

SCOMM

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## ALIA Training Strategic Plan



Alaska Department of Labor and Workforce Development  
Commissioner Click Bishop  
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Fairbanks  
June 13, 2008

“This gasline will fuel our homes, our economy and careers for Alaskans - for generations.”

Governor Sarah Palin  
2008 State of the State Address





## Gasline Workforce Goal

Alaskans are trained and ready for a gas pipeline and other natural resource development jobs—and these jobs are made available to Alaskans.



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## Workforce Development Process

- Identify skills gaps
- Minimize gaps through career awareness, effective labor exchange, job center network, accessible training services



*Result: Alaskans meet the needs of Alaska employers for legacy jobs and long term careers.*

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## Training System at a Glance

### Postsecondary Education

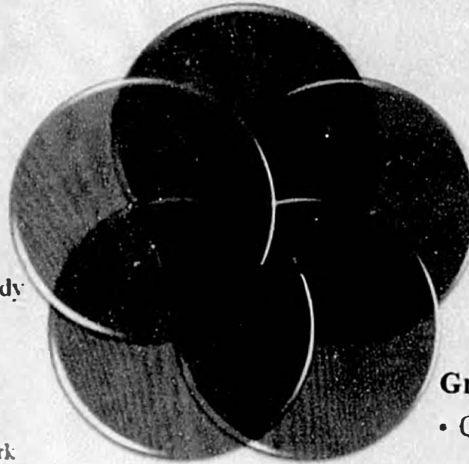
- University of Alaska
- AVTEC
- Regional Training Centers
- Private Training Providers

### Secondary Education

- Education & Early Development
- High Schools
- Adult Basic Education
- Youth First
- Construction Academies
- College Ready Work Ready

### Employment Services

- Job Center Network
- Counseling
- Job Training Referral



### Funding

- *Federal*
  - Workforce Investment Act
  - Denali Training
  - Pipeline Training
- *State*
  - STEP
  - TVEP
  - GF
- *Tuition, etc.*

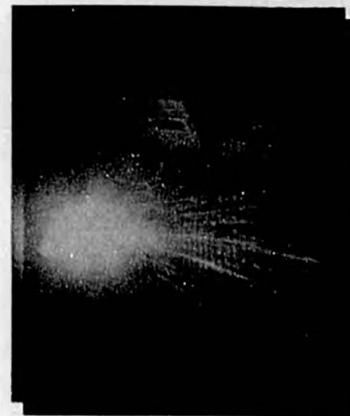
### Grantees

- Competitive Selection

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## Challenges

- Economic cycles
- Ebb and flow of workers
- Awareness—not just professional positions but high paying blue collar jobs
- Cost and accessibility of training
- Job barriers—drug free, driver's license, employability skills, transferrable certification



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## Four AGIA Strategies

- Increase awareness of and access to careers in natural resource development
- Develop comprehensive career and technical education system
- Increase registered apprenticeships and on-the-job training opportunities
- Increase training for operations, technical and management workers



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### 1. Increase Awareness of and Access to Careers in Natural Resource Development

- Job awareness program
- One stop information on jobs and training
  - FY 09 funding to develop training web site and improve online job service



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## 2. Develop Comprehensive Career and Technical Education System

- Career pathways, skill standards and training program coordination
  - FY 09 funding for coordinator
- Work Keys DEED/DOLWD partnership
  - FY 09 funding in DEED
- K-12 career planning and counseling
  - FY 09 Alaska Youth First funded
- Integrated system for youth and adults
  - FY 09 Construction academies funded



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## 3. Increase Registered Apprenticeships and On-the-Job Training Opportunities

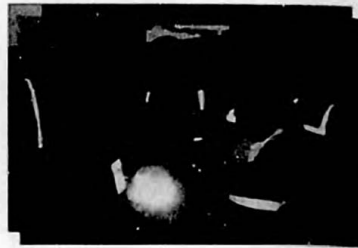
- Increase job training for entry level jobs
- Increase apprenticeships in construction
- Employer incentives for apprenticeships and OJT
  - Funding received to support apprenticeships and OJT—targeted federal grant and general fund



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## 4. Increase Training for Operations, Technical and Management Workers

- Expand programs for critical jobs
  - FY 09 funding for UAA engineering program expansion
- Recruit more Alaska high school grads
- Help workers keep pace with technology and skill upgrades
- Expand management training opportunities for skilled workers



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## Our Focus

- Current skills gap
- Legacy and long-term jobs



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## Identifying the AGIA Skills Gap

Working with industry partners, DOLWD:

- Identified 113 AGIA occupations
- Used existing occupational supply and demand data to help identify potential gaps



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## Alaska's AGIA Skills Gap

- Current gap: In 2006 nonresidents accounted for more than 16% of the workers in the AGIA identified occupations
- Future gap: More than 37% of Alaskans working in AGIA occupations were 45 years old or older in 2006



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## AGIA Occupational Data

	Percent Nonresident Workers (2006)	Percent Workers Age 45+ (2006)	Average Hourly Wage (May 2007)
Carpenters	17.0%	34.6%	\$26.33
Civil Engineers	12.4%	43.9%	\$36.64
Electricians	24.2%	32.7%	\$31.47
Operating Engineers and Other Construction Equipment Operators	18.3%	49.9%	\$28.10
Surveyors	18.1%	45.2%	n/a
Truck Drivers, Heavy and Tractor- Trailer	13.6%	48.8%	\$21.66
Welders, Cutters, Solderers and Brazers	34.8%	40.4%	\$25.05

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## For More Information

- Web: [labor.state.ak.us](http://labor.state.ak.us)
- Click on: AGIA Training Strategic Plan



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## PREFACE

This document contains the Findings and Determination of the Commissioners of Natural Resources and Revenue concerning whether to issue a license under the Alaska Gasline Inducement Act ("AGIA") to TransCanada Alaska Company, LLC and Foothills Pipe Lines Ltd. Throughout this document, the AGIA applicant is referred to as "TC Alaska." TC Alaska is a subsidiary of TransCanada Corporation ("TransCanada"). TransCanada, through its independent pipeline company affiliates, owns and operates one of the largest natural gas pipeline transportation networks in North America. TransCanada has pledged all support necessary, both financial and otherwise, to TC Alaska to achieve completion of the project.

The basis for this Determination is explained in detail in the written Findings and supporting documentation that follows:

- **Executive Summary.** The Executive Summary contains a short, simple discussion to provide the reader with a sketch of the more important aspects of the Findings document. The reader can obtain additional, more detailed information from the actual text of the Findings and Determination.
- **Chapter One — Introduction and AGIA:** Chapter One serves as an introduction to the process used to develop this Findings document and presents information that guides the reader through the evaluation conducted by the Commissioners of the Departments of Natural Resources and Revenue under AGIA. Chapter One also presents information on how the commissioners examined and compared three natural gas projects in order to determine the type of project that most sufficiently maximizes benefits to Alaskans.
- **Chapter Two — Technical Background:** Chapter Two provides a simplified explanation of the many components of a major natural gas pipeline project: what physical and engineering components comprise a natural gas pipeline, what regulatory processes govern the development and operation of a pipeline, what commercial factors drive the economics for the various pipeline stakeholders, and what methods are traditionally used to evaluate a pipeline project's technical and commercial viability.
- **Chapter Three — Analysis of TC Alaska's Application:** Chapter Three contains the commissioners' evaluation of the TC Alaska Project as proposed in its AGIA Application.
- **Chapter Four — LNG:** Chapter Four contains the commissioners' comparison of the TC Alaska Project with liquefied natural gas (LNG) project options.
- **Chapter Five — Producer Project:** Chapter Five consists of the commissioners' comparison of the TC Alaska Project with the proposal ConocoPhillips and BP recently submitted, labeled "Denali" — the Alaska Gas Pipeline ("the Producer Project").
- **Chapter Six — Findings and Determination:** Chapter Six contains the Findings and Determination of the commissioners.
- **Appendices:** The appendices contain information that supplements or further explains the Findings document. The appendices include the summary of public comments and the responses to those comments, as well as expert reports.

## EXECUTIVE SUMMARY

This Executive Summary contains a short, simple discussion of the more important aspects of the Findings document. The reader can obtain additional, more detailed information from the actual text of the Findings and Determination. As discussed in these Findings:

- *Issuance of the AGIA license to TC Alaska will maximize benefits to Alaskans because it will provide the best opportunity to achieve a gas pipeline that encourages full exploration of Alaska's natural gas resources, generates long-term jobs for Alaskans, maximizes state revenues, provides affordable in-state gas opportunities, and realizes other important state goals.*
- *Although liquefied natural gas ("LNG") project options are likely economic, they would provide the state with less revenue than the TC Alaska Project. Exclusive LNG projects are significantly less likely to succeed compared to TC Alaska because they are more complex, more costly, more difficult to finance, and would face potential regulatory barriers in exporting LNG to Asia. The TC Alaska Project provides Alaska with its best opportunity for a successful LNG project, as a "Y-line" option. The TC Alaska Project proceeding first will reduce costs and lessen financial and contracting hurdles associated with an LNG project. Coming after gas is already bound for U.S. markets, a Y-line may be able to overcome political opposition to exporting gas. Accordingly, the commissioners believe that the best route to an Alaska LNG project runs through the TC Alaska proposal.*
- *Although the TC Alaska Project would generate billions of dollars of profits for the Major North Slope Producers, BP and ConocoPhillips have opposed the TC Alaska Project and touted their own pipeline proposal ("the Producer Project"). Unlike TC Alaska's Project, the Producer Project contains no commitments to a project timeline, fails (similar to TAPS) to ensure tariff and expansion terms that will maximize North Slope exploration and development, suffers from potential antitrust problems, and in order to result in a pipeline will likely (similar to the failed Stranded Gas Development Act contract) require the state to provide the Producers with massive additional fiscal concessions.*

### Purpose of this Finding and Determination

AGIA, AS 43.90, requires the Commissioners of Natural Resources and Revenue to issue a determination with written findings if they decide that a proposed gasline project will sufficiently maximize the benefits to the people of Alaska and merits issuance of an AGIA license. This document constitutes the commissioners' Finding and Determination. Following an extensive evaluation process and consideration of public comments, the commissioners have determined that the TC Alaska Project will sufficiently maximize the benefits to Alaskans and merits issuance of the AGIA license.

