02/05/13

LUNCH & LEARN: COOK INLET GAS SITUATION - RAILBELT UTILITIES PERSPECTIVE

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Lunch and Learn

Tuesday at Noon

Capitol Room 106

An In-depth Look at Alaska's Resources

Lunch provided by presenters

HOSTED BY
REP. ERIC FEIGE &
REP. DAN SADDLER
CO-CHAIRS
House Resources

Contact:
Linda Hay, Staff
465-3715

Tuesday, February 5, 2013

Program Title: **Cook Inlet Gas Situation - Railbelt Utilities Perspective**

Presenters: Colleen Starring, ENSTAR—Brad Evans, Chugach Electric Association—Jim Posey, Municipal Light & Power—Peter Stokes, Petrotechnical Res. AK

Sponsor: Resource Development Council

Brad Evans is Chief Executive Officer of Chugach Electric Association, in Anchorage, Alaska. He was appointed to serve as Interim CEO in December 2007, and named CEO in July 2008.

Evans has 27 years of electric utility experience in Alaska. He held positions in planning, generation and power control at Chugach from 1985 to 1992. He served as the manager of System Dispatch at Golden Valley Electric in Fairbanks from 1992 to 2001. He returned to Chugach in 2001 to head the Energy Supply division.

Headquartered in Anchorage, Chugach is the largest electric utility in the State of Alaska, with nearly 81,000 retail service locations. Chugach also provides power for Alaskans throughout the Railbelt region through wholesale and economy energy sales to Homer Electric Association, the City of Seward

M. Colleen Starring was appointed President of ENSTAR Natural Gas Company in 2007.

Prior to taking over the leadership responsibilities for ENSTAR, Colleen held various management positions within ENSTAR's parent company, SEMCO Energy Inc. Colleen has 35 years of experience in the utility business, primarily in Operations, Gas Supply and Regulatory Affairs.

Colleen is a member of the managing committee of the American Gas Association, and serves on the Board of Western Energy Institute and the National Association of Female Executives. Colleen was named Outstanding Manager of the Year by Gas Utility and Pipeline Industries magazine. She has been a committed community volunteer and has served on the board of directors of several organizations, including the Anchorage Chamber of Commerce and United Way.atanuska Electric Association and Golden Valley Electric Association.

Jim Posey has served as the General Manager of Anchorage Municipal Light and Power since Jan. 3, 2003. Prior to his appointment to ML&P, Posey served three years as Director of the MOA Cultural & Recreational Services Department. In that position, he oversaw the Anchorage Museum of History and Art, the Anchorage Municipal Library System, Parks & Beautification, Sports & Recreation, and Chugiak/Eagle River Parks & Recreation.

Jim was born and raised in Beaumont, Texas. After a stint in the Air Force, he attended Wichita State University and graduated in 1972. He attended graduate school at the

University of Kansas and received a Juris Doctorate degree in 1975. For many years, he was an oil and gas attorney for Worldwide Energy and ARCO Alaska, Inc. During his years at ARCO (1979-1996), Posey also worked as a Resources Issues Manager and Federal Government Relations Manager. He was appointed to the Alaska Public Utilities Commission by Gov. Tony Knowles and served in that capacity from 1996-1999.

Always active in community affairs, Posey has served on the boards of the Anchorage Community Land Trust, Junior Achievement, Alaska Public Telecommunications, Inc. and the Anchorage Center for Families. He is a founding member of the American Association of Blacks in Energy (AABE) and participates in Urban League programs. He is a strong advocate for underserved youth and volunteers his time as a mentor whenever possible.

Peter Stokes grew up on the Kenai Peninsula and received an engineering degree from UAF. He also has an MBA from Duke University.

He has worked in the oil industry for 30 years, starting with UNOCAL in Alaska. His career includes domestic and international assignments. He has been consulting for oil & gas clients with Petrotechnical Resources Alaska (PRA) since 2004. His clients include new explorers in AK, regional native corporations, NS Borough and South

Central utilities. Recent projects include the restart of the NS Badami Oil Field, study of the Cook Inlet Gas Supply and the drilling of gas supply wells for Barrow.

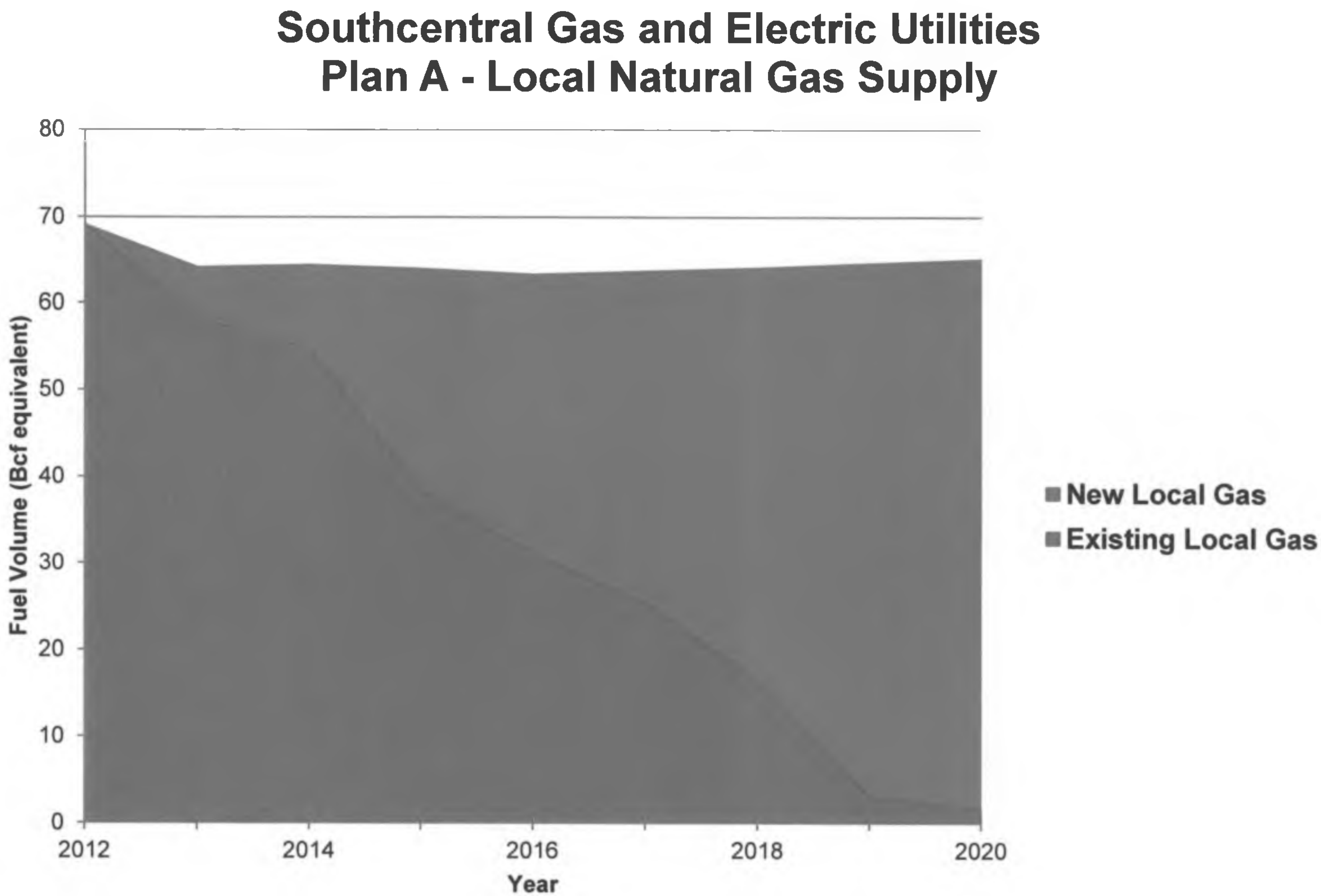
He is chairman of UAF's College of Engineering & Mines Advisory & Development Council and on the Board of The Alaska Support Industry Alliance.

