

U.S. Department of Energy PORTS Facility Site Reindustrialization

Piketon, Ohio

The facility at Piketon, Ohio

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PORTS: A Multi State Economic Development Asset

- Adjacent to largest natural gas reserves in the world
 - Private sector is investing 100s of billions of dollars in the region
- Goal is to leverage PORTS site unique assets for the synergistic production and use of energy including:
 - Power generation with Combined Cycle Gas Turbine (CCGT) facility and other energy generation facilities
 - Cracker facility, gas processing, fractionation plants, and refineries
 - Downstream shale natural gas liquids petchem manufacturing facilities
 - Utilize the site as a regional energy transmission and distribution hub
- Turn a national liability into a taxpayer asset
- Transform the PORTS mega-site into multi-state economic development asset and key component of the “Appalachian Energy Hub”

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SODI MISSION AND FOCUS

- SODI is the Southern Ohio Diversification Initiative: the designated Community Reuse Organization (CRO) for the DOE PORTS Reservation near Piketon
- SODI's focus is to improve the quality of life in Pike, Scioto, Ross and Jackson Counties
- Through economic diversification
- Through development of underutilized DOE land and facilities at PORTS
- Support local industries
- Develop partnerships

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Ohio University PORTSfuture Project Summary

Funded by DOE EM Portsmouth/Paducah Project Office

Activities performed for the benefit of the public interest and to inform cleanup efforts at the site

Interface with DOE, SSAB, SSAB committees, CRO, site contractors, OEPA, elected officials, economic development entities, national experts, private sector/industries, and many other community stakeholders

Activities focus on:

- Education, Public Engagement, and Entrepreneurship
- Economic Modeling/Economic Impact /Data/GIS
- Ecology, Hydrology, and Site Environment

Project information and products: www.portsfuture.com

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OHIO UNIVERSITY GRANT ACTIVITIES: OUTCOMES AND PUBLIC VALUE CREATED

- Reduce DOE EM footprint at PORTS
- Reduce DOE costs/cost avoidance to save taxpayer dollars
- Facilitate the transfer of property
- Leverage public assets of PORTS and the region
- Attract/expand industries and create jobs
- Contribute to regional economic stability-attract domestic and foreign investment, increase tax base

