort with the central node being located on SODI parcels that were formerly part of the PORTS reservation. Newpoint has named the multi-state geographical area and concept "The Appalachian Triangle Hydrogen Hub (ATH<sub>2</sub>)". ATH<sub>2</sub> will contribute to identifying and evaluating sites with unique infrastructure that can be repurposed for future economic benefit such as decommissioned federal facilities and retired or operating energy production facilities in the area that could be potentially converted to decarbonized energy generation and sustainable manufacturing facilities. This will greatly increase economic security by attracting additional clean energy and manufacturer investment to expand new job creation and promote auxiliary business development in the heart of Appalachia. Another focus of this effort will be to advance research, demonstration, and deployment (RD&D) efforts for emerging technologies in partnership with private industry, universities, and/or national laboratories when possible. RD&D may explore the utilization of regionally produced coal, biomass, plastic, organic waste, and other suitable resources for recycling as a value-added feedstock in the production of clean energy and or sustainable manufacturing.

#### Industry partner: Oklo Inc.

Oklo is a company focused on advanced nuclear microreactor design technology to create compact fast reactors that can recycle, and use spent fuel (i.e. previously used nuclear fuel, also considered nuclear waste) from other nuclear reactors and spent fuel from their own reactors. Oklo reactors are smaller is size, less obtrusive in appearance, and profess to have exceptional safety profiles due to their design compared to other reactors currently operating. The company claims to have more than 750 MW of customer interest in signed memoranda of understanding and letters of intent. Oklo is actively evaluating 15 different sites for projects including the DOE former Gaseous Diffusion Plan in Pike County, Ohio. Oklo has successfully won four Department of Energy (DOE) competitive awards for fuel recycling totaling ~ \$17 million. Fuel diversification is an advantage enjoyed by Oklo in that it's advanced reactors can be configured to operate on transuranic-based or HALEU-based fuel. During 2020, Oklo was the first advanced reactor design firm to access recycled high-assay, low-enriched uranium (HALEU) fuel from Idaho National Laboratory for demonstration purposes. Commercializing the technology to recycle fuel has the potential to propel small modular reactor deployment as a source of zero carbon power in the United States by providing a reliable source of cost-competitive fuel to this industry while simultaneously providing a viable use for spent nuclear fuel.

Oklo has signed an MOU with SODI to explore the viability of installing two small modular nuclear reactors on former DOE land that has been deeded to SODI. Oklo is also pursuing a partnership with Centrus Energy on advanced nuclear fuel fabrication and advanced fuel recycling technologies centered at the Centrus facility which is collocated at the DOE former Gaseous Diffusion Plant in Pike County, Ohio. Oklo has yet to determine land needs and locations regarding which SODI land to use for siting Oklo reactors. Oklo intends to pursue power purchase agreements from data centers and other high-volume energy users and will explore repurposing deactivated coal fired power plants for conversion to nuclear small modular reactor technology for baseload power generation as part of their revenue stream strategy.

#### Industry partner: Battery storage

In July of 2023, one of the nation's leading developers in renewable energy projects and storage solutions approached GEM about exploring a large-scale renewable energy battery storage project on SODI parcels in Pike County, Ohio. The company deploys innovative approaches to craft power purchase agreements and financing for power projects in the United States. Currently the developer is exploring an option to purchase an initial 50 acres in the southern portion of SODI's parcel 2. The company has also articulated an interest in acquiring two additional 50-acres parcels as those become available from DOE and deeded to SODI. Access to the PJM grid interconnection adjacent to the site to disperse decarbonized energy on a wide scale is the most enticing reason for their interest in siting a project as part of the integrated energy system complex.

# PORTSfuture Leveraged Funds, Site Reindustrialization Metrics, and STEM Metrics for Budget Period 1

# Leveraged funds

As stated previously, our work is carried out through collaborative partnerships which enhances our effectiveness, value creation, and longevity. Whenever possible, PORTSfuture seeks to leverage additional dollars to expand the impact of our work.

# In Budget Period 1, PORTS future leveraged approximately \$221,876 in non-DOE Ohio University funding and \$63,877 in other non-DOE grant funding to support PORTS future efforts for a total leveraged funding value of \$285,753.

This includes securing:

- Voinovich School State of Ohio award for the Appalachian New Economy Partnership- \$163,876
- Voinovich School Research Incentive-\$58,000
- American Electric Power Fund of the Columbus Foundation-\$44,144
- Ohio STEM Learning Network-\$6,458
- Ohio Environmental Protection Agency Ohio Environmental Education Fund-\$1,860
- Sugar Bush Foundation-\$5,350
- National Science Foundation-\$4,625
- US Environmental Protection Agency-\$725
- Habitat for Ohio-\$725

#### Site reindustrialization metrics

Significant strides in site reindustrialization occurred during Budget Period 1. The decarbonized hydrogen project raised the necessary capital from many private equity investors to begin the purchase of their first parcel of land from SODI. That project is currently performing due diligence activities needed to develop their DOE Loan Program Office loan guarantee application. SODI and the PORTSfuture Program established partnerships with two additional energy sector developers to join the reindustrialization effort including one developer of advanced small modular nuclear reactors and one developer in renewable energy battery storage, both of which move this effort toward achieving the goal of establishing an the 'all of the above' integrated energy and sustainable manufacturing complex at the former PORTS site. Stakeholder engagement meetings to share information on site reindustrialization efforts, update on progress, seek information or input, and/or explore synergies and potential collaborations and partnerships expanded greatly during Budget Period 1 with over 100 such meetings held, and two DOE Open Houses attended with a wide range of stakeholders include legislators, environmental groups, developers, business and industry, governmental entities, and others. Three webinars were held with a total of 450 registrants. Seven press releases were picked up by media in the state and the PORTS future website had 147,587 page views. The Ohio organized labor steering committee expanded their role in supporting site reindustrialization efforts in the areas of advocating for the project at the regional, state, and federal levels. PORTSfuture

remained active in a variety of regional, state, and national collaborations that are relevant to our work and PORTS future provided a very wide range of tools and technical assistance described throughout this report for SODI and other site reindustrialization stakeholders.

#### STEM metrics

PORTSfuture STEM engagements described in this report yielded contacts with 1,564 youth in the fourcounty area of Pike, Scioto, Ross, and Jackson counties to engage these youths in a variety of hands-on STEM learning activities. Additionally, our Summer STEM Days Public Library Partnership focused on demonstrating Ohio University's My Backyard Stream kits in each county. These events yielded contact with 83 students, family members, and/or adults interested in learning about the My Backyard Stream kits that have been made available to one public library in each county. The Appalachian STEM Enrichment Academy (ASEA) developed seven new lessons and the ASEA website received 29,486 page views during Budget Period 1, further expanding our STEM engagement with youth, educators, parents, and caregivers.

#### **Ohio University Students Involvement in Budget Period 1**

During Budget Period 1, 38 Ohio University undergraduate, graduate, and honors tutorial students from a wide variety of majors including Interior Architecture, Urban Design, and Sustainability; Environmental Geology; Environmental Studies; Fine Arts-Film; Computer Science; Environmental Biology; Mechanical Engineering; and the College of Health Sciences and Professions were involved in supporting the work of the PORTSfuture Program.

#### **Program Accolades and Recognition During Budget Period 1**

- PORTSfuture was the recipient of a National Association of Development Organizations (NADO) infrastructure award for our site reindustrialization activities.
- PORTSfuture Program site reindustrialization activities and the leadership of Stephanie Howe was
  featured in Ohio University's spring edition of the alumni magazine called "Ohio Today". This
  magazine has wide-reaching impact to explain and promote site reindustrialization as it is distributed
  to all Ohio University alumni via email and hard copy magazines.

# **Site Repurposing Activities-Budget Period 1**

OU site repurposing activities include collaborating with SODI and other stakeholders in the areas of master planning, site readiness and property transfer activities; data analysis; GIS; industry discovery, support, and networking; collaborations/partnership building; stakeholder engagement, project resource acquisition for SODI; and developing linkages to applicable Ohio University researchers and tech commercialization entities. Ongoing Technical Assistance, Public Outreach, Education, and Engagement for Property Transfer and Future Use activities include developing property request guidelines (as requested); a property transfer plan; a phased-implementation schedule; providing reindustrialization planning and progress updates, information gathering and sharing through meetings and webinars, and STEM educational activities for regional youth in the four-county region.

These activities support the diversification of the regional economy by imagining possibilities beyond the immediate and existing economic realities in southern Ohio to identify what is needed to best prepare the PORTS site to attract 21<sup>st</sup> century industries with enduring missions. This will provide residents in the region access to new job prospects, enhanced wages, and an overall improved quality of life. Site reindustrialization will spur regional cluster and supply chain-related growth throughout the impacted counties, further advancing economic healing by growing both large and small business opportunities in southern Ohio and beyond. OU Budget Period 1 activities are depicted in Figure 2 below.



# Figure 2-OU Budget Period 1 activities Integrated Energy System-Closed Loop Manufacturing (IES-CLM) complex

As previously stated, the Southern Ohio Diversification Initiative is pursuing the development of an Integrated Energy System-Closed Loop Manufacturing (IES-CLM) complex at PORTS to leverage the unique infrastructure and other assets of the site to their optimal value for new economic growth opportunities.

The technical definition of an IES is two or more energy resources utilized as inputs to two or more physically coupled subsystems to produce one or more energy commodities as outputs. A simpler definition is multiple energy resources combined to produce one or more energy related products. An IES embodies a synergistic integration of an "all-of-the-above" energy strategy.

The key aspects of an IES-CLM are collocating, combining, interconnecting and/or networking of energy producers and energy users and utilizing waste outputs from one industrial process as an input or feedstock into a different industrial process. In an IES-CLM, the "whole" is worth more than the "sum of the parts", value is the driver, and desired value propositions such as high efficiency, high reliability, low emissions, low/acceptable production costs, and creation of more permanent, higher quality jobs are achieved. An IES-CLM results in industrial symbiosis as depicted in Figure 3 below.





IES-CLM complexes integrate high temperature heat with industrial technologies to produce electricity for use by manufacturers, data centers, and residential consumers; supply predictable, low-cost energy for industry and for the national grid; power industrial processes such as carbon conversion (e.g., <u>coal</u> to liquids) and chemical production; and produce decarbonized hydrogen for transportation fuels, polymers, plastics, fertilizer, and the hydrogen fuel cell market to name a few. Creating an IES-CLM at the PORTS facility will serve and expand existing markets; create new markets; establish new applications for value-added manufacturing with the region's coal and natural gas assets; utilize hydrogen across components of the IES-CLM; develop flexible processes to accommodate market shifts; and utilize residual heat to drive low temperature processes such as water purification (e.g., distillation, osmosis) and enzymatic processes (e.g., fermentation, anaerobic digestion).

The Piketon IES-CLM Project is being developed along these time frames:

- Near-term (1 to 4 years)-Deployment of current technologies that are scalable and investable now to build a process plant that produces decarbonized hydrogen to produce clean ammonia and clean silicon needed by industries to meet their market goals while adhering to regulatory requirements.
- Mid-term (4 to 15 years)-Transition and prepare for the potential addition of advanced small modular nuclear reactors and other energy sources, renewable energy battery storage, and process plants to accommodate changing economic and regulatory environments.
- Long-term (15+ years)-Integration and optimization of energy sources and industrial processes and continued recruitment of industries to accommodate changing economic and regulatory environments.

A graphical depiction of the Integrated Energy System-Closed Loop Manufacturing concept is depicted in Figure 4 below. To view the IES-CLM complex technical concept diagrams, see Appendix 1.



Regional cluster development will occur with the growth of natural spin-offs from the core IES-CLM complex at the former PORTS facility as various industries can realize more effective production costs when collocated within an IES-CLM. Industries that are high hazard, high security, high investment, and/or require extremely high temperature process heat can be located within the secure area of the IES-CLM complex. Other industries can tie into the IES-CLM complex to access heat, electricity, hydrogen, and other production outputs via transportation networks (e.g., roads, rail, and pipelines). A depiction of the potential for regional cluster development with an IES-CLM complex follows in Figure 5 below.



