Project Description for the

Alaska Gas Spur Line
(Glennallen to Beluga)

Submitted to:

AGIA License Office -- State of Alaska
Alaska Gasline Inducement Act (AGIA)

Prepared by:

Alaska Natural Gas Development Authority (ANGDA)

November 28, 2007

Alaska
Natural Gas Development Authority
411 W. 4th Avenue, First Floor, Anchorage, AK 99501 907-257-1334

November 27, 2007

AGIA License Office
State of Alaska, Department of Revenue
550 West 7th Avenue, Suite 1820
Anchorage, AK 99501

RE: Glennallen to Beluga
Alaska Gas Spur Line (AGSL)

To whom it may concern:

ANGDA is a public corporation created by the citizens of Alaska. Consistent with ANGDA's statutory purpose and authorities (AS 41.41), this AGIA Application "Addendum" is submitted with a sharp focus on gas use in Alaska and a lateral "spur line" link to Southcentral Alaska.

This document is intended to be an "adjunct" to a large project application filed under AGIA's North Slope gas to market requirement. The AGSL is compatible with the range of projects proposed to link North Slope gas to markets. ANGDA's evaluation finds the lowest transportation charge to the Alaskan consumer is achieved through an in-state pipeline system maximizing shipments in the tariff-efficient large diameter pipeline used to export North Slope gas.

AGSL is responsive to and consistent with the AGIA requirements. In addition, the AGSL conforms to the Alaska Constitution requirement of Article VIII for the development of natural resources for the maximum benefit of Alaskans. AGSL includes connection of new gas discoveries and physical access to gas throughout Alaskan communities.

This document may be physically included in other applications or an applicant may wish to include it by reference to this filing.

There is a large body of publicly available ANGDA reports that are not duplicated in this document, but are available for review during the AGIA evaluation of AGSL.

For additional information, please contact me by e-mail at hheinze@doa.doi.gov , by fax at 907-646-5006, or by telephone at 907-257-1347.

Sincerely,

Harold Heinze
Chief Executive Officer

ANGDA Submittal

The ANGDA Board of Directors authorized the submission of this AGIA Application at its public October 24, 2007, regular meeting.

The application packet includes both a printed and electronic copy of:

1. Transmittal Letter dated 11/28/07
2. Signed Document Summary Submittal Form
3. RFA Appendix D Application Checklist with AGSL References annotated
4. Expanded Appendix D Requirements with narrative summaries of ANGDA commitments
5. Volume 1 providing an Overview of AGSL
6. Volume 2 detailing the Economics, Tolls and Tariffs of AGSL
7. Signed Certification, Appendix E
8. MS Excel format information under Appendix C

This application does not contain proprietary information or trade secrets.

This application is publicly available in its entirety at:

www.angda.state.ak.us

Harold Heinze, CEO of ANGDA

CERTIFICATION

I certify that I am authorized to submit this Application on behalf of the Alaska Natural Gas Development Authority (ANGDA) -- ("Applicant").

I also certify that Applicant and any and all successors and assigns agrees that in the event Applicant is awarded an AGIA License it will: (1) comply with AGIA and its requirements in their entirety, AS 43.90, *et seq.*, as in effect on June 8, 2007, (2) perform all of the actions and fulfill all of the Required and Additional Commitments listed in its Application and as required in Appendix D ; (3) be bound by the License terms and conditions as set forth in Section 4 of the Request for Applications, and (4) abide by, in addition to AGIA, all other applicable laws, rules and regulations. This certification includes Applicant's agreement to act promptly and diligently in fulfilling all of the foregoing requirements, commitments, and other obligations.

In addition, I certify under AS 43.90.130(16) that by submitting this Application, Applicant has waived the right to appeal the rejection of its Application as incomplete, the issuance of a License to another applicant, or the Determination under AS 43.90.180(b) that no Application merits the issuance of a License.

Finally, I certify that the Applicant agrees this certification is provided by Applicant as consideration for the inducements provided to Applicant under AS 43.90.110, and that this certification shall remain binding upon the Applicant.

Executed on November 28, 2007

Harold Heinze, ANGDA Executive Director

Attested By:

Corrie Young, ANGDA Board Secretary / Treasurer

CORRIE YOUNG
My Commission Expires
NOTARY PUBLIC
Main Office
STATE OF ALASKA

APPLICATION CHECKLIST

Alaska Natural Gas Development Authority
AGSL Project

Statute	Requirement	RFA Reference	Applicant's Reference
43.90.130 (1)	Application must be filed by the deadline	**1.6**	**N/A**
43.90.130 (2)	*provide a thorough description of a proposed natural gas pipeline project for transporting natural gas from the North Slope to market, which description may include multiple design proposals, including different design proposals for pipe diameter, wall thickness, and transportation capacity, and which description shall include:*	**2.1**	**V 1 - 1.1** **V 2 - 1.1**
(A)	*the route proposed for the natural gas pipeline, which may not be the route described in AS 38.35.017(b);*	**2.1.1.**	**V 1** **1.1 & 1.8** **V2 - 5.1**
(B)	*the location of receipt and delivery points and the size and design capacity of the proposed natural gas pipeline at the proposed receipt and delivery points, except that this information is not required for in-state delivery points unless the application proposes specific in-state delivery points;*	**2.1.1**	**V 1 - 1.1** **V2 - 5.1**
(C)	*an analysis of the project's economic and technical viability, including a description of all pipeline access and tariff terms the applicant plans to offer;*	**2.10. and 2.2.3.4.**	**V 1** **1.1-1.5, 1.7**
(D)	*an economically and technically viable work plan, timeline, and associated budget for developing and performing the proposed project, including field work, environmental studies, design, and engineering, implementing practices for controlling carbon emissions from natural gas systems as established by the United States Environmental Protection Agency, and complying with all applicable state, federal, and international regulatory requirements that affect the proposed project; the applicant shall address the following:*	**2.2 to 2.8**	**V 1** **1.1 - 1.7** **1.9 – 1.10** **1.17**
(D) (i)	*if the proposed project involves a pipeline into or through Canada, a thorough description of the applicant's plan to obtain necessary rights-of-way and authorizations in Canada, a description of the transportation services to be provided and a description of rate- making methodologies the applicant will propose to the regulatory agencies, and an estimate of rates and charges for all services;*	**2.2.3.13** **2.2.4.1** **2.2.4.5**	**Not Applicable**

Statute	Requirement	RFA Reference	Applicant's Reference
(D) (ii)	*if the proposed project involves marine transportation of liquefied natural gas, a description of the marine transportation services to be provided and a description of proposed rate-making methodologies; an estimate of rates and charges for all services by third parties; a detailed description of all proposed access and tariff terms for liquefaction services or, if third parties would perform liquefaction services, identification of the third parties and the terms applicable to the liquefaction services; a complete description of the marine segment of the project including the proposed ownership, control, and cost of liquefied natural gas tankers, the management of shipping services, liquefied natural gas export, destination, re-gasification facilities, and pipeline facilities needed for transport to market destinations, and the entity or entities that would be required to obtain necessary export permits and licenses or a certificate of public convenience and necessity from the Federal Energy Regulatory Commission for the transportation of liquefied natural gas in interstate commerce if United States markets are proposed; and all rights-of-way or authorizations required from a foreign country;*	**2.1.3** **2.2.3.14**	**Not Applicable**
43.90.130 (3)	If the proposed project is within the jurisdiction of FERC, does the Application commit:		**Not Applicable**
(A)	*conclude, by a date certain that is not later than 36 months after the date the license is issued, a binding open season that is consistent with the requirements of 18 C.F.R. Part 157, Subpart B (Open Seasons for Alaska Natural Gas Transportation Projects) and 18 C.F.R. 157.30 - 157.39;*	**2.2** **2.2.4.3** **2.2.3**	**V1** **1.1 – 1.4** **V2 - 1.1**
(B)	*apply for Federal Energy Regulatory Commission approval to use the pre-filing procedures set out in 18 C.F.R. 157.21 by a date certain, and use those procedures before filing an application for a certificate of public convenience and necessity, except where the procedures are not required as a result of sec. 5 of the President's Decision issued under 15 U.S.C. 719 et seq. (Alaska Natural Gas Transportation Act of 1976); and*	**2.2** **2.2.4.3**	**V1 - 1.4**
(C)	*apply for a Federal Energy Regulatory Commission certificate of public convenience and necessity to authorize the construction and operation of the proposed project described in this section by a date certain;*	**2.2** **2.2.4.3**	**V1** **1.4, 1.6**
43.90.130 (4)	*if the proposed project is within the jurisdiction of the Regulatory Commission of Alaska, commit to*		**V1 – 1.4,1.6** **V2 - 3.2**
(A)	*conclude, by a date certain that is not later than 36 months after the date the license is issued, a binding open season that is consistent with the requirements of AS 42.06;*	**2.2** **2.2.4.4**	**V1** **1.1 - 1.2, 1.4, 1.6**
(B)	*apply for a certificate of public convenience and necessity to authorize the construction and operation of the proposed project by a date certain;*	**2.2** **2.2.4.4**	**V1** **1.1 - 1.2, 1.4, 1.6**
43.90.130 (5)	*commit that after the first binding open season, the applicant will assess the market demand for additional pipeline capacity at least every two years through public nonbinding solicitations or similar means;*	**2.4** **2.4.1.1**	**V1 - 1.4** **V2 – 3.3**
43.90.130 (6)	*commit to expand the proposed project in reasonable engineering increments and on commercially reasonable terms*	**2.4**	**V1 – 1.1, 1.3,1.4,1.7** **V2 – 3.3**

Statute	Requirement	RFA Reference	Applicant's Reference
	that encourage exploration and development of gas resources in this state;	**2.4.1.2**	
43.90.130 (7) (A)	*(A) will propose and support the recovery of mainline capacity expansion costs, including fuel costs, from all mainline system users through rolled-in rates as provided in (B) and (C) of this paragraph or through a combination of incremental and rolled-in rates as provided in (D) of this paragraph;*	**2.4 2.4.1.3 2.4.1.1**	**V1 1.3-1.4**
(B)	*will propose and support the recovery of mainline capacity expansion costs, including fuel costs, from all mainline system users through rolled-in rates; an applicant is obligated under this subparagraph only if the rolled-in rates would increase the rates* *(i) not described in (ii) of this subparagraph by not more than 15 percent above the initial maximum recourse rates for capacity acquired before commercial operations commence; in this sub- subparagraph, "initial maximum recourse rates" means the highest cost- based rates for any specific transportation service set by the Federal Energy Regulatory Commission, the Regulatory Commission of Alaska, or the National Energy Board of Canada, as appropriate, when the pipeline commences commercial operations;* *(ii) by not more than 15 percent above the negotiated rate for pipeline capacity on the date of commencement of commercial operations where the holder of the capacity is not an affiliate of the owner of the pipeline project; for the purposes of this sub- subparagraph, "negotiated rate" means the rate in a transportation service agreement that provides for a rate that varies from the otherwise applicable cost-based rate, or recourse rate, set out in a gas pipeline's tariff approved by the Federal Energy Regulatory Commission, the Regulatory Commission of Alaska, or the National Energy Board of Canada, as appropriate; or* *(iii) for capacity acquired in an expansion after commercial operations commence, to a level that is not more than 115 percent of the volume-weighted average of all rates collected by the project owner for pipeline capacity on the date commercial operations commence;*	**2.4 2.4.1.3 2.4.1.1**	**PREAMBLE PREAMBLE V1 1.3-1.4, 1.7** **V2 2.2 – 3.3**
(C)	*will, if recovery of mainline capacity expansion costs, including fuel costs, through rolled-in rate treatment would increase the rates for capacity described in (B) of this paragraph, propose and support the partial roll-in of mainline expansion costs, including fuel costs, to the extent that rates acquired before commercial operations commence do not exceed the levels described in (B) of this paragraph;*	**2.4 2.4.1.3 2.4.1.1**	**V2 3.3**
(D)	*may, for the recovery of mainline capacity expansion costs, including fuel costs, that, under rolled-in rate treatment, would result in rates that exceed the level in (B) of this paragraph, propose and support the recovery of those costs through any combination of incremental and rolled-in rates;*	**2.4 2.4.1.3 2.4.1.1**	**V2 3.3**
43.90.130 (8)	*state how the applicant proposes to deal with a North Slope gas treatment plant, regardless of whether that plant is part of the applicant's proposal, and, to the extent that the plant will be owned entirely or in part by the applicant, commit to seek*	**2.2 2.2.3.12**	**V2 3.4**

Statute	Requirement	RFA Reference	Applicant's Reference
	certificate authority from the Federal Energy Regulatory Commission if the proposed project is engaged in interstate commerce, or from the Regulatory Commission of Alaska if the project is not engaged in interstate commerce; for a North Slope gas treatment plant that will be owned entirely or in part by the applicant, for rate-making purposes, commit to value previously used assets that are part of the gas treatment plant at net book value; describe the gas treatment plant, including its design, engineering, construction, ownership, and plan of operation; the identity of any third party that will participate in the ownership or operation of the gas treatment plant; and the means by which the applicant will work to minimize the effect of the costs of the facility on the tariff;		**Not Required**
43.90.130 (9)	*propose a percentage and total dollar amount for the state's reimbursement under AS 43.90.1 10(a)(1)(A) and (B) to be specified in the license;*	**2.11**	**V2 - 3.4**
43.90.130 (10)	*commit to propose and support rates for the proposed project and for any North Slope gas treatment plant that the applicant may own, in whole or in part, that are based on a capital structure for rate-making that consists of not less than 70 percent debt;*	**2.2** **2.2.3.5**	**V2 - 3.4**
43.90.130 (11)	*describe the means for preventing and managing overruns in costs of the proposed project, and the measures for minimizing the effects on tariffs from any overruns;*	**2.2.3.6** **2.2.3.11**	**V2 - 1.1**
43.90.130 (12)	*commit to provide a minimum of five delivery points of natural gas in this state;*	**2.1.1** **2.2.3.9**	**V1 1.1-1.2** **V2 5.1**
43.90.130 (13) (A)	*commit to offer firm transportation service to delivery points in this state as part of the tariff regardless of whether any shippers bid successfully in a binding open season for firm transportation service to delivery points in this state, and commit to offer distance-sensitive rates to delivery points in this state consistent with 18 C.F.R. 157.34(c)(8); and*	**2.2.3.9**	**V1 1.2, 1.4** **V2 1.1**
(B)	*commit to offer distance-sensitive rates to delivery points in the state consistent with 18 C.F.R. 157.34(c)(8);*	**2.2.3.9**	**V2 1.1-1.3**
43.90.130 (14)	*commit to establish a local headquarters in this state for the proposed project;*	**2.2.5**	**V1 1.10.5**
43.90.130 (15) (A)	*hire qualified residents from throughout the state for management, engineering, construction, operations, maintenance, and other positions on the proposed project.*	**2.3.4**	**V1 1.5** **V1 1.10.5**
(B)	*contract with businesses located in the state;*	**2.3.4**	**V1 1.10.5**
(C)	*establish hiring facilities or use existing hiring facilities in the state;*	**2.3.4**	**V1 1.5** **V1 1.10.5**
(D)	*use, as far as is practicable, the job centers and associated services operated by the Department of Labor and Workforce Development and an Internet-based labor exchange system operated by the state.*	**2.3.4**	**V1 1.5** **V1 1.10.5**
43.90.130 (16)	*waive the right to appeal the rejection of the application as incomplete, the issuance of a license to another applicant, or*	**1.13.7**	**Certification**

Statute	Requirement	RFA Reference	Applicant's Reference
	the determination under AS 43.90.180(b) that no application merits the issuance of a license;	Appendix D	
43.90.130 (17)	*commit to negotiate, before construction, a project labor agreement to the maximum extent permitted by law; in this paragraph, "project labor agreement" means a comprehensive collective bargaining agreement between the licensee or its agent and the appropriate labor representatives to ensure expedited construction with labor stability for the project by qualified residents of the state;*	**2.3.3**	**V1 1.5**
43.90.130 (18)	*commit that the state reimbursement received by a licensee may not be included in the applicant's rate base, and shall be used as a credit against licensee's cost of service;*	**2.2.3.10**	**V2 3.2**
43.90.130 (19)	*provide a detailed description of the applicant, all entities participating with the applicant in the application and the project proposed by the applicant, and persons the applicant intends to involve in the construction and operation of the proposed project; the description must include the nature of the affiliation for each person, the commitments by the person to the applicant, and other information relevant to the commissioners' evaluation of the readiness and ability of the applicant to complete the project presented in the application;*	**2.8**	**V1 1.3**
43.90.130 (20)	*demonstrate the readiness, financial resources, and technical ability to perform the activities specified in the application by describing the applicant's history of compliance with safety, health, and environmental requirements, the ability to follow a detailed work plan and timeline, and the ability to operate within an associated budget.*	**All of Section 2 and 2.9**	**Volumes 1 and 2**
	Required Documents :		
	Signed Application with Corporate Approvals	**1.10.4 1.13.3**	**Board Delegation**
	Signed Certification, Appendix E	**1.13.3**	**Attached**
	List of Applicant's Required and Additional Commitments		**Attached**
	Electronic Copy of Entire Application (On CD in PDF Print Ready Format)	**1.5**	**Attached**
	List of Data for Applicants to Provide in MS Excel Format, Appendix C (On CD in MS Excel)	**2.10.1**	**Attached**
	Identification of Proprietary Information and Trade Secrets and summary of Information for Public	**1.13.6**	**N/A**

Applicant's Name is the Alaska Natural Gas Development Authority (ANGDA)

Statute	Requirement	RFA Reference	Applicant's Reference
43.90.130 (1)	Application must be filed by the deadline	**1.6**	Via Personal Delivery

Statute	Requirement	RFA Reference	Applicant's Reference
43.90.130 (2)	*provide a thorough description of a proposed natural gas pipeline project for transporting natural gas from the North Slope to market, which description may include multiple design proposals, including different design proposals for pipe diameter, wall thickness, and transportation capacity, and which description shall include:*	**2.1**	**Vol 1** **1.1.1** **Vol 2** **1.1.1**
43.90.130(2) (A)	*the route proposed for the natural gas pipeline, which may not be the route described in AS 38.35.017(b);*	**2.1.1**	**Vol 1** **1.1.2** **1.8.1** **Vol 2** **5.1**
43.90.130(2) (B)	*the location of receipt and delivery points and the size and design capacity of the proposed natural gas pipeline at the proposed receipt and delivery points, except that this information is not required for in-state delivery points unless the application proposes specific in-state delivery points;*	**2.1.1**	**Vol 1** **1.1.1** **Vol 2** **5.1.3**
43.90.130 (12)	*commit to provide a minimum of five delivery points of natural gas in this state;*	**2.1.1** **2.2.3.9**	**Vol 1** **1.1 1.2** **Vol 2** **5.1**

See Response on following page.

Response: The Alaska Gas Spur Line (AGSL) 220-mile route begins in Glennallen, runs to Palmer and terminates in the Beluga area. The alignment from Glennallen to Palmer is defined by the State "Conditional Right-of-Way Lease" and existing electrical power line rights-of-way (R-O-W's). The Palmer to Beluga alignment follows the Alaska Pipeline Company (ENSTAR) and Chugach Electric's R-O-W's. No use of private sector lands is currently proposed for negotiation.

The base design provides a 20-inch / API 5L X80, pipeline operating at 2,500 psi. The wall thickness will vary from 0.55- to 1.1-inches. AGSL's initial flow rate will be 0.25 BCFPD (7 Mm^3/d) for service to residential and commercial utility customers.

Gas receipt into AGSL will be at Glennallen. ANGDA is committed to downstream AGSL gas delivery points at Palmer and Beluga. Mainline gas "off-take" points identified by ANGDA include the Yukon River crossing, Fairbanks, North Pole, Delta Junction, and Tok. ANGDA identified potential gas gathering points at North Slope foothills, Yukon River, Fairbanks, and Glennallen.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (2)(C)	*an analysis of the project's economic and technical viability, including a description of all pipeline access and tariff terms the applicant plans to offer;*	project's economic and technical viability Description of tariff terms	**2.10. & 2.2.3.4**	**Vol 1 1.1-1.7 1.9-1.10**

Response:

The calculated tariff under assumed AGSL flow rates, when added to the anticipated mainline tariff, reflects costs no greater than those now being absorbed by South Central Alaska customers. Considering distance-sensitive rates, some Alaskan customers may pay a lower tariff. Given the anticipated shortfall of natural gas in the Cook Inlet area, the AGSL is economically viable and more importantly, will provide the long-term energy solution for the Railbelt.

The AGSL design and construction plan is based on industry-proven materials, technology, and construction practices.

The estimated AGSL tariff is $1.40 per mmBtu at 0.25 BCFPD through a $725 million pipeline. The AGSL cost of service model tariff calculation assumes a capital structure with no greater than 30% equity. The AGSL hydraulic simulation model defines potential gas receipt and delivery points. The AGSL owners will work to accommodate newly discovered fields and new in-state customers.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130(2)(D)	*an economically and technically viable work plan, timeline, and associated budget for developing and performing the proposed project, including field work, environmental studies, design, and engineering, implementing practices for controlling carbon emissions from natural gas systems as established by the United States Environmental Protection Agency, and complying with all applicable state and federal regulatory requirements that affect the applicant shall address the following:*	Economically technically viable work plan, time line and associated budget for developing and performing the proposed project applicable state & federal regulatory requirments	**2.2 to 2.8**	**Vol 1** **1.1-1.7** **1.9-1.10** **1.17**

Response: ANGDA and its contractors developed an economically and technically viable work plan, timeline, and associated budget to develop the AGSL project. Field work, environmental studies, design, and engineering, documented in several dozen publicly-available studies that are tangible results of expenditures and work.

