



LEAGUE OF WOMEN VOTERS®  
OF NEW JERSEY

## **PurGen: A coal plant in Linden**

**The following report, the first in a series of three, has been prepared by LWNJ Natural Resources Committee and is aimed at informing League members.**

### **What is PurGen?**

SCS Energy, a Massachusetts-based company, wants to build a plant called PurGen One (generally referred to simply as PurGen) in Linden, NJ. It would function as an electricity generating plant when electric power prices are high and switch to manufacturing urea, which is used in fertilizers, and sulfuric acid when electricity prices are low.

Original plans called for a 750-megawatt power plant, which would have been capable of netting about 500 megawatts a year for the PJM grid, the electricity distribution network that serves New Jersey and other states in the region. The remaining 250 megawatts would have been required to power the plant.

But an air permit application filed with the New Jersey Department of Environmental Protection Dec. 21, 2010, was for a plant that will produce a “nominal” 400 megawatts. (*The air permit application, which was prepared by ESS Group Inc., can be seen at <http://goo.gl/r2qWo>. The NJDEP facility ID number is 42362.*) The application says: “During times of peak power demand, the Facility will export up to approximately 175 MW of electrical power to the PJM Interconnection market.”

The site that has been chosen is a 106-acre property on Grasselli Road that formerly was the location of a Dupont plant. It is on the Arthur Kill, the narrow waterway that separates New Jersey from Staten Island.

### **What fuel would be used?**

Operation of the plant would require 4,400 tons of coal a day. This coal would be brought to Linden by rail and gasified on site, using what is called an integrated gasification combined cycle (IGCC). This is a technology that turns coal into syngas (synthesis gas), removes impurities before combustion, and attempts to turn the pollutants into usable by-products.

PurGen says it will capture 90 percent of the carbon dioxide that would be emanated each year by the gasification process. The company then plans to liquefy that CO<sub>2</sub> and pump it through an undersea pipeline from the Arthur Kill along the New Jersey coastline to the vicinity of Atlantic City and then out to sea. When the pipeline gets to about 70 miles offshore, the CO<sub>2</sub> would be buried under the ocean bed.

Under the original plans, the pipeline was to have had a 10-million ton capacity, twice the amount of CO<sub>2</sub> the gasification would have produced. The remaining capacity would have been available to carry carbon dioxide from other area industries out to sea for sequestration. Under the new plan, the air permit application says the system will sequester 2.6 million tons a year, while it will have a total capacity of 6 million tons.

The type of undersea sequestration which SCS is proposing is being used in one other place in the world—in the North Sea, by a Norwegian oil company called Statoil. The sequestration there is being done from an off-shore platform called Sleipner, where Statoil is also drilling for oil. The oil company is sequestering about 1 million tons of CO<sub>2</sub> a year. When it built its pipeline, Statoil predicted it would be able to dispose of all of Europe's carbon dioxide at the Sleipner site. It has since revised that estimate, conceding that the pipeline is not suitable for handling that amount of CO<sub>2</sub>.

### **Where would the coal come from?**

PurGen says it will make what it calls a “commitment” not to use coal obtained from mountaintop removal mining, an ecologically devastating process in which hundreds of feet of land at the top of a mountain are blown up to get at the coal deposits. Mining companies using this process dump the contaminated debris into rivers and streams in the valleys below, polluting waterways in the region. The process is widely used in the Appalachian Mountains in West Virginia.

According to PurGen, it would use bituminous coal “most likely” from Pennsylvania.

### **How will the plant operate?**

The design described in the air permit application provides for a combined cycle power block that will include:

- A “nominal” 400 megawatt Mitsubishi Heavy Industries combustion turbine/steam turbine generator that is fueled by syngas.
- A heat recovery system generator.
- An air-cooled condenser.

The combustion turbine, steam turbine and heat recovery system generator will convert chemical energy in the syngas fuel into electricity. The heat recovery system generator will convert exhaust gas into high-energy steam, which will generate additional electricity in the steam turbine, the application says.

### **What are the plans for urea and sulfuric acid?**

The sulfuric acid and urea plants could operate up to 8,760 hours a year (that is, 365 days a year), according to the air permit application. A 175-foot tall silo would hold the urea before it is shipped out.

### **How much would the plant cost?**

In the original plans, the company said it would cost \$5 billion, a figure later updated on its website to \$5.2 billion. A Forbes magazine article, meanwhile, gave the expected cost as \$6

billion, and other estimates were as high as \$7 billion. No cost estimates are yet available for the reduced-scale plant.

From the start, SCS Energy said that it would apply for a federal subsidy to offset some of the cost, and there is no indication it has changed that stance.