Figure 5-Potential for regional cluster development with an IES-CLM complex

Reindustrialization of the PORTS site into an IES-CLM complex would serve as an excellent example of converting a national liability to a national asset, resulting in much-needed regional economic development. This effort is an extraordinary opportunity to demonstrate what can and should be done with former DOE Defense Nuclear Sites or other brownfield sites. The IES-CLM complex will provide enduring and non-exportable jobs focused on optimizing efficiency of energy production and energy utilization in a sustainable and environmentally responsible manner. Sustainability, recycling and the efficient use of the region's natural attributes/resources and its man-made industrial infrastructure are key drivers. Repurposing of coal assets as a chemical feedstock to make new and innovative products is an excellent opportunity for economic development. Using coal and shale assets in additive manufacturing and diversifying the regional economy will revitalize the region.

Citizens will have access to an increased number of high-quality, higher-than-average paying jobs. Economic impact analyses and workforce analyses of prospective future jobs have been and continue to be conducted by faculty at Ohio University. The region's entire economy will benefit from the site reindustrialization in the form of direct economic impacts (i.e., worker wages), indirect economic impacts (i.e., commerce and business revenue), and induced economic impacts (i.e., purchasing of goods and services in local communities that will generate business and job expansion and enhance state and local tax revenue). It is impossible to overstate the impact that site reindustrialization will have on the region's economy as there have been no large-scale industry start-ups or expansions to replace the DOE former plant operations in this part of southern Ohio. A multitude of IES-CLM complex benefits are shown below in Figure 6-IES-CLM Impact.



Figure 6-IES-CLM impact

OU grant activities support SODI's ongoing collaboration with a nuclear industry collaborative that conducted a siting study funded by the DOE Office of Nuclear Energy. This study is applicable to any site that may be considered by an advanced small modular nuclear reactor vendor. SODI is seeking to identify and pilot versatile, next generation advanced small modular nuclear reactor technologies at the PORTS site. The next generation nuclear reactors could serve as the long-term source of high temperature heat to power aspects of the IES-CLM complex at PORTS and could serve as a vital source of zero carbon power for high-volume users of electricity as well as serving the national electric grid. This new technology would be attractive to energy-intensive heat and power-using industrial end-users who are seeking zero carbon, environmentally friendly energy sources in their production processes. Key concerns that must be addressed include mitigating the significant up-front cost to construct the reactors and resolving regulatory issues associated with the design and federal licensing of these technologies. SODI and the industry collaborative plan to continue to work closely with the government, the US Department of Energy, and others with the goal of effectively maintaining this partnership.

# Summary of Budget Period 1 Activities for Site Repurposing Continuation and Ongoing Technical Assistance, Public Outreach, Education, and Engagement for Property Transfer and Future Use

Some activities from Budget Period 1 will carry into the next grant cycle as ongoing grant activities. Brief narratives for each activity-area displayed follow the graphic below.



# Site readiness for reindustrialization

The Southern Ohio Diversification Initiative (SODI) continues their focus on asset recovery operations by dedicating staff resources to that effort. Asset recovery involves SODI working with DOE and site cleanup contractors to identify, retrieve, recycle and/or sell personal property assets that are located at the PORTS site. By expanding asset recovery efforts, SODI will reduce landfill waste and increase revenue streams for regional economic development. Asset recovery proceeds are used by SODI for economic diversification initiatives in Pike, Ross, Scioto, and Jackson counties. These four counties served as the primary labor market for the PORTS site when it operated as a US DOE gaseous diffusion facility. The asset recovery proceeds are also used to accelerate the PORTS site reindustrialization efforts including working with Ohio University's PORTSfuture Program. DOE EM funding appropriated to the site by Congress is dedicated to cleanup activities including funding for the DUF6 facility. DUF6 is a coproduct that resulted from the gaseous diffusion processes that occurred when the DOE gaseous diffusion plant was operating in Ohio as well as at DOE sites in Paducah, Kentucky and in Oak Ridge, Tennessee. The mission of the DUF6 program is to convert this stored DUF6 into depleted uranium oxide which is a more stable chemical form that can be reused, stored, or more safely disposed. A coproduct of the conversion process is hydrofluoric acid (HF), which can be reused in industrial processes which provides a valuable 'upcycling' component to the DUF6 program.

Site readiness activities for site reindustrialization focus on preparing parcels to be made available for reindustrialization. This includes identifying industry types that would be a good fit for the available parcels; ensuring that the site can meet those industries' minimum siting criteria; analyzing the utility infrastructure in relation to industry attraction and determining minimum standards; identifying weaknesses and proposing funding sources to strengthen utility infrastructure; ensuring basic geological, environmental, and other related site characterization studies are completed or identify gaps and studies that need to be completed to prepare the site for redevelopment; improving and maintaining the SODI website; and assembling this information so that SODI can respond to and alleviate concerns of prospective companies which will be crucial to attracting industries. SODI formally received the first 80-

acre land parcel transfer at a ceremony held in July of 2018. An additional parcel of approximately 226 acres was deeded to SODI in January of 2023. Future parcel transfers are currently being processed by DOE which will greatly expand the land transferred footprint. The goal is to transfer these additional parcels during calendar year 2024, thus SODI needs to accelerate site reindustrialization preparedness to quickly attract industries and/or provide the requested land to current developers described previously in this report so that job creation can be realized for the region.

# Data and GIS

As stated earlier, the purpose of the site reindustrialization and outreach activities summarized in this report is to serve the DOE EM cleanup mission including informing property transfer for future site reindustrialization. By expanding data utilization with site stakeholders at PORTS and in the region to enhance information-based decision making when determining viable future-use options for the site and site assets, the potential for cost savings/cost avoidance is enhanced as DOE cleanup efforts continue.

Data and GIS created under previous grant activities are maintained and new and/or updated data and GIS products are developed as needed under the current grant. PORTSfuture data activities are summarized in Figure 7 and described below.





# Industry IMPLAN economic impact analysis and workforce analysis

In previous grant years, Ohio University conducted analyses on the direct, indirect, and induced economic impact and related workforce analysis on the four-county labor market closest to the facility (Pike, Scioto, Jackson, and Ross counties) of potential additive manufacturing industries (tier 2 industries) related to an IES. Additional analyses on other potential site reindustrialization options will be added to findings of previous grant years as appropriate. Budget Period 1 deliverables follow below.

# Newpoint Gas development related to Integrated Energy System Closed Loop Manufacturing (IES-CLM) economic impact analysis

OU finalized the analysis of the direct, indirect, and induced economic impacts on the regional labor market for our anchor industry partner's, Newpoint Gas LLC, planned decarbonized hydrogen energy production and sustainable manufacturing project. This analysis had been conducted in the year before Budget Period 1 and a few modifications were made during Budget Period 1 thus changing the final date of completion to October 2022.

The economic impact analysis report will inform site reindustrialization, local economic development planning efforts and workforce development strategies. This information can be used to seek support and/or resources from industry, investors, government, and the community in support of the development of this initial project that will launch the IES-CLM complex. Deliverables include a summary document that can stand alone or be compiled as part of a larger summary document. This analysis is available at: <a href="https://www.portsfuture.com/wp-content/uploads/2022/07/Decarbonized-Hydrogen-Project-IMPLAN-and-Workforce-Analysis.pdf">https://www.portsfuture.com/wp-content/uploads/2022/07/Decarbonized-Hydrogen-Project-IMPLAN-and-Workforce-Analysis.pdf</a>

Draft electronic version of report in PDF format-June 2022 Final electronic version of report in PDF format-completed October 2022

#### DOE Office of Nuclear Energy (NE) siting study for advanced reactor stakeholders

OU provided data and GIS products and services to the NE Siting Study carried out by SODI and their advanced reactor partners. This group developed generic design support for advanced reactor companies in the form of a Site Reuse Deployment Guidance document. The PORTS site is being used as the case study to develop guidance for an early site permit. The project focused on identifying, characterizing, and licensing sites for near-term deployment of advanced reactor demonstrations and first-commercial units. The Site Reuse Deployment Guidance document evaluates benefits and potential obstacles of repurposing an existing nuclear facility undergoing decommissioning for siting and construction of an advanced reactor project.

This group built upon earlier projects and products from the initial US public-private efforts on new plant licensing. The study documents insights for decontamination and decommissioning technologies in relation to cleanup for intended future use of DOE facilities. The group has stressed that this effort is not intended to supersede nor evade other formal decision processes related to identifying future uses of the PORTS site. The project merely serves to use the PORTS site as an example for explicating the revised requisite advanced reactor permitting and licensing documentation. The study developed a Plant Parameter Envelope (PPE) for use at the DOE PORTS site for advanced reactors and will also quantify potential savings to DOE's Office of Environmental Management if the PORTS site is repurposed for an advanced reactor project.

Draft electronic version of report and products in PDF format-June 2022

Final electronic version of report and products in PDF format-will be completed upon NE Siting Study group review and comment.

# Data on Ohio geology

OU is maintaining comprehensive data from the Ohio Department of Natural Resources and other sources on geology and related information that will be needed by private developers. A password protected web page was created on the portsfuture.com website so that data can be reviewed as needed by external parties upon request.

#### PORTS site master plan

OU collaborated with SODI to produce a site master plan that fully explicates SODI's mission, vision, assumptions, guiding principles, goals, values, objectives, challenges, benefits, and strategy for launching the IES-CLM complex at PORTS.

Draft electronic version of report in PDF format-August 2022

Final electronic version of report in PDF format-to be determined by SODI after SODI Board approval

#### PORTS land use plan

OU collaborated with SODI to produce a site land use plan that describes SODI's site reindustrialization purpose, assumptions, current land use, leases, transfers and other land use actions, future land use plans, land use issues, planning and control for existing missions, and process for future land use changes. Draft electronic version of report in PDF format-August 2022

Final electronic version of report in PDF format-to be determined by SODI after SODI Board approval

#### PORTS reindustrialization concept map

OU is maintaining, expanding, and modifying as requested the interactive site map that displays various layers including site infrastructure, easements, broadband points of presence, topography, limitations, parcel transfers, and other information to be used in site planning efforts. This is an interactive GIS database creating a land use and site master planning tool that enables the user to display various layers such as site infrastructure assets, wetlands, landfills, and other features in relation to developable parcels. This GIS tool will assist in assessing suitability to industry siting criteria and with other activities related to planning for reindustrialization. During Budget Period 1, OU updated this map in response to SODI requests. This interactive GIS database can be viewed at:

https://ohiou.maps.arcgis.com/apps/webappviewer/index.html?id=fe14a57f8ccb48d4875cbfbeb17e0271

# Utility matrix and permit inventory

OU developed a utility matrix and permit inventory in a previous DOE grant year. The utility matrix provides an at-a-glance view of utilities' current capacity, current usage, excess capacity, and other notes of importance for industries looking to site operations at PORTS. OU created an index/matrix of infrastructure requirements for targeted industries (e.g., water, gas, electric, security, other) that could serve to identify assets to preserve rather than demolish, resulting in potential for DOE cost avoidance in this effort. The utility matrix will provide useful data points on investments an industrial tenant might need to consider regarding making use of an asset that might otherwise be disposed. The utility matrix will continue to be updated based on targeted industry needs and is available upon request and at the discretion of SODI. This matrix is being maintained to support SODI's reindustrialization efforts.

# SODI resource manual implementation

In a previous grant year, Ohio University provided ~\$50,000 in non-DOE funds toward a collaboration among OU, private sector consultants, and SODI to create a comprehensive site reindustrialization resource manual. The manual is for use by SODI and other regional and state economic development entities working on the reindustrialization of the PORTS site consistent with the IES-CLM concept. Throughout Budget Period 1, OU continued discussing with SODI the implementation of recommendations in the manual. OU will continue to work with SODI as requested on carrying out recommendations in the manual in future grant years. Requests to review the manual can be directed to SODI.

