

# CRS Report for Congress

## The Alaska Natural Gas Pipeline: Status and Current Policy Issues

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## Summary

On August 27, 2008, the governor of Alaska signed legislation awarding a license to TransCanada Alaska (TransCanada) to permit, develop, and build a natural gas pipeline from Prudhoe Bay, Alaska, to the gas market hub in Alberta, Canada, with \$500 million of state support. Since the discovery of significant oil and gas reserves in Prudhoe Bay in 1968, Alaska state and federal policymakers have sought to accelerate bringing these important energy resources to market, especially to market in the lower-48 states. The Trans Alaska Pipeline System (TAPS) began shipping crude oil from Prudhoe Bay in 1978. Efforts to build a gas pipeline still have achieved little progress 30 years later.

This report provides a brief review of efforts to develop and construct a natural gas pipeline from Prudhoe Bay, a status report on recent efforts to proceed, and an analysis of major relevant policy issues.

In 1976, Congress passed the Alaska Natural Gas Transportation Act (ANGTA) as one element of a multi-pronged effort to respond to the natural gas supply problems caused by earlier wellhead price controls. Engineering work was underway on the pipeline when, in the early 1980s, the natural gas market in North America entered a prolonged period of relatively low prices for natural gas because domestic producers had responded vigorously to high prices during the phased decontrol of wellhead prices through the Natural Gas Policy Act of 1978 (NGPA). Interest in developing the pipeline waned because of the poor market prospects.

In 1997, the United States became a net importer of liquefied natural gas (LNG) for the first time. In retrospect, this was a leading indicator of a tightening natural gas supply for the North American market. Congress again promoted development of the pipeline in the Alaska Natural Gas Pipeline Act (ANGPA) in 2004 and with related amendments in the Energy Policy Act of 2005 (EPAct 2005).

The State of Alaska has pursued the natural gas pipeline development with a sense of urgency for several years. In 2001, Alaska established an interagency task force to move forward with a pipeline. The administration immediately preceding the current governor reached a controversial agreement with the Prudhoe Bay producers (ExxonMobil, BP, ConocoPhillips). The current governor proceeded with a new initiative, the Alaska Gasline Inducement Act (AGIA) that has led to the August 27 signing mentioned earlier.

Two producers, ConocoPhillips and BP, have formed Denali Pipeline to develop a Prudhoe Bay-to-market pipeline without AGIA support. The third, and largest, producer, ExxonMobil, has not supported any currently active pipeline development initiative.

Many challenges remain at this time. The key parties, however, appear constructively engaged in the effort to make available this significant energy supply option.

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# The Alaska Natural Gas Pipeline: Status and Current Policy Issues

## Introduction

Forty years ago, major oil and natural gas resources were discovered at Prudhoe Bay, Alaska. Since 1976, Congress has acted to promote the successful development of a natural gas pipeline from the Alaska North Slope (ANS) to the lower-48 states.<sup>1</sup> In the Alaska Natural Gas Pipeline Act of 2004 Congress established a statutory finding of public need for this project, stating in Section 103(b)(2) that:

- (A) a public need exists to construct and operate the proposed Alaska natural gas transportation project; and
- (B) sufficient downstream capacity will exist to transport the Alaska natural gas moving through the project to markets in the contiguous United States.

On August 27, 2008, Alaska's governor signed legislation into law that officially awarded to TransCanada Corporation (TransCanada) a license to permit, develop, and build an Alaska natural gas pipeline from Prudhoe Bay, Alaska, to the lower-48 states with \$500 million from the state. At full initial capacity of 4.5 billion cubic feet per day, this pipeline could initially supply an amount equal to about 7% of U.S. natural gas consumption in 2007.<sup>2</sup>

This report provides a brief review of the history of efforts to develop this project, a report on recent developments and project status, and a summary of remaining policy issues and the project outlook at this time.<sup>3</sup>

## Historical Overview

Since the discovery of the major natural gas and oil reserves on the Alaska North Slope in 1968, Congress has passed several measures to encourage the development of the natural gas resources there. **Table 1** presents several highlights of this process.

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<sup>1</sup> Alaska Natural Gas Transportation Act of 1976 (15 U.S.C. Sec. 719 *et seq.*).

<sup>2</sup> U.S. Energy Information Administration, *Natural Gas Monthly*, April 2008, Table 2.

<sup>3</sup> CRS reports on this subject include CRS Report, *Major Alaska Gas Pipeline Issues — A Perspective*, by Alvin Kaufman, Gary Pagliano, Joseph Riva, and Susan Bodilly, October 17, 1979 and CRS Report RL33716, *Alaska Natural Gas Pipelines: Interaction of the Natural Gas and Steel Markets*, by Stephen Cooney and Robert Pirog, updated March 28, 2007.