Additional field work will be performed during Summer 2008 to delineate wetlands. Similar field work will comply with ADNR/SHPO and ADF&G requirements. ANGDA will comply with all applicable state and federal regulatory requirements and local ordinances. AGSL carbon emissions will be controlled by using best available technologies and by providing in-state access to clean natural gas fuel. Buses will transport workers to minimize personal vehicle emissions and ease stresses on roads.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (2) (D)(i)	*if the proposed project involves a pipeline into or through Canada, a thorough description of the applicant's plan to obtain necessary rights-of-way and authorizations in Canada, a description of the transportation services to be provided and a description of rate- making methodologies the applicant will propose to the regulatory agencies, and an estimate of rates and charges for all services;*		**2.2.3.13 2.2.4.1 2.2.4.5**	**N/A**

Response: ANGDA is an intra-state service provider.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (2) (D) (ii)	*if the proposed project involves marine transportation of liquefied natural gas, a description of the marine transportation services to be provided and a description of proposed rate-making methodologies; an estimate of rates and charges for all services by third parties; a detailed description of all proposed access and tariff terms for liquefaction services or, if third parties would perform liquefaction services, identification of the third parties and the terms applicable to the liquefaction services; a complete description of the marine segment of the project including the proposed ownership, control, and cost of liquefied natural gas tankers, the management of shipping services, liquefied natural gas export, destination, re-gasification facilities, and pipeline facilities needed for transport to market destinations, and the entity or entities that would be required to obtain necessary export permits and licenses or a certificate of public convenience and necessity from the Federal Energy Regulatory Commission for the transportation of liquefied natural gas in interstate commerce if United States markets are proposed; and all rights-of-way or authorizations required from a foreign country;*	marine transportation services	**2.1.3** **2.2.3.**	**N/A**

Response: AGSL will not export gas products from Alaska via marine transportation systems. However, during the open season process, potential gas exporters (LNG or NGL) may seek capacity for further transport beyond AGSL to Kenai.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (3)	If the proposed project is within the **jurisdiction of FERC, does the Application commit:**	jurisdiction of FERC		**N/A**

Response: The AGSL is an "intra-state" gas transmission lateral pipeline subject to regulation by the Regulatory Commission of Alaska (RCA). However, since the AGSL will be receiving gas from a FERC regulated mainline, ANGDA commits to comply with applicable FERC regulations.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (3) (A)	*conclude, by a date certain that is not later than 36 months after the date the license is issued, a binding open season that is consistent with the requirements of 18 C.F.R. Part 157, Subpart B (Open Seasons for Alaska Natural Gas Transportation Projects) and 18 C.F.R. 157.30 - 157.39;*	date certain binding open season	**2.2 2.2.4.3 2.2.3**	**Vol 1 1.1-1.4 Vol 2 1.1**

Response: ANGDA will commit to a binding open season that complies with 18 CFR Part 157, Sub Part B and 18 CFR 157.30 – 157.39. ANGDA is conducting training for a negotiated in-state open season to assure potential in-state shippers are prepared to participate in the RCA and FERC regulated binding open season processes.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (3) (B)	*apply for Federal Energy Regulatory Commission approval to use the pre-filing procedures set out in 18 C.F.R. 157.21 by a date certain, and use those procedures before filing an application for a certificate of public convenience and necessity, except where the procedures are not required as a result of sec. 5 of the President's Decision issued under 15 U.S.C. 719 et seq. (Alaska Natural Gas Transportation Act of 1976); and*	FERC approval	**2.2 2.2.4.3**	**Vol 1 1.4**
43.90.130 (3) (C)	*apply for a Federal Energy Regulatory Commission certificate of public convenience and necessity to authorize the construction and operation of the proposed project described in this section by a date certain;*	apply with FERC by date certain	**2.2 2.2.4.3**	**Vol 1 1.4, 1.6**
43.90.130 (4)	*if the proposed project is within the jurisdiction of the Regulatory Commission of Alaska, commit to*	jurisdiction of **RCA**		**Vol 1 1.4, 1.6 Vol 2 3.2**
43.90.130 (4)(A)	*conclude, by a date certain that is not later than 36 months after the date the license is issued, a binding open season that is consistent with the requirements of AS 42.06;*	Consistent with the requirements	**2.2 2.2.4.4**	**Vol 1 1.1-1.2, 1.6**
43.90.130 (4) (B)	*apply for a certificate of public convenience and necessity to authorize the construction and operation of the proposed project by a date certain;*		**2.2 2.2.4.4**	**Vol 1 1.1, 1.2, 1.4, 1.6**

Response:

AGSL is an intra-state project subject to the jurisdiction of the Regulatory Commission of Alaska (RCA) and will apply to the RCA for a Certificate of Public Convenience and Necessity (CPCN) within 12 months of notice of the award of the AGIA license. AGSL will conduct an open season that will comply with the requirements of AS 42.06.

Additionally, ANGDA will conduct a binding negotiated open season beginning in 2008. Upon successful completion of an open season, ANGDA will submit the results, along with a complete application for AGSL certification to the RCA. The RCA application will be submitted no later than 12 months after the issuance of an AGIA license. The RCA will have sufficient time to review and approve the AGSL submission within the 36-months required by AS 43.90.130(4)(A).

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (5)	Applications must "commit that after the first binding open season, the applicant will assess the market demand for additional pipeline capacity at least every two years through public nonbinding solicitations or similar means;"	assess market demand every 2 years	**2.4** **2.4.1.1**	**VOL 1** **1.4** **VOL 2** **3.3**

Response:

ANGDA commits that nonbinding solicitations of interest (pursuant to the AGIA License) to assess potential market demand for expansion will be conducted at least every two years after the conclusion of the first binding open season.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (6)	commit to expand the proposed project in reasonable engineering increments and on commercially reasonable terms that encourage exploration and development of gas resources in this state;	Commit to expand the proposed project in reasonable engineering increments and on commercially reasonable terms that encourage exploration and development of gas resources in this state	**2.4 2.4.1.2**	**Vol 1 1.1, 1.3, 1.4,1.7** **Vol 2 3.3**

Response:

ANGDA commits to promptly and diligently pursue all regulatory approvals upon receipt of acceptable binding commitments for expansion capacity. ANGDA also commits to promptly and diligently proceed to expand the project at reasonable engineering increments.

AGSL is designed to provide low-cost expansion by over 50%.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (7)(A)	*(A) will propose and support the recovery of mainline capacity expansion costs, including fuel costs, from all mainline system users through rolled-in rates as provided in (B) and (C) of this paragraph or through a combination of incremental and rolled-in rates as provided in (D) of this paragraph;*	support the recovery of mainline capacity expansion costs incremental rolled-in rates	**2.4 2.4.1.3 2.4.1 .1**	**Vol 1 1.3- 1.4**
43.90.130(7)(B)	*will propose and support the recovery of mainline capacity expansion costs, including fuel costs, from all mainline system users through rolled-in rates; an applicant is obligated under this subparagraph only if the rolled-in rates would increase the rates*	Rolled-in rates would increase	**2.4 2.4.1.3 2.4.1 .1**	**Preamble Vol 1 1.3 -1.4, 1.7 Vol 2 2.2, 3.2**
43.90.130(7)(C)	*will, if recovery of mainline capacity expansion costs, including fuel costs, through rolled-in rate treatment would increase the rates for capacity described in (B) of this paragraph, propose and support the partial roll-in of mainline expansion costs, including fuel costs, to the extent that rates acquired before commercial operations commence do not exceed the levels described in (B) of this paragraph;*	recovery of mainline capacity rolled-in rate treatment before commercial operations	**2.4 2.4.1.3 2.4.1 .1**	**Vol 2 3.3**
43.90.130(7)(D)	*may, for the recovery of mainline capacity expansion costs, including fuel costs, that, under rolled-in rate treatment, would result in rates that exceed the level in (B) of this paragraph, propose and support the recovery of those costs through any combination of incremental and rolled-in rates;*	recovery of those costs of incremental and rolled-in rates	**2.4 2.4.1.3 2.4.1 .1**	**Vol 2 3.3**

Response:

AGSL assumes suppliers will price mainline gas to comply with this AGIA requirement. ANGDA will assure that potential gas shippers are aware of this requirement during open season negotiations.

AGSL's preliminary pipeline design is capable of substantial expansion.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (8)	*state how the applicant proposes to deal with a North Slope certificate authority from the Federal Energy Regulatory Commission if the proposed project is engaged in interstate commerce, or from the Regulatory Commission of Alaska if the project is not engaged in interstate commerce; for a North Slope gas treatment plant that will be owned entirely or in part by the applicant, for rate-making purposes, commit to value previously used assets that are part of the gas treatment plant at net book value; describe the gas treatment plant, including its design, engineering, construction, ownership, and plan of operation; the identity of any third party that will participate in the ownership or operation of the gas treatment plant; and the means by which the applicant will work to minimize the effect of the costs of the facility on the tariff;*	North Slope certificate authority gas treatment plant identity of any third party	**2.2 2.2.3.12**	**Vol 2 3.4**

Response: AGSL does not anticipate ownership or involvement in a North Slope gas treatment plant.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (9)	*propose a percentage and total dollar amount for the state's reimbursement under AS 43.90.1 10(a)(1)(A) and (B) to be specified in the license;*	states reimbursement	**2.11**	**Vol 2 3.4**

Response:

ANGDA anticipates Mainline applicants will include appropriate percentages and dollar amounts. The AGSL requirements will be minor with respect to state reimbursement.

ANGDA will continue to advance the AGSL through the AGIA review process using already appropriated funding. ANGDA will work with the AGIA selected licensee on the incorporation of the AGSL into the complete system design and permitting efforts.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (10)	*commit to propose and support rates for the proposed project and for any North Slope gas treatment plant that the applicant may own, in whole or in part, that are based on a capital structure for rate-making that consists of not less than 70 percent debt;*	propose and support rates gas treatment plant	**2.2 2.2.3.5**	**Vol 2 3.4**

Response:

The AGSL Joint Venture commits to a debt structure no less than 70%. A 100% debt capital structure will be proposed if AGSL operates as an independent entity.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (11)	*describe the means for preventing and managing overruns in costs of the proposed project, and the measures for minimizing the effects on tariffs from any overruns;*	preventing and managing overruns measures for minimizing	**2.2.3.6 2.2.3.11**	**Vol 2 1.1**

Response: AGSL's cost over-run management and minimization will include:

- Intensive and extensive front-end engineering design and complete project planning review of construction alternatives.
- Firm labor rates and work rules to promote productivity
- Fixed price material and equipment bids
- Firm contract timelines with completion rewards and substandard performance penalties
- Permitting and regulatory approvals before sanction of major expenditures
- Project management team continuity throughout the entire AGSL project
- Diligent management of project scope expansion and commitment of "contingency" funds
- Real-time cost tracking

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (13)(A)	*commit to offer firm transportation service to delivery points in this state as part of the tariff regardless of whether any shippers bid successfully in a binding open season for firm transportation service to delivery points in this state, and commit to offer distance-sensitive rates to delivery points in this state consistent with 18 C.F.R. 157.34(c)(8); and*	firm transportation service offer distance-sensitive rates	**2.2.3.9**	**Vol 1 1.2, 1.4** **Vol 2 1.1**
43.90.130(13)(B)	*commit to offer distance-sensitive rates to delivery points in the state consistent with 18 C.F.R. 157.34(c)(8);*	Offer distance-sensitive rates	**2.2.3.9**	**Vol 2 1.1, 3.3**
43.90.130 (14)	*commit to establish a local headquarters in this state for the proposed project;*	Local headquarters	**2.2.5**	**Vol 1 1.10.5**

Response: ANGDA commits to offer firm transportation service to various delivery points as part of the pipeline tariff irrespective of whether any shippers initially subscribe to such firm service.

ANGDA will provide distance-sensitive rates to delivery points in the State.

AGSL will be headquartered in Anchorage. Construction offices will be located in Glennallen, and Palmer.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (15)(A)	*hire qualified residents from throughout the state for management, engineering, construction, operations, maintenance, and other positions on the proposed project.*	hire qualified residents	**2.3.4**	**Vol 1 1.5**
43.90.130 (17)	*commit to negotiate, before construction, a project labor agreement to the maximum extent permitted by law; in this paragraph, "project labor agreement" means a comprehensive collective bargaining agreement between the licensee or its agent and the appropriate labor representatives to ensure expedited construction with labor stability for the project by qualified residents of the state;*	commit to negotiate a project labor agreement	**2.3.3**	**Vol 1 1.5**

Response:

The in-state labor pool is large enough to support almost all the AGSL craft needs. ANGDA is committed to providing all qualified Alaskans with the employment opportunity on AGSL. ANGDA will work with all state, federal, and local training agencies. ANGDA will complete the negotiation of a project labor agreement.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (15)(B)	*contract with businesses located in the state;*	contract with businesses	**2.3.4**	**Vol 1 1.5**
43.90.130 (15)(C)	*establish hiring facilities or use existing hiring facilities in the state;*	hiring facilities	**2.3.4**	**Vol 1 1.5**
43.90.130 (15)(D)	*use, as far as is practicable, the job centers and associated services operated by the Department of Labor and Workforce Development and an Internet-based labor exchange system operated by the state.*	Use job centers labor exchange	**2.3.4**	**Vol 1 1.5**

Response:

ANGDA will continue its commitment to contract with in-state businesses. Over three-quarters of ANGDA's existing contracts and contractors are Alaskan.

ANGDA will use existing hiring facilities in the state. ANGDA will utilize state job centers, associated Department of Labor and Workforce Development, and internet-based labor system to the extent practicable.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (16)	*waive the right to appeal the rejection of the application as incomplete, the issuance of a license to another applicant, or the determination under AS 43.90.180(b) that no application merits the issuance of a license;*	Waive the right to appeal	**1.13.7 Appendix D**	**Certification**

Response: ANGDA will waive the right to appeal the rejection of the application..

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130 (18)	*commit that the state reimbursement received by a licensee may not be included in the applicant's rate base, and shall be used as a credit against licensee's cost of service;*	reimbursement may not be included	**2.2.3.10**	**Vol 2 3.2**

Response: ANGDA will not include any AGIA license funding support in the AGSL tariff rate base.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
43.90.130(19)	*provide a detailed description of the applicant, all entities participating with the applicant in the application and the project proposed by the applicant, and persons the applicant intends to involve in the construction and operation of the proposed project; the description must include the nature of the affiliation for each person, the commitments by the person to the applicant, and other information relevant to the commissioners' evaluation of the readiness and ability of the applicant to complete the project presented in the application;*	detailed description nature of the affiliation commitments by the person	**2.8**	**Vol 1 1.3**
43.90.130 (20)	*demonstrate the readiness, financial resources, and technical ability to perform the activities specified in the application by describing the applicant's history of compliance with safety, health, and environmental requirements, the ability to follow a detailed work plan and timeline, and the ability to operate within an associated budget.*	fit willing and able	**All of Section 2 and 2.9**	**Vol 1 Vol 2**

RESPONSE:

ANGDA was formed in 2002 with passage of Ballot Measure 3 (AS 41.41) to develop a natural gas pipeline from Prudhoe Bay to tidewater on Prince William Sound and a spur line to the gas distribution grid in southcentral, Alaska.

ANGDA, a public corporation of the State of Alaska, focused much of its effort on project work that includes the costs, benefits, and possible ways to build a spur line to South-central Alaska. ANGDA spent over $2 million to obtain engineering cost estimates; develop project schedules; collect permitting and environmental forecasts; firm-up market projections; develop a cost-of-service model; create pro formal financials and obtain a Glennallen to Palmer conditional right-of-way. Other work included participation in legal, regulatory, and jurisdictional matters regarding in-state use of gas, tariffs, rights-of-way, and federal loan guarantees. Additionally, ANGDA studied alternative routes and participated in public forums related to their development. Over two dozen ANGDA contractors participated in these efforts.

ANGDA is developing a joint venture structure for design, construction, ownership, financing and operation for the project and is engaged with potential partners. Like other large-scale pipeline projects that provide a reasonable return on investment, AGSL is a financially attractive investment opportunity.

The joint venture arrangement provides flexibility for:

- individual owner financing;
- a single operator to:
  - manage all construction and operating activities;
  - contract with all shippers on behalf of owners;
  - collect all shipper tolls and;
  - distribute the revenue net of operating cost proportionally to owners
- mutual decisions on expenditures and expansions;
- a single tariff structure approved by regulators; and
- in-state shippers, Alaska Native corporations, and individual Alaskan investors to establish ownership shares

ANGDA is committed to the Millennium Agreement and has been proactive in engaging the communities, Alaska Native corporations and villages, utilities, and other businesses. Also Add to preamble: ANGDA's participation in demand development and aggregation at in-state off-take points.

ANGDA operates under a board-approved business plan that incorporates work plans and a budget. ANGDA is ready, fit, willing, and able to construct the AGSL.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
	Signed Application with Corporate Approvals	**Signed application**	**1.10.4 1.13.3**	**ANGDA BOARD DELEGA-TION**
	Signed Certification, Appendix E		**1.13.3**	**Attached**

Response: The ANGDA Board of Directors delegated signature authority for the AGIA application to the ANGDA Chief Executive Officer. The Corporate Approval (Resolution No. 102407) is a matter of public record dated October 24, 2007.

ANGDA's AGIA application is signed by Harold Heinze, Chief Executive Officer of the Alaska Natural Gas Development Authority (ANGDA).

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
	List of Applicant's Required and Additional Commitments			**Attached**

Response:

ANGDA's commitments far exceed the AGIA requirements.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
	Electronic Copy of Entire Application (On CD in PDF Print Ready Format)		**1.5**	**Attached**

Response: An electronic copy of the entire AGIA application is provided on CD in PDF Print Ready Format and Word searchable format, and in printed format.

Statute	Requirement	Key Words	RFA Reference	AGIA RFA X-REF
	List of Data for Applicants to Provide in MS Excel Format, Appendix C (On CD in MS Excel)	list of data	**2.10.1**	**Attached**

Response: ANGDA data is provided in the AGIA Application Volume 1 through Volume 2. The Cost of Service Model and Balance Sheet are provided as a single x-cel file.

Statute	Requirement	Key Words	RFA Reference	Applicant's Reference
	Identification of Proprietary Information and Trade Secrets and summary of Information for Public	proprietary information and trade secrets	**1.13.6**	**PREAMBLE**

Response: ANGDA is committed to maintaining a transparent public process. This application was prepared from public studies and documents and ANGDA does not seek confidentiality on any part of its submittal. Potential joint-venture materials will be maintained in accordance with applicable federal and state regulations for confidentiality.

Project Description for the

Alaska Gas Spur Line
(Glennallen to Beluga)

Volume 1:

Overview

Submitted to:

AGIA License Office -- State of Alaska
Alaska Gasline Inducement Act (AGIA)

Prepared by:

Alaska Natural Gas Development Authority (ANGDA)

November 28, 2007

TABLE OF CONTENTS

PREAMBLE

This document was prepared by the Alaska Natural Gas Development Authority (ANGDA) as an adjunct to any of several major gas pipeline proposals for getting North Slope gas to markets for use by Alaskans. The document should be read in the context of the larger proposal to which it is attached.

ANGDA published dozens of studies and reports on the use of and the need for natural gas within Alaska. These documents and other related efforts sponsored by state and federal agencies form the basis and background to this proposed project.

ANGDA's broad mission is to assure Alaska and Alaskans benefit from North Slope gas.

The in-state portion of any future gas mainline project must include:

- multi-segmented high-pressure gas transmission pipeline that will link the mainline to Cook Inlet;
- gas mainline take-off connections and metering to utilities, gas users, and wholesale propane facilities; and
- access to connector transportation pipeline that will link future gas discoveries to the mainline.

ANGDA's in-state efforts include these items, but the focus of this application is on the Alaska Gas Spur Line (AGSL) connection from the gas mainline to the Cook Inlet area.

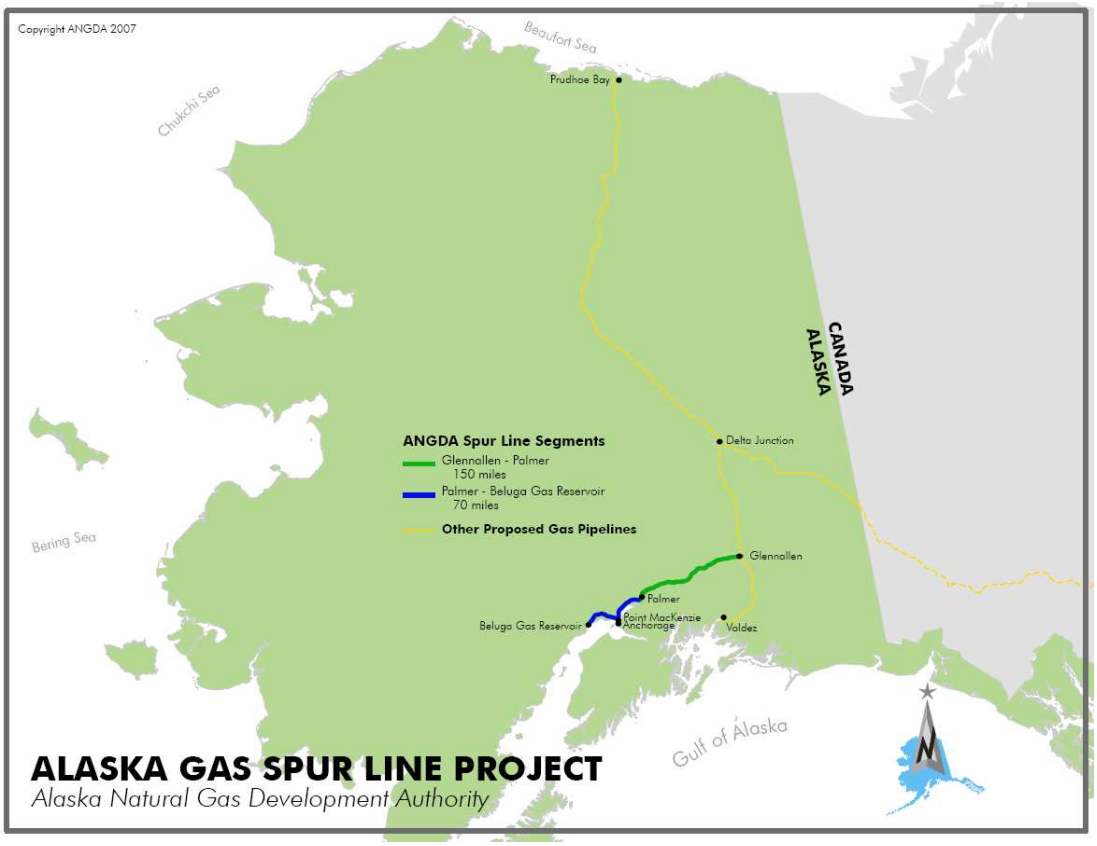
Elements of in-state gas use that are documented separately outside this application include:

- gas storage reservoirs to balance seasonal gas demand;
- alternatives for local gas production and electric power generation; and
- propane distribution to Alaska's coastal, river, and highway communities.

ANGDA will continue to work with Alaska utilities, businesses, and other gas consumers to develop an aggregated gas procurement approach for the mutual benefit of in-state gas users.

1.1.1 ALASKA GAS SPUR LINE (AGSL) SUMMARY

THE ALASKA GAS SPUR LINE (AGSL) will extend from Glennallen to Beluga.



AGSL will be approximately 220 miles (355 km) of nominal pipe size (NPS) 20-inch pipe, with a maximum allowable operating pressure (MAOP) of 2,500 psi (17 Mpa). The pipeline location, facilities, and delivery points are detailed below:

- meter stations and gas off-takes at Glennallen, Palmer and Beluga;
- initial compressor station at Glennallen (future compressor station planned for Eureka);
- propane extraction plants at Glennallen and Palmer; and
- other intermediate and terminal facilities.

