

INTELLIGENCE THAT WORKS

Cook Inlet Gas Supply Project Phase I Assessment

Regulatory Commission of Alaska

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Working Group Participants

Demand Group



State Agencies



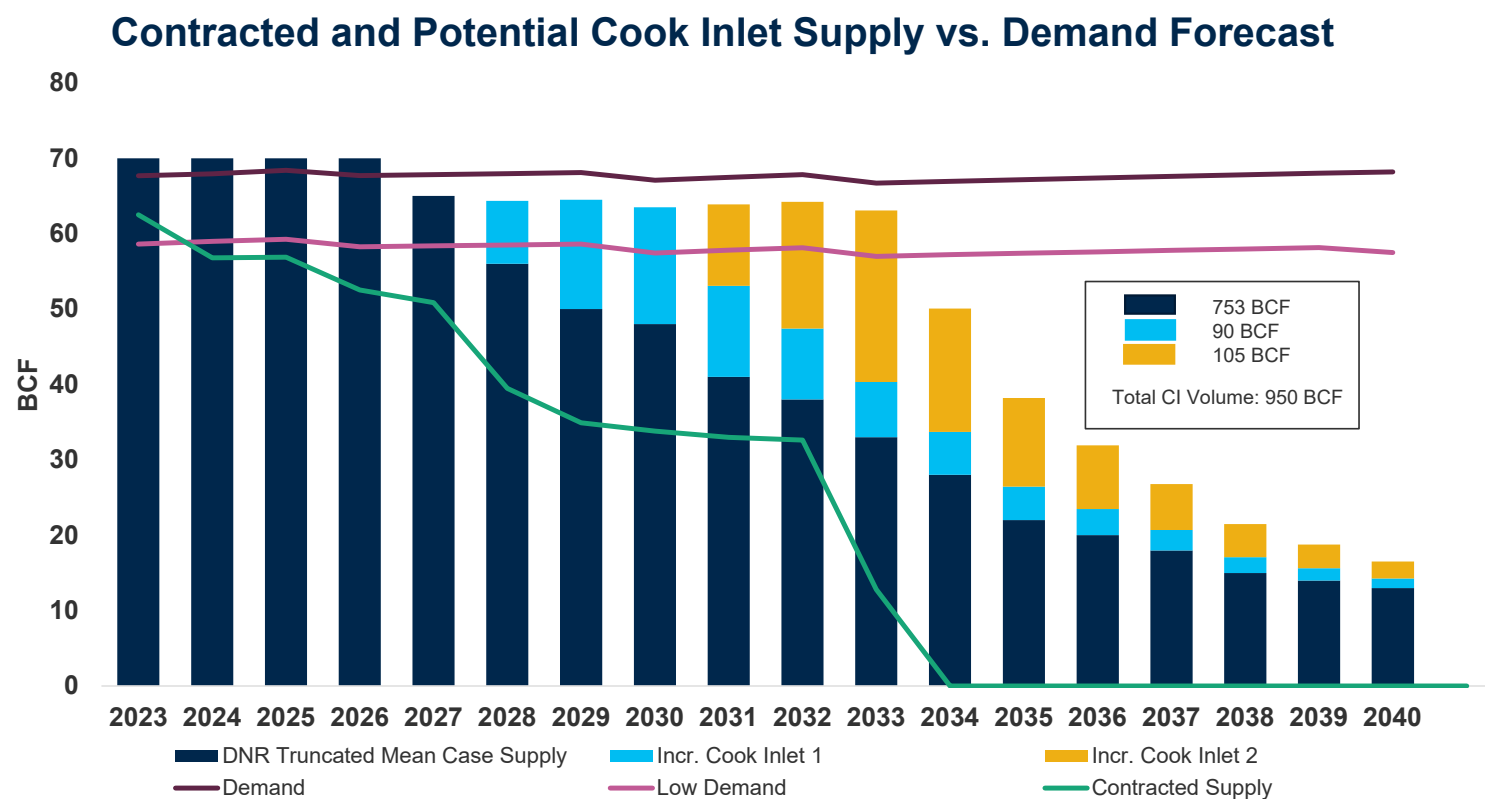
Key Conclusions

- Cook Inlet gas cannot fully meet demand forecast beyond 2026 with current proved reserves or beyond early/mid 2030s assuming incremental local supply development
- While continuing to work on Cook Inlet options, other project(s) must be pursued due to lead time to implement
- It is vital for the Alaska utilities to have control of the pace of option development due to the impending gas shortage
- Several viable options to supplement and Cook Inlet gas supply need to be progressed further in the next phase of this project (“Phase II”) to enable a sanction decision on one option by the end of 2023