In 1976, Congress passed the Alaska Natural Gas Transportation Act (ANGTA). The purpose of that legislation was to provide for sound decision-making on the natural gas transportation system that provided for Congressional and presidential participation in the process and to expedite construction and the start of operations. Briefly, the policy steps of the process moved expeditiously, all completed in 1977. In step one, the Federal Power Commission transmitted a recommendation of one of three transportation system options (May 1977), the land-based pipeline route along the Alaska Highway.<sup>4</sup> Two alternatives were land-based pipeline systems and one was a combination pipeline across Alaska and an LNG export terminal in Valdez. In step two, the president recommended the same Alaska Highway alternative (September 1977). In step three, Congress approved the president's decision through a joint resolution. That may have been the last time this project proceeded according to the original plan.

In the winter of 1977-1978, the nation experienced serious problems with natural gas deliveries through the interstate market because of the distortions of wellhead natural gas price controls. These price controls had been driven by a Supreme Court decision in 1954 (*Phillips Petroleum Co. v. Wisconsin*, 347 U.S. 672). In response to these delivery problems, Congress passed the Natural Gas Policy Act of 1978 (NGPA) and the Powerplant and Industrial Fuel Use Act of 1978 (PIFUA).

As natural gas supply and demand began to respond favorably to the energy policy legislation of 1978, the desirability of the Alaska natural gas transportation system declined.<sup>5</sup> Moreover, in an often repeated pattern for major U.S. energy supply projects, cost estimates for this transport system increased. Natural gas prices softened significantly as a natural gas supply "bubble" developed, and persisted for years, in response to wellhead price decontrol.<sup>6</sup> Commercial attention to the Alaska gas pipe initiative essentially disappeared during the 1980s.

Although the full pipeline project made no progress, as Canadian natural gas supplies from the Western Canadian sedimentary basin increased in the late 1970s and early 1980s, producers from the province of Alberta, Canadian authorities, and U.S. and Canadian pipeline companies worked to pre-build the downstream legs of the Alaska Natural Gas Transportation System (ANGTS) from Alberta to California and to the Midwest. The concept was that Canadian producers would loan the gas to the U.S. consumers and be repaid in kind when the Alaska North Slope supplies arrived. This concept led to tight provincial regulatory scrutiny of reserves-to-production ratios as Canadian producers sought export approvals from Alberta regulators.

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<sup>4</sup> The Federal Power Commission (FPC) was the predecessor of the Federal Energy Regulatory Commission (FERC).

<sup>5</sup> See discussion in D. Fried and W. Hederman, "The Benefits of an Alaska Natural Gas Pipeline," *The Energy Journal*, Vol. 2, No. 1, January 1981, p.22.

<sup>6</sup> A natural gas supply "bubble" is a temporary oversupply of capacity to produce natural gas.

The Western leg of ANGTS was Pacific Gas Transmission, and it went into service from Alberta to California in 1981. The eastern leg of ANGTS (Northern Border Pipeline) went into service in 1982.

**Table 1. Selected Dates from Alaska Natural Gas Development**

1968	Prudhoe Bay oil and gas discovered
1971	United States begins export of LNG to Japan from south central Alaska (Cook Inlet)
1976	Alaska Natural Gas Transportation Act (ANGTA) passed, P.L. 94-586
1977	Presidential Decision and FPC Report to Congress on ANGTS
1977	FERC (successor to FPC) issues conditional certificate for pipeline
1978	TAPS oil pipeline into service (ANS natural gas re-injected)
1979	Office of Federal Inspector (OFI) established
1981	“Western leg” of Alaska gas pipeline (Pacific Gas Transmission) pre-build into service
1982	“Eastern leg” (Northern Border Pipeline) pre-build into service
1983	Maritime Administration study of alternatives to pipeline released
1992	OFI eliminated
1997	United States becomes net importer of LNG for the first time
2001	Alaska Natural Gas Interagency Task Force established (State Dept., Dept. of Interior (including MMS and BLM), Dept. of Transportation, Dept. of Energy (including FERC))
2004	Alaska Natural Gas Pipeline Act passed, Division C, P.L. 108-324
2006	New governor announces Alaska Gasline Inducement Act (AGIA) initiative
2007	Five proposals submitted for AGIA consideration
2008	Governor determines one AGIA proposal meets AGIA criteria
2008	Conoco Phillips and BP announce the Denali Project as an alternative to an AGIA project
2008 (August)	Alaska legislature approves governor’s AGIA recommendation and it becomes law

In response to the lack of progress on the land-based pipeline system, the U.S. Maritime Administration authorized a study of marine system options in the 1980s to determine whether there might be commercial opportunities for the U.S. shipbuilding industry. The results indicated roughly comparable economics for the pipeline and LNG options to the U.S. west coast. LNG sales to the Pacific Rim

generally had greater economic potential, but were not politically viable in terms of the large energy exports that such options could entail.<sup>7</sup>

In 1992, approximately 13 years after the Office of the Federal Inspector had been established to expedite the Alaska natural gas pipeline project, it shut down.