#### Asset map

OU is maintaining, expanding, and modifying as requested the existing regional asset map. This map visually displays relevant regional assets useful for future site use decision-making such as highways,

hazmat routes, rail, airports, navigable waterways, accredited education institutions, metro centers, population that can be reached within various drive times from the site, potential industry offtake customers, supply chain vendors, and many other data points. During Budget Period 1, the asset map was updated to include new layers that became available and to add layers requested by our anchor private industry partner related to potential offtake customers. This map can be viewed at: http://ohiou.maps.arcgis.com/apps/webappviewer/index.html?id=e5e8bf0c28464fa9b558cd6064afce98

OU PORTS future data reports from previous grant years that continue to support site repurposing effort include:

Habitat Mapping of the Land and Vicinity of the United State Department of Energy (DOE) Portsmouth Gaseous Diffusion Plant (PORTS) Pike County, Ohio. Under this 2-year task, OU compiled a fully georeferenced database from DOE, State of Ohio, and public sources; completed a data gap analysis of the georeferenced data; and created a detailed land cover map of the PORTS site, including a 1-mile buffer around the site. Report and land cover map available at: <u>https://www.portsfuture.com/habitat-and-land-use-plan/</u>

Wetland and Primary Headwater Streams Mitigation Conceptual Design Plan. The task resulted in the preparation of a mitigation conceptual design plan, including a wetland mitigation bank proposal, which could be used by PORTS to compensate for potential unavoidable losses to waters of the United States (Clean Water Act Section 404 jurisdictional wetlands and headwater streams as regulated by Ohio EPA). This task applied to only the approximately 3,000 acres of federally owned lands outside of the central high security zone and to such other proximate lands that may be identified as potential locations for headwater stream mitigation. Wetland mitigation analysis and planning was limited to federal lands outside the central high security area. Report available at: https://www.portsfuture.com/habitat-and-land-use-plan/

# SODI public information and website redesign launch

During Budget Period 1, planning began for a public information campaign and website re-launch for the redesigned SODI website. The goal of these activities is to develop a positive and informative narrative about site reindustrialization activities. Ohio University has hired strategic consultants to assist in this effort. Funding for the consultants is coming solely from non-DOE resources at Ohio University. OU finished the redesign of the SODI website in a previous grant year in collaboration with SODI and an outside vendor. That effort designed and built a website for SODI that is easy to navigate and provides useful information to target audiences. Audiences for the website include industry prospects, businesses, nonprofits, economic development professionals, and general inquiries.

Throughout Budget Period 1, OU continued to maintain the SODI website and assist with updates, software licensing and other technical assistance. The website can be viewed at: http://www.sodidevelopment.org/

SODI public information campaign and website launch dates will be determined by SODI.

#### SODI operational and project funding

An on-going activity in Budget Period 1 in partnership with SODI was pursuing sources of funding for SODI operations and assisting SODI with their financial plan. A financial plan needs to be deployed to increase SODI's capacity to obtain the resources necessary to transform PORTS into an Integrated Energy Systems-Closed Loop Manufacturing (IES-CLM) complex and to pursue complementary missions. In the near-term, economic development funding is needed to establish a project development team with a full-time person to lead and coordinate the rollout of a master plan and subsequent execution and implementation plans, including a more formal financial plan. These plans must strive to be in harmony with State of Ohio and regional economic development strategies and efforts to the maximum extent

possible. Additionally, funding is needed for site readiness activities and analyses, identifying potential project opportunities, and other activities to expand PORTS reindustrialization. In summary, the initial economic development funds are to be used for:

- Expansion of asset recovery efforts.
- Compensation for a project development team, project manager, and professional support staff.
- Execution of a master plan for transforming PORTS.
- Execution of implementation plans.

During Budget Period 1, Ohio University has provided support to SODI's financial plan and project funding in the following ways:

- PORTSfuture tracks and summarizes available sources of new state and federal initiatives related to infrastructure improvements, industrial park improvements, and other related programs for which SODI may qualify. PORTSfuture also assists SODI as requested in pursuing these opportunities.
- PORTSfuture continues to advise SODI on public-private partnerships aligned with SODI's work. Ohio University offers to support SODI in pursuing such partnerships as part of the previously mentioned SODI financial plan.
- PORTS future tracks Congressional legislative updates on proposed Congressional bills that can impact PORTS reindustrialization efforts and the surrounding Appalachian region and periodically reviews these with SODI.

During Budget Period 1, OU wrote, submitted, and/or followed up on these funding applications to acquire resources for ongoing SODI operations and to support the overall GEM initiative:

- DOE EM1 non-competitive funding request for \$15M for SODI operational and site reindustrialization support-Submitted October 2021and acknowledge by DOE EM-1, Ike White, in December of 2021 with an expressed interest by Ike White to consider funding for specific projects.
  - Funding award from DOE EM to SODI is pending SODI identification of collaborative projects at the PORTS site. Projects need to be identified collaboratively by PPPO and SODI.
- Request to US Senator Sherrod Brown for community project earmark \$500K for SODI support-Submitted June 2021
  - This request was awarded in May 2022 and SODI receipt of funds is pending SODI completing necessary paperwork.
- Second request to US Senator Sherrod Brown for community project earmark \$4.29M for SODI support submitted April 2022.
  - During Budget Period 1 we were informed that this request was not advanced by Senator Brown's office since the previous earmark for \$500K is still pending SODI action.
- OU and SODI had discussions with the Local Development District in the SODI region to seek funding from the Ohio Governor's Office of Appalachia (GOA) \$500M Appalachia Investment Program. OU will assist SODI in the coming Budget Period 2 to seek funds to support site reindustrialization efforts.

# Coalition building for advancing site repurposing efforts

OU continues extensive activities in stakeholder engagement on behalf of, and at times with, our core site reindustrialization partners. These activities are crucial for coalition building at the regional, state, and national levels to advance site repurposing activities. Coalition building efforts have focused on:

- Meetings with key stakeholders/funders/influencers.
- Meetings with federal elected officials.

- Meeting with Biden Administration officials including US DOE officials.
- Ongoing contact with the Pike County Council of Governments.
- Facilitating an organized labor steering committee to assist with coalition building.
- Developing press releases, public information, and messaging materials.
- Other efforts to be determined moving forward.

# Labor engagement in support of site reindustrialization

OU has retained a nationally prominent firm, Remington Road Group (RRG), to work with OU, SODI, and GEM partners on coalition building with organized labor at the regional, state, and national levels to advance site repurposing activities. Ohio University has approved the use of their State of Ohio Appalachian New Economy Partnership funds to cover this vendor's costs. RRG has developed this partnership with organized labor that has been foundational to re-industrialization work at PORTS. Unions are respected messengers in Ohio by both community members and business and governmental leaders. The state's citizens trust unions to advocate for the rights of working people and to help create well-paying, endurable jobs. To formalize our efforts and to create continuity, under the leadership of RRG, we formed The Ohio Valley Green Energy and Manufacturing (GEM) Labor Steering Committee. The Committee includes the leadership of the Ohio American Federation of Labor and Congress of Industrial Organizations (AFL-CIO), Ohio State Building and Construction Trades Council, Tri-State Building Trades, and international and local leaders of the International Brotherhood of Electrical Workers (IBEW) and the Plumbers and Pipefitters unions. The Labor Steering Committee supports the PORTSfuture Program goals by actively engaging with industry partners and other stakeholders to provide advice and guidance, advocacy, sharing workforce expertise, and ensuring a ready workforce with the tailored skills and expertise necessary to advance GEM projects.

The Labor Steering Committee meets monthly with SODI and OU to stay informed about site reindustrialization progress and to provide input and guidance to other stakeholders. The Committee engages with the private and public partners about the site's new and ongoing developments and to share insight into workforce issues. Industry partners, such as Newpoint and Oklo, have been invited early in their project development processes to join in Labor Steering Committee meetings to share their plans and to build relationships that will help their projects move forward more effectively. This effort has been key to Newpoint signing an MOU with the Tri-State Building Trades committing Newpoint to a Project Labor Agreement (PLA) when construction work begins, and with the United Steelworkers (USW) union committing to Voluntary Recognition once operational work begins.

Congressional partners are invited often to attend meetings on significant topics where they would benefit from the information, or which may ultimately lead to a congressional request. For example, we invited congressional offices to sessions with industry partners to discuss project benchmarks prior to issuing press releases publicly. We have also invited them to discussions about federal programs that industry partners may be interested in pursuing such as Hydrogen Hubs and Tech Hubs. In the past, we have invited the offices of Senators Portman, Brown, and Vance and Representatives Wenstrup, Ryan and Kaptur. After the election of Senator Vance, we invited his State Director to a special briefing by labor and other partners on the potential of reindustrialization at PORTS. The offices of Senators Brown and Vance and Congressmen Wenstrup remain actively engaged in the Labor Steering Committee and with GEM partners.

Seminal work that has been facilitated through the Labor Steering Committee includes:

- Setting up and participating in numerous meetings between labor-friendly investment funds and Newpoint to secure financing for the PORTS hydrogen project.
- Joining in meetings with the DOE Loan Program Office and Newpoint in Washington D.C.

- Participating in congressional meetings with Newpoint on Capitol Hill.
- Collaborating in providing information on union members' skills and training capabilities for nuclear industry recruitment.
- Participating in meetings with local government leaders about reindustrialization.
- Providing support for our earned media efforts through interviews and quotes in press releases.
- Providing input that has helped in drafting grant requests.
- Providing letters of support for grant applications made by SODI and our industry partners.
- Showing support by attending public meetings on reindustrialization efforts.
- Co-hosting and participating in webinars produced through the PORTS future Program work.

# Labor Steering Committee Membership

- Ohio AFL-CIO-Tim Burga, President, Matt Smith, Legislative Director, Mike French, Regional Representative
  - Represents more than 600,000 union men and women in the State of Ohio who are affiliated with the Ohio AFL-CIO through 41 international unions and 1,500 local unions. It represents both the building trades and industrial unions like the USW.
  - Ohio State Building and Construction Trades Council, Mike Knisley, Secretary
    - Represents more than 100,000 trades women and men in Ohio and are affiliated with AFL-CIO. Provides leadership through direction and cooperation from 14 regional councils.
- Tri-State Building and Construction Trades Council-John Holbrook, Business Manager
  - 50 local affiliated construction unions representing thousands of union members in 33 counties in three states including Kentucky, Ohio, and West Virginia. Their Ohio jurisdiction covers 10 counties closest to the PORTS facility.
- International Brotherhood of Electrical Workers (IBEW)-Steve Crum, International Representative of the IBEW, Dan Shirey, Business Manager, IBEW Local 575, IBEW International Executive Board Member
  - Represents thousands of active members and retirees who work in a wide variety of fields, including utilities, construction, telecommunications, broadcasting, manufacturing, railroads, and government. They offer highly regarded union training programs, which allows them to provide union signatory electrical contractors with the very best workforce available.
- United Association of Plumbers and Pipefitters- Kenny Ruggles, International Representative, Bobby Cole, Business Manager, UA Local 577
  - Represents approximately 9,000 Plumbers, Pipefitters, Sprinkler Fitters, HVACR Service Technicians, Welders and Pipeliners working in the construction industry throughout Ohio.

Labor Leaders Steering Committee\_meetings that occurred between October 1, 2022-September 30, 2023, include the following:

# 2022

 December 15-Union leaders labor steering committee meeting with Amy Peterson, DOE Loan Program Office.

# 2023

- January 19- Union leaders labor steering committee meeting.
- March 16-Union leaders labor steering committee meeting with Bryan Gray, State Director, Senator J.D. Vance.
- May 18-Union leaders labor steering committee meeting with Newpoint and representation from US Senator Vance's Office and Congressman Wenstrup's Office attending.

- July 20-Union leaders labor steering committee meeting with Oklo and representation from US Senator Vance's Office and Congressman Wenstrup's Office attending.
- August 17- Union leaders labor steering committee meeting with Newpoint.

# Stakeholder engagement meetings for site reindustrialization

These meetings occur with a wide range of stakeholders to share information on site reindustrialization efforts, update on progress, seek information or input, and/or explore synergies and potential collaborations and partnerships. Meetings that occurred in Budget Period 1 are listed below.

