



Interior Gas Utility

Board of Directors Special Board Meeting

December 12, 2017

4:00PM

100 Cushman Street, Ste. 501, Fairbanks, Alaska

AGENDA

I. Call to Order

- Roll call
- Approval of Agenda
- Public Comment – *limited to three minutes*

II. New Business

- Fairbanks Large Storage Project
 - BM 2017-03 **Pg. 2 - 3**
Recommendation for IGU Concurrence to Proceed with the 5.25 MG LNG
Storage Project
 - NewGen Analysis dated 12/07/2017 **Pg. 4 - 13**
 - FNG Memo to AIDEA **Pg. 14 - 21**
 - AIDEA Resolution G 17-20 **Pg. 22 - 24**

III. Other Business

- Next Agenda

IV. Director Comments

V. Adjournment



**Interior Gas Utility
BOARD MEMORANDUM
No. 2017-03**

Meeting Date: December 12, 2017

From: General Manager, IGU

Subject: Recommendation for Concurrence to Proceed with the 5.25 MG LNG Storage Project

The Interior Alaska Natural Gas Utility (IGU) authorized the General Manager to execute a Purchase & Sales (PSA) and Finance (FA) Agreements with the Alaska Industrial Development and Export Authority (AIDEA) for the acquisition of Pentex and for the Financing of the Development of the Interior Energy Project (IEP). As part of the PSA, Section 5.3 Conduct of Business prior to Closing, part (c) states AIDEA shall not allow the Acquired Companies to enter into any agreement having a term of more than six months or any agreement reasonably expected to require expenses or expenditures of more than \$50,000 without IGU consenting to such an action.

A Request for Proposal for an Engineer, Procure and Construct (EPC) contract to build the large (5.25 MG) LNG tank was issued on September 14, 2017 and solicited for in accordance with appropriate public procurement. Two proposals were received and were evaluated by FNG, Owners Engineer, Chris Hosford of CHI and David Prusak (Stantec) of IGU. The timing of this effort was done in order to meet a project completion date on or before January 1, 2020 and be eligible for a \$15 M storage credit from the State of Alaska.

Effort has been expended to verify if the sizing of the LNG facility proposed is a least cost option. The analysis was completed by NewGen Strategies & Solutions (Brown Thornton) and is attached. It determined that the 5.25 MG storage tank in comparison to an incremental storage approach (multiple 75,000 gallon tanks) is the least-cost option under a 50% conversion demand scenario. Equally important, it shows the two storage options are mutually exclusive from a cost perspective, that is, embarking on an incremental security storage eliminates the large storage tank as an economic option for the future to serve the community. Other benefits of the large tank are that it provides 15 to 70 days of reliable peak-day security storage depending on demand, better utilization of the liquefaction facilities through more leveled production, and, should a pipeline be built in the future, an opportunity to levelize the gas delivery would be provided for.

Negotiations for a firm price is soon to be completed for the Tank, foundation and associated civil work. FNG is prepared to move forward with the final EPC contract negotiations and issuance of a notice to proceed. The balance of plant which includes transport unloading and offloading, vaporization equipment, boil-off gas compression, control room and appropriate security and safety components has been advancing in design and scope for budgeting to complete this work.

In June of 2017, AIDEA authorized Fairbanks Natural Gas (FNG) to proceed with the front end engineering and design (FEED) work for the Storage Project and allowed expenditure of up to \$1.5 M. for this purpose. Currently the budget line item for this facility in the FA is shown as \$42 M, which was the cost estimate prepared in 2014. With the firm pricing of the Tank nearing finalization, AIDEA has approved the FNG request for financing of \$45.5 M of additional funds for a total of \$47 M for the completion of the project. The updated cost estimate includes an allowance for the Davis Bacon wage requirement for specific trades and, with the current level of FEED work, is appropriate for budgeting purposes for a construction project of this type.

1
2 It is recommended that the IGU Board concur with AIDEA's approval of the additional financing
3 which allows FNG to proceed with construction of the Storage Project.
4

5 Prepared by: David J. Prusak, Project Manager,
6

7 Submitted by: Jomo Stewart, General Manager
8

9 Approved:
10

11 _____ \ _____
12 Michael T. Meeks

Date

13 Chair, IGU Board of Directors
14

15 Attached: NewGen Analysis dated 12/07/2017
16 FNG Memo to AIDEA
17 AIDEA Resolution G 17-20
18

Memorandum

To: Jomo Stewart, Interior Gas Utility
David Prusak, Stantec

From: Brown Thornton, NewGen Strategies & Solutions

Date: December 7, 2017

Re: Examination of Storage Alternatives

As part of its planning process, IGU is examining options for meeting future liquefaction and storage requirements and associated capital funding requirements. IGU's Base Case storage scenario includes the 35% conversion demand, construction of a 5.25 mgal storage tank in Fairbanks, and relocating two tanks from Fairbanks to North Pole. An alternative storage strategy is to build incremental security storage and build LNG production capacity as needed to meet demand. In addition, the impact of upgrading Titan 1 is examined.

Results from IGU's liquefaction and storage examination are summarized below. Additional detail and supporting analysis is attached to this memo.

