

Holcomb Expansion



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Project Background

This project evolved from a resolution approved by the Sunflower Board of Directors that directed its staff to, "Maximize the value of Sunflower's assets for the benefit of its six Member Systems."

This resolution resulted from strategic planning which revealed that a substantial amount of added value could be achieved through the expansion of the generating capacity at Holcomb Station since it was originally designed for three units.

Because Sunflower didn't need additional generation capacity initially, the overall concept was to develop the site to its maximum potential through investments in new generating units by outside parties with Sunflower operating and maintaining all generating units on the site.

Project Structure

Following six years of planning and marketing activities, Sunflower announced, in August 2005, that Tri-State Generation and Transmission Association, Westminster, Colorado and Sunflower had signed agreements that would result in the construction of two identical 600 megawatt (MW) generating units beginning in 2008. As the project has matured, the generating capacity for the units was increased to 700 MW. The construction schedule is largely driven by the need for additional transmission line capacity.

A second announcement is expected in July that will unveil plans for the construction of a third unit of identical size and design. While the project participants for the third unit have yet to be announced, they will consist of regional public utilities that are seeking to increase their baseload capacity. A portion of this unit will be used by Sunflower to provide up to 150 MW to Mid-Kansas Electric Company, LLC, a new utility that recently purchased the Kansas Electric Network from Aquila, Inc.

Tri-State will manage the construction activities of the project. The construction company who will actually complete the engineering, procurement, and construction phase of the project will be announced as soon as final agreements are signed. That announcement is expected in July.

The total installed cost of the three plants is expected to be \$3.6 billion.

Project Benefits For Sunflower

Sunflower will earn development fees from its work to bring the project to fruition. Additionally, other fees will be paid by project participants for their use of Sunflower's existing facilities that will serve the new plants. Sunflower will earn fees for its work to operate and maintain the new plants. Other benefits to be derived by Sunflower include being able to spread its labor and administrative expenses over additional generating units. Currently, Sunflower employs approximately 130 people for the existing unit. The expansion projects will more than double that workforce. In addition to the benefits mentioned above, lower fuel costs for Unit 1 will result from the economies of scale related to larger coal purchases.

These project revenues and cost savings will be utilized by Sunflower to offset capital and operating expenses that would have otherwise been charged to Sunflower's Member Systems.

Project Benefits for Kansas

Dr. Ralph Gamble, Fort Hays State University Economics professor, recently completed a second economic impact study of the project. His report estimated that the total net benefit of the generators over a 35-year period will be more than \$8 billion.

The report indicated that more than 3,600 jobs (direct and induced) would be created in Kansas with an annual payroll of over \$116,000,000 during the construction period of six years. Following construction, nearly 500 full-time jobs will result, Gamble predicted, with an annual payroll of more than \$24,000,000.

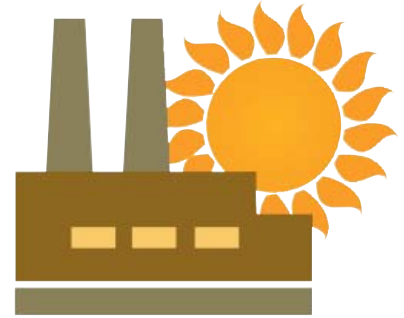
Plant Design Features

Each unit built on the site will be constructed to provide a minimum generation capacity of 700 MW (net). The fuel supply will be comprised of low-sulfur coal delivered by rail from the Powder River Basin in Wyoming.

The environmental control systems will be built with the Best Available Control Technology. BACT is an emission limitation based on the best degree of reduction for each regulated air pollutant emitted from a new plant. It results in the emission rates that are achievable and is determined on a case-by-case basis, taking into account energy, environmental and economic impacts, and other costs.

The plants will be equipped with advanced low-NO_x burners and a selective catalytic reduction system; spray-dry flue gas desulfurization systems with fabric filters, and on-site solid waste disposal.

The new units will be integrated with the existing plant through existing common facilities that will serve, in various amounts, all plants on the site. These common facilities include rail spur, coal receiving and handling, waste powder handling, water treatment, potable water, sewage, waste disposal system, switchyard, and certain administrative, warehouse and control facilities.



The anticipated construction period for each plant is 42-48 months and construction on the first unit is expected to begin in 2007.

