

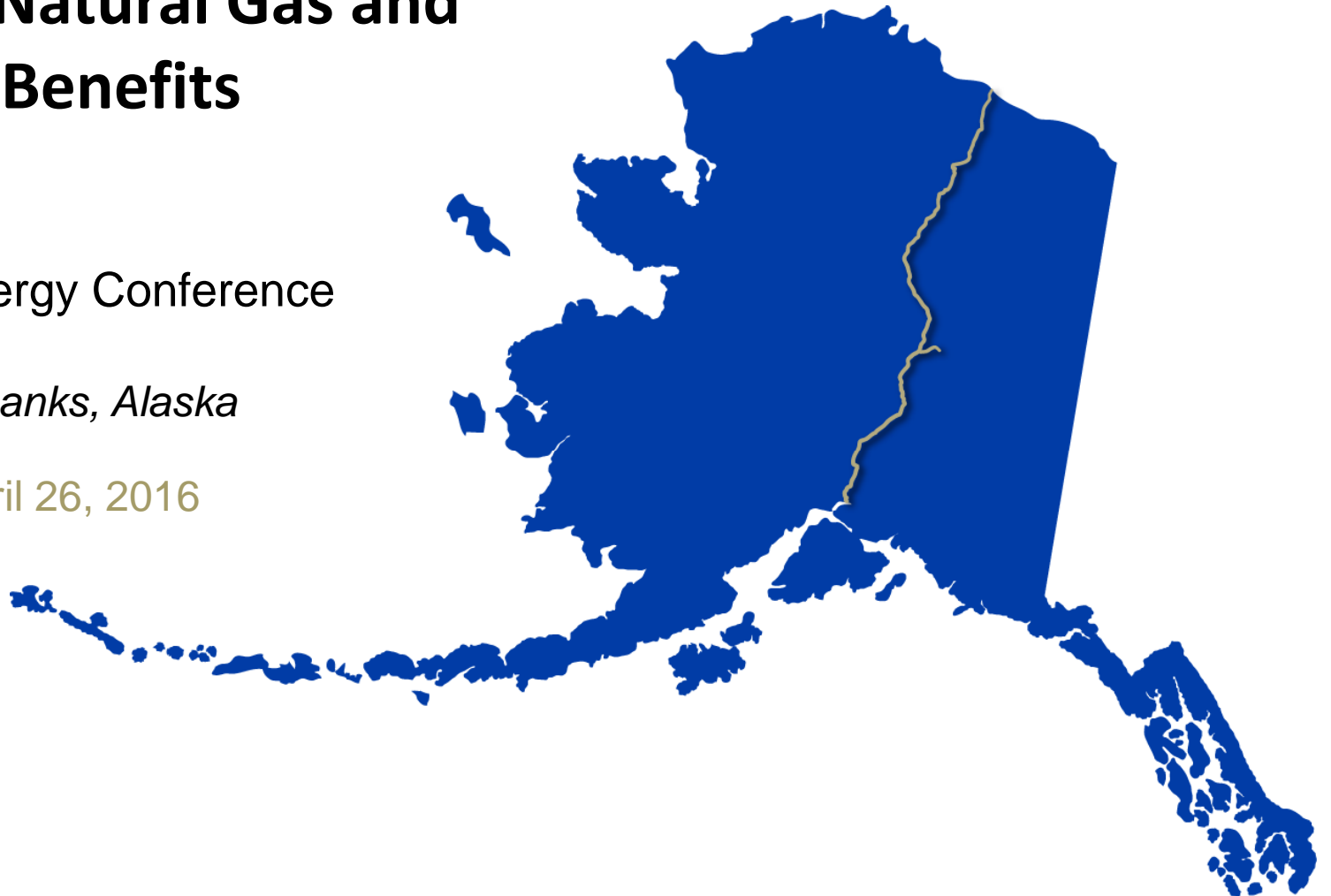


Delivering Natural Gas and It's Benefits

Rural Energy Conference

Fairbanks, Alaska

April 26, 2016



Natural Gas Pipeline Development

2009: Legislature begins taking deliberate steps to develop an in-state pipeline, independent of other producer led North Slope commercialization efforts.



2011: **Alaska Stand Alone Pipeline (ASAP)** plan developed and delivered to the Legislature. Plan further optimized during 2012.



2013: **Alaska Gasline Development Corporation (AGDC)** established as an independent, public corporation - \$355+ million investment towards **ASAP (HB 4)**.