In 1997, U.S. imports of LNG began using the lower-48 receiving and regasification facilities built during the 1970s. The United States imported enough LNG that, for the first time, imports exceeded the approximately 60 billion cubic feet per year exported from the Cook Inlet/Kenai Peninsula of South Central Alaska. This milestone proved to be an early indicator of a tightening supply situation in the lower-48.

Serious reconsideration of the construction of a natural gas pipeline from the Alaska North Slope began around 2000. One important sign of the renewed interest was the inclusion in the 2001 National Energy Plan of the recommendation to expedite construction of a natural gas pipeline from the Alaska North Slope to make deliveries to the lower-48. Also in 2001, the Alaska natural gas interagency task force formed. This task force included the State Department, the Department of the Interior (including Bureau of Land Management and the Minerals Management Service), the Department of Transportation, and the Department of Energy (including the Federal Energy Regulatory Commission).

In 2004, Congress passed the Alaska Natural Gas Pipeline Act. Among its provisions, it:

- clarified that the Federal Energy Regulatory Commission could consider any application under the Natural Gas Act or the Alaska Natural Gas Transportation Act;
- created an Office of the Federal Coordinator (OFC);
- provided for a loan guarantee of as much as \$18 billion;
- provided for accelerated tax depreciation (7 years versus 15 years);
- provided for an enhanced oil recovery tax credit for the cost of a gas treatment plant on the Alaska North Slope; and
- established guidance to ensure the Federal Energy Regulatory Commission would regulate the open season capacity bidding procedures so that access to pipeline capacity would become available to parties beyond the three major Alaska North Slope producers to promote competition in Alaska North Slope development of natural gas.<sup>8</sup>

The Federal Energy Regulatory Commission issued a final rule on the open season matter on February 9, 2005 (FERC Order No. 2005).

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<sup>7</sup> W. F. Hederman, "A Review of Marine Systems Use in Developing Alaska Natural Gas," SPE 11294, *SPE Hydrocarbon Economics and Evaluation Symposium*, March 2, 1983, Dallas, TX.

<sup>8</sup> Division C, Public Law 108-324.

The Energy Policy Act of 2005 (EPA 2005), also addressed the Alaska natural gas pipeline. In Section 1810, Congress required that the FERC submit to Congress, on a semi-annual basis, reports describing the progress made regarding licensing and building the pipeline.<sup>9</sup>

## Recent Developments

There are four projects that are being actively promoted at this time. Two are mutually exclusive to transport Alaska North Slope natural gas to the lower-48 states, the TransCanada project and the Denali project. Two smaller projects focus on intra-Alaska issues: the “bullet line” to South Central Alaska and an LNG project with a pipeline to Valdez that could proceed with varying levels of supply.

In January TransCanada submitted the only proposal to the Alaska Gasline Inducement Act (AGIA) process that the governor judged complete. This proposal resembles the original Alaska Natural Gas Transportation System (ANGTS). TransCanada has stated that it will not be responsible for natural gas treatment into the pipeline and will only accept pipeline quality gas into the pipe. It also stated a willingness to develop the gas treatment facilities if necessary.

The pipeline would follow the Trans-Alaska Pipeline system (TAPS) past Fairbanks to Delta Junction then follow the Alaska Highway to Alberta, Canada. The natural gas would move through Alberta via TransCanada’s existing pipeline network. The natural gas would continue to the lower-48 states via the ANGTS pre-build lines and other existing pipeline capacity. Through AGIA, TransCanada would receive \$500 million from the state of Alaska to support its expenses to prepare cost estimates, environmental work, etc., for an open season for potential shippers and for applying to the FERC for a certificate and tariff.<sup>10</sup> The original capacity of this pipeline would be between 4.5 to 5 billion cubic feet per day (Bcf/d). According to FERC staff, it would be expandable to 5.9 Bcf/d with compression only,<sup>11</sup> which means expansion to this level would be relatively low cost.

Conoco Philips and BP, two of the three major Prudhoe Bay natural gas producers, have made a proposal outside of the AGIA process to build a pipeline. This BP Conoco Philips Denali Project (BPCPDP) would follow a similar right of way (ROW) to the TransCanada project. BPCPDP would include a gas treatment facility and would consider the option of new pipelines through Alberta and to the lower-48 states if deemed necessary.