Long Term Gas Supply Update

House Resources Lunch & Learn

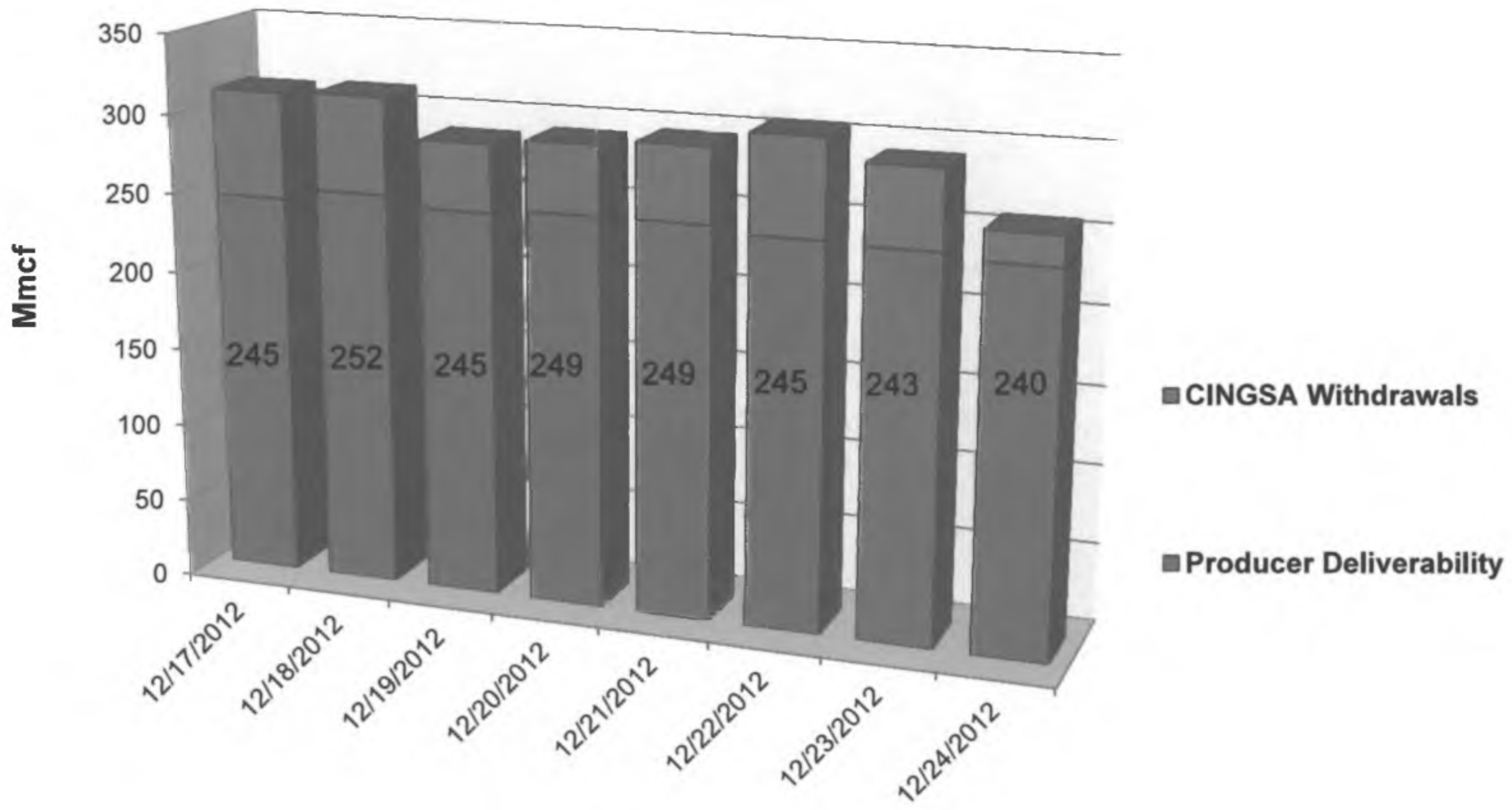
February 5, 2013

Need vs. Time



Southcentral Gas and Electric Utilities
Plan A - Local Natural Gas Supply
80
70
60
50
40
30
20
10
0
Fuel Volume (Bcf equivalent)
2012
2014
2016
2018
2020
Year
New Local Gas
Existing Local Gas