2014: State participation in **Alaska LNG** project authorized (*SB 138*), **Joint Venture Agreement** executed and Pre-Front End Engineering and Design (**Pre-FEED**) begins



2016: AGDC progressing two North Slope natural gas pipeline project options: **Alaska LNG** primary and **ASAP** backup



AGDC Overview

- AGDC is an independent public corporation of the State (2013)
- Has primary responsibility for developing a North Slope natural gas pipeline project on the State's behalf
- Assists DNR and DOR in maximizing the value of the state's gas – *revenue, jobs, economic benefit*
- Holds State's full 25% equity in the Alaska LNG project
- Transports the State's royalty and tax gas
- Plans and develops in-state gas delivery



North Slope Gas Projects

- AGDC is owner of two project alternatives:

Alaska LNG

- State's priority project
- \$45-\$65 billion LNG export project
- Partnership with Exxon, BP, ConocoPhillips

ASAP

- State's back-up project
- \$10 billion in-state gas pipeline
- Currently 100% state owned

- Either project is capable of delivering gas to Alaskans – *but they vary significantly in size, scope and cost*
- AGDC is responsible for planning and developing in-state gas delivery *regardless of which project is built*

In-State Gas Delivery Mission

Deliver natural gas to in-state users, balancing maximum benefit to the people of the state and delivery at commercially reasonable rates.



In-State Gas Work To Date

- Detailed study of natural gas demand in Alaska
 - Existing demand
 - Potential demand
 - Growth scenarios
- Conceptual offtake facility costs
- Gas aggregator subsidiary
 - Consolidate in-state gas planning activities
 - Coordinate with North Slope gas suppliers and in-state users
 - Help small communities analyze gas infrastructure needs
 - Pool small quantities of in-state demand
 - Provide planning assistance to policy makers
- In-State program plan due to AGDC Board – June 2016