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WHO IS INVOLVED: GOVERNMENT, CORPORATIONS, NONPROFITS, & CITIZENS

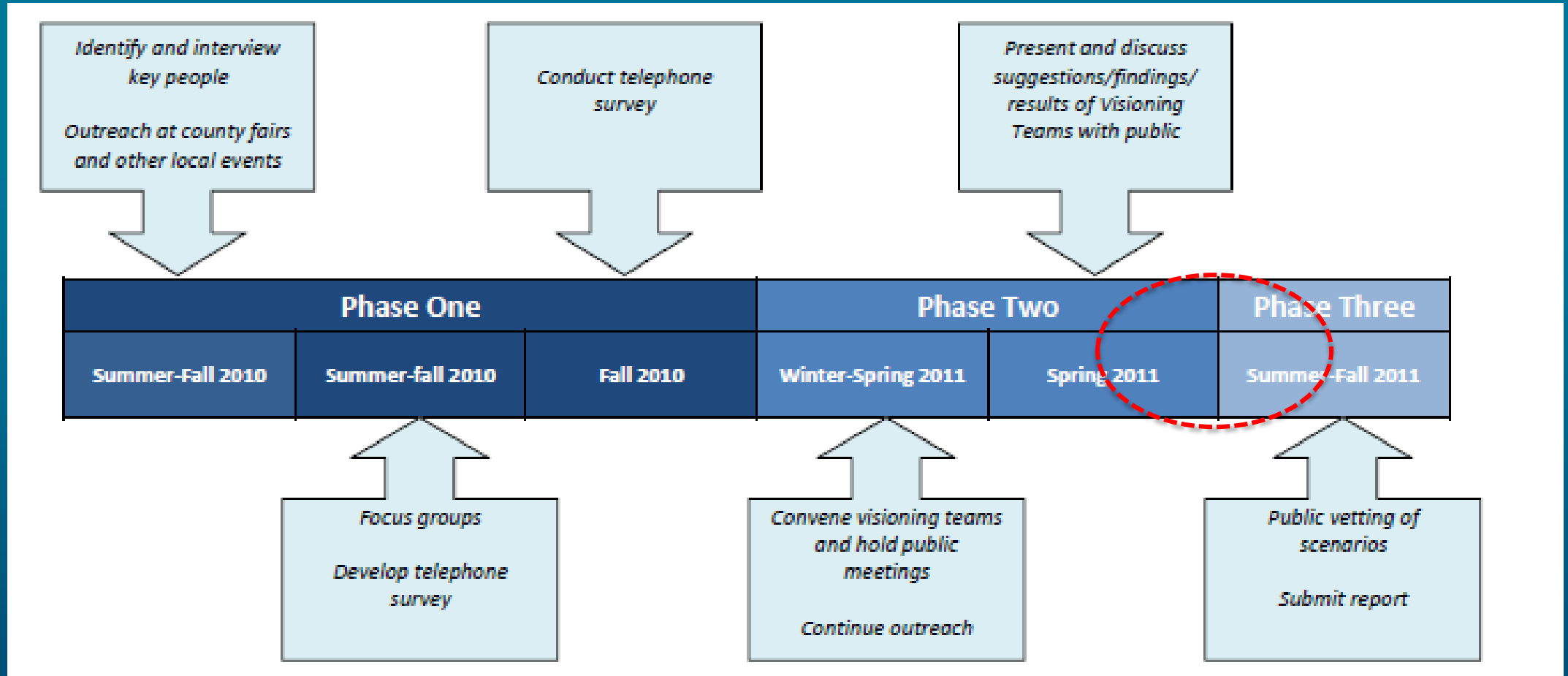
- DOE PORTS staff
- SODI
- FBP, InSolves, and RSI (site contractors)
- Ohio University
- National laboratories
- National experts
- Regulatory entities
- Consultation with regional economic development stakeholders in Pike, Scioto, Jackson, and Ross counties, JobsOhio, OVRDC, the SSAB, private industry, community, local residents, elected officials and others

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Initial Ohio University Grant Activity 2010-2011: Public Engagement on Site Future Use Visioning



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Public Future Use Scenario Voted Preferences 2010-2011

Scenario	Preferences
Industrial Park	421
Green Energy Production	475
Multi-use Southern OH EC	143
National R & D	418
Training & Education	160
Greenbelt	131
Warehousing	179
Nuclear Power Plant	495
Metal Recovery	152

