

**SCOMM**

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**Subject: Phillips signs up for Nigeria LNG**

**Date:** Mon, 10 Sep 2001 11:24:16 -0800

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Phillips Oil Unit In Pact For Nigeria Liquefied Gas Plant

Dow Jones Newswires

NEW YORK -- Phillips Petroleum Co.'s (P) Phillips Oil Co. unit signed a memorandum of understanding to develop a new liquefied natural gas, or LNG, facility in Nigeria.

In a press release Friday, Phillips said the deal was signed with its co-venturers, Nigerian National Petroleum Co. and Nigerian Agip Oil Co., along with the Nigerian government.

The memorandum establishes a multidiscipline study team that will evaluate an offshore LNG facility.

The proposed plant, which will be sized at 850 million cubic feet a day of natural gas, is expected to be onstream by 2007.

The gas supply will come from gas reserves within onshore oil and gas fields already operated by an existing joint venture among the companies.

Phillips holds a 20% interest in the joint venture, while the Nigerian National Petroleum Co. holds 60% and Nigerian Agip Oil Co. holds 20%.

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**Subject: Problems for Mackenzie**

**Date:** Mon, 10 Sep 2001 11:06:38 -0800

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Natives may kill Mackenzie pipeline with new demands  
Issues raised by Deh Cho First Nations jeopardize hopes of expediting project

By Ed Struzik, Journal Staff Writer  
The Edmonton Journal

Friday, September 07, 2001

A string of new demands from a key aboriginal group in the North may have dealt a body blow to plans for a multibillion-dollar natural gas pipeline down the Mackenzie Valley.

"We're studying the implications of this," says Hart Searle, spokesman

for the Calgary-based consortium that includes Imperial Oil, Conoco Canada, Shell Canada and Mobil Oil Canada.

"But obviously, many of the demands that have been put forward are beyond our ability to do anything about them," he added.

"These are issues between the Deh Cho and the federal government to resolve."

Searle reiterated the consortium's position that a pipeline will not proceed unless it is supported by northern aboriginal groups.

The Deh Cho First Nations in the southern Mackenzie Valley have been the last to take a stand on the pipeline.

Most other aboriginal groups fully support the project and the jobs and economic opportunities it will bring to the economically depressed region of the country.

At a meeting last week, 10 chiefs who represent the 4,000 people in the Deh Cho region resolved to support the project only if a number of conditions were met. The meeting took place in the remote community of Wrigley on the shores of the Mackenzie River, and the decisions were conveyed this week to consortium executives. The demands include:

- Recognition by the oil and gas industry that the terms and conditions of a pipeline must be negotiated through the Deh Cho land-claims process;
- Provisions for sharing of revenues and royalties from the development of oil and gas reserves in the Deh Cho;
- Community impact benefits agreements be in place before the project proceeds;
- Full Deh Cho participation in any environmental assessment.

The chiefs also said they would not support a pipeline unless the hunters and trappers who harvest along the pipeline route back the project.

One senior energy company official suggested the demands could prove to be a "body blow" for the project because a decision on whether to proceed needs to be made before the end of the year.

A quick solution isn't likely because both the federal and territorial governments have indicated that they are determined not to allow the Deh Cho to use the pipeline as leverage in their ongoing land claims negotiations.

They are also extremely uneasy about demands which would essentially push them to the sidelines when it comes to negotiating big projects such as this one.

Nellie Cournoyea, former premier of the Northwest Territories and co-chair of an aboriginal group that is negotiating a one-third interest in the pipeline, says she is disappointed but not surprised by the Deh Cho demands.

However, she insists the pipeline will go ahead.

"One small group of people can not decide on the economic well-being of the majority of people in the Northwest Territories," she said.

"And the reality is the Deh Cho need this pipeline more than any other group in the North."

The one precedent to this does not favour the Deh Cho.

Back in 1984, aboriginal groups in the Northwest Territories refused to sign an agreement that would have given them a share of the revenues that were to come out of the oil pipeline from Norman Wells to Alberta.

In the end, the federal government gave the pipeline company the right of way it needed without an agreement in place, and the aboriginal people were left with nothing.

The Deh Cho, however, do have some leverage this time around.

An American consortium, which includes Phillips, British Petroleum-Amoco and Exxon-Mobil, is looking at the possibility of shipping gas from Alaska undersea to the Mackenzie Valley and then to Alberta.

Should the consortium decide that the route poses too many problems, it will likely go ahead with a pipeline down the Alaska Highway.

Such a decision would almost certainly stall efforts to get Canadian gas out of the Arctic. Most everyone agrees that two pipelines cannot be built at the same time because there is not enough skilled manpower, equipment and pipe.

Cournoyea says the Aboriginal Pipeline Group is currently working on a strategy that would ensure that the Deh Cho demands do not stall or kill the Mackenzie Valley proposal.

"What we won't and can't do though is negotiate their land claim for them," she said. "That's between them and the federal government."

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July 19, 2001

**ALASKA NATURAL GAS PIPELINE ACT OF 2001****I. Overview****A. Background**

- In the 1970s, tight energy supplies generated substantial interest in commercializing Alaska North Slope natural gas.
- The result of this interest was a mammoth proceeding before the Federal Power Commission (FERC's predecessor) in which competing applicants vied to be picked to build a transportation system — a highly contentious and litigious process.
- Concerned that the normal regulatory and judicial review processes would never end, Congress passed a special statute, the "Alaska Natural Gas Pipeline Act of 1976" (ANGTA), transferring the selection decision, under an expedited schedule, to the President and itself. The selected system and operator could then go forward to obtain the requisite regulatory approvals with the benefit of an expedition directive and tight limitations on judicial review.
- The President and Congress designated a project known as the Alaska Natural Gas Transportation System. The southern portion (known as the "pre-build") between Alberta and the Lower 48 was completed in the 1980s and early 1990s. Despite the passage of more than two decades, however, the governmentally selected project for the Alaska-to-Alberta segment has been unable to obtain the financing necessary to go forward.
- The situation in Canada is similar. The Canadian counterpart of the project — a pipeline from the Alaska/Canada border into Alberta — was approved under the Northern Pipeline Act but has not proceeded.

**B. Fresh Approach Needed**

- Getting access to Alaska North Slope natural gas is an important element of the nation's long-term energy strategy.
- The approach of having the government "pick a winner" has been unsuccessful.
- It is in the national interest to let competitive market forces work. The market, not a governmental selection process, is the best tool for determining the project or projects that can achieve economic viability and provide cost-effective transportation.

- Relying on market forces to the greatest degree possible is the currently preferred regulatory approach. Indeed, since the passage of ANGTA, natural gas prices have been deregulated, the transportation and sales functions of natural gas pipelines have been "unbundled," and gas prices are wholly driven by free-market forces.

### C. The Concept of the Proposed Legislation

- For purposes of the FERC approval process, the proposed legislation differentiates between the Alaska-to-Alberta ("A-to-B") and the Alberta-to-Lower 48 ("B-to-C") segments.
  - ✓ The A-to-B segment is completely undeveloped, whereas there is a substantial existing B-to-C infrastructure. Thus, the respective needs, competitive dynamics, and likely course of development (e.g., new pipeline vs. expansion) of the two segments differ greatly.
  - ✓ In light of those differences, the proposed legislation relies on a streamlined, market-based approval process for the A-to-B segment and the normal Natural Gas Act approval process for the B-to-C segment.
- The proposed legislation requires thorough review under, and full compliance with, applicable environmental laws.
- To enhance the prospects of success, the proposed legislation seeks to reduce regulatory uncertainty and delay through reasonable expedition measures, deadlines, and limitations on judicial review.
- To rationalize the multi-agency approval process, the proposed legislation provides for a Federal Pipeline Director with strong coordination powers and responsibilities.

## II. Section-by-Section Summary of the Proposed Legislation

### A. Section 1 — Short Title

- "Alaska Gas Pipeline Act of 2001"

### B. Section 2 — Congressional Findings

- This section sets forth findings that support the need for the legislation.
- The findings note the existence of substantial natural gas resources on the North Slope, the importance of those resources to the nation's long-term energy needs, the 1976 enactment of special legislation to facilitate the approval and construction of a transportation system to move Alaska gas to the Lower 48; the failure of that legislative effort, the outdated features of the

previously approved system, and the current renewed interest in constructing a transportation system to move the gas to the Lower 48.

- The findings explain that it is in the national interest to encourage the development of one or more environmentally sound transportation systems through sensible, expedited regulatory procedures and to rely to the extent possible on competitive market forces to determine the future development of North Slope gas.

**C. Section 3 — Congressional Statement of Purpose**

- This section explains that the legislation seeks to expedite the approval, construction, and operation of one or more transportation systems for delivering North Slope gas to the Lower 48 by relying on market forces to determine which projects are economically viable; expediting the certification and permitting processes; ensuring compliance with environmental laws; establishing a Federal Pipeline Director to coordinate and move the process forward; and expediting, and narrowing the scope of, judicial review.

**D. Section 4 — Definitions**

- This section defines various terms used throughout the Act.
- Definition of "Alaska Natural Gas" is identical to that used in ANGTA.
- Uses "Alaska Facilities Gas Project" and "Lower 48 Facilities Gas Project" to differentiate between A-to-B and B-to-C segments, respectively.

**E. Section 5 — Expedited Approval Process**

- Adds a new Section 7(c)(3) to the Natural Gas Act requiring FERC to grant any and all applications to build the Alaskan part of A-to-B facilities if three criteria are satisfied:
  - (1) The applicant must have reached an agreement with a "Shipper" of Alaska Natural Gas for the transportation of that gas with the intent that all or a portion of the gas ultimately will be delivered to the Lower 48 States.
    - ◊ A "Shipper" essentially is any person that has entered into an agreement with the applicant for the transportation of Alaska Natural Gas; anyone who, through contract or otherwise, controls Alaska Natural Gas may be a Shipper.
    - ◊ This provision reflects a market-based approach, not unlike that reflected in Section 311 of the Natural Gas Policy Act
  - (2) FERC must be satisfied that "rates and charges for, and terms and conditions of" such transportation services can be established in accordance with FERC's usual procedure.

(3) FERC must be satisfied that terms and conditions for compliance with all applicable environmental laws can be established in accordance with FERC's usual procedure.

o The latter two requirements assure that certain key aspects of traditional pipeline regulation under Section 7 of the Natural Gas Act, including protection of ratepayers and protection of the environment, will be followed with respect to any Alaska Gas Facilities Project.

- To provide for expedition, FERC is directed to act on any Alaska Gas Facilities application within 18 months.
- Adds a new Section 7(c)(4) to the NGA under which the Commission may issue a certificate authorizing construction of facilities to transport Alaska Natural Gas from the Canadian border to markets in the Lower 48 States. Such applications will be considered pursuant to the Commission's normal Section 7 procedures.

F. Section 6 — Environmental Reviews

- Requires a *single EIS* for each proposed "Alaska Gas Project." This means that:
  - ✓ EISs for A-to-B projects will be prepared separately from EISs for B-to-C projects
  - ✓ Each proposed project will be studied in a separate EIS
  - ✓ Agencies must work together to prepare a single EIS for each project
- Requires each EIS to be prepared pursuant to the lead agency's regulations and procedures.
- Designates FERC as the lead agency for all EISs for A-to-B and B-to-C projects.
- Sets deadlines for completing the EISs:
  - ✓ Draft EIS within 12 months after filing of complete FERC certificate application
  - ✓ Final EIS within 6 months after DEIS (i.e., 18 months total for EIS preparation)
  - ✓ Deadlines may be extended by FERC for good cause
- Requires consistency between the *scope* of the EIS and the *scope* of FERC certificate application. This means:
  - ✓ EIS focuses on project within FERC jurisdiction (Canadian portions are reviewed by Canadian agencies, not by FERC; this is consistent with current FERC practice)

**G. Section 7 — Federal Pipeline Director**

- Creates the Office of the Federal Pipeline Director in the Executive Office of the President. The Director would be appointed by the President and confirmed by the Senate.
- Overall responsibilities of the Director include "coordinating the expeditious discharge" of all federal agencies' activities on Alaska gas projects (A-to-B and B-to-C). Gives agencies *discretion* to delegate decision-making authority to the Director, but does not require them to do so. (Similar to ANGTA provision for non-enforcement regulatory responsibilities.)
- Specifically charges the Director with responsibilities for "coordinating the expeditious completion" of all environmental and other studies for Alaska gas projects. This role includes coordination with federal, state, local, and tribal agencies, as well as coordination with Canadian agencies (via the State Department).
- Requires the Director to report semi-annually to Congress on the status of all pending applications for Alaska gas projects.
- Authorizes the appropriation of funds for the Director's Office.

**H. Section 8 — Agency Reviews and Decisions**

- Directs federal agencies to expedite their handling of all Alaska gas project actions.
- Requires the federal agencies involved in Alaska gas projects to cooperate and coordinate with one another to expedite the decision-making process — through MOUs, joint documents, joint meetings, etc.
- Prevents federal agencies from including discretionary terms in permits if the Federal Pipeline Director finds that such terms would "prevent or impair in any significant respect the expeditious construction and initial operation of an economically viable and environmentally sound system."

**I. Section 9 — Judicial Review**

- Time limits: challenges to this Act's validity must be brought within 60 days of its enactment; challenges to actions by federal agencies or officers under the Act must be brought within 60 days of such action.
- Jurisdictional Limits: judicial review is limited to claims of constitutional violation or agency action in excess of statutory authority. Precludes claims that federal agency actions are "arbitrary and capricious."

- **Exclusive Jurisdiction of Special Court:** challenges to this Act or actions taken thereunder must be brought directly in the U.S. Court of Appeals for the District of Columbia Circuit.
- **Expedited Procedures:** does not impose specific deadline but directs the D.C. Circuit to provide expedited consideration.
- Similar limitations on judicial review are contained in ANGTA.

*J. Section 10 -- Separability*

- If any provision of this Act, or application thereof, is held invalid, the remainder of the Act is unaffected.

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**IN THE SENATE OF THE UNITED STATES**

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**A BILL**

To Expedite the Approval, Construction, and Initial Operation of One or More Economically Viable and Environmentally Sound Transportation Systems for the Delivery of Alaska Natural Gas to the Lower 48 States.

*Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled,*

**SEC. 1. SHORT TITLE.**

This Act may be cited as the "Alaska Natural Gas Pipeline Act of 2001."

**SEC. 2. CONGRESSIONAL FINDINGS.**

(a) The Congress finds and declares that—

- (1) Over the next 20 years, the demand for natural gas in the United States is expected to increase by more than 50 percent, and the nation's anticipated production, at current growth rates, will fall far short of that level of demand.

- (2) One of the largest known reserves of natural gas in the United States, estimated at over 35 trillion cubic feet, is located in Alaska, in the vicinity of Prudhoe Bay. In addition, it is estimated that there may be up to 100 trillion cubic feet of natural gas on the North Slope of Alaska.
- (3) If delivered to the Lower 48 States, the known and expected natural gas resources on the North Slope of Alaska would make an important long-term contribution to the nation's energy supplies. At present, however, there is no natural gas pipeline system connecting the North Slope of Alaska to the Lower 48 States.
- (4) In 1976, Congress enacted the Alaska Natural Gas Transportation Act (ANGTA), 15 U.S.C. § 719, to expedite completion of a pipeline system connecting the North Slope of Alaska to the Lower 48 States. ANGTA authorized the President and Congress to designate a single project as the Alaska Natural Gas Transportation System (ANGTS), which would be entitled to the benefit of a streamlined regulatory approval process and limited judicial review.
- (5) In 1977, the President and the Congress designated an ANGTS project, and the southern portion of that project (known as the "pre-build") was completed between Alberta and the Lower 48 States in the 1980s and early 1990s.
- (6) Despite the passage of more than 20 years, parties seeking to develop the Alaska-to-Alberta section of the ANGTS project have been unable to

obtain the regulatory approvals or attract the financing necessary to permit construction of the project to begin.

- (7) As a result of the passage of time, some design features mandated for the Alaska-to-Alberta section of the ANGTS project would have to be modified to take full advantage of current technological capabilities, and other changes also may be needed to ensure an economically, environmentally, and technically sound approach.
- (8) The nation's energy supply situation has changed in recent times, thereby triggering renewed interest in a variety of proposals to construct transportation facilities to move Alaska Natural Gas to markets in the Lower 48 States.
- (9) In concert with this renewed interest in understanding technical requirements and determining if an economically viable transportation system can be developed, an important first step in assessing economic viability is to know whether regulatory approvals can be obtained and environmental impacts assessed in a timely fashion.
- (10) Therefore, it is in the national interest to:
  - (i) encourage the renewed interest in proposals to bring about the transportation of Alaska Natural Gas to the Lower 48 States;
  - (ii) provide as much regulatory certainty and expedition as practicable for approval and implementation of any such environmentally sound proposals to enhance their prospects of economic viability

- and development and thereby to provide the nation with the benefit of one or more cost-effective transportation systems;
- (iii) allow for the possibility that the market may support now or in the future the construction of more than one transportation system to move Alaska Natural Gas efficiently to the Lower 48 States;
  - (iv) rely on competitive market forces, to the maximum extent possible, in determining the future development of Alaska Natural Gas supplies;
  - (v) encourage the development of one or more pipeline systems for transporting Alaska gas to the Lower 48 States in a manner consistent with
    - (a) maximizing the delivery of a long-term, reliable supply of natural gas to the Lower 48 States, as soon as possible; and
    - (b) complying with all applicable environmental laws

**SEC. 3. CONGRESSIONAL STATEMENT OF PURPOSE**

The purpose of this Act is to expedite the approval, construction, and initial operation of one or more transportation systems for the delivery of Alaska Natural Gas to the Lower 48 States by:

- (a) relying on competitive market forces to determine which such system or systems can be built and operated in an economically viable manner;
- (b) providing for the expedited review and approval of applications for a certificate of public convenience and necessity and related federal approvals for one or more pipelines transporting Alaska gas to the Lower 48 States;

- (c) ensuring the full consideration of environmental impacts and related concerns during the review of any proposed Alaska Gas Projects, consistent with the need to expedite such review;
- (d) creating an Office of Federal Pipeline Director to direct the efficient and coordinated participation of, and decision-making by, the various federal agencies and other governmental interests involved in the review and approval of one or more Alaska Gas Projects; and
- (e) expediting the resolution of, and limiting the jurisdiction of the courts to review, disputes concerning any aspect of this legislation or the approval process for any Alaska Gas Project.

To accomplish this purpose, Congress intends to exercise its constitutional powers to the fullest extent in the authorizations and directions contained herein.