- Construction of the 5.25 mgal storage tank is the least-cost option with a 50% conversion demand buildout (approx. 5.3 bcf per year).
- Construction of incremental security storage (with minimal 5-day storage) is the least-cost option for No Growth (approx. 0.75 bcf per year) and for a 35% conversion demand buildout (approx. 3.9 bcf per year). However, at higher demands, incremental security storage quickly becomes more costly than the 5.25 mgal storage option due to number of tanks and additional liquefaction capacity requirements.
- The large tank strategy provides more reliability in peak day storage and better utilization of liquefaction facilities. For example, under incremental storage, peak-day storage is held at the 5-day minimum requirement since additional storage for leveling liquefaction is costly. With the 5.25 mgal storage tank, peak-day storage ranges from 70 days at 1 bcf per year to 15 days at 5 bcf per year.
- The two storage options are mutually exclusive from a cost perspective; that is, embarking on an incremental security storage strategy eliminates the large tank as an economic option for the future.
- Rate impact is directly related to the difference in debt service as compared to the Base Case scenario and demand or gas sales.
- Timing of capital funding between the storage options is only a factor in the first two construction years – not a material impact to overall bond financing.

The findings support current plans to proceed with the 5.25 mgal storage tank. The alternative storage tradeoff is a lower cost upfront, while demand is less certain, versus a higher overall cost when demand materializes.

Let us know if you have any questions or would like additional information.

**Interior Gas Utility
Alternative Storage Scenarios
Comparison of Estimated Cost for Storage and Liquefaction - 12/07/2017**

Discussion:

The table below summarizes results from an examination of capital funding requirements for alternative storage scenarios. IGU's Base Case includes 35% conversion, the construction of a 5.25 mgal storage tank in Fairbanks, and relocating two tanks from Fairbanks to North Pole. An alternative storage strategy is to build incremental security storage and build LNG production capacity as needed to meet demand. In addition, the impact of upgrading Titan 1 was examined.

Item / Year	Incremental Security Storage and Liquefaction				5.25 mgal Storage Tank and Liquefaction			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Base Case Scenario 5	Scenario 6	Low Gas Scenario 7	Scenario 8
Alt. Storage Scenario	3.93	3.93	5.29	5.29	3.93	3.93	5.29	5.29
Annual Demand (bcf)	14	14	21	21	-	-	-	-
Number of Bullet Tanks [1]	1,050,000	1,050,000	1,575,000	1,575,000	5,250,000	5,250,000	5,250,000	5,250,000
New Storage (gal) [1]	5-6 days	5-6 days	5-6 days	5-6 days	20-70 days	20-70 days	15-65 days	15-65 days
Days of Storage	Titan 2, 3	Titan 1, 2, 3	Titan 2, 3, 4	Titan 1, 2, 3, 4	Titan 2, 3	Titan 1, 2, 3	Titan 2, 3	Titan 1, 2, 3
Liquefaction Projects	7.5 bcf	8.1 bcf	10.5 bcf	11.1 bcf	7.5 bcf	8.1 bcf	7.5 bcf	8.1 bcf
Liquefaction Capacity								
2018	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2019	\$ -	\$ 10,000,000	\$ -	\$ 10,000,000	\$ -	\$ -	\$ -	\$ -
2020	\$ 71,292,000	\$ 71,292,000	\$ 71,292,000	\$ 71,292,000	\$ 60,370,570	\$ 70,370,570	\$ 60,370,570	\$ 70,370,570
2021	\$ 5,860,000	\$ 5,860,000	\$ 7,060,000	\$ 7,060,000	\$ 48,972,000	\$ -	\$ 48,972,000	\$ -
2022	\$ 2,400,000	\$ 2,400,000	\$ 3,600,000	\$ 3,600,000	\$ -	\$ 48,972,000	\$ -	\$ 48,972,000
2023	\$ 2,400,000	\$ 2,400,000	\$ 33,600,000	\$ 33,600,000	\$ -	\$ -	\$ -	\$ -
2024	\$ 32,400,000	\$ 2,400,000	\$ 3,600,000	\$ 3,600,000	\$ -	\$ -	\$ 30,000,000	\$ -
2025	\$ 2,400,000	\$ 32,400,000	\$ 3,600,000	\$ 3,600,000	\$ 30,000,000	\$ -	\$ -	\$ 30,000,000
2026	\$ 1,200,000	\$ 1,200,000	\$ 32,400,000	\$ 2,400,000	\$ -	\$ -	\$ -	\$ -
2027	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 31,200,000	\$ -	\$ -	\$ -	\$ -
2028	\$ -	\$ -	\$ 1,200,000	\$ 1,200,000	\$ -	\$ -	\$ -	\$ -
2029	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2030	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 30,000,000	\$ -	\$ -
2031	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2032	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 119,152,000	\$ 129,152,000	\$ 157,552,000	\$ 167,552,000	\$ 139,342,570	\$ 149,342,570	\$ 139,342,570	\$ 149,342,570
Difference From Base Case	\$ (20,190,570)	\$ (10,190,570)	\$ 18,209,430	\$ 28,209,430	\$ -	\$ 10,000,000	\$ -	\$ 10,000,000

[1] New bullet tanks at FBKS and NP or new 5.25 mgal tank at FBKS; does not include existing storage at FBKS

SCENARIO 1 -- Storage and Liquefaction Plan at 35% Conversions**Titan 1 - Existing Capacity****Bullet Tanks - Incremental Security Storage**