# 2022

- October 3-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- October 4- Mark Denton, Senior Project Manager, Orano Federal Services LLC
- October 11- Dr. Charles Forsberg, MIT Energy Initiative
- October 13-DOE Loan Program Office
- October 13-Hecate Energy
- October 17-Hecate Energy
- October 17-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- October 18-Scott Sklar, George Washington University and Frostburg State University
- October 19-Amanda Woodrum, Reimagine Appalachia
- October 19-Lee Geisse and Suzanne Caflisch, Blue Green Alliance and Sam Sawmiller, Natural Resources Defense Council
- October 25-Southern Ohio Diversification Initiative (SODI) Board and Newpoint
- October 25-Jennifer Garrison, Appalachian Regional Commission Policy Advisor
- October 26- Dr. Charles Forsberg, MIT Energy Initiative
- October 31-Amanda Woodrum, Reimagine Appalachia
- November 2-Dr. Kimberly Samaha, Born Global LLC
- November 3- Amanda Woodrum, Reimagine Appalachia
- November 17-Dr. Kimberly Samaha, Born Global LLC
- November 22-Ohio EPA and Ike White, EM1, US Department of Energy
- November 23-Dr. Joel Yudken, Highroad Strategies
- December 1-Amanda Woodrum, Reimagine Appalachia
- December 6-Amanda Woodrum, Reimagine Appalachia
- December 6-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- December 14- Dana Kuhnline, Reimagine Appalachia
- December 19-William Loveless, Columbia University Energy Policy Center
- December 20-Mark Riedy, Esq, counsel to Commercial Aviation Alternative Fuel Initiative (CAAFI)

# 2023

- January 3-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- January 5-Jeff Dimick, CEO, TCG Global and Darlene Sherrod, VP Technology TCG Global
- January 5-Dr. Joel Yudken, Highroad Strategies
- January 10-Amanda Woodrum, Reimagine Appalachia
- January 11-Shirley Bandy, President, Pike County Chamber of Commerce
- January 11-John Hemmings. Executive Director, Ohio Valley Regional Development Commission
- January 19-Lee Geisse and Suzanne Caflisch, Blue Green Alliance, David Levine, American Sustainable Business Network, and Remington Road Group

- January 24-Ryan Augsburger, President, Ohio Manufacturers Association
- January 26-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- January 30-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- January 26-Amanda Woodrum, Reimagine Appalachia
- January 28-Michael Burr, Executive Director, Microgrid Institute
- January 30-Ryan Augsburger, President, Ohio Manufacturers Association
- February 7-Lee Geisse, Katie Harris, and Abby Harvey, Blue Green Alliance, and Remington Road Group
- February 20-June Ring, Business Developer, UberData Networks
- February 20-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- March 20-Nick Connell, Interim Executive Director, Green Hydrogen Coalition (GHC)
- March 28-Suzanne Caflisch, Lee Geisse, Dan Taylor, Blue Green Alliance, and Remington Road Group
- April 3-Steve Hellem and Martin Chillicothe, Navista Group
- April 4-Mark J. Riedy, Partner, Kilpatrick Townsend
- April 5-Eli Flournoy, Executive Director, Sugarbush Valley Impact Investments and Remington Road Group
- April 6-Amanda Woodrum, Reimagine Appalachia
- April 11-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- April 19-Ryan Augsburger, President, Ohio Manufacturers Association
- April 20-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- April 20-Amanda Woodrum, Reimagine Appalachia
- April 21-Ed Wanamaker, Director of Business Development, BWXT Conversion Services
- April 28-Ryan Augsburger, President, Ohio Manufacturers Association
- May 10-Jeff Dimick, CEO, TCG Global and Darlene Sherrod, VP Technology TCG Global
- May 10-Mark Denton, Senior Project Manager, Orano Federal Services LLC
- May 11-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- May 15-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- May 18-Amanda Woodrum, Reimagine Appalachia
- May 18-Ryan Augsburger, President, Ohio Manufacturers Association
- May 31-Ben Lachman, Expert in Residence, BRITE Labs
- June 2-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company, Alan Davis, President/CEO, Bob Clayton, Chief Growth Officer, David Smart, Account Manager and Sourcing Specialist, Connex Marketplace
- June 8-Andrew Sowder, Senior Technical Executive, Advanced Nuclear Technology, Electric Power Research Institute (EPRI) and Diana Grandas, Engineer/Scientist III, Transformative Nuclear Technologies, EPRI
- June 14-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company, Alan Davis, President/CEO, Bob Clayton, Chief Growth Officer, David Smart, Account Manager and Sourcing Specialist, Connex Marketplace
- June 15-Amanda Woodrum, Reimagine Appalachia
- June 17-Mark J. Riedy, Partner, Kilpatrick Townsend

- June 20-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- June 22-Amanda Woodrum, Reimagine Appalachia
- June 23-Jeff Dimick, CEO, TCG Global and Darlene Sherrod, VP Technology TCG Global
- July 3-Ryan Augsburger, President of the Ohio Manufacturer's Association
- July 5-Jeff Dimick, CEO, TCG Global
- July 10-Chris Ajemian, Consultant and Seth Hoedl, President, Post Road Foundation
- July 13-Amanda Woodrum, Reimagine Appalachia
- July 14-David Wilhelm, Partner and Chief Strategy Officer, Paul Turner, Senior Vice President, Business Development, Hecate Energy
- July 17-John Hoag, Managing Director, Broadband and 5G Connectivity Center, Computer Science and Engineering at the Ohio State University
- July 19-Amanda Woodrum, Reimagine Appalachia
- July 20-Bill Paolillo, Vice President Strategic Alliances and Advanced Technologies, J.W. Didado, Quanta Services Company
- July 26-Paul Turner, Senior Vice President Business Development, Jared Wren, Development Manager, and Doug Carraher, Business Development, Hecate Energy
- July 26-John Seryak, CEO of Go Sustainable Energy
- July 27-Amanda Woodrum, Reimagine Appalachia
- July 27-Caroline Cochran, COO and Cofounder and Brian Gitt, Head of Business Development, Oklo Inc.
- July 28-Steve Hellem, Executive Director, Navista
- August 1-Bailey Kirby, Proposal Coordinator, Emma Redfoot, Siting Lead, Oklo Inc.
- August-Rob Freda, Center for Advanced Nuclear Systems, MIT
- August 7-Ben Lachman, Expert in Residence, BRITE Energy Innovators
- August 8-Paul Turner, Senior Vice President Business Development, David Wilhelm, Chief Strategy Officer, Hecate Energy
- August 8-Randy Reames, Business Processes Project Manager, X-Energy
- August 14-Rob Freda, Center for Advanced Nuclear Systems, MIT, and Josh Grubaugh, Hanwha Asset Management
- August 21-Lee Geisse and Suzanne Caflisch, Blue Green Alliance
- August 22-Lou Tierno, Director, Appalachian Sustainable Business Network
- August 22-Randy Reames, Business Processes Project Manager, X-Energy and Mark Denton, Senior Project Manager, Orano Federal Services
- August 24-Rob Freda, Center for Advanced Nuclear Systems, MIT, and Josh Grubaugh, Hanwha Asset Management
- August 24-Amanda Woodrum, Reimagine Appalachia
- September 6-Sara Younes, Amanda Kolling, Tama Weinberg, Katherine Killebrew, Government Accountability Office
- September 7-Amanda Woodrum, Reimagine Appalachia
- September 12-Ryan Augsburger, President, Ohio Manufacturers Association
- September 13-John Seryak, President, Go Sustainable Energy
- September 15-Laura Bennett, Office of Research and Sponsored Programs and Renee Fister, Associate Provost at Murray State University
- September 20-Lee Geisse and Suzanne Caflisch, Blue Green Alliance
- September 26-Mark Denton, Senior Project Manager, Orano Federal Services LLC
- September 29-Jackie Toth, Deputy Director and Board Secretary, Good Energy Collective
- September 28-Lee Geisse and Suzanne Caflisch, Blue Green Alliance

#### Additional key stakeholder engagements to advance site reindustrialization

#### Integration and circular economy

Additional key stakeholder engagements were held with energy influencers about GEM and PORTS's transformation to an IES-CLM complex. For example, discussions were held with Colonel Dr. Paul Roege, Executive Director of Advance Nuclear Production Experts Group (ANPEG) and Dr. Charles Forsberg, Member of ANPEG and Professor at MIT, about integrating MIT's various energy initiatives to help support GEM and PORTS's transformation to an IES-CLM complex. Several discussions were held with Rob Freda, who is also member of ANPEG, about optimizing efficiency and enabling near-term profitability by building out modularly. Meetings were held with Dr. Rama T. Ponangi, Research Associate for the Center on Global Energy Policy at Columbia University regarding energy policies to support the development of Integrated Energy Systems -Closed Loop Manufacturing (IES-CLM) complexes. Meetings were held with Dr. Kimberly Samaha, Born Global, LLC and Born Global Foundation, and Boston University regarding applying circular economy concepts and developing sustainable ecosystems.

#### Energy Communities Alliance (ECA)

Ohio University remains involved as a non-voting member with the Energy Communities Alliance (ECA) to keep apprised of policy and priorities of this group. ECA serves to inform and advance the needs and requests of host communities and local governments that are adjacent to or affected by US DOE facilities. OU's Budget Period 1 involvement includes:

- Actively participated in Energy Community Alliance's (ECA) meetings on DOE Loan Program opportunities.
- Actively involved in ECA's Policy Committee.
- Active member of ECA's Nuclear Committee, which meets quarterly. In May Ohio University's Dr. Ben Cross participated in the New Nuclear Development meeting held in Paducah, Ky. While there, Dr. Cross was interviewed by staff of the Energy Futures Initiative (EFI) about future nuclear development. Much of the interview centered on nuclear's potential role in an integrated energy system.
- Actively participated in ECA Board of Directors meetings.

#### American Manufacturing Communities Collaborative (AMCC)

Ohio University participated in the American Manufacturing Communities Collaborative (AMCC) weekly calls with leading manufacturing development organizations across the United States. AMCC's mission is to create and strengthen an alliance of communities with regional economic development initiatives underway dedicated to achieving sustainability. AMCC focuses on initiatives striving to obtain economic growth, improved environmental performance, and inclusive well-paying job creation to create new opportunities and equity within a revitalized American manufacturing base.

#### **CONNEX** Marketplace

Through participation in AMCC, connections were made with CONNEX Marketplace, which is developing a database of all US manufacturing entities and working to help manufacturers be better integrated and globally competitive. Along with Dr. Bill Paolillo, Vice President of Strategic Alliances and Advanced Technologies at J.W. Didado, Quanta Services Company, discussions with CONNEX Marketplace led to the issuance of a Request for Information to identify potential offtake customers for metallurgical silicon expected to be produced by the Newpoint project. Additional meetings were held with CONNEX Marketplace for establishing measures for Environmental, Social, and Governance (ESG) goals and carbon footprints to provide added product differentiation for any CO<sub>2</sub>-free products produce at PORTS in the future. Follow up meetings were held with leadership at CONNEX Marketplace to discuss working with the Ohio Manufacturing Association (OMA) to identify potential

manufacturers to co-locate at GEM's IES-CLM complex at PORTS. The repurposing of fossil energy facilities in Central Appalachia was also discussed.

#### Catalyst Connect

Through AMCC, connection was made with Catalyst Connect, which is a center approved by the National Institute of Standards and Technology Manufacturing Extension Partnership (NIST MEP). Catalyst Connect is the official representative of the MEP National Network in southwestern Pennsylvania. The MEP National Network is a unique public-private partnership that delivers comprehensive solutions to US manufacturers, fueling growth and advancing US manufacturing. Catalyst Connect's Clean Energy Manufacturing (CEMfg) initiative provides technical assistance and business support to small and medium sized manufacturers seeking to expand business, production, and jobs in the clean energy supply chains in the coal-impacted Appalachian region.

#### Federation of American Scientists

Through AMCC, a connection was made with the Federation of American Scientists. This group strongly advocates for the development of innovation ecosystems. The connection ties in well with a paper titled "Clean Innovation Ecosystems, Lifting Distressed Communities with Clean Energy" being co-authored by Dr. Bill Paolillo, Dr. Ben Cross and others. This paper has been submitted for consideration for publication in the Journal of Renewable Energy.