## Benefits for Alaska of a TC Alaska Gas Pipeline Project

The pipeline project proposed by TC Alaska offers significant benefits to Alaska. Alaska's economy will benefit from short-term construction jobs, but will benefit more significantly from long-term careers, as new natural gas fields are developed because the pipeline to market has been built. Alaska will benefit from a pipeline that can be expanded to accommodate additional natural gas supplies that can be dedicated to meet

Alaska's energy needs. Alaska will benefit from a pipeline tariff structure that maximizes state revenues, provides true open access to all potential shippers, provides the lowest reasonable transportation rates, and accommodates expansions. Alaskans will benefit from the opportunity the TC Alaska Project creates for a "Y

line" liquefied natural gas project and the "bullet line" to Southcentral Alaska. Alaska will benefit from the potential for lower energy costs as natural gas is made available to communities throughout Alaska via off-take points along the pipeline route and associated spur lines. The construction of a natural gas pipeline is an exciting start to a new era in the Alaska economy, one where more Alaskans have careers in natural gas exploration and development, where the state and its citizens enjoy a continuing stream of tax and royalty revenues, and where local energy costs are reduced.

Constructing a natural gas pipeline will generate thousands of construction jobs that will last for three to four years. After the pipeline is operating, employees will be needed to operate compressor stations and other pipeline facilities. The demand for skilled workers trained to drill wells and build new production facilities will increase as the availability of a path to market enhances the economics of exploring for Alaska's vast undiscovered gas resources. Because of its commitments to expansion and real open access that will open the North Slope basin to competition, the TC Alaska Project will generate long-term jobs more effectively than either an LNG option or the Producer Project.

The TC Alaska Project will not interfere with a smaller "bullet line" from the North Slope to Southcentral Alaska. Rather, moving both projects forward simultaneously may produce unique synergies. There are adequate amounts of natural gas on the entire North Slope to fill both pipelines. Because of its smaller scale, the "bullet line" project may be designed and

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constructed more quickly than the TC Alaska Project. The two projects may provide benefits to each other: the construction work force may gain experience working on the "bullet line," and the TC Alaska Project may attract experts to the state who would not otherwise be available to work on the "bullet line" project.

The TC Alaska Project would not preclude an LNG project. Indeed, approving the TC Alaska Project will enhance the prospects for a successful "Y line" LNG project as it will reduce the costs, financing challenges, and commercial coordination challenges unique to LNG projects. TC Alaska offers to construct or transport gas to a "Y line" from Delta Junction to an LNG processing facility in Prince William Sound if shippers express sufficient demand for that project as the work on the overland project progresses.

The TC Alaska Project provides several opportunities to address Alaska's need for low-cost energy. TC Alaska's proposed distance-sensitive transportation rates ensure that Alaskans will pay just the costs incurred to ship gas within Alaska. The TC Alaska Project also offers the potential for construction of spur lines that will make natural gas available to communities throughout the state. Most importantly, because the true open access and tariff provisions promote gas exploration and development, Alaskans will benefit from an environment in which companies compete to meet Alaskans' energy needs.

The cost of transportation on the TC Alaska pipeline (its "tariff") will protect the state's interests throughout the years of pipeline operation. Lowest reasonable tariffs are essential to ensure genuine open access and maximize opportunities for development of Alaska's North Slope natural gas resources. TC Alaska commits to the requirements of AGIA that are designed to ensure the lowest possible tariffs. When tariffs are too high, explorers and developers are discouraged from investing in North Slope natural gas exploration and development. Low tariffs improve the economics of finding and developing additional natural gas resources on the North Slope, which encourages additional exploration and development work that will provide for long-term, stable employment for Alaskans.

Low tariffs also mean that the state can earn a greater return on its natural gas resources. As the owner of the natural gas resources, the state gets a share of the natural gas production, its "royalty" share. As a sovereign, the state taxes the profit on natural gas production. Tariffs are

#### Low Tariffs

- Encourage exploration
- Increase long-term employment opportunities
- Produce higher revenues to the state
- Strengthen the Permanent Fund

deducted from the market price at the destination where the natural gas is delivered before the royalty amount and production taxes are calculated. This means the higher the tariff, the lower the return to Alaska for its natural gas resource. These returns are an important future revenue stream for the state that can be used to fund government services and capital projects, defray the cost of energy to Alaskans, and maintain the strength of and protect the Permanent Fund.

TC Alaska has committed to regularly expand its pipeline to meet the need for transporting additional gas on reasonable commercial terms. This is essential to opening the North Slope to competitive natural gas exploration and development. New explorers and producers need confidence that if their efforts are successful, they will be able to get their natural gas into the pipeline and to market at a fair rate for transportation.

Alaska's experience with TAPS (which is owned by the Major North Slope Producers) demonstrates how the terms of ownership and operation of a pipeline can adversely affect the state's economic interests and the exploration efforts of developers who do not own a share of the pipeline. When the Regulatory Commission of Alaska reviewed the tariffs on the TransAlaska oil pipeline twenty-six years after it began to operate, it found that the tariffs were excessive. The Superior Court, and eventually the Alaska Supreme Court, affirmed the Commission's finding that the TAPS owners had collected pipeline tariffs from shippers that were an average of 57 percent too high. Decades of excessive tariffs reduced the state's royalties and production tax, and hindered competitive development of the state's oil resources by non-owner companies.

Alaska cannot afford to repeat the TAPS experience. The state must maximize development of the natural gas resources on the North Slope to realize economic growth through increased jobs, revenues and other benefits that will flow from increasing gas production. TC Alaska's commitment to a lower tariff structure will ensure that the state does not repeat the problems experienced with TAPS.

The commissioners recognize the Producer Project may be pursued to completion outside the AGIA process and without state fiscal concessions. The Producers have an obligation to market their gas when it is reasonably profitable to do so; they do not have an obligation to transport the gas through any particular project. If the Producer Project proceeds to an open season, the TC Alaska Project would compete with the Producer Project for gas commitments. However, the Producers have stated that they need concessions from the state to enable them to commit gas to any gas pipeline project. AGIA ties upstream incentives to gas committed at the initial

open season of the AGIA project, to provide the state with the benefits Alaskans require. The state will have opportunities throughout this process to evaluate the need to increase the value of the AGIA upstream incentives, when justified.

The TC Alaska Project offers significant benefits to the state and its citizens. As a pipeline company which increases its profits by expanding its system, TC Alaska has the incentive to foster timely development of the state's natural gas resources to their maximum potential. This also serves the state interests. The TC Alaska Project sets the stage for an open and competitive North Slope natural gas basin during and after pipeline construction. TC Alaska is unique in its willingness to commit to actions that will realize this future.

## Background

Development of Alaska's natural resources is the cornerstone of Alaska's economy. Alaska's North Slope is a world-class natural gas basin. Recent studies estimate that there are 224 trillion cubic feet ("Tcf") of undiscovered, technically recoverable natural gas resources throughout the Alaskan Arctic. Of this amount, 137 Tcf are categorized as undiscovered, economically recoverable resources. These resources are in addition to the approximately 24.5 Tcf of natural gas reserves within Prudhoe Bay plus 9 Tcf of natural gas reserves discovered in other existing fields on the North Slope, including Point Thomson. Although there has been considerable debate about who should build a pipeline and when it will be built, there is unanimous agreement that Alaska needs a pipeline to get its huge volumes of natural gas to market.

When natural gas was discovered on the North Slope, the search began for a way to get Alaska's substantial natural gas resources to market. State and federal laws were passed to encourage natural gas pipeline construction. Potential developers spent millions of dollars on plans and studies. However, the low prices in natural gas markets forestalled the commitments necessary to support the tremendous cost of what would be the largest construction project in North America. As dynamic changes occurred in the natural gas market within the last decade, the viability of, and interest in, an Alaska natural gas pipeline increased.

Awarding a license to TC Alaska will ensure that any additional upstream incentives are provided in exchange for the benefits inherent in an AGIA project. In addition, awarding a license to TC Alaska reduces the likelihood that the state will need to provide unwarranted concessions to the Major North Slope Producers.

In 1998, when the Stranded Gas Development Act ("SGDA") was passed, the average price for natural gas in the Lower 48 was under \$2 per million British thermal unit (mmbtu). The first half of this decade was marked by discussions of what type and amount of government subsidies and concessions were needed to make the project viable. Within Alaska, those discussions came in the context of contract negotiations conducted by the previous Governor and his administration with the three primary oil and gas leaseholders on the North Slope: BP, ConocoPhillips, and ExxonMobil ("Major North Slope Producers"). The debate surrounding the proposed contract centered on how much value the state would need to transfer to the Major North Slope Producers and how much risk the state would be required to accept.

By 2006, the natural gas markets had changed dramatically. The average price of natural gas in the Lower 48 was more than \$0 per mmbtu. Large government subsidies no longer appeared necessary to make the project economically viable. In addition, the state had become much better educated on natural gas pipeline economics. The State learned that if it was not careful to protect its interests, billions of dollars in value could be transferred unnecessarily from the state to the Major North Slope Producers. These changes shifted the public debate from what state concessions would be necessary to what the state government could do to most effectively advance the project and maximize the interests of Alaskans. The legislature did not accept the contract that had been negotiated with the Major North Slope Producers under the SGDA. The Major North Slope Producers continued to insist that large concessions from the state were needed, without demonstrating the need for those concessions. Alaska's natural gas pipeline project was at an impasse.

When the Palin Administration proposed AGIA in early 2007, it was based on the understanding that an Alaska natural gas pipeline project was economically viable and that the Major North Slope Producers would continue their efforts to negotiate commercial terms to maximize their strategic position in Alaska and obtain maximum value from any natural gas pipeline project. To protect the state's interests, AGIA used free market competition to move the project through the current impasse. All interested companies were eligible to propose any type of project they determined to be economically and technically viable. The Major North Slope Producers would need to decide whether they were going to get the enormous reserves of Alaska natural gas in the fields they now operated to market in a pipeline they built and owned, or one constructed by

AGIA uses free market competition to move the project through the current impasse. All interested companies were eligible to propose any type of project they determined to be economically and technically viable.

a third party. AGIA presumed that the Major North Slope Producers would act as reasonable commercial players who would comply with their lease obligations and participate in a project with positive economics. Furthermore, AGIA established that if incentives are provided to a natural gas pipeline project they are given in exchange for genuine open access and other provisions necessary to protect the state's interests.

