

IMPACT OF HB 247: COOK INLET ASSESSMENT

**Presentation to House Resources Committee
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THE COOK INLET OIL AND GAS MARKET: A SCORECARD

What has happened to oil and gas production and activity in the Cook Inlet in recent years?

Oil production has risen from 7.5 mb/d in 2009 to almost 18 mb/d

Gas production has stabilized after years of steadier decline

How has the gas market adjusted in recent years?

Cook Inlet has undergone major transition in supply, demand, prices, competition and expectations

Some of these changes are typical in mature basins—others are unique to Cook Inlet

What's the outlook and how sensitive is the outlook to changes in oil/gas fiscal system?

DNR: 1,183 bcf in remaining 2P reserves; 1,600 bcf w/ Cosmopolitan and Kitchen Lights (ballpark)

Continued drilling at old fields plus Cosmopolitan and Kitchen Lights: current market well supplied

At current (gas) price levels, brownfield investment should be profitable under stricter fiscal regime

Credits more important for developing new resources, especially with demand constraints

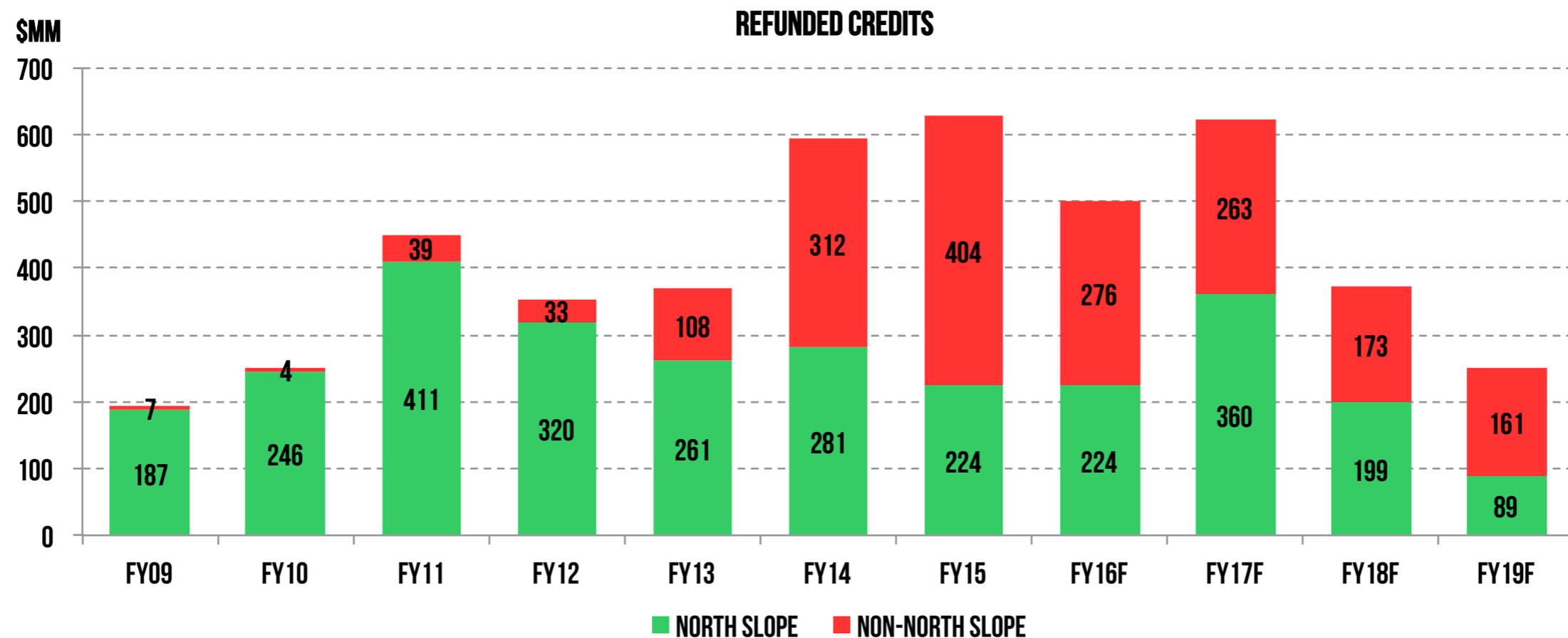
Currently much uncertainty over future regime - setting a stable, sustainable system is paramount

REFUNDED CREDITS REACHED **NEW HIGH IN FY 2015**

Refundable credits in FY 2015 reached \$628 mm, the highest point ever

In both 2014 and 2015, the majority of these credits went to non-North Slope companies

Under DOR's current forecast, credits will exceed \$1.1 billion in FY 2016 and FY 2017