#### Ohio Manufacturers Association (OMA)

Through other Ohio University resources leveraged by PORTS future, our efforts have included developing technical assistance, industry support, and feedback through OMA on the GEM strategy and the evolution of the Newpoint project at the PORTS site. Mike Zimmer, Executive in Residence with the PORTSfuture Program, has served as our point of contact with OMA. He engaged in various consultations with the President of OMA in support of our industrialization strategy that has economic benefits for the State of Ohio. Mike was able to obtain from OMA recommendations of individual OMA member companies to evaluate as potential offtake customers for products generated by Newpoint. OMA offered transportation and logistics advice based on OMA member's experiences about what is needed to support large manufacturing projects. This could be a value-added benefit for determining how the PORTS site interacts with and/or supports the wider region related to rail, trucking, pipeline, electricity transmission and distribution, river barges, intermodal and harbor transport, and logistics support. OMA has been useful in assessing support from relevant State of Ohio entities, regional government interest, and in evaluating strategies for addressing and procuring the support of JobsOhio for project development. Those consultations and referrals by OMA have been invaluable to the GEM effort and at least a dozen meetings were held with OMA throughout Budget Period 1. OMA has expressed interest in hosting Newpoint to provide a presentation on their PORTS project for the OMA Energy Committee during calendar year 2024.

Mike Zimmer was invited to serve as a guest speaker at the September 2023 OMA Annual Energy Conference in Columbus, Ohio. The OMA conference highlighted a major keynote presentation by Ohio Lieutenant Governor John Husted embracing and supporting the "all of the above" energy strategy of OMA. This "all of the above" energy strategy has also been the blueprint for PORTS site reindustrialization efforts that the PORTSfuture Program supports. Mike served as moderator for the morning session for on-site power generation and emerging trends in distributed generation for the electric utilities, industrial, and equipment vendor sectors in the state and nationwide. In the afternoon, he served as a guest speaker on a corporate energy management panel. Mike was joined in the program by other luminaries and guest speakers from Cleveland Cliffs Steel, Belden Brick, Honda 's Battery Company, Inc., Amgen, Tosah SMD, Campbell Soup, Cenovus Energy, the Ohio Office of the Consumers' Counsel, PPG Industries, Ohio EPA, and Go Sustainable Energy. This OMA conference provided education and technical assistance for 210 attendees in Ohio's manufacturing sector, representing over \$140 billion of gross domestic product for the Ohio economy.

#### ReImagine Appalachia (RA)

Support from Ohio University resources has enabled the PORTSfuture Program to be engaged in participation, planning, and strategic advisory support to the ReImagine Appalachia group. This group is primarily funded by the Heinz Foundation and is advancing an integrated energy strategy for Appalachian areas within the four-state region of Pennsylvania, West Virginia, Kentucky, and Ohio. RA's work is grounded in garnering labor and community support and input for the conversion of distressed energy and manufacturing sites, in an environmentally responsible fashion, to transform them into critical economic assets. Mike Zimmer, Executive in Residence with the PORTSfuture Program, has served as the liaison to this group. He has made formal presentations related to the GEM project strategy and development interests resulting in the project being highlighted in the prior year at RA's annual conference. Mike's involvement in RA provides an opportunity to inform wider technical assistance to the region, procure regional public policy support for the GEM strategy, and help identify reindustrialization alternatives for deactivated coal plants and retired manufacturing facilities in the region.

Mike has participated as a member of RA's advanced manufacturing working group and attended 20 meetings during Budget Period 1. For this working group, he identified subject matter experts for RA's webinars and helped to shape training programs supported by ReImagine Appalachia. Topical areas for which Mike advised includes workforce development, distressed coal plant development, sustainable manufacturing alternatives and strategies, transportation and logistics, energy project and climate finance, waste heat, combined heat and power systems, steam recovery, biofuels, and economic development. Mike chaired an RA webinar during June of 2023 for 90 registrants on the critical support of transportation and logistics assets in the multistate region. This webinar discussed the valuable support that the transportation infrastructure can provide to the RA region for energy development, advanced manufacturing, reindustrialization, and more sustainable energy outcomes. OU has become a trusted advisor to ReImagine Appalachia and through this work has worked closely with other university participants in the region including Pittsburgh University, Penn State University, Carnegie Mellon University, Marshall University, and West Virginia University.

# Relevant virtual webinars and virtual trainings attended by the Ohio University PORTS future Program team to inform site reindustrialization efforts during Budget Period 1 follow below.

- October 20, 2022-Government Accountability Office (GAO) Briefing on DOE's Environmental Management Program.
- October 24, 2022-American Nuclear Society Operations & Power Division. Powering our Future: The Coal to Nuclear Opportunity.
- October 25, 2022-National Energy Technology Laboratory Regional Workforce Initiative (RWI).
   2022 US Energy and Employment Report Regional and National Briefing featuring David Keyser, Senior Advisor in the Department of Energy (DOE) Office of Energy Jobs.
- October 27,2022-National Renewable Energy Laboratory Research for People & Planet. Bioenergy Pathways hosted by the Boston University Institute for Global Sustainability (IGS).
- January 24, 2023-DOE Office of Clean Energy Development (OCED) Industrial Demonstrations Program Notice of Intent.
- January 24, 2023-Department of Energy's Notice session on \$6.3 billion for transformative industrial decarbonization demonstration projects.
- February 9, 2023-Energy Futures Initiative (EFI) US Hydrogen Demand Action Plan. White House National Climate Advisor Ali Zaidi was the keynote speaker, with EFI's CEO Ernest J. Moniz and EFI's Senior Vice President of Research Alex Kizer.

- February 14, 2023-Energy Futures Initiative. Turning Carbon Capture and Sequestration (CCS) Projects into Blue Chip Investments: Policy Actions.
- March 9, 2023-National Energy Technology Laboratory Regional Workforce Initiative (RWI). Point Source Carbon Capture in the US.
- March 25, 2023-ReImagine Appalachia and BlueGreen Alliance. Labor Women Who Lead.
- May 18, 2023-Appalachian Energy Futures. Community Engagement for Clean Energy Hubs and Projects.
- June 7, 2023-Ohio Innovation Tour: Intel + Higher Education in Southeast Ohio.
- June 27, 2023-Appalachia Energy Futures (AEF). Understanding Regional Clean Hydrogen Hubs and Carbon Capture.
- June 28, 2023-Department of Energy. Pathways to Commercial Liftoff, a department-wide initiative to strengthen engagement between the public and private sectors to accelerate the commercialization and deployment of key clean energy technologies.
- July 18, 2023-Appalachia Energy Futures (AEF). Understanding Carbon Sequestration.
- August 9, 2023-Energy Futures Initiative (EFI). High-Quality Jobs in the Clean Energy Transition.
- September 20 and 21, 2023-Smart Growth America and National Association of Development Organizations (NADO). Building Economic Resilience in Energy Communities: Nuclear Host Communities Forum.

# Ongoing Technical Assistance, Public Outreach, Education, and Engagement for Property Transfer and Future Use: property transfer, STEM, and entrepreneurship activities

# Property requests response guidelines

Initial planning for this activity began in previous grant years and OU and SODI gathered information from other former DOE sites on how property transfer and reuse had been deployed. OU continues to assist SODI with identifying areas on the site that are not good candidates for building (and remove them from consideration in the property transfer proposal process); defining steps for the transfer of property to private industry; identify documentation needed for each involved party; establishing criteria for reviewing proposals that are submitted for consideration; and producing GIS maps for areas that are 'build-able' based on the articulated needs of the developer. SODI has tabled the need for any formal guidelines to be drafted by OU since DOE PPPO has established an exemplary property transfer process. OU would be pleased to draft formal guidelines in the future if requested by SODI to do so.

# Transportation study and traffic impact/thoroughfare impact study (pending)

OU began exploring the planning of a transportation study and traffic impact and thoroughfare impact study. At the request of SODI, this activity is currently tabled until SODI's site reindustrialization transportation needs are more fully formed.

#### Stakeholder outreach, partnerships, and networking support

Many entities continue to express interest in supporting and/or assisting SODI's reindustrialization efforts, with activities determined as appropriate. PORTSfuture also collaborates with SODI in regional outreach, partnership building, and networking support activities to inform site stakeholders and citizens of site reuse activities; engage economic development professionals and elected officials; identify private sector interests aligned with site reindustrialization goals; broaden contacts with potential collaborators; develop partnerships; elicit regional support; and share information to support SODI's site reuse mission. These activities were summarized the stakeholder engagement section above.

#### STEM activities

Science, Technology, Engineering, and Mathematics (STEM) enrichment activities are designed to encourage regional students to learn about and engage in activities in STEM disciplines. The goal is to encourage students to pursue careers in these in-demand STEM fields that provide well-paying employment opportunities. These activities may help prepare the future workforce in the region to be job-ready when site reindustrialization efforts are realized. PORTSfuture STEM partners are depicted in Figure 8 below.



Figure 8 PORTSfuture STEM partners

PORTS future STEM activities are summarized in Figure 9 and described below.



Figure 9-PORTSfuture STEM activities

# ASER 12 & ASER 13

ASER 12 (primarily funded under a separate activity within the grant). During Budget Period 1, Ohio University worked with a Waverly High School teacher and 18 students in Pike County to produce the 12th Annual Site Environmental Report Student Summary. This summary provides information to the public regarding the US Department of Energy's progress on cleanup work at PORTS. During the 2022-2023 academic year, students received Subject Matter Expert (SME) seminars on site history, site cleanup and other environmental engineering topics, and participated in a classroom presentation from DOE to provide an overview of the site. The group participated in a tour of the PORTS site and attended a field day at Lake Hope State Park facilitated by OU staff who provided opportunities for the students to engage in hands-on stream sampling activities. A brief video of the ASER 12 project was created by an Ohio University communications student. The final student-generated report and video was completed by August 31, 2023, and hard copies were widely distributed via mail throughout the region. The video and final document can be accessed at this link: <a href="https://www.portsfuture.com/aser-12/">https://www.portsfuture.com/aser-12/</a>

ASER 13 (primarily funded under a separate activity within the grant). Ohio University began preparations for the ASER 13 project to be conducted in partnership with Eastern High School in Pike County for the 2023-2024 academic during Budget Period 2.

Regional ASER (primarily funded under a separate activity within the grant). Ohio University began preparations for the ASER 13 project to be conducted in partnership with Northwest High School in Scioto County for the 2023-2024 academic during Budget Period 2.

# Appalachian STEM Enrichment Academy (ASEA)

OU continued the development of the Appalachian STEM Enrichment Academy (ASEA), a virtual academy that serves as an online resource for ongoing STEM learning year-round for teachers, students,

parents, and caregivers. Seven new lessons were developed and added to the online academy and the ASEA website received 29,486 page views during Budget Period 1.

Two online cohorts of specialized virtual trainings were conducted for regional youth utilizing content from the ASEA website. One cohort was a 3-week ASEA online summer camp for grades 6-11 that focused on Computational Literacy. Events were held June 5-22, with 6 sessions and 7 participants. Students learned computational thinking skills and coding syntax in Scratch and Python.

The second online cohort focused on Water Quality and two sessions were held for Unioto Elementary on April 13. Twenty-five 4<sup>th</sup> grade students attended, and the classroom received a Water Quality kit prior to the event to ensure the ability for hands-on learning during the virtual sessions.

The ASEA is a versatile modality for expanding regional STEM engagement. In Appalachian Ohio, we are connected to the land, communities, history, and spaces around us. At Ohio University, we are proud of our history of encouraging students to be stewards of Appalachia, and of the entire world, by connecting them with skillsets and career pathways for creating a more sustainable future. The Appalachian STEM Enrichment Academy provides virtual hands-on STEM learning opportunities and career track development for K-12 students throughout Appalachia Ohio and beyond.

STEM—or Science, Technology, Engineering, and Math—are vital areas in which we must engage our youth. Students who have a familiarity of STEM topics and an appreciation for how STEM learning creates career opportunities will be better prepared for their future. The Academy platform provides hands-on activities and online lessons and resources and is available 24/7/365. It can be utilized by teachers, after school groups, summer camps, parents/grandparents/caregivers, and students themselves to access unique resources to encourage the next generation of lifelong STEM learners who will be equipped with the knowledge needed to tackle emerging challenges in our world. Our lessons follow a "5E instructional model" which facilitates topical connections through engagement, exploration, explanation, elaboration, and evaluation (see more at <a href="https://bscs.org/bscs-5e-instructional-model/">https://bscs.org/bscs-5e-instructional-model/</a>).

