



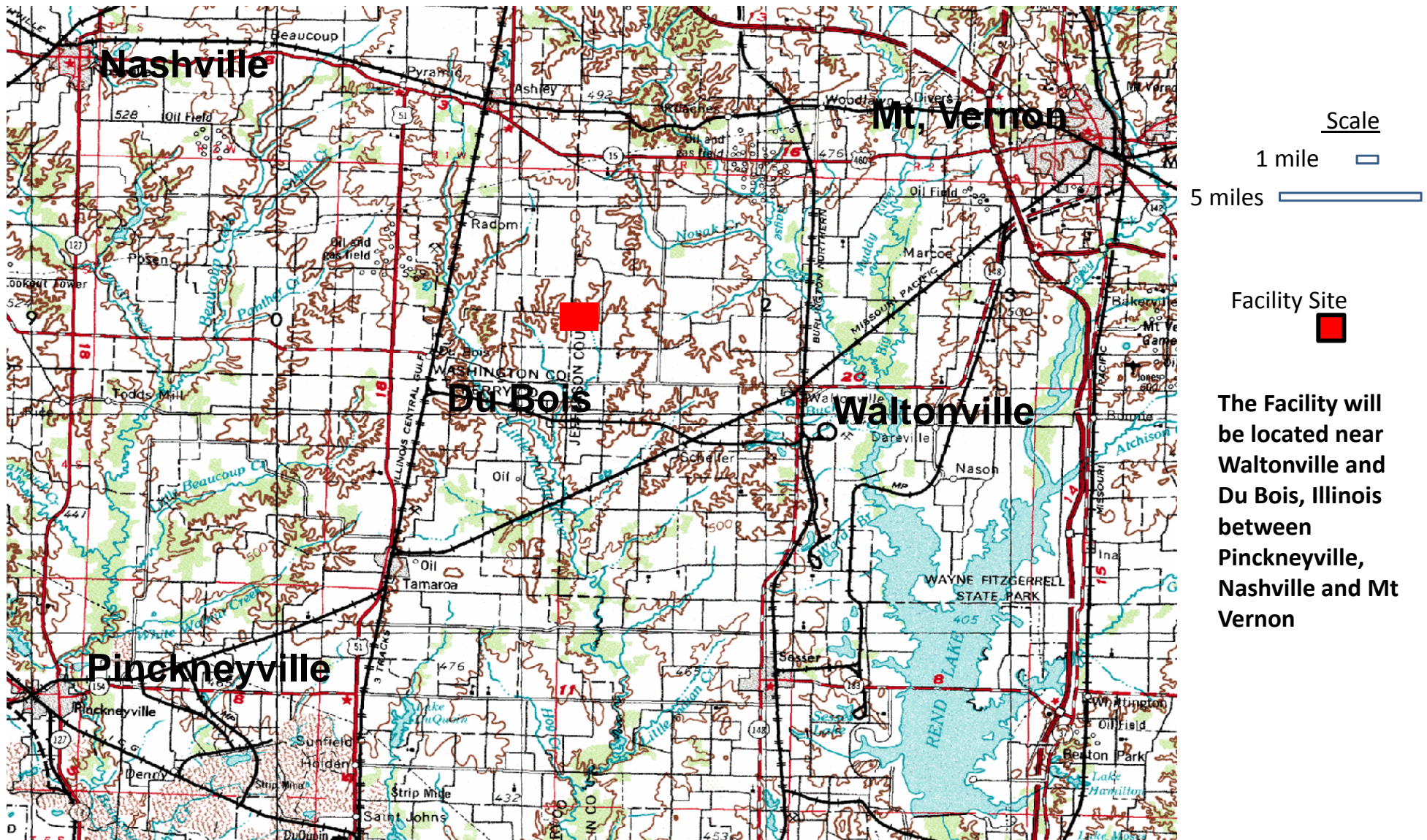
Southern Illinois Coal to SNG

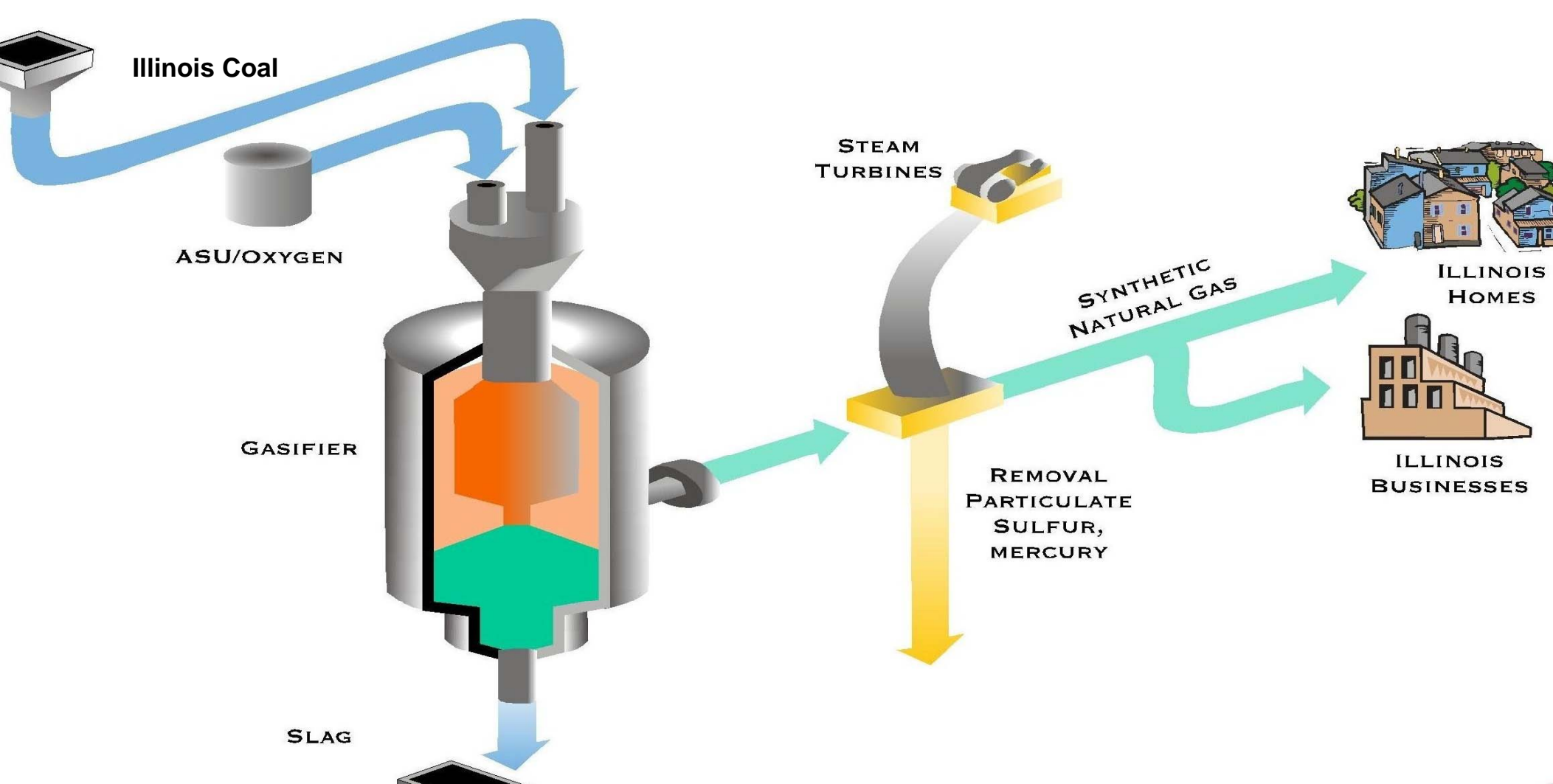
Power Holdings of Illinois

March 2009

The data cited in this material has been developed for Power Holdings by its engineering consultants and are the best current estimates of the values for the Facility. The material is subject to frequent and substantial change over time. This information is not suited for use as the basis of technical design nor for financial, business or investment decisions.