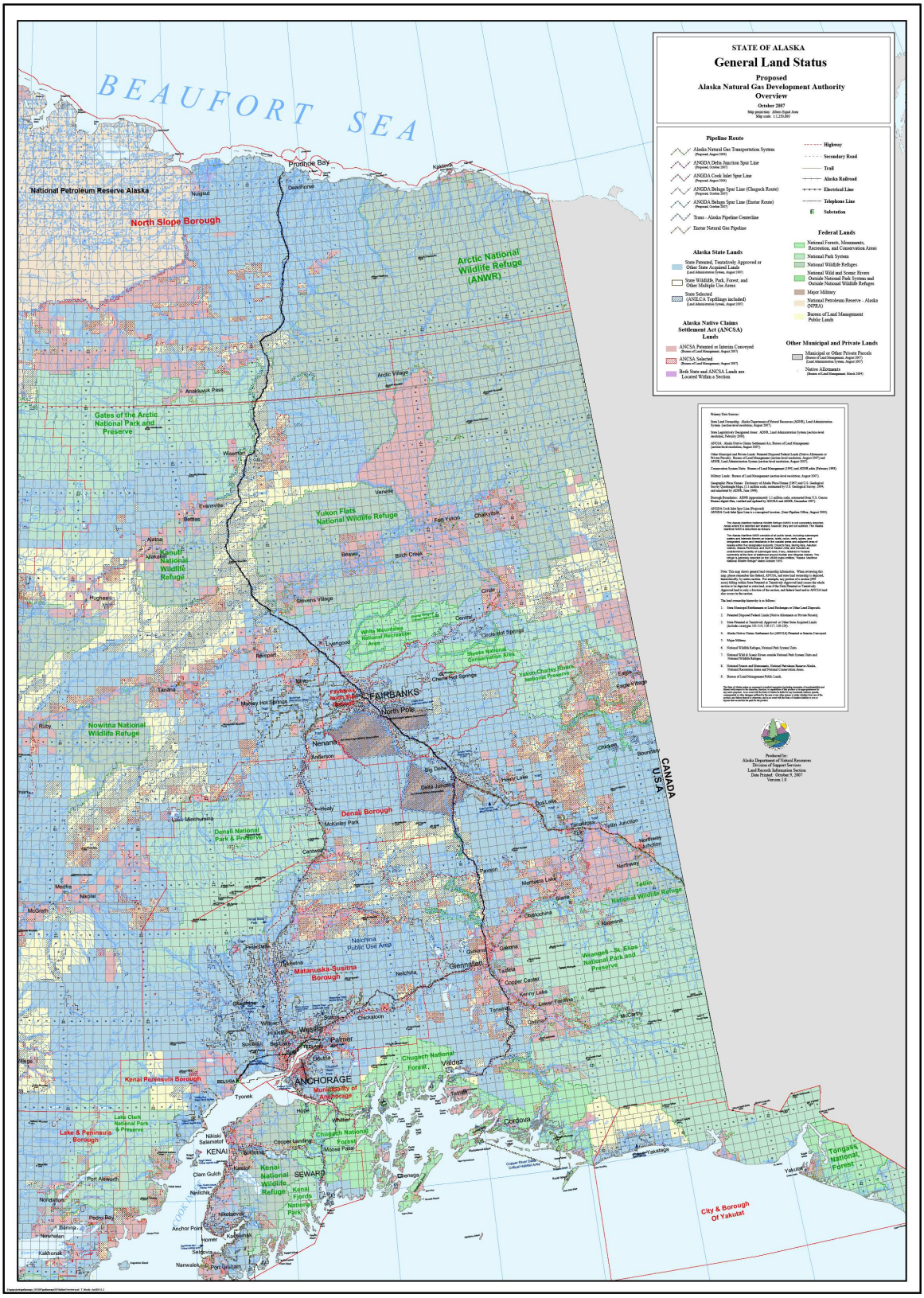
AGSL is designed to deliver a minimum annual average 0.25 BCFPD (7 Mm^3/d) of sales gas within Alaska. The estimated total capital cost for designing and constructing AGSL is $1.25 billion (USD), not including Allowance for Funds Used During Construction (AFUDC) or Interest During Construction (IDC).

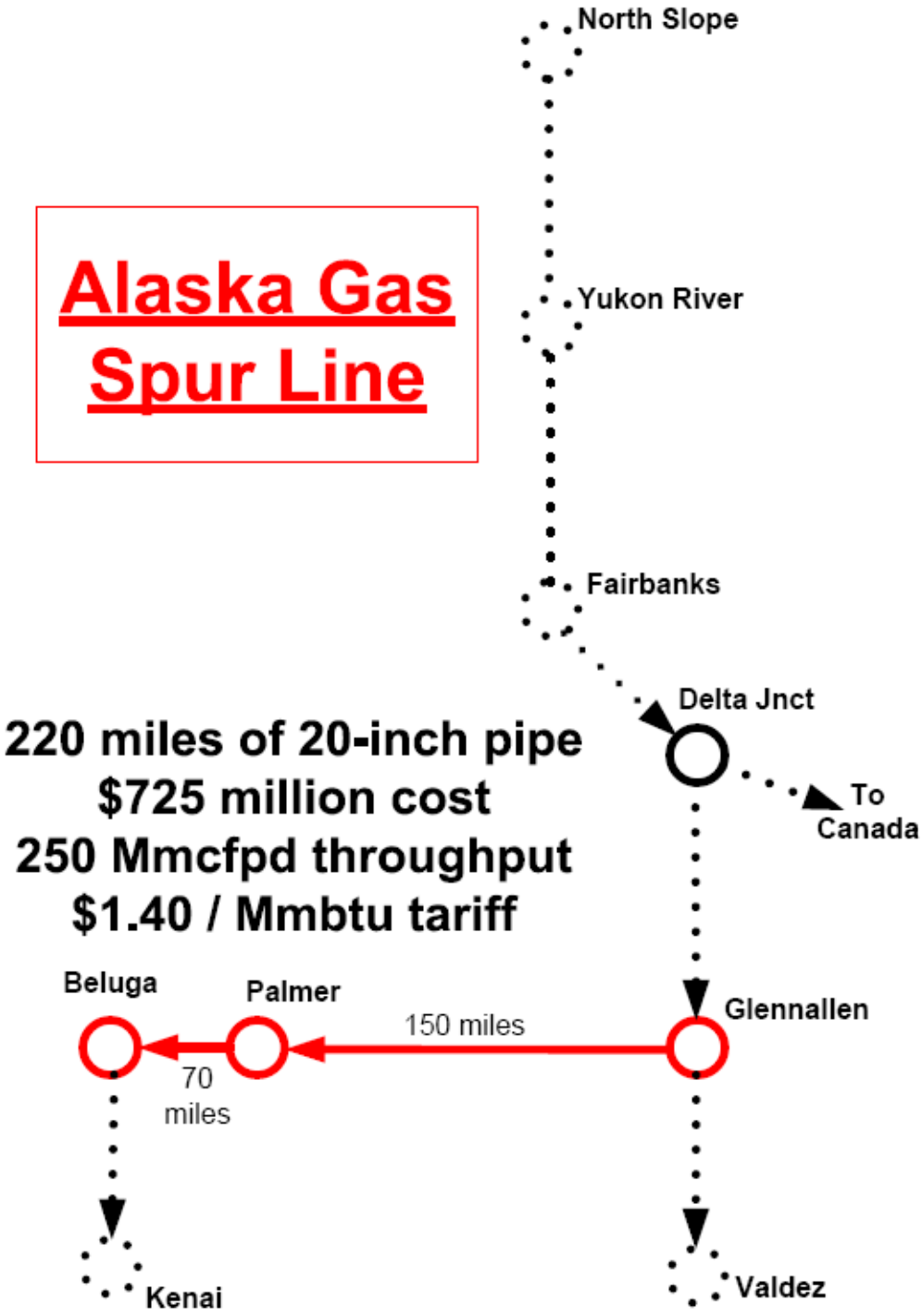
The base pipeline capacity can be expanded to an annual average capability of over 0.5 BCFPD (14 Mm^3/d) of sales gas by installing additional compressor stations. The design selected will depend on shippers' requirements and the receipt locations.

Range of Annual Gas Throughput		
Nominal Pipe Size	Base Design	Upside Throughput
18 inches	250 MMcfpd	430 MMcfpd
24 inches	500 MMcfpd	1,220 MMcfpd

Subject to timely regulatory approvals, gas can be delivered in 2014.

1.1.2ALASKA GAS SPUR LINE CONCEPT





1.1.3 JOINT VENTURE SPONSORS

AGSL is being developed as a potential joint venture by the Alaska Natural Gas Development Authority, a public corporation of the State of Alaska (AS 41.41). ANGDA received a conditional right-of-way lease from the State of Alaska for a high pressure gas pipeline alignment between Glennallen and Palmer (both in Alaska). The AGSL joint venture will evolve in the year following submittal of the AGIA applications. ANGDA is prepared to fund and operate the joint venture until the AGIA license selection process is completed.

ANGDA contacted the following potential joint venture partners:

- upstream companies (including "producers" and explorers)
- pipeline companies
- LNG plant and ship owner / operators
- experienced energy project investors
- local Alaska utilities (gas and electric)
- petro-chemical manufacturers
- ANCSA regional corporations
- individual Alaskans

The interested parties have requested anonymity at this time.

1.1.4 JOINT VENTURE STRUCTURE

AGSL will use a joint venture structure for design, construction, ownership, financing and operation of the project. The business arrangement is designed to maximize the probability of AGSL being timely built.

The joint venture arrangement provides flexibility for:

- individual owner financing;
- a single operator to:
    - manage construction and operating activities,
    - contract with shippers on behalf of owners,
    - collect shipper tolls and,
    - distribute revenue (net of operating cost) to owners;
- mutual decisions on expenditures and expansions;
- a single tariff structure approved by regulators; and
- in-state shippers, Alaska Native regional corporations, and individual Alaskan investors to establish ownership shares.

1.1.5 ENVIRONMENTAL ASSESSMENT

A comprehensive environmental and socioeconomic assessment will identify the potential effects of each of the major project components. The Environmental Assessment (EA) will address project-specific and cumulative effects including:

- identifying and assessing the significance of project-specific effects, including the project's affects on the biophysical and socioeconomic environment;
- identifying appropriate mitigation measures for project-specific effects and determining the residual implications;
- identifying the additive effects of project components on the environmental and socioeconomic features;
- determining whether the residual project effects could interact cumulatively with the effects from other projects or activities that have been, or will be, carried out;
- implementing practices for controlling carbon emissions as required by EPA, and
- complying with all applicable federal and state regulations, and local ordinances.

1.1.6 PUBLIC CONSULTATION

ANGDA is committed to early and continuous public consultation as an integral part of the project management process. ANGDA's public outreach facilitated receipt of a conditional state right-of-way lease.

ANGDA has reaffirmed and acted in accordance with the State of Alaska Millennium Agreement with Alaska Natives.

1.1.7 ANGDA STUDIES

ANGDA commissioned numerous professional studies that are public documents. These studies are available at www.angda.state.ak.us. Copies are also available to the public at the ANGDA headquarters library. In addition, ANGDA maintains electronic copies of public reports and news media stories on Alaska gas issues.

1.2.1 AGSL PURPOSE

The purpose of AGSL is to provide adequate, cost-effective, efficient, and reliable transport of North Slope gas to meet long-term Alaskan needs.

1.2.2 ECONOMIC FEASIBILITY

Key factors in the economic viability of the AGSL are:

- sufficient natural gas reserves
- firm contractual shipping commitments
- adequate market demand
- financial attractiveness (fit, willing and able)

1.2.2.1 GAS SUPPLY

North Slope gas reserves are 10 times larger than the 3 TCF of gas needed to support the 0.25 BCFPD (7 Mm^3/d) AGSL pipeline for over 30 years.

1.2.2.2 CONTRACTUAL COMMITMENTS

During the open season, the AGSL operator will continue to consult with companies that are interested in shipping gas on AGSL. To date, Precedent Agreements have not been executed. Firm Service Transportation Agreements will be in place before pipeline construction begins.

1.2.2.3 ALASKA GAS MARKETS

Several recent independent studies of in-state demand for natural gas forecast a long-term requirement of 0.25 BCFPD (7 Mm^3/d) to provide heating and power generation. Analyses of energy alternatives favor continued use of existing gas distribution infrastructure to meet residential and commercial requirements (very high cost to convert from gas).

The base case throughput volume of the AGSL does not include industrial use or tidewater export volumes of gas. Current Kenai LNG export is a volume equivalent to the base 0.25 BCFPD (7 Mm^3/d). Potential industrial use and tidewater export volumes could be as high as five times the base volume.

If open season nomination volumes are substantially higher than the base case, pipeline capacity will be increased and transportation charges reduced.

1.2.2.4 FINANCING

AGSL owners will be responsible to provide the capital to fund its proportionate share of construction costs. The owners can use internally generated funds and debt to meet their capital requirements.

1.2.3 AGSL PIPELINE DESCRIPTION

1.2.3.0 BACKGROUND

The concept of delivering North Slope gas to market is over three decades old. AGSL assumes a large project through Canada to the US or to Valdez for LNG shipment will be constructed as a result of the AGIA process.

1.2.3.1 PIPELINE DESIGN

Interrelated elements in designing a gas transmission pipeline include:

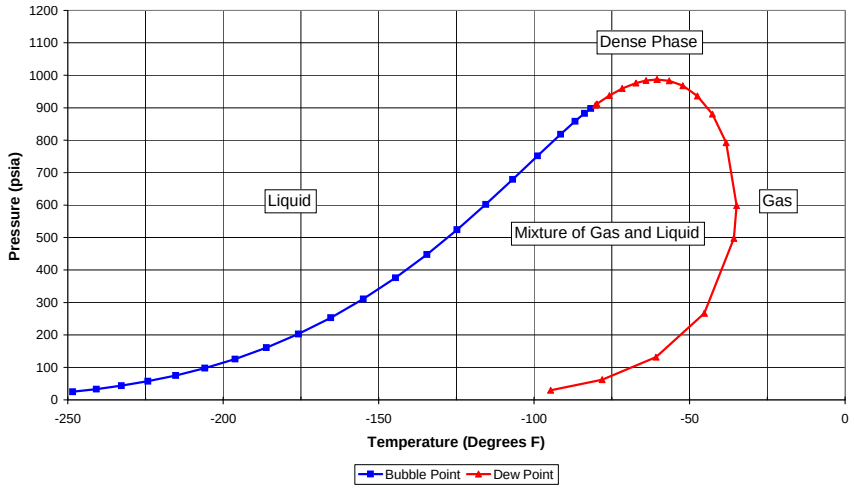
- pipeline operating pressures (both maximum and minimum)
- pipe diameter
- steel metallurgy (manufacturing and welding)
- code requirements and specification

These design elements directly affect the cost and operational performance of the pipeline.

1.2.3.2 PIPELINE OPERATING PRESSURES

The AGSL design sets a maximum allowable operating pressure (MAOP) of 2,500 psi. This specification is at the upper end of current conventional designs that maximize throughput, minimize cost per unit of capacity and optimize tariff.

North Slope gas reserves include a high percentage of natural gas liquids (NGLs). Transport of these valuable ethane, propane and butane molecules requires that the minimum operating pressure be greater than the “critical pressure” for the specific hydrocarbon molecular mixture. Maintaining a dense-phase flow (avoiding a two-phase flow) can be achieved at pressures above 1,500 psi.



The maximum pressure drop between compressor stations was set conservatively at 500 psi to provide maximum operational reliability and leave significant margin for higher throughputs. Alternative evaluations are presented at 1,000 psi pressure drop.

1.2.3.3 PIPE DIAMETER

With a base gas flow of 0.25 BCFPD, pipeline diameter as small as 18 inches is calculated using gas hydraulic flow equations. A peak flow capability of 0.40 BCFPD (cold winter day) would require a pipe diameter no smaller than 20 inches.

The AGSL 20-inch pipeline diameter base design was selected because it is a standard pipe size.

1.2.3.4 PIPE METALURGY

A grade X-80 pipe (yield strength of 80,000 psi) was chosen because of the following:

- wide-spread field use over a long period of time in Arctic conditions,
- favorable welding characteristics over a wide range of temperatures and wall thicknesses,
- worldwide availability from most steel mills.

1.2.3.5 REGULATIONS, CODES AND STANDARDS

The AGSL and associated facilities will be designed, constructed and operated according to federal and state regulations and municipal ordinances; and government and industry codes and standards. Gas pipeline and facilities are regulated by the U.S. Department of Transportation (DOT) 49 CFR Part 192 Natural Gas Pipeline regulates transportation of natural and other gas by pipeline and sets minimum federal safety standards. The USDOT has authority to enforce pipeline safety.

ASME 31.8 covers the design, fabrication, installation, inspection, testing, and other safety aspects of operation and maintenance of gas transmission and distribution systems, including gas pipelines, gas compressor stations, gas metering and regulation stations, gas mains, and service lines up to the outlet of the customer's meter set assembly.

1.2.4 ALTERNATIVE AGSL PIPELINE ROUTES

1.2.4.2 ALTERNATIVE PIPELINE ROUTES

The following routes were considered:

- Paxson to Curry / Talkeetna
- Fairbanks to Willow
- Delta Junction to Glennallen
- Gakona Cutoff
- Glennallen Highway - (Glennallen to Palmer)
- Chickaloon Cutoff

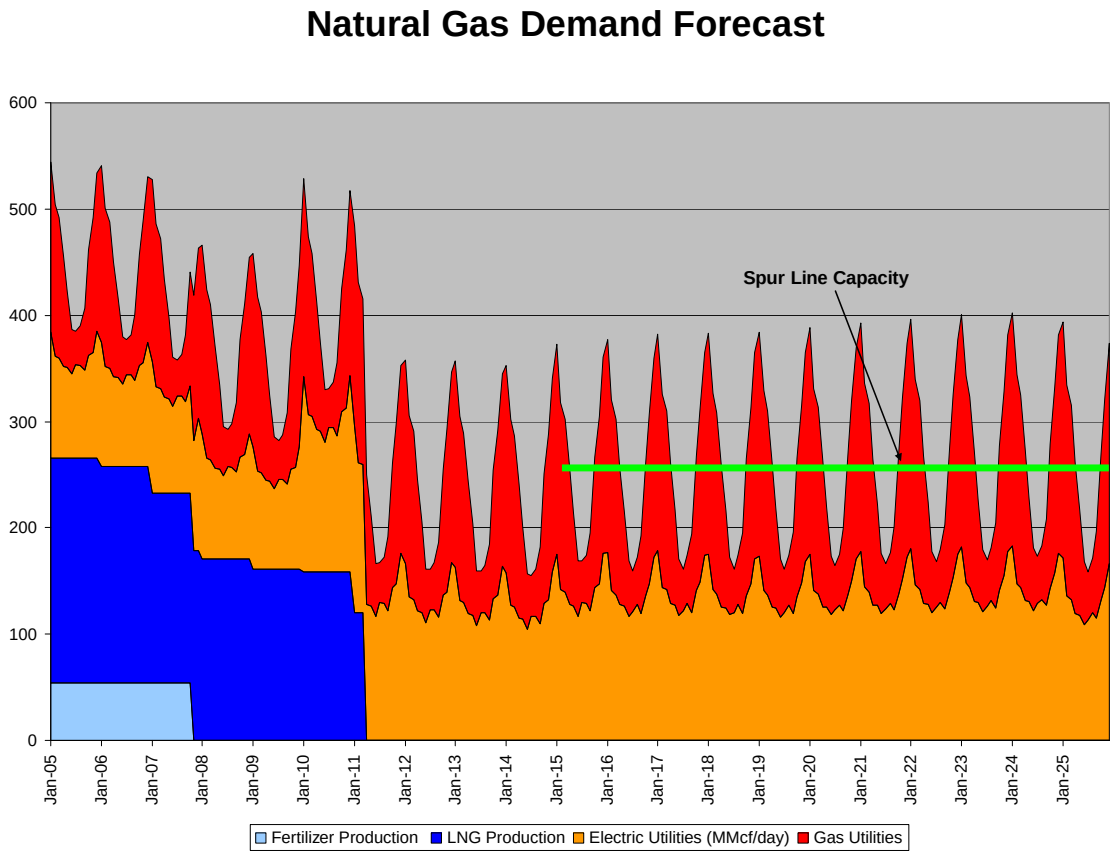
Several route alternatives were defined through community input during the public outreach program.

The Glennallen to Palmer and Beluga were the pipeline alignments chosen based on:

- greater flexibility of delivery service
- lower tariff to shippers, and
- minimal impact of new ROWs

1.3.1 AGSL INITIAL DELIVERY CAPACITY

AGSL was designed for 0.25 BCFPD (~7 Mm^3/d) to meet residential and commercial demand and is expandable to the current usage (includes industrial use) of 0.5 BCFPD (~14 Mm^3/d).



1.3.2 PROJECTED CAPACITY ALLOCATION

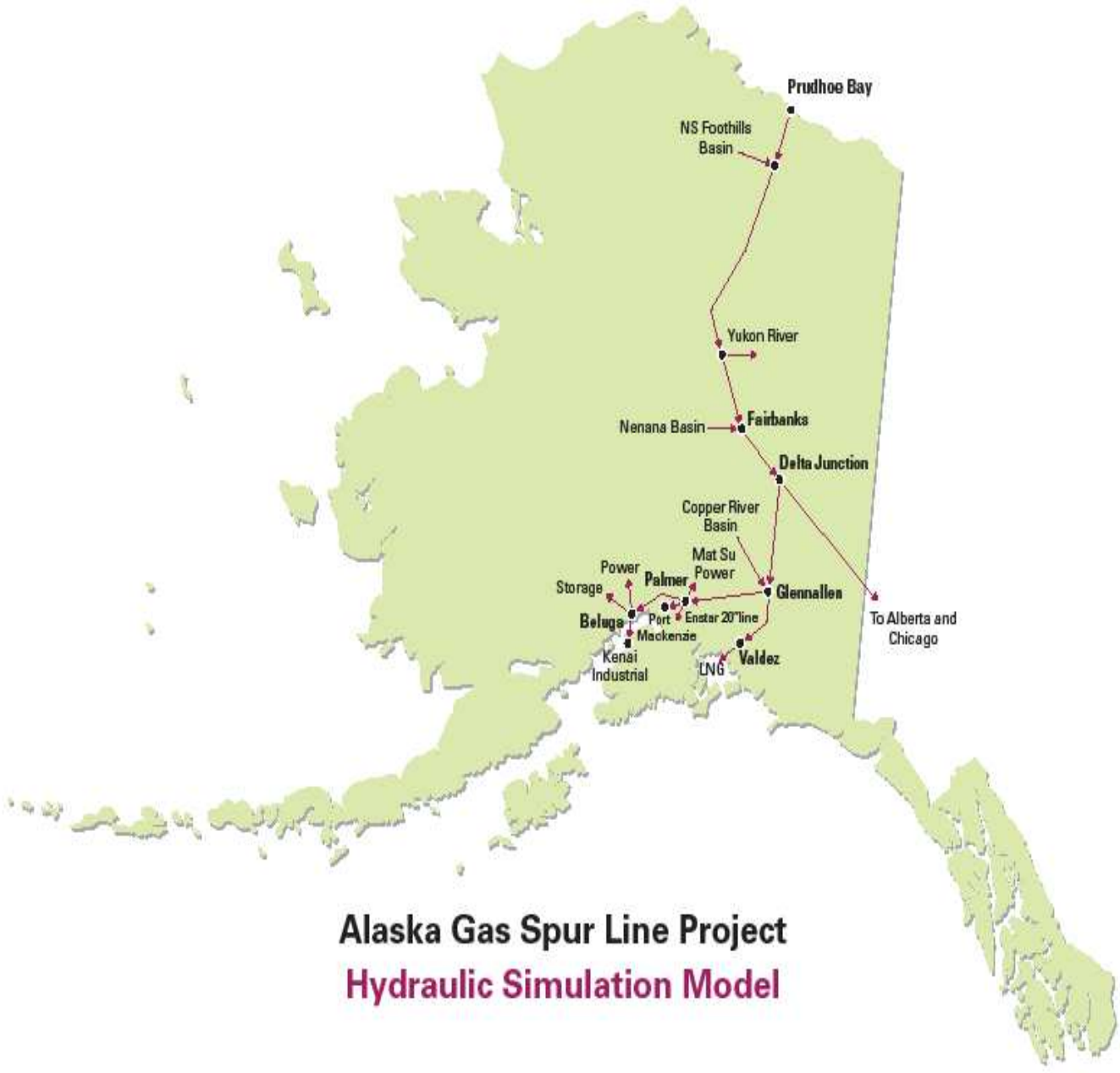
AGSL understands other potential producers are in various stages of exploration and development planning in the Prudhoe Bay area, North Slope Foothills Basin, Yukon Flats, Nenana Basin, Nelchina Basin and Beluga gas fields. As the results and details of these plans evolve and become known, these producers might be in a position to contract for any remaining capacity.

If the design capacity is not totally contracted for under Firm Transportation Service Agreement commitments, the installation or reconfiguration of some of the compressor stations might be delayed until the remaining capacity is committed to contract.