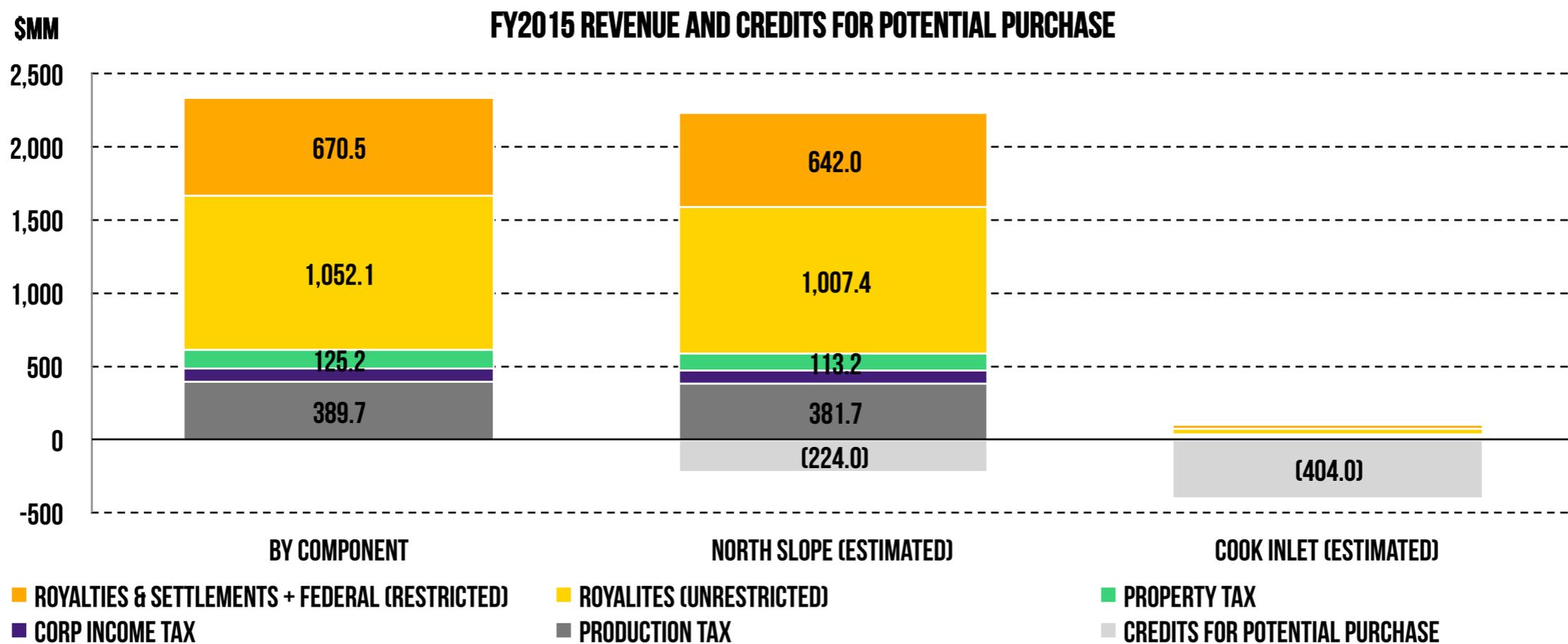
SOURCE: ALASKA DEPARTMENT OF REVENUE, TAX DIVISION

BIG DIFFERENCE BETWEEN NORTH SLOPE AND COOK INLET

The majority of refundable credits go to Cook Inlet companies

Cook Inlet production, however, generates limited direct revenue for the state

Credits on the North Slope are more limited but also a far smaller fraction of total value generated