#### SEC. 4. DEFINITIONS.

As used in this Act:

- (1) the term "Alaska Gas Project" means any Alaska Facilities Gas Project or Lower 48 Facilities Gas Project;
- (2) the term "Alaska Natural Gas" means natural gas derived from the area of the State of Alaska generally known as the North Slope of Alaska, including the Continental Shelf thereof;
- (3) the term "Commission" means the Federal Energy Regulatory Commission;
- (4) the term "Lower 48 States" means the contiguous States of the United States of America;

- (5) the term "Lower 48 Markets" means any market for the consumption of natural gas that is located within the Lower 48 States;
- (6) the term "Alaska Facilities Gas Project" means any natural gas pipeline system that carries Alaska Natural Gas from the area generally known as the North Slope of Alaska to the border between Alaska and Canada, including any related facilities that fall within the jurisdiction of the Commission; and
- (7) the term "Lower 48 Facilities Gas Project" means any natural gas pipeline system that carries Alaska Natural Gas from the border between Canada and the Lower 48 States to any Lower 48 Markets, including any related facilities that fall within the jurisdiction of the Commission.

**SEC. 5. EXPEDITED APPROVAL PROCESS.**

- (a) Section 2 of the Natural Gas Act is amended to include the following additional definitions:

- (11) "Alaska Natural Gas" means natural gas derived from the area of the State of Alaska generally known as the North Slope of Alaska, including the Continental Shelf thereof.
- (12) "Lower 48 States" means the contiguous States of the United States of America.
- (13) "Lower 48 Markets" means any market for the consumption of natural gas that is located within the Lower 48 States.
- (14) "Shipper" means, for purposes of section 7(c)(3) and (4) of this Act, any person that has entered into an agreement with a person that is or will

upon its issuance become the holder of a certificate of public convenience and necessity authorizing an Alaska Facilities Gas Project or a Lower 48 Facilities Gas Project for the purpose of transporting Alaska Natural Gas.

- (15) "Alaska Facilities Gas Project" means any natural gas pipeline system that carries Alaska Natural Gas from the area generally known as the North Slope of Alaska to the border between Alaska and Canada, including any related facilities that fall within the jurisdiction of the Commission.
- (16) "Lower 48 Facilities Gas Project" means any natural gas pipeline system that carries Alaska Natural Gas from the border between Canada and the Lower 48 States to any Lower 48 Markets, including any related facilities that fall within the jurisdiction of the Commission.

(b) Section 7(c) of the Natural Gas Act is amended to include the following additional paragraphs:

"(3) Notwithstanding any other provision of law, the Commission shall issue a certificate of public convenience and necessity to any person for the construction and operation of an Alaska Facilities Gas Project where:

- (A) such person has reached agreement with a Shipper of Alaska Natural Gas for the transportation of natural gas through an Alaska Facilities Gas Project on behalf of such Shipper with the intent that all or a portion of such Alaska Natural Gas, along with any other natural gas, will ultimately be delivered to Lower 48 Markets for consumption; provided, however, that the Commission shall not consider the present extent of

transportation capacity downstream of the proposed Alaska Facilities Gas Project;

(B) rates and charges for, and terms and conditions of, such transportation services can be established in accordance with the procedure provided in subsection (e) of this section; and

(C) terms and conditions for compliance with all environmental laws applicable to the proposed Alaska Facilities Gas Project can be established in accordance with the procedure provided in subsection (e) of this section.

Upon the filing of any such application, the Commission shall determine within 18 months whether the agreement between the Shipper and such person meets the requirements of (A) and whether the matters identified in (B) and (C) can be established in accordance with subsection (e) of this section, and, if so, the Commission shall within such period make the findings, attach such reasonable terms and conditions as the public convenience and necessity may require, and issue a certificate, all in accordance with the procedure provided in subsection (e) of this section.

(4) Notwithstanding any other provision of law, the Commission may issue a certificate of public convenience and necessity authorizing the construction and operation of a Lower 48 Facilities Gas Project to any person that has reached agreement with a Shipper of Alaska Natural Gas that will have been first transported through an Alaska Facilities Gas Project for any continued transportation of such gas from the U.S. border with Canada to any destination

within the Lower 48 Markets, provided that the Commission makes the findings and attaches such reasonable terms and conditions therefor in accordance with the procedure provided in subsection (e) of this section."

**SEC. 6. ENVIRONMENTAL REVIEWS.**

- (a) **Separate EISs for Alaska Facilities and Lower 48 Facilities Gas Projects.**
- (1) Before a certificate of public convenience and necessity is issued for any Alaska Facilities Gas Project under Section 7(c)(3) of the Natural Gas Act, a single environmental impact statement shall be prepared for that project and for any gas conditioning plant developed in conjunction with such project in accordance with the National Environmental Policy Act, 42 U.S.C. § 4332(2)(C), and this Act. The preparation of an EIS for a project pursuant to this paragraph shall satisfy the NEPA obligations of each federal agency whose approval is required for that project.
- (2) Before a certificate of public convenience and necessity is issued for any Lower 48 Facilities Gas Project under Section 7(c)(4) of the Natural Gas Act, a single environmental impact statement for that project shall be prepared in accordance with the National Environmental Policy Act, 42 U.S.C. § 4332(2)(C), and this Act. The preparation of an EIS for a project pursuant to this paragraph shall satisfy the NEPA obligations of each federal agency whose approval is required for that project.

(b) Any environmental impact statement prepared pursuant to subsection (a) of this section shall be prepared in accordance with the regulations and procedures of the lead agency designated for that statement in subsection (c) of this section.

(c) Lead agency for preparation of environmental impact statements.

(1) The lead agency for any environmental impact statement prepared pursuant to subsection (a)(1) of this section shall be the Commission.

(2) The lead agency for any environmental impact statement prepared pursuant to subsection (a)(2) of this section shall be the Commission.

(d) The preparation of any environmental impact statement prepared under subsection (a) of this section shall be expedited. The draft environmental impact statement shall be issued within 12 months after the certificate application is accepted for filing, and the final environmental impact statement shall be issued within 6 months thereafter, unless the Commission determines for good cause that additional time is needed to comply with environmental or other laws.

(e) The scope of any environmental impact statement prepared under subsection (a) of this section shall correspond to the scope of the certificate application for which such environmental impact statement is being prepared.

**SEC. 7. FEDERAL PIPELINE DIRECTOR.**

(a) The Office of the Federal Pipeline Director shall be established within the Executive Office of the President. The functions of the Office shall be directed by the Federal Pipeline Director, who shall be appointed by the President, by and with the advice and consent of the Senate.

(b) The Federal Pipeline Director shall be responsible for coordinating the expeditious discharge of all activities by federal agencies with respect to any Alaska Gas Project, from the pre-application consultation stage through the completion of project construction and initial operation. The Director also shall be responsible for coordinating the compliance by all federal agencies with the provisions of this Act with respect to such projects. Such coordination shall include requiring submission of scheduling plans for permits, certificates, grants, or other necessary authorizations. Such coordination may include serving as a "one window point" for filing and issuance of all necessary permits, certificates, grants, or other authorizations, and, consistent with law, federal government requests for data or information related to any application for a permit, certificate, grant, or other authorization. Upon the written agreement of the Director and the head of any federal agency, the agency may delegate to the Director any statutory function vested in such agency related to the functions of the Director, including permitting functions.

(c) The Federal Pipeline Director shall be responsible for coordinating the expeditious completion of all environmental and other studies and reviews of any kind that are required or conducted for any Alaska Gas Project. Such coordination shall include requiring the submission of detailed scheduling plans for completing such studies and reviews within the time periods allowed under this Act and also shall include requiring the submission of periodic reports

on agencies' compliance with such plans. Such coordination also may include serving as the "primary point of contact" for the federal government with any and all participants in such studies and reviews, including

- (i) Federal agencies and officials, including those involved in the preparation of an environmental impact statement;
- (ii) State, local, and tribal governments and non-governmental stakeholders; and
- (iii) Canadian agencies responsible for decisions relating to the transportation of Alaska Natural Gas to the Lower 48 States.

(d) The Federal Pipeline Director shall semi-annually submit a detailed report to Congress on the status of all pending applications for Alaska Gas Projects.

(e) There is hereby authorized to be appropriated, beginning in fiscal year 2002 and each fiscal year thereafter, such sums as may be necessary to carry out the functions of the Office of the Federal Pipeline Director appointed by the President under section 7(a) of this title.

#### SEC. 8. AGENCY REVIEWS AND DECISIONS.

(a) All actions taken by any federal officer or agency with respect to an Alaska Gas Project shall be expedited, in a manner consistent with completion of the necessary reviews and approvals by the deadlines set forth in this Act.

(b) Federal agencies involved in the review or approval of an Alaska Gas Project shall cooperate and coordinate with one another, under the direction of the Federal Pipeline Director, to expedite the decision-making process and to minimize duplication of effort. Such cooperation and coordination efforts shall include, as appropriate, the following:

- (i) memoranda of understanding with applicants or prospective applicants;

- (ii) inter-agency memoranda of understanding;
- (iii) inter-agency coordination procedures;
- (iv) inter-agency coordination meetings;
- (v) joint pre-filing or post-filing consultation meetings with project applicants;
- (vi) joint public meetings; and
- (vii) joint reports, studies, and other documents, including but not limited to the joint environmental impact statement required to be prepared for each Alaska Gas Project under section 5(a) of this title.

(c) Any certificate, right-of-way, permit, lease, or other authorization issued or granted for an Alaska Gas Project shall include the terms and conditions required by law, and may include terms and conditions permitted by law, except that with respect to terms and conditions permitted but not required, the federal officer or agency, notwithstanding any other provision of law, shall have no authority to include terms and conditions that the Federal Pipeline Director determines would prevent or impair in any significant respect the expeditious construction and initial operation of an economically viable and environmentally sound system for transporting Alaska Natural Gas to the Lower 48.

(d) Any federal officer or agency, with respect to any certificate, permit, right-of-way, lease, or other authorization issued or granted by such officer or agency for an Alaska Gas Project, may, to the extent permitted under laws administered by such officer or agency, add to, amend, or abrogate any term or condition included in such certificate, permit, right-of-way, lease, or other authorization except that with respect to any such action that is permitted but not required by law, such federal officer or agency, notwithstanding any such other provision of law, shall have no authority to take such action if the Federal Pipeline Director determines that it

would prevent or impair in any significant respect the expeditious construction and initial operation of an economically viable and environmentally sound system for transporting Alaska Natural Gas to the Lower 48.

**SEC. 9. JUDICIAL REVIEW.**

(a) **Exclusiveness of Remedy.** Notwithstanding any other provision of law, the actions of federal officers or agencies taken with respect to any Alaska Gas Project shall not be subject to judicial review except as provided in this section.

(b) **Limitations on the Filing of Claims.**

(i) Claims alleging the invalidity of this Act may be brought not later than the 60th day following its date of enactment.

(ii) Claims alleging that any action taken by a federal officer or agency in connection with an Alaska Gas Project will deny rights under the Constitution of the United States, or that any such action is in excess of statutory jurisdiction, authority, or limitations, or short of statutory right, may be brought not later than the 60th day following the date of such action, except that if a party shows that he did not know of the action complained of, and a reasonable person acting in the circumstances would not have known, he may bring a claim alleging the invalidity of such action not later than the 60th day following the date of his acquiring actual or constructive knowledge of such action.

(c) **Exclusive Jurisdiction of Special Court.** A claim under subsection (b) of this section shall be barred unless a complaint is filed prior to the expiration of the time limit specified in that subsection in the United States Court of Appeals for the District of Columbia

Circuit acting as a Special Court. Such court shall have exclusive jurisdiction to determine such proceeding, and no other court of the United States, or any state, territory, or possession of the United States, or of the District of Columbia, shall have jurisdiction of any such claim in any proceeding instituted prior to or on or after the date of enactment of this Act.

(d) Expedited Procedures. With respect to any claim under subsection (b) of this section, the United States Court of Appeals for the District of Columbia Circuit shall set the matter for expedited consideration, taking into account the national interest as defined in section 2 of this Act.

**SECTION 10. SEPARABILITY.**

If any provision of this Act, or application thereof, is held invalid, the remainder of this Act shall not be affected thereby.

# Cambridge Energy Research Associates

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July 17, 2001

Commissioner Wilson Condon  
State of Alaska, Department of Revenue  
333 Willoughby Avenue, 11<sup>th</sup> Floor  
P.O. Box 110400  
Juneau, Alaska 99811-0400

Dear Commissioner Condon,

This letter addresses the list of 13 questions forwarded by the Governor and staff via email and discussed in a conference call. As requested, we have addressed the issues falling within our expertise, have offered our judgments where they might prove helpful, and have provided references for types of analysis beyond CERA's expertise and for which other firms might be of more assistance.

CERA addresses the long-term future of energy markets and industries in the context of scenarios, rather than single forecasts. This allows our clients better to understand the forces driving the future, and how significant uncertainties can affect the future strategically. The State of Alaska has participated in the scenarios-based CERA study, "Toward New Frontiers: The Future of Gas Supply in North America," (hereafter the "supply study") which addresses several of the questions that you have asked, including competing sources of supply and their timing and sequence of development. These answers draw upon that body of work. You have been provided physical copies, and have access also via the Internet.

A summary of the scenarios developed in the supply study — *Gas Favored*, *Supply Realignment*, and *Aftershock* — is provided below for your convenience and immediate reference. These descriptions, along with supply/demand balances and prices under each scenario, may be found in Section II of the supply study.

## *The Gas-Favored Scenario*

The Gas-Favored Scenario depicts an industry that has established the foundation for both price and demand growth over the longer term. Strong economic growth (averaging 3 percent through the study period), a strong competitive position for gas in power generation markets, and favorable environmental policies drive a surge in gas demand for power generation. By 2003, demand climbs to 24 trillion cubic feet (Tcf) in the United States. In Canada significant new pipeline infrastructure results in continued strong pricing, with consumption rising to 3.0 Tcf and exports climbing to 4.1 Tcf by 2003.

The expectation of continued pricing strength creates the financial incentive for increased exploration and production activity. The crucial areas upon which so much of production health depends — US Gulf deep water and the Western Canadian Sedimentary Basin (WCSB) — respond well to drilling activity. Higher prices also facilitate the expansion of the gas pipeline and distribution infrastructure needed to meet the growing demand. After intense market pressures through 2003, the supply-demand balance settles to a more sustainable balance. Gas volumes from the Rockies and Atlantic Canada are strong, and the scenario experiences the highest utilization of LNG import facilities. The health of the more traditional supply regions means that the need for northern frontier supplies is delayed until 2011. Gas demand in the United States reaches 28.9 Tcf by 2010.

#### *The Supply Realignment Scenario*

The Supply Realignment Scenario is characterized by intense market pressure, where demand growth is constrained for limited periods by the amount of gas supply available. Moderate economic growth (averaging 2.5 percent) and favorable environmental policies drive a surge in gas demand for power generation. However, gas supplies fail to keep pace. The US Gulf Coast experiences high decline rates in onshore and shallow offshore supplies, and the deep offshore does not deliver the incremental volumes of gas that were generally expected as oil-related drilling and associated gas production grow only slowly. The supply build of the WCSB is also moderated. Continuing gas demand and tight supply keep natural gas prices very high through 2003.

This tight market balance causes large-scale reactions. On the demand side the United States experiences a significant loss of demand among feedstock users of gas — namely ammonia and methanol manufacturers. On the supply side high prices attract aggressive activity in frontier areas, including development of the Canadian offshore East Coast, an acceleration in plans for LNG expansion, and an aggressive timeline for the development and connection of the Mackenzie Delta and northern frontier. In this context Alaskan gas reaches the US market in 2008.

The demand downturn and this supply acceleration in turn moderate price in the latter half of the study period. Eventually, growth in US and Canadian demand leads to renewed tightening in the market balance and, after 2010, another cycle of increased pricing strength. Gas demand in the United States reaches 26.7 Tcf by 2010.

#### *The Aftershock Scenario*

The Aftershock Scenario plays out the events that would occur surrounding a recession in the near term. After an initial year of overheated economic growth, the Federal Reserve Board takes action to slow the economy. These efforts, along with lingering effects from the readjustment of stock equity valuations, help to plunge the economy into a serious recession that lasts from late 2001 through 2003. The recession softens growth in power demand and causes a decline in industrial demand.

The initial pricing strength during the period of overheated economic growth creates the financial incentive for increased exploration and production activity. The crucial areas upon which so much of production health is dependent — US Gulf deep water, WCSB, and Rockies — respond strongly to activity. These supply responses emphasize the

price downturn that results from the subsequent softening of demand. In this challenging market environment a lower cost pipeline from the Mackenzie Delta is built in 2009, before an Alaskan line, and Alaska gas flow is delayed until mid 2012.

As production begins to moderate in response to these new price signals, the economy itself begins to recover, so that by 2005 the supply/demand balance returns to somewhat tighter levels. Gas demand in the United States reaches 26 Tcf by 2010.

The responses to your individual questions follow:

## **Question 1: Form of royalty.**

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**Question 1, Part A: Alaska has the option to take its one-eighth share of royalty "in-kind" or "in-value." Given the proposed size of the project and the known reserve, to what extent might Alaska's royalty gas be needed "in-value" to ensure sufficient throughput and project viability?**

In general, transportation rights – that is, the rights to transport services on natural gas pipelines — are separate from ownership of reserves (and of ownership of the pipe) in the United States and Canada. An election by the state to take royalties in-kind is quite meaningless without a mechanism to monetize the gas. In order to do that, the state would either have to procure firm transport rights from the field area to markets in the L-48, or to entrust an agent to do so on its behalf. The obligation for the transportation costs would rest with the state in either case. Without an ability to move the gas to market, the state's royalty gas could be trapped in the ground as the producers continue to fill available pipeline capacity (which they have secured) with their equity gas. While such a situation may seem unlikely, producers have had gas production interrupted or shut-in for lack of pipeline capacity rights (in the Rocky Mountains and deep-water Gulf, for example). If the state elects to take its gas in-kind it should commit to accompanying access to firm pipeline transport capacity.