Our online platform delivers these programs remotely, while fostering an appreciation for the beautiful Appalachian region and introduces ways students can experience STEM every day. The Academy is carried out by a team of faculty and professional staff and students at the Voinovich School, along with contributions from external partners and subject matter experts. It provides career tracks in specific substantive areas including water, energy, environmental remediation, technology, and sustainability. Learning modalities include a blending of seminars and interactive online sessions; hands-on learning activities, many of which can be carried out with items found at home; career videos; and student sharing via their online postings, videos, and social media interaction. In-person classroom presentations can be provided as well upon request and dependent on available resources.

The virtual academy addresses the resource limitations in Ohio Appalachia and is a collaboration across several programs at Ohio University with joint funding and/or resource support from the DOE PORTSfuture Program, American Electric Power (AEP) Ohio Fund of the Columbus Foundation, Ohio STEM Learning Network, OHIO Museum Complex, Sugarbush Foundation, National Science Foundation, US Environmental Protection Agency's Climate Literacy program, Ohio Habitat for Humanity, and Ohio University's Voinovich School of Leadership and Public Service. This collaborative approach enables funding contributors to leverage funds across regional STEM efforts. Cross-promoting STEM offerings expands reach and impact by increasing the volume of student participants and improving long-term access to STEM career pathways information for regional students. The virtual academy reaches wider audiences than if each STEM effort were to develop virtual learning opportunities separately. The online nature of this effort enhances the value of the investments across programs as the

content is created once and can serve thousands of regional students. Marketing efforts are ongoing through OU platforms and events and by our partnering entities. See the ASEA homepage in Figure 10 below. The Academy is free and open to the public for use from any internet-abled device at home or on the go. To explore the ASEA, please visit: <u>https://www.appalachianstemacademy.org/</u>



Welcome to the Appalachian STEM Enrichment Academy. This site offers hands-on STEM learning opportunities and promote interest in STEM careers for grammar school, middle school, and high school students throughout Appalachian Ohio.

# TRACKS

The Appalachian STEM Enrichment Academy offers tracks in six different interest areas. Coming soon: Hands on learning for students K-12, accessible with the click of a mouse.



Figure 10-ASEA homepage

#### **District Science Days**

District Science Days serve students from most of southern and southeastern Ohio, including Ross and Jackson Counties in District 12 and Pike and Scioto Counties in District 14. Students in grades 5-12 can compete by presenting their original projects following either standard scientific method or engineering design principles. Through inquiry-based project learning, students gain skills in posing a research question, creating a hypothesis, method development, data collection, data analysis, and written and oral communication. The Ohio Academy of Sciences has developed standards linkages for science fairs across grades 5-12. Students earning a superior at their school fair qualify to compete at their District Fairs and those earning superiors at District Fairs qualify to compete at State Science Day held in Columbus, Ohio each May. High school students in both districts have the additional opportunity to qualify for the Buckeye Science and Engineering Fair which allows them to compete for a spot at the International Science and Engineering Fair and high school students in District 12 can compete for a spot at the International Fair straight from their district. The potential for learning, exposure to a community of engaged young scientists, and competition for scholarships and awards for students from southern Ohio is unparalleled.

PORTS future funding has increased participation for students and schools in the four-county region; supported teachers with connecting students to scientists at Ohio University; provided OU staff to

coordinate with and support schools in the four-county region; supported district fair operations; and connected students from the four-county region with Ohio University resources. Teachers who participated this past academic year received a \$500 stipend from the PORTSfuture Program. This year PORTSfuture supported 6 schools in Jackson and Ross Counties, mentored 79 students and 73 of those students presented at the District Science Fair held at the Ohio University main campus in Athens, Ohio or virtually if they preferred. Ohio's 2023 International Science and Engineering Fair Finalist was Macy Long, a Senior at Zane Trace High School in Ross County. Her Project Title was "Human Ultrasonic Echolocation Device for Assisting the Visually Impaired". Macy competed May 14-19, 2023, at the International Fair in Dallas, Texas, and her travel costs were generously sponsored by Fluor-BWXT Portsmouth, LLC. Figure 11 below depicts students presenting their science projects at the District Science Days event at the Ohio University Athens campus.



Figure 11-Students presenting their science projects at the District Science Days event at the Ohio University Athens campus

# Summer STEM Days

Ohio University staff and students engaged regional youth in Pike, Jackson, Ross, and Scioto counties in hands-on activities to learn about water quality at Sumer STEM Days events at public libraries in each county. These events were planned and promoted in partnership with the public libraries. Ohio University assembled 'family sized' My Backyard Stream kits for these counties' library-sponsored learning programs. Water quality materials, family friendly instruction sheets, and content cards were provided for biological, chemical, and physical stream monitoring units. Families can obtain the kits from these libraries to take home and use with their families for their own family fun. Figure 12 below depicts the My Backyard Stream kit.



Figure 12-My Backyard Stream kit

Summer STEM Days included the Pike County library event at Lake White on June 10, 2023, with10 participants and included a My Backyard Stream demonstration and training for residents of Pike County to learn about their new library resource. The Jackson County Library event was held at Hammertown Lake on July 19, 2023, with 35 participants. The event included a My Backyard Stream demonstration and training for residents of Jackson County to learn about their new library resource. The Scioto County Library event was held on July 26, 2023, with 30 participants. The event included a table display to promote the My Backyard Stream kit available to residents of Scioto County to learn about their new Beyond Books library resource. The Ross County Library event was held on August 30, 2023, at Don Coppel Athletic Park with 8 participants. The event included a My Backyard Stream demonstration and training for the after-school science club children of Ross County to learn about their new library resource.

These Summer STEM Days events provided an engaging opportunity for participants to explore science techniques through hands-on activities. PORTSfuture outreach efforts strive to inspire regional youth interest in STEM careers for the future. The Appalachian STEM Enrichment Academy was also promoted to youth and parents at these events.

# Ohio STEM Learning Network (OSLN) Southeast Ohio Hub

During Budget Period 1, three OSLN co-directors (two from Ohio University and one from Washington State Community College) on-boarded with Nancy Stevens, Director of the OHIO Museum Complex at Ohio University and previous director for OSLN southeast Ohio hub, to expand and develop rural cohort relationships that will have continuity and longevity. The Ohio University Southeast Ohio STEM hub has a track record in the region with working with teachers, K-12 students, higher education students, communities, and industry across several established programs and partnerships. Programs that provide the OSLN Southeast Ohio hub broad support and a robust network to strengthen and grow regional STEM education include but are not limited the OHIO Museum Complex, STEMstart, My Backyard Stream, STEAM Ahead, Appalachian STEM Collaborative, and the Appalachian STEM Enrichment Academy. In addition to these established projects, the OSLN Southeast Ohio hub plans to communicate with STEM schools, aspiring STEM schools, community leaders, and industry through electronic communication, in-person professional development, and convenings with access to a Qualtrics survey to obtain valuable input from stakeholders about needed resources and support to grow quality STEM education in the region. During Budget Period 1 PORTSfuture partnered with the Ohio University OSLN Southeast Ohio Hub to promote our outreach events and resources. Information on the OSLN hubs can be found at this link: https://osln.org/hubs/

#### Virtual Symposium

Budget Period 1 included maintenance of the Virtual Symposium, which is a collaboration between the Voinovich School of Leadership and Public Service at Ohio University (OU) and the Kentucky Research Consortium for Energy and the Environment at the University of Kentucky (UK). These activities are funded by grants administered by DOE's Office of Environmental Management Portsmouth/Paducah Project Office. Primarily funded under a separate task, the Virtual Symposium provides ongoing access to scientific and technical presentations for STEM education interests. The video presentations, PowerPoint presentations, and project reports can serve as useful Science, Technology, Engineering, and Math (STEM) education tools for area schools, colleges, and universities. The Virtual Symposium also provides valuable information to the public at large about projects related to OU activities conducted at the DOE Paducah Gaseous Diffusion Plant (PORTS) site near Piketon, Ohio and UK activities conducted at the DOE Paducah Gaseous Diffusion Plant (PGDP) site in Paducah, Kentucky. Several videos were added this year related to the Appalachian STEM Enrichment Academy. The Virtual Symposium can be viewed at: https://www.portsfuture.com/virtual-symposium-2/

#### Science Alliance

PORTS future was delighted to participate in the DOE PORTS annual Science Alliance event held in October of 2022 that provided over 1,200 high school students in Pike, Scioto, Ross, and Jackson Counties access to a variety of interactive kiosks to learn about careers in the environmental and engineering fields. The Voinovich School's Raccoon Creek/Watershed team and AmeriCorps volunteers provided a display that included a live stream table with live fish and macroinvertebrates for the students to explore to learn about stream health and stream cleanup methods. The Voinovich School's Geographic Information Systems (GIS) and data team provided a display illustrating data and GIS applications and uses.

#### Fluor-BWXT Portsmouth Steam Ahead Collaboration

The PORTSfuture Program is pleased to continue to participate in a collaborative STEM education program sponsored and hosted by Fluor-BWXT Portsmouth LLC, a DOE contractor conducting cleanup activities at the PORTS site. Fluor's STEAM Ahead program engages elementary students at Western, Eastern, and Jasper elementary schools in Pike County. The PORTSfuture Program provided an engaging habitat activity utilizing the tree cores and cookies collected during the 2011- 2012 Habitat Study conducted by OU at the DOE PORTS location. Hands-on activities were developed for the third and fourth graders to learn about trees, natural resources, how to determine the age of a tree, and identifying various tree species and their leaves. The PORTSfuture Program gifted 65 Foldscopes (foldable microscopes) and related accessories at the request of one teacher for continued use in that fourth-grade class at Eastern Elementary School. During Budget Period 1, PORTSfuture and Fluor collaborated with five schools that held nine sessions and 208 students were engaged. Figure 13 below depicts elementary students engaging with Ohio University students at a STEAM ahead event.



Figure 13- Environmental Studies graduate student Maya Clouse-Henry engaging with elementary students

# US Senator Sherrod Brown Summer Manufacturing Camp-Jackson Ohio

The Jackson County Summer Manufacturing Camp is an annual event organized by Jackson County OhioMeansJobs and Jackson County Department of Job and Family Services in collaboration with the office of Senator Sherrod Brown to provide an opportunity for local middle school students to learn about careers in their community, tour local manufacturing facilities, and engage with industry experts. This multi-day camp took place from Wednesday, May 31, to Friday, June 2, 2023, and consisted of both facility tours and events hosted by the University of Rio Grande's Jackson campus. This year, 27 Jackson County middle school students grades 6-8 attended the event. On June 2, 2023, Ohio University's Voinovich School of Leadership and Public Service staff along with Ohio University students provided drone and m-bot demonstrations to familiarize students with these technologies, how they are continuing to grow, and discussing potential career opportunities in technology fields.

The drone demonstration showed a pre-programmed drone flight that included facial recognition capabilities to follow a specific person. OU staff and students also showed a higher end drone that could record video and take pictures. Career opportunities discussed included drone pilot, drone technician, drone software engineer, and drone hardware designer. The mBot robot demonstration showed technology for self-driving cars and self-driving warehouse robots works, using pre-programmed codes and printed paths for the robots to drive. The students could see how the addition of sensors allowed enhanced capabilities, such as collision avoidance and responding to color changes on the path. The students were then given an opportunity to manually control the mBots using a tablet, to see how verbal commands, drawing a driving path, and manually driving it using controls on the tablet worked. Careers discussed included Robotics Engineering, Robotics Technician, Mechanical Engineer, Design Engineer, Software Engineer, and Hardware Engineer. Ohio University provided a platinum sponsorship fee paid by other non-DOE funds to enable students to attend the camp at no cost. During Budget Period 1, PORTSfuture engaged 27 students and PORTSfuture provided 27 robot kits for students to take home to continue their hands-on learning.

#### Additional classroom STEM offerings

STEM activities previously developed by OU can be offered onsite in classrooms across the four-county area in southern Ohio dependent upon available funding. We have created a body of work around renewable energy; the Internet of Things/smart technology; water quality; physical features of lakes and streams; acid mine drainage; analyzing chemical and biological data; and collecting water quality data as a citizen scientist that translates across ages and grades. Working with local teachers, we can customize single class period sessions to their curriculum needs and interests. Hands-on activities augment these programs when possible. Career pathway discussions are integrated into programs for middle and high school students.