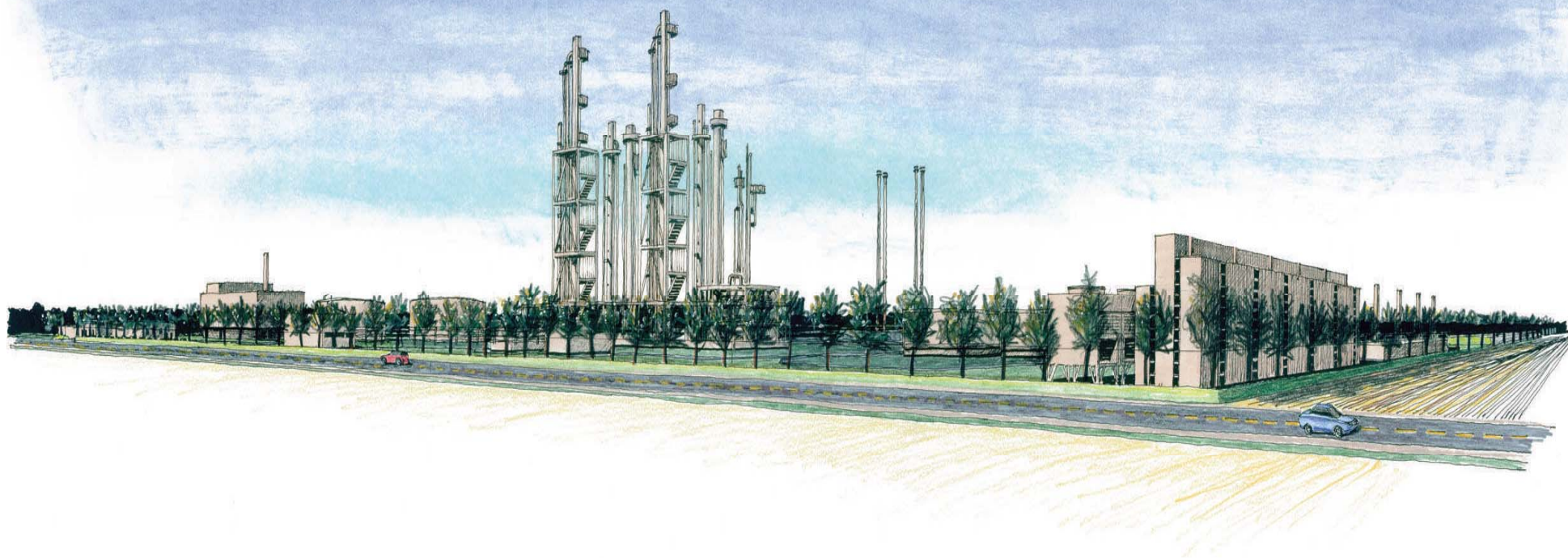
Southern Illinois Coal to SNG Facility Site





Basic Gasification Process

A gasifier is a closed vessel where coal slurry (coal turned to powder and mixed with water) is combined with nearly pure oxygen. The gasifier operates at a very high pressure (1000 psi) and high temperature (2500°F). Almost all the coal is turned into a gas with a small percentage leaving the bottom of the gasifier in the form of a glass like material that can be used in road bed construction and concrete production. The gas that leaves the gasifiers is cleaned of impurities (particulates, sulfur and mercury) and converted into synthetic natural gas, which is the same as the natural gas used in homes. As part of the gas clean-up processes, high pressure steam is produced which is used to generate sufficient electric power to operate the entire Facility.



Artist's Rendering of Southern Illinois Coal to SNG Facility

This rendering shows the main plant from the southwest corner looking from Washington County across Tomahawk Lane. At the right corner of the plant are the six gasifiers, and to their right are the air separation units. The tall towers in the center of the site are the Rectisol towers which are part of the gas clean-up process. Just to their right are four safety vents, which will operate about 1% of the time. Located at the left side of the picture are the steam generation, cooling towers and maintenance buildings. There are no smoke stacks on this site similar to those one would find at a conventional electric power plant.



Gasifier

Pictured above is one gasifier contained in a weather enclosure building. During normal operation, the Facility will utilize five gasifiers with one spare as back-up. The gasifier takes a coal slurry, and nearly pure oxygen from the air separation unit, and turns the coal into a gas. Since it is planned for the coal to be delivered to the Facility in an underground slurry pipeline, there will be no coal pile or coal trains at the site. The gasification process is a completely closed system, thus producing no odors.