1.3.3 AGSL EXPANSION CAPACITY

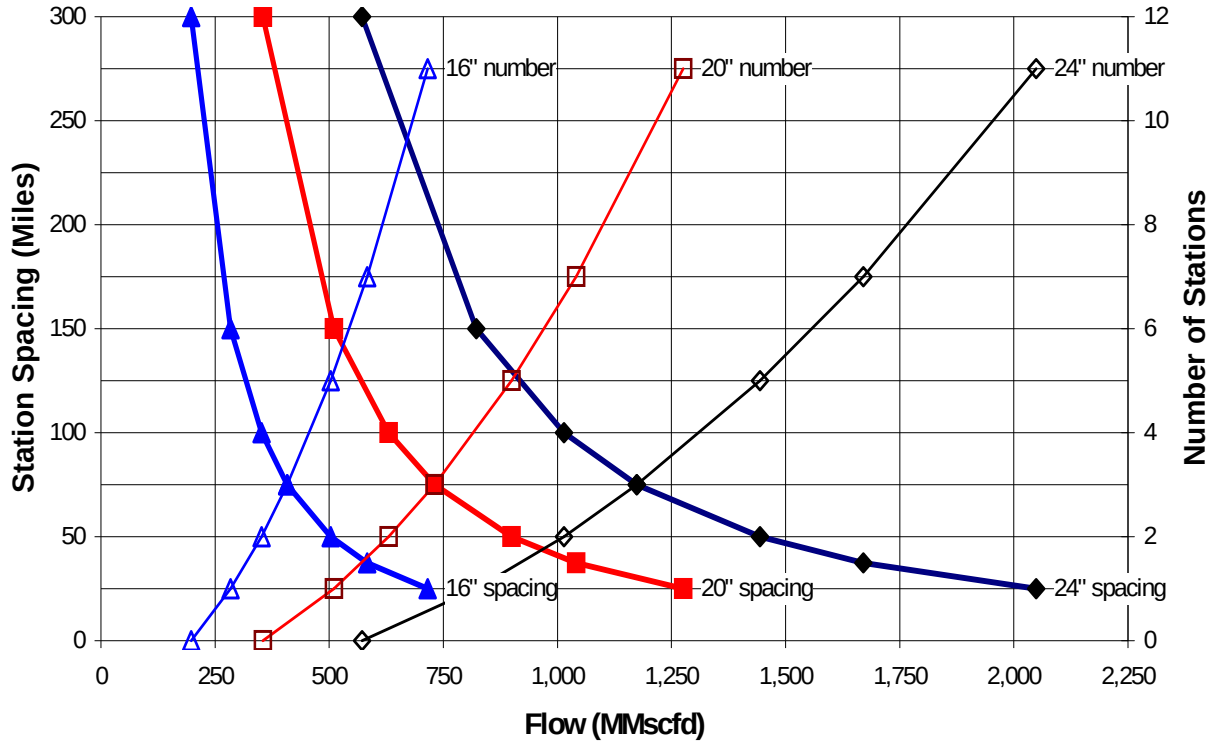
The 0.25 BCFPD (~7 Mm^3/d) capacity of the applied-for facilities can be expanded up to 0.50 BCFPD (~14 Mm^3/d) by adding compressor stations at the intermediate block valve sites. The location of the potential compressor station has been selected (near Eureka) to provide a range of capacity up to 0.5 BCFPD (~14 Mm^3/d).

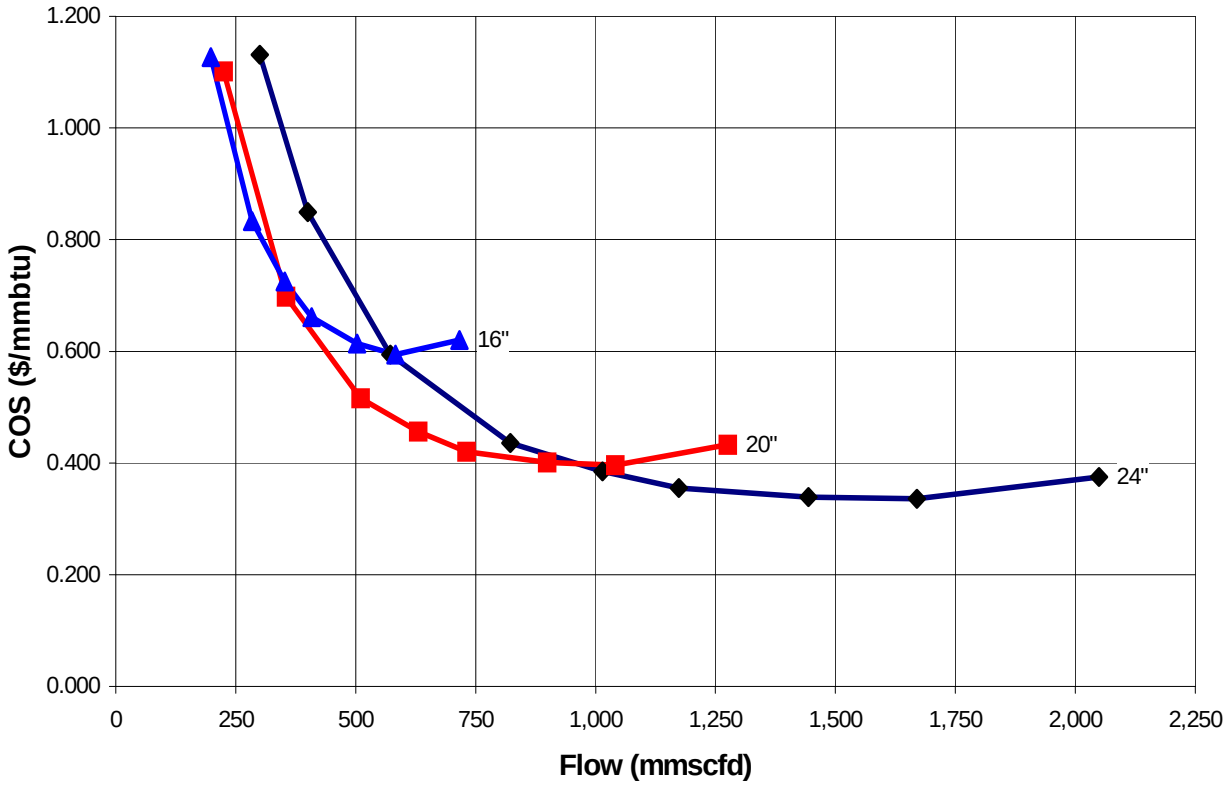
1.3.4 AGSL SYSTEM CONFIGURATION



The AGSL linear alignment is capable of expansion to Kenai, Valdez, Port MacKenzie and other future destinations within Alaska. A hydraulic simulation model with numerous gas receipt and delivery points was created to prepare for other potential shipper requirements identified during the open-season process.

The model calculation results are generally portrayed by the following curves relating pipeline throughput to compressor station spacing and cost of service.





1.4.1 OPEN SEASON PROCESS

To establish a commercial basis for AGSL, ANGDA initiated a series of educational forums and workshops for potential shippers to provide nonbinding interest in shipping gas in the spur line. ANGDA will hold a binding, negotiated open season to determine the capacity volumes of qualified companies.

Responses to the nonbinding open season will determine initial pipeline capacity parameters to be used at the start of the binding, negotiated open season.

AGSL will be subject to the jurisdiction of the Regulatory Commission of Alaska (RCA). To comply with the requirements of AS 42.06, ANGDA will conduct the initial binding negotiated open season in 2008. Upon successful completion of the open season, ANGDA will submit results and an application to the RCA for certification no later than 12 months after the issuance of an AGIA license. Under this timeline the RCA, ANGDA, and open season participants will have sufficient time to approve the filing, tariffs, and commitments within the 36-month window required by AS 43.90.130(4)(A).

Potential in-state shipper decisions must also include mainline tariff requirements set during a Federal Energy Regulatory Commission (FERC) jurisdiction open season. Coordination of mainline and spur line shipping terms is essential.

ANGDA determined it is important to preserve the opportunity to build the AGSL prior to the mainline completion. ANGDA continues to work diligently with potential stakeholders to develop an in-state open season process.

1.4.2 PRECEDENT AND FIRM TRANSPORTATION SERVICE AGREEMENTS

Precedent agreements for sales gas in Alaska will be executed by shippers for terms of 15 and/or 20 years.

Firm Transportation Service Agreements (FTSA) are required to provide the contractual commitments to finance, and construct the AGSL.

1.4.3 TYPES OF SERVICE

AGSL will provide firm service for a primary term of either 15 or 20 years.

Authorized Overrun Service (AOS) is also available to firm service shippers.

In addition, Interruptible Transportation (IT) service will be available to a shipper that has a Firm Transportation Service Agreement, subject to the operating conditions of the pipeline.

1.4.4 TOLLING PRINCIPLES

Parties who execute Precedent Agreements agree to principles used to calculate the tolls for the pipeline.

SUMMARY OF TOLLING PRINCIPLES

Element	Principle
Open access, contract carrier	• Open for use by eligible shippers • Encourages exploration and development
FERC and RCA regulated	• Tolls and tariffs are just and reasonable, consistent with the intent of the *Federal Energy Regulatory Commission* (FERC) and *Regulatory Commission of Alaska* (RCA), aligned with FERC and RCA precedents and are in the public interest.
Cost of service	• Tolls are based on the actual cost of designing, constructing and operating the pipeline. • Tolls are stable and predictable.
Same tolls for same service	• No discrimination among shippers • Promotes fairness, equality and transparency of toll determination • Shippers who are also owners do not receive special privileges or priority access to capacity.
Alaska Gas Spur Line scope	• Applies to the gas pipeline, which will extend from the outlet of the Prudhoe Bay facility to Glennallen and beyond • No laterals will be constructed by the gas pipeline sponsors. However, laterals and gathering lines will be constructed by others, as required.

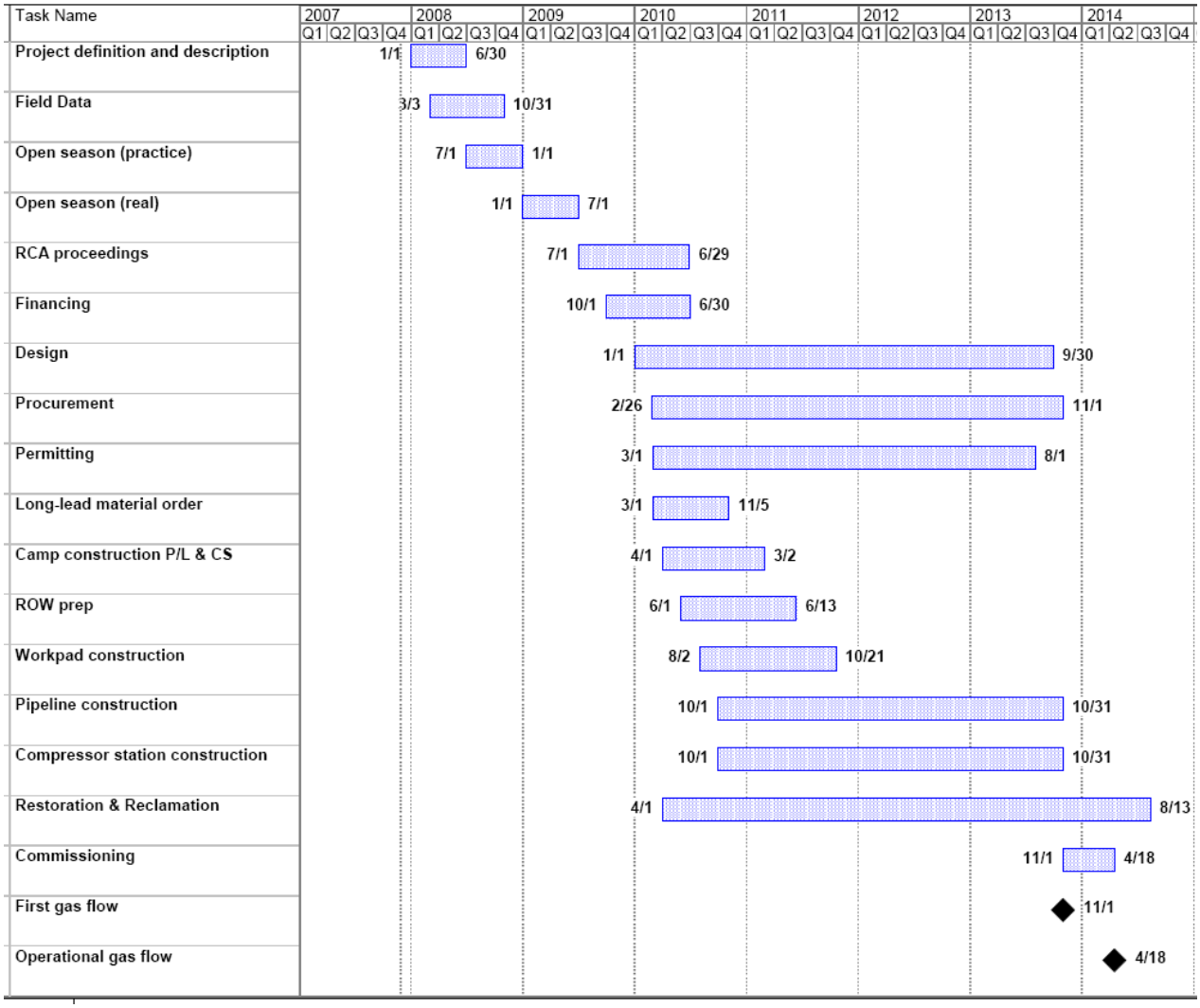
1.4.5 TARIFF PRINCIPLES

In addition to the tolling principles, the tariff principles are included as terms of the Precedent Agreements. These tariff principles represent the key elements that will form the general terms and conditions of the gas pipeline and include:

- quality specifications
- demand charge credits
- force majeure
- capacity release
- system use gas
- expansion policy

1.5 PROJECT MANAGEMENT ELEMENTS

1.5.1 PROJECT SCHEDULE



Construction is expected to start after regulatory approvals are issued and the sponsors have made a decision to construct. Construction will continue for four years, after which the first deliveries of gas will begin. Peak construction activity will occur in the winter.

Gas is expected to be delivered to Alaska by the middle of 2014 or earlier. Camp and equipment demobilization, construction clean up and site reclamation will extend into the first year of operations in 2015.

The schedule assumes summer construction of infrastructure that is required to support construction activity during the initial winter season. Pipeline construction and related facility activities occur in multiple areas or spreads at the same time. This multi-spread construction approach allows flexibility to accommodate changes in local conditions, such as weather.

1.5.2 CONTRACTING PRINCIPLES

AGSL will use contractors that are:

- fit, willing, and able to meet safety, environmental, technical, and quality standards
- financially capable
- able to meet project schedule
- cost competitive

1.5.2.1 ALASKAN CONTRACTORS

Qualified Alaskan contractors will be invited to participate in the competitive bidding process. To date, ANGDA has been able to award over 90% of its work to Alaskan contractors.

1.5.2.2 CONSTRUCTION LABOR

Employment opportunities will be available to qualified Alaska residents. ANGDA intends that the AGSL will be constructed and operated under a Project Labor Agreement.

The peak seasonal field workforce requirement for the gas spur pipeline and facilities is estimated to be between 1100 and 1600.

1.6.1 REGULATORY AND PERMITTING OVERVIEW

AGSL will acquire regulatory authorizations, permits and approvals for the project.

ANGDA will enter into an interagency framework for the regulatory and environmental review and approval process for AGSL. AGSL will encourage collaboration among the regulatory and environmental authorities and the public.

AGSL will issue a Project Execution Plan (PEP) pursuant to the regulatory process with FERC and RCA.

1.6.2 REGULATORY APPROVALS

AGSL requires regulatory authorizations before construction and operation of AGSL. These licenses, permits and authorizations must be obtained before the start of construction.

The AGSL will require a State of Alaska (RCA) Certificate of Public Convenience and Necessity and approvals of the toll and tariff principles. Regulated utilities that ship gas on AGSL will also require RCA approval of their gas purchase and shipping contracts.

1.7.1 DESIGN BASIS

AGSL will connect with the mainline at Glennallen and transport gas / NGLs to Palmer and ENSTAR gas tie-in location near Palmer, and will terminate at Beluga.

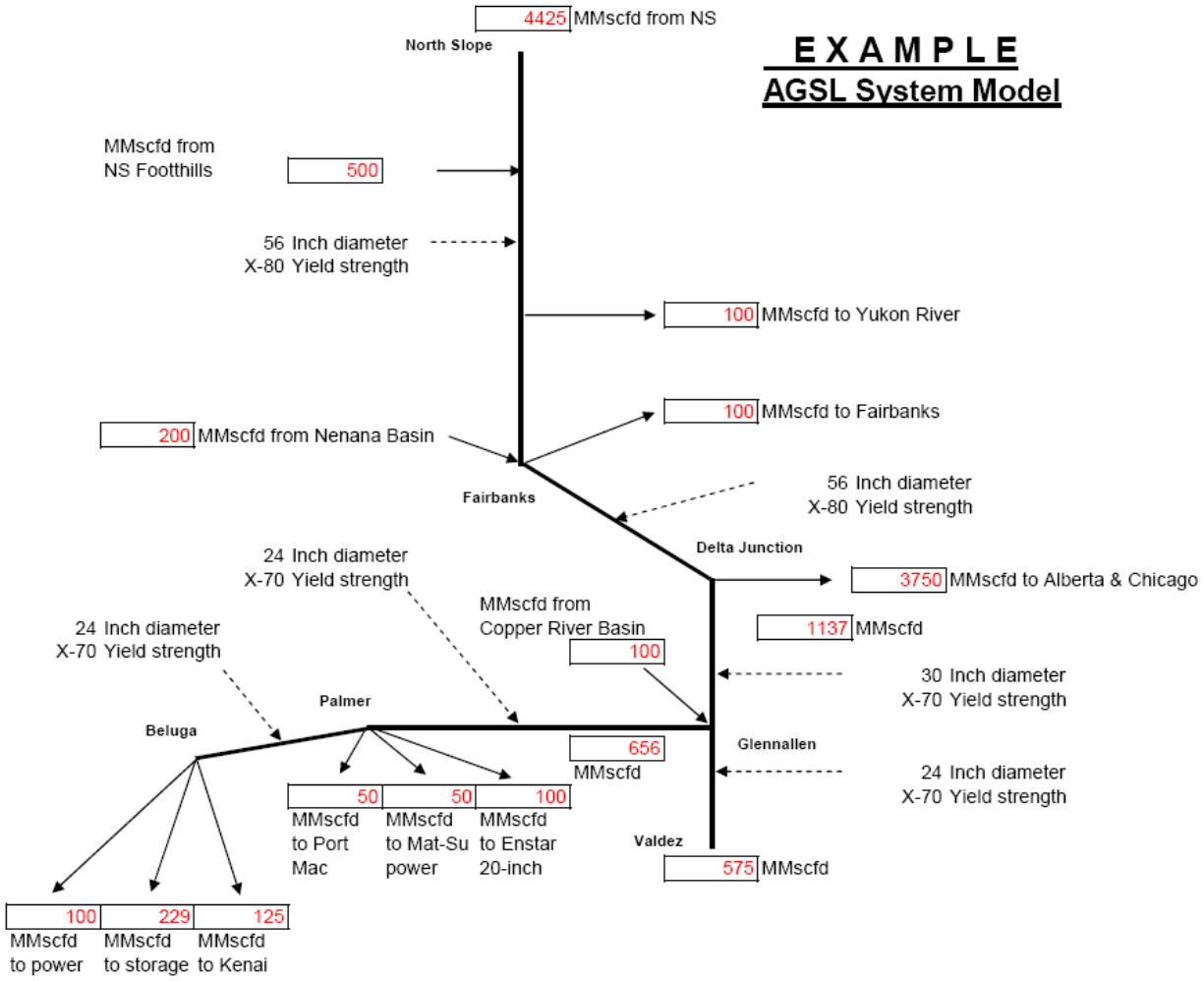
The base design assumes the delivery of 0.25 BCFPD (~7 Mm^3/d) from the AGSL Glennallen facility to the Beluga area.

The AGSL design will provide expansion capability to accommodate additional volumes from ongoing and future exploration activities and new gas users.

- The Glennallen to Palmer design will accommodate expansion to twice the base volume by added compression (oversize the pipe in base case design), i.e., to approximately ~0.5 BCFPD (~14 Mm^3/d).
- The Palmer to Beluga design will accommodate expansion to twice the base volume.

1.7.2 SYSTEM CONFIGURATION AND EXPANSION

As new gas fields develop, gas volumes and composition will be defined. The AGSL is designed for flexibility in system capability.



1.7.3 FACILITIES

A custody-transfer meter station will be located at or near the Glennallen, Alaska Gas Pipeline off-take outlet leading to AGSL.

Two compressor station sites will be designed at 75-mile (~120 km) intervals along the pipeline near Glennallen, and Eureka (future). The compressor stations will be accessible from existing or new all-weather roads extending from the State of Alaska highway system.

1.7.4 GEOTECHNICAL FACTORS

The AGSL design recognizes that the pipeline will be subject to secondary load conditions from:

- frost heave
- thaw settlement
- slope instability
- pipe buoyancy

The interaction of a buried cold gas pipeline with these Arctic geotechnical factors is being evaluated in ANGDA's consideration of a slightly elevated pipeline profile.

1.7.5 INTERCONNECTIONS

The AGSL Glennallen gas custody-meter station will be located near the site of the Glennallen Compressor Station facility and is part of AGSL. This meter station will use multi-path ultrasonic meters and single-path ultrasonic check meters or the equivalent. Chromatographs will be used to measure gas composition.

The sponsors will provide valve access points on the gas pipeline for communities, upon request. Communities requesting access will require:

- agreements with pipeline shippers to purchase the gas
- an agreement with the pipeline owners for an interconnection, including identifying a gas receipt point on the gas pipeline near their community
- regulatory approvals for facilities and gas distribution

The communities or developers acting for the communities will be responsible for providing any transportation, distribution, metering, processing or other facilities needed to bring the natural gas from the gas pipeline to users in the communities.

