



ICF International's oil and gas practice supports private and public sector clients by providing economic and technical services and policy analyses that enhance their ability to make informed strategic and resource development decisions.

Our analyses and technical services cover all aspects of the domestic and international oil and gas industry.

- Strategy Development and Implementation
- Asset Valuation and Due Diligence
- Market Assessments and Forecasting
- Regulatory and Litigation Support
- Supply Assessments and Project Evaluation
- Government Services
- Environmental Services

# Oil and Gas Pipelines and Storage Asset Valuation and Due Diligence

In today's rigorous business environment, company stakeholders are demanding greater financial scrutiny on projects, making accurate asset valuation more important than ever before. Valuing gas assets now requires a more thorough understanding of **gas market fundamentals** and the **implication of gas system operations for locational prices**. Using our **sophisticated tools** and analytics to evaluate gas markets and the characteristics of price formation, ICF International can provide clients with regional- and location-specific forward-pricing curves that reflect the full impact of North American market fundamentals.

## Gas Market Model (GMM®)

- Represents the entire North American natural market and international competition for liquefied natural gas (LNG) imports
- Provides detailed regional, annual, and monthly forecasts of prices, demand, supply, and pipeline flows
- Contributes to producing hundreds of customized cases for clients each year and supports ICF's monthly, quarterly, and annual subscription services.

## Energy Asset Decision Support System (EADSS™)

- Represents multiple asset types (e.g., gas and power together)
- Provides detailed market and operational rules in a stochastic modeling framework
- Shows when and where new capacity is needed
- Incorporates effects of uncertainty and volatility on asset operation, revenues, and value- or location-specific assignments
- Evaluates high-deliverability storage, pipelines, daily gas and electric market interactions, and contract terms
- Provides complete gas market interactions on revenues and asset value

ICF has provided asset valuation and due diligence support to the financial community for more than \$10 billion in **gas asset financing** across the United States, Canada, and Mexico. Our work has supported the financing of major interstate pipeline, gas storage, and independent power projects.

## Featured Projects

### Natural Gas Storage and Pipeline Valuation

ICF assessed the value of a proposed storage project and related natural gas pipeline in the U.S. Southwest for a private power company interested in bidding on capacity. Using EADSS, we identified how the proposed storage and additional pipeline would alter flow patterns, enhance deliverability, and reduce price volatility. This engagement required modeling gas and electric market interactions.

### Market Assessment for Pipeline Refinancing

ICF conducted a market assessment for the refinancing of the Iroquois pipeline system to benefit potential lenders and note-holders. We assessed gas supply, demand, and transportation in the northeast United States. We also examined the gas production outlook and value of supply from relevant sources, determined the range of gas market outlooks for the Northeast, and assessed the competitive position of the pipeline in its northeastern market.

**Passion. Expertise. Results.**

### High Deliverability Gas Storage in U.S. Northeast

ICF analyzed the commercial feasibility of a salt cavern natural gas storage project in the northeastern United States for a gas storage developer and service company. We performed an economic analysis of the regional market for high-deliverability storage service and the alternative services available to prospective customers. Pipeline capacity, conventional seasonal storage, and LNG options were considered as alternatives. Potential competing markets included regional power generation, industrial, and core market sectors. We researched potential storage service customers, including local distribution companies and gas marketers, as well as direct service for power generators and industrials.

### Evaluating Natural Gas Gathering Facilities

On behalf of an interstate pipeline, ICF estimated the value of a non-jurisdictional gathering pipeline system. The analysis used EADSS to examine the implications of possible new production coming on line, gas market prices on different connecting pipelines, and competition from nearby gathering systems. The analysis showed the expected stream of revenues and the high and low values associated with project uncertainties.

### Alaskan Pipeline

For producers on the Alaskan North Slope, ICF evaluated the effect of Alaskan and MacKenzie Delta gas on U.S. and Canadian gas markets, prices, and pipeline flows. We evaluated various scenarios to assist the producers in understanding the implications of different assumptions and configurations for bringing frontiers supplies into the market.

### Pacific Northwest Gas Storage Strategy Study

ICF used EADSS to evaluate strategies for purchasing or releasing transportation capacity and purchasing gas storage capacity. The work was performed for the owner of a gas-fired generator and thus looked at alternative dispatch scenarios, price volatility in the gas and oil markets, and pipeline interruption, as well as oil prices.

### Pipeline Valuation

ICF supported valuations of the Texas Oasis pipeline and the Weeks Island pipeline. For the former, we examined producer options for shipping on alternative pipelines to help identify what rates could be charged based on shipper opportunity costs and market prices in the Katy and Waha areas. For the Strategic Petroleum Reserve, we helped the government develop information to submit an offering memorandum for selling the surplus Weeks Island oil line as a gas pipeline. We identified markets, differential values in these markets, potential buyers, and an estimate of the value.

### Market Assessment for Financing of New Pipeline Construction

ICF was retained by a consortium of banks to provide a market assessment for financing the construction of the \$1 billion Maritimes and Northeast Pipeline System between Nova Scotia and New England. We also were retained on behalf of lenders for Iroquois Pipeline's refinancing and later its Eastchester Expansion into New York City. In all of these assignments, we analyzed the long-term potential, viability, and economics of gas supply, reviewed long-term gas demand forecasts, and assessed relative competitive positions of fuel suppliers and pipelines delivering into the New York and New England markets. ICF also provided similar lender support in the Pacific Northwest and California for the Pacific Gas and Electronic Company Expansion Project.

### Market Clearing Engine (MCE) – Gas Pipeline and Market Model

Developed by ICF, MCE is a software system that determines the daily operational and pricing schedules for the Victorian natural gas market in Australia. The model combines non-linear pressure/flow equations, equations relating compressor performance to power use, inlet and outlet pressure, pressure regulation and check valves, and bids for gas deliveries and receipts within an optimization framework to determine optimal hourly receipts and deliveries of gas based on bids and physical constraints within the system. MCE results are calibrated closely to the outputs of a transient flow model and against actual pressures and flows in the pipeline system.

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## About EEA and ICF International

Founded in 1974, EEA has exhibited leadership and innovation in analyzing energy and environmental issues for a wide range of industry, government, and nongovernmental organization clients. Like ICF, EEA also brings strong analytics and proprietary models to its engagements. Together, EEA and ICF provide expanded capabilities to serve commercial and government energy market participants with unparalleled analyses of natural gas supply, transportation and market issues; automotive and transportation technology; environmental regulations and policy; and distributed generation/combined heat and power (CHP) markets and technologies. Distinguished professionals from both firms also provide superior strategic planning and regulatory support to all segments of the natural gas industry. This augments ICF's traditional strengths in energy modeling, electric power, transmission, emissions markets, energy efficiency, and water markets.

ICF International (NASDAQ: ICFI) partners with government and commercial clients to deliver consulting services and technology solutions in the energy, climate change, environment, transportation, social programs, health, defense, and emergency management markets. The firm combines passion for its work with industry expertise and innovative analytics to produce compelling results throughout the entire program life cycle, from analysis and design through implementation and improvement. Since 1969, ICF has been serving government at all levels, major corporations, and multilateral institutions. More than 2,500 employees serve these clients worldwide. ICF's Web site is [www.icfi.com](http://www.icfi.com).

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