Supply and Demand Assumptions

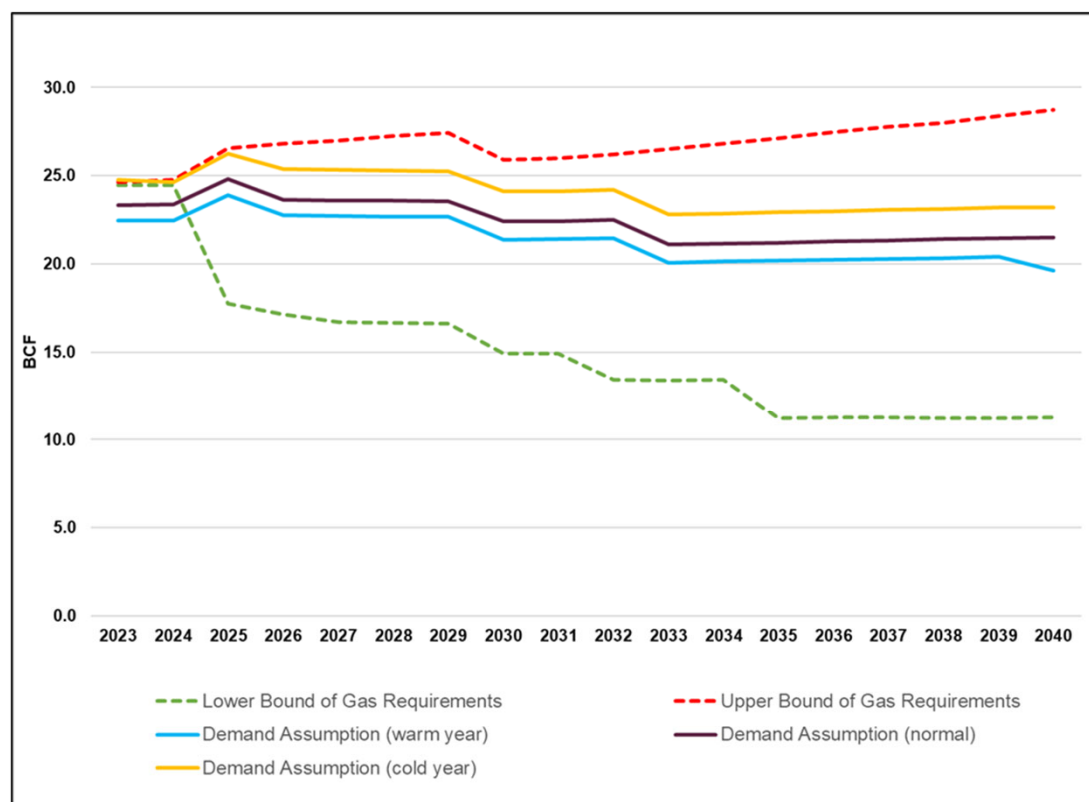
1. Long-term natural gas demand for interconnected Alaska utilities
 - Forecast supplied by the utilities, and provides basis for capacity planning assumptions
 - ENSTAR's stable gas demand for heating, GVEA's plan to incorporate more natural gas generated electricity into its system, and potential range of outcomes for renewable power generation and beneficial electrification all impact potential demand outcomes
 - High, Medium, and Low natural gas demand forecast represents reasonable expectations and timelines for clean energy uptake and a range of winter temperatures
2. Cook Inlet Supply
 - Used DNR's 2022 Cook Inlet Mean Truncated supply forecast as the base case assumption for future gas coming from Cook Inlet
 - Uncontracted Cook Inlet reserves are ~290 BCF in 2027-2040
 - DNR anticipates gas supply gap to develop in 2027
 - Used DNR's 2018 gas availability study to estimate incremental Cook Inlet supply and price levels beyond base case

Supply and Demand Assumptions (Cont.)