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SODI SITE FUTURE USE VISION

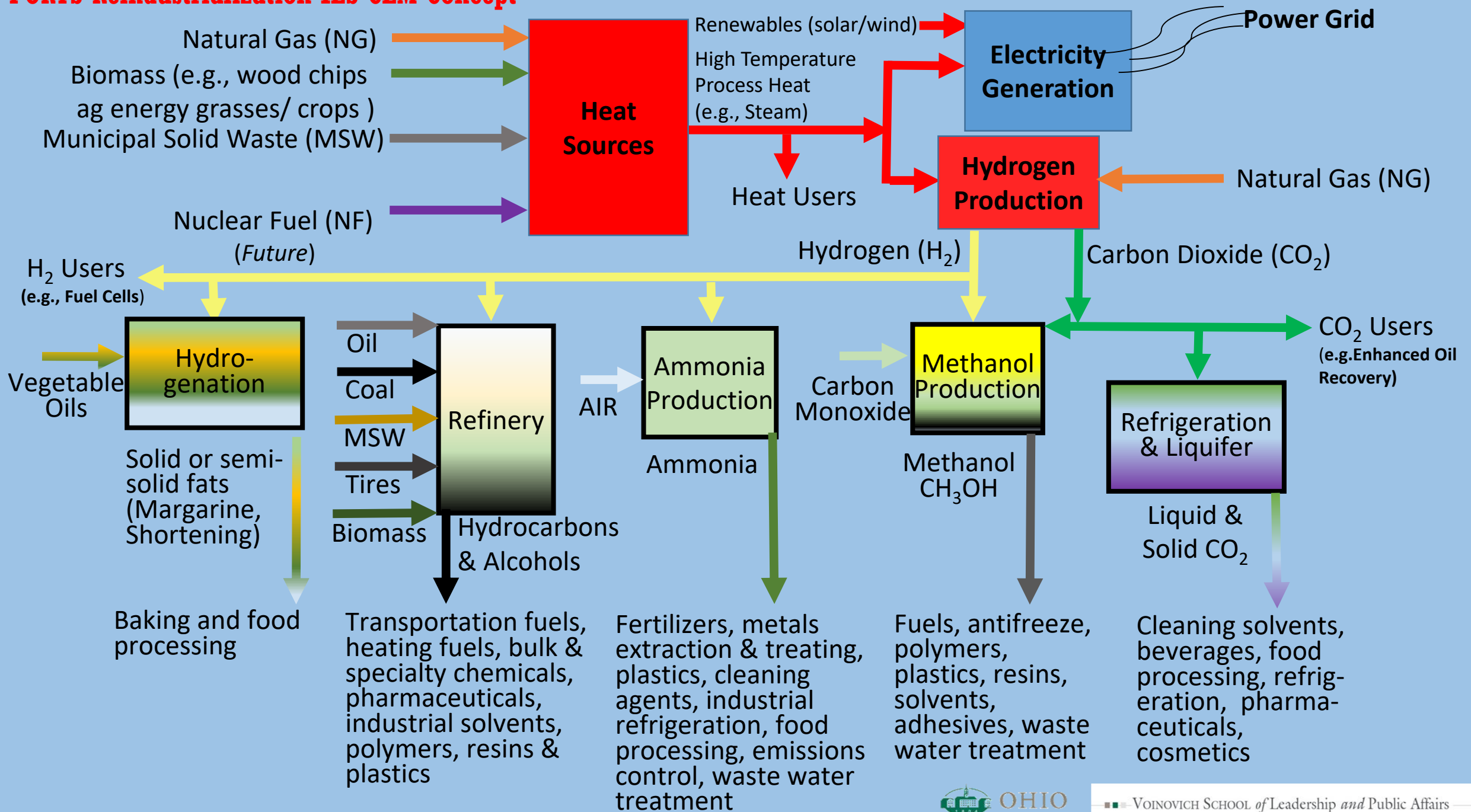
- Derived from 2010-2011 public engagement future use visioning process
- Creating an Integrated Energy System-Closed Loop Mfg. (IES-CLM) Complex at the PORTS site utilizing circular economy principles
- The IES will be an “Energy Mall” incorporating fossil, renewable, nuclear, energy storage, T&D, and advanced energy technologies
- Utilize Ohio shale resources in downstream manufacturing
 - Links to cracker facility and regional storage hub
- Collocating energy producers and intensive energy end-users
- Providing cluster collaboration opportunities for the region
- Interested industries will be sought to join this effort as partners, anchor tenants, co-producers, and energy end-users

