



Project Information Sheet Sherberghan Gas-to-Power Plant Feasibility Study

Assessing domestic gas-to-power options - diversifying Afghanistan's energy mix

Implementing Partner	AEAI and Gustavson Assoc.
Project Start Date	January 2005
Anticipated Finish Date	February 2006

Objective

The Government of Afghanistan (GOA) and the International Donors recognize the need to support economic growth and development and have agreed that restoring and increasing electric power supply is a top national priority. These efforts are necessary to support economic growth and development.

The GoA has established the need to develop indigenous energy resources while pursuing supplemental power imports for increasing electricity supply. The GoA requires clarity concerning its domestic resource options to effectively plan a balanced strategy for negotiating future contracts for power imports.

The GoA has also placed a priority to power supply projects that can be implemented in the short to mid-term (2006-2008). The Sherberghan Gas to Power Feasibility Study meets part of this strategic need and is one component of the North East Transmission System.

The development of the Sherberghan is a key recommendation of the Afghanistan Power Sector Master Plan prepared by Norconsult in October, 2004 and updated in December, 2005. The Master Plan was funded and published by the World Bank for the Government of Afghanistan and states in part that:

"The Feasibility Study of a gas fired power plant at Sherberghan or Mazar should be initiated soonest. The plant would contribute to meeting demand growth in the North, and, depending on the size and timing, also in the Kabul region."

The project goals are to:

1. Revitalize the natural gas industry by establishing an efficient and paying anchor customer

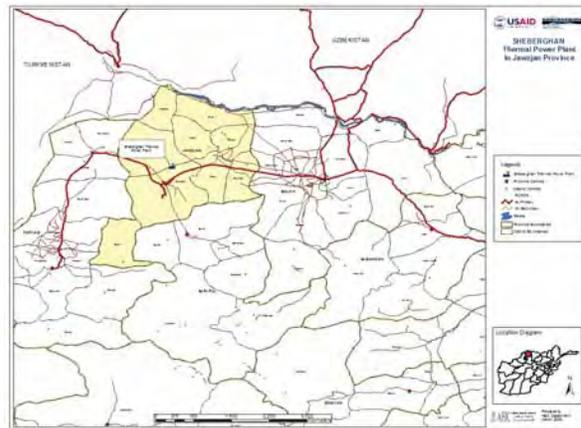
2. Expand electric power capacity by exploiting indigenous fuel reserves to create a secure, cost competitive electric power source while improving grid stability.

Program Description

The United States, through USAID, planned to provide up to \$150 million to build a 100 MW gas fired power generating plant and gas treatment plant using indigenous Afghan natural gas resources. The natural gas reserves around the city of Sherberghan in Northern Afghanistan appear to be sufficient to fuel such a power plant on a long-term basis.

The feasibility study evaluated the requirements to develop a gas-to-electric power generating facility in Sherberghan. From a technical standpoint, there was little question that the power plant could be built, fueled, operated and maintained. In addition to confirming the technical feasibility of the project, questions were also addressed that included:

- Status, quantity, and quality of indigenous gas reserves sufficient to fuel the plant on a long-term basis
- Probable cost of gas production
- Location of the plant
- Cost of the plant and its implementation
- Economics of electricity generation
- Creation of an effective commercial structure allowing for Afghan ownership on a long term self-sustaining basis



Sherberghan Thermal Power Plant – Jawzjan Province



Project Accomplishments

The study concluded that the project is an excellent opportunity to gain high impact results consistent with the strategic objective of USAID/Afghanistan and other donors in Afghanistan. Specifically, the study indicates that the project will dramatically benefit the economic reconstruction of Afghanistan.

The study indicates sufficient indigenous and proven gas reserves are likely to exist to fuel the planned 100 MW power plant for its 20 year design life. The study also recognizes, before proceeding with the plant, further remediation of the gas reserves is needed to ensure adequate supply. A suggested plan for performing this work was also included in the study.

The price of gas is a critical issue that must be resolved to ensure economic long-term sustainability of the gas supply sector. The price needs to be set so as to attract necessary investment in further gas exploration, infrastructure development and production facilities to encourage future expansion.

The site for the plant was determined to be Gerquduq, near the city of Sherberghan, in the vicinity of the DABM substation and the Afghan Gas Company well field and processing facility.

The capital cost of the 100 MW power plant is expected to be in the range of \$100 million. The gas conditioning plant is expected to cost approximately \$35 million, including the upgrading of a small water pumping station. The remediation of the gas fields was estimated to cost \$25 million.

A technical and economic assessment was carried out to estimate the total price for electric energy generation, including capital cost, fixed and variable operations and management and fuel price. The total price is expected to be in the range of 5 cents (US) per kWh. If the initial capital cost of the power plant is financed on a grant basis (no recovery of initial capital costs), the operating cost of delivered wholesale power is expected to be approximately 3 cents (US) per kWh.

The Sherberghan Project is the most expedient and least cost option for generating electricity. The technology is reliable, allowing for flexibility and providing critically needed system stability.

This project also provides for system diversification in fuels, reducing the seasonal aspects of Afghanistan's hydropower generating stations.