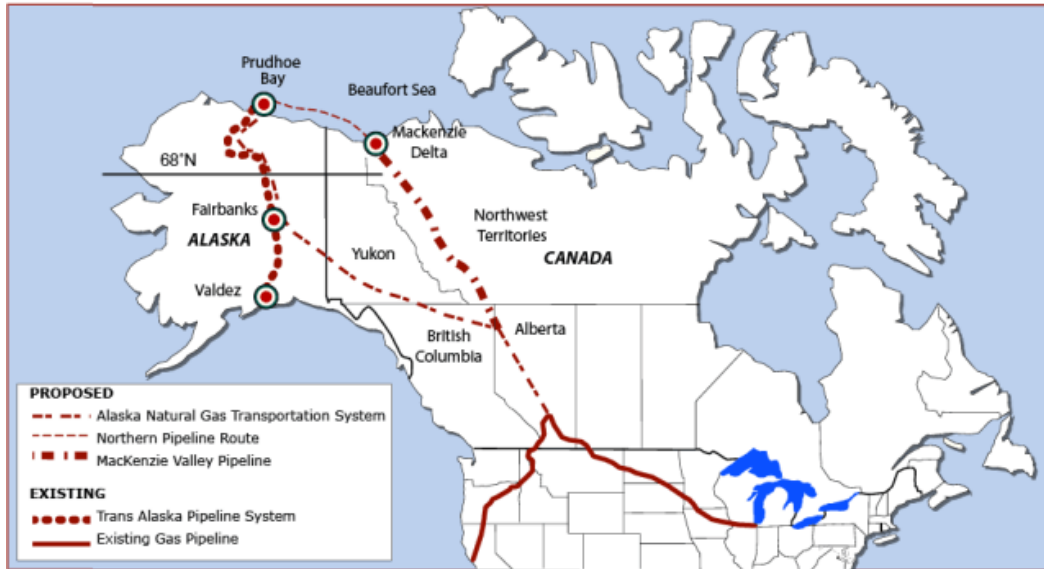
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<sup>9</sup> P.L. 109-58, 119 Stat. 594(2005), 42 U.S.C. Section 15801 *et seq.*

<sup>10</sup> In an “open season” process, all parties wishing to become shippers can compete for available capacity on a pipeline. There are no special rights for existing shippers or other parties.

<sup>11</sup> FERC, *Sixth Report to Congress on Progress Made in Licensing and Constructing the Alaska Gas Pipeline*, August 29, 2008, p. 8.



**Figure 1. Alaska Oil and Gas Pipelines**

**Source:** Adapted from CRS Report RL31278, *Arctic National Wildlife Refuge*, Figure 6, based on Energy Department maps.

The other two proposals are of more local interest than national interest. An in-state plan for a new pipeline linking Anchorage and other parts of south central Alaska, as proposed by Enstar, Inc. and the Alaska Natural Gas Development Authority (ANGDA), recently gained approval from the governor of Alaska. This pipeline would initially run about 450 miles from Cook Inlet to Fairbanks (in central Alaska). If necessary (for instance, if a large pipeline is not operational when needed for in-state Alaska demand) then a small diameter “bullet line” may extend to the Brooks Range (north Alaska) to bring natural gas south to Fairbanks, Anchorage, and other Alaska markets. This pipeline would have an in-service target date of 2013 and deliver 460 million cubic feet per day for a cost of approximately \$3 billion.

Finally, a project option that began with all-Alaska project proposals would involve an extension to Valdez on the southern coast of Alaska of the main line natural gas pipeline to the lower-48. This line would deliver an unspecified volume of natural gas to be liquefied for export as LNG either to North American or other markets. The intent would be for Alaska to participate in some value-addition economic activity. With the announcement of state support of the other projects, the prospects for the LNG option appear less likely.

## Alaska’s Selection Process

When Alaska’s new governor took office in December 2006, she reiterated her commitment to make progress on an Alaska gas pipeline a priority for the state. In 2007, Alaska passed the Alaska Gasline Inducement Act (AGIA), proceeded with a Request for applications (RFA), and determined that one application was complete.

In a related development, the state of Alaska announced it was taking back the oil and gas leases of the Point Thompson unit on the ANS because the unit operator, ExxonMobil, had failed to meet development obligations. This matter is now in the courts.<sup>12</sup>

## Applications

Alaska received five applications through the AGIA process:

1. TransCanada Pipelines Ltd. and Foothills Pipe Lines, Ltd. (TransCanada) proposed a pipeline that would follow a route similar to the ANGTS route for the originally approved project. TransCanada would not be responsible for the gas treatment plant on the ANS and the pipeline would stop at Alberta and connect with the existing TransCanada Alberta network (Alberta hub).