Case Study: A Cold Week December 2012



Impacts of Incentives

Hilcorp Alaska

Apache
EXPLORING WHAT'S POSSIBLE

Aurora

LINC ENERGY

Anchor Point Energy

Furie Operating Alaska LLC

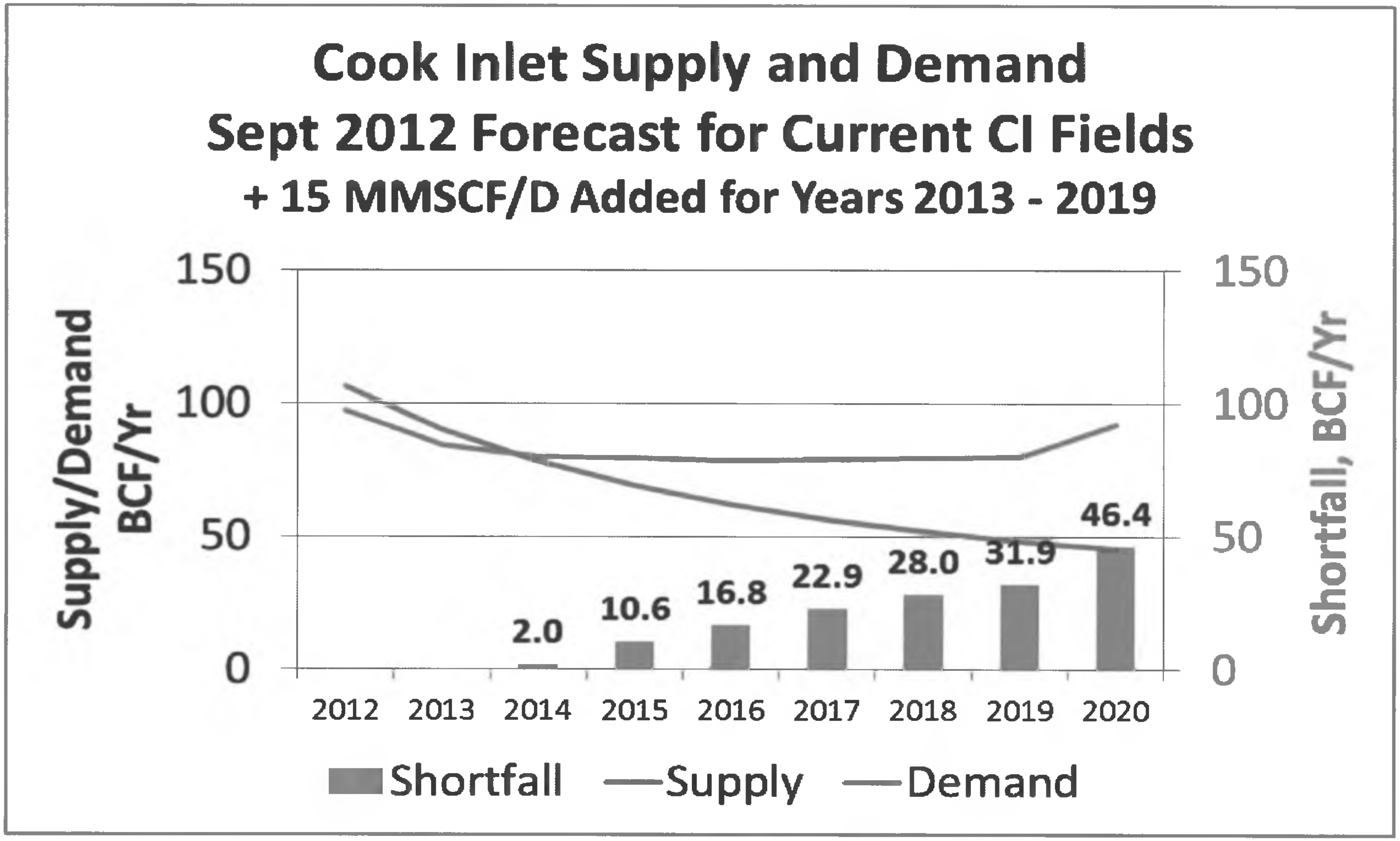
NORDAQ ENERGY

BUCCANEER ENERGY

Miller Energy

Cook Inlet Energy

PRA Update


Cook Inlet Supply and Demand
Sept 2012 Forecast for Current CI Fields
+ 15 MMSCF/D Added for Years 2013 - 2019
Supply/Demand BCF/Yr
Shortfall, BCF/Yr
150
100
50
0
2.0
10.6
16.8
22.9
28.0
31.9
46.4
2012
2013
2014
2015
2016
2017
2018
2019
2020
Shortfall
Supply
Demand

Working Together - Plans Become Reality

Cook Inlet Natural Gas Storage Alaska:
CINGSA on-line for Southcentral utilities
11 Bcf Storage

Fire Island Turbines:
Producing wind power for Southcentral Alaska
Offsets .4 Bcf of gas/year

Southcentral Power Plant Project:
Began commercial operations - February 1, 2013
Offsets 3 Bcf of gas/year

"Bottom Line"
Supplementing Cook Inlet Gas

The ideal solution would:

- Avoid discouraging new Cook Inlet gas production
- A project scalable to market needs
- Flexible solution to allow for portfolio of future options
- Bridge to Alaska solutions

"Bottom Line"

Interest Expressed in Response to LTGS Request for Information

- 3 Marine CNG Providers
- 6 Marine LNG Providers
- LNG Trucking from ANS

Next Steps

- Consultants' Final Analysis
- Joint LTGS Group Decision on Preferred Option
- Permitting & Regulatory Filings

Cook Inlet
Natural Gas Supply Update – 2012

RDC Lunch & Learn

House Resources Committee

February 5, 2013

Peter J. Stokes, P. E.
Petrotechnical Resources of Alaska

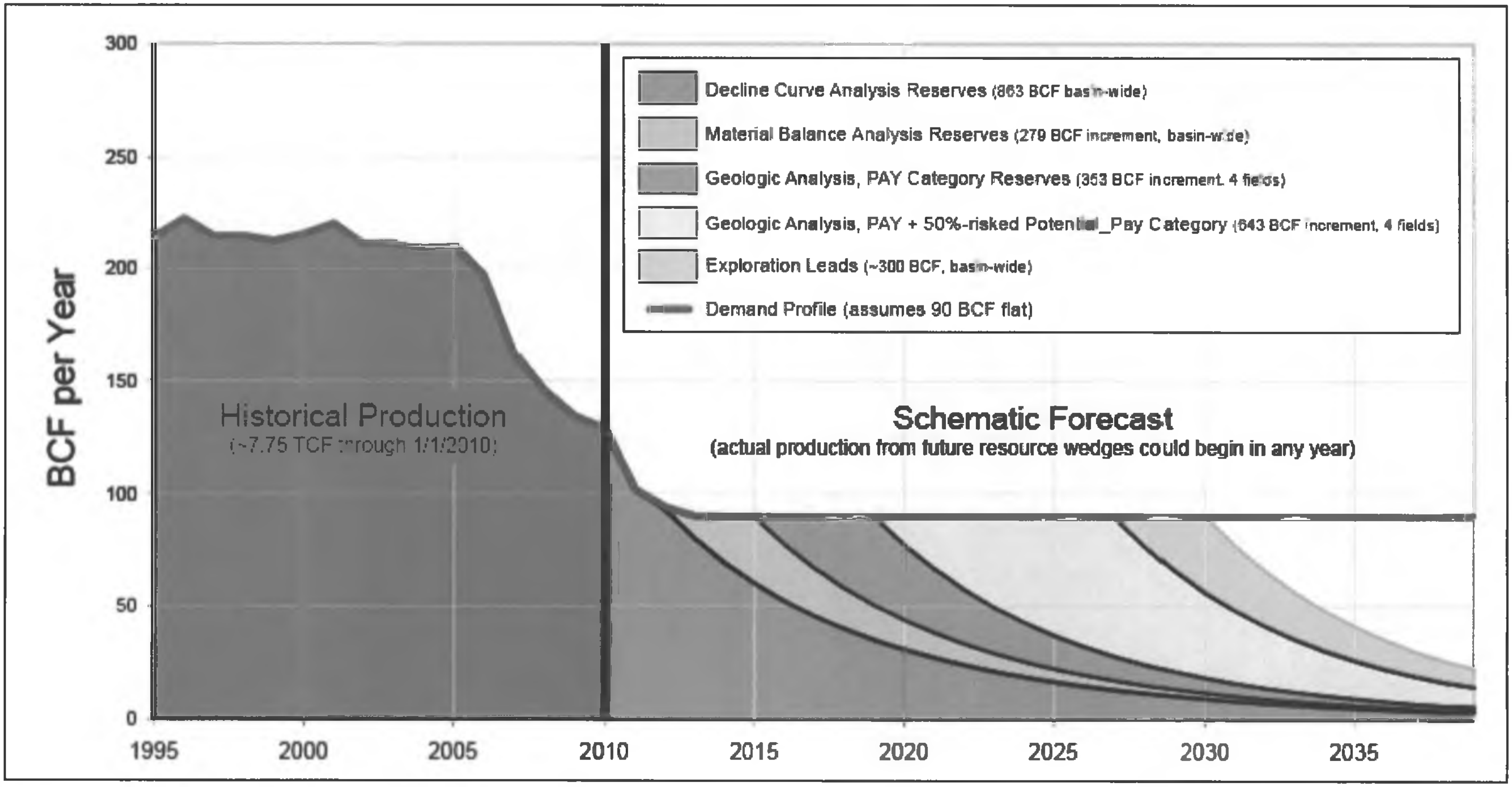
Cook Inlet
Natural Gas Supply Update – 2012