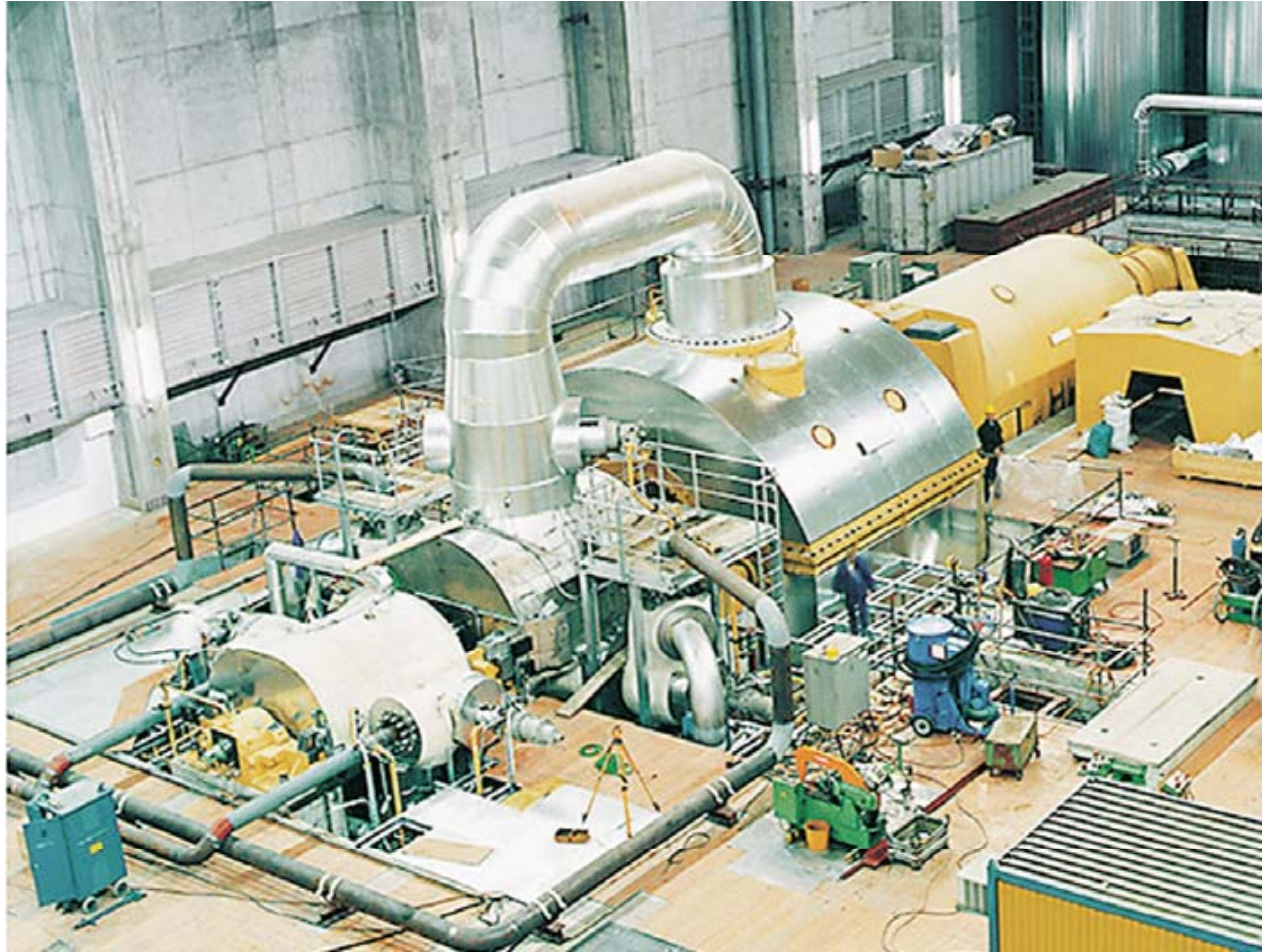
Air Separation Units

Pictured above is an air separation unit. The Facility has similar units. An air separation unit takes the air that we breathe and compresses it until the oxygen separates from the nitrogen. The pure oxygen is then piped to the gasifier. Argon, which represents 1% of the air we breath, is also separated. The nitrogen and argon are sold to other industrial facilities for use in their processes. Argon and nitrogen are not harmful to people and produce no odors.



Rectisol Towers

Pictured above is a Rectisol unit. The Facility will have two such units. The Rectisol unit cleans the gas that comes out of the gasifiers removing over 99% of the sulfur found in the coal. The Rectisol process uses cooling and pressure to separate out the sulfur. Once clean, the gas goes into the methanation process which turns it into synthetic natural gas, just like the natural gas used in homes today. All the sulfur captured is immediately turned into sulfuric acid. This process is entirely enclosed thus producing no odors.



Steam Turbines

Pictured above is a steam turbine in a weather enclosure building. The Facility will have two such units also in a weather enclosure building. The Facility has been designed to capture heat from the gasifiers, gas cleaning and methanation processes. This heat is turned into steam and this steam is used to run the steam turbines that produce enough electricity to run the entire Facility. There is even a little electricity left over to provide power to the transmission system near the Facility. Steam turbines are much quieter than gas turbines found at conventional electric power plants.