AGIA established a competitive process to allow companies to compete for a license. The companies submitting applications to construct and operate Alaska's natural gas pipeline were required to commit to the tariff and expansion terms that were designed to protect the state's interests and to develop the state's economy by providing employment during the construction of the pipeline and (more importantly) providing long-term careers in a new natural gas exploration and development industry. AGIA was based on the understanding that competition could drive companies to make those commitments. All who recognized that the project economics were positive would compete for the commercial opportunity to build the natural gas pipeline and earn some of those profits. The competition was open to everyone willing to operate within the parameters established by the AGIA "must haves." All competitors, including natural gas pipeline companies, natural gas producers, and LNG projects were eligible to compete.

In exchange for the commitments required in AGIA, the Alaska legislature offered a package of inducements. These include: reimbursement of up to \$500 million of the costs incurred to obtain a regulatory approval from the Federal Energy Regulatory Commission ("FERC") to construct a pipeline; an AGIA project coordinator to facilitate the process; and a stable production tax rate for ten years and fixed royalty valuation methods to anyone who committed to purchase capacity to ship natural gas on the AGIA gasline during its first binding open season. The legislature recognized the state's vital interests in encouraging exploration and development of Alaska's natural gas resources by ensuring a genuine open access pipeline and the lowest reasonable transportation rates. AGIA license applicants were required to commit to a tariff structure that would assure the lowest possible transportation rates and expansion terms to encourage natural gas explorers and prospective developers to compete to explore for and develop Alaska's North Slope natural gas resources and bring them to market. The legislature made the inducements available to an AGIA licensee if the licensee would agree to meet the requirements and make the commitments that the legislature deemed necessary to protect the state's interests.

A Request for Applications ("RFA") was released on July 2, 2007. Applications were due November 30, 2007. The applications covered a variety of projects including both overland natural gas pipelines and LNG projects. After a thorough review, only the application from TC Alaska was found to have met all the threshold application "completeness" requirements of the AGIA statute and RFA. Although none of the applications proposing an LNG application was complete, the commissioners nevertheless compared several LNG options with the TC Alaska Project before making a decision due to the need to resolve the long-standing public debate over which route is preferable. A public review process was held on the TC Alaska application, and more than 350 public comments were received. The comments were considered in development of the Findings and are summarized in Appendix A along with responses.

The commissioners assembled a team of experts to provide analysis to help the commissioners evaluate the TC Alaska application, examine LNG options, and review the Producer Project. The team included numerous experts whose names and contributions are presented in Chapter 2. Their reports, compiled and attached as Appendices, were evaluated in developing these Findings and Determination.

## How a Natural Gas Pipeline Project will Progress

Construction of a natural gas pipeline to bring Alaska's natural gas to market is a complex undertaking. There is no single event that will take the state from not having a pipeline to having a pipeline. Rather it is a series of steps, spanning a number of years, with each step affecting the next and requiring significant expenditures. Benchmarks define these steps, and at each one a pipeline developer must re-evaluate the project economics and decide whether to proceed. A successful Alaska natural gas pipeline requires much more than a proposal to build a pipeline; it requires a company that will move through each of the steps to completion. The state's evaluation process considered how likely it is that the TC Alaska Project, various LNG options and the Producer Project will complete the progression from an exciting idea to an operating pipeline.

The first step for the TC Alaska Project is issuance of an AGIA license. That license will make TC Alaska's commitment to obtain a FERC certificate legally enforceable. TC Alaska will not earn any revenues until natural gas begins to flow through the pipeline, approximately ten years after an AGIA license is awarded. In exchange for the state's commitment match of up to \$500 million of the costs of taking the project through FERC certification, the state gets a commitment

from TC Alaska to move the project forward to that benchmark. TC Alaska has committed to submit an application to the FERC by December 2011.<sup>1</sup>

After the AGIA license is issued, the next step for TC Alaska is holding an open season. Open season is the term used in the natural gas industry to describe the process a pipeline builder uses to solicit firm shipping commitments for natural gas. Producers that commit to ship natural gas get reserved capacity on the pipeline and fixed transportation rates. The pipeline company gets commitments to transport natural gas that will help it finance construction of the natural gas pipeline.

A natural gas pipeline ultimately needs shipping commitments to be successful. In order to attract shipping commitments, a project must provide positive economic opportunity for gas shippers. The commissioners' analysis shows that the Major North Slope Producers can expect billions of dollars in profits if they commit gas to the TC Alaska Project.

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After an open season, regardless of results, TC Alaska will apply for a FERC certificate. An interstate pipeline must have a certificate of public convenience and necessity from FERC before constructing new pipeline facilities. Among other things, FERC reviews the project, approves the proposed tariff terms, and sets recourse rates based on its review of the costs of construction and operation. Recourse rates are available to all shippers, but any company willing to commit to ship a defined volume for a specific period of time can negotiate better terms. FERC commonly approves negotiated rates. FERC has the authority to impose certificate conditions on the pipeline company that it believes are necessary to protect the public interest.

The proposed transportation rates described in TC Alaska's application are a reasonable first step in allocating the risks and rewards among the parties who will be involved in this project. However, nothing in the AGIA license prevents the state from protecting its interests in front of FERC by arguing for different terms. As the project moves forward and the project costs and

<sup>1</sup> In its Application, TC Alaska promised this and other dates on receiving the AGIA License by April 1, 2008. According to TC Alaska, if the License is issued later this year, these dates may need to be adjusted. However, for ease of reference in these Findings we will continue to refer to the original dates used by TC Alaska in its Application.

expected revenues are better defined, the negotiations between TC Alaska and potential shippers will continue. If, after they have negotiated their cost of transportation, the Major North Slope Producers can demonstrate that some change in the state's fiscal regime is necessary to enable them to earn a fair return, then the legislature can consider changes to the state's fiscal system.

After a FERC certificate is awarded, the complex process of pipeline construction begins. Because of the remote location and large size of this pipeline, the process of ordering materials and bringing them to the site will require extensive logistical planning. Construction of the pipeline and the associated processing plant will take at least three years.

Throughout the process, TC Alaska will continue to evaluate if there is demand for more capacity in the pipeline. Capacity can be added by including additional compressor stations ("compression") or adding parallel pipe ("looping"). As additional natural gas fields are discovered and brought into production, the TC Alaska pipeline will add capacity and continue to create more jobs in Alaska's natural gas industry.

## TC Alaska Project Proposal

TC Alaska proposes to build a 48-inch diameter, high-pressure pipeline capable of carrying between 3.5 and 5.0 billion cubic feet per day (bcfd). The project would run 1,715 miles from a natural gas treatment plant at Prudhoe Bay on the North Slope to interconnect with the Alberta Hub in Canada. This is the second largest natural gas trading center in North America, which interconnects with pipelines that carry more than 10 bcfd of gas into U.S. markets. The Alaska section will be approximately 750 miles long with six compressor stations at startup and five natural gas delivery points in Alaska.

The net present value ("NPV") calculation methodology used to assess TC Alaska's application allows the State to consistently and transparently assess its future value in common terms. Because TC Alaska's application, the LNG options, and the Producer Project are based on a variety of assumptions and projections, it is essential to use common terms to assess the impacts of these assumptions and projections on

Net Present Value - NPV is an economic calculation used to determine the value of long-term projects. It recognizes that a dollar today is worth more than a dollar in the future. Future income (or "net value") is measured by its "present" value through discounting. The NPV calculation allows assessment of profits that will be spread over decades.

the value to the state. With the basic assumptions rendered into common terms, the state can evaluate whether the TC Alaska Project serves the best interests of the state and compare it to LNG options and the Producer Project.

The path offered by TC Alaska's plan is likely to succeed. TC Alaska provided a work plan that is technically reasonable, feasible and specific. It includes the use of technology that TransCanada is now using to operate pipelines in climates similar to Alaska's. The schedule, including the timing of U.S. and Canadian regulatory approvals, is aggressive but reasonable and appropriate. TransCanada has the financial ability to contribute equally to the project and to obtain the financing necessary for construction. TransCanada has a strong record of performance in developing other large projects and a positive record of integrity and business ethics.

The commissioners also considered whether sufficient natural gas exists on the North Slope to fill the capacity of TC Alaska's proposed pipeline for 25 years. Alaska has enough natural gas resources to fill the TC Alaska pipeline for 25 years and for decades longer. This is true even though Point Thomson natural gas may not be available for any project during its initial years due to the operator's failure to develop the Point Thomson Unit in a timely manner, and the significant potential that the Unit must first be developed for liquid condensate and oil. The unavailability of Point Thomson gas, however, is more than offset by the unique profitability of the natural gas at Prudhoe Bay. In fact, despite the unavailability of Point Thomson gas, the state and the Major North Slope Producers stand to receive significantly positive cash flows and NPVs from the Project even if the Prudhoe Bay gas is the only gas ever produced on the North Slope. If, in addition to the Prudhoe Bay gas, natural gas from Alaska's other vast resources is also produced (including Point Thomson gas—which is very likely), then the Project will be even more profitable.

The state and the Major North Slope Producers stand to receive significantly positive cash flows and NPVs from the Project even if the Prudhoe Bay gas is the only gas ever produced on the North Slope. If, in addition to the Prudhoe Bay gas, natural gas from Alaska's other vast resources is also produced (including Point Thomson gas—which is very likely), then the Project will be even more profitable.

Additionally, the commissioners considered the claim by the Major North Slope Producers that TC Alaska cannot succeed because of the risk that, if it builds the Project, it would be sued by former partners that worked with other TransCanada affiliates to try to advance an Alaska

gasline project more than two decades ago. As discussed in Chapter 3, the commissioners find that the potential claims against TC Alaska and its affiliates are extremely weak, and that the Producers have failed to support their speculative theory. As a result, the commissioners conclude that the risk of litigation over this issue does not present a significant barrier to the TC Alaska Project's likelihood of success, including its ability to obtain financing.

The commercial terms proposed by TC Alaska are reasonable. TC Alaska's plan for managing cost overruns will reduce the risk for shippers of tariff increases. The TC Alaska proposal provides the Major North Slope Producers with several significant commercial opportunities. They can construct and own the gas treatment plant on the North Slope. They can also own an equity share in the TC Alaska pipeline. Further, the terms may become even more attractive through negotiations with the Major North Slope Producers.