Year	Demand (MCF)	Storage (gal)	FBKS Storage (\$ [1])	NP Storage (\$ [2])	Liquefaction (\$ [3])	Total (\$)
2018	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2019	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2020	1,056,992	640,000	\$ 8,260,000	\$ 14,060,000	\$ 48,972,000	\$ 71,292,000
2021	1,506,093	640,000	\$ 5,860,000	\$ -	\$ -	\$ 5,860,000
2022	2,011,598	790,000	\$ 2,400,000	\$ -	\$ -	\$ 2,400,000
2023	2,502,689	940,000	\$ 2,400,000	\$ -	\$ -	\$ 2,400,000
2024	2,956,791	1,090,000	\$ 2,400,000	\$ -	\$ 30,000,000	\$ 32,400,000
2025	3,315,553	1,240,000	\$ 2,400,000	\$ -	\$ -	\$ 2,400,000
2026	3,552,091	1,315,000	\$ 1,200,000	\$ -	\$ -	\$ 1,200,000
2027	3,687,155	1,390,000	\$ 1,200,000	\$ -	\$ -	\$ 1,200,000
2028	3,804,024	1,390,000	\$ -	\$ -	\$ -	\$ -
2029	3,867,420	1,390,000	\$ -	\$ -	\$ -	\$ -
2030	3,907,551	1,390,000	\$ -	\$ -	\$ -	\$ -
2031	3,925,632	1,390,000	\$ -	\$ -	\$ -	\$ -
2032	3,929,944	1,390,000	\$ -	\$ -	\$ -	\$ -
Total			\$ 26,120,000	\$ 14,060,000	\$ 78,972,000	\$ 119,152,000

NOTES:

[1] BOP over first two years plus 12 new tanks

[2] BOP plus 2 new tanks

[3] Titan 2 and Titan 3

SCENARIO 2 -- Storage and Liquefaction Plan at 35% Conversions

Titan 1 - Ugraded Capacity

Bullet Tanks - Incremental Security Storage

Year	Demand (MCF)	Storage (gal)	FBKS Storage (\$ [1])	NP Storage (\$ [2])	Liquefaction (\$ [3])	Total (\$)
2018	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2019	737,651	340,000	\$ -	\$ -	\$ 10,000,000	\$ 10,000,000
2020	1,056,992	640,000	\$ 8,260,000	\$ 14,060,000	\$ 48,972,000	\$ 71,292,000
2021	1,506,093	640,000	\$ 5,860,000	\$ -	\$ -	\$ 5,860,000
2022	2,011,598	790,000	\$ 2,400,000	\$ -	\$ -	\$ 2,400,000
2023	2,502,689	940,000	\$ 2,400,000	\$ -	\$ -	\$ 2,400,000
2024	2,956,791	1,090,000	\$ 2,400,000	\$ -	\$ -	\$ 2,400,000
2025	3,315,553	1,240,000	\$ 2,400,000	\$ -	\$ 30,000,000	\$ 32,400,000
2026	3,552,091	1,315,000	\$ 1,200,000	\$ -	\$ -	\$ 1,200,000
2027	3,687,155	1,390,000	\$ 1,200,000	\$ -	\$ -	\$ 1,200,000
2028	3,804,024	1,390,000	\$ -	\$ -	\$ -	\$ -
2029	3,867,420	1,390,000	\$ -	\$ -	\$ -	\$ -
2030	3,907,551	1,390,000	\$ -	\$ -	\$ -	\$ -
2031	3,925,632	1,390,000	\$ -	\$ -	\$ -	\$ -
2032	3,929,944	1,390,000	\$ -	\$ -	\$ -	\$ -
Total			\$ 26,120,000	\$ 14,060,000	\$ 88,972,000	\$ 129,152,000

NOTES:

[1] BOP over first two years plus 14 new tanks

[2] BOP plus 2 new tanks

[3] Titan 2 and Titan 3

SCENARIO 3 -- Storage and Liquefaction Plan at 50% Conversions**Titan 1 - Existing Capacity****Bullet Tanks - Incremental Security Storage**

Year	Demand (MCF)	Storage (gal)	FBKS Storage (\$)^[1]	NP Storage (\$)^[2]	Liquefaction (\$)^[3]	Total (\$)
2018	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2019	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2020	1,188,378	640,000	\$ 8,260,000	\$ 14,060,000	\$ 48,972,000	\$ 71,292,000
2021	1,829,950	715,000	\$ 7,060,000	\$ -	\$ -	\$ 7,060,000
2022	2,552,101	940,000	\$ 3,600,000	\$ -	\$ -	\$ 3,600,000
2023	3,253,659	1,165,000	\$ 3,600,000	\$ -	\$ 30,000,000	\$ 33,600,000
2024	3,902,376	1,390,000	\$ 3,600,000	\$ -	\$ -	\$ 3,600,000
2025	4,414,894	1,615,000	\$ 3,600,000	\$ -	\$ -	\$ 3,600,000
2026	4,752,805	1,765,000	\$ 2,400,000	\$ -	\$ 30,000,000	\$ 32,400,000
2027	4,945,754	1,840,000	\$ 1,200,000	\$ -	\$ -	\$ 1,200,000
2028	5,112,709	1,915,000	\$ 1,200,000	\$ -	\$ -	\$ 1,200,000
2029	5,203,275	1,915,000	\$ -	\$ -	\$ -	\$ -
2030	5,260,605	1,915,000	\$ -	\$ -	\$ -	\$ -
2031	5,286,435	1,915,000	\$ -	\$ -	\$ -	\$ -
2032	5,292,595	1,915,000	\$ -	\$ -	\$ -	\$ -
Total			\$ 34,520,000	\$ 14,060,000	\$ 108,972,000	\$ 157,552,000

NOTES:

[1] BOP over first two years plus 19 new tanks

[2] BOP plus 2 new tanks

[3] Titan 2, Titan 3 and Titan 4

SCENARIO 4 -- Storage and Liquefaction Plan at 50% Conversions

Titan 1 - Ugraded Capacity

Bullet Tanks - Incremental Security Storage

Year	Demand (MCF)	Storage (gal)	FBKS Storage (\$ [1])	NP Storage (\$ [2])	Liquefaction (\$ [3])	Total (\$)
2018	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2019	737,651	340,000	\$ -	\$ -	\$ 10,000,000	\$ 10,000,000
2020	1,188,378	640,000	\$ 8,260,000	\$ 14,060,000	\$ 48,972,000	\$ 71,292,000
2021	1,829,950	715,000	\$ 7,060,000	\$ -	\$ -	\$ 7,060,000
2022	2,552,101	940,000	\$ 3,600,000	\$ -	\$ -	\$ 3,600,000
2023	3,253,659	1,165,000	\$ 3,600,000	\$ -	\$ 30,000,000	\$ 33,600,000
2024	3,902,376	1,390,000	\$ 3,600,000	\$ -	\$ -	\$ 3,600,000
2025	4,414,894	1,615,000	\$ 3,600,000	\$ -	\$ -	\$ 3,600,000
2026	4,752,805	1,765,000	\$ 2,400,000	\$ -	\$ -	\$ 2,400,000
2027	4,945,754	1,840,000	\$ 1,200,000	\$ -	\$ 30,000,000	\$ 31,200,000
2028	5,112,709	1,915,000	\$ 1,200,000	\$ -	\$ -	\$ 1,200,000
2029	5,203,275	1,915,000	\$ -	\$ -	\$ -	\$ -
2030	5,260,605	1,915,000	\$ -	\$ -	\$ -	\$ -
2031	5,286,435	1,915,000	\$ -	\$ -	\$ -	\$ -
2032	5,292,595	1,915,000	\$ -	\$ -	\$ -	\$ -
Total			\$ 34,520,000	\$ 14,060,000	\$ 118,972,000	\$ 167,552,000

NOTES:

[1] BOP over first two years plus 19 new tanks

[2] BOP plus 2 new tanks

[3] Titan 1, Titan 2, Titan 3 and Titan 4

SCENARIO 5 -- Storage and Liquefaction Plan at 35% Conversions

Titan 1 - Existing Capacity

5.25 mgal Storage Tank

Year	Demand (MCF)	Storage (gal)	FBKS Storage (\$ [1])	NP Storage (\$ [2])	Liquefaction (\$ [3])	Total (\$)
2018	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2019	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2020	1,056,992	5,590,000	\$ 48,710,570	\$ 11,660,000	\$ -	\$ 60,370,570
2021	1,506,093	5,590,000	\$ -	\$ -	\$ 48,972,000	\$ 48,972,000
2022	2,011,598	5,590,000	\$ -	\$ -	\$ -	\$ -
2023	2,502,689	5,590,000	\$ -	\$ -	\$ -	\$ -
2024	2,956,791	5,590,000	\$ -	\$ -	\$ -	\$ -
2025	3,315,553	5,590,000	\$ -	\$ -	\$ 30,000,000	\$ 30,000,000
2026	3,552,091	5,590,000	\$ -	\$ -	\$ -	\$ -
2027	3,687,155	5,590,000	\$ -	\$ -	\$ -	\$ -
2028	3,804,024	5,590,000	\$ -	\$ -	\$ -	\$ -
2029	3,867,420	5,590,000	\$ -	\$ -	\$ -	\$ -
2030	3,907,551	5,590,000	\$ -	\$ -	\$ -	\$ -
2031	3,925,632	5,590,000	\$ -	\$ -	\$ -	\$ -
2032	3,929,944	5,590,000	\$ -	\$ -	\$ -	\$ -
Total			\$ 48,710,570	\$ 11,660,000	\$ 78,972,000	\$ 139,342,570

NOTES:

- [1] Large 5.25 mgal storage tank in FBKS
- [2] BOP plus relocation of 2 tanks from FBKS
- [3] Titan 2 and Titan 3

SCENARIO 6 -- Storage and Liquefaction Plan at 35% Conversions**Titan 1 - Upgraded Capacity****5.25 mgal Storage Tank**

Year	Demand (MCF)	Storage (gal)	FBKS Storage (\$) [1]	NP Storage (\$) [2]	Liquefaction (\$) [3]	Total (\$)
2018	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2019	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2020	1,056,992	5,590,000	\$ 48,710,570	\$ 11,660,000	\$ 10,000,000	\$ 70,370,570
2021	1,506,093	5,590,000	\$ -	\$ -	\$ -	\$ -
2022	2,011,598	5,590,000	\$ -	\$ -	\$ 48,972,000	\$ 48,972,000
2023	2,502,689	5,590,000	\$ -	\$ -	\$ -	\$ -
2024	2,956,791	5,590,000	\$ -	\$ -	\$ -	\$ -
2025	3,315,553	5,590,000	\$ -	\$ -	\$ -	\$ -
2026	3,552,091	5,590,000	\$ -	\$ -	\$ -	\$ -
2027	3,687,155	5,590,000	\$ -	\$ -	\$ -	\$ -
2028	3,804,024	5,590,000	\$ -	\$ -	\$ -	\$ -
2029	3,867,420	5,590,000	\$ -	\$ -	\$ -	\$ -
2030	3,907,551	5,590,000	\$ -	\$ -	\$ 30,000,000	\$ 30,000,000
2031	3,925,632	5,590,000	\$ -	\$ -	\$ -	\$ -
2032	3,929,944	5,590,000	\$ -	\$ -	\$ -	\$ -
Total			\$ 48,710,570	\$ 11,660,000	\$ 58,972,000	\$ 119,342,570