If the state were to take royalty in-kind gas for delivery to markets only within the state, the pipeline should be designed to only accommodate that flow to the intended delivery points. Otherwise, the state may be obligated to pay for unused capacity downstream of those deliveries, or the unused capacity would add to the unit cost of transport for the producers' gas and thus threaten the project economics. To avoid this threat, additional pipeline capacity could be built from the field to in-state delivery meters, and the state would have the obligation for paying for that additional capacity or passing it on to consumers. Commercial and distribution interests within the state may also contribute some share of the cost if they were to contract for gas delivery to similar points. Establishing a market value for this in-state delivery may prove difficult and may result in the state not receiving the full value for the commodity

The adequacy of reserves and productive capability does not appear to be an issue limiting the viability of this project. The type of royalty elected is unlikely to affect the economics of the project due to any lack of producibility. In other words, the reserves and productive capability are sufficient to fill any reasonable pipeline under consideration, whether the state takes its gas in royalty or in-kind.

**Question 1, Part B: What are the economics associated with taking royalty gas in-kind along the line, such as in the Fairbanks area, for use as home heating and electrical generation compared to current energy sources?**

The cost of gas delivered to homes and business in comparison to that of the energy sources now used usually requires an engineering study to determine the cost of a distribution system, and is beyond CERA's general expertise. However, for reference, existing non-gas distribution costs (from major pipeline systems to individual

consumers) in the US Lower 48 tend to range from approximately \$1.50 to \$5.00 per MMBtu to residential and commercial consumers, depending upon real estate costs, population densities and industrial loads on the distribution systems. Non-gas distribution costs within Alaska will likely be well above average, given the low-population density. However, high costs for alternate energy sources, potential industrial or power generation host loads, and reasonable real estate costs may offset a portion of higher than average distribution costs, potentially allowing gas to compete with other sources of energy in localized instances. With Fairbanks proximity to the line, gas may prove to be a competitive energy source there, but gas may not be competitive in other areas absent major host industrial or power generation loads.

A distribution franchise holder would normally conduct such a study. In the largest scale recent new franchise acquisition, Sempra Energy procured the franchise for the development of a provincial distribution systems off of the Maritimes and Northeast pipeline in Nova Scotia. A year after being awarded the contract, a decision was made not to move forward with the majority of that development. In that instance the economics did not work, even in a province more densely populated than Alaska. This is a result of the lack of incentive for existing residential and commercial fuel users to switch to gas given the higher comparative cost of the gas as well as the high initial costs of delivery and conversions. A new distribution system is more expensive than the costs suggested above and needs to be added to the cost of the gas to the consumer. This is a condition that Alaska is likely to face as well.

**Question 1, Part C: Alaska has the option of switching back and forth between taking its royalty in-value or in-kind. It can make these switches on six-months notice. It is possible that during the early years of project operation Alaska would want to take its royalty in-value, and then later switch to taking it in-kind to supply feedstock or fuel for some kind of industrial development. Would the possibility of exercising this option affect the design of the project? How would the possibility of exercising this option affect the economics of the project?**

Again, switching from royalty in value to royalty in-kind may be of little use to the state unless additional pipeline capacity is built from the producing area to the in-state delivery meters, and unless the state also procures transport capacity to match its royalty production. CERA assumes the state would not consider using Alaska-Alberta capacity to deliver gas within the state; that could indeed burden either the state or the project. If additional capacity within the state were built, then the state's switching royalty methods would not necessarily be of major concern to the producers. However, the state would be expected to pay a rate for this short-haul capacity that would not increase the producers' cost of further expansions of long-haul capacity. The state would likely have to make this commitment at the design stage of the pipeline, thereby making a future switching option somewhat meaningless. While capacity could be added at a late date, the state should not expect to pay a low transport rate based only on the cost of additional compression, without sharing in a fair manner the full cost of the initial pipeline and rights-of-way. Disputes based on average ("rolled-in") and incremental rates, and who pays them, are quite common in the Lower 48.

Unless the state intends to deliver the gas for a lower cost than could be obtained from the producers, there is no inherent value in using "state-owned" gas. A true market value for the gas would enable development to occur without using in-kind gas.

## **Questions 2 and 3: Petrochemical industry possibilities**

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**Question 2: What types of in-state petrochemical industries using Alaska gas might be economically viable and competitive in world markets? To what extent would such developments be dependent on a tidewater location (and an additional gas spur line)?**

The most obvious industries based on natural gas are methanol, ammonia and petrochemical. The viability of all does relate to global economics. Delivery to market would be a key consideration. Therefore, a tidewater location for Alaska development would be essential. This suggests that the most economic location of the facilities would be on the coast, with a gas pipeline from the mainline to that location. The additional cost of transportation from the North Slope to a coastal location (likely either Cook Inlet or Valdez) would burden any development with additional costs that other world sources are unlikely to incur. This additional cost would be for both the mainline and the spur line. The comments on the development of in-state gas delivery are also valid here; in other words, any development would have to ensure that it did not strand downstream pipe and therefore negatively affect the major pipeline development economics. Without an inherent advantage, such as gas costs that are lower than other world stranded sources, new facility development is not likely to fare well economically.

CERA does not analyze petrochemical markets worldwide. We have a relationship with Dewitt and Company partly for this purpose, and recommend contact with:

Earl H. Armstrong  
Managing Director  
Dewitt and Company  
16800 Greenspoint Park  
North Atrium, Suite 120  
Houston, Texas 77060-2386  
281-774-7298  
[earmstrong@dewittworld.com](mailto:earmstrong@dewittworld.com)

We have not contacted Mr. Armstrong directly concerning this referral, but would be more than willing to do so if this would be of help.

**Question 3: What is the most economic use of Alaska's natural gas liquids?**

This is a decision that will be made by the producers. The natural gas liquids (NGL's) that will be produced with the gas are ethane, propane and butane. All can be used as fuel, petrochemical feedstock or specialty use. Ethane will be the largest component. Its use is highly dependent on the cost of the gas itself, as recent events have demonstrated. Over the past winter, the high cost of gas made it uneconomic to use the ethane for petrochemical feed and as a result it was left in the gas stream and sold alongside the natural gas. Propane is used as a heating fuel as well as a petrochemical feedstock but will be available in lower volume. The smallest volumetric component of

the NGL's is butane, most commonly known for its use in lighters. Its primary uses are fuel, petrochemical and refining.

Current plans are to ship the NGL's as part of the natural gas stream thereby reducing the cost of transportation on a Btu or heating value basis. Removal of the liquids in Alaska may have a detrimental affect on the pipeline economics. Liquid extraction facilities would add to the cost and complexity of the main objective of getting the pipeline built to move the natural gas to market.

While some small-scale extraction of NGL's may be attractive to serve local markets, it is unlikely to be economic to do a full extraction. As an example, a full-scale extraction would result in approximately 85,000 BPD of ethane and 50,000 BPD of propane at a gas flow of 2.5 Bcfd. The only effective disposition of these liquids would be piping or shipping to market (which would not be economic) or development of base petrochemical facilities that would produce ethylene and propylene. The likely location for an extraction facility would be on the main pipeline, which would necessitate a liquid pipeline to either Cook Inlet or Valdez. The coastal location would be the likely choice for the petrochemical facility. A gas pipeline volume of 3 to 4 Bcfd would be the minimum for a single-train world-scale facility of 3 billion pounds per year of ethylene. As a comparative example, Alberta has 8.5 billion pounds per year of capacity and has the dual advantages of lower gas prices (relative to Henry Hub) and a low Canadian dollar. The ethylene and propylene could be further upgraded to polyethylene and polypropylene, but this would further escalate the capital requirements. It would be difficult to develop these facilities and be competitive in a global market without state subsidies.

Another looming obstacle to consider is the importance of the NGL's, especially the ethane, to the government of Alberta. Given the cost and obstacles to development within Alaska, it may be an appropriate trade-off to leave the liquids in the gas in exchange for approval from Alberta, which will play a significant role in the approval process for the pipelines required to get the gas to L-48 markets.

An approach that is not recommended is to allow the liquids to flow initially and later extract them in Alaska after facilities have been developed in other locations. This "upstreaming" has occurred in the past, been highly contentious, and could negatively impact the gas pipeline economics in the future.

Liquids extraction will be required in Alberta if it has not occurred before then since the majority of the pipeline infrastructure from that point forward cannot accommodate the liquids content. Alliance is the only pipeline with a high enough operating pressure to maintain the liquids in the gaseous form.

#### **Question 4: What other potential supply sources are the most likely competitors with Alaska to fill the gap between North American demand and supply?**

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A complete discussion of each major supply area in North America can be found in Section III of the supply study, and Appendix B provides the production outlook by scenario for each major basin. In brief, the major competitors with Alaska gas to serve demand growth include (production growth is provided below on a "wet" basis, including the Btus associated with liquids in the gas stream):

- **Western Canada.** The Western Canadian Sedimentary Basin (WCSB) is far from a mature producing area. Although drilling in the basin must extend both deeper and farther afield from the traditional shallow drilling in southern Alberta to sustain production increases, potential to grow production in this basin is significant. CERA expects production growth of between 4.0 (Aftershock) and 7.2 (Gas-Favored) Bcf per day from the WCSB between 2000 and 2015. This expected growth is the major reason producers must, and are, evaluating the cost of building from Alaska not only to Alberta but also directly to markets in the US. The WCSB is currently showing signs of renewed growth after flat production in 2000. In 2001, production is expected to increase by 650 mmcfd and higher in 2002.
- **Deep-water Gulf of Mexico.** After declining by more than 1.0 Bcf per day since 1998, net production in the Gulf of Mexico is expected to begin to increase this year as the ramp up of production from deep-water fields offsets the decline in shallow-water production. Although the decline in shallow-water "shelf" production is expected to slow, shelf production will continue to decline. Overall production from the Gulf of Mexico is expected to increase by a range of 3.2 Bcf per day (Supply Realignment) to 6.4 Bcf per day (Gas-Favored), depending upon the scenario, from 2000 to 2015. A driving force of the Supply Realignment Scenario is disappointment in growth in deep-water production. In this scenario overall Gulf production peaks in 2010. The future of deep-water production is both a driving force in the North American gas market, and also a major uncertainty.
- **The Rocky Mountains.** Growth potential in the Rocky Mountain States continues to be large, hampered mainly by access restrictions and the separate and piecemeal development of individual plays and the associated infrastructure. The proximity of the California market, however, and the pipeline infrastructure now planned from the Rockies to California, may provide the impetus for development that this region needs. CERA expects production growth of between 3.0 (Aftershock) and 3.9 (Gas-Favored) Bcf per day from this region by 2015.
- **Atlantic Canada.** Development potential on the Scotian Shelf offshore Nova Scotia remains immense but requires concurrent pipeline development. Nevertheless, CERA expects Atlantic Canadian production to grow by 2.4 to 2.7 Bcf per day by 2015. Production development announcements will ensure that this area will grow to over 1 Bcfd by 2005.

- **LNG imports.** With the reactivation of all existing import facilities, plans for new facilities underway, and growing investments in liquefaction facilities worldwide, LNG imports into the US are on a track to exceed even the strong growth expected in the supply study. In the study, CERA incorporates growth in LNG imports of between 2.0 and 2.9 Bcf per day between 2000 and 2015. However, this is achieved using only existing import facilities. CERA's current study of worldwide LNG markets is likely to place the growth in LNG imports even higher — up to 4.0 or even 4.5 Bcf per day. This is based upon recently announced liquefaction investments as well as multiple plans for added import facilities into the US.

These supply sources are potential "competitors" with Alaska gas in a limited sense with regard to project approval, and a much greater and more direct sense if and when all projects and growth proceeds. Significant Alaska gas production is dependent on a single large-scale commitment and a corresponding huge capital investment in pipe. As well, the sequencing of new global LNG supplies depends more on one-time discreet capital investment decisions than on basin development economics. The outlook for the basic supply / demand fundamentals by project participants is the foundation for the project decision rather than the usual sense of competition among supply basins.

In the broader context of the energy marketplace other competitors for Alaska gas emerge. For one example, clean-coal technologies are a significant competitor for power generation loads, the major growth market for gas. Should clean coal effectively penetrate new generation markets, it would indirectly compete with all new gas supply sources by reducing the gas demand requirements.

## **Question 5: What are the locations, time frames and major hurdles for competing sources of gas to meet future North American demand?**

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The locations, timing, major hurdles and sequencing of supplies is best addressed in a scenarios context for the future, and a major theme of the supply study is this sequencing of supply under three alternate scenarios. A workshop format often works best in addressing the many issues raised by a general request such as this and such a workshop could be provided within the framework of CERA's relationship with the State of Alaska. This written response discusses the major drivers and reasoning behind the sequencing of supply sources in each of the scenarios.

The primary locations are as described above in Question 4. The time frames and major hurdles for competing sources of gas are best addressed by individual scenario. More complete discussions of issues relevant to this question can be found in the supply study by scenario in Section 2, and by major supply region in Section 3.

In the past a more unique set of circumstances needed to coincide to bring an arctic project to fruition and a more narrow window of opportunity existed. Today, the dynamics of supply and demand suggest a greater need for arctic gas. All three scenarios demonstrate a need for some arctic gas, outlining not only a need but also a wider "window". Recent events, driven by substantially higher prices, such as the plethora of LNG project proposals and new coal-fired power plants, indicate that the window may be at risk of narrowing once again. Absent these factors, the issues for development relate more to timing and volume than the need for arctic gas. Depending on the particular scenario, arctic gas comes on in 2007, 2009, or 2011. Although the mechanism of delivery is still a subject of debate for northern gas, the need for a large volume of gas into the Lower 48 states is not. The economics for development of new sources of supply are expected to be in place to move major projects forward.

### **Supply Realignment**

#### **Time Frame**

In this scenario the pace of discovery in the deep-water Gulf of Mexico declines, resulting in a need to realign US supplies away from traditional areas toward the frontiers. In addition, supply does not grow and in fact declines in many traditional onshore US producing areas. With demand pressure continuing but supply not keeping pace, it is not surprising that an arctic gas pipeline is built first in this scenario.

The strong prices in today's market lead to project commitments before the end of 2001. The plans for northern development include large project(s) that ultimately bring both Alaska and Mackenzie gas to market. The size of the project(s) is nominally 4 Bcf per day, increasing to an ultimate design of 4.5 Bcf per day.

Detailed design begins in late 2001 and continues for 2+ years. This design incorporates a northern or arctic segment as well as a market segment to the pipelines. It also includes development of reserves and liquids extraction facilities. Regulatory

applications begin in late 2001 and continue through 2002, with approvals coming in 2003 and 2004. Some construction preparation activities begin in late 2003, with main construction efforts beginning in 2005. Equipment orders begin in 2004 for long lead items, with most procurement occurring in 2005. Construction continues through 2007 and beyond as the projects are ramped up. In-service of the initial arctic supplies begins in midyear 2007, with flows increasing through 2008 and 2009. Initial Mackenzie flows begin in mid-2009.

The combined gas flows reach 3.5 Bcf per day by 2010 and achieve a maximum of 4.25 Bcf per day by 2015. The market segment of pipe includes 1.75 Bcf per day in 2007–08 to the US Midwest and 1.6 Bcf per day to the West Coast in 2007–09. Ultimately, pipeline capacity to these regions for 2007 and beyond will reach 2.7 Bcf per day to the Midwest and 2.45 Bcf per day to California and the Pacific Northwest. That total, although primarily for arctic gas, also includes some increase for WCSB growth.

### Major Hurdles

Under supply realignment conditions, an early decision to move forward with an arctic pipeline project itself represents a major hurdle for competing sources of supply. While a decision by the producer consortium to move forward would not likely be reversed based on temporary price movements, the risk of reversal would relate more to large-scale events. Investment in most onshore and shallow offshore supply areas can and will respond more quickly to price changes. However, the timetable for arctic development in this scenario is aggressive and optimistic, and any unexpected delay in the development process would delay the in-service date beyond that in this scenario. In fact, a commitment before the end of 2001 is beginning to look doubtful, suggesting a delay for project in-service to 2008

As long as near-term prices remain strong, ongoing decisions for traditional supply growth will be made and development will continue. While demand pressure allows room for development of other frontier sources, decisions regarding current sources of supply will continue. Delays or deferrals of those decisions are unlikely to occur until after the onset of significant frontier supply. At that time, weaker prices may result in reduced activity as arctic gas and/or LNG displace onshore US gas growth.

LNG imports increase within the capacity of existing facilities, but some potential imports are rerouted to other markets, resulting in a slightly smaller increase in net imports than in the Gas-Favored Scenario. Again, new greenfield facilities are a distinct possibility as a result of recent events.

### **Aftershock**

#### Time Frame

In the Aftershock Scenario the recession that begins in 2001 defers plans for northern development. Although the recession is brief and is followed by strong economic growth, project proponents and developers are reluctant to proceed immediately after the recovery. This caution leads to the development of a much smaller project initially, likely a Mackenzie River line as a first step. Alaska gas does not enter the marketplace until 2012 in these conditions.

Commitment to northern development is still made in 2001/2002, but the recession slows the process, both in the project design and in the regulatory submissions. Design begins in 2002, with initial regulatory filings beginning in late 2002. The process is not stopped but drags out over a longer time frame. Detailed design is not completed until 2005 and approvals begin to stream in from late 2004 through 2006. Long-lead equipment orders begin in 2006, with some site preparation beginning late that year. Construction begins in 2007 and first gas flows of 1 Bcf per day begin in early 2009. Flows increase to 1.5 Bcf per day by 2011. Alaska gas begins movement in mid-2012, and total volumes climb to 3.5 Bcf per day by 2013 and reach their maximum of 3.95 Bcf per day by 2014.

The smaller initial size of the northern development in this scenario leads to a more incremental approach to the market segment of the capacity. Expansions to the Midwest of 400 MMcf per day are required in both 2009 and 2010, with expansions of 200 MMcf per day in both years to California and the Pacific Northwest. Ultimately, 2.6 Bcf per day is built to the Midwest, while 2.1 Bcf per day is constructed to the West Coast markets.

### Major Hurdles

Low demand and prices create major hurdles for capital-intensive supply developments in the Aftershock Scenario. In a challenging environment for all new supply sources, Alaska gas is especially disadvantaged in terms of timing, as are eastern Canadian and LNG supplies. Supply growth from these sources is delayed as the capital investments are put off. For Alaska and offshore eastern Canada, volume growth over the 15-year period is near that in the Gas-Favored Scenario. For LNG, in which investment will occur in many phases, overall volume growth is 600 MMcf per day less in Aftershock than in the Gas-Favored Scenario.

Several onshore basins that require a consistently high level of investment in order to grow are disadvantaged even more. These include the WCSB (growth is 3.2 Bcf per day less than in the Gas-Favored Scenario), the Gulf of Mexico (1.7 Bcf per day less), and the onshore Gulf Coast (1.2 Bcf per day less). These areas never make up the increment of investment lost during the recession and the sustained period of low prices. The reduction in demand that accompanies the recession offsets this reduced supply development and pushes the need for frontier supplies further into the future.