- **Southcentral Alaska Gas Supply/Demand 2012-2020**
- **Possibilities to Meet Southcentral Demand**
- **The impact of Cook Inlet Gas Storage project in mitigating winter peak demand**

2010 PRA Cook Inlet Study

- ENSTAR, Chugach Electric and ML&P commissioned PRA to perform a study of Cook Inlet Supply from existing Fields
- 2010 Study allowed Cook Inlet Utilities to better understand their gas supply
  - Impact and drivers of drilling/development activity
  - Further understanding of DNR 2009 CI Gas Report
  - Help predict when gas would need to be imported into the Cook Inlet market

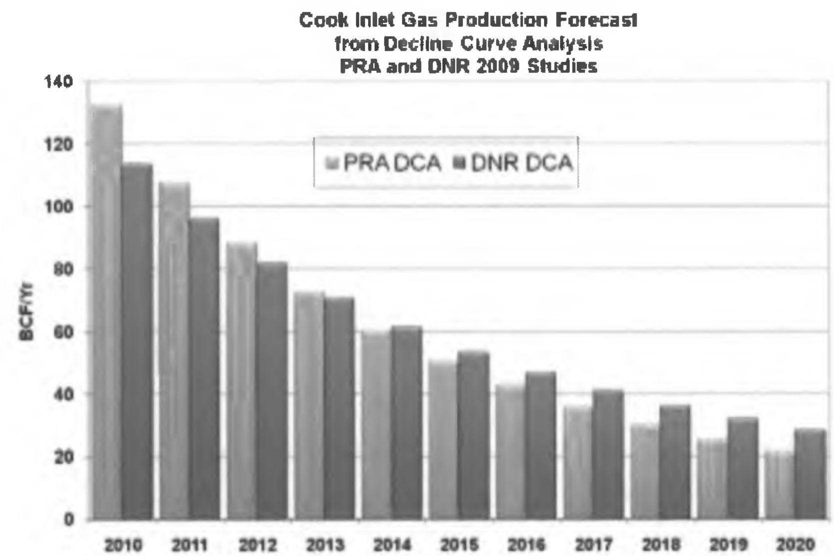
Annual Supply – DNR 2009 Report



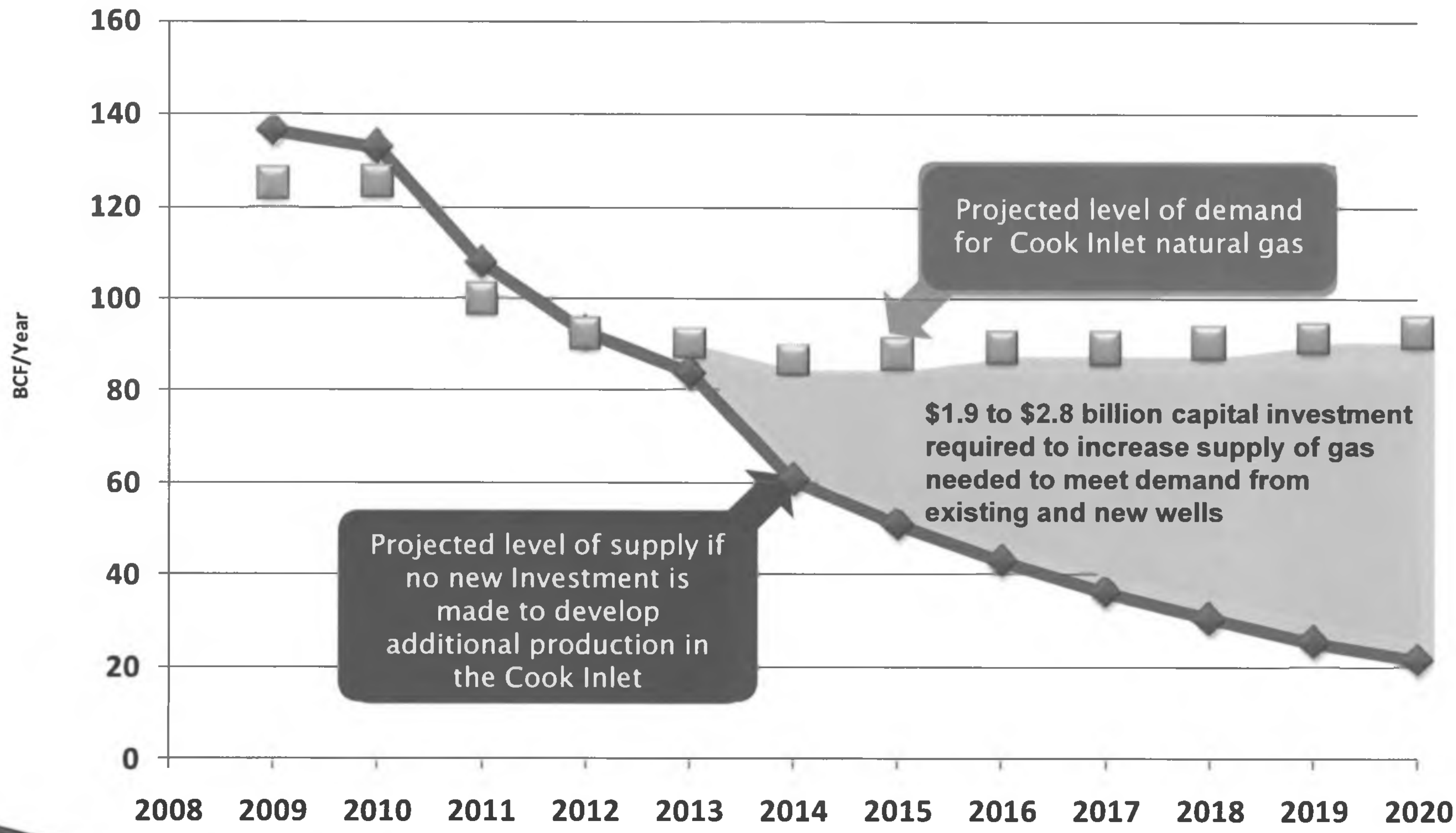
Source: AK DNR December 2009 Study

Comparison of DNR and PRA Decline Curve Analysis

- Cook Inlet declines in 2010 PRA Study compared favorably with DCA in DNR 2009 Study



2010 PRA Summary



DNR 2011 CI Gas Cost Study

- CI Basin, with investment, is capable of meeting needs until 2018-2020 at prices below available alternatives
- Failure to make investments in lockstep with demand will result in need of alternative sources sooner.