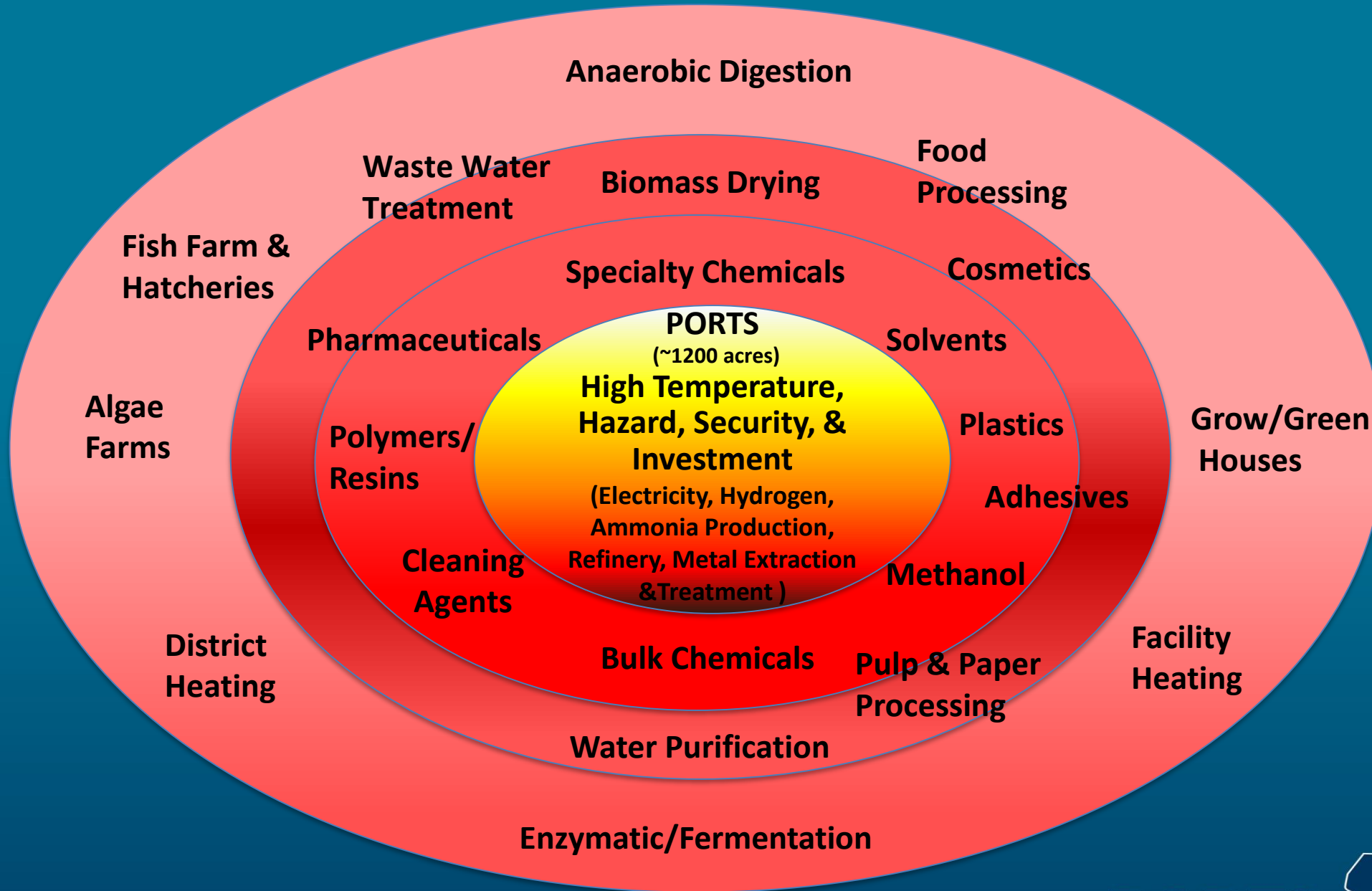
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PORTS Reindustrialization IES-CLM Concept