Although there are project risks, none of them are significant enough to outweigh the TC Alaska Project's likelihood of success. Natural gas prices are not likely to decline enough to make the project uneconomic. The risk that there are insufficient resources on the North Slope to fill the proposed pipeline is low. The commissioners anticipate that the state's current fiscal structure will allow companies that develop North Slope gas and transport it on the TC Alaska pipeline to earn a significant profit.

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The TC Alaska Project is viable. TransCanada has successfully constructed many natural gas pipelines and now operates 36,000 miles of natural gas pipelines in North America. The TC Alaska Project will provide positive economics to the state and federal governments, the Major North Slope Producers and to TC Alaska. It is likely to succeed because all of the stakeholders will benefit from success and risk losing a lot if the project fails.

## Alternatives to the TC Alaska Proposal

There were no applications found complete that proposed an in-state pipeline and LNG project. In addition, although the Major North Slope Producers did not submit an AGIA application, BP and ConocoPhillips recently announced the Producer Project. To help determine whether TC Alaska's pipeline proposal maximizes benefits and is in the best interest of the state, the commissioners evaluated LNG project options from the North Slope to an LNG plant in Valdez and the Producer Project.

The LNG project options examined were guided by the LNG project proposals submitted under AGIA. Under the same assumptions used to analyze the TC Alaska Project, all LNG project options resulted in less value to the state and the Major North Slope Producers. Although an LNG project would be able to tap the higher prices, that we expect to be available in the Asian market, the LNG projects have significantly higher costs and thus result in lower NPV to the state or Major North Slope Producers. The commissioners' analysis does not reveal comparative benefits in either timing or costs associated with an LNG project.

Even if LNG had demonstrated comparable NPV to the TC Alaska Project, the LNG projects would still not be preferable to the TC Alaska Project. The commissioners' analysis reveals that LNG projects have a much lower likelihood of success compared to the TC Alaska Project. An LNG project will face unique financing and commercial challenges for several reasons. These include the need to negotiate multiple and concurrent agreements for the purchase, pipe transport, liquefaction, shipping, re-gasification, and sale of natural gas. An LNG project also faces significant challenges because the Major North Slope Producers have made it clear that the Asian market is not their preferred market. In addition, an LNG project will face significant risk of not being permitted to export the gas to its primary market in Asia.

The primary markets for Alaskan LNG are in Asia, thus an LNG project would not address North American energy security and likely faces significant political opposition to exporting the gas.

The gas quality (specifically, requirements for higher heat content) required to fulfill long-term contracts to an Asian buyer is likely to preclude the development of a petrochemical industry in Alaska associated with an LNG project. Some propane can be removed from the natural gas stream to meet Alaskan energy needs. However, the other natural gas liquids would need to remain in the stream to satisfy the expected contract requirements of the Asian market.

In addition, LNG projects create concerns about genuine open access at the liquefaction plant. FERC cannot impose open access requirements on a liquefaction plant. Just as pipeline tariff terms can create disincentives for exploration, so can the processing terms at the liquefaction plant. The lack of genuine open access at the liquefaction plant will increase risks for explorers and limit the incentive for new natural gas exploration and development on the North Slope. The career opportunities and revenues associated with future development and expansions offer great value to Alaska; the limitations on those factors associated with an LNG project make it less attractive.

When compared to an exclusive LNG project, the overland gasoline project proposed by TC Alaska provides an opportunity for a successful LNG "Y line" project or "spur line." The likelihood of success of an LNG project is greatest when it is constructed as a "Y line."

Approving the TC Alaska Project will enhance the prospects for a successful "Y line" LNG project as it will reduce costs, financing challenges, and commercial coordination challenges unique to LNG.

The dynamics of a producer-owned and operated pipeline are very different from those of a third-party owned pipeline. An entity that both produces natural gas and owns the pipeline, like the Producer Project, earns revenues through sales of natural gas and shipment of the natural gas. Such an entity is not necessarily as driven to keep costs low—a producer who owns a pipeline and the natural gas shipped through the pipeline, is essentially paying itself to ship the natural gas, and so is less sensitive to the transportation rate. And because they own or produce the natural gas, there is a reduced economic driver to explore for and develop additional resources until such time as it is necessary to maintain shipping volumes through the pipeline. As the state's experience with TAPS has shown, combining pipeline and shipper responsibilities can harm the state's interests. For many of these same reasons, the Producer Project suffers the risk of being stalled by anti-trust challenges.

Any Alaska natural gas pipeline project can proceed without state assistance. AGIA is not the exclusive vehicle for construction of an Alaskan natural gas pipeline; rather it was created to ensure that a natural gas pipeline is constructed that meets Alaska's needs. It was not designed to preclude the Major North Slope Producers from owning and operating the natural gas pipeline. Instead, its goal was to ensure that if they did, they would act like an independent pipeline company rather than an integrated gas producer and pipeline company. The state's interests would be protected through commercial tariff terms that ensure the lowest possible tariffs, guarantee genuine open access and expansion of the pipeline to encourage continued development of Alaska's vast natural gas resources.

On the day before the AGIA applications were due, ConocoPhillips publicly announced their desire to pursue a natural gas pipeline outside the AGIA process. Negotiations of fiscal conditions were a pre-condition of moving forward with the project. The administration chose to continue the competitive AGIA process in favor of exclusive negotiations. Recently, BP and ConocoPhillips announced the pursuit of another natural gas pipeline project: "Donall™ - the Alaska Gas Pipeline" ("Producer Project"). Negotiations over fiscal conditions are no longer

seen as a pre-condition of forward movement, but are now seen as a pro-requisite to a successful open season.

None of the important commercial terms of the Producer Project are defined and, unlike TC Alaska, the Producer Project makes no enforceable commitments. There is no enforceable commitment to adhere to their stated timeline or to achieve additional milestones, such as applying for a FERC certificate. There is no information on the tariffs the Producer Project would offer, let alone an enforceable commitment to provide genuine open access. This makes the option currently presented by the Producer Project extremely risky for the state. The Producer Project was offered outside of the AGIA process, and may continue in parallel to TC Alaska's efforts.

None of the important commercial terms of the Producer Project are defined and, unlike TC Alaska, the Producer Project makes no enforceable commitments.

Some have suggested that the state should "save" its \$500 million, and exclusively pursue the Producer Project rather than the TC Alaska Project. However, no company would turn down \$500 million unless it expected to extract even greater concessions later from the state. Indeed, during the SGDA process the Major North Slope Producers demanded the state provide billions of dollars in fiscal concessions—far more than the \$500 million provided under AGIA. In addition, the Producers demanded numerous other concessions which would have required the state to relinquish a large portion of its sovereignty. There is no reason to expect BP and ConocoPhillips would not demand similar concessions if the state rejects the TC Alaska application. In addition, these objections to AGIA ignore the fact that the state will receive numerous benefits for the \$500 million, including lower rates that more than offset the \$500 million and enforceable commitments to move the project forward.

In sum, the TC Alaska Project will enhance the likelihood of success of an LNG "Y line" project. Facilitating a "Y line" may protect the state against future price changes in North American and LNG markets. The Producer Project, because of its undefined commercial terms, offers enormous risks and uncertain rewards to Alaska.

In sum, the TC Alaska Project will enhance the likelihood of success of an LNG "Y line" project. Facilitating a "Y line" may protect the state against future price changes in North American and LNG markets. The Producer Project, because of its undefined commercial terms, offers enormous risks and uncertain rewards to Alaska.

## Summary of the Findings

- The TC Alaska Project is economically viable. At expected natural gas prices, the project will generate billions of dollars and substantial rewards for Alaskans, the Major North Slope Producers, the state and federal governments, and TC Alaska.
- TransCanada has a proven track record in pipeline design, construction, and operation and currently operates more than 38,000 miles of gas pipeline in North America. It has the financial resources to meet the challenge of financing this project.
- The TC Alaska Project plan is technically sound and feasible, and the project schedule is appropriately aggressive but reasonable.
- The extremely positive economics of TC Alaska's Project, combined with the legal and political context, provide favorable conditions for attracting shipping commitments for the project.
- Overall, the TC Alaska Project is likely to succeed.
- Exclusive LNG project options would most likely result in lower NPV to the state than the TC Alaska Project, would not easily accommodate expansions and the open access terms that would cause more long-term jobs to be added to the state's economy, and have a lower likelihood of success than the TC Alaska Project.
- A "Y-Line" addition to the TC Alaska Project is more likely to succeed than other LNG project options.
- The key for adding long-term jobs for Alaskans is a pipeline that encourages exploration and development of North Slope natural gas. The TC Alaska Project makes legally enforceable commitments that will result in such a pipeline.
- Alaskans need low-cost energy. This can be provided by an Alaskan gas pipeline project that has a low transportation cost (tariff), is committed to expansion to accommodate new found natural gas, provides access for natural gas off-take and spur lines in Alaska, ensures that natural gas delivered in Alaska only pays transportation costs for the mileage that the natural gas has traveled, and results in maximum revenue to the state and its citizens. The TC Alaska Project meets these objectives.

- The TC Alaska Project will not preclude construction of a smaller pipeline from the North Slope to Southcentral Alaska. Issuing a license to TC Alaska may increase the likelihood that plans for a "bullet line" or "spur line" will become reality.
- Similar to the failed SGDA contract, the Producer Project is not guaranteed to continue to advance the project to construction or even FERC certification and will likely require undefined concessions from the state. Similar to TAPS, the Producer Project will likely result in commercial terms that do not protect Alaska's interests.
- The TC Alaska Project provides opportunities for significant Producer ownership. If the state determines that additional concessions are needed, they can be added to the TC Alaska Project to ensure that any concessions result in a pipeline that maximizes benefits for Alaskans.

## Determination

The commissioners found TC Alaska's application to be complete and in compliance with the AGIA statute and Request for Applications. Following an extensive evaluation process, the commissioners determine that the natural gas pipeline project from the North Slope to Canada proposed by TC Alaska is the project that will sufficiently maximize the benefits to the people of this state. The commissioners further determine that the TC Alaska Project merits the award of a license under AGIA. These Findings and Determination will be submitted to the presiding officers of each house of the Alaska Legislature for approval of the license.