Range of Potential Gas Requirements Associated with Renewable Power Adoption

Electric Utility
Gas Demand



Scope and Assessment of Options

1. Option scope development and screening-level evaluation
 - Created or adopted (from project developers) conceptual scope and cost estimates for ten most viable options
 - Developed estimated cost of supply in \$2023 (today's dollars) using consistent volumes up to each option's ability to supply gas

Scope and Assessment of Options (Cont.)

2. Created a prioritized system of scoring different options with guidance from the utilities' Working Group on prioritization. Options were scored based on ten criteria. Uniformly, the top three criteria received the highest priority scores.

- 1) Schedule risk
- 2) Reliability of supply during operations
- 3) Delivered cost of supply per Mcf
- 4) Flexibility / Scalability
- 5) Project complexity and integration into current system
- 6) Permitting
- 7) Environmental impact
- 8) Size of direct investment by utilities
- 9) Local economic impact
- 10) Carbon efficiency

Key Project Option Metrics

Gas Supply Options (Private Ownership)

					Cost of Supply		
Option		Timeline from decision YE2023	Capital Investment	Supply Volume	Gas	Midstream	Total
		years	\$ mm	Bcf/year	\$/Mcf	\$/Mcf	\$/Mcf
1	Cook Inlet Gas	3 - 4	up to \$1500 - \$2000	up to ~23	\$9.3 - \$25.5	Included	\$9.3 - \$25.5
2 (a)	In-State Pipeline (Private)	6 - 7	~ \$8,790	up to 105	\$1.3 – \$2.6	\$26.8 – \$34.2	\$28.1 - \$37.0
3	Kenai LNG	4 - 5	\$768	up to 55	\$8.6 - \$8.9	\$3.4 - \$4.7	\$12.0 - \$13.6
4	Greenfield Port and Regas	6 - 7	\$876	up to 55	\$8.6 - \$8.9	\$4.0 - \$5.3	\$12.6 - \$14.2
5	FSRU - Own/Lease	4 - 6	\$698	up to 55	\$8.6 - \$8.9	\$3.6 - \$5.0	\$12.2 - \$13.9
6	Barge / Small LNG Carrier	4 - 5	\$563	up to 25	\$8.6 - \$8.9	\$13 - \$14	\$21.6 - \$23.0
7	Alaska LNG	7 - 8	~\$43,000	up to 183	\$1.3 – \$2.6	\$3.1	\$4.4 - \$5.8
8	LNG Truck and/or Rail	3 - 4	\$321	~9	\$2.50	\$22.5 - \$29.5	\$25 - \$32
9	Renewable Natural Gas	Unknown	n/a	~1	~\$25	Included	~\$25
10	Hydrogen (green)	12+	unknown	n/a	n/a	n/a	\$>32

Key Project Option Metrics (Cont.)

The assessment also considered how cost of supply of certain options with long-term benefits to the State of Alaska can be impacted by alternative financing with State participation

Gas Supply Options (State Participation)

Option		Timeline from decision YE2023	Capital Investment	Supply Volume	Cost of Supply		
					Gas	Midstream	Total
		years	\$ mm	Bcf/year	\$/Mcf	\$/Mcf	\$/Mcf
2 (b)	In-State Pipeline (Subsidized 80%)	6 - 7	~ \$8,790	up to 105	\$1.3 – \$2.6	\$7.8 - \$9.9	\$9.2 - \$12.6
2 (c)	In-State Pipeline (State Owned)	6 - 7	~ \$8,790	up to 105	\$1.3 – \$2.6	\$5.9 – \$7.4	\$7.3 - \$10.0
4 (b)	Greenfield Port and Regas (Subsidized 80%)	6 - 7	\$876	up to 55	\$8.6 - \$8.9	\$2.3 - \$3.3	\$10.9 - \$12.2
4 (c)	Greenfield Port and Regas (State Owned)	6 - 7	\$876	up to 55	\$8.6 - \$8.9	\$2.2 - \$3.1	\$10.8 - \$12.0

Top Scoring Options for Meeting Future Demand

A. In-State Pipeline

- Construct a 24-inch pipeline that can meet local demand and provide opportunity for future industrial customer supply
- Only viable with state participation / subsidy due to relatively small utility demand
- Provides broad benefits across the state
- Current forecast indicates that this is a long-term option, and would not meet schedule for near-term shortfall