2. Alaska Gasline Port Authority, a municipal entity (City of Valdez, Fairbanks North Star Borough, and North Slope Borough), proposed a natural gas pipeline from the ANS to Valdez, where the gas would be liquefied and exported, providing added value within Alaska.

3. Alaska Natural Gasline Development Authority (ANGDA) proposed a smaller capacity lateral line to link from whatever major line was selected to move gas to South Central Alaska (Anchorage and other locations) to make up for declining production there.

4. Little Susitna Construction Company and a subsidiary of China Petroleum and Chemical Corporation (Sinopec) proposed a pipeline from the ANS to Valdez in the south where the gas would be liquefied and exported to the Pacific Rim.

5. AEnergia LLC, a startup formed by persons with large engineering project experience, proposed an ANS to Alberta pipeline that would be jointly owned by the producers (74%), the State of Alaska (25%), and AEnergia (1%).

The state determined that one application, TransCanada's, was complete. That is the only project that advanced to the evaluation step. Alaska awarded TransCanada the AGIA license on August 27, 2008.

During the state AGIA process, Conoco Phillips sought out-of-time consideration for a project that did not meet the AGIA requirements. This proposal was quickly rejected. In April, Conoco Phillips and BP announced a joint proposal, the Denali Project. ExxonMobil, a major player in any successful development, has expressed both objections and support (for no project in particular) for developments so far.

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<sup>12</sup> Bradner, Tim, "Exxon continues work at Point Thompson site," *Alaska Journal of Commerce*, September 7, 2008; story available at [[http://www.alaskajournal.com/stories/090708/hom\\_20080907023.shtml](http://www.alaskajournal.com/stories/090708/hom_20080907023.shtml)]

The governor dismissed the BP Conoco Phillips Denali Project proposal. Other state and federal energy policy makers have welcomed the Denali proposal.

## Recent Reports

The results of recent reports prepared for the state of Alaska were presented at recent legislative hearings in the AGIA process.<sup>13</sup> A project cost/schedule and tariffs analysis appears to provide input for the overall net present value (NPV) analysis. This cost/schedule analysis presents a range of cost estimates.<sup>14</sup> The range, however, appears rather narrow in light of the recent general cost escalation on energy products and services and the specific costs escalation announced for another North American Arctic gas development project, the Mackenzie Valley project (now above \$16 billion (Canadian)) for this 760 mile pipeline.<sup>15</sup>

The net present value analysis prepared for the State calls the TransCanada project economics “robust” and finds benefits for all stakeholders across a “wide range of project cost outcomes,”<sup>16</sup> but there is not adequate information in the presentation posted on the AGIA website to assess these results independently.<sup>17</sup>

## Current Status of AGIA

The Alaska Legislature held special sessions called by the governor to consider the AGIA proposal. Legislative meetings occurred in multiple locations around Alaska. The recent approval means that TransCanada will get \$500 million from the state to support TransCanada’s next steps in the project approval process. In particular, TransCanada must proceed to an open season and to apply for a certificate from the FERC. The state funds will help pay for these steps.

## Policy Issues

Policy issues related to the construction and operation of an Alaska natural gas pipeline include:

- national energy supply,
- open access to the pipeline,
- project risk management and sharing,
- diligent development of the resources,

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<sup>13</sup> The AGIA website is located at [<http://gov.state.ak.us/agia/>].

<sup>14</sup> AGIA Analysis Technical Team, B. Sparger and E. Briel, “Analysis of Project Costs/Schedules & Tariffs,” Alaska Gasline Inducement Act Legislative License Hearings, Juneau, ALASKA, June 6-10, 2008.

<sup>15</sup> [<http://www.mackenziegasproject.com>]

<sup>16</sup> “Net Present Value (NPV) analysis,” State of Alaska - Anchorage Special Session, June 18, 2008.

<sup>17</sup> AGIA website: [<http://gov.state.ak.us/agia/>].

- international issues,
- Alaska economic development, and
- environment.

## Energy Supply

Prudhoe Bay on the north slope of Alaska is the largest oil accumulation in North America. The production of the associated and dissolved natural gas has implications for oil production. Early in the efforts to proceed with the natural gas pipeline, some expressed concern that continued reinjection of the co-produced natural gas could damage the structure of the reservoirs and harm oil production. Reservoir simulation modeling and actual results ultimately proved this concern to be unfounded.

Advanced enhanced oil recovery techniques now use the natural gas and condensates to maintain oil production at levels above those that would result from natural decline rates. The Alaska Oil and Gas Conservation Commission must approve natural gas production rates after reviewing potential effects on oil production. The potential natural gas reserves on the ANS exceed 100 trillion cubic feet.<sup>18</sup>

In 1995, the U.S. Geological Survey (USGS) estimated that the ANS may contain as much as 590 trillion cubic feet of in-place gas in the form of hydrates.<sup>19</sup> This immense resource base remains unavailable at this time because there are no commercially viable technologies to produce methane from hydrates.