The license will be issued to TC Alaska as soon as practicable after the effective date of a bill approving the license proposed by the commissioners. If a bill is not passed within 60 days of the date that the legislative presiding officers receive this Determination, the commissioners may not issue the proposed license and may request new applications.

This Executive Summary presents an overview of the Written Findings and Determination by the Commissioners of the Alaska Departments of Natural Resources and Revenue for issuance of a License under the Alaska Gasline Inducement Act (AGIA). It summarizes the commissioners' process for evaluating TC Alaska's proposed natural gas pipeline project and the commissioners' determination as provided by AGIA. This Executive Summary is part of the commissioners' Written Findings and Determination that is anticipated to be published on May 28, 2008. This document is a summary only, and is not the commissioners' final determination under AGIA and is not a final agency action.



## Infrastructure Improvements Needed to Support Gas Pipeline Construction

Legislative Briefing - June 13, 2008

# **GAS PIPELINE CORRIDOR**

**Prudhoe Bay To Canadian Border**

## **BASIC TRANSPORTATION ISSUES**

- ▶ Gas pipeline will be different than TAPS
  - × Buried construction, more earthwork truck loads
  - × Heavier pipe (0.5" v. 1.25")
  - × Greater use of large "modules"
  - × More ports of entry
  - × More air freight traffic
  - × Higher background traffic
  - × More pavement at risk
  - × "Just in time" delivery approach likely



## WHY NOW?

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- × Only 6 Construction Seasons (including FY09) Until Gasline Construction
- × Too Much Work to be Compressed into a 2 to 3 Year Construction Window
- × Bad Roads = Slower Gasline Construction and Increased Costs
- × Bid Ready Projects Save Future Inflation as well as Maintenance Costs by Doing Projects Now

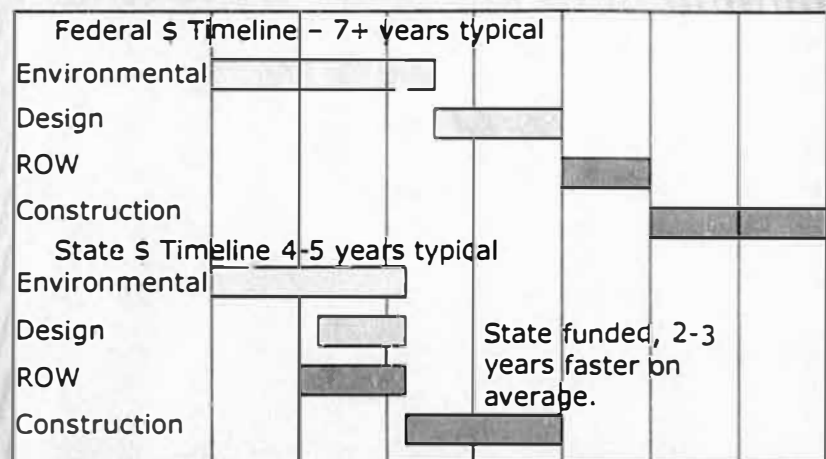
## WHY NOW? CONTINUED

- × Insufficient Federal Highway Funds and Timeline for Federal Projects
- × Don't Want Roads Under Construction During Gasline Construction
- × Projects will be Training Ground for Trades Needed for Gasline
- × Reduce Accidents / Save Lives

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## STATE FUNDS ADVANTAGES

Years

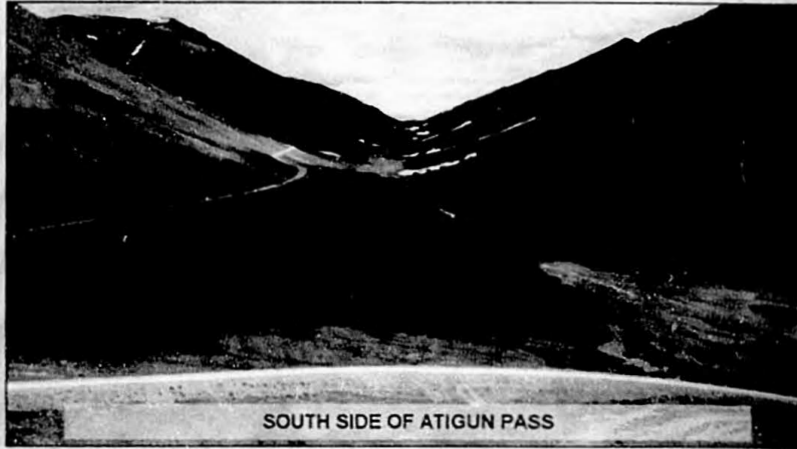


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## KEY CHOKEPOINTS

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- ▶ Atigun Pass
- ▶ Yukon River Bridge
- ▶ Fairbanks, North Pole, Delta Junction
- ▶ Alaska Range and Thompson Pass
- ▶ Haines and Haines Highway
- ▶ Anchorage to Wasilla



## EXAMPLE OF LIMITING BRIDGE GERSTLE RIVER - ALASKA HIGHWAY

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Multi-span, with height and width restrictions on module movements. Estimated Cost to Replace >\$50 M

## **GAS PIPELINE TRANSPORTATION CORRIDOR DESCRIPTION**

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- × Upgrade Bridges, Highways, Material Sites and Maintenance Camps
- × Improve Safety and Drivability
  - Width
  - Alignment
  - Grades
  - Embankment
  - Surfacing Improvements
- × Improve Maintainability

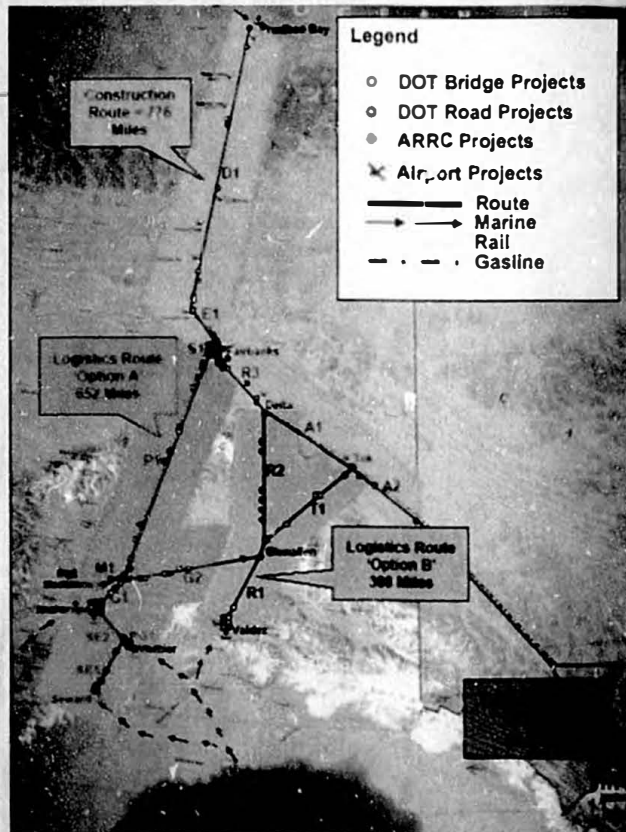
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## Transportation Corridors Identified for Ongoing Analysis

ROUTE KEY			
ID	ROUTE	MP START	MP END
A1	Alaska	1422	1315
A2	Alaska	1314	1221
D1	Dalton Hwy	0	415
E1	Elliott	0	68
G1	Glenn Hwy	0	34
G2	Glenn Hwy	35	180
H1	Haines	0	44
K1	Kondike	0	66
M1	Pt. MacKenzie	0	10
P1	Parks Hwy	0	323
PG1	Portage Glacier	0	5
R1	Richardson Hwy	0	117
R2	Richardson Hwy	118	268
R3	Richardson Hwy	269	362
S1	Steele Hwy	0	11
SE1	Seward Hwy	0	78
SE2	Seward Hwy	79	125
T1	Tok Cutoff	0	121



## GAS PIPELINE TRANSPORTATION CORRIDOR DESCRIPTION

- ✘ Part 1
  - + Dalton/Elliott Highways - Prudhoe Bay to Fairbanks
- ✘ Hub in Fairbanks
- ✘ Part 2
  - + Richardson Highway - Fairbanks to Delta
  - + Alaska Highway - Delta to Canadian Border

## DALTON HWY CORRIDOR COST SUMMARY

- × **Scope:** 36 Projects Along 415-Mile Corridor
  - + 24 Highway projects
  - + 3 Airports
  - + 2 Bridges
  - + 7 Facilities
- × **Schedule:** July 2008 – December 2014
- × **Cost:** \$1.0 Billion – Average \$167 Million a Year for 6 Years
- × **Initial Funding Request:** \$100 Million GF

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## DALTON HWY CORRIDOR PROJECTS

### Initial \$100M Request

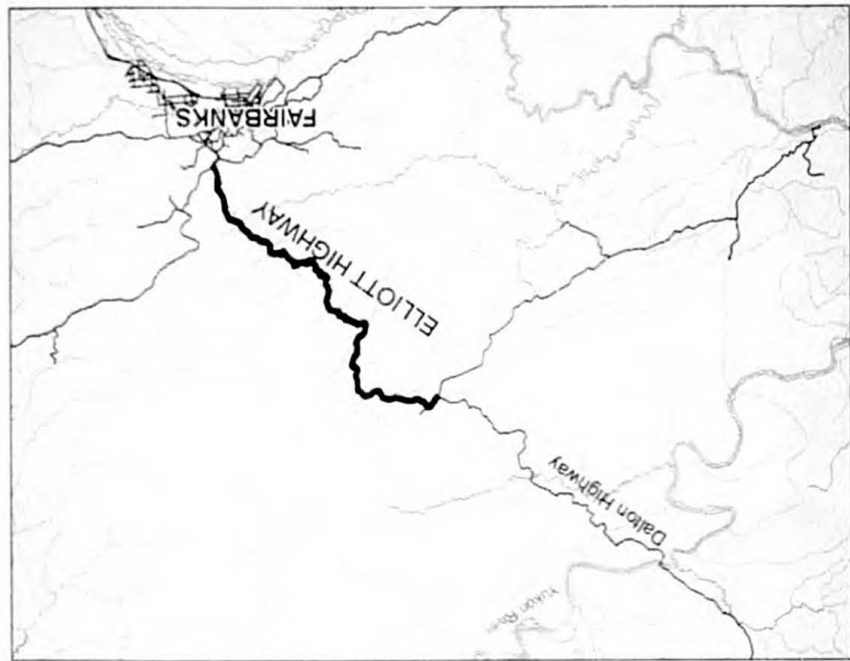
#### Construction \$75.5M

- Dalton MP 9-11: Reconstruction
- Dalton MP 175-197: Reconstruction Includes Bridge Replacement
- Dalton MP 260-321: Culvert Repairs, Replace with Bridge