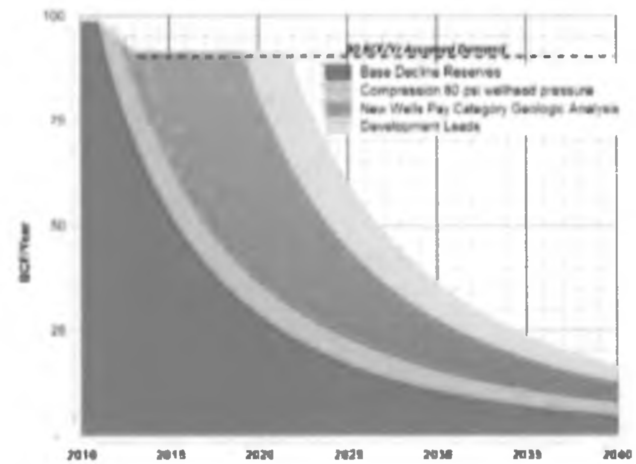


Figure 7. Hypothetical production forecasts resulting from this study for the Cook Inlet basin assuming a constant 90 BCF/Year demand after 2011. Production from future resource wedges could begin in any year. The projected "pay" volumes (green wedge) for this study are greater than that of the 2009 study (Figure 2) due to an error resulting in the understatement of McArthur River Grayling Gas Sands new well pay reserves potential. This error is corrected in this Figure.

2012 Update

- PRA was asked by CI Utilities to Update the 2010 Study to make a current estimate of supply from existing Cook Inlet Fields for comparison to the current CI Demand Forecast.

- Due to drilling and compression additions since 2009, the predicted shortfall from existing fields has changed from 2013 to 2014.

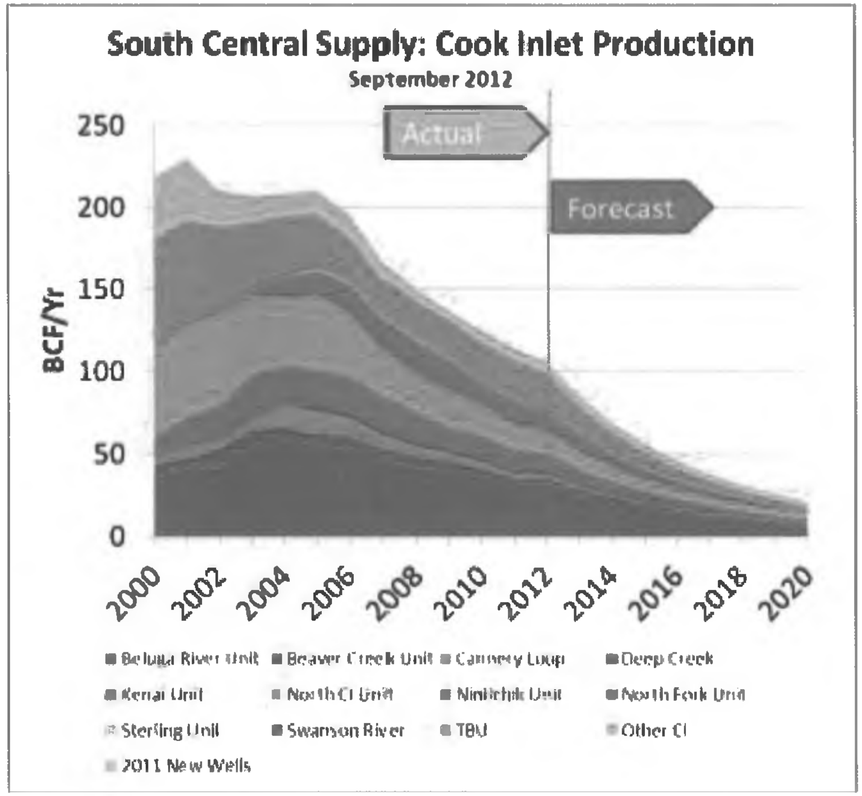
Cook Inlet Production Past and Future

2000-05: High production supported Nikiski plants:

- Agrium Chemical Plant
  - Shut down in 2006
- LNG Exports continue
  - Future uncertain - License Extension ends March 2013

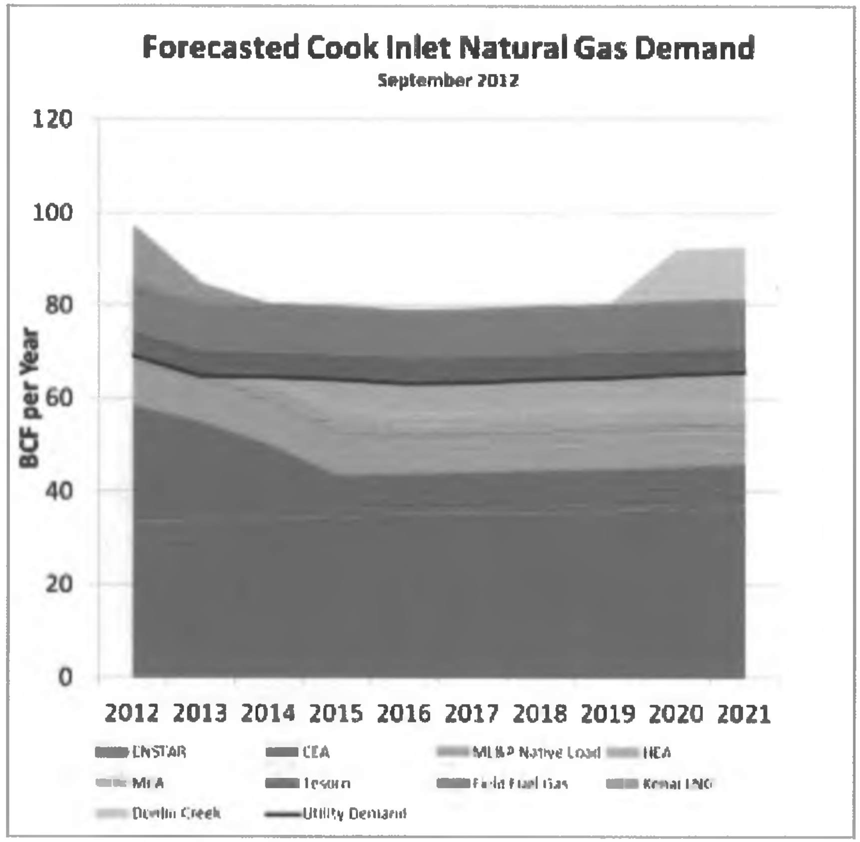
2014+: Production for:

- Utilities
- Refinery
- O&G / Mining Fuel



South Central Demand

Projected User	2014-19
ENSTAR	44%
Chugach Electric	13%
O&G Fuel Gas	13%
HEA/MEA	12%
ML&P	11%
Tesoro	7%