### **Gas-Favored**

#### Time Frame

In this world, demand growth is strong, driven by strong economic growth and environmental pressure on fuels that might otherwise compete for power generation load. While gas prices rise in real terms, this demand growth is also driven by a strong but consistent and competitive gas price, which in turn is enabled by strong supply growth in traditional supply areas. Gas attracts demand in part because supply growth enables gas to remain competitively priced. The result is that the fundamental need for arctic gas is delayed as traditional supply areas show continued strength.

A pipeline from the arctic enters service in 2011 in this scenario, as the Gulf of Mexico, Western Canada and even the traditional onshore US basins continue to grow but cannot keep pace with demand increases. Importantly, gas discoveries in the deep-

water Gulf of Mexico continue at a strong pace, something that is now far from certain. In addition, production in the Permian grows in only this scenario, while the US Gulf Coast onshore grows by nearly 3.0 Bcf per day. Supply growth in all other competing areas, as well as unexpected resiliency in traditional basins, delays the need for Alaska gas.

Discussion, lobbying, and analyzing are the predominant activities until 2002. Although detailed design begins in 2002, no consensus and commitment is made until 2003, when activity begins more in earnest. The regulatory process is initiated in late 2004 through 2005, with approvals coming in 2007–08. Initial construction preparation begins in 2007–08 as well, with construction in full swing by 2009. Initial flows begin in midyear 2011, with volumes reaching 2 Bcf per day the following year. Volumes continue to ramp up to 2.5 Bcf per day in 2013 and 3.5 Bcf per day in 2014 before reaching 3.86 Bcf per day in 2015. Flows may increase even further beyond the study period.

The market segment will require 900 MMcf per day of additional capacity to the Midwest in 2011, followed by annual increases to reach a total of 3.0 Bcf per day by 2015. Western capacity to California and the Pacific Northwest will require increases of 800 MMcf per day in 2011, followed by annual additions raising the total to 2.75 Bcf per day by 2015.

#### Major Hurdles

Achieving continuous supply growth in many traditional US producing areas will be quite challenging. Indeed, the resiliency in supply from traditional producing areas in this scenario is well above current conventional wisdom, and many producers challenge this aspect of the Gas-Favored Scenario. However, CERA believes this growth is feasible, despite numerous challenges, in an environment of continued healthy real prices, a pace of technological change that allows steady reductions in real finding and development costs, and strong drilling activity.

Ramping up LNG imports above the capability of existing facilities will also prove challenging. CERA expects LNG imports to increase quickly through existing facilities, with imports limited by feasible operating rates and tanker berths. The theoretical limit of current tanker berths is approximately 4.5 Bcf per day, while operational feasibility may limit imports through these facilities to near 4.0 Bcf per day. New LNG facilities face many hurdles, including permitting in the US, added pipe costs if not in the US, permitting processes in Mexico, and the added capital associated with new vaporization. In the gas-favored world total LNG imports reach near the theoretical maximum of 4.0 Bcf per day.

Strong development interest in recent months in both LNG supply and in vaporization into the North American market indicate that LNG imports may increase beyond the capability of existing plants in all cases, despite these challenges. The lower individual discreet investment costs, the smaller project size, the smaller environmental "footprint", the shorter timeframe, and the fewer jurisdictions for approvals do suggest the challenges may be fewer and smaller than those faced by arctic gas pipelines.

**Question 6: What is the range of throughput of Alaska North Slope gas necessary for a viable project? Will North American demand be able to accommodate those volumes?**

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Minimum viable capacity depends upon a reliable estimate of costs, which at this time is unavailable. The minimum economic pipeline capacity would be an estimated 2.5 to 3.0 Bcf per day under the most favorable cost assumptions, but CERA understands that producers are now focusing on a capacity of 4.0 Bcf per day or higher. Using simplified but standard pipeline cost planning and estimation metrics, a pipeline capital cost range of \$10 billion to \$15 billion would result in an annual pipeline cost of service of approximately \$2.0 billion to \$3.3 billion (20-22 percent of capital). Major annual costs include the return of and on capital (depreciation and the costs of debt and equity), labor, operating and maintenance expenses, and general and administrative overhead costs. The resulting unit transport costs are provided in the tables below:

**Simple Transport Cost Estimates:**

Pipeline Capital: \$15,000,000,000

<u>Annual Costs</u>	<u>Average Daily Throughput (Mcf)</u>	
	2,500,000	4,000,000
20%	\$ 3.29	\$ 2.05
22%	\$ 3.62	\$ 2.26

Therefore, if pipeline costs are close to \$15 billion, then a throughput of 4.0 Bcf per day and a Chicago price of \$3.00 are required to offer a netback of \$0.74 - \$0.95 per Mcf to producers, depending upon the operating cost structure of the pipeline.

If cost estimates are closer to \$10 billion, then an initial throughput of 2.5 Bcf per day may be more acceptable to producers, as it would offer a potential netback of \$0.81 in a \$3.00 Chicago price (see table below).

**Simple Transport Cost Estimates:**

Pipeline Capital: \$10,000,000,000

<u>Annual Costs</u>	<u>Average Daily Throughput (Mcf)</u>	
	2,500,000	4,000,000
20%	\$ 2.19	\$ 1.37
22%	\$ 2.41	\$ 1.51

If costs are closer to \$15 billion, then an average throughput closer to 4.0 Bcf per day is therefore required under most ranges of price expectations. If costs can be held to \$10 billion, then pipelines designed for lower initial throughput become an option.

These are rough "rules of thumb" that are not completely applicable here due to several other factors. The first is that as a high pressure, liquids-rich gas pipeline, the cost on a Btu basis is reduced from the cost on a volumetric or Mcf basis. In other words, the liquids carry some of the cost of transportation, thereby potentially reducing the cost of the gas transportation. This was a premise that the Alliance pipeline was built on. The second factor is that the transportation from Alberta to market is unlikely to be a new "greenfield" pipeline. It is more probable that the second segment of the line will be accomplished by the different levels of expandability on the existing pipelines out of western Canada (PGT, Northern Border, Alliance and TransCanada). There are levels of expansion capability on all those lines, starting with simple compression, moving to looping and compression all the way to "twinning" of a line or lines. All these levels of expansion are less expensive than a new line and will also allow delivery to different markets than a single new pipe would allow. An estimate of the average unit cost of these various expansions is in the \$0.80 – \$0.85 / mcf range for the Alberta to market portion of the line. The third factor that may become necessary in order to enable construction of an arctic pipeline is a divergence from conventional financing and risk sharing, whereby all parties (producers, pipelines, finance and government) play a role.

Another way to view the cost is from a transportation-only perspective. Using the cost ranges given by the various project proponents, the Alaska to Alberta portion ranges from \$ 0.80 to \$1.20, the intraAlberta portion is likely to be \$0.20 – \$0.25, with the Alberta to market portion adding \$0.80 – \$0.85, for a total project transportation cost of \$1.80 - \$2.30. This is the minimum market price required before any consideration for production costs, royalties, taxes, etc. that will be used for project evaluation. The irony of any pipeline construction is that once built the fixed costs have to be paid regardless of movement of gas therefore becoming "sunk cost". The shipping decisions then arguably are based on variable of operating costs.

There is little question of the ability of the US and Canadian markets to absorb these supplies. If a pipeline is build, the gas will flow and will be consumed in the market. The outcome is likely to be downward pressure on prices. The real question is what is the pricing impact and how prolonged is it likely to be? In the supply study arctic deliveries of 3.9 – 4.3 Bcf per day are absorbed in the context of Henry Hub prices in the \$2.07 (minimum Aftershock year) to \$4.64 (Gas-Favored 2015) nominal range. These volumes are "ramped up" over time; a faster build to the higher volumes is going to have a more significant impact on price. Obviously, the lower end of that range could be below the full cost of transportation and if that outcome were the expectation of a producer, it would negatively affect the decision to proceed while an expectation of the higher price is well above the project threshold. As mentioned earlier, the anticipation of higher LNG volumes in a similar or earlier timeframe is going to have an added impact.

**Question 7: In light of the above, what is the likelihood and viability of an additional gasline project from the Mackenzie Delta?**

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The likelihood and viability of gas from the Mackenzie Delta is dependent on a number of factors — routing of the Alaska gas pipeline, timing of both projects if separate, and the volume of Alaska gas regardless of the issue of one or two pipes.

In the context of the supply study scenarios, a volume of 2.5 to 2.75 Bcfd of Alaska gas was assumed and this level leaves room for up to 1.5 Bcfd of Mackenzie gas. Since no scenario contemplates a total volume of arctic gas of greater than 4.25 Bcfd, a volume in excess of 2.5 Bcfd from Alaska does suggest a risk to development of Mackenzie gas beyond that level. If a 4 Bcfd or large pipeline is built for Alaska gas, and that line is built first and separate, there is a substantial risk that Mackenzie development will be pre-empted and delayed beyond the timeframe of 2015. The recent plethora of LNG projects only adds to this risk.

Another possibility is that separate projects could proceed on similar timeframes. This could occur if the decision is for two pipelines and simultaneous commitments to proceed are made. This could present a situation with a total volume of 5.5 Bcfd entering the market. Such an eventuality has not been contemplated in any of the scenarios and would definitely have a depressing effect on prices beyond any levels in the scenarios.

**Question 8: What changes, if any, would make a stand-alone Alaska LNG project delivering its product to the Asian market economic? What project development scenarios might make such a LNG project economic? Even if an Alaska project were economic, will there be competing sources of gas around the Pacific that would likely be able to beat the price an Alaska project would be required to charge?**

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CERA is addressing these issues currently as part of a multi-client study of world LNG markets, which the State of Alaska is participating in. If a more timely response is required, we will make every effort to address your issues separately. If desired, once the study is more complete, we could arrange a meeting with CERA's Asian and North American LNG experts to address the significance of the study findings for your questions.

Preliminary perspectives on the Asian market for LNG are provided in the following paragraphs, and these are followed by a comparison of shipping costs and distances from major suppliers to major markets in the Pacific basin. The term "train" refers to the liquefaction capacity of a given liquefaction unit. In Alaska's case the LNG sponsor group is considering two trains with an initial capacity 3.6 million tons per year, expandable to 7 million tons per year each. The volumes per train correspond to 480-500 MMcf (millions of cubic feet) per day, expandable to approximately 1.0 Bcf per day for each train. This is approximately the standard in international LNG markets. These shipping costs listed below illustrate the competitive position and challenges associated with moving Alaska LNG into Asian markets.

There is plentiful gas supply to East Asia in the current decade, and it will be a buyers' market for LNG for at least a decade. A number of countries are developing supply projects:

- Australia - the Northwest Shelf 4th train due for 2004, with a 5th train possible by 2007 (competitive against Alaska supply);
- Indonesia - adding another train at Bontang, seeking to develop a new supply project by 2006 at Irian Jaya (these will both beat Alaska economics);
- Malaysia - Developing a third LNG project at Bintulu, probably on line by 2004 (beats Alaska economics);
- Brunei - Opening up the upstream with an eye toward adding a new train by 2007/8 (beats Alaska economics);
- Russia - looking to supply Japan and Korea with LNG from Sakhalin (likely very competitive economically against Alaska, and with Shell's marketing strength behind the project).

- In addition, there are projects in the Persian Gulf that are looking to supply East Asia, and which would likely prove competitive with Alaska.

The demand picture is far less certain, with a significant possibility that demand will prove disappointing. Liberalization of the power and gas industries in Japan and South Korea mean that the future demand for gas in both countries is highly uncertain. Japanese utilities have deferred a number of proposed gas-fired power projects in an effort to clean up their own balance sheets. As competitive pressure forces power tariffs down in the industrial sector, the utilities are being forced to cut capital expenditures. Competition with coal will only intensify as a result.

Political and economic uncertainty (globally) benefits the "secure" suppliers (Australia and potentially Alaska). The issue for East Asia is one of security versus economy. Historically, concerns about security of supply led to the willingness of Japanese buyers in particular to pay a premium for diversity of supply. A world with lessened political tensions, but more economic competition (globalization), will lower the willingness to pay that premium. A world of price competition but relative peaceful relations in East Asia is probably negative for Alaska, as it will see a strong competitive threat from Russian supply and will improve Indonesia's chances of financing new supply. A world of relative political instability in East and Southeast Asia will allow Alaska to market its gas as a secure supplier.

Preliminary results from CERA's LNG study comparing shipping costs and distances among existing and potential LNG supplies and markets in the Pacific basin are provided below. On these terms Alaska LNG is competitive shipped into Mexico, but would face challenging competition to Asian markets.

In addition to the shipping costs listed below, Alaska LNG would face upstream pipeline transport costs from Prudhoe Bay to Alaska's southern coast of approximately \$0.70 or more, plus compression fuel (conservative estimate based upon capital costs of \$2.4 billion for pipe, and throughput of 2.0 Bcf per day). This transport cost, added to shipping, would be subtracted from the netback price available to Alaska reserves, and does not include the capital associated with liquefaction facilities or ships.

### Full Costs Transportation Tariffs Pacific Basin (\$/mmbtu)

FROM:		Qatar	Malaysia	Indonesia	Indonesia	Australia	Russia	US	Bolivia	Venezuel a/ Trinidad
		RasGas	Bintulu	Tangguh	Arun	NWS	Sakhalin	Alaska	Arika	
<b>TO:</b>										
Japan	Sodegaura	\$1.01	\$0.50	\$0.42	\$0.58	\$0.61	\$0.25	\$0.62	\$1.35	\$2.02
Japan	Kagoshima	\$1.73	\$0.85	\$0.80	\$1.02	\$1.11	\$0.63	\$1.24	\$2.55	\$3.33
Korea	Inchon	\$0.96	\$0.45	\$0.42	\$0.53	\$0.60	\$0.28	\$0.72	\$1.46	\$1.96
Taiwan	Yung-An	\$0.83	\$0.32	\$0.32	\$0.40	\$0.47	\$0.35	\$0.80	\$1.52	\$1.82
China	Pearl River	\$0.81	\$0.32	\$0.36	\$0.38	\$0.49	\$0.39	\$0.84	\$1.57	\$1.80
India	Bombay	\$0.30	\$0.59	\$0.70	\$0.40	\$0.63	\$0.92	\$1.44	\$1.57	\$1.53
India	Ennore	\$0.43	\$0.45	\$0.56	\$0.26	\$0.52	\$0.78	\$1.28	\$1.54	\$1.48
Mexico	Rosarito	\$1.67	\$1.14	\$1.00	\$1.24	\$1.22	\$0.72	\$0.45	\$0.67	\$0.85

**Marginal Cost Transportation Tariffs  
Pacific Basin  
2006-2010  
(\$/mmbtu)**

		<b>FROM:</b>									
		Qatar RasGas	Malaysia Bintulu	Indonesia Tangguh	Indonesia Arun	Australia NWS	Russia Sakhalin	US Alaska	Bolivia Arika	Trinidad	
<b>TO:</b>											
<b>Japan</b>	Sodegaura	\$0.35	\$0.22	\$0.16	\$0.21	\$0.23	\$0.11	\$0.21	\$0.47	\$0.64	
<b>Japan</b>	Kagoshima	\$0.63	\$0.44	\$0.39	\$0.45	\$0.48	\$0.35	\$0.50	\$0.86	\$1.03	
<b>Korea</b>	Inchon	\$0.33	\$0.20	\$0.16	\$0.19	\$0.22	\$0.12	\$0.23	\$0.49	\$0.62	
<b>Taiwan</b>	Yung-An	\$0.29	\$0.16	\$0.13	\$0.15	\$0.18	\$0.14	\$0.26	\$0.51	\$0.57	
<b>China</b>	Pearl River	\$0.28	\$0.16	\$0.14	\$0.15	\$0.19	\$0.15	\$0.27	\$0.53	\$0.57	
<b>India</b>	Bombay	\$0.13	\$0.24	\$0.24	\$0.15	\$0.23	\$0.32	\$0.45	\$0.53	\$0.43	
<b>India</b>	Ennore	\$0.17	\$0.20	\$0.20	\$0.11	\$0.20	\$0.28	\$0.40	\$0.52	\$0.47	
<b>Mexico</b>	Rosarito	\$0.54	\$0.41	\$0.33	\$0.41	\$0.41	\$0.26	\$0.15	\$0.24	\$0.25	

**Transportation Distances  
Pacific Basin (miles)**

		<b>FROM:</b>									
		Qatar RasGas	Malaysia Bintulu	Indonesia Tangguh	Indonesia Arun	Australia NWS	Russia Sakhalin	US Alaska	Bolivia Arika	Trinidad	
<b>TO:</b>											
<b>Japan</b>	Sodegaura	6,637	2,498	2,286	3,461	3,623	952	3,386	8,983	13,585	
<b>Japan</b>	Kagoshima	6,125	1,986	1,984	2,949	3,289	1,168	3,996	9,579	13,098	
<b>Korea</b>	Inchon	6,302	2,204	2,361	3,123	3,610	1,251	4,079	9,771	13,276	
<b>Taiwan</b>	Yung-An	5,351	1,236	1,557	2,173	2,617	1,777	4,605	10,218	12,321	
<b>China</b>	Pearl River	5,159	1,170	1,855	1,980	2,726	2,095	4,922	10,558	12,184	
<b>India</b>	Bombay	1,313	3,212	4,413	2,132	3,775	5,971	8,799	10,550	8,506	
<b>India</b>	Ennore	2,340	2,180	3,382	1,100	2,949	4,939	7,767	10,358	9,963	
<b>Mexico</b>	Rosarito	11,489	7,334	6,635	8,311	8,111	4,481	2,278	4,122	4,007	

### **Question 9: What are the possibilities of a GTL project in conjunction with an Alaska Highway gas pipeline or with the current taps line?**

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Gas-to-liquids (GTL) technology is emerging as a viable alternative to LNG and long-distance pipelines as a means of monetizing remote gas resources. Although the technology is not new, in recent years there has been growing interest driven by progress by a number of companies in reducing costs for the GTL process. Other factors such as growing concerns about flaring of remote associated gas and the environmentally driven tightening of fuel specifications have contributed to growing interest in the commercial application of GTL. As a consequence, a number of players are showing clear signs of intending to proceed with the development of commercial GTL projects, and it is likely that at least one or two projects will be developed and become operational in 2005–06. In CERA's view, if crude prices average in a range of \$17 - \$20 per barrel for WTI, a significant commercial GTL industry with productive capacity by 2020 of up to 2 million barrels per day could emerge.