#### Design \$24.5M

- Dalton MP 0-55: 100% Design
- Material Site Study: Entire Corridor





ELLIOTT HWY CORRIDOR

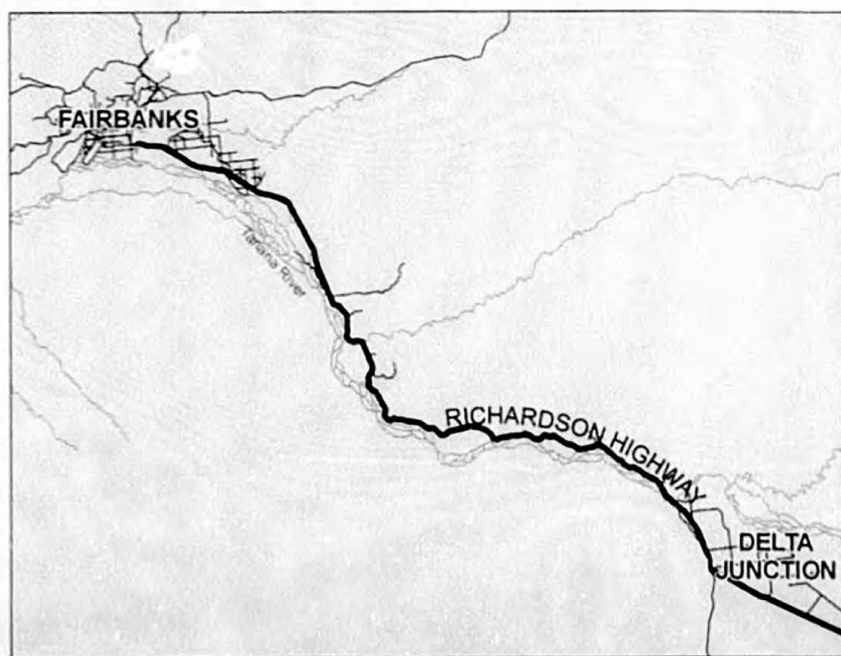


## ELLIOTT HWY CORRIDOR COST SUMMARY

- × **Scope:** 6 Projects Along 73-Mile segment
  - + 3 Highway projects
  - + 1 Airport
  - + 1 Bridge
  - + 1 Facility
- × **Schedule:** June 2009 – December 2014
- × **Cost:** \$100 million

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## RICHARDSON HWY CORRIDOR

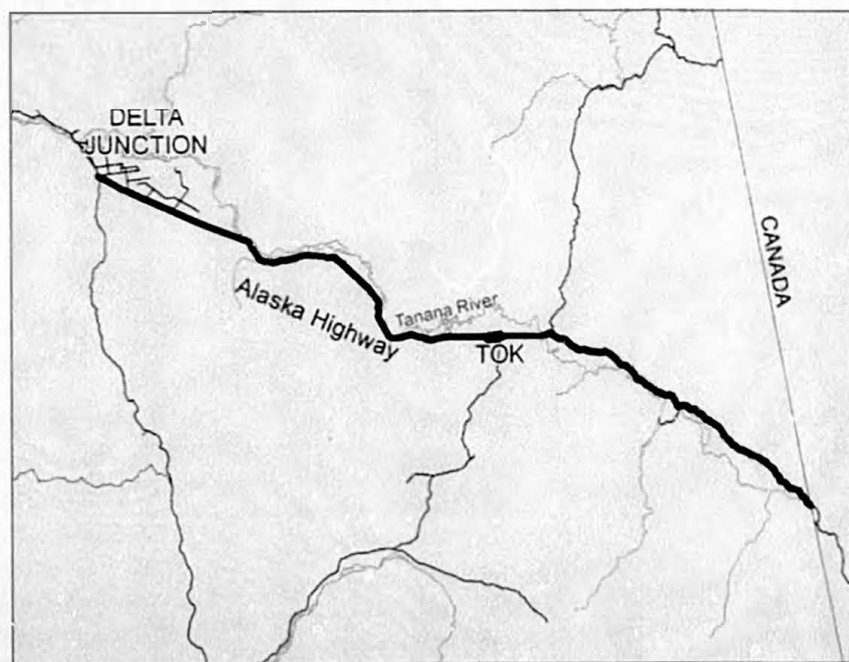


## RICHARDSON HWY CORRIDOR COST SUMMARY

- × **Scope:** 21 Projects along 95-mile segment
  - + 15 Highway projects
  - + 2 Bridges
  - + 4 Facilities
- × **Schedule:** June 2009 - December 2014
- × **Cost:** \$300 million

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## ALASKA HWY CORRIDOR



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## **ALASKA HWY CORRIDOR COST SUMMARY**

- × **Scope:** 23 Projects along 200-mile segment
  - + 9 Highway projects
  - + 2 Airports
  - + 9 Bridges
  - + 3 Facilities
- × **Schedule:** June 2009 – December 2014
- × **Cost:** \$600 million

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## **WHY START WITH DALTON HWY CORRIDOR**

- × Dalton Hwy is Alaska's major industrial highway
  - × Construction Projects Will be Ready for Bid in Early 2009
  - × Start Design on the Worst Sections, Proceed to Environmental with Goal of Bid Ready in 2010/2011 – Completing Construction in 2014
  - × Material Sites are Depleted in This Corridor; New Sites Need to be Identified, Permitted and Developed

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## ISSUE OF FINANCIAL RESPONSIBILITY

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- ▶ Who pays?
  - + Some road work needed regardless
  - + FERC ruled in 1980's pipeline traffic part of ordinary highway use (cannot penalize or treat pipeline differently)
  - + Yet, the past tells us pavements will be obliterated!
  - + Will FERC see it differently this time?

## FINANCIAL RESPONSIBILITY (2)

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- ▶ STIP funds 'tapped' out
  - + Funding levels decline in 2009
  - + New earmarks less likely
  - + Urban and other needs are great
  - + STIP \$\$ cannot be diverted to gas pipeline on wholesale basis
- × Status of Shakwak Funds
  - + Will Yukon Roads/Bridges be able to handle construction loads and traffic

## **FINANCIAL RESPONSIBILITY (3)**

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- ▶ Financial responsibility issues to be discussed:
  - + Major activity site access such as turn lanes (camps, pipe staging yards)
- ▶ Weigh station bypass technology
  - + May improve state and carriers efficiencies
- ▶ Safety features needed
  - + Truck pull outs to allow passing
  - + Module movements safety pull out areas at bridges
  - + More passing lanes

## **DOT&PF PROGRESS TO DATE**

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- × Full time coordinator in place
- × Key work identified (bridges, passing lanes, highway reconstruction)
- × Federal funded projects underway
- × GO bond projects – November election
- × Started Conversations with Prospective Builders

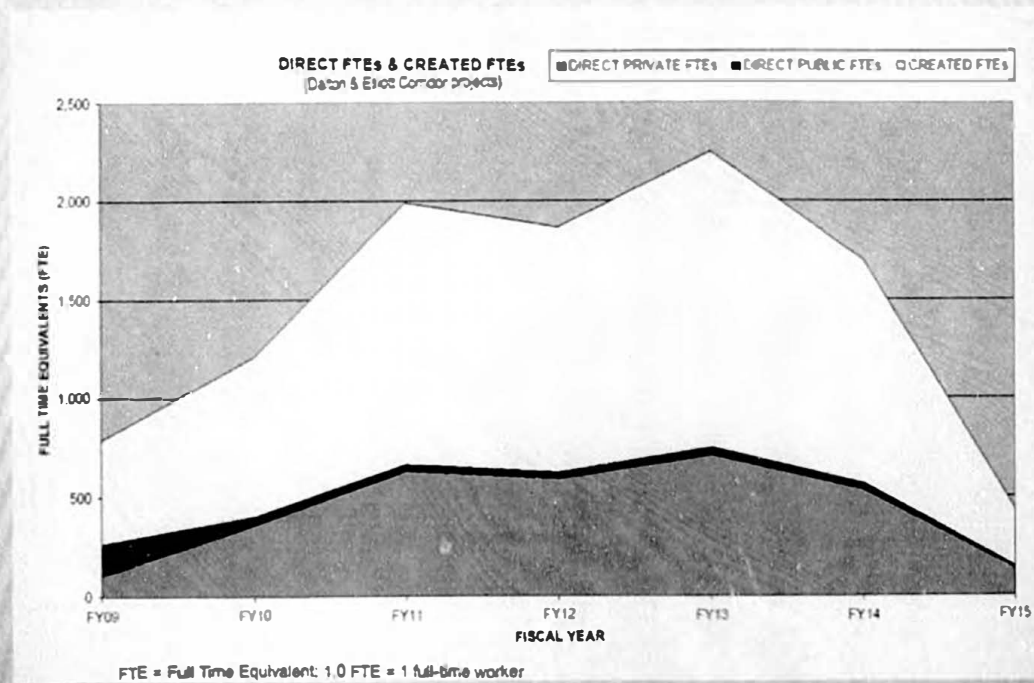
# VISIBLE PROGRESS

2007 Elliott Highway: New Washington Creek Bridge and realignment



2007 Dalton Highway: Grade heightening at MP 241 to 242 to alleviate snow drifting, and aufeis.

# NEW JOBS CREATED



## **NEXT STEPS**

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- × Begin work on Dalton Highway - \$100M
- × Evaluate Needs for FY10 Budget
- × Create State Gasline Permit Office
  - Streamline State Permit Process
  - Increase Federal Permitting Efficiencies
- × Establish Apprenticeship Programs
- × Establish MOU w/ Canadian Counterparts

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## **OTHER ISSUES**

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- ▶ Size and weight issues
- ▶ Extra maintenance and operations support during construction
- ▶ Safety and law enforcement
- ▶ Aviation needs
- ▶ ROW for TC Alaska
- ▶ ROW for Bullet Line
  - ▶ Denali Park and ANILCA
- ▶ Construction Impact on Tourism



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## QUESTIONS

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Contact:

Frank Richards, P.E.