Cooling Towers

Pictured above is a typical cooling tower installation. The Facility will have a similar cooling tower installation. Once the steam goes through the steam turbine and makes electricity, the steam goes to the cooling tower. Here the water evaporates into the air as nearly pure water vapor, much like the steam that comes off a coffee pot. This is the only water that leaves the plant and it is in the form of water vapor. All other water is cleaned and recycled back into the process.

Basic Information on Facility

- The main Facility site is on 160 acres on the east side of Tomahawk LN. There will be a 120 acre transportation center on the west side of the road.
- The Facility will operate 24 x 7 with 1-2 weeks a year of complete shutdown for regular maintenance.
- Since the Facility is designed to operate 24 hours a day, there will be lights around the site to facilitate safe operations. Any lighting will be directed toward the operation minimizing light emanating into the surrounding area.
- The Facility will employ about 250 employees with about 50 people working each shift.
- Construction of the Facility will take about 3 years with peak employment at the site of over 1,000.
- Tomahawk Lane and E DuBois Road are to be upgraded to handle construction and normal operations traffic (about 150 vehicles per day). Large loads during construction will come from Interstate 64 down U.S. 51 to reach Tomahawk Lane.
- A rail spur will be constructed to Canadian National Railroad to handle rail car shipments and deliveries.
- The activity around the Facility will include the shipping of by-products by truck and rail. This is estimated to be about 20-30 trucks and 15-30 rail cars per day. The by-products shipped by truck and rail will be argon, nitrogen and sulfuric acid.
- All equipment needed for firefighting will be purchased for the site. Facility employees will be trained to handle fire protection. There will be relationships with local fire companies to assist when needed. Any needed training for the volunteers will be provided by the SNG Facility so they can provide assistance safely.