NOTES:

[1] Large 5.25 mgal storage tank in FBKS

[2] BOP plus relocation of 2 tanks from FBKS

[3] Titan 1, Titan 2 and Titan 3

SCENARIO 7 -- Storage and Liquefaction Plan at 50% Conversions

Titan 1 - Existing Capacity

5.25 mgal Storage Tank

Year	Demand (MCF)	Storage (gal)	FBKS Storage (\$ [1])	NP Storage (\$ [2])	Liquefaction (\$ [3])	Total (\$)
2018	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2019	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2020	1,188,378	5,590,000	\$ 48,710,570	\$ 11,660,000	\$ -	\$ 60,370,570
2021	1,829,950	5,590,000	\$ -	\$ -	\$ 48,972,000	\$ 48,972,000
2022	2,552,101	5,590,000	\$ -	\$ -	\$ -	\$ -
2023	3,253,659	5,590,000	\$ -	\$ -	\$ -	\$ -
2024	3,902,376	5,590,000	\$ -	\$ -	\$ 30,000,000	\$ 30,000,000
2025	4,414,894	5,590,000	\$ -	\$ -	\$ -	\$ -
2026	4,752,805	5,590,000	\$ -	\$ -	\$ -	\$ -
2027	4,945,754	5,590,000	\$ -	\$ -	\$ -	\$ -
2028	5,112,709	5,590,000	\$ -	\$ -	\$ -	\$ -
2029	5,203,275	5,590,000	\$ -	\$ -	\$ -	\$ -
2030	5,260,605	5,590,000	\$ -	\$ -	\$ -	\$ -
2031	5,286,435	5,590,000	\$ -	\$ -	\$ -	\$ -
2032	5,292,595	5,590,000	\$ -	\$ -	\$ -	\$ -
Total			\$ 48,710,570	\$ 11,660,000	\$ 78,972,000	\$ 139,342,570

NOTES:

[1] Large 5.25 mgal storage tank in FBKS

[2] BOP plus relocation of 2 tanks from FBKS

[3] Titan 2 and Titan 3

SCENARIO 8 -- Storage and Liquefaction Plan at 50% Conversions

Titan 1 - Upgraded Capacity

5.25 mgal Storage Tank

Year	Demand (MCF)	Storage (gal)	FBKS Storage (\$ [1])	NP Storage (\$ [2])	Liquefaction (\$ [3])	Total (\$)
2018	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2019	737,651	340,000	\$ -	\$ -	\$ -	\$ -
2020	1,188,378	5,590,000	\$ 48,710,570	\$ 11,660,000	\$ 10,000,000	\$ 70,370,570
2021	1,829,950	5,590,000	\$ -	\$ -	\$ -	\$ -
2022	2,552,101	5,590,000	\$ -	\$ -	\$ 48,972,000	\$ 48,972,000
2023	3,253,659	5,590,000	\$ -	\$ -	\$ -	\$ -
2024	3,902,376	5,590,000	\$ -	\$ -	\$ -	\$ -
2025	4,414,894	5,590,000	\$ -	\$ -	\$ 30,000,000	\$ 30,000,000
2026	4,752,805	5,590,000	\$ -	\$ -	\$ -	\$ -
2027	4,945,754	5,590,000	\$ -	\$ -	\$ -	\$ -
2028	5,112,709	5,590,000	\$ -	\$ -	\$ -	\$ -
2029	5,203,275	5,590,000	\$ -	\$ -	\$ -	\$ -
2030	5,260,605	5,590,000	\$ -	\$ -	\$ -	\$ -
2031	5,286,435	5,590,000	\$ -	\$ -	\$ -	\$ -
2032	5,292,595	5,590,000	\$ -	\$ -	\$ -	\$ -
Total			\$ 48,710,570	\$ 11,660,000	\$ 88,972,000	\$ 149,342,570

NOTES:

[1] Large 5.25 mgal storage tank in FBKS

[2] BOP plus relocation of 2 tanks from FBKS

[3] Titan 1, Titan 2 and Titan 3



MEMORANDUM

To: John Springsteen, AIDEA Executive Director

From: Dan Britton, Fairbanks Natural Gas

Date: November 29, 2017

Re: Interior Energy Project – Fairbanks Large Storage Project

This memorandum provides the background and a project plan summary, for the design, construction and commissioning of Fairbanks LNG Storage facility consisting of a 5.25 MM gallon tank and auxiliary equipment (the “Storage Project”) to be located adjacent to an existing Fairbanks Natural Gas (FNG) storage facility. The construction of the Storage Project is a critical step in the overall IEP Project which provides for an increased level of LNG supply and security, as well as facilitating improved utilization rates related to LNG production and transportation assets. In addition, the Storage Project completion is time critical in order to possibly qualify for State of Alaska tax credits that could total up to \$15MM, that requires such a facility to commence commercial operation before January 1, 2020. The Storage Project is a key component of the HB 105-Compliant project plan for the IEP that was approved by the Alaska Industrial Development and Export Authority (the “Authority”) through Resolution No. G17-13 on September 21, 2017. FNG recommends the AIDEA Board approve Resolution No. G17-20, authorizing the modification of FNG’s existing Sustainable Energy Transmission and Supply (“SETS”) loan to allow for the financing of up to \$45.5MM for the completion of the Storage Project. The FNG SETS loan would be converted to a long-term loan associated with the financing agreement currently being finalized with the Interior Gas Utility. The Interior Gas Utility (IGU) management team has been apprised of the project status, and support’s the Authority’s approval of the Storage Project funding conditioned upon IGU Board of Director’s concurrence.

