**PROPOSED PROJECT OVERVIEW**

The facility, expected to employ 400-500 workers during operations, would include an ethane cracker and three polyethylene units with storage, logistics, cooling water facilities, water treatment, emergency towers, buildings and warehouses.

The proposed complex would be the first major U.S. project of its type built outside the Gulf Coast region in 20 years, locating the facility close to both supply and markets would reduce economic and environmental transportation costs and provide regional manufacturers with more flexibility, shorter supply chains and enhanced supply dependability.

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**FROM NATURAL GAS TO EVERYDAY PRODUCTS**

**ETHANE** ➔ **REMOVE HYDROGEN** ➔ **ETHYLENE** ➔ **POLYETHYLENE**

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**THE MANUFACTURING PROCESS**

Ethane, the primary raw material for the proposed project, is a natural gas liquid, or NGL, that exists in certain natural gas deposits including the Marcellus and Utica Shales. Ethane is primarily used to create ethylene. The proposed project’s "cracker" unit would break down ethane's large molecules and rearrange the carbon and hydrogen atoms to create ethylene. This is accomplished by heating the ethane to very high temperatures, greater than 1100°F (593°C), in one of the cracker's seven reactors. Producing ethylene is an important first step in creating many of the products we use every day.

The proposed facility would convert the ethylene it makes into different types of polyethylene, the next step in the manufacturing chain. Different grades of polyethylene make different types of products:

- Low-density polyethylene (LDPE) and linear low density polyethylene (LLDPE) are the raw materials for items like food packaging, film, trash bags, diapers, toys and housewares.
- High-density polyethylene (HDPE) is used to create "stiffer" products such as crates, drums, bottles, food containers and other types of housewares.

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**PROJECT AT-A-GLANCE**

**KEY FACTS**

**PROJECT**
A petrochemical complex converting ethane into ethylene and then into polyethylene.

**OPERATOR**
Shell Chemicals

**SITE**
Located 30 miles northwest of Pittsburgh on the Ohio River, the approximately 780-acre site is primarily existing industrial land in Potter and Canfield Townships, Beaver County, Pennsylvania, with processing units in Potter.

**SCOPE**
Facility would convert ethane into approximately 1.6 million tons of polyethylene per year.

**PRODUCTS**
- Low density and linear low density polyethylene (LDPE and LLDPE) used to make food packaging, film, trash bags, diapers, toys and housewares
- High density polyethylene (HDPE) used to make crates, drums, bottles, food containers and other types of housewares
- Ethane cracker byproducts used to make fuels and other chemicals

**JOBS**
Up to 6,000 jobs during construction; 400-500 once operational

**BUYING & HIRING LOCALLY**
Shell and its contractors will strive to hire and buy locally where practical. The program includes a commitment to promote opportunities for local suppliers and contractors, and support local workforce development programs.

**KEY MILESTONES**
- Project evaluation
- Permitting
- Pre-decision site preparation
- Investment decision
- Construction start (if project proceeds)
- Operations start

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**FOR MORE INFORMATION ABOUT SHELL’S PROPOSED PETROCHEMICAL FACILITY, TO PROVIDE FEEDBACK OR ASK QUESTIONS:**

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May 2015
SHELL CHEMICALS
A PROPOSED PETROCHEMICAL FACILITY

BUILDING NEW OPPORTUNITIES TOGETHER

Shell is exploring the possibility of building an petrochemical facility in Beaver County, Pennsylvania, near Pittsburgh. The project would take advantage of the plentiful new supplies of ethane in the region to produce polyethylene, a raw material used extensively by the area’s manufacturing base to make a wide range of products we use every day. If built, the project would create jobs, promote growth and provide regional manufacturers with more flexibility, shorter supply chains and enhanced supply dependability.

WORKING TOGETHER TO BUILD RESPONSIBLY

At Shell, we are committed to keeping people safe, protecting the environment and being a good neighbor. We still have a lot of work to do before deciding whether or not to build the facility – including commercial and cost evaluations, detailed engineering and permitting, among many other activities. We will share updates as we continue with project planning and evaluation, and we will work with our prospective neighbors and other parties to address their interests.

DELIVERING COMMUNITY BENEFITS

If we move forward with our proposed project, the facility would deliver a number of benefits:
- jobs: up to 10,000 at peak construction and 400 on operations;
- economic growth and increased local tax revenue; and
- redevelopment of an existing industrial site.

SITE SAFETY

KEEPING PEOPLE SAFE

Safety is a core value at Shell. Each team member makes a personal commitment to keep people safe, protect the environment and be a good neighbor – goals we live by every day. Safety is fundamental to everything we do storing with a rigorous, five-level systematic approach to safety as we design and engineer the project.