### **What is the timeline for the project?**

While there has been no official estimate of the time that might be required to build PurGen, obtaining all the necessary permits could be a lengthy process. In addition to the DEP, a host of federal agencies would be involved. As far as the air permit application goes, DEP regulations provide for a review period of 480 days.

The project has been in the planning stage for a long time. By August 2009, when the Linden City Council held a special public information meeting on the project, the company said it had already spent about \$15 million on site design and engineering.

Since then, a law suit stemming from an earlier attempt by Linden to bring condemnation proceedings for the designated site has been settled. Agreement was reached in a multi-party settlement involving the city, DuPont and PurGen as well as ISP, which owns a small piece of land adjacent to the Dupont site, and Morris/Linden Associates, a company which had wanted to build warehouses on the site.

Prior to filing for an air permit with the DEP, SCS Energy had filed an application for the pipeline with the Bureau of Ocean Energy Management, Regulation and Enforcement (formerly the Minerals Management Service.)

### **Who's for it and who's against it?**

Labor unions, seeing a prospect of jobs for their members, have been among the most vociferous supporters of PurGen at public meetings held to date. A pro-PurGen website, [www.purgenmeansjobs.com](http://www.purgenmeansjobs.com), says that 9,000 jobs will be generated during construction of the plant. But SCS Energy itself never claimed anywhere near that number. A brochure issued by the company when the plan was presented to the Linden City Council in 2009 said that during an estimated four years of construction, union jobs would peak at 1,500, and once the plant was completed there would be 125 permanent union jobs and 25 professional jobs. The air permit application now says that the project could support 360 "direct and indirect" jobs.

With the new plant promising ratables as well as jobs, Linden Mayor Richard Gerbounka and some Linden City Council members have come out in favor of the project. Others lined up for PurGen include Rep. Leonard Lance (R-7<sup>th</sup> District) and New Jersey State Senate President Stephen Sweeney (D-3<sup>rd</sup> District), both of whom cited the Obama Administration's support for carbon capture and sequestration and the need to move toward cleaner energy.

The opposition has honed in on worries about environmental issues.

Thirty-five environmental, civic, religious and other organizations, including the League of Women Voters of New Jersey, have joined a Stop PurGen Coal Plant Coalition. Their website, [www.stoppurgencoalplant.org](http://www.stoppurgencoalplant.org), explains why. Among the reasons:

- They challenge the claim that there is such a thing as “clean coal,” citing the impacts of mining, transporting and burning the fuel.
- They protest the use of tax money that could instead go to developing clean energy.
- They raise the possibility of leakage of carbon dioxide into ocean waters already affected by acidification.
- They charge that the plant would increase air pollution, not only with the percentage of the CO<sub>2</sub> that is not sequestered but also with other emissions, including nitrogen oxide, sulfur dioxide and volatile organic compounds.
- They point out that the City of Linden already has an “environmental justice” designation from the state. That is a term used to describe areas with large non-white and/or economically disadvantaged populations which have more than their fair share of polluting facilities.

In shore communities, where tourism could be affected, governing bodies concerned about the pipeline have adopted formal resolutions expressing opposition to the project. The Atlantic City Council was first to go on record as being against it, followed by Mullica, Buena Vista and the Atlantic County Board of Freeholders.

The opposition is not limited to New Jersey. Rep. Michael McMahon (D-NY), whose district includes Staten Island, has written to Gov. Chris Christie that residents of New York and New Jersey should not be exposed to “a potentially toxic experiment.”

### **Why is LWVNJ opposed?**

The LWVNJ board voted to oppose PurGen on the recommendation of its Natural Resources Committee, which cited the following reasons:

- In 2008, the League of Women Voters of the United States called for a 10-year moratorium on new coal-fired generating plants to allow time to study carbon capture and sequestration.
- The proposed site is surrounded by densely populated areas in New Jersey and Staten Island which would be endangered by an accident.
- While an impervious layer of rock would keep CO<sub>2</sub> buried beneath the seabed from seeping upward, lateral leakage remains a concern.
- Even if PurGen abides by its “commitment” not to use coal obtained from mountain removal mining, other mining methods carry their own problems. Underground mining is hazardous and uses huge amounts of energy; strip mining leaves the ground bare of vegetation.
- Although one of the arguments for PurGen is the increasing demand for electricity, the plant would serve as a generating station only part time, when electricity prices are high. It would turn to production of urea and sulfuric acid at other times.
- At present, alternate energy sources meet only a small part of the state’s energy needs. But with burgeoning interest in solar and wind particularly, the picture could change drastically in the years it would take to put PurGen on line.
- Reducing demand by conservation, which has always been a major goal for the League, is preferable to increasing dependence on non-renewable energy sources.