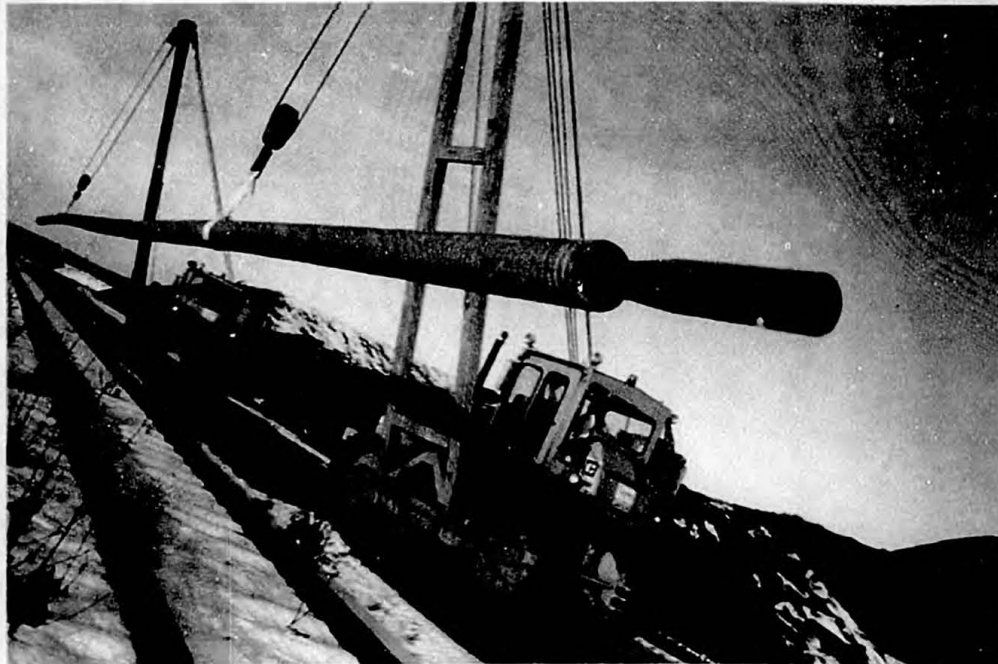
Deputy Commissioner

Alaska DOT&PF

(907) 465-3900

[frank.richards@alaska.gov](mailto:frank.richards@alaska.gov)

## Modeling of Short- and Long-Term Employment Generated by Construction and Operation of an Alaska Natural Gas Pipeline Project



ARCADIS

Employment projections generated for ...

- **Construction Phase** of the pipeline and installation of compressor stations, Gas Treatment Plant and LNG facility
- **Operation Phase** of the pipeline and related facilities (compressor stations, GTP and LNG plants)
- **Exploration and Development** work on the North Slope spurred by operation of natural gas pipeline



ARCADIS

## Sources of Data/Model Used

- **Sources of Data**
  - Cost data from TC Alaska AGIA Application and other information provided to the State
  - Data generated by State's consultants
  - Information from Division of Oil and Gas
- **Model Used**
  - IMPLAN
  - Cost-driven
  - Uses Alaska-specific labor factors



 ARCADIS

## Construction Phase Assumptions

- **Gas Treatment Plant and LNG facility will be built Outside**
- **Major equipment and materials purchased Outside**
- **Labor force in Valdez constrained by size of camp**



 ARCADIS

## Construction Phase Employment Results

- Any natural gas pipeline project will create thousands of short-term construction jobs
- Largest number of construction jobs will be available during a brief peak period
- LNG option
  - 16,000 jobs in peak year
  - Longer 'peak' period due to LNG installation
- TC Alaska/Producer Pipeline
  - 15,000 jobs in peak year



 ARCADIS

## Operations Phase Employment Results

- TC Alaska or Producer Pipeline: ~200 operations jobs in Alaska
- LNG option: ~600 operations jobs in Alaska
  - ~200 jobs on the pipeline and at GTP
  - ~400 jobs at LNG plant in Prince William Sound



 ARCADIS

## E&D Employment: Scenario Development

- FERC regulations mandate an open access pipeline
- 'Effective Open Access' is different from FERC-mandated open access



 ARCADIS

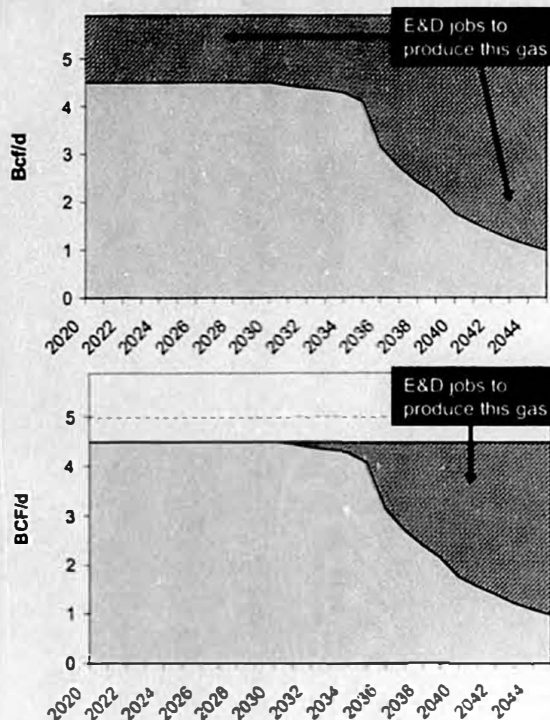
## E&D Employment: Scenario Development

- 'Effective Open Access' pipeline system
  - Reasonable transportation rates
  - Timely voluntary expansions
- 'Non-Effective Open Access' pipeline system
  - Higher transportation rates
  - Does not offer voluntary expansion
  - May contain components (e.g., an LNG facility) that is not required to operate on an open access basis



 ARCADIS

## E&D Employment: Scenarios



ARCADIS

- **TC Alaska Scenario**
  - Offers 'Effective Open Access'
  - Capacity expansions as demanded + Reasonable tariffs = Favorable explorer economics = Aggressive E&D activity
- **'Non-Effective Open Access' Scenario**
  - No capacity expansion
  - No new natural gas production (or E&D work) until current fields fall off plateau

## E&D Employment: Assumptions

- New production facilities will be constructed in Alaska
- New natural gas fields will be brought on-line to keep the pipeline full at a given assumed capacity
  - 5.9 bcf/d for TC Alaska Scenario
  - 4.5 bcf/d for Non-Open Access Pipeline Scenario



ARCADIS

## Results: E&D Employment

- **TC Alaska**
  - Approximately **72,000** E&D jobs in the 2015 to 2045 timeframe
  - Jobs may be created as early as 2015
- **Non-Effective Open Access Project**
  - Approximately **47,000** E&D jobs in the 2015 to 2045 timeframe
  - Job creation may be delayed as late as 2026



 ARCADIS

## Results: E&D Employment

- **Timing of E&D job creation is a function of a pipeline's characteristics**
  - Effective Open Access = Jobs Sooner
  - Non-Effective Open Access = Job Creation Delay
- **Creating new natural gas basin-related jobs sooner is important ...**
  - Offset job losses likely to occur as existing oil fields decline
  - Maintain existing skill sets and talent pool in Alaska



 ARCADIS

# An Explorer's View of Gas Pipeline Issues

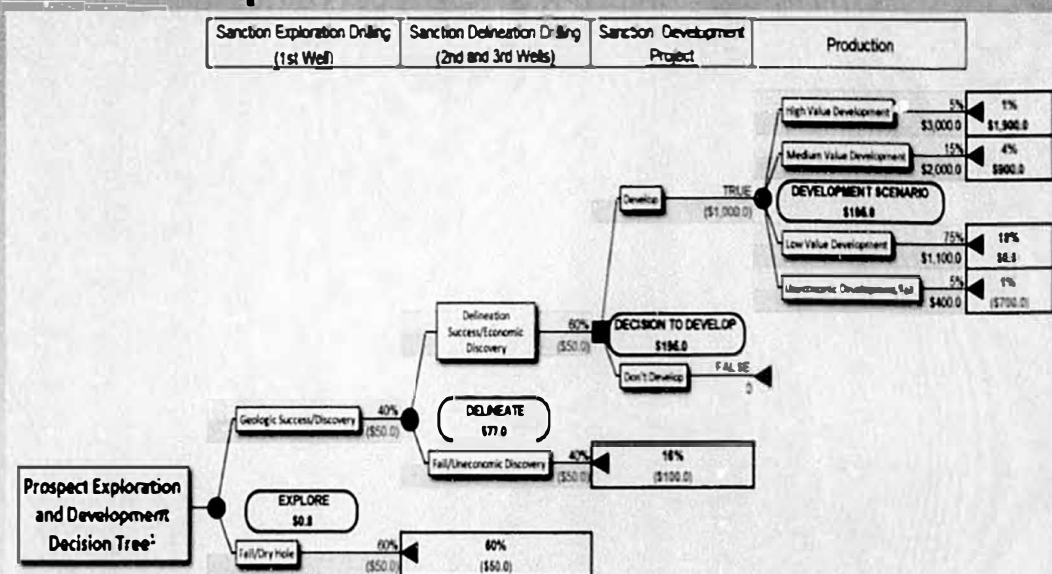
Alaska Division of Oil & Gas  
June 13, 2008



Alaska Department of  
Natural  
Resources

<http://www.dog.dnr.state.ak.us/oil/>

## Explorer's Decision Tree



<sup>1</sup> Assumes land position already established and prospect is identified and ready to drill.