PLANNING FOR SAFETY

This means that at each stage a team of experts is assessing potential safety concerns: fire, explosion, traffic accidents, leaks and equipment failures. The first objective is to eliminate potential risks wherever possible. Then we build in measures to prevent incidents while determining how to limit any effects. Once in operation, we will maintain a highly trained response team on site and we will work closely with local emergency officials and agencies to regularly test our response plans and procedures.

DELIVERING SAFETY

At Shell, we won’t be satisfied until we achieve our goal of zero incidents, and our people play a critical role in our safety performance. To that end, we introduced our mandatory 12 Life-Saving Rules in 2009, significantly improving our overall company safety record. These rules focus on the highest risk areas in our daily activities, including working safely at heights and following safe driving practices such as not speeding or using cell phones. All employees and contractors who work for us must follow these rules or choose not to work for Shell.

REPURPOSING AN INDUSTRIAL SITE

A key benefit would be our planned re-development of an existing industrial site. Shell also would be a long-term steward of the kind.

PROTECTING THE ENVIRONMENT

We believe that taking an environmentally responsible approach is the right thing to do. If the project moves forward, we plan to use energy and water efficiently, redesign on existing industrial sites, manage emissions, prevent spills and protect water quality.

BALANCING WATER USE

If built, the facility would recycle and reuse water in its processes, drawing approximately 20 million gallons per day from the Ohio River. Approximately 80 percent will evaporate as clean steam, the rest will be treated to remove impurities and tested to meet water quality standards before it’s returned to the river. This includes:
- Recycling condensate (condensed steam from process equipment).
- Retention ponds for storm water; water will be tested, treated as needed and then discharged to the river.
- Procedures to avoid, mitigate and quickly respond to spills before they reach water.
- Groundwater monitoring wells and regular water quality testing.
- Shoreline improvements and erosion protection along the Ohio River adjacent to the facility.
- Plans to create, recreate, enhance and preserve in-kind habitats — in the same watershed to offset impacts to wetlands and streams on the site.

ADDRESSING AIR QUALITY

The proposed facility would use the most recent technologies to provide the greatest energy efficiency and lowest emissions. Other environmental measures we’re considering include:
- Recycling “tail gas,” a byproduct of the ethane cracking process that is primarily cleareining hydrogen, to power the ethane cracker furnaces.
- Building an ethylene storage unit to eliminate visible flaring except during emergency situations such as a total regional power failure.
- Using natural gas-fired cogeneration to provide steam and electricity for the project and selling excess electricity to PJM for regional use, potentially helping improve air quality.
- Eliminating the environmental impacts of transporting ethane to the U.S. Gulf Coast for processing and shipping the polyethylene back to the region.

PROMOTING LOCAL OPPORTUNITIES

If the project is built, we would expect to spend a large portion of the project’s proposed investment in the area through direct and indirect employment, and the purchase of products and services.

HIRING AND BUYING LOCALLY

During construction, our primary construction contractors would be the source of the majority of construction jobs, supply purchases and subcontracts. While we cannot make specific commitments, our agreements with them emphasize using local resources. They will strive to hire to locally and promote opportunities for local suppliers and contractors.

KEEPING EACH OTHER SAFE

At Shell, we take the safety of our people, our neighbors and our facilities very seriously. As our employees and contractors are critical to delivering on our goal of zero incidents, we will require skill assessments, drug tests and background checks. We will work with contractors and suppliers who are environmentally and socially responsible; comply with applicable laws and regulations; provide competitive supplies and services; and give proper regard to health, safety and security for their employees and local communities.

RECRUITING LOCAL WORKERS

During a potential construction phase, up to 6,000 workers at peak activity levels could be needed, including skilled craft workers such as boilermakers, bricklayers, carpenters, millwrights, pipefitters, ironworkers, painters, sheet metal workers and electricians (among others), as well as non-skilled labor. Once operational, the facility would employ 400-500 workers in jobs ranging from craft / maintenance to process technology and operations as well as other technical, administrative and management jobs.

At an appropriate stage in the future, Shell and its major contractors plan to work with local schools, community and technical colleges, as well as local and regional construction industry leaders, to support education and training programs that prepare students for careers in construction, engineering and plant operations.

BUILDING BUSINESS OPPORTUNITIES

To help drive more of the proposed project’s economic benefits to the community, we want to work with qualified local firms, primarily through our major contractors. Shell will require its construction contractors to identify local goods and services to use during the construction phase and to work with those local suppliers, vendors and subcontractors so they can compete for contracts.

All of the major construction contractors will have a business registration process to identify local suppliers, vendors and subcontractors.

YOU CAN QUALIFY FOR BUSINESS OPPORTUNITIES

- Strong safety record
- High regard for health, safety and security for employees and local communities
- Environmentally and socially responsible
- Compliance with applicable laws and regulations
- Competitive supplies and services

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