Background

FNG and its subsidiary, Cassini LNG Storage, LLC (“Cassini”) began development of the Storage Project in 2012 and since such time have expended approximately \$1.7MM completing geotechnical evaluations and preliminary design and permitting work related to the Storage Project. The project was put on hold given the decline in oil prices, the status of the IEP and the formation of the Interior Gas Utility. Given the likely advancement of the IEP, and the progress being made towards the sale of Pentex to the Interior Gas Utility, the Alaska Industrial Development and Export Authority approved Resolution No. G17-09, on June 29, 2017. The resolution authorized FNG and Cassini to proceed with front end engineering and design (FEED) work for the Storage Project and allowed the expenditure of up to \$1.5MM for this purpose.

FNG subsequently began additional engineering activities and developed and issued an updated Request for Proposal to Engineer, Procure and Construct (“EPC”) the tank and its associated civil

works and foundation. FNG received responses to its request on October 31, 2017. Evaluations of responses are complete, and FNG is prepared to move forward with final EPC contract negotiations and issuance of a notice to proceed on the Storage Project.

In addition, FNG has been advancing balance of plant (BOP) designs and scope and has revised the budgets for the completion of this work and is sufficiently satisfied that the budget provided under separate confidential communication accurately reflects the expected cost of the Storage Project.

Project Plan

FNG / Cassini will construct a new 5.25 million LNG storage facility in Fairbanks. This project's cost estimate total is \$48.7 million which includes the \$1.7MM spent to date for the preliminary work. The storage facility is expected to qualify for a State of Alaska storage credit of \$15 million. This storage project will meet the RCA's requirement for five days of storage and provide some level of seasonal supply by storing LNG produced in the summer for use in the winter. FNG previously advanced the same storage project.

The project is separated into two major components, including the EPC of the Tank, foundation and associated civil works and the balance of plant, which includes transport loading and offloading, vaporization equipment, boil-off gas compression, control room and appropriate security and safety components.

The attached updated project development plan provides further background related to the project execution.

Recommendations for AIDEA Board action

FNG management with concurrence of the IEP Team and the AIDEA administration recommend the AIDEA Board vote to pass resolution No. G 17-20 approving the modification of FNG's existing SETS loan to provide for the financing of the Fairbanks Storage Project.

This resolution will accomplish the following actions:

- Authorize the financing of the Fairbanks Storage Project from the AIDEA SETS Fund
- Enable the construction of the Fairbanks Storage Project, a key component of the HB-105 plan to proceed

Attachment

Attachment A: Updated Project Development Plan, Fairbanks Storage Project



LARGE STORAGE TANK PROJECT

FAIRBANKS NATURAL GAS, LLC

PROJECT DEVELOPMENT PLAN

Describes the program to develop large LNG storage in Fairbanks to facilitate the expansion of natural gas distribution



LARGE STORAGE TANK PROJECT

INTRODUCTION

The Fairbanks Large Storage Tank is part of the Interior Energy Project (IEP) designed to expand natural gas distribution in Fairbanks and Interior Alaska. A tank with a capacity of 0.44 Bcf (5.25 million gallons) is desired. A five-million-gallon tank represents a 15 fold increase compared to FNG's current storage capacity. The new tank is part of a program that will develop new, larger capacity production facilities, larger tanker fleet, and expanded distribution system. The development of the production facility, tanker fleet, and distribution system are under separate cover.

PROJECT

The Fairbanks Large Storage Tank is a project ("the Project") to design, construct and startup storage, truck offloading, and vaporization facilities at an existing FNG facility in south Fairbanks, Alaska. The existing storage tanks will be decommissioned and re-purposed after startup of the new facility. New vaporization is required to handle the planned increased volumes of gas sent out from the tank. The new tank and vaporization equipment will be tied into the existing and expanded metering run and distribution header.

PROJECT DEVELOPMENT PLAN

This Project Development Plan describes the means, methods, and expenditures for accomplishing project goals. This plan will be updated periodically throughout the life of the project. This development plan may reference other agreements, contracts, and documents. In the event of conflict between the terms, conditions, and provisions of this Project Development Plan and any referenced document, the terms, conditions, and provisions of the referenced document shall control.

SCOPE

Preliminary Engineering

Preliminary engineering has evaluated the tank site for permit requirements, surrounding activity and zoning considerations, including vapor dispersion and thermal exclusion space. The vapor dispersion and thermal exclusion space requirements has determined the maximum size of the tank suitable for the site. Preliminary engineering developed a list of qualified tank bidders, identified a contracting plan, prepared requests for proposal for tank design and erection, determined site layout, conducted geotechnical investigation, analyzed the most cost-effective foundation design, and evaluated the bid results for tank design and erection.



LARGE STORAGE TANK PROJECT

Tank Design-Erect Contract

The LNG storage tank is a specialty item governed by several design codes including federal 49 CFR 193 – Safety Standards for LNG Facilities; NFPA 59A – Standard for Production, Storage and Handling of LNG; and API-620 – Standard for Design and Construction of Large, Welded, Low Pressure Storage Tanks.

The tank, its foundation and the site preparation will be designed and erected on a lump sum turnkey contract basis.

The bid specifications called for bidders to provide a refrigerated liquid tank suitable for storage of liquids at -325°F or warmer at a pressure of not more than 2.5 psig in general accordance with API-620 2006 edition.

