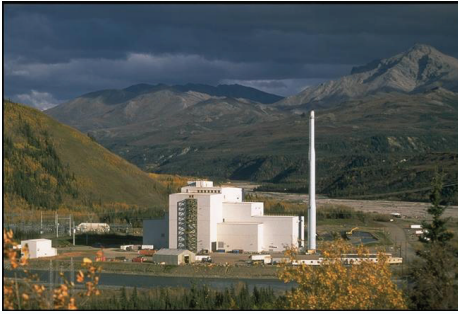




Clean Coal and Gasification



Clean Coal and Gasification Services

- Cost and Cash Flow Analysis
- Asset Valuation and Due Diligence
- Certificate of Need, Permitting, and Siting Process
- Risk Assessment
- Policy Analysis and Regulatory Support
- Facility Security
- Fuel Diversity and Strategy
- Support Applications for Funding
- Power Purchase Agreements
- Fuel Price Projections
- Strategic Communications

Significant investment in and development of clean coal and gasification projects is on the horizon. Continued gas price uncertainty and the increasing likelihood of regulations that aim to reduce greenhouse gases (GHGs), gasification projects, specifically Integrated Coal Gasification Combined Cycle (IGCC) projects, are an attractive technology option. IGCC plants are well-positioned to provide a share of the new power generation resources required in the United States because they are environmentally-friendly and utilize our domestic supply of coal resources.

Also, the 2005 Energy Policy Act provides a number of provisions for tax credits, guarantees, loans, and direct grants for clean coal and gasification projects. As a result of these incentives, the first few of these projects will be in a strong position to come to fruition and those pursuing such projects would benefit by accelerating their development efforts. Early movers who are able to meet the project criteria and have projects on-line in the near-term will have the strongest advantage.

ICF International can help companies seeking to develop IGCC plants to assess the feasibility of doing so and to implement their plans by providing a range of services that will help bring these projects to fruition.

Featured Services

Cost and Cash Flow Analysis. Before embarking on the development of an IGCC plant, some regulatory and financial assurance of return on investment will be critical. Using engineering and market analysis, ICF can help determine estimated return on investment and necessary financing.

Asset Valuation and Due Diligence. Banks generally require third-party confirmation to verify that the financial projections are sound, and ICF specializes in providing financial institutions with independent, comprehensive market analyses that take their concerns into account.

Certificate of Need, Permitting, and Siting Process. Regulatory approval and siting are key elements for all power plants, but particularly for plants such as IGCCs, which may have large footprints and significant impacts on coal transportation and electric transmission. With its plant siting, transmission analysis, and environmental impact services, ICF can help resolve all these issues.

Risk Assessment. Many variables, whether financial, fuel-oriented, regulatory, or technical, may affect the viability of IGCCs. ICF can “stress test” these variables to determine how robust the viability of the plant is to changes and then develop strategies to deal with any “low-probability-but-high-impact” events.

Policy Analysis and Regulatory Support. ICF can provide support for obtaining the regulatory approvals necessary, using analysis that combines technical expertise with deep energy industry knowledge giving our clients the substantive understanding of key issues and crucial considerations.

Facility Security. ICF can help design a plan to assure State and Federal regulators that the IGCC plant will be well-protected and minimally exposed to breaches of security.

Fuel Diversity and Strategy. ICF can help utilities and developers ensure the right balance in their power generation portfolio while meeting environmental requirements. Many utilities have become highly dependent on gas in recent years and deciding whether to add solid fuel to that mix is a major corporate decision and implementation challenge.

Featured Services (continued)

Support Applications for Funding. Significant subsidies are now available for new technologies, particularly coal gasification. ICF can support the application for funding to the Federal and State governments to obtain these substantial payments.

Power Purchase Agreements. IGCC plants developed by independent power developers will need strong power purchase agreements. ICF specializes in supporting PPA contract design and negotiation and providing objective market analysis.

Fuel Price Projections. ICF can analyze and forecast the fuel prices that will determine whether or not an IGCC plant is competitive with the conventional alternatives.

Strategic Communications. ICF can help design communication outreach campaigns to raise public awareness of this new technology.

Featured Solutions

Environmental Externalities and Socioeconomic Impacts Modeling Analysis.

ICF conducted environmental externalities and socioeconomic impacts modeling analysis for a proposed IGCC plant in support of a power purchase agreement (PPA) negotiation with a midwestern state's Public Utilities Commission (PUC). ICF's study compared the predicted impacts for the IGCC plant with those of an alternative power plant using supercritical pulverized coal technology. We also modeled fine particulate formation and transport to estimate a range of human health effects—including mortality and several kinds of morbidity—resulting from fine particulate inhalation. ICF estimated damage costs based on the predicted mortality and morbidity. ICF also developed a qualitative comparative assessment of the potential impacts related to mercury deposition resulting from emissions by the IGCC and alternative power plants. In addition, ICF performed socioeconomic impact analyses for the two power plant scenarios based on regional economic activity, employment, and tourism and the anticipated effect of building and operating the new plants.

IGCC Facility Legislative Support and Testimony. ICF supported development of a merchant IGCC facility. We reviewed the operational characteristics of the

unit, verification of performance standards for operation, and recommendations. ICF also determined the forward expected dispatch and revenue stream from operation of the unit, as well as the expected value to consumers. Our staff testified before State legislative committees in support of this project development.

Real Options Analysis of Advanced Coal Technology.

For a confidential commercial client, ICF conducted a real options analysis to determine the optimal sequential capacity addition and carbon control plan over the next 40 years. Our staff worked with the client to develop projections of the cost and performance for IGCC and competing gas-fired and non-carbon technologies, carbon capture and sequestration options, and a range of carbon and non-carbon regulatory futures. ICF forecasted build decisions and electric market impacts and assessed the impacts of regulatory, fuel, and technology uncertainties on the build mix. The values of the IGCC and carbon capture technologies under the range of scenarios examined were used in a real options decision analysis framework to identify the optimal build mix and carbon control decision.

Analysis of Market Potential for IGCC with Carbon Sequestration.

For a confidential government client, ICF projected the market potential for IGCC with and without carbon capture capability through 2050. ICF worked with the client to develop projections of the cost and performance for IGCC and for capturing the carbon dioxide produced by those plants. Based on that information, ICF used IPM®, its proprietary power model, to forecast build decisions and carbon dioxide emissions impacts under multiple technical and carbon policy scenarios.

Economic Market Analysis. ICF was engaged by a leading IGCC developer to perform an economic market analysis of the proposed IGCC generating station in northern Minnesota. We provided an in-depth comparison of expected market conditions under two key scenarios highlighting the possibility for savings when comparing the expansion plan proposed by the incumbent utility with an IGCC focused development plan. ICF staff also assessed externality costs associated with emissions from traditional coal-fired generators, as well as the effect of accompanying transmission upgrades on the MISO system.

About ICF International

ICF International (www.icfi.com) partners with government and commercial clients to deliver consulting services and technology solutions in defense, energy, environment, homeland security, social programs, and transportation. Combining passion for our work with industry expertise and innovative analytics, we deliver compelling results throughout the entire program life cycle, from analysis and design through implementation and improvement. Since 1969, ICF International has been serving government at all levels, major corporations, and multilateral institutions. More than 1,600 employees serve these clients worldwide.

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