In 2008, the USGS completed an assessment of undiscovered conventional oil and gas resources in all areas north of the Arctic Circle that applied a geology-based probabilistic technique. The results indicate that more than 1,600 trillion cubic feet of natural gas, 44 billion barrels of natural gas liquids, and 90 billion barrels of oil remain to be found in the Arctic. The extent to which these resources are under United States territory or other Arctic nations has not yet been determined.<sup>20</sup>

The vast resources proven and expected from Arctic Alaska have provided strong reasons to get a natural gas pipeline in operation.

The ANGPA found that an Alaska natural gas transportation project would provide specific significant economic benefits to the United States and Canada. Recent independent gas producer assertions, however, suggest that technology advances for gas shales in the last two to three years may assure strong lower-48

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<sup>18</sup> USGS Open File Report 2004-1440, *Conventional Natural Gas Resource Potential, Alaska North Slope*, by David W. Houseknecht, December 13, 2004.

<sup>19</sup> USGS Open File Report 2004-1452, *Alaska North Slope Gas Hydrate Energy Resources*, by Timothy S. Collett, no date.

<sup>20</sup> Available at [<http://geology.com/usgs/arctic-oil-and-gas-report.shtml>].

domestic natural gas supplies for the foreseeable future.<sup>21</sup> Whether these new assertions affect pipeline project financing for the Alaska project remains to be determined.

## Open Access to the Pipeline

An important policy concern regarding development of this pipeline is that it provide a means for all potential natural gas producers on the ANS to transport gas to market through it. If the three Prudhoe Bay producers were to build a private pipeline with no capacity for others, it would not provide an incentive for additional exploration and production from others on the ANS. The FERC has required open access on this pipeline.<sup>22</sup>

## Project Risk Management and Sharing

This pipeline project would be the largest civilian construction project in the history of North America. Current cost estimates range from \$26 billion to \$40 billion. It would likely take at least ten years from approval to completion/operation. Its developers and their financial backers would face immense execution, financial, market, and political risk. Congress has acknowledged the magnitude of these risks and authorized up to \$18 billion of loan guarantees to help address the risk challenge (ANGPA 2004, P.L. 108-324). The congressionally approved \$18 billion loan guarantee relates to the risks associated with a potential drop in delivered natural gas values compared to current forecasts. Although current prices and forecast prices are high, natural gas prices and the outlook for future prices can change.

Currently, it appears that an Alaska natural gas pipeline would operate under tariffs approved by the Federal Energy Regulatory Commission (FERC) for the United States and by the National Energy Board (NEB) for Canada. The pipeline operators would have contractual commitments from shippers for transporting gas through the pipeline.

Producers and the state of Alaska might face financial risk on the price of the natural gas produced. The value of the natural gas on the Alaska North Slope would be the market value where the pipeline delivered the gas minus the tariff payment to deliver the natural gas to market. As currently envisioned, the Alaska North Slope producers would be the shippers. Local gas distribution companies (LDCs) or other natural gas consumers or marketers could also commit to transport contracts with the pipeline. In the case of LDCs, it appears that most state regulators would not approve the necessary long-term contracts at this time.

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<sup>21</sup> See, for example, Navigant Consulting, Inc., *North American Natural Gas Supply Assessment*, July 4, 2008.

<sup>22</sup> Regulations Governing the Conduct of Open Seasons for Alaska Natural Gas Transportation Projects, FERC Stats. & Regs., Regs. Preambles ¶ 31,174 (February 9, 2005); 70 Fed. Reg. 8,269 (February 18, 2005) (Order No. 2005) and Regulations Governing the Conduct of Open Seasons for Alaska Natural Gas Transportation Projects, FERC Stats. & Regs., Regs. Preambles ¶ 31,187 (June 1, 2005); 70 Fed. Reg. 35,011 (June 16, 2005) (Order No. 2005-A).