## Key Lessons From the Model

- Exploration is risky: big chance of big spend but no payoff
- Need big payoff from the success leg to pay for the large probability of failure
- If payoff from the success leg isn't sufficiently large, initial exploration never occurs

6/12/2008

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## How AGIA Boosts the Success Leg Payoff

- Lower base tariffs (75/25 debt/equity ratio) increase netbacks
- Lower tariffs through Rolled-in rates also increase netbacks
- Expeditious and predictable timeline, from first spend to first gas, raises *discounted* value of eventual gas sales

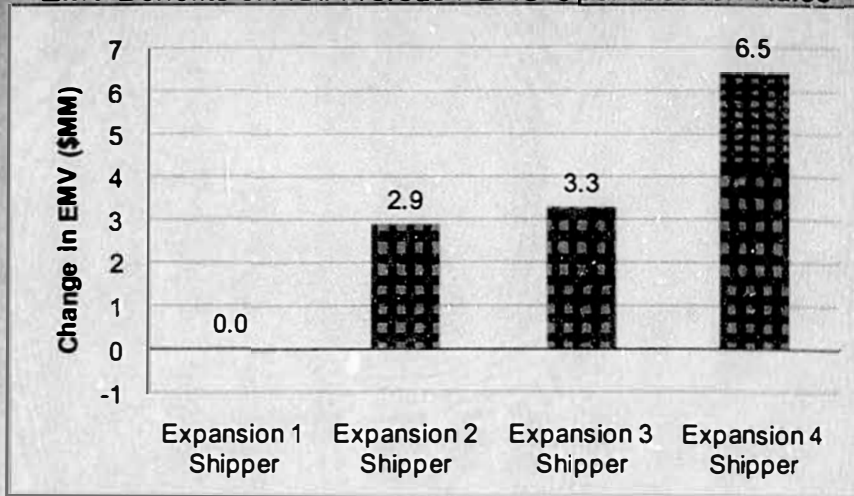
6/12/2008

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# Tariff Provisions

Effect of Rolled-in vs. Incremental

EMV Benefits of AGIA versus FERC Open-Season Rules\*



\*Expected monetary value (EMV) of a generic North Slope stand-alone gas prospect; 75/25 D/E capital structure for base tariffs, 60/40 for expansions; \$8.00 AECO gas price, flat, real

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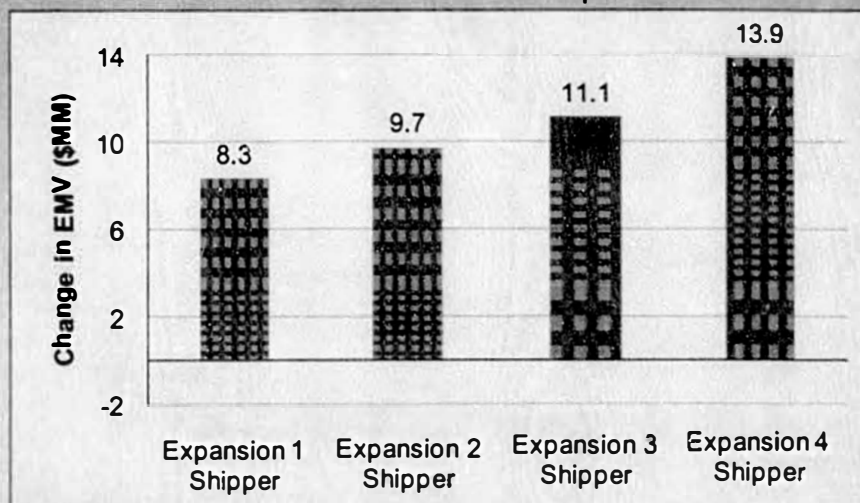
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tjr: Prospect Analysis\_080513b Regional Exploration Scenarios.xlsm

# Tariff Provisions

Effect of Rolled-in, 75/25 D/E vs. Incremental, 50/50 D/E

EMV Benefits of AGIA versus FERC Open-Season Rules\*



\*Expected monetary value (EMV) of a generic North Slope stand-alone gas prospect; \$8.00 AECO gas price, flat, real

6/12/2008

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tjr: Prospect Analysis\_080513b Regional Exploration Scenarios.xlsm

# Critical Results on Access Delays

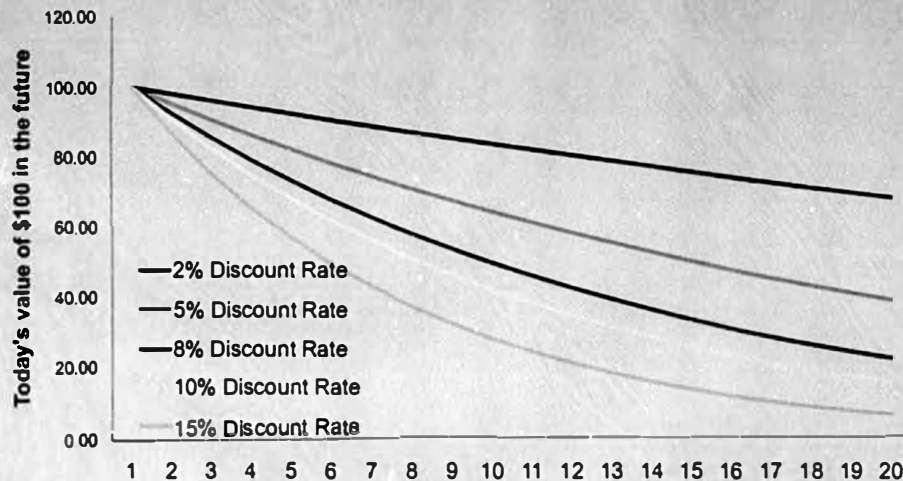
1. Up-front investment for seismic acquisition, exploration drilling, and delineation drilling really hurts the economics of oil and gas projects that risk being delayed for many years
2. Every year of delay in access to a gas pipeline after money has already been invested materially reduces the expected monetary value (EMV) of projects

6/12/2008

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## How Discounting Works

Present Value of \$100 Cash Flow in Future Years  
Sensitivity to Discount Rate

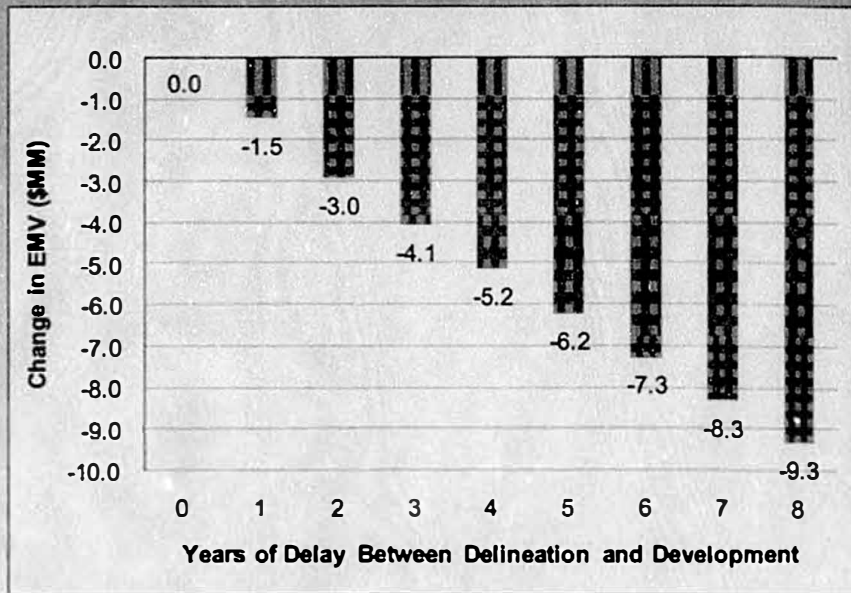


6/12/2008

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# Prospect Economics\*

Effect of Delay: AGIA vs. FERC Open-Season Rules



\*Expected monetary value (EMV) of a generic North Slope stand-alone gas prospect

6/12/2008

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tjr: Prospect Analysis\_080513b Regional Exploration Scenarios.xlsm

End  
(Appendix Follows. For full model details  
see AGIA Finding, Appendix L)

6/12/2008

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# The Exploration Model Base Case Assumptions

1. 10% discount rate for operator (5% for SOA)
2. Land is already leased over attractive prospect
3. Seismic data is already owned over prospect
4. Prospect is sanctioned for exploration drilling
5. 1<sup>st</sup> exploration well cost = \$38 MM\* in Year 1 of the project
6. 2 well delineation program cost = \$25 MM\* each in Year 2 and Year 3 of the project
7. Pad and facilities construction begins in Year 4, cost is scaled to production
8. Pipeline construction begins in Year 5, cost is scaled to production
9. Base Case (no delay) = 1<sup>st</sup> gas sale in Year 8, 6 years after delineation drilling

\*Undiscounted expense in today's dollars, before any tax credits or incentives

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# Defined Variables

1. Gas price = \$8.00/Mcf\*
2. OpEx = scaled based on annual production rate

\*Fixed value or rate for every year of the model

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## Drilling Success Probabilities

1. 40% = Probability 1<sup>st</sup> exploration well finds gas (geologic success)
2. 60% = Probability delineation drilling program is success

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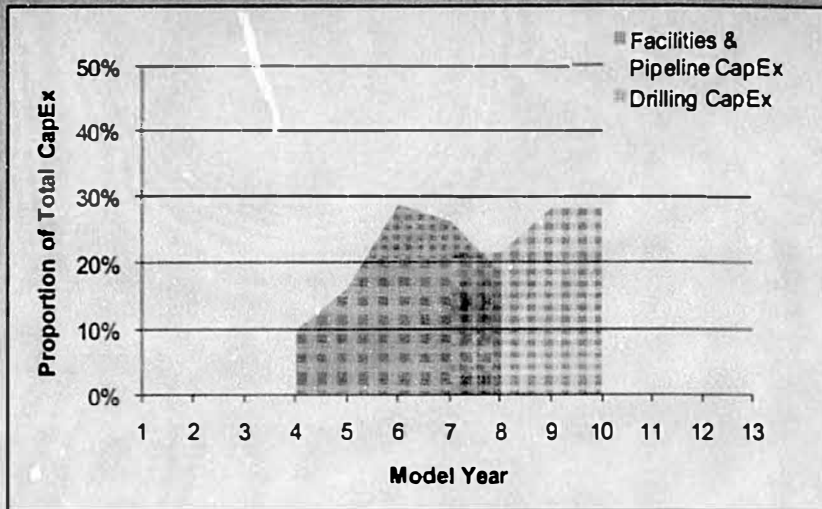
## Development Scenario Probabilities

1. High reserves case = 1,800 BCF (5% probability after delineation)
2. Medium reserves case = 800 BCF (15% probability after delineation)
3. Low reserves case = 400 BCF (75% probability after delineation)
4. Uneconomic reserves case = 80 BCF (5% probability after delineation)

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## Base Case Expenditure Profiles for Facilities and Drilling



Note: Baseline production is assumed to begin in Year 8 after one year of development drilling.

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