# **Dissemination of Program Activities and Technical Assistance**

Project website, <u>www.portsfuture.com</u> is used widely to disseminate information, resources, reports, videos, and other deliverables.

Press releases are developed for specific events and activities when applicable, related to site reindustrialization, STEM events, and other outreach events.

Presentations are provided to stakeholders such as economic development entities, elected officials, federal offices, labor leaders, private companies, investors, community groups, and the Site-Specific Advisory Board (SSAB) along with frequent contact with other regional site stakeholders and other related regional initiatives.

# **DOE Public Open Houses**

DOE EM PPPO and DOE PORTS lead the coordination and roll out of a series of Community Open Houses each year to enable residents in the four-county area near the PORTS site to learn about site cleanup, property transfer, and site reindustrialization progress. Kiosks include the Site-Specific Advisory Board (SSAB), the community reuse organization, the PORTSfuture Program, and site cleanup contractors featuring asset recovery, cleanup information, onsite waste disposal facility, and workforce information. PORTSfuture attends the events and displays work products including the interactive PORTS site reindustrialization concept planning and regional assets maps, economic impact and workforce analysis data, general site reindustrialization materials, and summaries of STEM activities. During Budget Period 1, PORTSfuture presented information at open houses that were held on August 29<sup>th</sup> in Portsmouth, Ohio and on August 31<sup>st</sup> in Piketon, Ohio.

# Program presentations and technical assistance provided during Budget Period 1

- Presented at the Electric Power Research Institute (EPRI) Fusion Forum held on June 21, 2023, on OU stakeholder engagement and site reindustrialization support to SODI. SODI presented information on their DOE Office of Nuclear Energy Siting Study.
- Provided technical support to Murray State University, a DOE grantee, in the Paducah Kentucky area to assist with their grant development and planning their program roll out.
- The Centralia Coal Fired Power Plant in Washington state is attempting to convert that facility to advanced nuclear energy production. Project leaders from Centralia reached out to PORTSfuture regarding advice on stakeholder engagement.
- A Pennsylvania-led coalition is attempting to develop an Appalachian Sustainable Business Network. Principles reached out to PORTSfuture regarding advice on developing partnerships and stakeholder engagement.

 The BlueGreen Alliance (BGA)national and Ohio offices contacted PORTS future to obtain input from OU and our site reindustrialization partners on national hydrogen project recommendations that BGA is developing.

# Technical assistance on energy finance

Through other Ohio University resources leveraged by PORTSfuture, Mike Zimmer, Executive in Residence with the PORTS future Program, has served as resource for energy finance networking and outreach activities related to PORTS reindustrialization. He has offered consultations on energy project finance trends, climate and green banking, bond finance implications of the recently enacted Infrastructure Act and Inflation Reduction Act, and also on wider energy project development issues. This included informed guidance and assistance for PORTS site reindustrialization projects to procure attention and support from the DOE Loan Programs Office, Ohio Air Quality Development Authority bond financing, project development funding, bonding, and general development strategies. Consultations included support from ReImagine Appalachia, Heartland Capital, energy professional practitioners in Washington DC, American Bar Association, American Council on Renewable Energy, and George Washington University. Mike also advised on sources of possible programmatic support from the US Treasury, DOE, the Department of Commerce, Appalachian Regional Commission, US Environmental Protection Agency, and the US Department of Agriculture. Mike Zimmer has also presented or written on these topics for the regional Mayors Partnership for Progress which is facilitated by Ohio University, and he has presented at various graduate classes at George Washington University, Loyola University, and OU during Budget Period 1.

# Technical assistance in developing the State of Ohio Appalachian Assistance Funds

Through other Ohio University resources, OU has coordinated and led a regional effort in support of Ohio Governor DeWine's initiative to provide Appalachia Ohio economic development assistance through special funding from federal American Rescue Plan Act funds. OU working with its various resources and networks coordinated regional planning support for this initiative culminating in approval by the Ohio General Assembly in June 2022 for \$500 million of funding over the next three years. This includes the provision of technical assistance and planning grants of \$50 million to local communities, support for workforce development, and economic development assistance during 2023. Execution grants for over \$470 million will be determined in quarter four of 2023 and funding awards will commence in January 2024. This source of funds can serve as supportive funding for elements of the PORTS reindustrialization related to utility transfers and modernization, expansion of onsite rail, and construction of an expanded 23-mile natural gas pipeline to the site to serve the Newpoint project and future site developers.

#### PORTSfuture Program 2023 webinar series

The PORTSfuture Program organized several live, interactive, and informative webinars in 2023. These events focused on three topical areas essential to site reindustrialization and allowed for wider-reaching stakeholder engagement than is possible with traditional, in-person meetings. Three webinars were hosted by Ohio University's Voinovich School of Leadership and Public Service's PORTSfuture Program, the American Sustainable Business Network, and the Ohio Sustainable Business Council, and were co-sponsored by the Southern Ohio Diversification Initiative, the Tri-State Building and Construction Trades Council, the Pike County Chamber of Commerce, the Ohio Valley Regional Development Commission, and Amplifire Strategic Communications. The hosts and sponsors promoted the virtual events via press releases, email lists, social media, flyers, and general, daily networking.

The first webinar was held on Monday, February 13, 2023. The topic was "Clean Energy & Infrastructure: Impact & Opportunities." Participants were invited to learn about the federal initiatives and resources for moving toward the clean energy economy. The panel was moderated by Michael Green, the

Director of Climate & Energy Policy for the American Sustainable Business Network, and featured speakers were Joshua Peck, Senior Policy Advisor for the White House Office of Clean Energy Innovation and Implementation; Brian Maher, Senior Communications & Marketing Consultant for the US. Department of Energy Loan Programs Office; and Katie Harris, Legislative Director for the BlueGreen Alliance. Stephanie Howe, Director of Energy Programs and Director of Human Capital at Ohio University's Voinovich School of Leadership and Public Service, provided a brief overview of the PORTS site reindustrialization effort. Then the panel of high-level experts shared information on how federal initiatives and resources, including funding opportunities from the Bipartisan Infrastructure Law and the Inflation Reduction Act, are dramatically changing the energy landscape. There were 148 participants registered for this event, and the recording and follow-up were widely shared by the hosts and co-sponsors, which spurred further collaboration and discussion. A link to the webinar can be found here: <a href="https://youtu.be/39NmXd7oRuo">https://youtu.be/39NmXd7oRuo</a>

The second webinar was held on Wednesday, April 12, 2023. The topic was "Why Hydrogen and Why Now?" Participants were invited to learn about hydrogen projects moving Ohio and the US toward a more sustainable energy and manufacturing economy. Stephanie Howe, Director of Energy Programs and Director of Human Capital at Ohio University's Voinovich School of Leadership and Public Service, provided a brief overview of the PORTS site reindustrialization effort. Michael Zimmer, Executive in Residence at Ohio University's Voinovich School of Leadership and Public Service, moderated the panel discussion. Featured speakers were Nick Connell, Interim Executive Director of the Green Hydrogen Coalition to represent hydrogen production using renewable energy sources; Frank Calzonetti, Vice President of Research at the University of Toledo, with a focus on using nuclear energy to create pink hydrogen; and Wiley Rhodes, CEO of Newpoint Gas, LLC, focusing on blue hydrogen. There were 133 participants registered for this event, and the recording and follow-up were widely shared by the hosts and co-sponsors, which spurred further collaboration and discussion. A link to the webinar can be found here: https://youtu.be/1Cy6d9yrvP0

The third webinar, titled "Effectively Engaging Media," was held on Thursday, June 1, 2023. It was designed to help stakeholders of clean energy projects engage with the media to advance their organization's message and objectives. The featured speakers were Daniel van Hoogstraten, founder of Amplifire Strategic Communications, and Katie Ellman, the Communications Lead for the American Sustainable Business Network. Both facilitators are seasoned communications professionals helping to advance major clean energy projects in Ohio and nationally that will move the state and country toward a more sustainable energy and manufacturing economy. The virtual learning experience included representatives from businesses, organized labor, nonprofits, and advocacy groups.

Daniel Van Hoogstraten provided a brief overview of the PORTS site reindustrialization efforts and recognized the effective public-private collaboration among the representative sectors, including academia, community benefit and advocacy groups, energy, labor, and sustainable manufacturing. The presentation included information about the Ohio media landscape, discussions on cultivating relationships with the press, how to prepare for and approach an interview, what to expect from different types of media, developing and delivering a strong message, tips for successful interviews, and how to handle difficult questions posed by members of the media. There were 85 participants registered for the event, and the recording and follow-up were widely shared by the hosts and co-sponsors, which spurred further collaboration and discussion.

A link to the webinar can be found here: <u>https://youtu.be/ e3z1QOB2BQ</u>

Figure 14 below depicts a webinar summary of events flyer.







# Organizing National Webinars to Educate, Excite, and Engage Our Stakeholders!



Figure 14-Webinar summary of events flyer

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# Communications and media engagement

OU has retained a well-respected Ohio firm, Amplifire Strategic Communications, to work with OU, SODI, and GEM partners on communications and media activities to advance site reindustrialization activities. Ohio University has approved the use of Voinovich School research incentive funds to cover this vendor's costs. In coordination with OU, Amplifire engaged with the media through press releases and individual reporter outreach to enhance the visibility of the PORTS reindustrialization work. Amplifire work highlights for Budget Period 1 include:

# Press interaction

- August 2023-Drafted a press release in anticipation of the Newpoint parcel 1 land purchase from SODI. The release is being held until the land purchase is finalized.
- June 2023-Wrote and sent a press release on SODI introducing Oklo to the Piketon community. Media coverage included:
  - Pike County News Watchman: <u>SODI introduces Oklo to the Piketon community</u>, 6/23/23
- June 2023-Coordinated an interview for various partners with a Columbus Dispatch reporter about the PORTS reindustrialization project. The reporter is continuing to monitor the project and the interview helped set a positive baseline of knowledge and understanding of the effort.
- May 2023-Pitched a press announcement to members of the Ohio press on Oklo's plans to site advanced nuclear reactors at PORTS. Responded to questions from the press and coordinated follow up. Media coverage included:
  - Highland County Press: <u>Southern Ohio Diversification Initiative introduces Oklo to the</u> <u>Piketon community</u>, 6/23/23
  - Cleveland.com/The Plain Dealer: <u>Ohio may soon get two new nuclear power plants for the</u> <u>first time in decades</u>, 5/23/23
  - Scioto County Daily News: <u>Reviving the Site of the Portsmouth Gaseous Diffusion Plant</u> with Oklo's Small Nuclear Plants, 5/21/23
  - WOUB Public Media: <u>A West Coast startup wants to build two nuclear power plants in</u> southeast Ohio, 5/22/23
- March 2023-Drafted a press release to announce the teaming agreement between Newpoint Gas and CDM Smith. Media coverage included:
  - Chillicothe Gazette: <u>Newpoint Gas continuing work toward reindustrializing former DOE site</u> <u>in Pike County</u>
  - Scioto Post: <u>CDM Smith and Newpoint Gas Sign Clean Hydrogen Project Teaming</u> <u>Agreement to Reindustrialize Former DOE Site in Pike County Ohio</u>

# Content and materials

- August 2023-Created a poster/slide/graphic on the STEM engagement activities of the PORTSfuture Program for OU's use at DOE Open Houses and for other purposes. It visually highlights the local, state, and federal partners involved, and lays out programs led by and contributed to by PORTSfuture.
- July 2023-Created a poster/slide/graphic on the partners involved in the PORTS site reindustrialization, under the leadership of OU and SODI. It lays out the reindustrialization goals, energy projects coming to the site, and the variety of partners across organized labor, regional, and economic development organizations, public institutions of higher learning, federal government offices, industry, and consultants.
- December 2022-Created a one-pager summarizing key points of the GEM initiative.