Federal policymakers may want to make sure that all participants in this project accept a fair share of the risks so that they will take responsibility and be accountable for successful implementation. For example,

- Supply risk appears minor but the Point Thompson natural gas may be necessary to realize the economies of scale on the pipeline. The state of Alaska and ExxonMobil continue to dispute the pace of development there. This dispute could endanger the timely availability of these natural gas volumes and harm project economics.
- Construction risk appears serious with regard to cost overruns. Given the recent cost escalation experienced in energy projects generally, the potential for this project to cost more than the \$26 billion (U.S. dollars)<sup>23</sup> initial estimate appears likely and to exceed the highest estimates heard to date, \$40 billion, remains possible.
- Engineering completion risk appears small. All the potential project developers (BP, Conoco Philips, ExxonMobil, and TransCanada) have relevant and appropriate scale pipeline system engineering experience.
- Market risk appears moderate in terms of the potential market value at time of delivery. The Canadian Energy Research Institute (CERI) has reportedly estimated that market value for the natural gas would need to exceed \$10 (Canadian) per million Btu for the project to be viable.<sup>24</sup> Because it appears producers must deliver the natural gas to Alberta or the lower-48 states, the market risks fall on them. This explains the importance to them of control over project costs, which affect the netback value at Prudhoe Bay. Alternatively, gas distribution companies or other natural gas purchasers could also purchase pipeline capacity and assume some market risk. Current state regulatory practice does not appear to encourage such long term commitments. This is a policy area that would benefit from additional analysis but is a state-level issue.
- The three Prudhoe Bay producers have sought guarantees on Alaska tax and royalty policy that the state has viewed as unreasonable. On long-term, multi-decade agreements, flexibility from all parties is often a key to successful agreements. Rather than locking all factors down permanently up front, agreeing to the timing of renegotiation and the range of acceptable variations might provide a faster path to agreement.

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<sup>23</sup> Unless specifically mentioned otherwise, all dollars are in current U.S. dollars.

<sup>24</sup> P. Howard, D. McColl, D. Mutysheva, and P. Kralovic, *Ensuring Market Access: The Capacity of Western Canada's Natural Gas Pipeline System*, Canadian Energy Research Institute, Study No. 113, 2008.

- TransCanada, in its AGIA application, also proposed another measure to mitigate financial risks. This proposal, known as the Bridge Shipper proposal, would have the United States federal government take the risk for unused capacity were the pipeline finished and there were not adequate natural gas flowing to use the capacity. TransCanada points out that it is prepared to proceed with the pipeline without such Bridge Shipper support and provided it as an “outside the box” idea invited by Alaska in the AGIA invitation. If the pipeline were built with 4.5 billion cubic feet per day (Bcf/d) capacity and no natural gas producers or customers signed on for capacity, the levelized annual bridge shipper contingent liability for all capacity could be as high as approximately \$3 billion (nominal) per year for 25 years.<sup>25</sup> The primary purposes of this proposal appear to be (1) to buttress the attractiveness for those who might finance the project and (2) to allow the project to proceed without Prudhoe Bay producer commitments so that it will be easier to make the case later on that these producers are not working diligently to develop the resource.

The magnitude and complexity of the risks for this project have always presented challenges for success — and for project start-up. There is little reason to expect these challenges to diminish significantly.

## Diligent Development

The slow pace of development on the Alaska natural gas pipeline has led some pipeline proponents to conclude that the Prudhoe Bay producers would prefer not to develop these resources at this time. This controversy has expanded on the ANS when, in April 2008, the Alaska State Department of Natural Resources terminated ExxonMobil’s lease in the Point Thompson unit east of Prudhoe Bay. ExxonMobil disputes the termination and this matter will likely end up in the court system for many years if there is no settlement.

Recent announcements by ExxonMobil indicate they intend to proceed with Point Thompson development activity. They have also indicated a willingness to move forward on a Prudhoe Bay to lower-48 pipeline.<sup>26</sup> Progress on the pipeline may require progress on Point Thompson, as well.

## International Issues

Any onshore pipeline from Alaska to the lower-48 states must go through Canada. Canada has cooperated with the United States for decades on a variety of matters related to this pipeline (e.g., the pre-build segments in the early 1980s).

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<sup>25</sup>  $\$1.96/\text{MMBtu} \times 1.067 \text{ MMBtu}/1 \text{ mcf} \times 4.5 \text{ million mcf}/\text{day} \times 365 \text{ day}/\text{year} = \$3.4 \text{ billion}/\text{year}$

<sup>26</sup> See, for example, Dow Jones news service, “Exxon: Set to work with TransCanada, Conoco, BP on Alaska Pipeline,” August 7, 2008, 2:40 PM EST.

Canadian matters that could affect an Alaska natural gas pipeline include the Mackenzie Valley pipeline; TransCanada's certification; the Alberta pipeline network status; oil sands development (which could consume significant quantities of natural gas as fuel); and Alberta natural gas production.