Despite this potential emergence of a viable, global GTL business, GTL is unlikely to be a favorable option for the development of Alaska North Slope gas. A GTL project based on the North Slope would be at a marked cost disadvantage to many other regions with large remote gas resources. As a result, it is unlikely that developers will proceed with development of large-scale commercial GTL projects based on North Slope gas.

Although the basic chemistry of F-T synthesis has been known for over 75 years, high costs relative to the oil value chain have prevented the widespread application of the technology to the monetization of remote gas resources. However, significant research and development programs have continued. Since the mid-1990s, signs have been accumulating that advances in technology and a move to larger size plants are resulting in significant reductions in cost. For example, Shell has reported a 60 percent reduction in the unit capital cost of its Shell Middle Distillate Synthesis (SMDS) process since 1987. Conoco recently announced plans to build a 400 bpd plant to demonstrate advances in its syngas and F-T synthesis technologies.

As a result, the cost of liquids produced from GTL is falling. Based on current technology, the cost of a barrel of GTL output has fallen to approximately \$17 – \$20 per barrel, based on:

- All-in capital costs of \$20,000 per barrel per day of GTL production capacity.
- Product yield of 1 barrel of GTL liquids per 8,500 Scf of feed gas.
- Operating costs of \$4.00 – \$5.00 per barrel.
- A feed gas cost of \$0.50 per MMBtu.

Prices for GTL products will be closely tied to the prices of the corresponding refined products — naphtha, jet fuel, and diesel fuel. GTL producers can expect to realize a price premium to reflect the quality of GTL products, but this premium will be limited to reflect the marginal operating cost of refinery processing required to meet the relevant constraining specification, such as diesel sulfur content. With costs as outlined above,

the GTL process is economically if feed gas is available into the GTL plant at \$0.50 – \$0.75 per MMBtu.

Looking at the track record of other technologies, it is likely that further cost reductions in GTL could occur if several large-scale GTL plants are built, based on the experience gained from the design, construction, and operation of these first plants. GTL economics will remain highly dependent on the margin between the feed gas price and global oil prices. If oil prices average \$12 - \$15 per barrel (real terms) for WTI, or if the feed gas price into the plant is above \$0.75 per MMBtu, GTL economics would be marginal. Hence under such a lower price environment, development of GTL plants would be limited and very slow unless significant further progress is made in reducing costs.

### ***The GTL Opportunity in Alaska***

Development of GTL projects based on the associated-gas reserves of the Prudhoe Bay field on the North Slope of Alaska have been under consideration for some time. However in CERA's view, GTL development on the North Slope is unlikely to be economically viable. The high capital, operating, and logistics costs associated with the location make other remote gas sites much more attractive candidates for GTL developments.

A number of factors have been cited supporting the development of GTL projects in Alaska, including:

- **Resource size.** The enormous gas reserves of the Prudhoe Bay field are more than sufficient to support multiple gas monetization options. Hence GTL can be considered in combination with the other options, including pipelines and LNG.
- **Existing infrastructure.** The TAPS oil pipeline has significant, and potentially growing, spare capacity. Hence no or very little investment would be required to transport output from a potential GTL plant on the North Slope to Valdez. GTL output could potentially extend the life of conventional crude oil production on the North Slope, if conventional production were to decline to the point that the minimum volume threshold for operation of TAPS was reached.
- **Market for clean fuels.** Diesel fuel specifications in the United States, and the State of California in particular, are among the tightest in the world, and are getting tighter. By 2007, on-road diesel fuel sold in the US will have to meet a 15 ppm sulfur specification. Valdez's relative proximity to the US West Coast could make this a potentially attractive market for Alaska GTL production.

However in CERA's view these benefits are insufficient to offset the factors working against the developments of GTL on the North Slope:

- **Plant capital and operating costs.** The harsh and remote arctic environment would significantly increase the cost of building, operating and maintaining a complex process facility such as a GTL plant on the North Slope, relative to many competing sites with remote gas resources. Given the importance of capital and operating costs to the overall economics of the GTL process, this would significantly penalize Alaska North Slope GTL projects versus competing projects.

- **Shipping costs.** The existing capacity in the TAPS system would obviate the need for investment in pipeline capacity to transport North Slope GTL production to tidewater. However the GTL project would presumably have to pay TAPS tolls. Further, the Jones Act would require the shipment of GTL products from Alaska to the US West Coast to take place in higher cost US-built, -flagged and -crewed vessels. The total logistics costs for a GTL plant on the North Slope would likely be least \$1 - \$2 per barrel higher than for most other sites being considered for GTL development.
- **Segregation capability in TAPS.** The high quality GTL products must be segregated from other, potentially contaminating hydrocarbon streams in order to achieve maximum potential value. If TAPS does not currently have the capability to provide such segregation, this would further penalize the economics of a North Slope GTL plant. This penalty would take the form of either higher costs required to pay for the capability to segregate, or lower netbacks caused by downgrading if GTL products are blended into the ANS stream.

**Question 10: If Alaska gas moves into the Canadian pipeline system in the next 7-10 years, will there be sufficient capacity in the Canadian pipeline system to deliver Alaska gas to American markets? If new "take away" capacity from Alberta is required to accommodate arctic gas, is there any reason to believe the toll charged to use that new capacity would be materially higher than the toll charged the already existing capacity?**

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Pipeline capacity from Alaska to Alberta *must* be accompanied by an equal amount of additional capacity from Alberta to markets in the US. Supply growth in Western Canada will not only meet Canadian demand growth but will fully utilize (and likely require some expansion) of the existing infra/structure before any arctic gas begins to flow.

Since all existing export pipelines out of Alberta will be fully utilized, an increase in current tolls is likely on the majority of the pipes. Timing is important since the levels of expandability do result in different levels of cost. Generally, FERC only allows expansion costs to be rolled in existing rates if the change is a very small increase. If an expansion would push existing tolls beyond that point, the expansion is given "incremental rates" attributable to that expansion. However, rather than assign the cost of expansions to any source of supply, the table below indicates the volume-weighted average cost of expansion to accommodate WCSB growth as well as up to 4 Bcfd of arctic gas. This average cost assumes L-48 demand growth will require additional supply both along the West Coast and in the Midwest, the natural markets for Canadian and arctic supply.

First level of expandability

Pipeline	Volume (mmcf/d)	Expansion (\$/mcf)
PGT	500	0.45 - 0.50
NBPL	300	0.45 - 0.50
TCPL	500	0.75 - 0.80
Alliance	1000	0.80 - 0.85
Subtotal	2,300	Average 0.67 - 0.70

Next level of expandability

To Midwest	1,500	0.90 - 1.00
To West Coast	2,100	0.70 - 0.80
Subtotal	3,600	Average 0.78 - 0.88
Total expansion	5,900	Average Toll 0.74 - 0.81
IntraAlberta Portion		0.20 - 0.25

Total Estimated Toll Arctic / Alberta terminus to Market: 0.94 - 1.06

The first level of expandability involves compression and in some instances looping (addition of pipe in areas of high pressure drop). Once this "cheaper" expansion is exhausted, more and more pipe has to be added until the system is at its maximum economic operation. At that point the alternatives are a new pipeline or "twinning" of an existing system. Twinning can be considered a total looping or the building of an additional line using the same right-of-way and existing infrastructure and as such will always be less expensive than a new greenfield pipeline. To arrive at the volumes required, it is likely that extensive looping and some twinning will be required.

This indicates that the tolls from Alberta to the Pacific Northwest and California will be higher than existing rates, but lower than tolls to the Midwest. The tolls to the Midwest will be higher than existing Northern Border Pipeline rates, but will be comparable with the current Alliance and TransCanada tariffs.

## **Question 11: Assuring local uses**

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### **Question 11, Part 1: In the development of a gasline project, how have other states/nations assured access to gas for local communities and value-added processing opportunities?**

This question would require a major study effort of comparative distribution franchise practices, and is generally beyond the scope of CERA's work.

The most obvious and recent example is mentioned earlier in this document and that is the experience in Nova Scotia. After winning the distribution rights in the province, Sempra has announced a dramatic reduction in the economic ability to provide local services.

### **Question 11, Part 2: How do we ensure sufficient capacity in the pipeline or ability to expand capacity to allow for future additional gas throughput, particularly for future in-state uses, without jeopardizing the economics of the project?**

If sufficient commercial interests exist within Alaska to support pipeline capacity dedicated to in-state deliveries, then experience in other markets indicates that those interests have proven willing to pay for such capacity. If not, then it is a matter of direct state subsidy. A bid ("open season") process usually establishes commercial interest in pipeline capacity. Similarly, the state could solicit interest in bids for distribution franchises. The potentially low market value of gas and moderate transmission costs could be favorable factors to the economics of distribution, with negative factors of terrain, permafrost and low population density adversely affecting the delivered cost.

Pipelines are usually designed with expandability in mind, but system design always involves a trade-off between initial costs (which may be minimized if more compression is used) and future expandability (which may be greater if less compression and larger pipe is used initially). The producers are the likely drivers of this decision. If there is significant potential for future growth in productive capacity, then producers are likely to ensure some expandability, especially in a project of this magnitude. If the initial cost burden is too high, then the willingness by producers to pay for future expandability may be lessened.

The state can support the economics of the project by paying a fair and objective rate for capacity to deliver within the state, and offering to help with the possible cost burden associated with ensuring future expandability to markets within the state. Again, while the state should not use long-haul capacity for in-state deliveries, nor should it pay for capacity costs beyond the Alaska delivery points.

## **Questions 12 and 13: Financing and ownership**

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**Question 12: How will the gasline most likely be financed? Can the state play a constructive role in the efforts to finance the pipeline project? Should the state seek to ensure that the pipeline be financed in some particular way?**

Your attorney in Washington DC, Robert Loeffler of Morrison and Foerster, called to ask for recommendations of investment bankers to deal with these questions. I referred him to two organizations:

- 1) Petrie Parkman in Houston – Bill Garner. This investment bank specializes in the energy industry, and specifically is probably the leading specialist in supply deals. As such, they should be quite competent to advise the state on the benefits or drawbacks of varying financial arrangements.
- 2) The Riverstone Group in New York. This group was formed by David Lucien from Goldman Sachs, Doug Mackenzie from both Morgan Stanley and Goldman Sachs, and includes Pierre Lapeyre, also from Goldman. David and Doug were energy and gas practice leaders within their organizations, and Pierre worked with gas industry clients as well.

These individuals and companies should be able to provide quality services and advice to the state.

**Question 13: Should the state be a part owner of an Alaska Highway gasline project? What economic advantages would there be if the state were to assume an ownership interest in a gasline?**

Benefit to the state from ownership in the pipeline would be limited. Ownership might include a small level of influence and information regarding the development process but even this is doubtful. Although we have not approached these producers directly with this issue, generally from most producers' and pipeline developers' perspective government participation and involvement would be a complicating factor that could impede and slow the process. Since there is no inherent benefit, CERA's recommendation is that Alaska avoid direct ownership interests in the pipeline. If such participation would be beneficial, it would be best undertaken at the request of the producers.

We hope that this memo supports those areas in which CERA is able to be of help, and those for which we will help with references. CERA stands ready as part of its relationship with the state of Alaska to provide presentations or conference calls relating CERA's LNG and supply multiclient studies to your specific issues, or in other areas which the state might deem helpful. We look forward to continuing our relationship, and hope to see you again soon.

Sincerely,

Edward M. Kelly  
Director of Research  
North American Natural Gas  
Cambridge Energy Research Associates

Ed Small  
Director, Canadian Energy  
Cambridge Energy Research Associates

Enclosure

## **Alaska Highway Natural Gas Policy Council** **COMMITTEE STRUCTURE**

***Council Mission: To promote an Alaska Highway Natural Gas Pipeline project to the lower 48 that also enables creation of a natural gas business in Alaska.***

### **Alaska Hire/Buy/Build** – Mike Navarre, chair

*Jerry Hood, Rhonda Boyles, Rosemarie Maher, Jake Adams, Peg Tileston*

- Use of the Alaska labor pool by contractors and subcontractors
- Use of Alaska businesses
- Training and readiness of Alaskans for jobs on a gas project
- Socio-economic impacts

### **State Pipeline Ownership and Tax Structure** – Bill Corbus, chair

*Dave Rose, Ron Duncan, Grace Schaible, Mike Navarre, Ed Rasmuson, Mike O'Connor, Ken Thompson*

- State promotion and facilitation of project financing – state ownership
- Evaluation of state tax structure

### **Federal/International Action** – Charlie Cole, chair

*Esther Wunnicke, Bob Penney, Jon Rubini, Jeff Feldman, George Wuerch*

- Federal permitting/access
- Federal agency lead
- Canadian permitting/access
- Other contractual considerations
- Domestic markets – competing sources/sharing of the market
- Canadian national and territorial relations

### **Access for in-state gas use and future opportunities** – Ken Thompson, chair

*Carl Marrs (vice chair), Rosemarie Maher, Rhonda Boyles, Al Adams, Brian Davies, Jim Jansen, Jerry Hood, Bob Penney, Jack Roderick, Lee Gorsuch, Jeff Feldman, George Ahmaogak*

- Supply/demand for in-state natural gas
- Best practices valuation/net-back pricing methodology to facilitate in-state gas use
- Ensuring fair and transparent access rules to natural gas for Alaskan customers
- Benefits of natural gas development to rural Alaska and to communities along the pipeline
- Future options over 50 years for projects utilizing: gas-to-liquids (GTL), liquefied natural gas (LNG), natural gas liquids (NGL), petrochemical feedstock, fertilizer, etc. for in-state use or for export to markets in Asia or the West Coast
- Promotion or attraction of investment for in-state distribution and value-added processing
- Assess costs and benefits of the State taking delivery of its royalty share vs. taking royalty payments; review other states' policies for best practices

### **Environmental Considerations** – Peg Tileston, chair

*Brian Davies, Esther Wunnicke, Lee Gorsuch, Grace Schaible*

- Environmental impacts and necessary protection measures
- Doing it right

Subject: Purvin & Gertz Report Entitled "Alaskan Gas Development Strategies"  
Date: Tue, 10 Apr 2001 16:46:42 -0800  
From: Jeff Lowenfels <jeffl@ypc.com>  
To: Highway Gas Policy Council Members

April 10, 2001

Dear Highway Gas Policy Council Member:

Attached is a seven-page paper prepared by Yukon Pacific Corporation in which we challenge and correct several core assumptions regarding the LNG alternative examined in the Purvin & Gertz report entitled "Alaskan Gas Development Strategies". This report was distributed to a number of paid subscribers and sponsors (including the State of Alaska, several legislators and many private companies) last year and has been cited publicly on a number of occasions following its release.

Since Yukon Pacific was not a subscriber (nor, incredibly, were we ever consulted by Purvin & Gertz in the course of their work on this report in connection with any of the unique characteristics of a North Slope-sourced LNG project which are the subject of our attached paper), we have only recently reviewed this document and had an opportunity to analyze it and compile these comments. This is extremely unfortunate because we believe that the report was relied on by the Governor and his staff to conclude that "My Way is the Highway." As you will see, had the true numbers been included, this might not have been the case.

I know you will find a few minutes to read the attachment to this email. After doing so, please feel free to contact me or my staff with any questions you may have. We are quite convinced that our numbers for OUR project are the most exact and correct available and should be used when analyzing the results of the Purvin & Gertz report.

We sincerely appreciate the time and effort you are devoting to this vital issue. In particular, I want to thank you for inviting me to speak to your group last week on behalf of YPC. I hope my remarks were useful to you and the essential work the Governor has asked you to do.

Sincerely,

Jeff Lowenfels,

President and CEO

Yukon Pacific Corporation

# CONFIDENTIAL

The following comments have been prepared by Yukon Pacific Corporation following an extensive review of a confidential report authored by Purvin & Gertz, Inc. (P&G) entitled "Alaskan Gas Development Strategies". The remarks offered and changes proposed below refer to numbers, assumptions and values in the Purvin & Gertz document that are confidential and are provided for the purposes of internal review of the report.

## Summary

This analysis shows that several important elements used in the P&G evaluation of the North Slope-sourced LNG project alternative should be changed to properly reflect the potential for a *much higher* netback value (over \$1.00 per million Btu, nearly 5 times greater than the \$.22 figure used) to Producers and the State of Alaska. These changes are discussed in detail below and involve incorrect assumptions in the P&G report relating to projected LNG prices in Japan, LNG plant operating costs, LNG plant capital recovery costs and pipeline cost of service. *Except for the issue of projected LNG prices in Asia, this occurred because of P&G's misapplication of "generic" LNG project design and cost factors in its analysis rather than employing the innovative design efficiencies and resulting cost savings benefits unique to the permitted TAGS LNG project.*

Among other gas commercialization alternatives analyzed in the report, P&G assesses the potential netback for a new, generic, world-scale LNG export project requiring an 800 mile natural gas pipeline from the North Slope to a production facility and marine terminal located on the south shore of Alaska. P&G reports the following values, again, for a generic LNG project (Figure VII-18 on page VII-23):

	\$/mmbtu
1.) CIF Japan price	3.34
2.) Marine transport	0.65
3.) LNG plant operating costs	0.40
4.) LNG plant capital recovery costs	0.93
5.) Pipeline cost of service	<u>1.14</u>
<b>Producer netback</b>	<b>0.22</b>

## A. LNG economic analysis

Using the above factors with "corrected" (and most definitely CORRECT) information produces considerably different and *far more positive* results for the Producer (and State) netback for the Alaska LNG project.

### 1.) CIF Japan price

P&G's projected prices for LNG appear to be low.

The \$3.34/mmbtu is the "lower tier price" per P&G. The table entitled "FORECAST DELIVERED LNG PRICE TO JAPAN, EXISTING CONTRACT INDEXATION (2000\$)" (page VII-10) shows the following (note: JCC is the abbreviation for "Japan Crude Cocktail"):

Year	2000	2005	2010	2015	2020	
JCC, \$/bbl	26.79	20.95	19.40	19.18	19.15	
LNG \$/mmbtu	3.82	3.37	3.32	3.31	3.30	
BTU parity \$/mmbtu	4.58	3.58	3.32	3.28	3.28	at 5.85 mmbtu/bbl

The JCC \$/bbl are lower than the crude oil forecast of the US Department of Energy, EIA published in their AEO 2001 report. Perhaps some further review of world oil price forecasts would be beneficial.

Data from the Sumitomo Corporation shows that LNG price exceeded JCC price (on a \$/mmbtu basis) from 1987 through the beginning of 1999. The P&G chart on page VII-10 shows that they analyzed LNG prices during the year of 1999 during which world energy prices increased dramatically. Their analysis thus reflects atypical conditions.