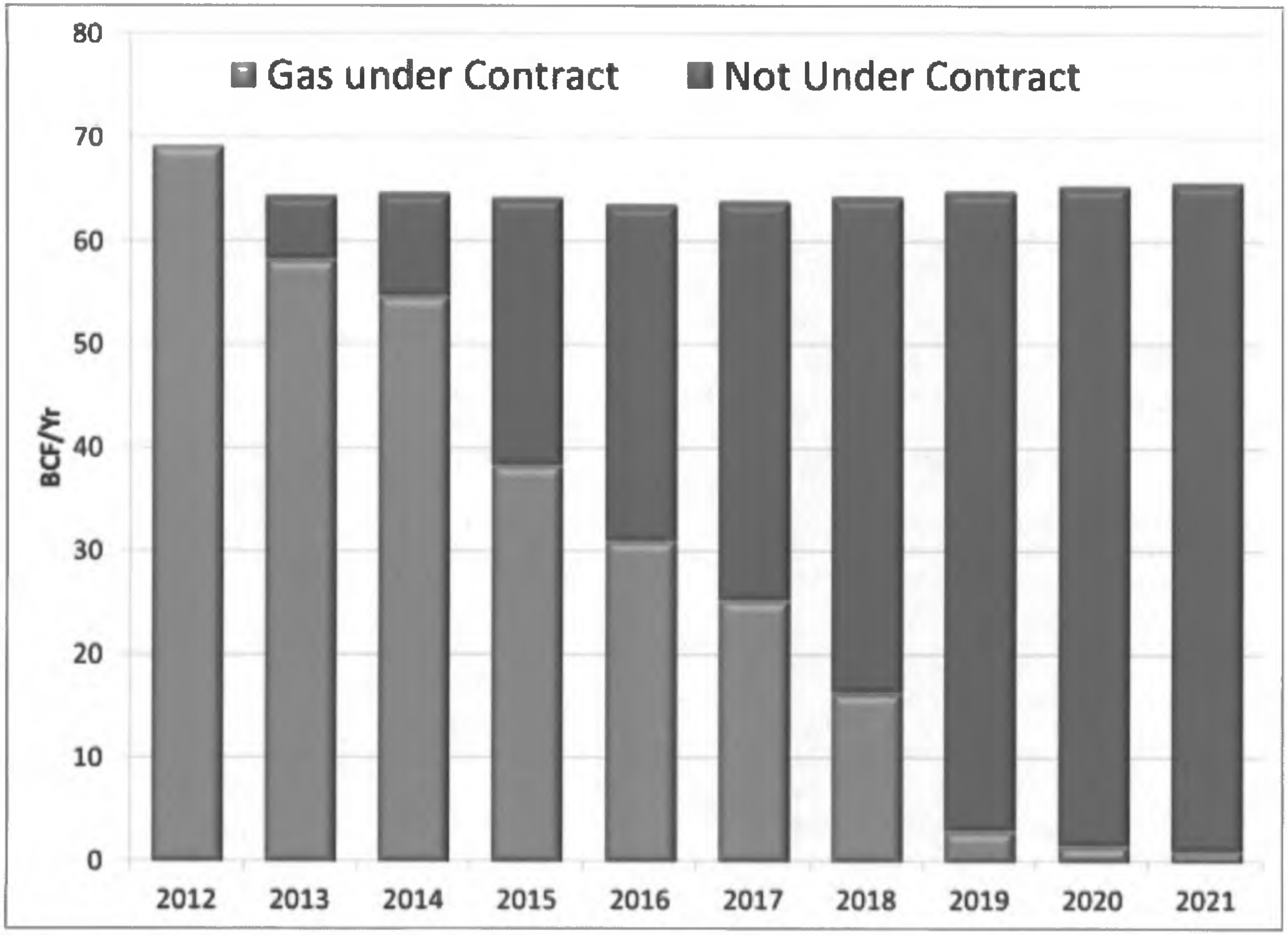
Why Do Utilities Care About Cook Inlet Gas?

- ENSTAR
  - Cook Inlet gas provides 100% of supply
- Chugach Electric
  - Cook Inlet gas used for 90% of generation
- ML&P
  - Cook Inlet gas used for 88% of generation

South Central Utility	2012 Predicted Consumption, BCF
ENSTAR	33.6
Chugach	25.0
ML&P	10.6

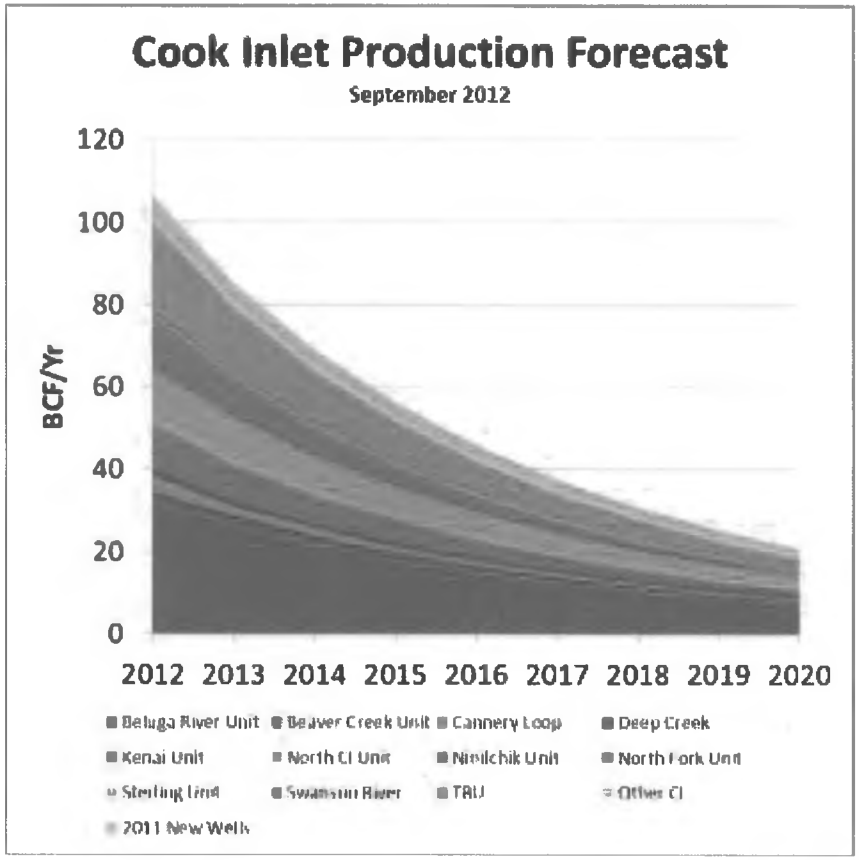
PRA

Total Utility Contracted and Not Contracted Gas Demand -2012



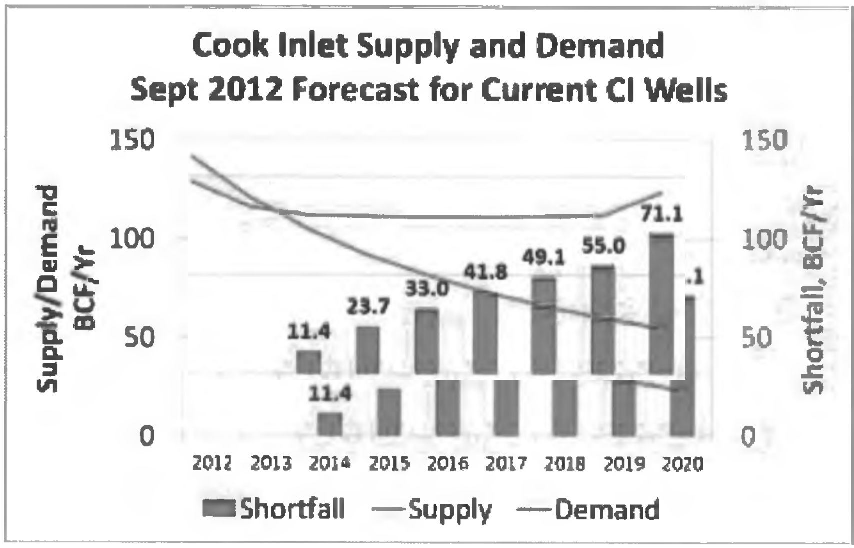
2012 Cook Inlet Supply Prediction

- PRA Decline Curve Analysis of existing fields and wells
  - 16-17% Annual Decline
- Does not include future developments or wells