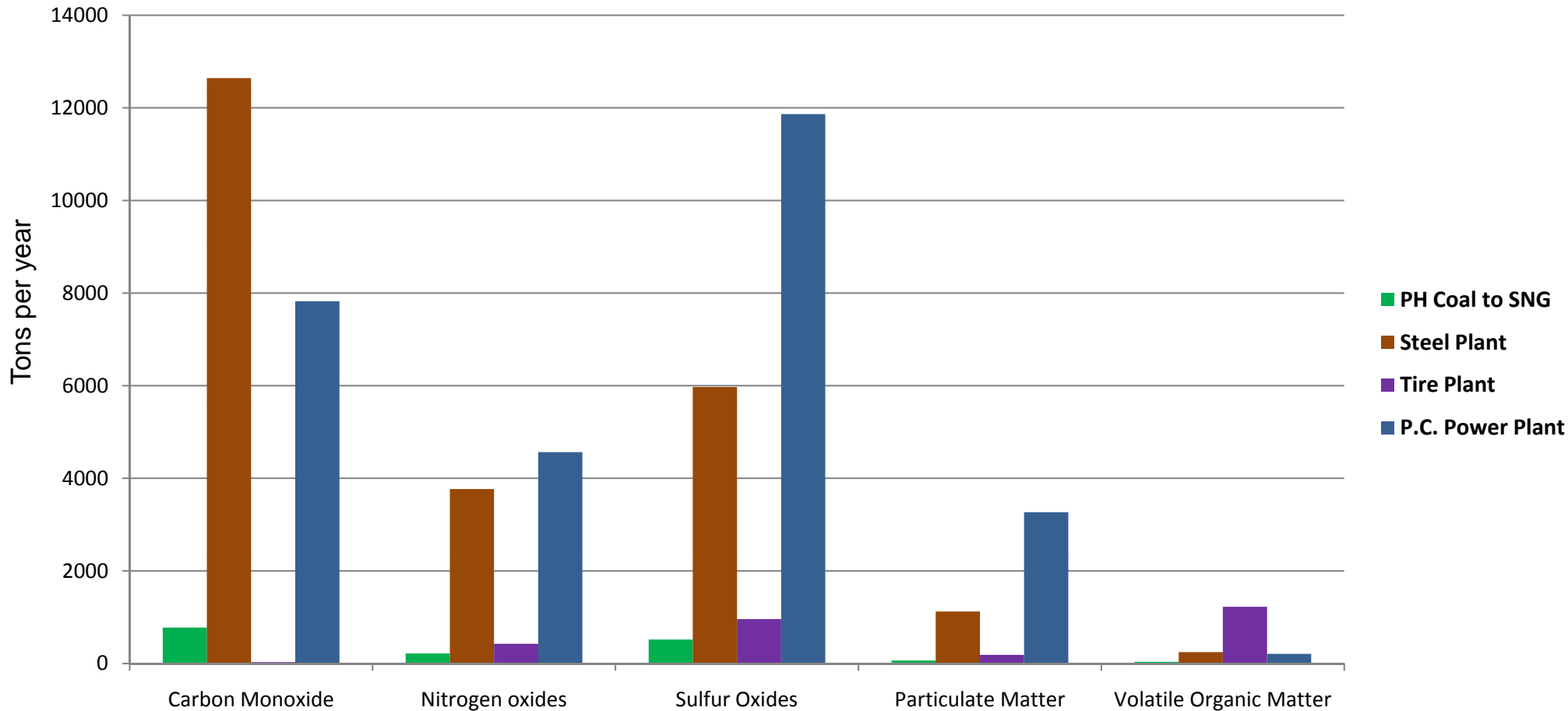
Basic Information on Facility

- Water for operations will be piped in from Rend Lake and purified on site to support steam, cooling and the slurry line needs of the Facility. The Facility's water agreement with the Illinois Department of Natural Resources states that if water from Rend Lake is required for human consumption the Facility will be required to shut down until a sufficient water level returns.
- All process water will be treated on site making this a "zero liquid discharge" Facility. No process water will be disposed of off site.
- Storm water will be captured and treated in the process water treatment facility. A storm water collection pond capable of holding a 24 hour 5 inch rainfall will be constructed on the site. A study of the past 25 years of single day rain falls in Mt. Vernon indicates the largest 24 hour rainfall has been 5 inches.
- There will be a connection to the electric transmission system so that the small amount of excess power can be dispatched.
- Coal supply will be transported underground in a slurry pipeline to the Facility from a mine site to the west.
- The synthetic natural gas will leave the Facility by an underground pipeline and connect to the interstate pipeline in Washington County.
- Noise at the Facility's fence line will be about 65dB, about level of normal conversation.

Air Emission Information

- Power Holdings plans to invest over \$150 million in emission control equipment to comply with all federal and state air standards for the Facility. The following page compares the Facility's emissions to the emissions of other comparable large industrial plants.
- Key Emissions
 - **PM (Particulate Matter)** This is typically the dust and dirt that is usually associated with coal. Since the coal for the process is planned to be delivered to the site by slurry line, there will be no coal pile on the ground, thus the level of PM is significantly lower than other coal operations.
 - **SO₂ (Sulfur Dioxide)** This gas is a contributor to acid rain and originates with the sulfur contained in Illinois coal. The gas clean-up process removes over 99% of the SO₂ from the process and immediately converts it into sulfuric acid.
 - **VOM (Volatile Organic Matter)** These gases can contribute to the formation of smog in urban areas and are a source of odor. The high temperature of the gasification process eliminates most of the VOM's and additional pollution control equipment reduces these levels even further.
 - **NO_x (Nitrogen Oxides)** This gas is normally caused by the combustion of fossil fuels. At the Facility there is no combustion of coal in the gasifiers, because this is a chemical process. In addition, all the electricity is produced by steam turbines so again no NO_x is produced. Any small sources present at the Facility will use low NO_x burners or contain additional pollution control equipment to minimize NO_x emissions.
 - **CO (Carbon Monoxide)** This gas comes from the incomplete combustion of any fossil fuel. Carbon monoxide produced at the Facility is controlled through thermal oxidizers on the Rectisol unit.

Air Emission Comparison of the SNG Facility to Representative Industrial Operations and Power Plants



(Source: Illinois EPA Permits for representative steel mill, tire plant, new state of the art coal power plant and Power Holding's Air Permit Application for the Southern Illinois Coal to SNG Facility)

The emissions shown on the chart above for the Southern Illinois Coal to SNG Facility (in Green) include normal operations, malfunctions and start-ups. The values, in total, are far less than the emissions at comparable large industrial plants or even a state of the art electric power station. The Facility is designed to meet all of the current state and federal emission requirements for facilities of this category.

Summary

- The Facility will replace about 5% of the natural gas used in the State of Illinois and is designed to displace natural gas which is produced off-shore and transported by ship to the United States.
- Most of the Synthetic Natural Gas produced at the Facility will be purchased by local utilities to help keep down the cost of natural gas to their customers.
- The Facility will provide over 1000 construction jobs and approximately 250 well paying permanent jobs. Over \$25 million per year will be spent operating the Facility which will provide a significant boost the local economy.
- The Facility will meet or exceed all environmental standards for this type of operation.
- The Facility will operate as a good neighbor environmentally and will have a very positive impact on the local economy.
- If you have any further questions, contact us:

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