P&G correctly notes that LNG prices are generally indexed to oil price. However, only some of the contracts index immediately with changing oil prices. Those contracts with a delayed indexing would tend to slow the rate at which LNG prices would catch up with a change in oil price. P&G does not address this lag in LNG price indexing, thus one would expect the LNG price determined per their analysis for 1999 to be too low.

The above data shows that the \$3.34/mmbtu "lower tier price" used by P&G is actually closer to the oil btu parity price. Based upon P&G's oil price forecast, an LNG price more representative of current and historical LNG pricing would be \$3.72/mmbtu (112% of Btu parity \$3.32/mmbtu). P&G uses the \$3.34/mmbtu "lower tier price" as the base price for reporting the economics for an LNG project. The low sensitivity LNG price (pages VII-24 and VII-25) is 90% of their "lower tier price".

P&G (page VII-12) develops an "upper tier price" that they report in their report (page VII-13). The high sensitivity price (pages VII-24 and VII-25) is the average of the "lower" and "upper" tier price (\$3.61/mmbtu).

The following ranks the respective LNG prices in \$/mmbtu.

P&G low sensitivity price	\$3.00
P&G lower tier price	\$3.34
<b>P&amp;G economic report for LNG</b>	<b>\$3.34</b>
BTU parity with P&G oil price	\$3.34
P&G higher sensitivity price	\$3.61
<b>Est. LNG price historical per Sumitomo</b>	<b>\$3.74</b>
P&G upper tier price	\$3.89

Adjusting the P&G economic analysis to reflect the historical relationship between delivered LNG prices to Japan and JCC and using P&G value for JCC produces the following result:

	\$/mmbtu	change
CIF Japan price	3.72	+0.38
Marine transport	0.65	
LNG plant operating costs	0.40	
LNG plant capital recovery costs	0.93	
Pipeline cost of service	1.14	
Producer netback	0.60	+0.38

## 2.) Marine transport

P&G assumes use of 137,500 CM tankers at \$200 million each (page VII-20). P&G assumes one tanker per 1 MTA of LNG production. These assumptions are essentially the same as YPC.

## 3.) LNG plant operating costs

The P&G includes fuel in their plant operating costs. They give credit for colder ambient air in Alaska and reduce the fuel from 10% typical of an equatorial plant to 8% (Page VII-18). They did not go far enough however to reflect the benefits of high pressure low temperature feed to the plant. The following is a summary of fuel for various plants:

Typical equatorial	10-11%
P&G Alaska	8%
YPC with 2200 psi pipeline (Bechtel 1991)	6%
YPC with 2600 psi pipeline (KBR 2000)	4%

The YPC data is based upon heat and material balances provided by Air Products and Chemicals Inc. with minor engineering adjustments by Bechtel and Kellogg, Brown & Root. YPC's numbers are sound.

YPC designed the pipeline using our thermal-hydraulic simulation software and chose a high operating pressure that, for a number of reasons, minimized frost heave and thaw settlement concerns. Since we condition the gas on the North Slope there is no need to drop the pressure from the pipeline to liquefaction. Liquefaction efficiency and thus fuel vary with the inlet pressure to the plant. We took advantage of the higher pressure and optimized the LNG plant to improve the thermal efficiency.

I believe P&G used a 2200 psi pipeline design. They should reduce their fuel consumption to at least 6% in order to be consistent with their premises for the pipeline. YPC would use 4% fuel consistent with our design.

The premise used by virtually every party looking at a North Slope-sourced LNG project is that a single owner will purchase gas at the North Slope and sell LNG FOB Valdez. Incremental economics regarding fuel consumption are thus based upon North Slope price. Typically, operating costs for the project are reported as non-fuel values with fuel costs are determined as the difference in BTUs sold versus purchased.

P&G says that fuel is a "major" expense. We don't have line item details of their operating costs. Assuming that "major" translates to "more than half", let's assume that fuel is 60% of the P&G operating costs of \$0.40/mmbtu. Reducing the fuel from 8% to 6% would reduce the operating expense by \$0.06/mmbtu [ $\$0.40 \times 60\% \times (8-6)/8$ ].

Adjusting the P&G economic analysis to reflect 6% fuel produces the following result:

	\$/mmbtu	change
CIF Japan price	<b>3.72</b>	<b>+0.38</b>
Marine transport	0.65	<b>0.0</b>
LNG plant operating costs	<b>0.34</b>	<b>-0.06</b>
LNG plant capital recovery costs	0.93	
Pipeline cost of service	<u>1.14</u>	
Producer netback	<b>0.66</b>	<b>+0.44</b>

#### 4.) LNG plant capital recovery costs

In the year 2000, YPC developed capital costs for the LNG plant and marine terminal based upon our new high pressure design. The excavation and plot plan were developed for YPC by Michael Baker, Jr. The heat and material balances were developed by APCI. CBI provided a design and cost for the LNG tanks. Moffatt & Nichol developed the design and cost estimate for all marine facilities. KBR developed the design of the liquefaction plant (based upon the APCI balances), utilities and other attendant facilities based upon their database of costs for other base load LNG facilities. KBR rolled all of the costs together in a turnkey estimate of a 2 train (9.2 MTA), 3 train (13.8 MTA) and 4 train (18.4 MTA) facility. The KBR estimate includes contingency for a 75% probability of cost under run. YPC added costs for owner management of the project.

The cost of a YPC's 9.2 MTA and 13.8 MTA liquefaction plant and marine terminal scenarios in US2000\$ are \$2.3 and \$3.1 billion respectively. P&G's estimate for a 14 MTA facility is \$5.3 billion.

YPC estimate for a 14 MTA facility is 42% less than P&G's estimate. Again it must be noted that P&G's design is based upon a fuel consumption twice that of YPC's (8% vs. 4%). One would expect the P&G design to cost more since there is twice as much fuel consuming equipment.

The following reflects a somewhat arbitrary adjustment of the P&G capital costs for the LNG plant referenced to YPC's costs using a ratio of 6% fuel to 4% fuel ( $42\% \times (1-0.33) = 28\%$  less):

	\$/mmbtu	change
CIF Japan price	<b>3.72</b>	<b>+0.38</b>
Marine transport	0.65	<b>0.0</b>
LNG plant operating costs	<b>0.34</b>	<b>-0.06</b>
LNG plant capital recovery costs	<b>0.67</b>	<b>-0.26</b>
Pipeline cost of service	<u>1.14</u>	
Producer netback	<b>0.92</b>	<b>+0.70</b>

#### 5.) Pipeline cost of service

On page V-21, the following COS in \$/mmbtu are reported for a pipeline from Prudhoe to the south shore (Valdez):

BSCFD	COS
0.8	0.8 1.27
1.0	1.0 1.14
1.6	1.6 0.84
2.0	2.0 0.76
3.0	3.0 0.72

The pipeline cost of service reported in the economics is for 1.0 BSCFD, however, the LNG plant COS reported is for 2.0 BSCFD (approximately 14 MTA). P&G notes that the flow ramps up from 1 to 2 BSCFD. Using the COS for a 1 BSCFD scenario for a project ramping to 2 BSCFD is very conservative.

P&G does not have a pipeline COS for a ramp-up scenario. Perhaps some value between the COS for a 1 and 2 BSCFD scenario should be used in the economics. The following reflect the P&G economics adjusted (somewhat arbitrarily) for a pipeline COS ramped from 1 to 2 BSCFD [ $0.95 = (1.14 + 0.76)/2$ ]:

	\$/mmbtu	change
CIF Japan price	3.72	+0.38
Marine transport	0.65	0.0
LNG plant operating costs	0.34	-0.06
LNG plant capital recovery costs	0.67	-0.26
Pipeline cost of service	<u>0.95</u>	<u>-0.19</u>
Producer netback	1.11	+0.89

#### 6.) Alaska income tax

P&G assumes a 9.4% income tax rate for Alaska. The oil companies use worldwide accounting that reduces their effective Alaska income tax rate to about 3.6% in 1999. Assuming international oil company ownership of all or part of the facilities, the tax of an Alaskan project appears overstated by 5.8%. Obviously, this would not apply to a Canadian project.

## B. Summary on economics for the LNG alternative

P&G's approach was to apply a consistent set of criteria to various gas project options to generate comparative economics. It appears that their economic comparison was done to assess the relative merits of the project as opposed to endorsing the viability of any one project.

The above analysis shows that combining the P&G analytical approach with YPC cost estimates and view of market pricing would result in a LNG project netback price in excess of \$1.00/mmbtu. ***This netback is higher than any of the pipeline options to the lower 48 states.*** This value exceeds the value YPC considers as a probable wellhead value and is somewhat suspect.

The assumptions used by P&G differ significantly from those used by YPC for the TAGS project. It is possible for people to have different opinions. P&G should consider reviewing their assumptions regarding LNG for the following reasons:

- 1 – Their capital cost estimate for the LNG plant and marine terminal is significantly larger than estimates produced by the licensor of the process technology used in over 80% of the worldwide base load capacity (APCI) in conjunction with an EPC firm that designs and builds LNG plants (KBR).
- 2 – P&G did not complete a cost of service for a pipeline ramping up to a design volume of 2 BSCFD (14 MTA). Use of the COS for a 1 BSCFD is a very conservative assumption. Any gas project from Alaska, whether overland or LNG, will have to ramp-up to the market entry volume within 2 years. P&G assumes quick or instantaneous ramp-up of the overland pipeline options (i.e., 4 BSCFD scenarios). On page II-1 P&G acknowledges that unless the LNG project is "piggy-backed" with another project, the LNG project must be massive in order to reduce the unit gas transportation costs. Uniform application of P&G's premises does not support use of a COS for a 1 BSCFD line for the LNG option.
- 3 – P&G's use of an LNG price at BTU parity with oil is not supported by historical data regarding LNG imported to Japan. Recognizing that people can differ regarding speculating about the future, it still seems reasonable to set the base economics at the historical condition (i.e., 112% of BTU parity with oil) then complete a sensitivity analyses above and below the base. P&G's price in the higher sensitivity case is less than the historical base condition experienced in the LNG market. It seems overly pessimistic to run all economics below the historical average condition especially since worldwide gas demand appears to be dramatically increasing (i.e., low cost of gas turbine combined cycle plants, quick installation time of these plants and environmental benefits regarding energy produced per molecule of CO<sub>2</sub> released).

### **C. Piggy-backing LNG with GTL**

P&G recently issued work regarding piggy-backing an LNG project with a GTL project located on the south shore of Alaska. Unfortunately, this scenario is not included in their report of Alaskan gas pipeline options. Piggy-backing LNG with GTL will not only reduce the unit transportation costs, but will increase the throughput per unit of installed capital for the LNG. The liquefaction plant can be designed for an extended end flash with the flash gas going to the feed of the GTL plant. This will reduce the specific horsepower (Hp per unit of LNG produced) and increase the efficiency of use of capital expenditure.

### **D. Asia Pacific LNG Supply and Demand**

P&G shows that there is sufficient incremental demand for a 14 MTA LNG project from Alaska. However, the P&G values for incremental demand are less than those of YPC, Standard & Poors DRI, and Tokyo Gas.

# **Our Gas, Our Future**



Dear Gas Policy Council Member:

April 3, 2001

We appreciate your willingness to devote your time and energy to the issue of our huge North Slope gas deposits. You have chosen well: This is one of the most important issues Alaskans will ever confront.

As we see it, your primary challenge is to decide which is the best option for Alaska's gas. Here, our State Constitution is helpful: "Alaska's resources must be utilized, developed, and conserved for the maximum benefit of Alaska's people." (Article VIII, Sec. 2.) Fortunately, there also seems to be a consensus on the evaluation criteria: revenues for Alaska, gas for Alaskans, and jobs for Alaskans. More good news: There's probably no need to make a tradeoff between maximizing one of these outcomes at the expense of another.

Our Gas, Our Future thought the attached analysis detailing impediments to overland pipelines might prove of interest. Since the attached document was completed, several announcements have made piping gas to the U.S. all the more unlikely: Phillips and Chevron intend to put a combined 9 million tons of Australian LNG into California. BP intends to liquefy Egyptian natural gas, possibly for export to the U.S. East Coast. Then there is word of a major new gas find in Wyoming. Yesterday, BP announced plans to build three LNG import terminals in the U.S. and Shell announced plans to put Asian LNG (possibly from Sakhalin, which they are jointly developing with Exxon) into California and Western Mexico. These are our markets! In other words, the U.S. market looks more and more like a box canyon where hopes for a gas project will die a long and agonizing death.

The Governor asked you to complete your work by November. These recent announcements suggest that November may be too late; today's markets evaporate tomorrow. This is as true in Asia, where some 9 projects are vying for the market, as it is in the U.S. And this "you snooze, you lose" situation is precisely why the Council must unshackle itself from constraints encoded in its name and determine what's best for Alaska, post-haste. Fortunately, this is well-trod ground. For starters, we'd recommend Backbone's January 2001 report, "Alaska's Gas, Alaska's Future."

Should you have any questions or comments, please do not hesitate to contact us. Our Gas, Our Future stands ready to assist the Gas Policy Council in its deliberations in any way we can, because our gas is our future.

Sincerely,

Scott R. Heyworth, Director

# **Impediments to an ALCAN Gas Pipeline**

## **I. Alaskan Issues**

Alaska's Constitution requires Alaska's resources to be developed for the maximum benefit of Alaska's people. In the case of North Slope natural gas, this means developing it in such a way that maximizes revenues for the state and Permanent Fund, that makes gas available to the maximum number of Alaskans, and provides the maximum number of jobs for Alaskans. The group Backbone's recent study strongly suggests that the LNG export option meets all three of these criterion, while the Alcan and over-the-top proposals clearly do not. Instate gas use is especially important, given Cook Inlet's impending shortage. According to a report by ISER, UAA's Institute of Social and Economic Research, absent a new source of inexpensive clean burning natural gas soon, Southcentral Alaska's economy will be crippled.

North Slope natural gas is Alaska's last, big, untapped available hydrocarbon asset. Delivered to Japan or the lower 48, our North Slope gas is worth \$100-200 billion. Most of that value will be derived from transportation. Therefore, if Alaska wants to maximize revenue from the gas, it will have to own the transportation system. This will be difficult or impossible with a project running through Canada. State ownership is only an option with an all Alaskan project like the LNG project. State ownership could pay huge dividends to Alaskans, the gas owners, because public ownership enables the LNG project to avoid federal corporate income taxes. This tax holiday could save \$1Billion per year, money that could help fuel state government and the Permanent Fund throughout the 21<sup>st</sup> century.

## **II. Producer Issues**

The motives of the producers and their commitment to marketing North Slope gas are questionable. One would assume that if the producers were really serious about an Alcan project, they'd work closely with the existing permit holder, Foothills. Instead the producers ignore Foothills, and worse, threaten the company with bankruptcy. The producers announced a \$75 million gas project study that sounds impressive but may be little more than a public relations exercise. This was the case with their similarly ballyhooed and priced LNG options study begun with much fanfare in 1998 and never finished.

Many observers believe that the producers will gin up figures showing huge cost savings for the North Slope offshore option over the Alcan. The thinking is that the producers will then use these figures in an attempt to extract fiscal concessions from the state and U.S. and Canadian governments. Is this just paranoia? No, it's standard operating procedure; and the companies have suggested that this is their plan.

Though largely unknown until recently, it is now common knowledge the 1991 Prudhoe Bay Issues Resolution between the units leaseholders (primarily Arco, BP, and Exxon) essentially prohibited gas sales prior to 2005. The impediments included a trigger mechanism whereby a gas sale would allow BP to call in billions of dollars of paper debt from Arco and Exxon for gas borrowed for infield use (fuel and enhanced oil recovery). Also the 1991 agreement guaranteed BP's right to veto gas sales prior to 2005. Finally, a gas sale would trigger a reallocation of operating costs at Prudhoe Bay directly onto Arco and Exxon, the largest gas owners, precisely when their capital costs had just gone up.

According to the Knowles Administration, the unitization of Prudhoe Bay aligned oil and gas ownership and eliminated impediments to gas sales. Unfortunately, these agreements have not been

finalized and are not yet public. So, there may well be institutional impediments to gas sales. Indeed, some observers believe Phillips Petroleum's repeated referrals to gas sales in the year 2007 suggest strongly that the new agreement establishes new impediments.

So what drives the producers' so-called study? Greed and fear. As for the greed,... Gas handling facilities at Prudhoe Bay are currently at capacity, therefore limiting oil production. The producers would like to remove this limitation, but investing in more gas handling capacity for a rapidly declining field makes no economic sense. As for the fear,... A bigger driving force behind the producer's theoretical enthusiasm for gas is the increasingly chilly political climate in Alaska. Alaskans and their elected representatives are tired of being manipulated and short-changed by the oil companies. Recent evidence of this falling-out is everywhere. It includes talk of:

- Eliminating the ELF tax
- Establishing a reserves tax on gas to provide the companies with an incentive to start marketing the gas; House Bill 190 introduced March 19 by Rep. Whitaker R-Fairbanks.
- Canceling of gas leases for non-performance, and
- State ownership of the gas transportation system.

As if the above weren't worry enough, the producers are struggling to keep Alaskan gas out of the Asian market until they have placed their Russian and Indonesian gas there first. With lower 48 gas prices at an all-time high and dissatisfaction in Alaska growing by leaps and bounds, the producers know they have to look really, really, really, really serious about marketing Alaska's gas or there nearly free ride will end abruptly. All evidence suggests they may be right.

Still more revealing is the recent announcement by Phillips that while saying for years that there is no market for LNG gas from Alaska (a distance of 2000 miles to our West Coast) Phillips is entering an agreement with El Paso Gas to ship 5 million tons per year to our West Coast from their holdings in Australia (a distance of 7,000 miles!). If Alaska had a 5 million ton contract with El Paso to our own West Coast and a 4 million ton contract with any Asian country, that total of 9 million tons per year immediately makes an LNG project to Tidewater in Valdez **viable immediately.**

### **III. Practical, Technical, and Legal Impediments**

There are other impediments to an Alcan project, starting with the size necessary to make it economic. U.S. and Canadian laws and treaty specify a maximum daily volume of 2.5 Bcf. Current calculations suggest, however, that, in order to be economic, the Alcan project must move at least 4.0 Bcf of natural gas per day. If true, this would dictate raising the allowable daily volume to at least 4.0 Bcf/day. While simple from a design point of view, these changes will be extremely difficult to bring off politically.