Alternative Design Considerations

When evaluating the choices for new capacity, the project participants considered many design factors and different forms of generation technologies. Such factors included an engineering evaluation of the type, size, and duty-cycle of capacity needed, an economic evaluation of the fuel choices, and an evaluation of alternatives to the addition of new capacity.

These factors, in this project, led to the choice of super-critical pulverized coal-based generating units designed for sub-bituminous low sulfur Powder River Basin (PRB) coal.

This choice was made because at a scale required for the generation needs of the region, pulverized coal-based steam generation is the only available demonstrated technology for fossil fuels. Also, a supercritical steam cycle is the most energy efficient design available for this type of fuel and size range. Finally, PRB coal is by far the most available and economical coal source for power plants in the region.

The project participants did not propose to construct any renewable energy source (wind, solar, hydro, etc.). While renewable forms of electricity generation are viable in small quantities, they cannot fill the large capacity requirements for the region.

Similarly, natural-gas based resources in either simple or combined-cycle generation technology are not proposed since the fuel cost associated with such resources makes energy from them too expensive for the needs of the participants. Additionally, these forms of generation are more suitable for peaking and intermediate load

applications, and are therefore unsuitable for the base load requirements of the region.

Circulating fluidized bed (CFB) technology was not proposed as a resource since the size of such units are typically in the 250 MW size range and eight such units would be required to equal the capacity of the three proposed SCPC units. Such a generation option would prove too costly and ineffectual to suit the needs of the constituent energy providers and their customers.

Additionally, integrated gasification combined-cycle (IGCC) generation technology was not proposed since such units are inherently more expensive to construct, have lower reliability and substantially higher maintenance costs. In addition, there are no examples of this technology at the scale required to satisfy the demands of the partners in this project.

Transmission Facilities

Transmission facility investments necessary to support the new generation will be met by both new construction and upgrades to the existing transmission infrastructure. Reliability and economic considerations require more than one path from the plants being constructed. At least two high voltage lines will be necessary to move the electricity from Holcomb to Tri-State's primary load areas in Colorado.

In a proposed joint construction project, Tri-State and Western Area Power Administration, a federal power marketing agency, would build 600-800 miles of new high-voltage transmission lines to deliver energy from the new Tri-State generating units in Kansas and provide additional transmission capacity in eastern Colorado.

These proposed improvements, known as the Eastern Plains Transmission Project (EPTP), would be synchronously connected to the western U.S. electricity grid. It would enhance the reliability of the transmission system and improve the available capacity to deliver energy in Eastern Colorado. The construction of this proposed project would begin in 2008 and completed by 2011.

In addition to EPTP, additional transmission lines will also be built or upgraded to move power to the participants in the third unit. Preliminary transmission studies indicate a significant investment in Kansas, Oklahoma and Texas. The primary line construction in Kansas for the third unit will be from the existing substation at Spearville, Kansas to the Moreland substation in Oklahoma. Additional lines will likely be built to connect with the Potter County substation near Amarillo, Texas. These lines will be connected with the Southwest Power Pool.

Water

The plants at Holcomb will use water from rights appropriated for this purpose by the Chief Engineer of the Division of Water Resources (DWR) and from rights purchased for this purpose by Wheatland Electric Cooperative, Sunflower's largest Member and water supplier.

Each new plant will require about 8,000 acre feet of water to meet annual production needs. In anticipation of the power plant project, Wheatland has purchased or contracted for the purchase of approximately 29,000 acres of sand hills land including nearly 48,000 acre feet of agricultural water rights. Following conversion from agriculture to industrial rights, Wheatland anticipates having about 29,000 acre feet of water rights available for power plant and other uses.

These land purchases were made from willing sellers, several who came to Wheatland offering to sell their water rights, once they knew a market existed. No condemnations were involved in the purchases.

As shown above, when water is acquired that formerly was used for agricultural purposes, the appropriation is reduced by approximately 40% as required by DWR regulations. The process of using water to make electricity is a process of adding value in the same way western Kansans add value to livestock and crops that are exported around the globe.

The impact of this change in use on the local economy is always a concern, but it will be mitigated by the additional jobs both at the power plant and the water production facilities. The farmed acres will be seeded to native grasses which will take several years to accomplish and require a substantial investment by Wheatland. Once established, nearly all the acres will be grazed, continuing the agricultural heritage of the area. Re-establishing the sand-sage prairie will have a substantial positive impact on wildlife native to the area, some of which have been in decline for a number of years.