#### Webinars

Amplifire worked in close coordination with OU to conduct three national webinars. The webinars were: 1) "Clean Energy & Infrastructure: Impact and Opportunities" on February 13, 2023; 2) "Why Hydrogen & Why Now?" on April 12, 2023; and 3) Effectively Engaging the Media on June 1, 2023. In addition to helping lead the planning, Amplifire's role in the webinar series included:

- Recruited webinar cosponsors including the Southern Ohio Diversification Initiative, Tri-State Building and Construction Trades Council, Pike County Chamber of Commerce, and Ohio Valley Regional Development Commission; and worked with cosponsors to increase outreach for the events.
- Assisted with securing speakers for the webinars.
- Recruited Ohio leaders and stakeholders to attend webinars.
- Helped establish agendas and run of show.
- Created and disseminated flyers and invitations.
- Led and presented the final media training webinar.

# Educating government stakeholders

- July 2023-Communicated Newpoint's level of investment, expected job creation, and other information and data to the US Department of Energy (DOE), following a request from DOE for information to publicize the project.
- October 2022-Wrote a document with talking points, background information, and recent updates on progress of PORTS reindustrialization, and shared it with the staff of US Senator Joe Manchin (D-WV) and former Congressman Tim Ryan (D-OH) in advance of their visit to the site.

# **Collaborations**

During Budget Period 1, PORTS future continued to sustain and expand collaborations with entities that can assist achieving site reindustrialization goals.

# DOE-related entities such as US DOE National Laboratories and Community Reuse Organizations

The PORTS future Program connects with various experts at DOE National Laboratories and community reuse organizations around the country to seek information to inform our program activities and to discuss PORTS future Program activities in support of DOE EM cleanup and preferred community future use.

During Budget Period 1, we continued our engagements with the National Energy Technology Laboratory (NETL), Idaho National Laboratory (INL), and the National Renewable Energy Laboratory (NREL) for the purpose of gathering information relevant to site reindustrialization activities.

# PJM Interconnection, LLC

PJM is a regional electricity transmission organization (RTO) and PORTS future maintains contact with PJM when needed to seek information about grid capacity and potential grid and load needs to help better identify PORTS viability as an electricity transmission and distribution hub. In a previous grant year, PORTS future secured the PJM database of coal fired power plants designated to be deactivated in their service area. Our hydrogen industry partner, Newpoint, is using this database to evaluate the possibility of converting some of the deactivated plants to produce electricity using decarbonized hydrogen. These regional plants could serve as 'spokes' to the hydrogen production hub being created at the PORTS site by Newpoint.

# Institute for Sustainable Energy and Environment (ISEE)

PORTSfuture remains connected to the OU Russ College of Engineering and Technology (RCET) ISEE which houses a coal research center that is touted as one of the nation's leading academic energy research organizations. ISEE is developing innovative and responsible engineering solutions to issues surrounding domestic energy sources and alternative uses of coal in additive manufacturing. These efforts can play a key role in the development and operation of an IES-CLM complex and contacts with RCET ISEE are ongoing.

#### Institute for Corrosion and Multi-Phase Technology (ICMPT)

PORTSfuture remains connected to ICMPT at the OU Russ College of Engineering and Technology (RCET). ICMPT conducts research for new ways to address corrosion in pipelines in partnership with a global gas and oil industry alliance. Pipelines will be a key infrastructure component for an IES-CLM complex.

#### Biomass, bio-digesters, bio products, and co-production systems

The PORTS future program collaborates with faculty researchers at Ohio University who are exploring opportunities for developing biomass, bioenergy, and bio products coproduction systems to enhance environmental ecosystem protections. Biomass, bioenergy, and bio products could play a key role in the development and operation of an IES-CLM complex.

#### Related OU academic departments

The PORTS future program continues to engage with faculty and researchers from engineering, regional economic and community development, environmental studies, public administration/public policy, and other disciplines when applicable to advance grant activities.

# OU Office of Research and Sponsored Programs

In previous grant years, the Vice President (VP) for Research and Creative Activity and Dean of the Graduate College at Ohio University has engaged with SODI and DOE through the PORTS future Program to learn more about the site reindustrialization effort. The OU Research Office remains committed to providing support to our work, whenever possible, and specifically with linking relevant OU researchers to site reindustrialization efforts.

#### OU Entrepreneurial Ecosystem

Ohio University's Small Business Development Center (SBDC), APEX procurement technical assistance center (APEX), TechGROWTH Ohio entrepreneurship program, Innovation Center, LIGHTS Regional Innovation Network, Social Enterprise Ecosystem (SEE), and OU Tech Transfer Office are excellent resources for the PORTSfuture Program. They provide expert entrepreneurial education, business assistance, and capital resources in support of small business development, procuring government contracts, and venture development in Appalachian Ohio. These groups provide specific services in partnership with the PORTSfuture grant as requested.

#### OHIO for Ohio

Ohio University is committed to educating students, improving communities, and impacting the local, regional, and statewide economies through six OU campuses and two OU regional centers around the State. OU has recognized the PORTS site reindustrialization initiative as an important priority for regional economic development in southern Ohio. Numerous OU officials are providing input and offering insights to the activities of the OU DOE grant.

#### National experts and thought leaders

Ohio University's PORTSfuture grant leverages and incorporates University resources and relationships by engaging well-respected national experts and thought leaders in our grant activities. These august individuals provide valuable guidance and feedback to our work and raise the visibility of efforts to repurpose the facility. During Budget Period 1, the following serve in an ongoing and/or in-depth consultative capacity to our site repurposing and ongoing technical assistance, public outreach, education, and engagement for property transfer and future use grant activities:

- Mike Zimmer, Esq., attorney, and international energy business development expert who serves as an Ohio University Voinovich School Executive in Residence.
- Dr. Benjamin Cross, P.E., founder, and CEO of NuSynergy Energy LLC, formerly with Savannah River National Laboratory who serves as an Ohio University Voinovich School Executive in Residence.
- Jeff Finkle, past President, and CEO of the International Economic Development Council (IEDC) and Ohio University Voinovich School Appalachian New Economy Partnership Fellow.
- Rob Painter, OU alum with a storied career in the field of GIS/Data/Cybersecurity and venture capital including working for the US government, Central Intelligence Agency (CIA), Google, and other endeavors. He advises on efforts related to his connections in federal, defense, data, and technology areas with a specific interest in exploring utilizing the site as part of a national energy security strategy and/or as a possible site for government data centers and/or other private sector data centers. Rob serves as a Senior Executive in Residence at the Voinovich School.
- Dr. Greg Browning, President of Capital Partners, former Ohio University Trustee, former Director of the State of Ohio Office of Budget and Management, and former Senior Policy Advisor to Governor George V. Voinovich. Greg has served as a Senior Fellow and past chair of the Voinovich School of Leadership and Public Service advisory board.

#### Summary and next steps

Ohio University is honored to remain a part of, and to continue to add value to, DOE, SODI, and site contractor collaborative efforts on informing end-state configuration to support viable site repurposing, ultimately resulting in cost savings/cost avoidance and reducing the EM footprint at PORTS. The activities executed during Budget Period 1 under the Site Repurposing Continuation and Ongoing Technical Assistance, Public Outreach, Education, and Engagement for Property Transfer and Future Use activities created public value and served the public interest. These activities informed site cleanup and future use planning, while being mindful of leveraging the existing public assets of the PORTS site and the region to create regional economic stability.

The activities and information cited in this report serve to advance SODI's goal to develop an Integrated Energy System-Closed Loop Manufacturing (IES-CLM) complex at the site. It is important to restate and emphasize that these activities were carried out in a manner that was responsive to the stated future use preferences of the public in the four-county region near the site. These preferences were identified during various DOE and Ohio University public engagement efforts and with the involvement of numerous site stakeholders including SODI; Site-Specific Advisory Board (SSAB); community-at-large; Ohio organized labor groups; local, state, and federal elected officials; county, regional, and state level economic development officials; private sector interests; and national experts. These preferences continue to be sustained through ongoing contact with the same stakeholders.

Ohio University remains committed to building on the momentum gained to continue the vital activities reported on in this document. DOE, SODI, and OU have identified the following areas in which Ohio University can continue to add value. Additional details for some of these activities will be presented in future grant work plans. Proposed future activities include the following:

- Continuing to carry out work depicted in the OU Current Grant Activities graphic shown earlier in this report in Figure 1.
- Continue to identify IES-CLM complex industries and related industry needs to support expansion in the region and/or at the PORTS site. Conduct targeted industry site infrastructure analysis to inform sequencing for cleanup, including conducting a comparison of current site conditions versus conditions needed to support commercial use in specific targeted industry sectors to inform DOE decisions on property transfer.
- Viable clusters for future development that have been identified include energy, advanced manufacturing, and transportation/logistics. We will continue efforts focused on developing Public Private Partnerships for site reindustrialization.
- Identify siting requirements such as utilities and other assets to be left in place resulting in cost avoidance for DOE. Utilize GIS to display information when appropriate.
- Upon request and with the approval of DOE, update the utility matrix and permit inventory. The
  utility matrix provides an at-a-glance view of utilities' current capacity, current usage, excess
  capacity, and other notes of importance for industries looking to site operations at PORTS. This could
  serve to identify assets to preserve rather than demolish, resulting in the potential for DOE cost
  avoidance in this effort. Incorporate the management of site ecological assets/natural capital assets
  management as appropriate. The use of this matrix is subject to SODI's discretion.
- Develop and assist with the execution of a site repurposing implementation plan and SODI Resource Manual as requested/as appropriate and incorporate federal programs as appropriate.
- Work with SODI to develop site services agreements to facilitate and streamline new businesses' ability to access needed site services when locating on parcels transferred to SODI for site reindustrialization.
- Collaborate with SODI to promote their website and available transferred parcels through a public information campaign to audiences that include industry prospects, businesses, nonprofits, economic development professionals, and general inquiries.
- Assist SODI in fielding requests for property. This includes SODI requests to DOE for property and includes private sector request to SODI for property.
- Produce data and GIS needed to support these efforts (e.g., this may include maintaining existing data products, GIS products, creating profiles of regional economies, and/or other data to be determined).
- Conduct economic impact analysis, workforce analysis, and other types of data analysis for IES-CLM related industries.
- Assist SODI in developing and executing a financial plan to increase SODI's capacity to obtain the resources necessary to transform PORTS into an Integrated Energy Systems-Closed Loop Manufacturing (IES-CLM) complex and to pursue complementary missions and facilities.
- Continue to identify and engage external and/or private sector entities that could be interested in utilizing site assets for future business development and job creation in the region.

- Continue executing public information initiatives utilizing regional and national influencers and thought leaders to articulate the value of the PORTS site for economic development and elevate the visibility of the site reindustrialization efforts.
- Continue and/or expand Science, Technology, Engineering, and Mathematics (STEM) enrichment activities designed to entice regional students to learn about and engage in activities in STEM disciplines with the goal of encouraging students to pursue careers in these in-demand fields that provide well-paying employment opportunities.
- Continue to expand existing partnerships and develop new partnerships to advance site reindustrialization efforts.
- Continue to disseminate program information through websites, presentations, news releases and/or conferences as appropriate.
- Continue to inform and update key regional and political stakeholders on activities and progress.
- Continue to leverage other funding opportunities whenever possible and especially pursue opportunities to bring private sector dollars and/or public private sector partnerships to the PORTS site. This includes building upon current initiatives with entities such as:
  - Commercial partners interested in exploring opportunities at the site.
  - University partners interested in conducting research, development, and deployment activities in advanced energy/renewable energy endeavors at the site.
  - Technology commercialization experts, private sector venture capitalists, and pre-seed fund resources interested in investing in southern Ohio companies.
- Other activities will be defined in collaboration with program partners.



Granulation

Eurotecnica

process

CO,

NH<sub>3</sub>

17

Melamíne

C<sub>3</sub>N<sub>6</sub>H<sub>6</sub>

Urea(carbamide) 16

(Fertilizer) (NH<sub>2</sub>)<sub>2</sub>CO

co,

Hydrocarbons

& Alcohols

11

13 Char

12 Sulfur

Extracted 14 chemicals

Steam

CO

Formox

Process

Melamine

Synthesis

19

20-

Resins

Methanal

(Formaldehyde) CH<sub>2</sub>O

ó

# Appendix 1 Integrated Energy System (IES) Technical Concept

Baked Goods

Foods

Polymers consumer

Numerous

products

& Processed 22

industrial &