To begin to understand the political obstacles, one needs to recognize that 4.0 Bcf/day is a huge volume of gas, roughly equivalent to 20% of the current lower 48 U.S. demand. Even if it were economical to build the pipelines necessary to move this gas to the U.S. markets, the huge volume of new supply would depress the cost of natural gas in the U.S. But there is a practical problem as well: 4.0 Bcf/day exhausts proven North Slope gas reserves in 24 years. If the producers were allowed to ship the 6.0 Bcf per day that they'd like because the economics are better, they would exhaust proven North Slope reserves in a mere 18 years.

### **IV. Canadian Issues**

Assuming that the supply and cost obstacles could be overcome, the Alcan gas line faces other obstacles as it moves south. The Southern part of the Alcan system, a y-line from Caroline, Alberta

west to California and east to Chicago has long since been built and is filled with Canadian gas. Existing U.S. Canada treaties provide that Alaska gas has preference over Canadian gas in the pre-build. It's unlikely, however, that Canadian gas producers and their elected champions will voluntarily remove their Canadian gas from the line--as required by law--so that Alaskan gas can displace them from the market place. Alcan project advocates argue that the newly completed Alliance pipeline has 2 Bcf of excess capacity. That may be true today, but it almost certainly won't be true in 18 to 24 months when a slug of new Canadian gas starts moving to market.

This is where economic and political obstacles combine. The 4.0 Bcf would displace more than 80% of the combined increment of new Canadian and new lower 48 gas expected to move into the market in the next ten years. Self-interest will force Canadian and Lower 48 gas producers and their elected representatives to block any efforts to change existing Canadian and U.S. law and treaties. Meanwhile, a huge new field (estimated reserves of 50-100TCF, roughly the size of total estimated North Slope reserves) is expected to start moving some 3.0 BCF flow into the U.S. Northeast in the next three to four years, several years at the very least before an Alcan project could be built.

In this regard, it's worth noting that the last time Alaska tried to move its gas down the Alcan, Canadian producers helped kill the project by lowering their prices. Furthermore, supplies closer to market (lower 48, Nova Scotia, Alberta, and even the Mackenzie R. fields) will always be cheaper to place in the market than gas from Alaska's North Slope because transportation costs will always be lower. In other words, gas more proximal to lower '48 markets will always be able to undersell gas from Alaska's North Slope.

#### **V. Other Lower 48 issues**

New gas from the lower 48 and more proximal areas of Canada and Mexico will soften the U.S. domestic market, causing prices to plunge. In the lower 48, natural gas is a commodity, traded on the spot market, with short-term contracts. This contrasts with the situation in Japan, which has no indigenous hydrocarbons and secures its energy future with long-term contracts, running 20 to 30 years. The lack of long-term contracts in the U.S. market makes the \$10-12 billion required for a pipeline to Caroline Alberta--to say nothing of an additional 1500 miles to a market--a risky investment. The investment becomes even riskier given that the U.S. government expects the current Canadian and U.S. drilling frenzy to satisfy demand in the lower 48 for the next 20 years. Current federal supply estimates do not even include the large amounts of new gas available from the Gulf of Mexico.

#### **VI. Conclusion**

Given all of the above, it's not surprising that the producers and Alaska have not built a gas pipeline in the last 25 years. Fortunately, Alaska appears to have another better option: the all-purpose, all-Alaskan, LNG export project. **The question before the Gas Policy Council is: Which option is best for Alaska? To answer that question, the Council must thoroughly and fairly examine all the options.**

Scott Heyworth

**Alaska Highway Natural Gas Policy Council  
Workshop II Agenda**

**Thursday, April 5, 2001  
Anchorage Sheraton Hotel – 10:00 a.m. to 5:30 p.m.**

- I.** Call to order/opening remarks, 10:00–10:30
- II.** Presentation from Alaska Gasline Port Authority, 10:30-11:15
- III.** Presentation from Foothills Pipe Lines Ltd., 11:15-12:00
- IV.** Lunch break, 12:00 –12:30
- V.** Presentation from LNG Sponsor Group, 12:30-1:15
- VI.** Presentation from Yukon Pacific Corporation, 1:15-2:00
- VII.** Council Business, 2:00-2:30
- VIII.** Subcommittee Session I, 2:45-4:00
  - A. State's Royalty Share – Bill Corbus, chair
  - B. Access to the gas/In-state gas consumption– Ken Thompson, chair
  - C. Linking other future opportunities/markets – Carl Marrs, chair
- IX.** Subcommittee Session II, 4:15-5:30
  - A. Alaska Hire/Buy/Build – Mike Navarre, chair
  - B. Federal/International Action – Charlie Cole, chair
  - C. Environmental Considerations – Peg Tileston, chair

**Memo To: Environment Committee Gasline Policy Council Esther Wunnicke, Grace Schaible, Lee Gorsuch, Brian Davies, Bill Britt, Michele Brown and Frank Rue**  
**CC: Jim Sampson, Frank Brown, Ken Freeman**  
**Date: April 4, 2001**  
**RE: Thoughts in preparation for the committee meeting tomorrow, April 5 from 4:30 -5:30 pm**

Thank you for agreeing to serve on the Environment Committee. The ideas presented in this memo are preliminary and their purpose is to stimulate your thinking on what we should do and how we should go about doing it. I hope they will "kick start" our discussion tomorrow so that we can at least develop an outline for our work.

#### Scope of work

Identify and evaluate all possible environmental aspects of natural gas commercialization, including upstream (before gas enters pipeline); pipeline; and downstream (after gas leaves pipeline) activities; prior to, during and after construction. Also identify and evaluated environmental advantages and disadvantages of the use of natural gas within Alaska.

Produce by October 1 a committee report for inclusion in the Council's report. Please be thinking about the form the committee's report should take.

#### Process

Collect and disseminate information among committee members. Individually, as a committee, or as subcommittees, meet with individuals and organizations that have information and concerns about environmental aspects of various natural gas proposals.

I hope we can function by consensus – working through any difference of opinions to present a final report that is unified. If that is not possible, then a majority/minority position would be appropriate.

It has been suggested that a co-chairman of the Council and a member of each committee attend the public hearings that are scheduled. Please be thinking about which hearing(s) that you might be able to attend.

#### Questions

What have we learned for permitting, construction and operation of other pipeline projects?

What type of oversight entity is appropriate? Joint Fish & Wildlife Team (JFWF)? Other?

Does DEC, F&G and DNR have adequate personnel to respond to environmental permit requests and concerns? Can the state compete in the job market?

Areas of environmental considerations (starter list – please add your thoughts)

#### Hydrology

Ground & surface water use

Flow reductions

Surface drainage pattern changes

Wetlands disruptions, impairment and loss

Stream crossings including affect of "cold pipe" crossings in non-permafrost areas

Water quality

Air quality

Erosion

Vegetation changes

Oil & hazardous substance spills

Gravel sources

Noise

Impact of changing from natural gas to coal in Anchorage bowl

Impact of changing from diesel to natural gas in Fairbanks and other locations in Interior Alaska

Effect on habitat

Fish, wildlife and avia-fauna disturbance/displacement

I look forward to our meeting. I hope Michele and Frank can join via teleconference -- Ken Freeman said teleconferencing will be available. Grace will you be anyplace near a phone? I will check with Ken to find out if you call in through a conference operator or if we call you.

If you have any questions or concerns about any of this please contact me.

Peg Tileston

907-561-0540; 907-563-2747 FAX

pegt@alaska.net

## **Alaska Highway Natural Gas Policy Council** **COMMITTEE STRUCTURE**

***The Alaska Highway Natural Gas Policy Council's Mission:***

***To promote an Alaska Highway Natural Gas Pipeline project to the lower 48 that also enables creation of a natural gas business in Alaska.***

**Alaska Hire/Buy/Build** – Mike Navarre, chair

*Jerry Hood, Rhonda Boyles, Rosemarie Maher, Jake Adams, Peg Tileston*

- Use of the Alaska labor pool by contractors and subcontractors
- Use of Alaska businesses
- Training and readiness of Alaskans for jobs on a gas project
- Socio-economic impacts

**State's Royalty Share** – Bill Corbus, chair

*Dave Rose, Ron Duncan, Grace Schaible, Mike Navarre, Ed Rasmuson, Mike O'Connor, Ken Thompson*

- Best uses of the state's royalty share: in-kind vs. in-value
- Ensure fair return to the state
- Costs and benefits of the state taking delivery of royalty share
- State promotion and facilitation of project financing – state ownership
- Review other states policies for best practices

**Federal/International Action** – Charlie Cole, chair

*Esther Wunnicke, Bob Penney, Jon Rubini, Jeff Feldman, George Wuerch*

- Federal permitting/access
- Federal agency lead
- Canadian permitting/access
- Other contractual considerations
- Domestic markets – Competing sources/sharing of the market
- Canadian national and territorial relations

**Access to the gas/In-state gas consumption**– Ken Thompson, chair

*Rosemarie Maher, Rhonda Boyles, Al Adams, Brian Davies, Jim Jansen, Jerry Hood, Bob Penney*

- Demand for in-state natural gas
- Promotion or attraction of investment for in-state distribution and value-added processing
- Best practices valuation/net-back pricing methodology
- Ensuring access to natural gas for local communities
- Benefits of natural gas development to rural Alaska

**Linking other future opportunities/markets: GTL, LNG, NGL** – Carl Marrs, chair

*Jack Roderick, Lee Gorsuch, Jeff Feldman, George Ahmaogak, Ken Thompson*

- Options for projects utilizing gas-to-liquids and liquid natural gas
- Best use of natural gas liquids
- Asian/West Coast markets
- Allowing for expanded uses

**Environmental Considerations**– Peg Tileston, chair

*Brian Davies, Esther Wunnicke, Lee Gorsuch, Grace Schaible*

- Environmental impacts and necessary protection measures
- Doing it right

Memo To: Environment Committee Gasline Policy Council Esther Wunnicke, Grace Schaible, Lee Gorsuch, Brian Davies, Bill Britt, Michele Brown and Frank Rue  
CC: Jim Sampson, Frank Brown, Ken Freeman  
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Peg Tileston

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## Administrative Order No. 188

I, Tony Knowles, Governor of the State of Alaska, under the authority of art. III, secs. 1 and 24 of the Alaska Constitution, establish the Governor's Alaska Highway Natural Gas Policy Council (council).

### Purpose

1. Alaska North Slope gas development and transportation to market is of vital public interest. It is in the best interest of the people of Alaska that a North Slope natural gas commercialization project advance, to the maximum extent allowed by law, Alaska hire and use of Alaska businesses; Alaskan access to gas; and a fair share of revenues for Alaskans. This project should improve the standard of living for Alaskans by providing feedstock for new industries, community access to gas, and gas for future commercialization projects that may become feasible as market conditions improve. It is essential that Alaskans have a voice in determining how the state will achieve these goals.
2. As Governor, I join the many Alaskans in believing that the only viable and environmentally responsible project is a natural gas pipeline from Prudhoe Bay to Fairbanks, and then along the Alaska Highway through the Yukon Territory and Alberta to connect with distribution systems in America. This route was approved by Congress in 1977 and is the subject of an international treaty with Canada.
3. The purpose of the council is to engage Alaskans representing a broad spectrum of Alaska interests, experience, and geography to advise the Governor and the Alaska Highway Gas Pipeline Cabinet in determining how the state can best promote the Alaska Highway North Slope natural gas pipeline project and maximize benefits for Alaskans.

### Duties

1. The council shall hold statewide meetings to obtain the public's views on how the state can best promote a gas commercialization project and maximize benefits for Alaskans. During the meetings, the council shall present a summary of project options and general topics for discussion.
2. Before the statewide meetings, the council shall meet to plan its work schedule and prepare the presentation for the meetings.

3. No later than November 30, 2001, the council shall present a summary of public comments, consensus recommendations, and other information gathered to the Governor, the Alaska Highway Gas Pipeline Cabinet, and the public.

4. The council shall deliberate and make recommendations on topics related to natural gas commercialization, including

a. the benefits of natural gas development to Alaska communities, including those located in rural areas of Alaska;

b. the best uses of the state's royalty share of the gas and promotion or attraction of investment for in-state and value-added processing;

c. the costs and benefits of the state taking delivery of its royalty share of the gas in Alaska versus allowing a project developer to include the gas in its delivery flow to the Lower 48 states;

d. options for projects utilizing gas-to-liquids, liquified natural gas, and natural gas liquids;

e. demand for in-state natural gas consumption and its effects on a gas project;

f. environmental impacts and necessary protection measures;

g. training and readiness of Alaskans for jobs on a gas project, use of the Alaska labor pool by contractors and subcontractors, and use of Alaska businesses; and

h. state promotion and facilitation of project financing, including potential ownership by the state of some or all of a project.

#### **Membership and General Provisions**

The council shall be comprised of Alaskans representing a diversity of interests, experience, and geography and appointed by the Governor to serve at the pleasure of the Governor. Members of the Alaska Highway Gas Pipeline Cabinet shall serve as non-voting, ex-officio members of the council.

The Office of the Governor and other state agencies shall provide professional and administrative staff assistance to support the activities of the council. The Department of Law shall provide legal assistance to the council.

To reduce costs, the council shall use teleconferencing or other electronic means to the extent practicable in order to gain the widest public participation at minimum cost.

The council shall establish procedures for voting and meetings. Council members who are not state employees serve without compensation and are entitled to per diem and travel expenses in the same manner permitted for members of other state boards and commissions. Per diem and travel expenses for members of the council who are appointed as a member of a state agency are the responsibility of that state agency. The Governor shall designate two members of the council as co-chairs. Meetings of the council shall be conducted and notices of such meetings provided in accordance with AS 44.62.310 (Open Meetings Law).

#### Amendments and Revocations

This Order amends Administrative Order No. 187 to change the name of the Gas Pipelines Cabinet to the Alaska Highway Gas Pipeline Cabinet.

This Order revokes Administrative Order 152.

This Order takes effect immediately.

Dated at Anchorage, Alaska, this 24th day of January, 2001.

State of Alaska  
**Office of the Governor**

**Tony Knowles**  
Governor  
P.O. Box 110001  
Juneau, Alaska 99811-0001  
**NEWS RELEASE**



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FOR IMMEDIATE RELEASE: January 8, 2001

01-006

**ALASKA HIGHWAY GASLINE TOPS KNOWLES' SESSION AGENDA**  
***Legislation, Administrative Order, Budget Request to Jump Start Gasline Project***

Continuing his commitment to push development of an Alaska natural gas pipeline, Gov. Tony Knowles welcomed the opening of the 22<sup>nd</sup> Legislature today with legislation to facilitate development of a natural gas pipeline and an Administrative Order establishing a streamlined, one-stop state structure for gasline permitting and oversight. Saying "my way IS the highway," Knowles is also seeking \$4 million to jump start construction of a pipeline that follows the Alaska Highway by beginning work on needed permits and rights-of-way.

"Alaska's natural gas can be the foundation of a 21<sup>st</sup> century economy of high tech resource development, high tech manufacturing, and new business growth and quality of life based on affordable clean energy," Knowles said. "With known and estimated reserves of up to 100 trillion cubic feet, natural gas can fuel our economy for the next 50 to 70 years, but to start this mammoth undertaking, we need a single point of contact.

"The Administrative Order that I signed today creates a natural gas policy cabinet and a State Pipeline Coordinator to coordinate state permits, authorizations, and oversee construction of a pipeline to transport natural gas from the Alaska North Slope to market," Knowles said. "Our objective is to implement the 'one-stop shopping' approach to maximize efficiency in processing required approvals and permits and optimize state pipeline expertise and performance."

In addition to creating the pipeline coordinators office, Knowles' order establishes a natural gas policy cabinet, which includes the commissioners of each state agency involved the development of a gasline project. This includes the Departments of Natural Resources, Environmental Conservation, Fish and Game, Revenue, Transportation and Public Facilities, Labor and Workforce Development, and Community and Economic Development, as well as the director of the Division of Governmental Coordination, the director of the Governor's office in Washington D.C., and the Attorney General.

Under the order, each agency involved in pipeline permitting and authorization will appoint a liaison officer to be the pipeline coordinator's office to represent the agency in matters relating to permitting, authorization, and oversight of the project.

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Liaison officers will process gasline permits and authorizations as required by their agency; assist as necessary with authorizations by other agencies; manage and perform work necessary to oversee construction of a gasline; and provide other necessary assistance to the coordinator's office in their areas of expertise.

"The order establishes a fully integrated state organization that utilizes existing government structure and processes to the maximum extent possible, minimizes impacts to existing agency functions, and promotes internal alignment of state agencies," Knowles added. The order is for administrative purposes only and does not modify the statutory and regulatory authorities of designated agencies. The Pipeline Coordinator will submit periodic progress reports to the governor and the Gas Pipeline Cabinet that summarize goals and objectives and accomplishments against those goals and objectives.

Knowles also introduced legislation today that amends the "Stranded Gas" legislation that was passed in 1998 to facilitate natural gas commercialization to include an Alaska Highway natural gas pipeline or a gas-to-liquids (GTL) project. The earlier bill allowed the state to negotiate the fiscal terms of a gasline including a contract for payments in lieu of taxes, but specifically applied to a liquefied natural gas project. The most promising market for Alaska gas today is through a pipeline to the midwestern states. Other companies, meanwhile, are exploring new GTL technology. Knowles' bill would expand the provisions in the stranded gas bill to any viable project.

Knowles' announcements today are his latest steps to facilitate development of a pipeline to carry Alaska's 36 trillion cubic feet of known gas reserves to market. Since taking office in 1994, Knowles has brought in experts to review the state's position in the world gas market and analyze steps the state could take to improve the economics of gas development. Knowles touted Alaska gas during trade missions to Japan, Korea, and China, and as the nation's gas supply dwindled and prices rose sharply, he helped organize a summit in Ohio to explore domestic markets for Alaska gas.

Dedicating the remainder of his term to starting work on a gas project, Knowles established the state's principles for development, saying it must provide jobs for Alaskans, use Alaska businesses, and allow in-state access to the gas. In November, Knowles announced his preference of a pipeline route that follows the Alaska Highway, saying use of this established transportation corridor would be the fastest and cheapest way to bring Alaska gas to market. Just last week, Knowles announced the hiring of former Resource Development Council director Ken Freeman as his new business liaison, with special duties related to the gasline project.

"Once again, Alaska finds itself well positioned to meet America's growing thirst for energy," Knowles said. "Our challenge is to advance the interests of Alaskans as we work with industry and the marketplace. This legislation and creation of the State Pipeline Coordinator's Office to lead gasline development are important and necessary steps to facilitate this development for Alaska's future."