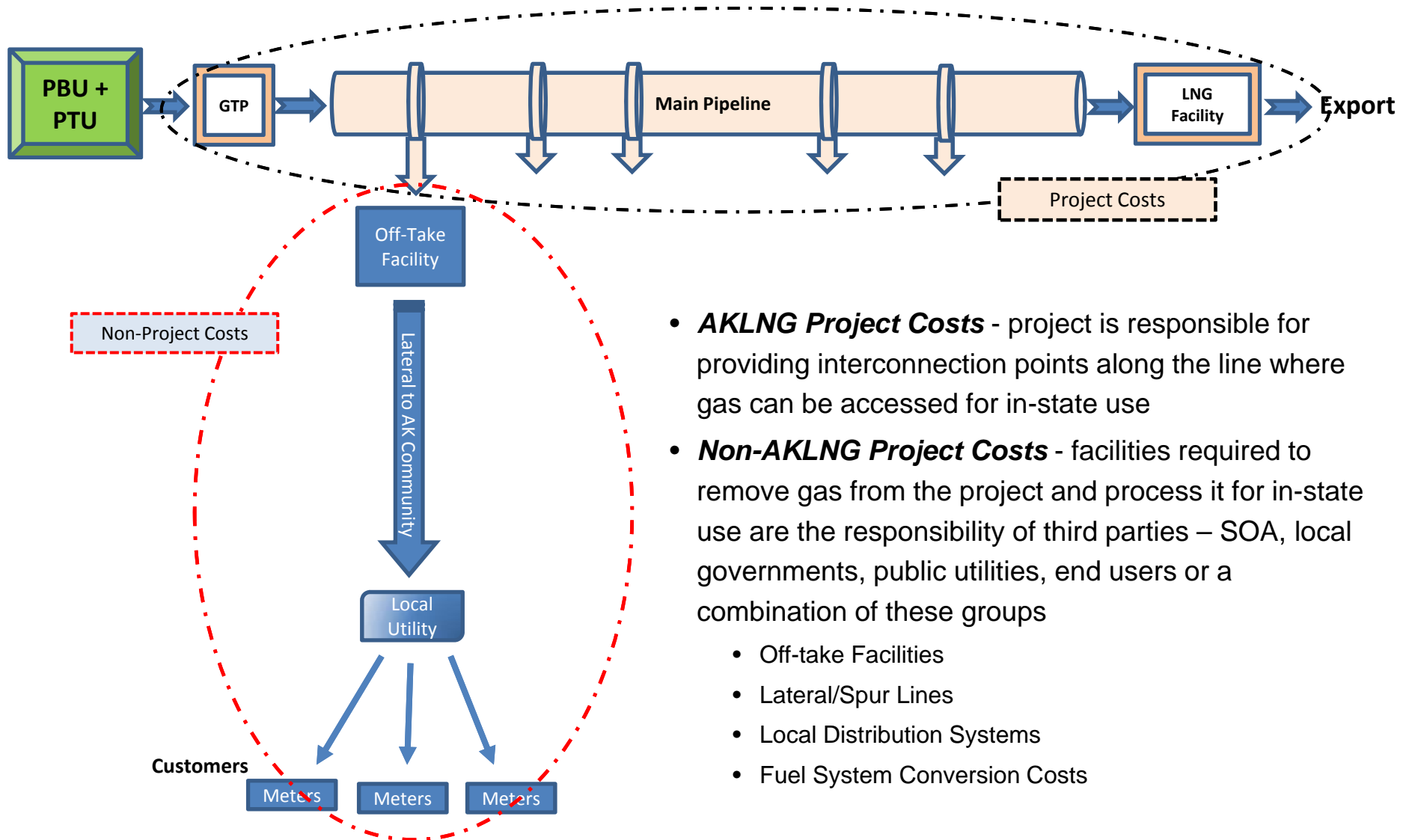
In-State Gas Demand

- Project volumes more than adequate to meet in-state demand growth
 - Base Case 2040 demand – 333 MMscfd (122 Bcf per year)
 - High Case 2040 demand – 422 MMscfd (154 Bcf per year)
- Demand will be partially supplied from Cook Inlet during the forecast period

Demand by Segment	2014 Actual (MMscfd)	2030 Forecast (MMscfd)	2040 Forecast (MMscfd)
Existing Demand			
ENSTAR, Railbelt electrical utilities, and industrial users (<i>excluding export</i>)	214	227	243
Potential Demand			
Interior heating and power utilities	2.5	51	56
Industrial operations (primarily mining)	0	31	31
Small communities – within 50 miles of alignment	0	3.2	3.4
Total Base Case Demand:	217	312	333



In-State Gas Infrastructure



- **AKLNG Project Costs** - project is responsible for providing interconnection points along the line where gas can be accessed for in-state use
- **Non-AKLNG Project Costs** - facilities required to remove gas from the project and process it for in-state use are the responsibility of third parties – SOA, local governments, public utilities, end users or a combination of these groups
 - Off-take Facilities
 - Lateral/Spur Lines
 - Local Distribution Systems
 - Fuel System Conversion Costs

In-State Gas Work Ahead

- Engage customers to validate in-state gas needs
- Evaluate in-state delivery economics
- Secure a gas supply from North Slope resource owners
- Coordinate with Alaska Energy Authority:
 - Definitions: “*Commercially Reasonable*” and “*Direct Access*”
 - Scope alignment with Alaska Affordable Energy Strategy
 - Population and energy use data
 - Local distribution system (LDS) cost factors
 - Conversion cost factors
- Collaborate with utilities, local communities, policy makers and the public to identify the most appropriate off-take locations

Questions

Brad H. Chastain, CPG
In-State Gas Manager

Alaska Gasline Development Corporation (AGDC)
3201 C Street, Suite 200
Anchorage, Alaska 99503
(907) 330-6300
www.agdc.us

Backup Slides



North Slope Gas Projects

Alaska LNG

ASAP

Project Sponsors	State of Alaska, ExxonMobil, BP & ConocoPhillips	State of Alaska
Design Objective	Liquefied Natural Gas (LNG) principally for export markets	Utility grade “lean” gas principally for in-state markets
Facilities		
Gas Treatment	<ul style="list-style-type: none"> GTP at Prudhoe Bay (~200+ acres) 8 Compressor Stations (30kHP) 	<ul style="list-style-type: none"> GCF at Prudhoe Bay (~70 acres) Compression at Prudhoe Bay
Pipeline	<ul style="list-style-type: none"> 800 mile, 42” mainline In-state off-takes 	<ul style="list-style-type: none"> 733 mile, 36” mainline 30 mile, 12” lateral to Fairbanks In-state off-takes
LNG Plant	LNG plant, storage tanks and tanker berths at Nikiski (~600 acres)	N/A
Terminus	Nikiski (<i>Kenai Peninsula</i>)	Currently Near Big Lake (<i>ENSTAR’s Beluga line</i>)
Design Capacity	~ 3.3 billion cubic feet/day at GTP ~ 2.2 billion cubic feet/day at LNG plant	Currently 500 million cubic feet/day
Cost	~ \$45 - \$65 bill	~ \$10 bill (+/- 20%)
Workforce	Peak: 9,000-15,000 Operations: ~1,000	Peak: 8,000 Operations: ~150
Construction	5-6 years (<i>after FID in 2019</i>)	3.5 years (<i>after FID in 2019</i>)
Completion	2025-2026	2024

In-State Off-Take Facilities

Off-Take Facility Cost Estimates

Size	Volume (MMscfd)	Off-Take Facility Capital Expense (\$Mill)*	Characteristic Community
Macro	80.00 – 330.00	\$38	North/South Cook Inlet
Mini	20.00 – 75.00	\$28	Fairbanks Size
Micro	0.40 – 2.00	\$15	Medium Density
Nano	0.04 – 0.25	\$14	Very Small

*Cost of laterals, spurs, local distribution and appliance conversions not included in figures above

In-State Gas Demand Forecast