Coal

The coal supply for the new units will be mined in Wyoming's Powder River Basin (PRB). This is a proven source that offers a long-term, stable supply of low sulfur coal. Coal purchases will be made through a competitive bid process from one or more of the PRB coal suppliers.

Sunflower currently has a long-term rail delivery contract in place for five million tons of PRB coal per year for the next 25 years. Rail delivery will be through the Denver/Pueblo corridor.

The project's economics indicate that coal should be the primary fuel source. Even though the Hugoton gas field is close to the project geographically, natural gas costs are based on market prices, not the geographic proximity to Holcomb Station. With the recent volatility of natural gas prices, it was determined that coal was a preferable fuel supply.

While the capital cost of a coal-based plant is significantly higher than a gas-based plant, the fuel costs are much lower. Currently, with gas prices between \$6 and \$7 per MMBtu, the fuel cost from gas is six to seven times more expensive than coal.

While there is increasing demand on our nation's low sulfur coal supplies, Sunflower and Tri-State are both members of a fuel supply cooperative that is one of the largest buyers of coal in the nation. Through that relationship, Sunflower has successfully negotiated its long-term coal and rail contracts since Unit 1 was first placed in service in 1983.

Air Emissions

The construction of the new power plants will bring about concerns related to the impact this project may have on the environment. Sunflower and its partners are committed to operating the plants in strict compliance with all applicable federal and state environmental laws.

The Clean Air Act is a federal law covering the entire country, but the states do much of the work to carry out the Act. Under this law, EPA sets limits on how much of a pollutant can be in the air anywhere in the United States. This ensures that all Americans have the same basic health and environmental protections. The law allows individual states to have stronger pollution controls, but states are not allowed to have weaker pollution controls than those set for the whole country.

While the EPA is primarily charged with overseeing the well being of the environment in the United States, states ultimately are responsible to the federal government for implementing and managing environmental programs. In Kansas, this task is accomplished by the Kansas Department of Health and Environment.

Kansas law requires that any person who proposes to construct or modify a source of air emissions may need a permit or an approval prior to commencing any construction activity. In compliance with that Kansas law, Sunflower filed an application for a construction air permit with the KDHE on February 6, 2006. Following a comprehensive review by the agency, a public hearing will be held to take comments from the public regarding the application. This hearing will be held in late August or September.

There will be additional emissions associated with the operation of the Holcomb Station. The air permit granted by the Kansas Department of Health and Environment is very stringent with very specific limits on emissions and all units will be in complete compliance with the federal Clean Air Act. The construction air permit, when issued, will describe the specific amounts of emissions that are authorized for release into the air.

The facilities will be designed and built to meet all state and federal regulatory requirements for emissions, which must meet Best Available Control Technology (BACT) requirements. For new coal-based generating units, BACT consists of: flue gas desulfurization systems (scrubbers) to remove sulfur dioxide, low-NO_x burners with over-fired air, a selective catalytic reduction (SCR) system to remove nitrogen oxides, and baghouses to remove particulate matter.

For mercury emissions, all plants will utilize the best available control technology options as required by recently passed federal regulations contained in the Clean Air Mercury Rule.

The EPA is also charged with setting national ambient air quality standards. The State of Kansas, in accordance with criteria established by the EPA, has classified the ambient air quality of the different areas of the state as either attainment, non-attainment, or unclassifiable. The designation for the respective areas is based on ambient air concentrations observed or predicted for select compounds for each representative area. The EPA promulgated ambient air quality standards (subsequently adopted by the KDHE) that were designed to protect the public health (primary standard) and welfare (secondary standard) for criteria pollutants. Holcomb Station is located in an area classified as full attainment for all criteria pollutants and will remain so after the plants begin operations.

Workforce

The construction company selected by the project partners will employ the construction workforce. Current estimates call for construction to begin in mid-2007. While the initial workforce will be relatively small, it will increase to more than 1,200 workers by the 21st month of construction and continue above 1,000 workers until the 50th month of construction. The total construction period will be 63 months if the units are built 12 months apart. Should that schedule be compressed, the peak workforce of nearly 1,500 workers will occur earlier in the process.