1.8.1 ROUTE SELECTION PROCESS AND CRITERIA

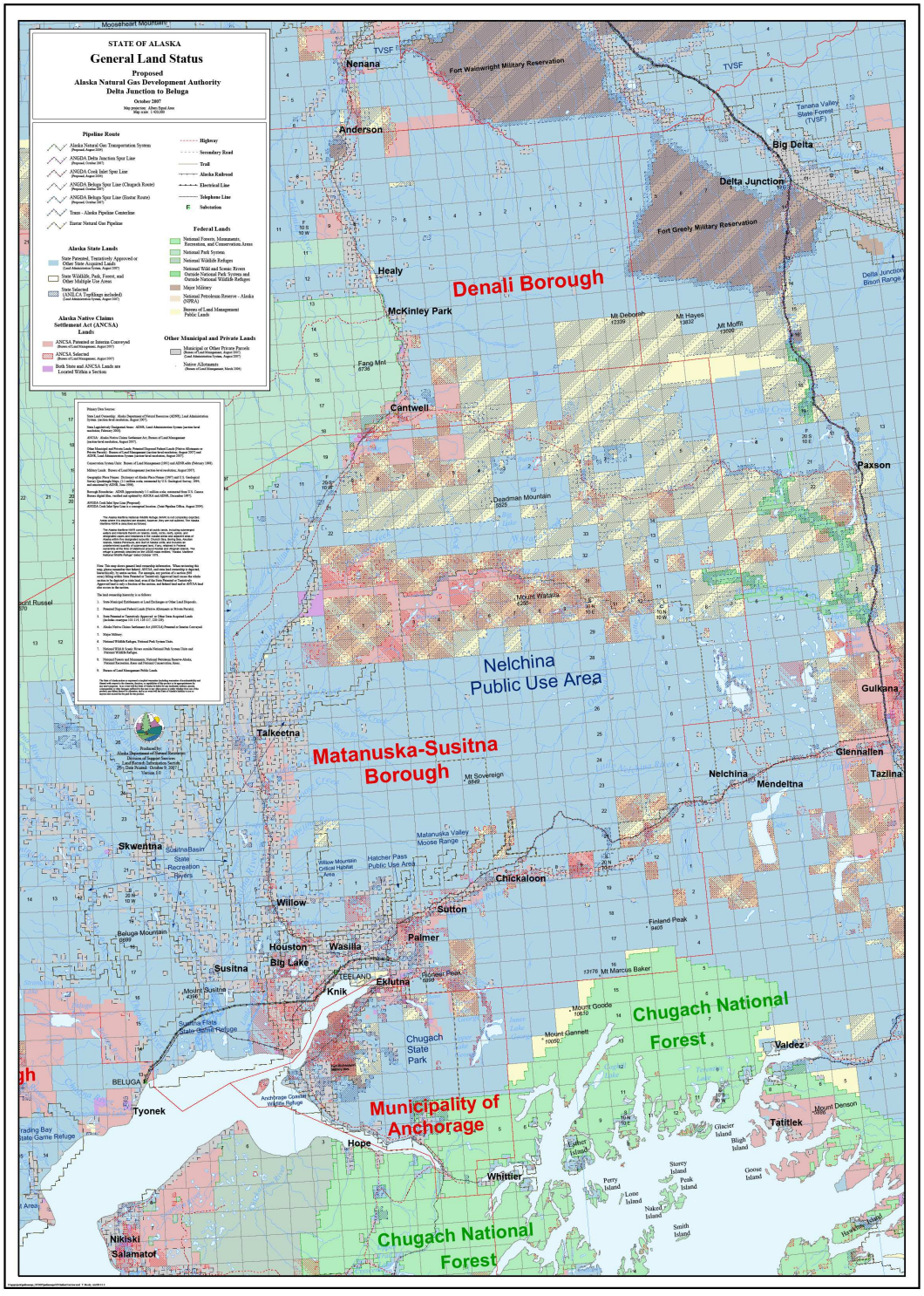
The AGSL route was selected using a process that included:

- reviewing previous pipeline, highway studies, utility proposals and other studies
- establishing route and site selection criteria
- identifying preliminary pipeline routes, sites and alternatives
- conducting field investigations involving community representatives
- revising preliminary site and route locations based on field investigations
- consulting with communities on sites and routes
- revising site and route locations, where practical, based on community input

The route selection criteria include:

- avoiding sensitive environmental and cultural areas
- reducing disturbance to communities and the landscape
- satisfying engineering and construction requirements
- reducing cost

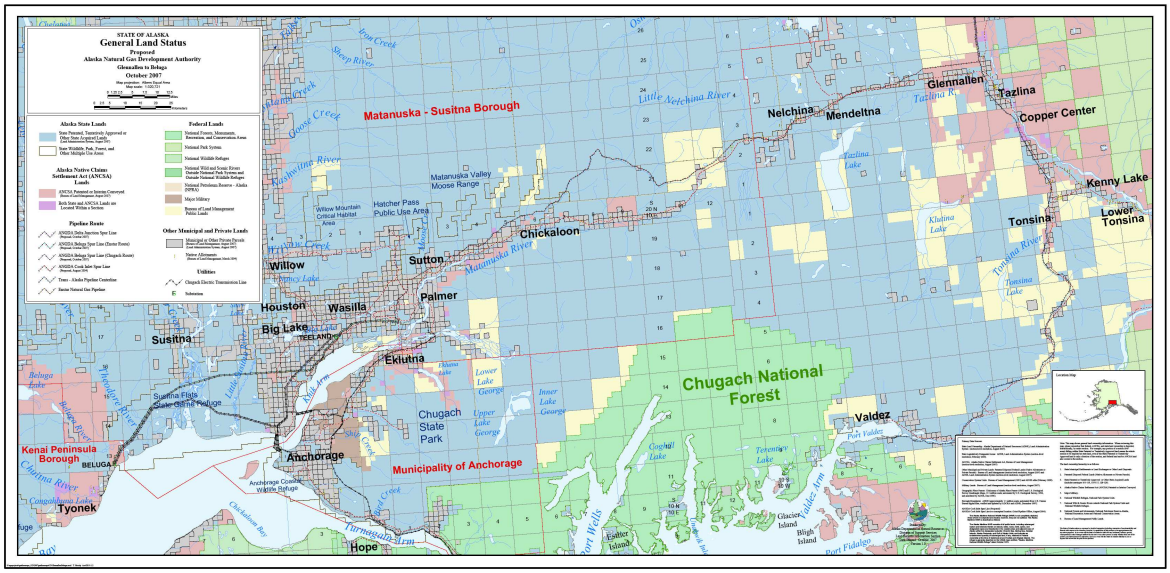
1.8.2 ROUTE DESCRIPTION



1.8.2.1 GLENNALLEN TO PALMER (150 miles)

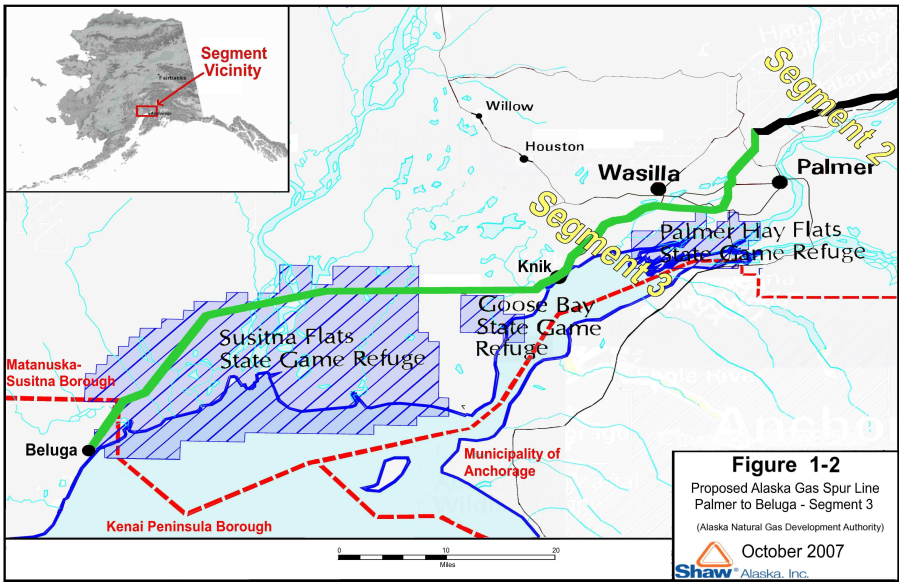
The AGSL will connect to the mainline at Glennallen.

The route west from Glennallen parallels and alternates from the north side to the south side of the Glenn Highway to Eureka in a ~60-foot to 1500-foot right-of-way. The route deviates north from the highway west of Eureka, over Chitina Pass and down Boulder Creek to Smith's cabin. The route crosses Kings River and connects with the Matanuska Power Transmission Line ROW just west of Chickaloon and follows it into a location at Fishhook Road near Palmer. Some private lands are encountered along this portion of the route. The road connecting Fishhook road and the Parks Highway is to be realigned and widened. AGSL plans to place its pipeline in that alignment. Over half of this alignment crosses state lands.



1.8.2.2 PALMER TO BELUGA (70-miles)

The route from Palmer to Beluga follows existing rights-of-way of ENSTAR and Chugach Electric.



1.9 CONSTRUCTION COSTS (in millions)

Capital Cost	
Glennallen to Palmer	$475
Palmer to Beluga	$150
Total Pipeline	**$625**
Compressor @ Glennallen	$50
Metering @ Glennallen	$25
Propane / Power @ Glennallen	$25
AGSL TOTAL COST	**$725 million**

These costs are consistent with a benchmark of $150,000/inch-mile to $175,000/inch-mile for Arctic gas pipeline costs.

1.10 CONSTRUCTION PLANNING

Construction and fabrication methods planned for use on AGSL are similar to those used in northern Russia, Alaska, Canada, Antarctica, and the Scandinavian countries. Conventional winter pipeline system expertise will be incorporated during design, construction and operation of this pipeline.

The window for pipeline and facilities construction is predicated on the familiarity, experience and skill of the various contractors and workmen that will work in a cold environment, the stability of soils, access, ambient air temperature and permitting criteria. It has been determined that certain portions of the pipeline right-of-way are better suited to summer or winter construction.

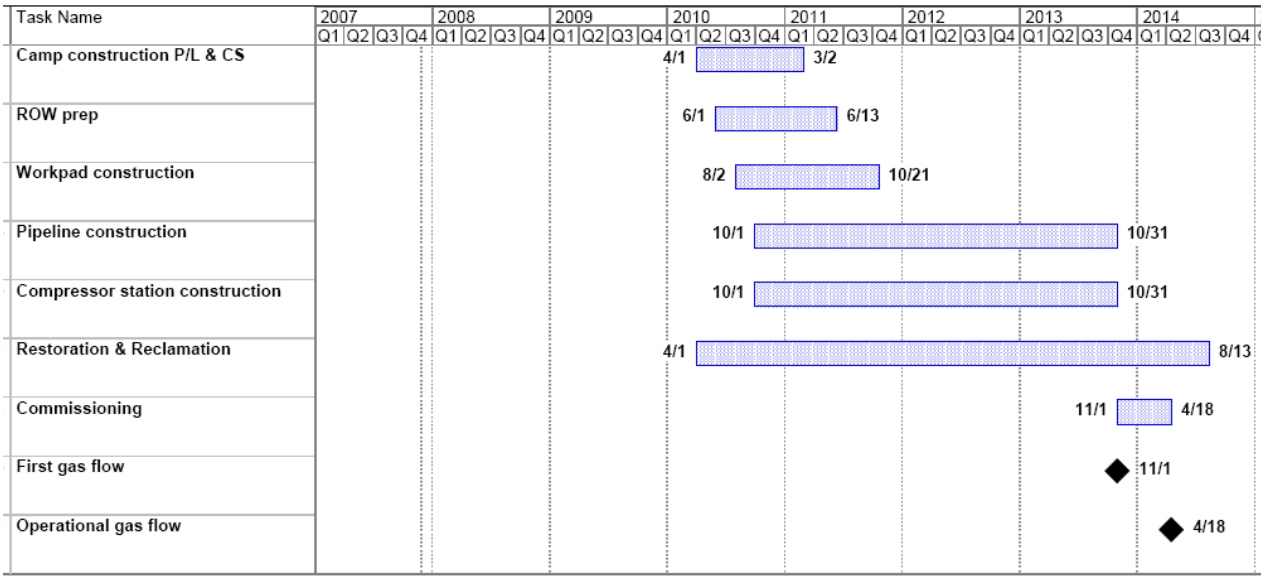
The following factors were considered in the AGSL construction planning:

- safety and emergency response
- environmental requirements
- regulatory and permitting requirements
- permafrost conditions
- seasonal constraints
- reduced daylight during the winter
- severe weather conditions
- construction logistics

- infrastructure requirements
- specialized construction equipment
- select fill requirements
- coordination with other project construction activities

Feedback from public consultation was considered in the design and construction planning process. This included the effects on, and opportunities for, Alaskan businesses, residents and nearby communities to participate in the employment and business opportunities resulting from constructing and operating the gas pipeline. Revisions to the construction plan may be made as a result of ongoing consultation and as engineering progresses.

1.10.2 CONSTRUCTION SCHEDULE



The construction schedule assumes that timing of approvals and permits allows activity to begin in the summer of 2010. Summer activities are critical to the schedule, as these activities allow construction of infrastructure to support winter 2010–2011 activities. Significant expenditures and commitments will be required to maintain this schedule. These investment decisions will be subject to review as the regulatory process proceeds.

This preliminary plan assumes four years of construction for the pipelines and associated facilities. Camp and equipment demobilization, construction clean up and site reclamation will extend into the first year of operations.

Preliminary construction in 2010–2011 involves preparation activities, such as building the infrastructure needed for construction, and clearing the rights-of-way and some facility sites. The subsequent years involve completing the clearing operations, and constructing the pipelines and associated facilities.

The remote location and seasonal constraints require significant preparation and preplanning to accommodate construction activities in the critical summer and winter periods. This preliminary plan will be revised as engineering progresses. The plan incorporates the results of field investigations and further community consultations.

A post-construction reclamation plan for construction infrastructure sites will be developed in accordance with the right-of-way lease and other permit stipulations. The

plan will include information gathered from public consultation and consideration of alternative uses for infrastructure sites.

1.10.3 LOGISTICS AND TRANSPORTATION

Logistics and transportation activities will be integrated and coordinated to AGSL to ensure the efficient use of existing infrastructure in delivering pipe, material and equipment to the construction sites.

The transportation plan will be developed to ensure that:

- personnel can be moved to and from the construction sites safely
- equipment and materials required for construction are delivered to the construction sites when needed

The primary transportation methods for project construction will be:

- trucks on existing highways, ice roads and new project roads
- aircraft, including helicopters, throughout the project area
- other vehicles, such as buses, in the project area
- barges to ports

The plan is to use the State Highway infrastructure to move construction equipment, material and modules, personnel and fuel. Trucks will be the primary mode of transportation between Glennallen and Palmer.

Trucks will be used to transport pipe from staging areas to pipeline storage areas and also for stringing pipe. Materials will be stored and transported to the right-of-way or facility sites, as required.

Bus transportation will be the primary method for transportation of personnel, because of the distances involved, safety, and numbers of required personnel at various work site locations

Winter access to Beluga from the Knik area typically extends from late December to the beginning of March. Construction materials and equipment will be delivered by winter road or by summer barge landings to Beluga to stage construction material and equipment.

1.10.4 INFRASTRUCTURE REQUIREMENTS

The infrastructure required to construct and operate AGSL includes:

- borrow and disposal sites
- staging and stockpile sites for materials and equipment
- fuel storage sites
- fly-camps, portable maintenance camps and construction camps
- permanent and temporary access roads
- airstrips and helipads
- temporary waste storage

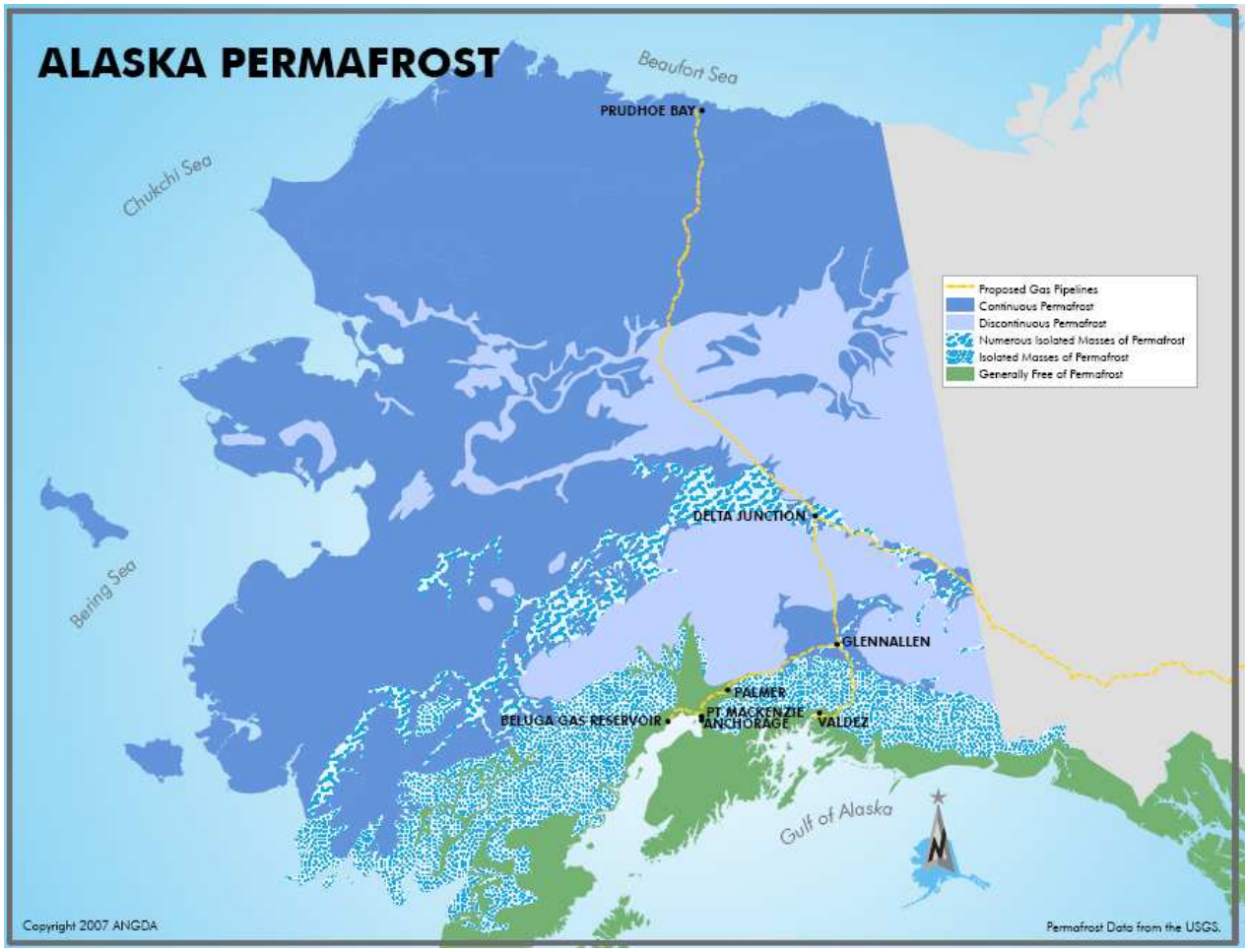
1.10.5 ALASKA WORKFORCE

Preliminary estimate for pipeline construction labor is 1,100-1,600 personnel per season. For compressor station support, an equal number is anticipated.

The AGSL headquarters will be in Anchorage. Construction and offices will be located in Glennallen and Palmer or Wasilla.

From its inception, ANGDA has stated its intention to hire qualified Alaskan residents throughout the state for management, engineering, construction, operations, maintenance, and other positions. Contracting with businesses located within the state has always been one of ANGDA's stated goals. ANGDA and its joint venture partners will establish hiring facilities at its local offices and will use existing hiring facilities within the state. ANGDA will use Alaska job centers, the Department of Labor and Workforce Development, and the state operated internet-based labor exchange system to recruit and hire potential Alaska workers.

1.10.6 PIPELINE CONSTRUCTION



Construction activities will take four years, with an initial winter season for preparation activities, such as clearing the right-of-way, followed by pipeline installation over two winter seasons.

The right-of-way and temporary workspaces will be cleared for pipeline construction when ground and permitting conditions allow. The full width of the right-of-way might not be cleared. Approaches to water bodies' crossings with steep south-facing slopes will be widened to accommodate access.

Pipeline clearing is expected to start in 2010 and end in 2012.

The right-of-way work surface will be leveled to safely move vehicles and equipment.

Pipeline construction can proceed safely on snow and ice-covered surfaces, if the cross-slopes are not excessive. Steep longitudinal and side hill slope access will be graded to provide safe working conditions. Snow and ice work pads will be constructed, where practical, over areas of unstable ice-rich soils and construction activities adjusted due to seasonal constraints.

Pipeline installation is expected to start in the winter of 2011-2012 and end in 2014. Double-Joints up to 80-feet (24 m) long will be transported by truck from pipe stockpile sites and strung-out along the right-of-way on temporary supports or skids.

The line pipe will be welded according to ASME 31.8 (gas) requirements and to project-specific requirements. Pipeline installation will be conducted in winter and summer according to the construction plan.

Equipment, such as chain trenchers, bucket wheel trenching machines and backhoes will be used for excavation where buried. Pipeline cover will vary from 1.5 feet to 3 feet (0.6 to 0.9 m), with some sections, such as water body crossings, requiring deeper burial. If bedrock is encountered, ripping or blasting might be required.

Spoil materials will be placed temporarily alongside the excavated trench. Padding materials, such as sand and gravel, might be placed in the trench before the pipe is lowered, if the trench bottom is rocky or otherwise unsuitable. If the spoil material is suitable, it will be used as backfill. If the spoil material is unsuitable it will be removed and disposed of at an approved disposal site. Suitable imported borrow material will be used as backfill when required.

The pipelines will be pressure tested to confirm strength and to check for leaks. Sections of installed pipeline will be pressure tested in accordance with ASME 31.8 requirements. If a leak occurs, the segment of pipeline identified by the test will be uncovered and repaired or replaced.

Maintenance and Operations, and Construction reclamation of the right-of-way is expected to start in 2012 and end in 2015. Plans will also be developed for ongoing right-of-way maintenance beyond 2015.

1.10.7 FACILITY CONSTRUCTION ACTIVITIES

Shop fabrication of facility modules is expected to begin in Alaska in 2009. Construction of facility sites is expected to begin in the winter of 2010–2011 and specific site preparation plans will be prepared for each location. Facilities are scheduled to start up in mid-2014. Initial facility sites are:

- The initial meter station located at Glennallen
- A compressor stations at Glennallen and
- A pressure reducing station in Palmer

Facility components will be fabricated and tested in offsite shops into modules that can be transported by truck directly to site and tested again before installation.

When they are received at the site, the modules will be set onto previously installed pile foundations and interconnected. Structural, piping, mechanical, electrical and instrumentation interconnections will be completed. Other facility components, such as yard piping and vessels, will also be installed.

1.10.8 COMMISSIONING AND START-UP

Commissioning and start-up activities are expected to begin in late 2013 and be completed by early 2014. A commissioning and start-up plan will be developed before commissioning starts. This plan will outline procedures for mechanical completion, pre-commissioning, commissioning, start-up, performance testing and turnover to operations staff for continuous operation.

Commissioning activities verify that equipment and control and safety systems are functioning according to the design and that the systems are ready for operation. This includes energizing selected equipment and systems.

Start-up activities begin with the introduction of dense-phase hydrocarbons into the process system. Equipment and processes will be started up for initial operation and will be monitored. Emergency shutdown tests will be completed and system performance data will be collected.

1.11.1 OPERATING STANDARDS

The gas pipeline operations will comply with regulatory requirements, permit conditions and licenses. The gas pipeline, compressor stations and other facilities are regulated by the RCA as appropriate. The regulatory requirements include:

- RCA - Onshore Pipeline Regulations
- ASME 31.8

1.11.2 SYSTEM OPERATION AND MAINTENANCE

1.11.2.1 PIPELINE AND FACILITY OPERATIONS

The gas pipeline and related facilities will be remotely monitored and operated from a main control center in Anchorage. Facilities will be designed for safe operations. Emergency shutdown systems will be initiated remotely or locally if an unsafe condition is detected. Hard copy and electronic data will be made available to technical support locations, maintenance bases and third-party locations, as needed.

1.11.2.2 RIGHT-OF-WAY INSPECTIONS AND REPAIRS

Pipeline and right-of-way inspection, maintenance and repair programs will be planned and executed to ensure a safe and reliable operation and to reduce any adverse safety and environmental effects. Air and ground transportation will be used, depending on the location, need and season.

1.11.2.3 FACILITIES

Facilities, including pigging facilities, meter stations, compressor stations and propane extraction plant will have remote monitoring capability and control functions, where required. Personnel will periodically visit the facilities to complete maintenance and operations activities.

1.11.2.4 MAINTENANCE BASIS

Maintenance required to support the operation will include warehousing for equipment, spare parts and emergency response equipment

Potential locations of these maintenance bases include Glennallen, Eureka, Purinton Creek area, Chickaloon, Palmer and Beluga.

1.11.2.5 EMERGENCY RESPONSE

Emergency preparedness and response plans will be developed to address and mitigate issues associated with public and personnel safety and environmental protection. Opportunities for mutual aid agreements with industry and government for sharing equipment and facilities will be considered.