SOURCE: ALASKA DEPARTMENT OF REVENUE, REVENUE SOURCES BOOK; TAX DIVISION; ENALYTICA ESTIMATES

ACTIVITY HAS RESPONDED IN RECENT YEARS

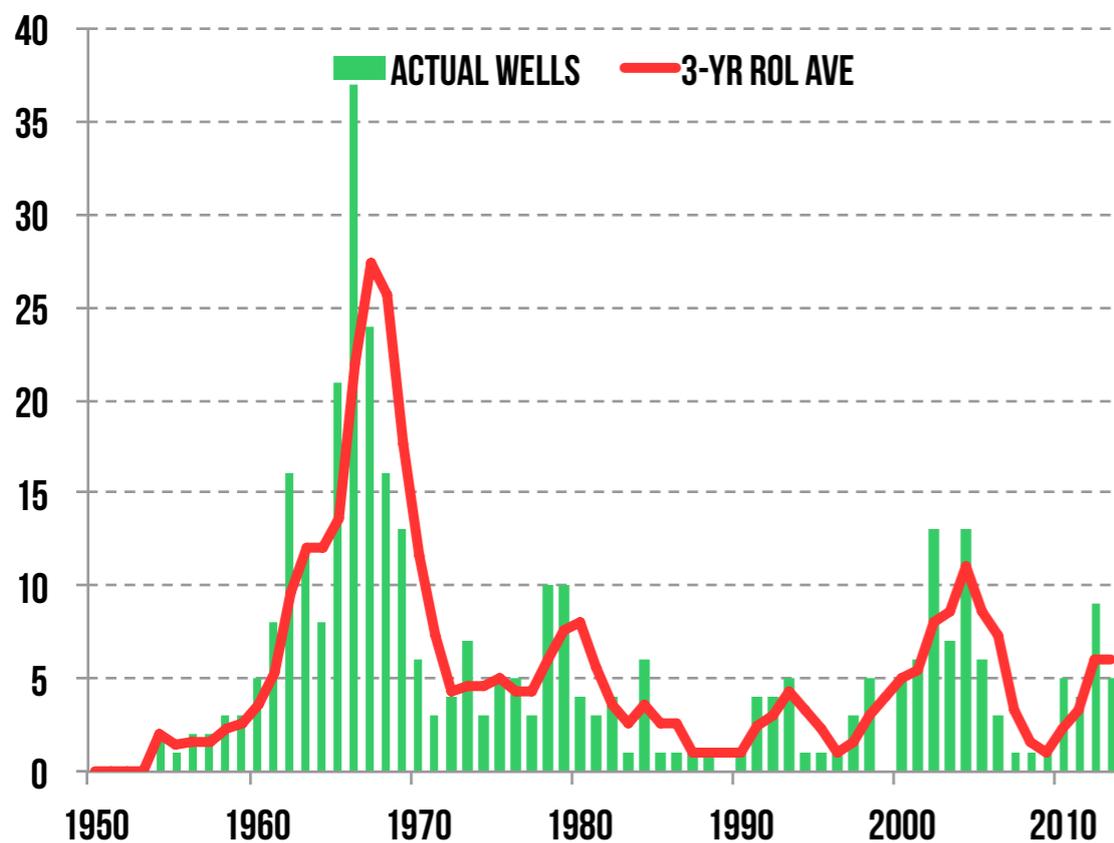
Exploration drilling in Cook Inlet has gone through several cycles since 1950s

Recent exploration activity (post 2010) on par with previous exploration peaks

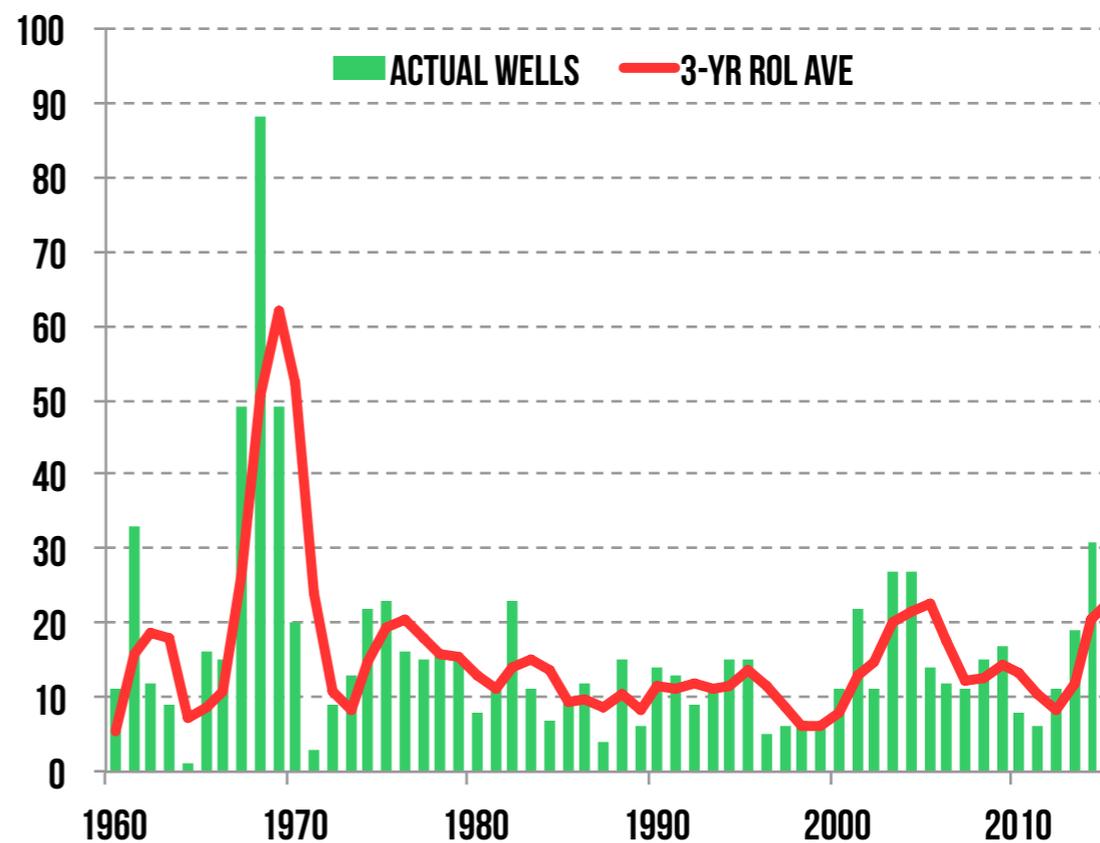
Development drilling has been more stable over the years