The successful bidder will design, provide materials, and construct on-site the tank and associated appurtenances including foundation anchors, access stairs, top platforms, and maintenance lifting gear.

The successful bidder shall be responsible for testing the tank and the insulation space for leak-free condition. The successful bidder shall also provide technical personnel to supervise the initial cool-down of the tank with LNG provided by FNG. The initial cool-down is a critical step to ensure that metal shrinkage is properly controlled and the tank maintains integrity.

The successful bidder shall warranty materials and workmanship for a period of two years from the date of substantial completion. The successful bidder shall also warranty the tank rate of evaporation (“Heat Leak”) at a rate mutually agreed to in the contract for a period of two years. Bidders were requested to provide a design with a rate of evaporation that approaches 0.05% at 50% tank capacity at the Fairbanks annual mean temperature of 27°F.

Site Development

Land clearing, access roads, and secondary containment dikes are required for the site. The work will be designed under the guidance of FNG’s Owner Engineer. The work was included in the Tank bid.

Foundation

CHI Engineering in collaboration with Alaska-based engineering firms has completed geotechnical evaluations and studies necessary to establish a baseline for designing for permafrost conditions. The tank contractor will be responsible the final foundation engineering and construction.

Vaporization

FNG’s Owners Engineer will design the vaporization equipment. The equipment will be purchased by FNG and installed by Alaskan contractors or added to the tank contractors scope of work.



LARGE STORAGE TANK PROJECT

Truck offloading

FNG's Owners Engineer will design improvements to truck-offloading to allow higher transfer rates and more frequent deliveries. Equipment will be purchased by FNG and installed by Alaska contractors or added to the tank contractors scope of work.

Send-out pumps

FNG's Owners Engineer has developed specifications for in-tank LNG send-out pumps. The pumps will be purchased by FNG and installed by Alaska contractors or the Tank contractor under factory supervision. The in-tank pumps are selected for reliability and reduced operating cost. External booster pumps can be added in the future if high-pressure delivery to future industrial users is required.

CONTRACTS

The contracting plan for development of the complete new storage site, including the tank is based on FNG serving as the project developer, and issuing and coordinating multiple prime contracts. In this manner, FNG can select the best value providers for portions of the scope. The contracts are:

- Owner's Engineer – Currently CHI Engineering Services, Inc. Portsmouth, NH.
 - The Owner's Engineer is responsible for overall site development plans, including the vapor dispersion and thermal radiation studies, foundation design, equipment sizing
- Permitting Consultant – Not Yet Selected
 - Permitting consultant responsible to identify and make application for all required permits
- Structural Engineer / Arctic Engineer – Great Northern Engineering, Inc. Palmer, AK
 - The structural and arctic engineer provides the tank foundation support calculations, pile sizing, and cold weather details in support of work by Owner's Engineer.
- Geotechnical Engineer – Golder Associates, Anchorage, AK
 - Geotechnical engineer provides subsurface investigation and determines soil bearing capacity for foundations and structures placed on the site
- Tank Designer / Erector – Under Consideration
 - Tank designer / erector has responsibility for designing a tank and foundation of the specified size in compliance with all applicable codes, and Owner specifications, erecting the tank in a safe, timely manner, and testing and certifying the tank to applicable Codes and standards. Tank erector shall provide personnel to supervise the initial cooldown and commissioning of the LNG tank. Foundation scope will include supply, fabrication, and installation of foundation; installing cooling coils around foundation in accordance with final design, placement of embedded tank anchors; and completion of the tank foundation in a safe and timely manner. The Tank supplier will also be responsible to



LARGE STORAGE TANK PROJECT

prepare, rough grade, and fine grade site in accordance with plans prepared by Owner's Engineer. This work includes preparation of the tank foundation site; construction of temporary access roads; grading and site prep for truck offloading facilities

- Mechanical Contractor – Not yet selected.
 - Mechanical contractor is responsible for setting all equipment other than LNG tank; installation of piping and supports in accordance with designs by Owner's Engineer from first flange at tank to tie-in to existing distribution header; coordination of shutdowns for tie-ins; testing and commissioning of all piping and equipment. Mechanical contractor shall provide personnel to assist Owner in functional checkout and commissioning of all equipment. FNG may increase the scope of the Tank contractor to include the balance of plant should this prove to be a more economical solution.
- Electrical Contractor – Not yet selected.
 - Electrical contractor is responsible for providing and installing all temporary and permanent electrical service to the site in accordance with designs provided by Owner's Engineer. Electrical contractor will provide conduit, supports, wiring and terminations to all equipment and devices requiring electrical or signal power or communications. Electrical contractor shall provide personnel to assist Owner in functional checkout and commissioning of all components.
- Other – Owner shall contract for other miscellaneous services including IT interconnecting and support; fencing, site security, security cameras and other services.

SCHEDULE

The schedule for project development is based on the following milestones

Milestones

June 15, 2017	Begin Preparing Updated RFP
September 15, 2017	Issue RFP for Tank Design & Erection
October 31, 2017	Tank proposals received
December 7, 2017	Final Investment Decision
December 18, 2017	Tank contract awarded
December 26, 2017	Final Foundation Design issued
December 18, 2017	Begin Civil Works
March 01, 2018	Begin Foundation Construction
June 18, 2018	Foundation complete and ready for tank erection
June 19, 2018	Commence tank erection
June 29, 2019	Tank ready for cool-down and commissioning



LARGE STORAGE TANK PROJECT

July 09, 2019	Begin Cool down
September 24, 2019	Cut over to new tank – send out begins

Budget

The total project budget is \$48.7 MM. FNG has previously expended \$1.7 MM in preliminary development work. The AIDEA Board of directors has authorized the expenditure of up to \$1.5 MM on additional Engineering work necessary to finalize the project, and FNG is requesting AIDEA approval to modify its existing SET's loan to allow for an additional \$45.5 MM in funding to complete construction.