1.11.3 PIPELINE INTEGRITY MANAGEMENT PLAN

A pipeline integrity management plan will be developed for use in the operations phase to ensure the safety of employees and the public, monitor environmental effects, protect the pipelines and facilities, and maintain pipeline integrity and reliability.

Leak detection will be included in the design of the gas pipeline. The components include line-break control, new technologies, and surveillance programs.

1.11.4 OPERATING COSTS

Operating costs were estimated using benchmarking data for gas pipelines.

This estimate will be revised as engineering and operations planning proceeds.

Project Description for the

Alaska Gas Spur Line
(Glennallen to Beluga)

Volume 2:

Economics, Tolls and Tariffs

Submitted to:

AGIA License Office -- State of Alaska
Alaska Gasline Inducement Act (AGIA)

Prepared by:

Alaska Natural Gas Development Authority (ANGDA)

November 28, 2007

TABLE OF CONTENTS

1. PARTICIPANTS AND FINANCING

1.1.1 PARTICIPANTS AND FINANCING

The ALASKA GAS SPUR LINE (AGSL) is a business entity being developed as a joint venture to build a gas pipeline and associated compression and off-take facilities from either Delta Junction or Glennallen to Beluga gas field. Potential joint venture participants are listed below.

- Alaska Natural Gas Development Authority (ANGDA), a public corporation of the State of Alaska (AS 41.41), holds a conditional right-of-way lease issued by the State for a gas pipeline between Glennallen and Palmer (Alaska). ANGDA will fund and operate the joint venture until the AGIA license selection process is complete.
- Company X, an experienced, large gas transmission pipeline company is anticipated to be the majority owner (51%) in the joint venture. Company X will operate the joint venture after project sanction.
- Shippers who execute a Precedent Agreement and Firm Transportation Service Agreement (FTSA) with the joint venture during the open season. These shippers will be eligible, in proportion to their shipping commitment, to become owners of up to a total of 30% at project sanction.
- An Alaska Native regional corporation (ANCSA Corp.) Gas Spur Line Limited Partnership, planned to be formed by representatives of various ANCSA Corporations, desire to participate in the joint venture. Up to 9.5% of the joint venture will be available for purchase from ANGDA until the first anniversary of AGSL gas deliveries.
- An Alaskan Gas Spur Line Limited Partnership will be formed to provide ownership opportunities for individual Alaskans in the AGSL project (up to 9.5%). Shares will be available for purchase from ANGDA until the first anniversary of AGSL gas deliveries.

JOINT VENTURE STRUCTURE

ANGDA plans to utilize a joint venture corporate structure for design, construction, ownership, financing and operation of AGSL. This business arrangement is designed to maximize the probability of AGSL being built in efficiently and on-schedule.

The joint venture arrangement provides flexibility for:

- Individual owner financing;
- Single operator to:
    - manage construction and operating activities;
    - contract with shippers on behalf of owners;
    - collect shipper tolls and;
    - distribute net revenue.
- Mutual decisions on expenditures and expansions;
- Single tariff structure approved by regulators; and,
- In-state shippers, Alaska Native Claims Settlement Act (ANCSA) corporations, and individual Alaskan investors to establish ownership shares.

ANGDA will be the initial operator of the joint venture. Under this structure, each participant will pay its share of the capital costs and will individually obtain funds to cover these costs.

Shippers will pay tolls to ANGDA. ANGDA will distribute net revenue to each owner according to its participating interest.

1.1.2 TRANSPORTATION COMMITMENTS AND AGREEMENTS

Participants will hold an open season in 2008 to define shipper interest. Expressions of interest will be a precedent agreement for firm natural gas deliveries.

A draft precedent agreement for firm transportation was crafted for use by potential shippers. The precedent agreements will be modified in response to varying AGSL conditions and feedback.

Shippers will enter into a Firm Transportation Service Agreement (FTSA) before the Joint Venture will begin constructing the AGSL. The FTSA's provide the contractual commitment underlying construction financing. The FTSA's will supersede the precedent agreements.

1.1.3 TOLLS AND TARIFFS

The AGSL will be a common carrier pipeline. The joint venture will offer firm transportation service for terms of 15 or 20 years. Authorized overrun service (AOS) and interruptible transportation (IT) service will be available only to shippers that have a FTSA.

The participants and potential shippers will develop toll and tariff principles to apply to the AGSL. AGSL will have different tolls for different terms of firm transportation service. The joint venture will work with communities in proximity to AGSL to provide access to gas. The joint venture will seek to decrease tolls to existing shippers as new shippers are added. The attendant rates will be based on distance carried in the AGSL.

Each shipper that signs a Precedent Agreement will be required to agree to AGSL tariff principles.

1.1.4 NORTH SLOPE GAS SUPPLY ANALYSIS

State Department of Natural Resources records indicate a proven North Slope gas supply of 24 Tcf. Approximately 3 Tcf is state-owned royalty gas. The 3 Tcf can supply AGSL for approximately 33 years at an anticipated flow rate of 0.250 Bcf/day.

1.1.5 GAS MARKET ANALYSIS

ANGDA and others conducted southcentral Alaska (Cook Inlet area) gas market analyses that concluded the average utility use in Cook Inlet is 0.250 Bcf/day.

2. TRANSPORTATION

2.1 COMMERCIAL CONSULTATIONS

2.1.1 NOTIFICATION TO POTENTIAL SHIPPERS

ANGDA plans to conduct a non-binding open season in 2008. The open season process will identify potential shippers and their capacity requirements. ANGDA will send a letter with a shipper expression of interest form to potential shippers (see Figures 2-2 and 2-3).

2.1.2 EXPRESSIONS OF INTEREST

Interested potential shippers should contact ANGDA via e-mail or letter indicating their interest. Completing "Expression of Interest Forms" (Figure 2.1) and delivering or mailing same to ANGDA fulfills that requirement.

2.1.3 UTILITY / SHIPPERS' FORUMS

ANGDA provides classroom forums to teach the fundamentals of the open season and discuss issues. Forums started in November 2007 (Figure 2-2).

The utility / shipper forum topics include:

- project updates
- pipeline design basis
- pipe sizing
- tolls and tariff principles
- expansion policy
- capital cost estimates
- operating cost estimates
- downstream connecting facilities
- gathering system issues
- northern consultation activities
- Precedent Agreements
- volume requirements
- tie-in locations
- gas composition and quality
- start-up timing
- length of term desired
- cost of capital
- gathering system

The details of classroom forum discussions, as well as subsequent individual meetings with potential utilities or shippers, may be subject to provisions of confidentiality agreements.

Figure 2-1: Expression of Interest Form

DATE: _____

SHIPPER / BUYER: _____

TERM: _____ **Years**

DELIVERY POINT: _____

(may be same as receipt point)

INITIAL CONTRACT DEMAND QUANTITY: _____ **MmBtu per day**

LONG-TERM TOTAL DEMAND QUANTITY: _____ **MmBtu**

SHIPPER/BUYER SIGNATURE:

_____

PRINTED NAME: _____

TITLE: _____

CC: Joint Venture(pipeline operator)

FORM: _____, DATE: _____

Figure 2-2: Notice of Open Season Training Process for Potential Shippers

2. PRECEDENT AGREEMENT (See Appendix for Example)

2.2.1 PURPOSE AND PROGRESS

The commercial basis for the pipeline is commenced with a Precedent Agreement. When the conditions in the Precedent Agreement are satisfied, the parties will enter into a Firm Transportation Shipping Agreement (FTSA). The FTSA provides the contractual commitment to the pipeline and inevitably the financial underpinning for its construction.

A draft Precedent Agreement for firm transportation was developed. Appropriate notice will be posted to ensure potential shippers have an opportunity to execute a Precedent Agreement. The notice will inform potential shippers of the due date for executing and returning a Precedent Agreement.

Meetings will be held with individual shippers/buyers to review Precedent Agreement details. Meetings will also be held with the gas owners group and with the potential pipeline operator group. The Precedent Agreement will be revised as needed.

2.2.2 AGSL SHIPPERS (TO BE INCLUDED AFTER OPEN SEASON)

2.2.3 KEY ELEMENTS OF PRECEDENT AGREEMENTS

In addition to the contract demand quantity, the key elements of the Precedent Agreement are the:

- joint venture obligations
- shipper's obligations
- term
- credit requirements
- permitted adjustments to contract demand quantity
- termination rights
- procedures for executing a FTSA
- toll and tariff principles

2.2.3.1 Joint Venture Obligations

Joint venture obligations:

- acquire AGSL regulatory permits, authorizations, and certifications
- enter into a FTSA after the Regulatory Commission of Alaska (RCA) order has been received, subject to the terms of the Precedent Agreements

2.2.3.2 Shipper's Obligations

Shipper's obligations:

- define requirements by July 1, 2009 and convey to project management
- sign and abide by the Precedent Agreement
- support the transporter in obtaining regulatory
- enter into a FTSA after receiving the RCA order, subject to the terms of the Precedent Agreement
- demonstrate and maintain creditworthiness

2.2.3.3 Term

The Precedent Agreement goes into effect as soon as it is executed and terminates either:

- when the FTSA is executed; or,
- when terminated earlier according to the terms of the Precedent Agreement.

2.2.3.4 Credit Requirements

A shipper's credit requirements include:

- a minimum BBB Standard and Poors credit rating (or equivalent)
- additional performance assurances as requested by the transporter if the shipper's credit rating is below the minimum or is materially changed (downgraded)
- maintaining creditworthiness throughout the term of the Precedent Agreement and the FTSA

2.2.3.5 Permitted Adjustments to Contract Demand Quantity

A number of the potential gas suppliers for the AGSL are in the early stages of exploration. Plans and marketability studies are not available to make firm commitments for pipeline capacity. Additional exploration and drilling may be required before commitments can be made. Therefore, the Precedent Agreement will provide flexibility for the capacity and the timing of shippers' needs. Capacity requirements may be adjusted without penalty under the following circumstance:

- by July 1**,** 2010 – an increase or decrease up to the lesser of 15% of the original contract demand quantity

2.2.3.6 Termination Rights

Termination at Decision to Construct

A termination option is available to shippers within 30 days after an RCA Approval Order for the pipeline is issued.

A shipper can exercise such a termination option by paying a termination fee to be determined when better information on market demand is available. This fee will represent an approximate proportionate share of the pre-development cost of AGSL undertaken by the participants at that stage of development. Any termination fee received by the joint venture will be used to reduce the pipeline rate base.

The joint venture will provide shippers with updated cost and volume information. If the volume or cost change by more than 15% from the amount identified at the decision date as a result of shippers electing to terminate the Precedent Agreement by paying a termination fee. Remaining shippers will be given a second opportunity, within 10 days, to terminate their Precedent Agreements by paying the termination fee or to accept more volume in the pipeline.

Termination Based on Pipe Size Change

Shippers have a termination right at no cost to shippers if the joint venture decides to reduce the pipeline size to a substantially lesser diameter that may restrict throughput to the detriment of the shipper.

2.2.3.7 Procedures for Executing a Firm Transportation Service Agreement

Joint Venture Obligations

Within 75 days of the RCA Approval Order the joint venture will:

- proceed to issue FTSA's to remaining shippers
- terminate the Precedent Agreement if the joint venture determines that the RCA requirements are not acceptable

Shippers' Obligations

Shippers will:

- return the executed FTSA either 15 days after the FTSA was received or 45 days after the RCA decision date, whichever is the latter,
- elect to terminate, within 30 days of the RCA decision date, for any reason, with payment of the termination fee

2.3 FIRM TRANSPORTATION SERVICE AGREEMENTS

2.3.1 PURPOSE

FTSA's are the financial basis for the pipeline investment. These agreements are required to be in place before the joint venture decides to construct. The combined FTSA's of all shippers will define:

- total pipeline capacity
- specific facilities required at start-up
- total demand charge determinants to calculate tolls
- participating interest in the pipeline for each owner and their individual financing obligations

2.3.2 TIMING OF EXECUTION

An executed FTSA supersedes the related Precedent Agreement. The FTSA will be executed shortly after the RCA order is issued. Other regulatory decisions may be pending when the FTSA is executed. Prior to start-up, the joint venture and the shippers will continue to pursue any remaining regulatory authorizations.

2.3.3 TERMINATION RIGHTS

The joint venture may terminate all FTSA's within one year of the RCA order date if the decision is made not to proceed with construction. The joint venture or shipper may terminate the FTSA if service does not start by January 1, 2017.

2.3.4 KEY ELEMENTS OF FIRM TRANSPORTATION SERVICE AGREEMENTS

The FTSA is the long-term contract governing AGSL operations that includes:

- date the AGSL is considered ready for service and the date the shipper's demand charge obligations begin

- joint venture commits to provide transportation service to the shipper

- shipper commits to pay tolls

- agreement that tolls will be determined according to the toll principles

- locations of receipt and delivery points

- default, termination and assignment provisions

- access to authorized overrun service

- renewal rights for shippers

- shipper credit requirements and financial assurances

- force majeure

3 TOLLS & TARIFFS

3.1 TYPES OF SERVICE

3.1.1 FIRM TRANSPORTATION SERVICE

Firm transportation will be provided in accordance with the FTSA.

3.1.2 NON-FIRM TRANSPORTATION SERVICE

Non-firm transportation will be in accord with Interruptible Transportation as described in the following paragraph.

3.1.3 INTERRUPTIBLE TRANSPORTATION SERVICE

Interruptible transportation (IT) service will (when pipeline capacity is available) initially be available only to those shippers that have a FTSA. The availability of interruptible transportation service to other shippers on any day will be subject to the operating capability of the pipeline as well as the firm service and authorized overrun service requirements.

Interruptible transportation tolls will be calculated as 110% of the 100% load factor equivalent of the applicable 15-year term firm service tolls, plus any commodity charge and system fuel requirements. Revenues from interruptible transportation will be credited to the annual revenue requirement of the pipeline which will reduce firm service transportation demand charges for all shippers.

3.2 TOLL PRINCIPLES

3.2.1 TOLLING CONSIDERATIONS

A cost of service tolling mechanism is defined in Table 3.1. The following guidelines were used to establish the anticipated tolling structure for the pipeline:

1. access to the pipeline will be made available to all shippers that have executed FTSA's and comply with the credit provisions

2. just and reasonable tolls will be developed under RCA jurisdiction

3. tolls will be based on the costs of developing, constructing and operating the pipeline

4. tolls must generate sufficient revenues to meet the debt and principal return's and equity requirements of the pipeline owners

The toll principles are set out as a schedule to both the Precedent Agreement and the FTSA. Each shipper that signs a Precedent Agreement must contractually agree that the tolls for the pipeline for the initial 20 years will be determined and calculated according to the toll principles.

The pipeline participants will seek RCA approval to establish the AGSL tolls according to the terms and procedures detailed in the toll principles. Table 3-1 summarizes the key toll principles.

3.2.2 KEY TOLL PRINCIPLES

The project structure requires a range of financial aspects of the project be identified, including the debt-to-equity ratio, the cost of debt and the appropriate tax rate for the pipeline for tolling purposes.

Table 3-1: Summary of Key Toll Principles

Category	Principle
General	• Establish tolls on a cost-of-service basis. • Tolls based on the Joint Venture's (JV's) estimates of costs (differences recorded in deferral accounts). • Carrying costs on deferral accounts calculated at the JV's current rate of return. • Net deferral account balance from one toll year applied to the immediately subsequent toll year. • Tolls established for 15-year FTSA's, 20-year FTSA's, Authorized Overrun Service (AOS) and interruptible transportation (IT). • Fixed costs will be recovered through a fixed demand charge. Variable costs will be recovered through a commodity charge. No significant variable costs have been identified. • The toll premium for 15-year FTSA's will be 5% over the 20-year FTSA toll. The toll premium for a short haul toll will be 10% greater than the 20-year FTSA toll but will reflect distance-sensitive charges. • The toll premium applies to any renewal period of a 15-year FTSA if that period is within the first 20 years of operation of the pipeline. • No demand charge for AOS. • IT toll will be 10% over the 15-year FTSA demand charge. • All IT revenue will be credited to the cost of service to reduce firm shipping costs. • Demand charge determinants will be based on all FTSA's where the shipper is not in default and with appropriate adjustments for any short-haul transportation.
Rate Base	• The rate base includes all capital costs, including working capital and line-pack, and pre-development costs that are approved by the RCA for inclusion in the rate base. It does not include any state reimbursement received by the applicant and is treated as a credit to the cost-of-service • Termination payments paid by a shipper to terminate its Precedent Agreement will reduce the rate base. • The allowance for funds used during construction (AFUDC) and interest during construction (IDC) will be calculated until the pipeline in-commission date based on the appropriate rate of return or cost of debt during the years that such funds were expended.
Return on Rate Base	• The deemed capital structure will be based on 70% debt and 30% equity unless completely an ANGDA project which may be 100% debt. • Return on equity (ROE) will be defined by RCA, • Return on equity after the initial 10 years will be determined, either as a result of a negotiated settlement with shippers, or an application by the JV to the RCA.
Depreciation Expense	• A composite depreciation rate will be applied to the entire gas plant in service. • The depreciation rate for the original facilities will be 3.3%, according to the formula set out in the toll principles (30-year straight line depreciation). The depreciation rate to be applied for tax purposes may be different than the pipeline rate. • The depreciation rate for capital assets placed in service after the start date will be based on the shorter of such assets' economic life or the weighted average number of years remaining in the primary terms of the FTSA's.

Income Tax Expense	• An income tax expense will be determined as if the joint venture was a stand-alone pipeline transmission/transportation company, carrying on business in Alaska and paying taxes on a flow-through basis. • All large corporation or other capital taxes that would apply if the joint venture is a stand-alone pipeline transmission/transportation company will also be included in determining the income tax expense.
Other Taxes	• Property, municipal, business occupancy and any other taxes, royalties or charges relating to the transmission/transportation system will be included.
Operating, Maintenance and Administration Costs	• All operating, maintenance and administrative costs will be included in the cost of service at their actual cost.

3.2.2.1 Capital Structure

The proposed deemed capital structure for toll-making purposes is a debt-equity ratio not less than 70% debt and 30% equity.

3.2.2.2 Cost of Debt

The deemed cost of debt for initial toll-making purposes will be equal to the actual project debt cost.

3.2.2.3 Return on Equity

The rate of return on equity for toll-making purposes will be RCA-defined and approved. It is anticipated to be approximately 12%.

3.2.2.4 Depreciation

A composite depreciation rate will be applied to the entire AGSL pipeline system in service. The annual depreciation rate for the original facilities will be 3.3%. The un-depreciated assets remaining at the end of the 20-year contracts are a risk of the pipeline owner.

3.3 TARIFF PRINCIPLES

3.3.1 PURPOSE

The tariff principles are set out as a schedule to both the Precedent Agreement and the FTSA. The pipeline participants will seek approval under RCA to establish the tariff for the AGSL according to the terms and procedures set out in the tariff principles. Each shipper that has signed a Precedent Agreement will have contractually agreed that the tariff for the pipeline should reflect these tariff principles.

3.3.2 KEY TARIFF PRINCIPLES

3.3.2.1 Quality Specifications

Generally, the gas quality specifications for the AGSL are aligned with upstream and potential downstream pipeline specifications.

The high operating pressure and Alaskan operating environment, including continuous and discontinuous permafrost regions, require several unique gas quality specifications for this pipeline. These are:

- a minimum limit of 3 mg of hydrogen sulphide per cubic meter of natural gas
- a limit of 6 mg of water vapor per cubic meter of natural gas
- a minimum and maximum inlet temperature for each receipt point as specified by the joint venture
- a heating value of no less than 1020 Btu/cf

3.3.2.2 Demand Charge Credits

The joint venture will provide shipper with demand charge credits if the joint venture does not provide firm service under an FTSA. No demand charge credit will be provided if the joint venture is unable to provide service as a result of any scheduled or unscheduled maintenance or force majeure event claimed by the joint venture during the first 12 months of any such event. No demand credits will be provided in situations where a capacity constraint arises from ambient temperatures being higher than those used in designing the pipeline.

3.3.2.3 Force Majeure

A force majeure event does not relieve shippers of their obligation to pay a demand charge or their obligation to deliver gas that meets each quality specification. If either the joint venture or a shipper's substantial or total performance obligations are impaired as a result of a force majeure event that has continued for 24 consecutive months, then the other party may terminate the FTSA.

3.3.2.4 Capacity Release

A shipper may make temporary assignments of capacity for 365 days or less without obtaining the joint venture's consent. A shipper will not be allowed to assign its entitlement to AOS capacity independently of its contract demand quantity.

3.3.2.5 System Use Gas

All shippers will supply to the joint venture their proportionate share of system use gas on a daily basis.

3.3.2.6 Expansion Policy

The joint venture cannot establish a definitive policy applicable to each expansion opportunity that might arise, given the uncertainty around the amount, location, quality and timing of future gas developments.

Shippers may, at any time, request new service from the joint venture. The joint venture, in responding to the shipper's requests for service, will comply with RCA guidance criteria for rate treatment of AGSL expansion costs, and will administer all requests in a way that ensures that all shippers are treated fairly and equitably. The joint venture will:

- assess each request for new service and, where necessary, conduct an open season to give other potential shippers an opportunity to participate in an expansion
- canvass existing shippers about the potential for turning back any unneeded existing transportation service to avoid over-building pipeline facilities

Following this process, if sufficient Precedent Agreements are entered into and the pipeline owners are prepared to proceed, the joint venture will make the necessary regulatory applications subject to the terms of the Precedent Agreement. Shippers, or potential shippers, retain the right to request RCA to order service.

3.4 SAMPLE TOLL CALCULATIONS

3.4.1 ASSUMPTIONS

ANGDA prepared a 13-year projection of tolls based on the toll principles and on the following assumptions:

- upstream costs are resident in mainline contracts and pipeline tariffs.
- expenditures incurred for the feasibility study, project definition, consultation, regulatory application and engineering design phases of the pipeline project are for constructing the pipeline and are thereby included in the rate base. The pipeline is expected to be in service by second quarter 2014.
- to simplify estimation and reporting, the cost of service calculations reflect the first full year of service, which, for modeling purposes, is expected to commence January 1, 2014.
- estimated capital cost, based on a 0.25 Bcf/d (7 Mm^3/d) design, of $725 million (2007$). (***See Note 1 below***)
- deemed capital structure of 70% debt and 30% equity
- return on equity rate of 12%
- deemed cost of debt rate of 6.0%
- AFUDC / IDC based on the deemed debt-to-equity ratio of 70:30 and the assumed

return on equity and cost of debt rates as above

- no inflation adjustments were considered due to AGIA requirements
- 105% over the 20-year FTSA rate toll premium applicable to the 15-year term FTSA toll
- flow-through calculation of income taxes on a stand-alone basis, using an expected federal tax rate of 35% and a state tax rate of 9.4%
- operations and maintenance cost estimated at $12.6 million in the first full year of operation
- estimated additional start-up costs have not been developed, but when available will be included in the rate base
- estimated line-pack costs are not included in the initial rate base but will be included when prices are firm
- cost estimates were developed in 2007$ and are not escalated
- all calculations are in as-spent-dollars, unless otherwise noted
- no firm service short-haul contracts are considered

Note 1: Does not include North Slope gas treatment plant costs as it is assumed that North Slope producers will factor those costs into their sale price.