2012 Supply vs. Demand Current Wells

- Base of only current wells predicts a shortfall as early as 2014
- 2010 PRA Study forecasted need of 13-14 new gas completions per year to avoid shortfall
- Only 5-8 new wells per year were actually completed 2009-2012



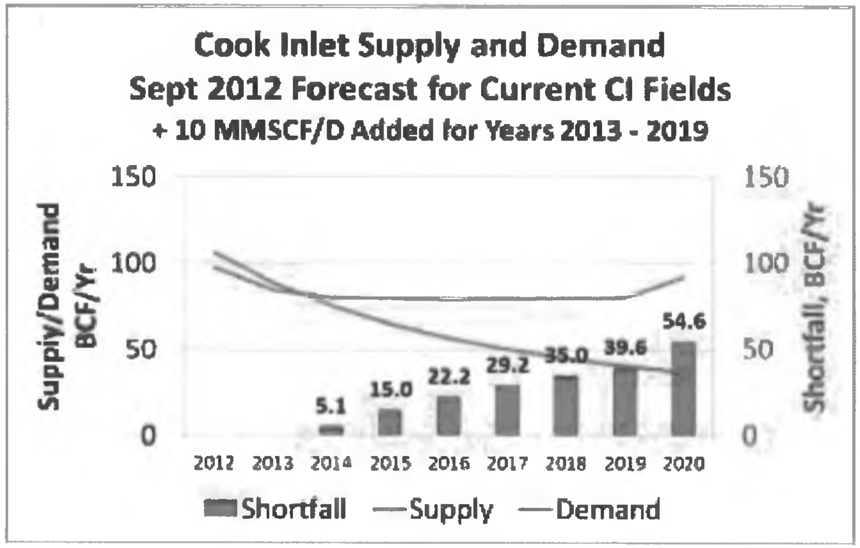
Cook Inlet Drilling Results

Period	Gas Wells Completed	Average Wells per Year	Initial Production (MMCF/day)
2001-2009	105	12.3	3.6 per well
2007-2009	34	13.6	3.1 per well
Nov-09 to Oct-10	5	5	3.7 per well
Nov-10 to Oct-11	6	6	1.7 per well
Nov-11 to Oct-12	8	8	3.6 per well

PRA

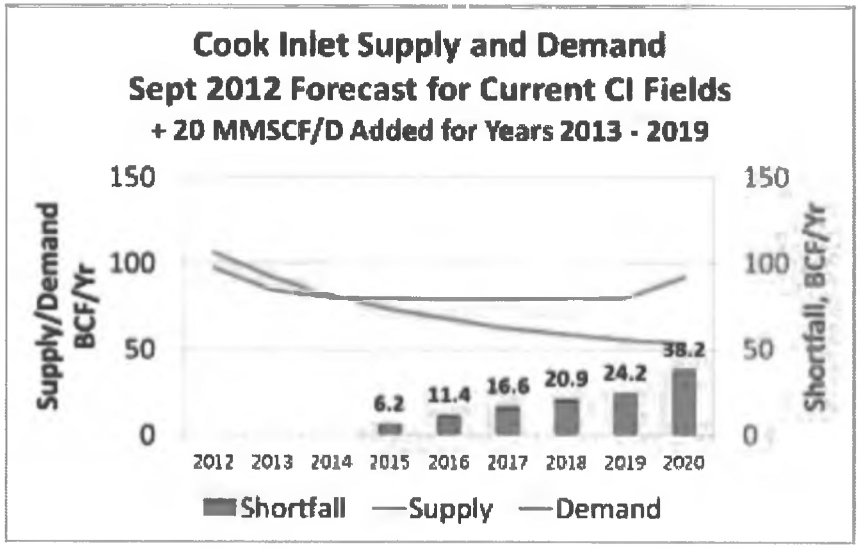
Supply vs. Demand:
Current Wells + Yearly Add of 10 MMSCF/D

- This sensitivity assumes 3-4 new gas completions added per year 2013-19.
- Shortfall still predicted in 2014



Supply vs. Demand:
Current Wells + Yearly Add of 20 MMSCF/D

- This assumes 6-8 new gas completions added per year 2013-19.
- Shortfall predicted in 2015
- Could be changed by additional near term infield developments
  - Hilcorp
  - CPAI
  - Buccaneer
  - Armstrong
  - Others



Methods of Meeting Southcentral Demand

- Infield development
  - Hilcorp
  - CPAI
  - Armstrong, Buccaneer, CIE, Aurora & Others
- Exploration
  - Onshore: NordAq, Apache, Buccaneer and others
  - Offshore: Furie, Apache, and Buccaneer
- Instate Gasline: ASAP
- Gas Import

Infield Development

- Hilcorp has stated that they will spend $203 million in capital in 2012 to develop oil and gas
  - Will likely spend $150 million per year over next 2 years
  - This is a marked increase over the activity level of Chevron and Marathon
  - Red Pad is now producing
- ConocoPhillips drilled 2 wells at Beluga River
- Buccaneer is completing Kenai Loop #4
- Armstrong has permitted 4 wells at North Fork
- Other infield development include Aurora and CI Energy

Unless more or high rate gas wells are developed, shortfall likely occurs in 2015+ timeframe

Exploration – Onshore

- NordAq: Delineating Shadura and Exploring
  - Shadura not to be developed until 2013
  - Exploring at Tiger Eye Prospect in 2012-13
- Buccaneer exploring near Homer
- CIE exploring west Cook Inlet
- Apache shooting large 3D Seismic Program, plans to drill 4th Quarter 2012 near Tyonek

If successful exploration wells are found near infrastructure and be quickly developed, there will be an impact on timing of shortfall

PRA

Exploration – Offshore

- Furie is drilling exploration wells with Spartan 151 jack up rig
  - Announced discovery at Kitchen Lights #1; did not complete
  - Drilled and suspended Kitchen Lights #2 and #2A
- Buccaneer has mobilized Endeavour jack up rig to CI to drill Cook Inlet prospects
  - Plans to drill at Cosmopolitan this winter
- Apache shooting offshore 3-D Seismic