High Temp

Low Temp

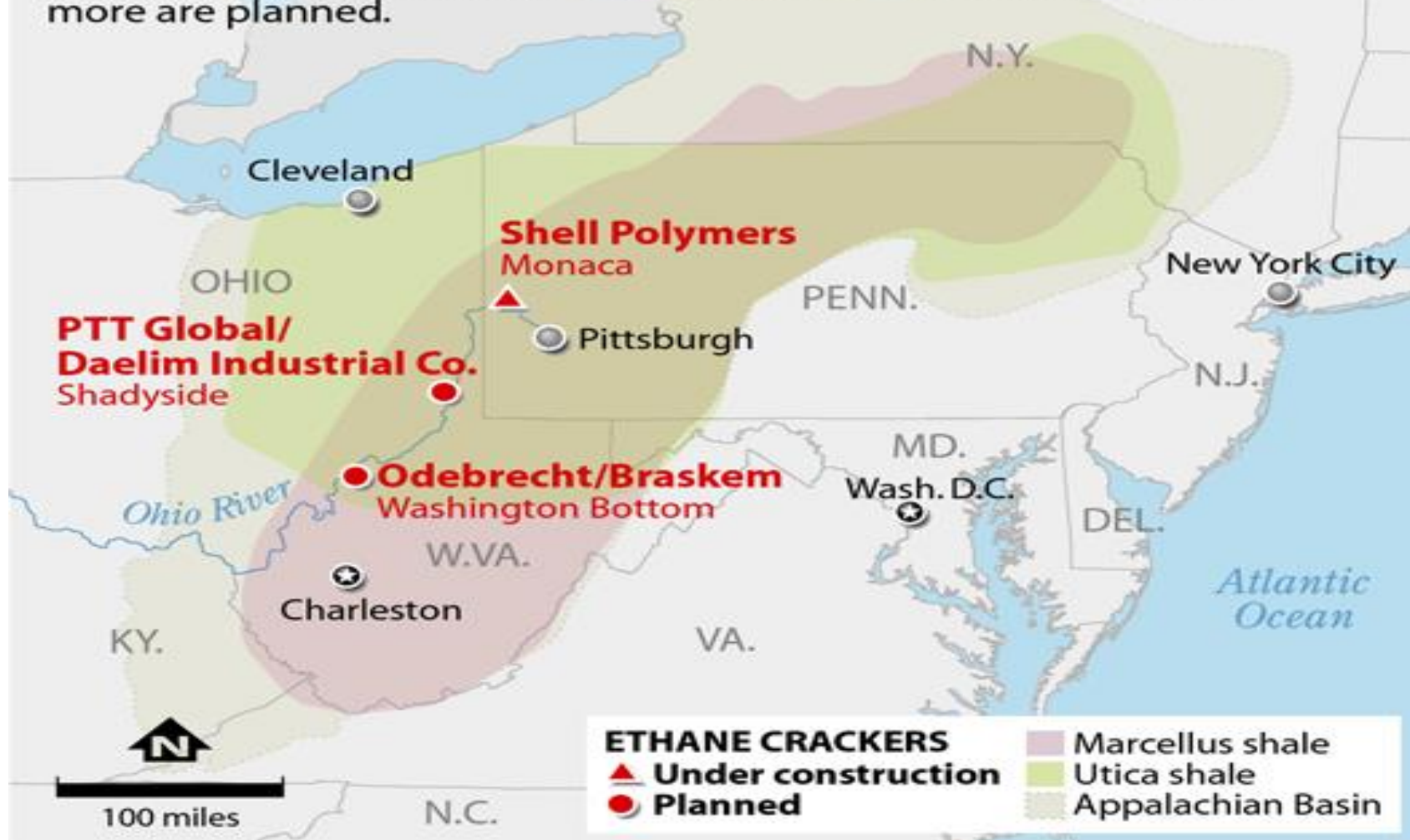
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Ethane Cracker Plants on the Ohio River

Cracker plants take ethane, a liquid natural gas byproduct, and “crack” the molecules to produce ethylene, a root chemical used to manufacture a variety of plastics products. One sprawling cracker plant is under construction along the upper Ohio River and two more are planned.



SOURCE: U.S. Energy Information Agency

PAUL HORN / InsideClimate News

1 NATURAL GAS PRODUCTION
Shale gas is extracted from the earth.

2 PROCESSING PLANT
Natural gas liquids (NGL) are separated from natural gas.

3 FRACTIONATOR
Natural gas liquids are refined into their distinct products, such as propane, butane and ethane.

LIQUEFACTION
Some ethane is liquified for export in tanker vessels.

4 ETHANE CRACKER
Ethane under high temperature and pressure is broken down into ethylene, the basic building block of most plastics.

5 PLASTICS MANUFACTURING
Ethylene is used to produce a wide variety of plastics and other products, including toys, textiles, containers, bags, PVC and housewares.

Plastics: From the Gas Well to Your Home

Political leaders see petrochemical and plastics manufacturing as the next big thing for the Appalachian basin after the fracking boom of the last decade. Making plastic requires a heavily industrialized process and network of gas wells, storage and pipelines. The Department of Energy calls this the "ethane value chain."