3.4.2 PROJECTED TOLLS

The projected tolls and the detailed calculations used to derive the toll projections are presented in:

- Table 3-2: Development and Construction Costs
- AGSL Volume 2 Appendix: Cost of Service Calculation for AGSL

Table 3-2: Development and Construction Costs ($Millions As-Spent, Except as Noted)

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cost $ millions	***Note *1***	***Note *2***	100	150	250	225							

***Note *1*: Accomplished under FY08 ANGDA Funding.**

***Note *2*: Accomplished under FY08 ANGDA Funding and equity partner contributions.**

3.4.3 PRO FORMA FINANCIAL STATEMENTS

- Table 3-4: Rate Base and Return on Rate Base
- Table 3-5: Capital Structure and Cost of Capital
- Table 3-6: Depreciation
- Table 3-7: Income Taxes

Table 3-4: Rate Base and Return on Rate Base ($Millions As-Spent)

Rate Base and Return on Rate Base	
Return on Rate Base	**Year 1**
Rate Base	**$ 1,377**
Overall Rate of Return	**7.8%**
Return	**$107**

Table 3-5: Capital Structure and Cost of Capital ($Millions As-Spent)

Capital Structure & Cost of Capital			
	Capital Structure	**Cost**	**Weighted Cost**
Long Term Debt	**70%**	**6%**	**4.2%**
Common Equity	**30%**	**12%**	**3.6%**
Total	**100%**		**7.8%**

Table 3-6: Depreciation ($Millions As-Spent)

Commencing Year 1 of operations (2014) 3.3% per annual straight line (note: may be different for tax purposes).

Table 3-7: Income Taxes ($Millions As-Spent)

Accumulated Deferred Income Taxes (ADIT)	
Authorized Depreciation Schedule (straight-line)	$ 45
IRS Accelerated Schedule (DDB)	$91
Difference X Composite Tax Rate	$19
Accumulated Surplus	$19
Composite Tax Rate	
1 Federal rate X state rate	0.0329
2 Federal rate less line 1	0.3171
Line 2 + state rate (9.4%) = composite rate	0.4111

3.5 AGSL INCOME STATEMENT AND BALANCE SHEET (See Appendix.)

4 GAS SUPPLY

4.1 GAS SUPPLY STUDIES

4.1.1 PURPOSE AND SCOPE OF GAS SUPPLY ANALYSIS

Northern Economics, Inc. was retained to develop a business plan to explore current and potential markets, natural gas supplies, and a pipeline project that could deliver natural gas to Alaskans. Additional studies were performed and evaluated to verify Alaska's natural gas supply and demand. These additional studies include:

- Southcentral Alaska Natural Gas Study, U.S. Department of Energy, June 2004
- Alaska Natural Gas Needs and Market Assessment, U.S. Department of Energy, June 2006
- Cook Inlet Energy Supply Alternatives Study, Alaska Natural Gas Development Authority, March 2006

This section summarizes the gas supply analyses for natural gas that most benefit Alaskans, including residential and commercial uses. A copy of the complete business plan, entitled *Alaska Natural Gas Development Authority Business Plan,* November 10, 2006, is also filed with this application.

4.1.2 STUDY AREA

The ANGDA Business Plan provided gas supply projections for in-state sources including:

- North Slope, Alaska
- Cook Inlet, Alaska

The AGSL is envisaged to initially include only onshore gas developments in North Slope, Alaska[1]. When the infrastructure is in place, some offshore areas may be developed in the longer term (likely post-2015).

4.1.3 RESULTS OF STUDY

Alaska's supply of natural gas is likely to come from two in-state sources: the onshore North Slope area and the Cook Inlet. The ADNR estimates that the Prudhoe Bay Field contains 24.0 tcf of economically and technically feasible resources. The Cook Inlet has supplied more than 6.3 tcf to date. Recent estimates by the U.S. Department of Energy (DOE) expect Cook Inlet to contribute 1.66 tcf to domestic supplies from proven and developed reserves in the future.

[1] Excluding Point Thomson

Table 4-1: Estimated Economically and Technically Feasible Resources by Location

Measure	North Slope[2]	Cook Inlet	Total
Billions of Cubic Feet (bcf)	27,417	1,663	29,070

Source: North Slope bcf estimates – ADNR (2004). Cook Inlet bcf estimates – U.S. DOE (2006).

Prudhoe Bay Field Natural Gas

The technically and economically known recoverable Prudhoe Bay gas resources are estimated to total approximately 24.0 tcf. This amount could sustain Alaska's entire residential, commercial, and power generation consumption of natural gas at 2005 levels for over 200 years.

Cook Inlet Natural Gas

Prior to 2005, Cook Inlet fields produced more than 6.3 tcf of natural gas. Production from proved reserves is expected to decline substantially over the next 20 years from over 200 bcf/year in 2005 to less than 17 bcf/year in 2026 (see Table 4-2 and Figure 1).

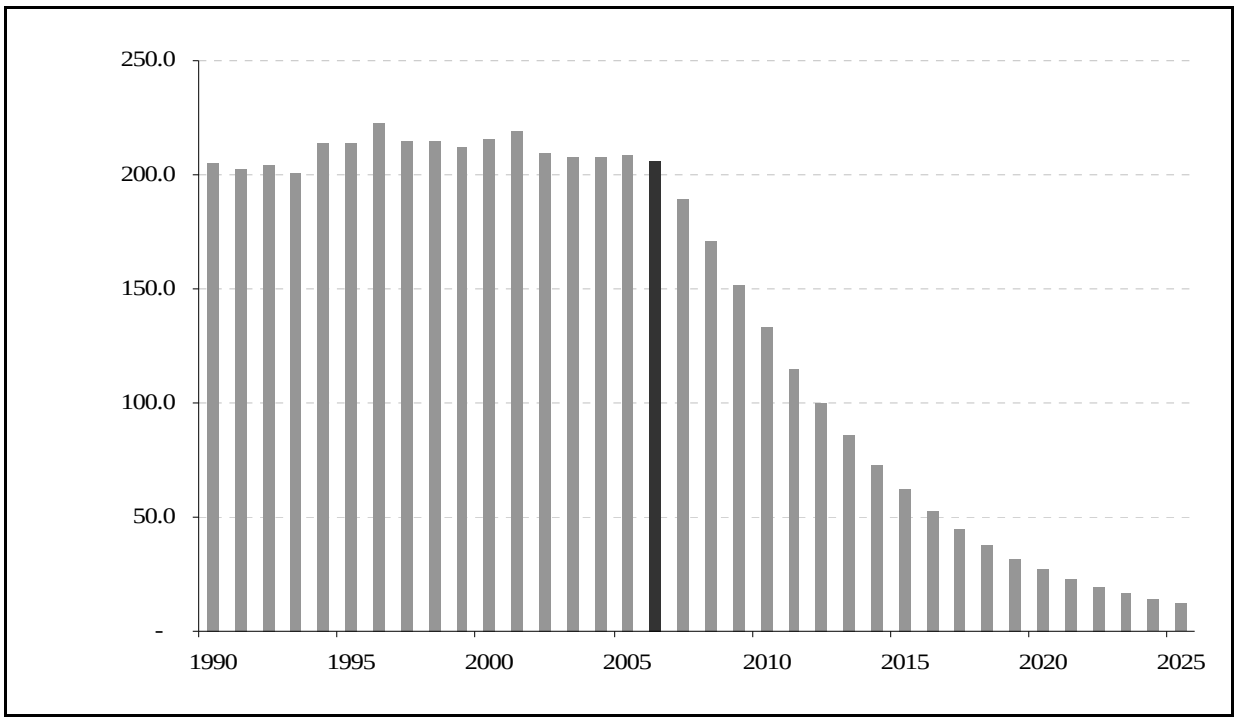
Table 4-2: Cook Inlet Production for Proved reserves (bcf/year)

Year	Production (bcf/year)	Decline from Previous Year (%)	Year	Production (bcf/year)	Decline from Previous Year (%)
2005	200.2		2016	48.2	11.6
2006	199.7	0.2	2017	42.8	11.2
2007	182.6	8.6	2018	38.1	11.0
2008	153.1	16.2	2019	34.0	10.8
2009	131.3	14.2	2020	30.5	10.3
2010	110.9	15.5	2021	27.4	10.2
2011	94.7	14.6	2022	24.6	10.2
2012	81.6	13.8	2023	22.1	10.2
2013	70.9	13.1	2024	19.9	10.0
2014	62.0	12.6	2025	18.0	9.5
2015	54.5	12.1	2026	16.2	10.0

Source: U.S. Department of Energy (2006)

[2] Excludes 8,000 bcf from Point Thomson

Figure 1: Actual and Projected Cook Inlet Gas Production from Discovered Fields, 1990-2025

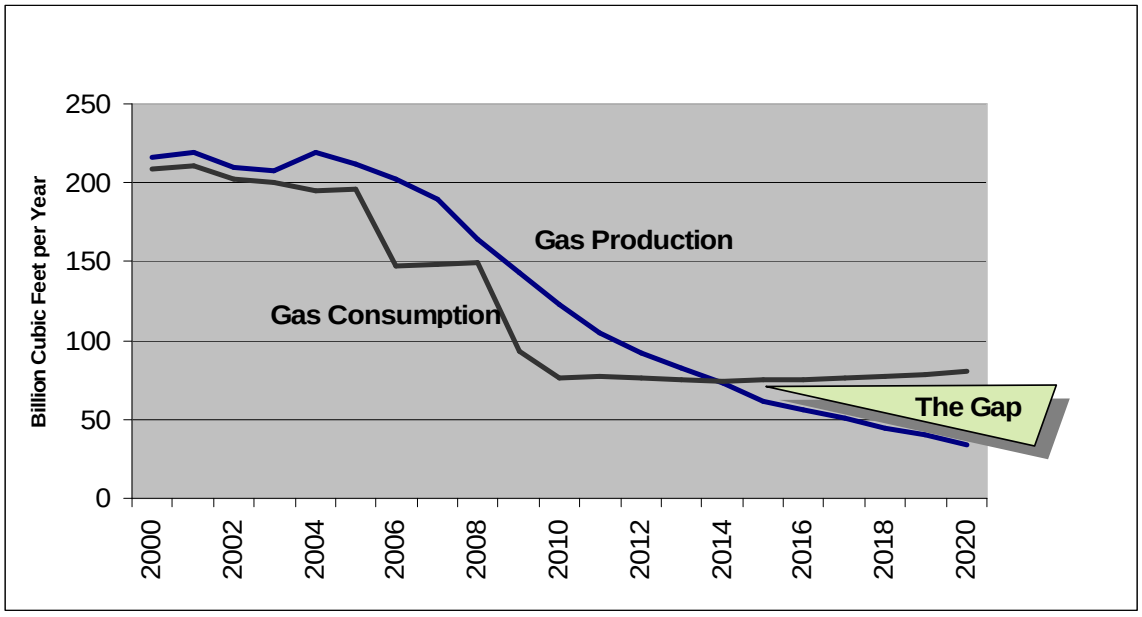


Source: Alaska Department of Revenue (2006)

4.1.4 GAS SUPPLY SUMMARY

The natural gas supply for Alaska is regionally specific. Cook Inlet gas reservoirs are currently being depleted, with only modest exploration success in recent years. Figure 2 illustrates the widening gap between production and consumption. Deliverability challenges started to occur in 2007 and can be expected to increase as supply tightens.

Figure 2: Cook Inlet Production and Consumption



Source: Dunmire Consulting Team (2006)

Prudhoe Bay gas reserves are large and expected to increase through continued exploration. The best solution for this regional gas supply imbalance is ANGDA's proposed AGSL.

5.1 GAS MARKET DEMAND AND DELIVERABILITY

5.1.1 PURPOSE

Northern Economics, Inc. was retained to assess current and potential markets in the Railbelt area (Fairbanks, Delta Junction, the Mat-Su Valley, Anchorage, and the Kenai Peninsula). The following additional studies were performed and evaluated to assess natural gas demand and deliverability:

- Southcentral Alaska Natural Gas Study, U.S. Department of Energy, June 2004
- Alaska Natural Gas Needs and Market Assessment, U.S. Department of Energy, June 2006
- Cook Inlet Energy Supply Alternatives Study, Alaska Natural Gas Development Authority, March 2006
- Cook Inlet Energy Scenarios, Ecology and Environment, Inc., November 2007

This section summarizes the market analysis for natural gas in the Railbelt area. A copy of the ANGDA business plan, entitled *Alaska Natural Gas Development Authority Business Plan,* November 10, 2006, is also being filed, in addition to other studies listed, with this AGSL submittal.

ANGDA assumes that there is in-state demand in other Alaska communities along the route of the pipelines but has not firmed up those demands as yet. The open season process will identify Alaska markets.

5.1.2 SCOPE OF STUDY

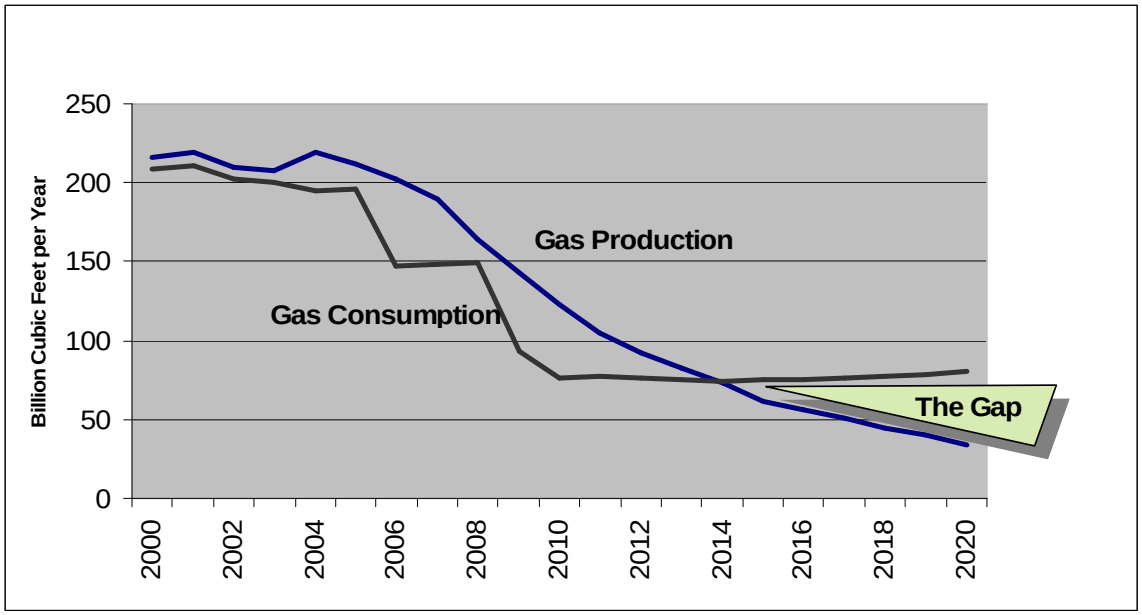
The Northern Economics Market Analysis recognizes that ANGDA is focused on potential projects providing the most benefit for Alaskans. This analysis includes an evaluation of natural gas demand for residential use, commercial use, and power generation.

5.1.3 RESULTS OF MARKET ANALYSIS

The overall supply and demand future for Alaska is regionally specific. Cook Inlet gas reservoirs are currently being depleted, with only modest exploration success in recent years. Figure 1 illustrates the widening gap between production and consumption, shown starting in 2014.

As mentioned above, ANGDA assumes that there is also demand for natural gas in Fairbanks, Delta Junction, Tok and Glennallen and will consider building and/or supporting off-take points in these communities.

Figure 1: Cook Inlet Gas Production and Consumption



Source: Dunmire Consulting Team (2006)

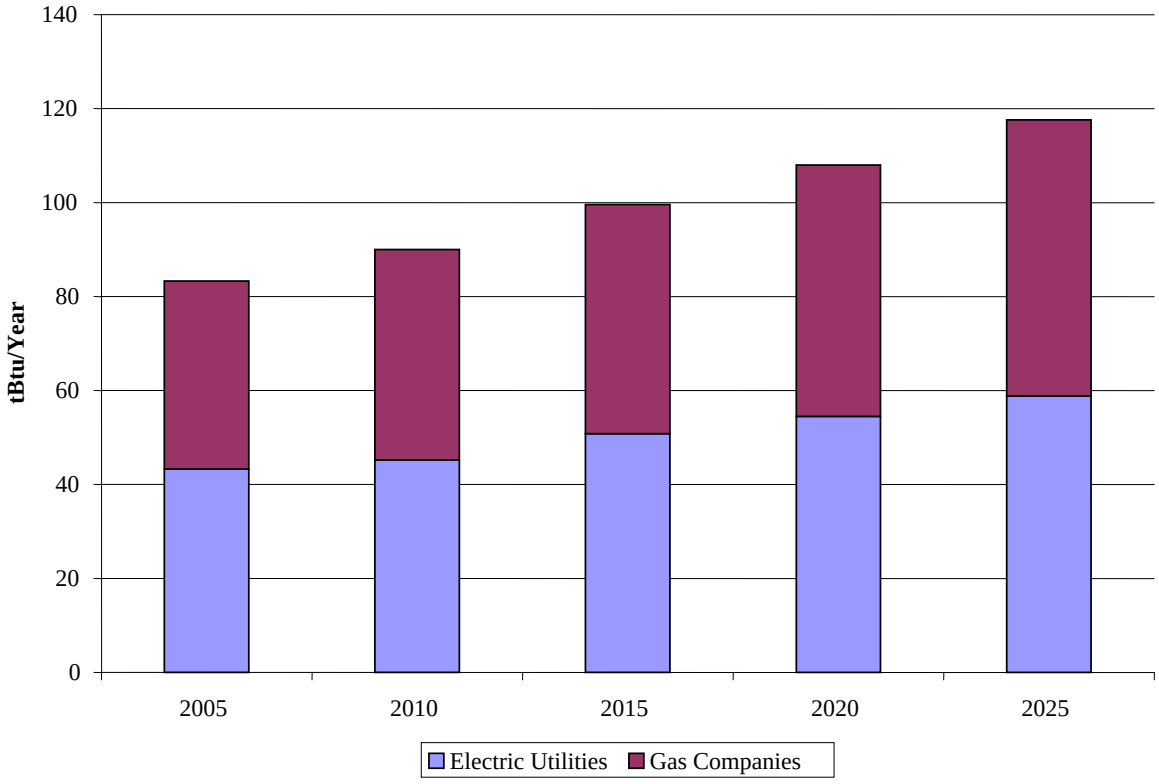
Growth in gas demand is expected to exceed production, thereby requiring additional sources of supply. Market analyses conclude that increasing demand warrants the proposed 0.250Bcf/d of gas to be transported by AGSL. Forecast for gas demand was divided into electrical power generation and residential and commercial consumption. Industrial demand has not been factored into the 0.250 bcf/d throughput.

5.2 REGIONAL MARKET ANALYSIS

5.2.1 RAILBELT GAS DEMAND FORECAST

A conservative estimate of demand for natural gas is expected to grow by 1.9 percent per year through 2025 for residential and commercial use, and 1.5 percent per year for power generation. Total projected demand for natural gas is shown in Figure 2.

Figure 2: Natural Gas Demand, Electric Utilities and Gas Utilities, to 2025



Source: Northern Economics, Inc. 2006

5.2.2 GAS UTILITY DEMAND FORECAST

Table 1 illustrates demand for natural gas distribution companies through 2025. The ENSTAR estimates are comparable to projections by the Department of Energy (2006). The Fairbanks Natural Gas (FNG) estimates are conservative due to the time required to build infrastructure in the Fairbanks market. The independent and direct category is primarily in the Anchorage area and is in addition to the ENSTAR demand. Fort Richardson and Elmendorf Air Force Base are both included in this category.

Table 1. Natural Gas Distribution Company Consumption and Projections (tBtu)

Utility	Year				
	2005	2010	2015	2020	2025
ENSTAR	29.0	33.1	36.5	40.2	44.2
Fairbanks Natural Gas	0.9	1.6	2.2	3.2	4.6
Independents/Direct	10.0	10.0	10.0	10.0	10.0
Total	40.0	44.8	48.8	53.5	58.8

Source: Northern Economics, Inc. 2006

5.2.3 ELECTRIC UTILITY DEMAND FORECAST

Eight electric utilities are within the AGSL potential service area. Two of these, Copper Valley Electrical Association (CVEA) in Glennallen and Alaska Power Company (APC) in Tok are electrically isolated, whereas the remaining utilities are electrically interconnected with each other.

Natural gas is the preferred fuel for power generation, but other fuels, such as coal resources, are now being considered due to declining gas supply in Cook Inlet.

The current and projected demand for the electric utilities is shown in Table 2. As noted above, CVEA could be supplied with natural gas from AGSL to generate electricity but APC would have to receive gas from the mainline.

Table 2. Electric Utility Natural Gas Consumption and Projections (tBtu)

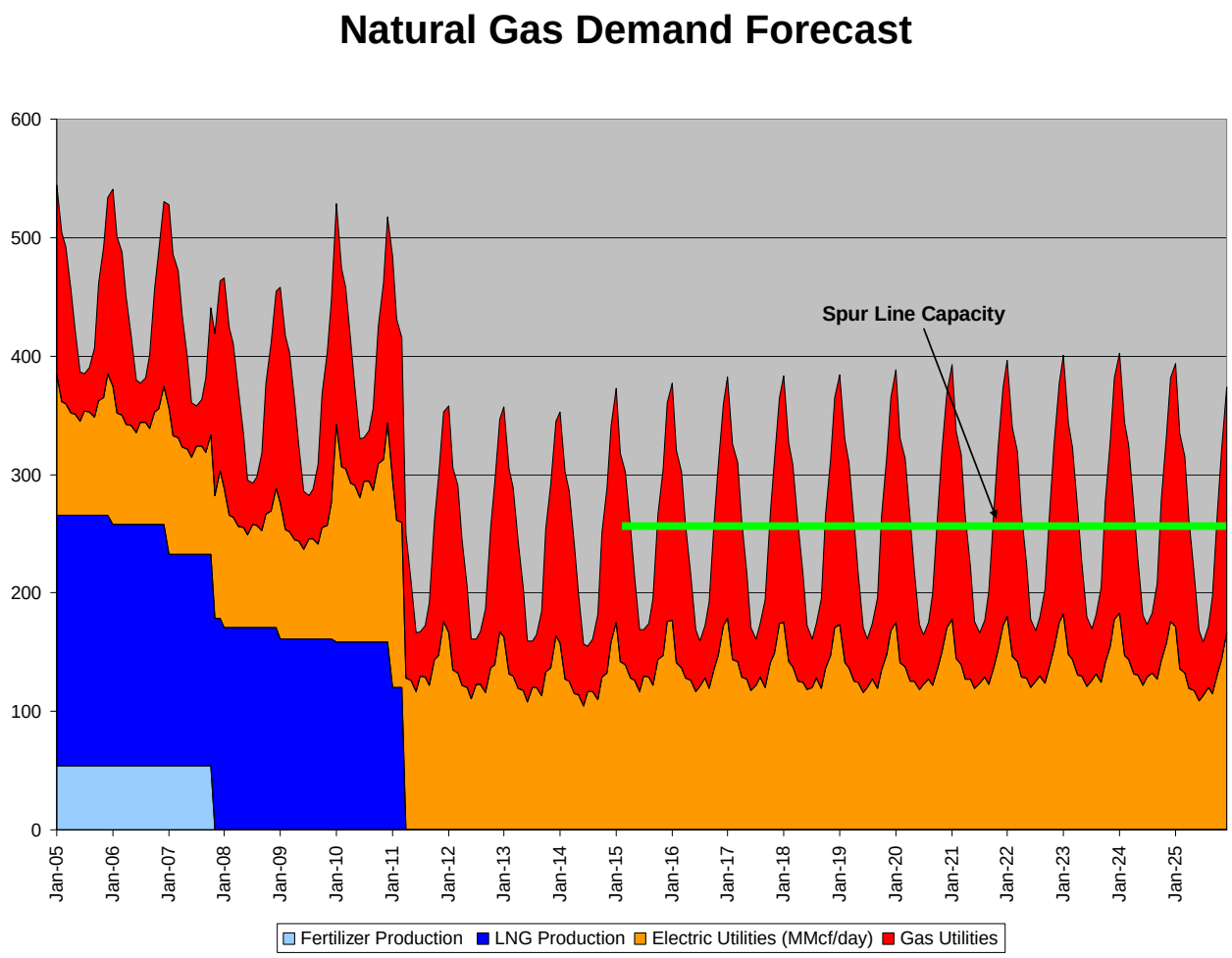
Utility	Year				
	2005	2010	2015	2020	2025
APC - Tok	0.0	0.0	0.4	0.4	0.4
AML&P – Anchorage (Railbelt)	10.5	10.9	11.4	12.1	12.7
Chugach/MEA/HEA/SES – Anchorage (Railbelt)	23.5	25.1	27.1	29.9	33.5
CVEA – Glennallen	0.0	0.0	0.3	0.3	0.4
GVEA – Fairbanks	5.0	5.0	7.5	7.6	7.7
HEA - Nikiski Cogeneration – Kenai Peninsula	4.1	4.1	4.1	4.1	4.1
Total	43.3	45.2	50.8	54.5	58.8

Source: Northern Economics, Inc. 2006.