State of Alaska  
**Office of the Governor**

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**NEWS RELEASE**



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FOR IMMEDIATE RELEASE: January 26, 2001

01-027

**KNOWLES ANNOUNCES CO-CHAIRS OF NEW  
ALASKA HIGHWAY NATURAL GAS POLICY COUNCIL**  
***Prominent Alaskans to Help State Direction on Gas Development;  
International Energy Firm to Advise State and Alaskans***

ANCHORAGE--Continuing his push to develop an Alaska Highway natural gas pipeline, Gov. Tony Knowles today announced two initiatives to further commercialization of Alaska's North Slope gas. By state Administrative Order, the governor created the Governor's Alaska Highway Natural Gas Policy Council to be chaired by two prominent Alaskans – retired ARCO Alaska Senior Vice President Frank Brown of Anchorage and former Fairbanks North Star Borough Mayor Jim Sampson of Fairbanks.

Knowles also announced that his administration has contracted with one of the world's top international oil and gas experts, Cambridge Energy Research Associates, to provide Alaskans expertise and analyses of various aspects of gas development.

"When it comes to natural gas, after two decades of false starts and broken dreams, the economic and political stars are finally aligned in Alaska's favor," Knowles said. "Despite our distance from domestic markets, our natural gas is more economic now than ever. The Governor's Alaska Highway Natural Gas Policy Council will engage the public as it analyzes the many issues related to gas development and makes recommendations to Alaskans."

The governor asked the council to begin its work soon and report back with recommendations by November 30, so their work can be incorporated into gas line legislation and project development. Knowles noted that his new special assistant for economic development, Ken Freeman, will provide staff assistance to the council.

Cambridge Energy also will assist the council and Alaskans in analyzing the many aspects of gas development. "Led by Pulitzer Prize-winner author Daniel Yergin, who won the honor for his thorough history of world oil development, Cambridge Energy can provide the objective market analysis we need to make the important public policy decisions facing Alaska," Knowles said.

The governor also used his remarks to the Alliance to praise developments in the oil patch.

Citing a recent analysis of the impact of the oil industry on Alaska's economy, Knowles noted that more than one in ten private sector jobs in the state are the result of this industry, which also has the highest average wage and the largest private sector payroll in Alaska. The investment the oil and gas industry makes in Alaska each year is roughly equal to the state's annual general fund spending.

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"Alaska's major producers, especially BP and Phillips, are working hard to keep those good news numbers coming by aggressively exploring for oil and gas on the North Slope," he said. "By investing about 25 percent more in capital spending, Phillips has targeted a 14 percent oil production increase over the next 5 years; BP 17 percent."

"Other companies such as Alberta Energy, Unocal, Marathon and others, are equally bullish on the Slope and in Cook Inlet. Last fall's North Slope area-wide sale set a record for state oil and gas lands leased for exploration, more than 713,000 acres," Knowles said. "In Cook Inlet, there's a renewed interest in exploration of natural gas and Forest Oil set the first new platform in Cook Inlet since 1986. The state is responding to all this interest with 16 area-wide lease sales in the next 5 years."

After Alaska's success in convincing the national administration to open the National Petroleum Reserve-Alaska to oil and gas exploration, Knowles said the challenge now is to persuade America and Congress to permit environmentally responsible development in the Arctic National Wildlife Refuge.

"We breathed a sigh of relief when the Clinton administration listened to Alaskans and declined to make ANWR a national monument," he said. "With a new national administration, we're better positioned for success in ANWR. But we shouldn't kid ourselves into believing we face a cakewalk."

"Our challenge is to demonstrate, using the latest technology and relying on the world's safest oil transportation system, that we can develop the oil beneath the refuge, while protecting the environment and fish and wildlife that we value so much and which are such an important symbol for so many Americans," the governor said.

Knowles has taken a number of steps to advance gas development, including visiting personally with the top officials of Alaska's oil and gas producing companies. He co-sponsored a natural gas summit in Columbus, Ohio attended by experts from more than 40 states.

Two weeks ago, he signed Administrative Order 187 creating a special Natural Gas Pipeline Cabinet and directing state agencies to work aggressively for timely one-stop permitting and right-of-way preparation. The Knowles administration has introduced legislation extending the state's ability to negotiate tax flexibility for natural gas projects, like an Alaska Highway gas line.

These initiatives are supported by a multi-million dollar budget request, which Knowles has asked the Legislature to act on quickly.

State of Alaska  
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**NEWS RELEASE**



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FOR IMMEDIATE RELEASE: February 2, 2001

01-035

**KNOWLES ADVANCES ALASKA HIGHWAY GASLINE WITH POLICY COUNCIL**  
***Civic, Business Leaders Included in 28-Member Panel***

Citing their breadth of experience and leadership in keeping Alaska's economy healthy, Gov. Tony Knowles today announced 26 members of the Governor's Alaska Highway Natural Gas Policy Council. The council will spend the next 10 months focusing on the best ways to advance construction of a natural gas pipeline down the Alaska Highway.

"This council is one of the smartest, most experienced, and highly dedicated group of Alaskans ever assembled for a single purpose: to help guide Alaska public policy as we build a natural gas pipeline," Knowles said. "I'm honored each of these Alaskans answered my call to public service for this important effort. I know Alaskans will be reassured that their views about this enormous project will be considered."

Knowles created the council January 26, when he signed an administrative order to "engage Alaskans representing a broad spectrum of Alaska interests, experience, and geography to advise the Governor and the Alaska Highway Gas Pipeline Cabinet in determining how the state can best promote the Alaska Highway North Slope natural gas pipeline project and maximize benefits for Alaskans."

The Governor last Friday announced the council's two co-chairmen: retired ARCO Alaska Senior Vice President Frank Brown of Anchorage and Jim Sampson, Executive Director of the AFL-CIO in Alaska and a former mayor of the Fairbanks North Star Borough. The 26 other members of the council appointed by the Governor today include:

- Former state representative and Kenai Peninsula Borough Mayor Mike Navarre;
- Anchorage Mayor George Wuerch;
- Former state Attorney General Grace Schaible of Fairbanks;
- Bill Corbus, president of Alaska Electric Light and Power Company of Juneau;
- Former state Attorney General Charlie Cole of Fairbanks;
- Former state Senator Al Adams of Kotzebue;
- Carl Marrs, president and CEO of Cook Inlet Region, Inc., of Anchorage;
- Rosemarie Maher, president and CEO of Doyon, Ltd., of Fairbanks;
- Former state Natural Resources Commissioner Esther Wunnicke of Anchorage and a member of the public policy group Alaska Common Ground;
- Former Anchorage Mayor Jack Roderick, a noted Alaska author and oil industry historian;
- Oil and gas consultant Brian Davies of Anchorage and former vice president for BP in Alaska;
- Jim Jansen, President of Lynden transportation company in Anchorage;

-more-

- Former Permanent Fund Executive Director Dave Rose, currently president of Alaska Permanent Capital Management;
- Ed Rasmuson, chairman of the National Bank of Alaska;
- Lee Gorsuch, chancellor of the University of Alaska Anchorage;
- Anchorage businessman Bob Penney, a member of the North Pacific Fisheries Management Council;
- Fairbanks North Star Borough Mayor Rhonda Boyles;
- Ron Duncan, president of GCI;
- Former ARCO Alaska President Ken Thompson, currently CEO of Pacific Rim Leadership Development of Anchorage;
- Peg Tileston of Anchorage, an environmental citizen activist and board chair of Alaska Common Ground, a non-partisan public policy group;
- Jake Adams, president of the Arctic Slope Regional Corporation
- North Slope Borough Mayor George Ahmaogak,
- Anchorage attorney Jeff Feldman;
- Jon Rubini, an Anchorage real estate businessman with statewide investments;
- Jerry Hood, chief executive officer of Alaska Teamsters Union local 959; and
- Mike O'Connor, president of Peak Oil Field Services Company.

"Commercialization of North Slope natural gas via the gasline project is the biggest economic opportunity to come to Alaska in years," Knowles said. "Taking full advantage of this opportunity won't be easy, though, and that's why we need a broad based, diverse group of Alaskans to work through the many issues that have to be addressed. I'm confident that this group will ensue public participation and produce recommendations that will protect the public's interests and make Alaskans proud as the gasline moves forward."

The Governor asked the council to hold statewide meetings to obtain the views of Alaskans on how the state can best promote a gas commercialization project and maximize benefits for Alaskans. He asked it to report back with recommendations by November 30, so their work can be incorporated into gas line legislation and project development. Among the issues the council will consider are:

- Benefits of natural gas development to Alaska communities, including those located in rural areas of Alaska;
- Best uses of the state's royalty share of the gas and promotion or attraction of investment for in-state and value-added processing;
- Costs and benefits of the state taking delivery of its royalty share of the gas in Alaska versus allowing a project developer to include the gas in its delivery flow to the Lower 48 states;
- Options for projects utilizing gas-to-liquids, liquified natural gas, and natural gas liquids;
- Demand for in-state natural gas consumption and its effects on a gas project;
- Environmental impacts and necessary protection measures;
- Training and readiness of Alaskans for jobs on a gas project, use of the Alaska labor pool by contractors and subcontractors, and use of Alaska businesses; and
- State promotion and facilitation of project financing, including potential ownership by the state of some or all of a project.

Two weeks ago, Knowles signed an administrative order that created a special Alaska Highway Natural Gas Pipeline Cabinet and directing state agencies to work aggressively for timely one-stop permitting and right-of-way preparation. Members of the Gas Pipeline Cabinet will serve as ex officio members of the council.

Knowles also recently introduced legislation that amends the "stranded gas" legislation that was passed in 1998 to facilitate natural gas commercialization to include an Alaska Highway natural gas pipeline or a gas-to-liquids (GTL) project.

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FOR IMMEDIATE RELEASE: February 27, 2001

01-063

**NATION'S GOVERNORS BACK ALASKA HIGHWAY GASLINE**  
***Knowles Sponsored Resolution Adopted by National Governors' Association***

Noting that America is dependent on reliable, reasonably priced energy supplies to support its economy and the demand for natural gas is growing faster than any other energy source, the National Governors' Association (NGA) today unanimously passed a resolution in support of responsible development of Alaska natural gas. The resolution also supports development of an Alaska Highway Natural Gas pipeline to carry that gas to domestic markets.

"This is the first national forum that is bi-partisan and represents all 50 states, that is solidly behind not just the transportation of Alaska natural gas but selecting the route that's in the national interest," said Gov. Tony Knowles, who sponsored the resolution. "This is an important step forward and will answer questions about the broad base of support that we have, particularly in that it designated the Alaska Highway as the preferred route."

The resolution concludes: "The governors endorse, pending completion of appropriate environmental review, a project to bring Alaska gas to market via a pipeline from the North Slope along the Alcan Highway through Canada to the North American distribution system. Any such project must ensure full pipeline safety to protect the public and environment."

The governors also urged the federal government to endorse policies that increase the availability of North American natural gas at reasonable prices to residential, commercial, industrial, and electric generation consumers. The resolution calls on federal and state governments to work together to allow for appropriate access to their public-owned lands for natural gas exploration, production or transmission, while protecting environmentally sensitive areas.

The resolution notes that the largest single untapped supply of natural gas available to North America is located in Alaska, where there are proven reserves of 35 trillion cubic feet of gas and estimated reserves of more than 100 trillion cubic feet. In support of the Alaska Highway route, the resolution notes the agreement in the 1970's between the United States and Canada to use the Alaska Highway route to transport Alaska natural

gas to the existing North American distribution system. Key rights-of-way and regulatory approvals for the project are still valid.

The resolution states that an Alaska Highway pipeline would parallel an existing highway corridor and not cross any national conservation system units. Such a project would be the biggest private construction project in North American history with the potential to meet a significant portion of the projected energy needs of United States for years to come.

"Alaskans understand that if we are to meet the American market demand, where the need is the greatest and it is economically in our advantage, then the Alaska Highway is the right route," Knowles said. "Construction of the Alaska Highway natural gas pipeline also opens other opportunities for the use of our gas, whether Gas-to-Liquids or Liquefied Natural Gas. This pipeline does not oppose other alternatives, but in fact helps them."

The NGA resolution is the latest effort made by Knowles to spur development of Alaska's Natural Gas. Since taking office he has tapped national and international experts to review ways to commercialize this undeveloped resource and touted Alaska natural gas on trade missions to Asia and the lower 48 states. The NGA resolution follows a similar resolution passed last December by the Western Governors' Association.

Knowles recently formed the Gas Advisory Council, comprised of 28 prominent Alaskans, to examine how the state can best maximize the benefits of an Alaska Highway Gas Pipeline project. The first meeting of the council will take place this Thursday, March 1, from 10:30 to 2 at the Anchorage Sheraton. Knowles and Lt. Gov. Fran Ulmer will attend the meeting, which is open to the public. In the coming months, the council will seek public comment on such things as Alaska hire, ensuring access to the gas for Alaskans, and determining the best use of the state's royalty share.

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**Broadcasters:** radio actualities of Gov. Knowles discussing the NGA resolution are available on the Governor's Information Line at 800-478-5669, or 465-5213 in Juneau.

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01-066

**ALASKA HIGHWAY NATURAL GAS COUNCIL TO MEET THURSDAY**  
***Knowles, Ulmer to Address Council's First Meeting at Anchorage Sheraton***

The Alaska Highway Natural Gas Policy Council will conduct its first meeting Thursday, March 1 from 10:30 a.m. to 2:00 p.m. at the Anchorage Sheraton Hotel. Gov. Tony Knowles will address the opening session of the council and convey his vision for commercializing Alaska's North Slope gas and maximizing the benefits of a gas pipeline for Alaskans.

Knowles formed the council by administrative order last month to examine how the state can maximize the benefits of an Alaska Highway gas pipeline project. Comprised of 28 prominent Alaskans, the council will also seek public comment on such things as Alaska hire, ensuring access to the gas for Alaskans, and determining the best use of the state's royalty share. A written report will be submitted to the Governor and members of his gas cabinet by November 30.

The first meeting of the council will serve as an organizational session and plan for upcoming public hearings. The agenda will begin with remarks from Knowles, Lt. Gov. Fran Ulmer, and Department of Natural Resources Commissioner Pat Pourchot. Representatives of Cambridge Energy Research Associates will also be in attendance to discuss gas supply and demand in domestic and international markets.

The council is led by retired ARCO Alaska Senior Vice President Frank Brown of Anchorage, and former Fairbanks North Star Borough Mayor Jim Sampson. Members of Knowles' special Alaska Highway Natural Gas Pipeline Cabinet serve as ex-officio members of the Policy Council and will attend Thursday's meeting.

The meeting is open to the public and the press. Members of the public can also listen to the meeting via teleconference at Legislative Information Offices statewide.

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FOR IMMEDIATE RELEASE: March 1, 2001

01-068

**KNOWLES OPENS MEETING OF ALASKA HIGHWAY GAS COUNCIL**  
***Charges Panel with Tackling Important Public Policy Questions***

Saying the social and economic benefits of the development of Alaska's vast natural gas resources are enormous, Gov. Tony Knowles today welcomed members of his Alaska Highway Natural Gas Policy Council at their first meeting. Knowles charged the 28-member panel of community, business, and labor leaders with tackling the important public policy questions that need to be answered before development can begin.

"I created this council for one important reason: to ensure that the interests of Alaskans are protected as we develop our North Slope natural gas," Knowles said. "This means making sure that Alaskans are hired to build and operate the gas pipeline and that Alaska businesses and products are used. It means making sure that Alaska communities have access to gas. And it means ensuring that Alaskans receive a fair share of the revenues generated on this resource which belongs to all of us."

Knowles appointed 28 Alaskans to the Council representing a wide range of interests. He named former ARCO Alaska Executive Frank Brown of Anchorage and former Fairbanks Mayor Jim Sampson to be co-chairs. Members of the governor's Natural Gas Cabinet will serve as ex officio members of the council, along with Lt. Gov. Fran Ulmer.

"Many of us in this room were involved in development of the Alaska oil pipeline and rarely does a generation get the opportunity to be involved in two projects of that magnitude," Knowles said. "What a privilege and opportunity it is for all of us to be involved with it."

In his Administrative Order creating the council, Knowles outlines several broad topics for consideration, ranging from direct state participation in a gas development project to environmental impacts. Six specific committees of the council will look at: Alaska hire and the use of Alaska businesses; best uses for the state's royalty share; in-state access to the gas; needed federal and international action; future markets opportunities such as linked LNG and GTL facilities; and environmental considerations.

Knowles noted that many more issues will likely be raised between today and the November 30 deadline he set for the council's report.

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"I ask you to visit Alaska communities, listen to Alaskans, engage the assistance of experts and ask tough questions of me, my administration, and sponsors of the various proposals for using our gas," Knowles said. "Our state has a lot of experts when it comes to natural gas development. Probably about 630,000 of them – and that's the way it should be. A natural gas project of this magnitude becomes available only very rarely – so it's incumbent on us to make sure it's done right."

An estimated 100 trillion cubic feet or more of natural gas is believed to be held beneath Alaska's North Slope. Knowles named his policy group the "Alaska Highway Natural Gas Policy Council," believing, as most Alaskans do, that the best way to develop our gas is via a pipeline along the Alaska Highway to domestic energy markets in the Lower 48.

"This is based on three facts: first, the consensus of the energy world is that the only market today for financing a pipeline and the best economic return to Alaska is in the United States," Knowles said. "Second, Alaska must act with a high sense of urgency in supplying this market. The energy gap created by this opportunity will be filled, and should be filled by Alaska gas. Third, a project of this size and scope must have national and Canadian support.

"There's a single hard, cold reality when it comes to our gas development: it won't happen unless it's commercially viable," Knowles added. "As many of you know, we've been dreaming and scheming about Alaska gas development for a generation. Yet it hasn't happened because it hasn't met the key market test. An Alaska Highway gasline does not exclude other projects. In fact, the consensus of experts is that it makes other types of gas projects, including a future LNG line, more economic."

Knowles said the Alaska Highway route also brings gas far closer to markets in Southcentral should Cook Inlet reserves ever prove inadequate to meet demand. The highway route even compliments development of Canadian gas in the Mackenzie Valley.

"Our mission is to promote the Alaska Highway Natural Gas Pipeline project to North America that enables creation of a natural gas industry in Alaska," Knowles concluded. "My charge to you is to help synthesize the views and suggestions of Alaskans and help resolve the many policy issues tied to gas development."

Noting the need to begin work now on reviewing and permitting this project, Knowles also asked for the council's support in making sure the Legislature provides adequate resources for the job.