ALASKA INDUSTRIAL DEVELOPMENT AND EXPORT AUTHORITY

RESOLUTION NO. G17-20

**RESOLUTION OF THE ALASKA INDUSTRIAL DEVELOPMENT
AND EXPORT AUTHORITY AUTHORIZING ADDITIONAL
LOAN TO FAIRBANKS NATURAL GAS, LLC FOR LNG
STORAGE FACILITY IN FAIRBANKS AND THE EXTENSION OF
THE MATURITY DATE ON THE LINE OF CREDIT PROVIDED
TO FAIRBANKS NATURAL GAS, LLC**

WHEREAS, the Alaska Industrial Development and Export Authority (the “Authority”) is pursuing the Interior Energy Project to bring additional supplies of natural gas to Interior Alaska;

WHEREAS, one of the planned components of the Interior Energy Project is a large LNG storage facility in Fairbanks, Alaska;

WHEREAS, Fairbanks Natural Gas, LLC (“FNG”) and its subsidiary, Cassini LNG Storage, LLC (“Cassini”), have been working to develop the Fairbanks LNG storage facility;

WHEREAS, proceeding with the development of Fairbanks LNG storage facility is time critical in order to possibly qualify for State of Alaska tax credits that require any such facility to commence commercial operation before January 1, 2020;

WHEREAS, in Resolution No. G17-09, adopted June 29, 2017, the Authority approved the expenditure of up to \$1.5 million for front end engineering and design (FEED) work on the Fairbanks LNG storage facility;

WHEREAS, beyond the FEED expenditures, FNG President Dan Britton has developed a total budget of \$45.5 million to complete the construction of the Fairbanks LNG storage facility;

WHEREAS, through a Loan Agreement made between the Authority and FNG dated May 19, 2014, the Authority made a loan to FNG under the sustainable energy transmission and supply (SETS) program for the expansion of FNG’s gas distribution system in Fairbanks;

WHEREAS, the 2014 FNG Loan Agreement can be amended to increase the amount of the loan by \$45.5 million and to revise the authorized scope of work under the loan to encompass the construction work to complete the LNG storage facility;

WHEREAS, the construction of the Fairbanks LNG storage facility is a “qualified energy development” eligible for financing under the SETS program and fund on the special terms authorized in SB 23 (HCS CSSB 23; ch. 26, SLA 2013);

WHEREAS, if the pending transactions with the Interior Gas Utility (IGU) are closed, the 2014 FNG Loan Agreement, as amended, will be superseded by the financing the Authority is to provide to IGU under the proposed Financing Agreement;

WHEREAS, the maturity date on the line of credit the Authority provided to FNG under 2014 FNG Loan Agreement is December 31, 2017, and this maturity date needs to be extended to allow sufficient time for the proposed Financing Agreement to be closed; and

WHEREAS, if IGU concurs in proceeding with the Fairbanks LNG storage project, the completion of the Fairbanks LNG storage facility will be in the best interests of the Authority.

NOW, THEREFORE, BE IT RESOLVED BY THE ALASKA INDUSTRIAL DEVELOPMENT AND EXPORT AUTHORITY AS FOLLOWS:

Section 1. If IGU concurs in proceeding with the construction of the Fairbanks LNG storage facility, the Authority’s sub-subsidiaries FNG and Cassini are authorized to proceed with the construction of the proposed Fairbanks LNG storage facility. The budget of \$45.5 million for the completion of the Fairbanks LNG storage facility is approved, which amount is in addition to the \$1.5 million previously authorized for FEED work. On behalf of FNG or Cassini, or both, FNG President Dan Britton, once IGU has concurred in proceeding with the project, is authorized to

negotiate, execute and cause to be performed all construction contracts, purchase orders, and other agreements necessary or convenient to completing the Fairbanks LNG storage facility.

Section 2. Once IGU has concurred in proceeding with the project, the Authority shall lend FNG up to \$45.5 million for the completion of the Fairbanks LNG storage facility. The loan shall be under the SETS program and fund and shall be made through an amendment to the existing 2014 FNG Loan Agreement. The terms for the loan shall be the same as those specified under the existing 2014 FNG Loan Agreement. To the extent that any provision of the amended 2014 FNG Loan Agreement, or any aspect of the procedure the Authority utilized with respect to the amended 2014 FNG Loan Agreement, deviates from the requirements of the Authority's SETS regulations (3 AAC chap. 101), those requirements of the SETS regulations are hereby waived pursuant to Section 11(d) of SB 23.

Section 3. If the proposed Financing Agreement with IGU is executed, the 2014 FNG Loan Agreement shall be amended to extend the maturity date of the line of credit until the closing on the proposed Financing Agreement occurs or until that closing is cancelled.

Section 4. Once IGU has concurred in proceeding with the Fairbanks LNG storage project, the Executive Director is authorized to sign all documents and to take all other actions, necessary or expedient, in fulfilling the purposes of this Resolution.

Dated at Anchorage, Alaska, this 7th day of December 2017.

Chair

ATTEST
[SEAL]

Secretary