5.2.4 RAILBELT GAS SUPPLY AND DELIVERABILITY

Natural gas demand for residential heating and power generation is seasonal, with greater demands occurring in colder months. In recent years, demands have increased beyond the system's ability to provide adequate supplies, even considering the interruptible industrial gas consumers and the closure of the Agrium plant. Figure 3 illustrates the existing and projected seasonal variation in gas demand through 2025.

Figure 3: Natural Gas Demand Forecast with Seasonal Demand



Alaska Gas Spur Line	ANGDA's proposed Alaska natural gas spur line project
AGSL	Alaska Gas Spur Line. ANGDA's proposed Alaska spur line project
Alaska Native	A member of any of the aboriginal peoples of Alaska, including American Indian, Eskimo, and Aleut peoples.
ANCSA	Alaska Native Claims Settlement Act
as spent dollars	Amounts that have not been adjusted to remove the effect of changes in the purchasing power of the dollar. Also known as nominal dollars.
backstop funding	Additional sources of funding to be provided when access to commercial sources of funding cannot be obtained under acceptable terms and conditions.
base case	The business case that represents a set of assumptions used to establish the design basis and against which alternatives are compared.
Bcf/d	The abbreviation for billion cubic feet per day.
capital cost	The money that needs to be spent to design and construct the project facilities.
compression, gas	The process of increasing the pressure on gas to reduce its volume or cause it to flow. Natural gas is usually compressed for pipeline transportation.
compressor station	A facility containing equipment that is used to increase pressure to compress natural gas for transportation.
ConocoPhillips	The abbreviation for the Conoco Phillips oil company.
contract demand quantity	The maximum amount of service a seller agrees to provide on a periodic (daily, monthly or annual) basis.
conversion factors	See Conversion - Math Factors Glossary
deemed capital structure	A capital structure used for rate-setting purposes that may differ from a company's actual capital structure.
deliverability	The estimated rate at which natural gas, crude oil or bitumen can be produced, unrestricted by demand but constrained by costs and transportation infrastructure. Also known as *production capacity*.

delta	An alluvial deposit, usually triangular in shape, at the mouth of a river, stream or tidal inlet.
ExxonMobil	The abbreviation for the Exxon Mobil oil company.
firm service	Service offered to customers under schedules or contracts that anticipate no interruptions, except for acts of God.
Firm Transportation Service Agreement	A contractual agreement that provides for the delivery of natural gas up to a specific maximum daily quantity. The shipper must pay a monthly demand charge, regardless of the volumes transported, and a commodity charge for the volumes actually transported.
FTSA	Firm Transportation Service Agreement (See above.)
force majeure	An unforeseeable course of events that excuse a person or an organization from fulfilling a contract.
gas, natural	A compressible mixture of hydrocarbons, with a low specific gravity, that occurs naturally in a gaseous form.
gas pipeline	The gas delivery method
gathering pipelines	Lines from gas-collecting facilities to the gas delivery line.
gathering system	The entire system that collects and delivers gas to the pipeline.
GMDFS	The abbreviation for Gas Market and Data Forecasting System.
heavy oil	Crude oil that has higher viscosity.
hydrocarbon	An organic compound of hydrogen and carbon whose density, boiling point, and freezing point increase as its molecular weight increases. Petroleum is a mixture of many different hydrocarbons.
infrastructure	Basic facilities, such as transportation, communication, power supplies and buildings, which enable an organization, project or community to function.
IRR	The Internal Rate of Return (IRR) is a capital budgeting metric used to decide whether they should make investments. It is an indicator of the efficiency of an investment (as opposed to NPV, which indicates value or magnitude). The IRR is the annualized effective compounded return rate which can be earned on the invested capital, i.e. the yield on the investment. A project is a good investment proposition if its IRR is greater than the rate of return that could be earned by alternative investments (investing in other projects, buying bonds, even putting money in a bank account). Thus, the IRR should be compared to an alternative cost of capital including an

	appropriate risk premium. Mathematically, the IRR is defined as any discount rate that results in a net present value of zero of a series of cash flows. In general, if the IRR is greater than the project's cost of capital, or hurdle rate, the project will add value for the company.
IT	The abbreviation for interruptible transportation.
Joint Venture	A business partnership
JV	Joint Venture (See above.)
line pack	A process whereby the amount of gas in a pipeline system is increased by adding gas or increasing pressure, or both.
liquefied natural gas	Super cooled natural gas that is maintained as a liquid at -160 ºC. As this gas occupies 1/640th of its original volume, it is easier to transport if pipelines cannot be used.
LNG	The abbreviation for liquefied natural gas.
natural gas liquids	Hydrocarbons that are gaseous in the reservoir, but that will separate out in liquid form at the pressures and temperatures at which separators normally operate. The liquids consist of varying proportions of butane, propane, pentane and heavier fractions, with little or no methane or ethane.
NA	Not applicable
NGL	The abbreviation for natural gas liquid.
NR	Not required
nominal dollars	Amounts that have not been adjusted to remove the effect of changes in the purchasing power of the dollar. Also known as *as-spent dollars.*
NPS	The abbreviation for nominal pipe size.
open season	A period of time in which potential customers can bid for pipeline services, and during which such customers are treated equally regarding priority in the queue for service.
permafrost	Permanently frozen subsoil occurring through the Polar regions and locally in perennially frigid area.
permafrost-active layer	It is the top layer of soil that thaws during the summer and freezes again during the autumn-winter.
permafrost-inactive layer	Refers to the soil below the active layer which is frozen year-round because the solar heat fails to penetrate.
permafrost-continuous	It refers to an environment where more than 80% of the ground surface is underlain by permafrost.

permafrost-discontinuous	It refers to an environment where 30 - 80% of the ground surface is underlain by permafrost.
permafrost-permanent	A category of permafrost where some of the underlying ground is unfrozen.
permafrost-sporadic	It refers to an environment where less than 30% of the ground surface is underlain by permafrost. The presence of sporadic permafrost is often dependent on the presence of organic soils that help preserve the permafrost under milder climates.
precedent Agreement	A conditional agreement between the shipper and the transporter that outlines the conditions leading the parties to enter into a FTSA, once the conditions have been satisfied.
production	The operation of bringing raw natural gas to the surface for processing.
production capacity	The estimated rate at which natural gas, crude oil or bitumen can be produced. Unrestricted by demand but constrained by costs and transportation infrastructure. Also known as *deliverability.*
pro forma	Something done or produced as a matter of form, usually a forward-looking projection.
project participants	The organizations working with ANGDA to develop AGSL.
pro rata	According to the share or interest of each.
recourse rates	Those rates on a gas pipeline that are in effect and any user may accept on a common-carrier pipeline.
reservoir	A porous and permeable underground rock formation containing a natural accumulation of crude oil or raw natural gas that is confined by impermeable rock or water barriers.
return on equity	Compensation for the investment of capital, i.e., earnings. Regulated public utilities are, by statute, entitled to charge rates that permit them to earn a fair return on their equity invested.
river/stream crossing / water course crossing	Method of pipeline or access crossing: HDD – Open Cut – shallow water - Bridge
ROE	The abbreviation for “Return-On-Equity”.
shipper	An individual or company that contracts with a pipeline company for transporting natural gas and that retains title to the natural gas while it being transported in the pipeline.

start-up	The act of starting up new machinery or equipment after commissioning, or re-starting up machinery or equipment after a temporary shutdown or decommissioning.
subordinated debt	A loan on security that ranks below other loans or securities with regard to claims on assets or earnings.
tariff	A published statement of rate schedules and general terms and conditions under which a service will be supplied.
toll	The fee charged by a pipeline company for the use of its facilities.
transporter	Owner of the pipeline
US	The abbreviation for the United States.
water course crossing	See "river/stream crossing".

PRECEDENT AGREEMENT
FIRM TRANSPORTATION SERVICE

ON

ALASKA GAS SPUR LINE
(AGSL)

This Precedent Agreement for Firm Transportation Service (Agreement), is made and entered on this date

_____,

by and between

Alaska Natural Gas Development Authority (ANGDA), a public corporation of the State of Alaska

and

_____ (Shipper)

The Parties Represent as follows:

A. ANGDA Joint Venture to own and operate an intrastate natural gas transmission subject to the jurisdiction of the Regulatory Commission of Alaska (RCA).

B. ANGDA to initiate an Open Season on July 1, 2008, for Shippers desiring firm transportation service on AGSL from Delta Junction, Alaska to Beluga, Alaska.

C. ANGDA Joint Venture and Shipper are willing to execute a Transportation Service Agreement (TSA) for firm transportation service subject to the terms and conditions of this Agreement.

The Parties Agree as Follows:

ARTICLE 1
FIRM TRANSPORTATION SERVICE COMMITMENT

1.1 In response to the Open Season, Shipper has requested a TSA for the service described on Exhibit A.

1.2 The availability of capacity for the requested service is subject to availability of capacity at the requested point locations and ability to construct the required facilities to accommodate an anticipated in-service date of January 1, 2014. The commencement date under the TSA shall be the date that the facilities are placed in service.

1.3 After evaluating all the new service requests received in the Open Season, ANGDA will tender a TSA to Shipper reflecting the service provisions set forth on Exhibit A, except that the Reserved Daily Capacity (RDC) may be reduced to reflect capacity allocations, and mutually agreeable receipt and delivery point capacities may be different from those set forth on Exhibit A. Shipper agrees to execute and return the TSA within 15 days of being tendered by ANGDA for execution.

1.4 If, by July 1, 2009, the expansion capacity is not fully subscribed or the owner/operator has not received and accepted the necessary permits and regulatory approvals or has been unable to finalize contracts necessary for construction to begin or to provide service under the TSA or if the pipeline operator determines in its sole judgment that the project is not economically viable ANGDA has the option to terminate the TSA by providing written notice to, ANGDA & other potential shippers not later than August 1, 2009 or alternatively providing its best estimate of an in-service date.

1.5 ANGDA will seek either rolled-in treatment or an incremental rate, as applicable.

ARTICLE 2
TERMINATION

This Agreement may be terminated by ANGDA pursuant to Section 1.4, otherwise this Agreement will terminate on the date of execution of the TSA by both parties and thereafter ANGDA's and Shipper's rights and obligations related to firm transportation service on the AGSL system shall in all respects be subject to the terms and conditions of such TSA and the pipeline tariff, as either or both may be modified.

ARTICLE 3
CREDITWORTHINESS

Shipper agrees to comply with ANGDA's creditworthiness requirements as defined in Volume 2 (entitled, "Economics, Tolls & Tariffs") of the AGSL project description document.

ARTICLE 4
SUCCESSION AND ASSIGNMENT

4.1 Any entity which shall become a successor to this Agreement by purchase, merger or consolidation shall be entitled to the rights and shall be subject to the obligations of its predecessor in interest under this Agreement.

4.2 Either ANGDA or Shipper may, without relieving itself of its obligations under this Agreement, assign this Agreement to any entity or entities, with which it is affiliated, including without limitation any wholly-owned subsidiary subject to satisfying ANGDA's creditworthiness standards. Otherwise, no assignment of this Agreement or of any of the rights or obligations hereunder shall be effective without the express prior

written consent of the other party, which shall not be unreasonably withheld. Shipper acknowledges and agrees that ANGDA may decline to consent to an assignment by Shipper to a party that does not or cannot demonstrate satisfaction of ANGDA's creditworthiness tariff provisions.

4.3 ANGDA shall have the right to pledge this Agreement, or any and all of ANGDA's rights there under, as security for any indebtedness incurred by ANGDA in connection with the financing or refinancing of the AGSL and to assign this Agreement in accordance with the terms and conditions of any agreement with third parties pertaining to any such indebtedness.

ARTICLE 5
NO THIRD PARTY BENEFICIARIES

This Agreement shall not create any rights in any third parties, and no provision shall be construed as creating any obligations for the benefit of, or right in the favor of, any person or entity other than ANGDA or Shipper.

ARTICLE 6
NOTIFICATIONS AND COMMUNICATIONS

Except as other provided herein, any notice contemplated or required by this Agreement shall be in writing, and shall be considered duly delivered when send by registered or certified mail, or be telefacisimile, to the appropriate address set forth below, or at such other address as ANGDA or Shipper may from time-to-time designate by express written notice.

ANGDA	Shipper: _____
ANGDA Contact Person	Contact Person: _____
ANGDA Contact Person's Title	Contact Person's Title: _____
411 W. 4th Avenuen, First Floor	Address: _____
Anchorage, AK 99501	Address: _____
TEL 907-257-1334	TEL: _____
FAX 907-646-5006	FAX: _____

ARTICLE 7
ENTIRE AGREEMENT

7.1 This Agreement contains the entire agreement between ANGDA and Shipper with respect to the subject matter hereof, and supersedes any and all prior agreements, understandings and commitments, whether oral or written, concerning the subject matter hereof, and any and all such prior agreements, understandings and commitments are hereby deemed to be void and of no effect.

7.2 No amendments to or modifications of this Agreement shall be effective unless agreed upon in a written instrument executed by ANGDA and Shipper, which expressly refers to this Agreement.

ARTICLE 8
GOVERNING LAW

The construction, interpretation, and enforcement of this Agreement shall be governed by the laws of Alaska, excluding any conflict of law rule, which would refer any matter to the laws of a jurisdiction other than Alaska.

IN WITNESS WHEREOF, the Parties have executed this Agreement to be effective as of the day and year first above written.

Shipper:

_____

By _____
(Name & Title)

Alaska Natural Gas Development Authority
A Public Corporation of the State of Alaska

By _____
(Name & Title)

(Exhibit A follows this page.)

EXHIBIT A
To Precedent Agreement dated _____.

Alaska Natural Gas Development Authority,
A Public Corporation of the State of Alaska

And

Shipper _____

Pipeline Name: Alaska Gas Spur Line (AGSL)

Location/Route: Delta Junction to Glennallen to Palmer to Beluga Gas Reservoir, Alaska

Reserved Daily Capacity (RDC) _____ mmBtu/da

Minimum Acceptable RDC _____ mmBtu/da

Rate (1): $_____/mmBtu/Month - (Maximum rate shipper is willing to pay.)

Anticipated minimum acceptable rate is $5.50/mmBtu.

Contract Term: ___ years from the date capacity is made available (15 year minimum)

Primary Receipt Point (2)	Maximum Receipt Point Quantity (3)
_____	_____
_____	_____

Primary Delivery Point (2)	Maximum Delivery Point Quantity (3)
_____	_____
_____	_____

Notes:

(1) Rates do not include usage charges, fuel reimbursement charges, differing service premiums or other RCA-approved surcharges.

(2) The parties may negotiate revisions to the listed primary points and quantities if necessary to match capacity availability.

(3) Total Receipt Point RDC must equal Total Delivery Point RDC.

Cost of Service Determination Model for AGSL (Glennallen to Beluga)

notes: 1.blue numbers are inputs																
2.all $ in millions except per mmBtu																
3. no inflation case																
4. glennallen to beluga case																
5. AFUDC & IDC changes for project duration and costs																
Components of the cost of service																
1. Expenses	O&M costs															
	A&G costs															
2. Taxes	Income															
	other															
3. Depreciation	capitalized debt															
	equity contribution															
4. rate of return	rate base X overall rate of return															
5. revenue credits	negative value															
input assumptions for the model																
1. pipeline costs ($M)	$725															
2. debt cost	6%															
3. equity cost	12%															
4. debt/equity ratio	70/30															
5. Project is 2 years in construction at $225 in year 1, $500M in year 2																
6. Burn rate of capital equivalent between equity and debt																
7. Throughput (mmBtu/day)	250															
8. Rate of return	7.8%															
9. Depreciation, 30 years, 3.3%/yr	3.3%															
10. Working capital per year ($M) @10%	$1	$1	$1	$1	$1	$1	$1	$1	$1	$1						
11. AFUDC ($M)	$30															
12. IDC ($M)	$36															
13. Property tax = 5 mils on gross plant	$ 4															
summarized cost of service																
year # from in-commission date	1	2	3	4	5	6	7	8	9	10						
return	$ 62															
O&M expenses	$ 9															
A&G expenses	$ 4															
depreciation expense	$ 26															
income tax	$ 24															
other taxes	$ 4															
revenue credits	$ -															
total cost of service	$ 128															
tariff per mmBtu	$ 1.41															
construction costs (millions of $)	$ 725	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0	0	0	0	0	
AFUDC	$ 30															
IDC	$ 36															
Rate Base																
Gross plant	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	$ 791	
less accumulated depreciation	$ 26	$ 52	$ 92	$ 131	$ 171	$ 211	$ 250	$ 290	$ 329	$ 369	$ 408	$ 448	$ 487	$ 527	$ 567	
net plant	$ 765	$ 739	$ 700	$ 660	$ 620	$ 581	$ 541	$ 502	$ 462	$ 423	$ 383	$ 343	$ 304	$ 264	$ 225	
after accumulated deferred income taxes	$ 755	$ 718	$ 667	$ 617	$ 567	$ 516	$ 466	$ 416	$ 366	$ 315	$ 265	$ 215	$ 164	$ 114	$ 64	
plus working capital	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	
total rate base	$ 756	$ 719	$ 669	$ 618	$ 568	$ 518	$ 467	$ 417	$ 367	$ 316	$ 266	$ 216	$ 166	$ 115	$ 65	

components of gross plant															
land and land rights															
right of way															
pipeline															
compression stations															
metering plant															
AFUDC															
IDC															
Depreciation															
annual (3.3% of gross plant)	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26
accumulated reserve for depreciation	$ 26	$ 52	$ 78	$ 104	$ 131	$ 157	$ 183	$ 209	$ 235	$ 261	$ 287	$ 313	$ 339	$ 366	$ 392
accumulated deferred income taxes (ADIT)															
authorized depreciation schedule (straight	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26
IRS accelerated schedule (DDB)	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52
difference X composite tax rate	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11	$ 11
accumulated surplus	$ 11	$ 21	$ 32	$ 43	$ 54	$ 64	$ 75	$ 86	$ 97	$ 107	$ 118	$ 129	$ 140	$ 150	$ 161
Composite tax rate calculation															
federal rate X state rate=(1)	0.0329														
federal rate less (1)=(2)	0.3171														
(2) + state rate =composite rate	0.4111														
Return															
rate base	$ 791														
overall rate of return	7.8%														
return	$ 62														
Capital structure and rate of return															
	capital structure	cost	weighted cost												
long term debt	70%	6%	4.2%												
plus common equity	30%	12%	3.6%												
total	100%		7.8%												
Transmission O&M and A&G expenses															
operating															
supervisory & engineering	$ 1.50	$ 1.50	$ 1.50	$ 1.50	$ 1.50	$ 1.50	$ 1.50	$ 1.50	$ 1.50	$ 1.50					
system control and dispatch	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40					
communication expense	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40					
compressor station expense, labor	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75					
compressor station expense, materiel and	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50					
mains	$ 2.00	$ 2.00	$ 2.00	$ 2.00	$ 2.00	$ 2.00	$ 2.00	$ 2.00	$ 2.00	$ 2.00					
M&R station expense, labor	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40					
M&R station expense, materiel and other	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75					
total operating expense	$ 6.70	$ 6.70	$ 6.70	$ 6.70	$ 6.70	$ 6.70	$ 6.70	$ 6.70	$ 6.70	$ 6.70					
maintenance															
mains	$ 0.15	$ 0.15	$ 0.15	$ 0.15	$ 0.15	$ 0.15	$ 0.15	$ 0.15	$ 0.15	$ 0.15					
compressor station, labor	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 0.75					
compressor station, materiel and other	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00					
M&R equipment	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25	$ 0.25					
Communication equipment	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20					
total maintenance expense	$ 2.35	$ 2.35	$ 2.35	$ 2.35	$ 2.35	$ 2.35	$ 2.35	$ 2.35	$ 2.35	$ 2.35					
total operation and maintenance expense	$ 9.05	$ 9.05	$ 9.05	$ 9.05	$ 9.05	$ 9.05	$ 9.05	$ 9.05	$ 9.05	$ 9.05					

Administrative and General Expense																
salaries	$ 1.20	$ 1.20	$ 1.20	$ 1.20	$ 1.20	$ 1.20	$ 1.20	$ 1.20	$ 1.20	$ 1.20	$ 1.20	$ 1.20				
office	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20				
outside services	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00				
property insurance	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40				
rents	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20	$ 0.20				
gen'l plant maintenance	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50				
total transmission A&G expense	$ 3.50	$ 3.50	$ 3.50	$ 3.50	$ 3.50	$ 3.50	$ 3.50	$ 3.50	$ 3.50	$ 3.50	$ 3.50	$ 3.50				
Total O&M and A&G expenses	$ 12.6	$ 12.6	$ 12.6	$ 12.6	$ 12.6	$ 12.6	$ 12.6	$ 12.6	$ 12.6	$ 12.6	$ 12.6	$ 12.6				
Income Taxes																
Federal																
return	$ 62	$ 62	$ 62	$ 62	$ 62	$ 62	$ 62	$ 62	$ 62	$ 62	$ 62	$ 62				
return less interest x rate base	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28				
equity return after taxes	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33				
plus: AFUDC portion of depreciation	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1	$ 1				
taxable income=(1)	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34				
federal tax factor: (0.35/1-0.35)=(2)	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54				
federal income tax:(1)X(2)=(3)	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18				
State																
taxable income=(1)	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34	$ 34				
plus: F.I.T. paid: (3)	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18	$ 18				
state taxable income	$ 53	$ 53	$ 53	$ 53	$ 53	$ 53	$ 53	$ 53	$ 53	$ 53	$ 53	$ 53				
state tax factor: rate/1-rate	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104				
state income tax: factor X taxable income	$ 5	$ 5	$ 5	$ 5	$ 5	$ 5	$ 5	$ 5	$ 5	$ 5	$ 5	$ 5				
total income taxes	$ 24	$ 24	$ 24	$ 24	$ 24	$ 24	$ 24	$ 24	$ 24	$ 24	$ 24	$ 24				
Other taxes																
property and employment	$ 4	$ 4	$ 4	$ 4	$ 4	$ 4	$ 4	$ 4	$ 4	$ 4	$ 4	$ 4				
Additional notes: No cost allocations performed, offtakes for intermediate customers not considered, no interruptable rates considered, no determination made between commodity and demand factors, tariff for the big line not considered, i.e., this model is only for the spurline from Delta Junction to Beluga, no storage charges considered, cost of doing business assumed constant for first 10 years of the project, hence no correction for inflation, no consideration for pipeline additions or major maintenance activities in the first 10 years of operation, no revenue credits assumed, annual calculations are as if new rates were defined each year; in actuality it would normally be several years between rate cases and changes in allowed RoR; blue entries are assumed or estimated numbers.																	