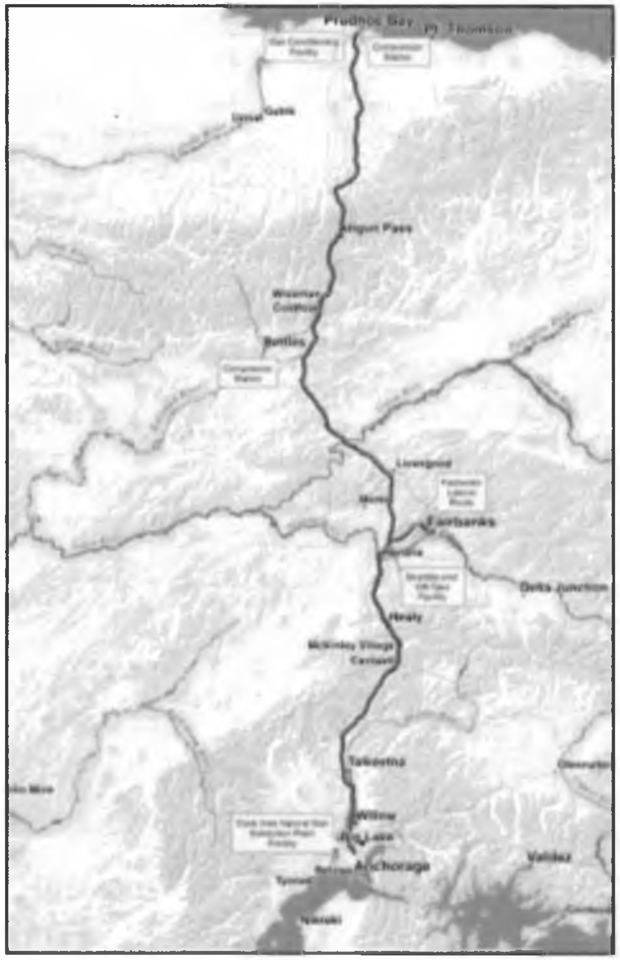
Timing for first gas production likely to be 3-5 years after discovery due to offshore permitting and construction lead times.

Alaska Stand Alone Gas Pipeline

From 7/1/2011 ASAP Project Plan

- Estimated to Cost $7.5 billion (2011$) +/- 30%
- Gas to South Central by 2020 at earliest.

ASAP will not solve 2015-2019 shortfalls in Cook Inlet gas supply.



Import Gas to Cook Inlet: LNG or CNG

- LNG is a commodity that can be contracted for import into Cook Inlet
  - Use of Nikiski Plant or other for regassifying
- LNG from North Slope
  - Large volume of truck deliveries to meet SC shortfall
- Compressed Natural Gas (CNG) is another option for importing gas
  - Could be a cheaper option than LNG
- Recent discussion of using diesel for short term until gas import infrastructure is in place

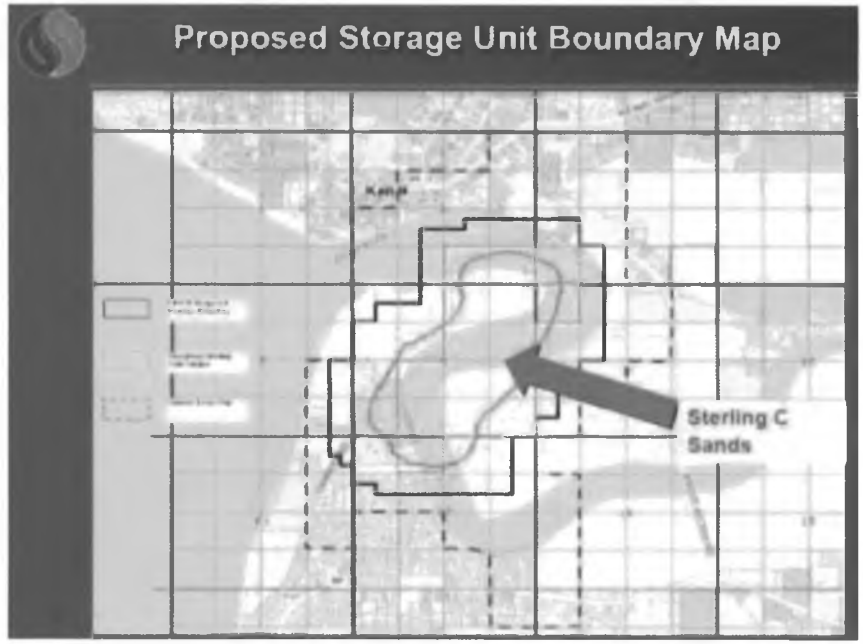
With timely engineering and permitting, LNG or CNG could be imported to fulfill short-term needs

Summary: Possibilities to Meet 2012-2020 Demand

- Infield drilling: Recent history of activity level does not predict that this will meet demands past 2015
- Onshore Exploration: Not proven and if successful would need time for development; could impact timing of shortfall
- Offshore Exploration: Not proven and 3-5 years from discovery to production
- Instate Gas Line: Will not be operational until 2020
- Imported LNG or CNG: Could bridge demand shortfall until exploration and/or instate gas line provide for sufficient supply

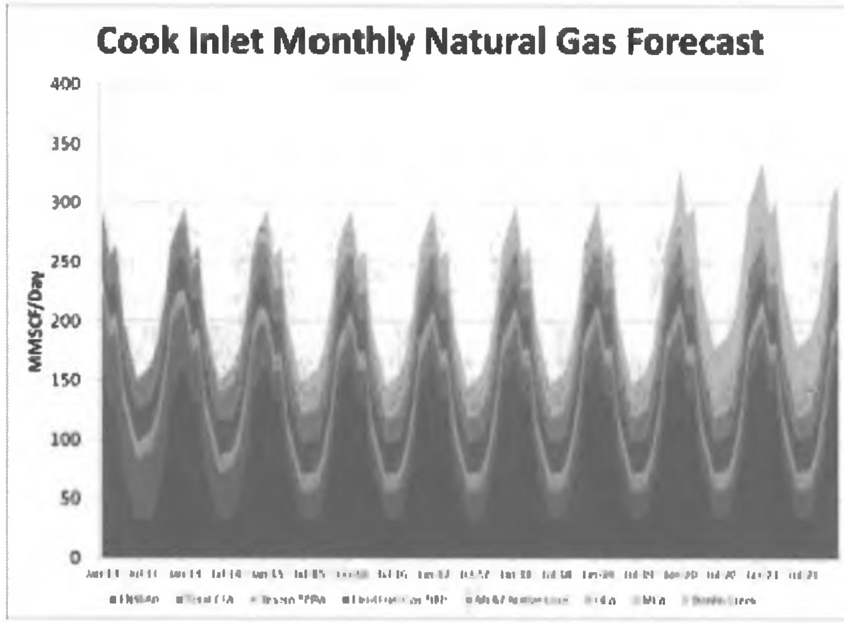
CINGSA Project

- 5 Horizontal wells and compression installed
- CINGSA Storage Project allows for 11 BCF of active storage
- Winter peak capacity of 140 MMSCF available from CINGSA storage



CI Peak Gas Demands

- Large swing between Summer and Winter gas demands
  - Summer: 150 MMSCF/D
  - Winter : 300 MMSCF/D
- CINGSA gas storage allows injection of CI gas during summer to help meet winter peak demands



Impact of CINGSA

- Currently allows for storage of 11 BCF/Year
- Will allow for meeting 45% of monthly average peak demand in the winter
- Allows for purchase and storage of gas during summer season for use during winter peak demands.
- Available for storage of future imported LNG or CNG
- Will help alleviate need of overproducing wells to meet peak daily utility demand

Source: Alaska Business Monthly
Photo by Robin Barry, ENSTAR

Conclusions

- Absent major new large discoveries that can be brought online in 1-2 years, the current pace of development could mean a shortfall in Cook Inlet supply to meet demand in 2014 or 2015.
- LNG or CNG import is only "certain" method to ensure no shortfall.
- CINGSA storage is capable of storing CI produced gas or imported gas for winter peak demand.

Questions?