SOURCES: U.S. Dept. of Energy; InsideClimate News research

NOTE: Graphic is diagrammatic and not to scale

PAUL HORN / InsideClimate News

Location Advantage-Nat'l Interests

- DOE secure facility
- Massive infrastructure-one of best mega-sites in nation
- Connection to national grid-transmission and distribution capabilities
- 60% US population within 600 miles
- Grid stabilization
- National security/energy security/inland refineries/grid stabilization
- Midwest emergency management
- Rural development project
- Keeps natural resource wealth in US

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Location Advantage-State & Regional Interests

- Natural resources in Appalachia/shale resources, cracker facility, storage hub
- Alternative uses of coal, MSW, other feedstock for mfg. and electricity
- Closed loop processes that are fully integrated
- Community support
- Ohio based company owns most shale rights in Ohio
- Marathon, AEP, P&G and other Ohio based companies
- PetChem industries including direct foreign investments
- Creates non-exportable 21st Century jobs in economically depressed area

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PORTS REINDUSTRIALIZATION IMPACT

Appalachia

HOPE
Capitalize on natural resources
Repurpose coal
Shale gas
Focus area for innovation
Provide bulk feedstock materials
Supply chain opportunities
Develop intermodal transportation hub

National

Convert a Federal liability to an asset
Increase US competitiveness
Leadership in integrated technologies
Improve energy price stability & predictability
Promote energy security & sustainability
Reduce greenhouse gas emissions

Ohio

Increase state tax revenues
Economic development in depressed area
State-wide supply chain opportunities
Create an intermodal transportation hub
Expands Ohio based companies in Ohio
Capitalize on available natural resource
Capitalize on a Federal investments
Attract major industry investments

Community

Economic stability
Increase local tax revenues
Retain educated & skilled workers
Import & home grow talent
Improve education at all levels
Enhance quality of life
Increase civic pride
New recreational areas & civic/cultural activities

PORTS

Purpose, mission & vision for the future
Host a megaproject & attract \$B investments
Utilize and enhance industrial infrastructure
Accelerate site cleanup
Integrate utility & support processes
Innovation hub for integrated systems
Economic driver/engine
Co-location of energy producers
Focal point for recycle & reuse

Industry

Synergistically integrate technologies
Optimize efficiency & minimize waste
Share resources & processes
Leadership in closed loop manufacturing
Significantly reduced operating costs
Promote partnerships & collaborations
Promote industry symbiosis (closed loop manufacturing)

Workforce

Create permanent non-exportable jobs
Opportunities for all skills and education levels
Development of advanced skills
Vertical & horizontal expansion of skills
Challenging opportunities with a greater purpose
Opportunities to work old & new technology

Technology

Development of integrative technologies
Next generation technologies
Focused research, development, demonstration, & deployment opportunities
Design for flexibility, robustness, & resilience
Enhance separations and recycling technologies
Develop a model of innovation to be replicated

Environmental

Promote Recycling & reuse
Optimize efficiency & minimize waste
Reduce greenhouse gas emissions
Provide new wetlands & recreational space
Enhance natural resource utilization
Utilize brownfield site

Potential Projects

- Renewable energy/alternative energy generation
 - Solar and solar panel mfg.
 - Biomass
 - MSW
- Data centers
- Vertical farming/indoor farming
- Combined Cycle Gas Turbine (CCGT) facility
- Pet Chem-downstream shale industries
- MSW to jet fuel for commercial aviation

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Summary and Next Steps

- PORTS is an extraordinary industrial site co-located to extraordinary natural assets
- Commitment to have FE and EM teams collaborate and integrate planning and actions to support both missions
- Convene summit in Ohio fall of 2019 to solidify joint FE/EM project (FE, EM, NETL, Appalachian Energy Hub Task Force, State of Ohio, SODI, OU)
- Collaborate on a 2020 roadmap/strategy to support joint mission of oil and gas development in the region while integrating opportunities for PORTS facility and Appalachian region

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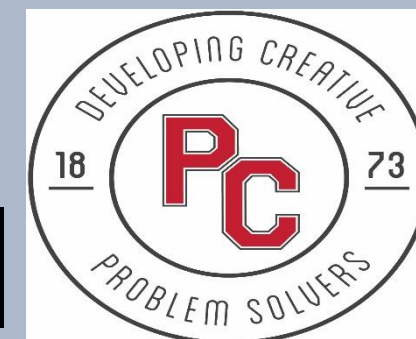
Ohio University Russ College
of Engineering and Technology

[Pike County Schools](#)

PORTSMOUTH SITE ADVISORY BOARD



VAINOVICH SCHOOL of Leadership and Public Affairs



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