B. Kenai LNG

- In cooperation with owner, modify existing export facility to utilize dock and potentially storage tanks in the short term, accelerating project timeline to meet shortfall

C. Floating Storage and Regasification Unit (FSRU)

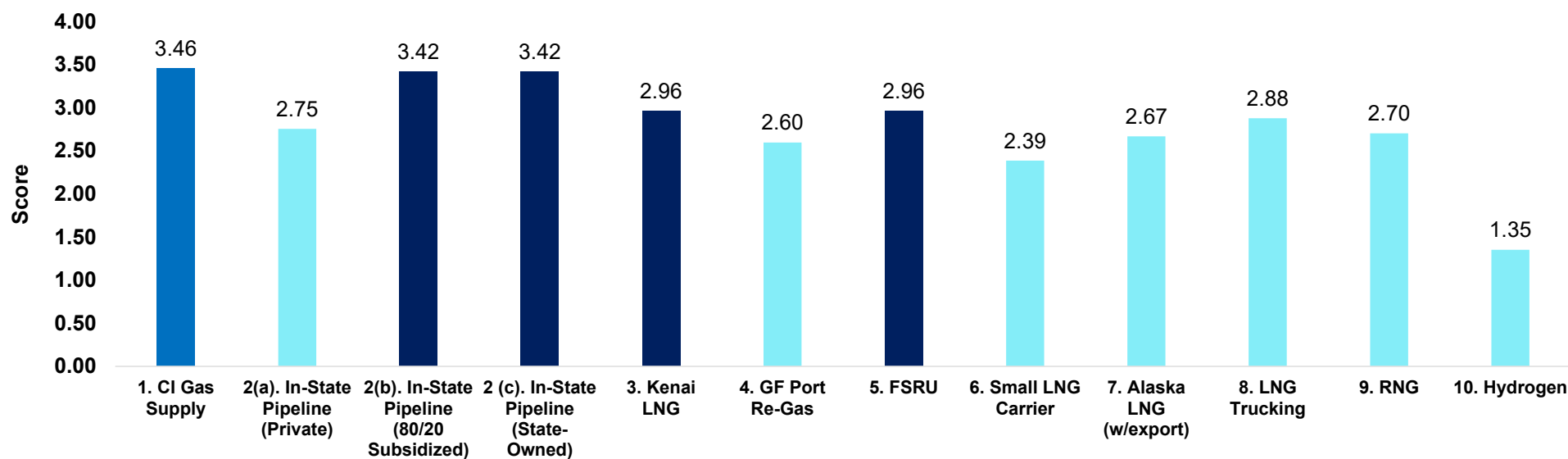
- Pursue options to utilize FSRU at existing or modified dock facilities in Nikiski, accelerating project timeline to meet shortfall

D. Cook Inlet Gas Supply

- Remains a preferred top-scoring option but is not sufficient to meet long-term demand forecast

Results of Options Scoring

Option Scoring Results (Max Score of 5)



Recommendations and Next Steps

- A. Utilities individually continue to work with Cook Inlet producers and the State to secure additional contracted supply and promote alternative development
- B. As the utilities' Working Group, pursue several top-scoring options in order to further define scope, schedule and commercial viability, specifically:
 - Modification of existing Kenai LNG facility (via commercial discussions with owner)
 - Scope definition and planning for FSRU option
 - Greenfield site selection and feasibility assessment for LNG imports if retrofit options become unavailable
 - Market survey to further define availability and cost of LNG
 - Optimization and feasibility assessment of the In-State Pipeline option with AGDC and State of Alaska in areas of permitting critical path and financing structure

Recommendations and Next Steps (Cont.)

- C. Refine cost of supply estimates for the three top-scoring options (FRSU, Kenai LNG, In-State Pipeline), develop procurement strategy
- D. Complete permitting due diligence of all top-scoring options and identify key bottlenecks and showstoppers
- E. For top-scoring options, develop draft venture model, project finance structure and plan of engagement with capital markets
- F. Identify one permanent solution or multiple short and long-term options to pursue by 1Q 2024 in order to meet the supply shortfall projected in 2027-2028