The Mackenzie Valley in the Canadian Arctic contains an estimated 6 trillion cubic feet of natural gas. It was discovered at approximately the same time as the Alaska North Slope gas at Prudhoe Bay. At one time, development of Mackenzie Valley gas appeared likely to be through a spur line connecting to the pipeline from Alaska. That configuration appears less likely today and Canadian interests hope to proceed with a Mackenzie Valley pipeline before the Alaska pipeline project begins.<sup>27</sup>

Mackenzie Valley gas, if developed, may go to the oil sands of northern Alberta to provide fuel for the steam generation required to produce crude oil there. The demand for steel and pipe for a Mackenzie Valley project are significant, and it is not clear that there is adequate, large diameter pipe reduction capacity in the entire world to serve both Alaska and Mackenzie Valley projects at the same time. Supporters of the Mackenzie Valley pipeline intend to precede the Alaska project. Mackenzie Valley pipeline supporters fear that if the Alaska line is completed first, then the economics for their pipeline may not remain viable.

TransCanada's ownership of Foothills Pipe Lines, Ltd., which was certificated for the section of the Alaska pipeline through Canada in Canada's Northern Pipeline Act (NPA, section 21), with the right-of-way approved (pursuant to section 37 of the NPA), has been an important consideration throughout Alaska pipeline discussions.

At this time, there appears to be the expectation that in ten years, when Alaska natural gas could start to flow through Alberta, there will be spare capacity in the Alberta pipeline grid. The treaty provisions included in the NPA appear to commit to providing sufficient capacity without specifying a capacity figure, and there is no sunset date in the legislation.

Oil sands development has accelerated in northern Alberta and costs have increased as pressure mounts for the available labor and other input requirements. Much of the Mackenzie natural gas is expected to serve the growing oil sands load.

Alberta gas production has been declining. There is the potential that unconventional gas production could reverse this trend but there is no concrete evidence of a turn-around at this time.

Another potentially important policy matter relates to the quantities of natural gas reaching the lower-48. The proposal to end an Alaska natural gas pipeline at the Alberta border and use the Alberta pipeline grid, the Alaska natural gas transportation system pre-build lines to California and the Midwest, as well as other pipelines downstream of Alberta into the lower-48 is possible because Alberta natural gas

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<sup>27</sup> Mackenzie Natural Gas Pipeline Group, "Scope of Applications," at [<http://www.mackenziegasproject.com>].



production is declining. This decline has left spare capacity that could be used by the Alaska natural gas traversing Canada. Given that the rationale for federal support of the Alaska natural gas pipeline is to increase lower-48 natural gas supplies, there is the potential for misunderstanding if Canadian exports to the United States decrease as Alaska natural gas arrives. This matter may require some attention before the phenomenon occurs.

Finally, on the international dimension, other nations have expressed interest in a role in ANS natural gas pipeline development. China's Sinopec participated in the AGIA process as a partner with Little Susitna Corporation in an application judged incomplete. More recently, the chairman of GazProm has expressed an interest in participating in the BP and Conoco Philips Denali Project.<sup>28</sup>

## **Alaska Economic Development**

The Alaska natural gas pipeline project has important implications for the state's economic health through construction job creation and revenue generation from production royalties. In addition, the presence of a major interstate pipeline from the ANS to the lower-48 would change the economics for many local energy markets within Alaska. For example, both TransCanada and Denali have agreed to provide up to five delivery points within Alaska. This can allow local communities without natural gas service to gain service if they are near the pipe right-of-way.

Presumably one of the delivery points would link with the Anchorage-Fairbanks gas bullet line. This would allow ANS natural gas to flow south to Anchorage and other South Central Alaska markets when Cook Inlet production declines. There might also be a development opportunity for a relatively small pipeline to South Alaska for LNG exportation. This would be another local value-add and job generator. TransCanada has also assured the State that if shippers preferred to go to South Alaska for an LNG system, they would accommodate that.

## **Environmental Effects**

The addition of the significant natural gas supplies from Alaska's north slope to the lower 48 fuel supplies is generally considered a positive development in terms of the environment. The immensity of the roughly 1,750-mile construction project has caused some concern about potential environmental effects to the land and wildlife near the construction area.

Congress has addressed this issue by delegating the Federal Energy Regulatory Commission as the lead federal agency to assure all environmental regulations of the national environmental policy act (and EPA) are met and that relevant agencies worked to meet environmental impacts statement deadlines established by the commission. In recognition of the complexity of this particular project, Congress created an Office of the Federal Coordinator (OFC) to enhance coordination and progress. Canadian regulators also coordinate with the OFC.

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<sup>28</sup> Charles Ganske, "Gazprom may bid on Alaska Pipeline," *WorldPoliticsReview* blog, June 8, 2008.

## **Conclusion**

A concerted effort by the State of Alaska and other interested parties has resulted in new momentum to proceed with an Alaska natural gas pipeline from Prudhoe Bay to the lower-48 states. Many challenges remain at this time. The key parties, however, appear constructively engaged in the effort to make available this significant energy supply option.