Recent growth placing three-year rolling average among highest in state's history

COOK INLET: EXPLORATORY WELLS SPUDED



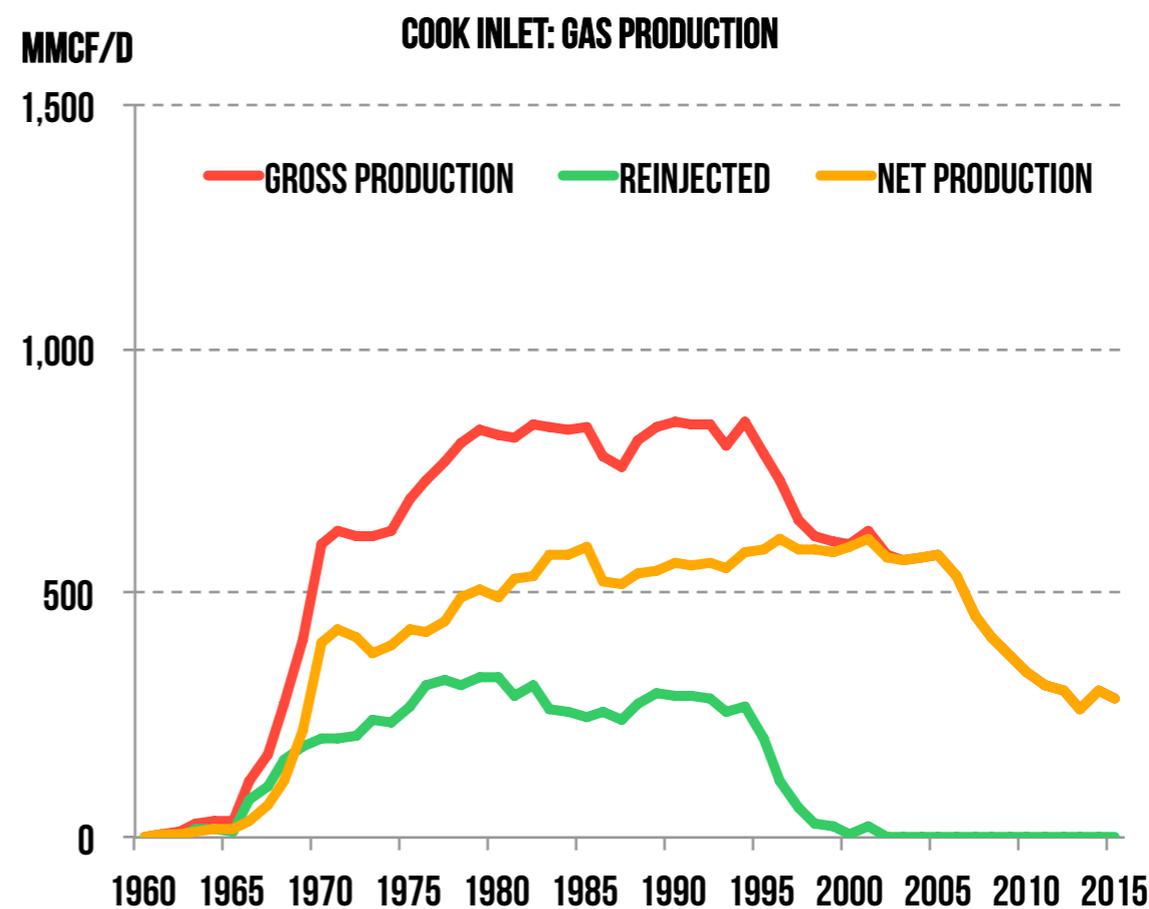
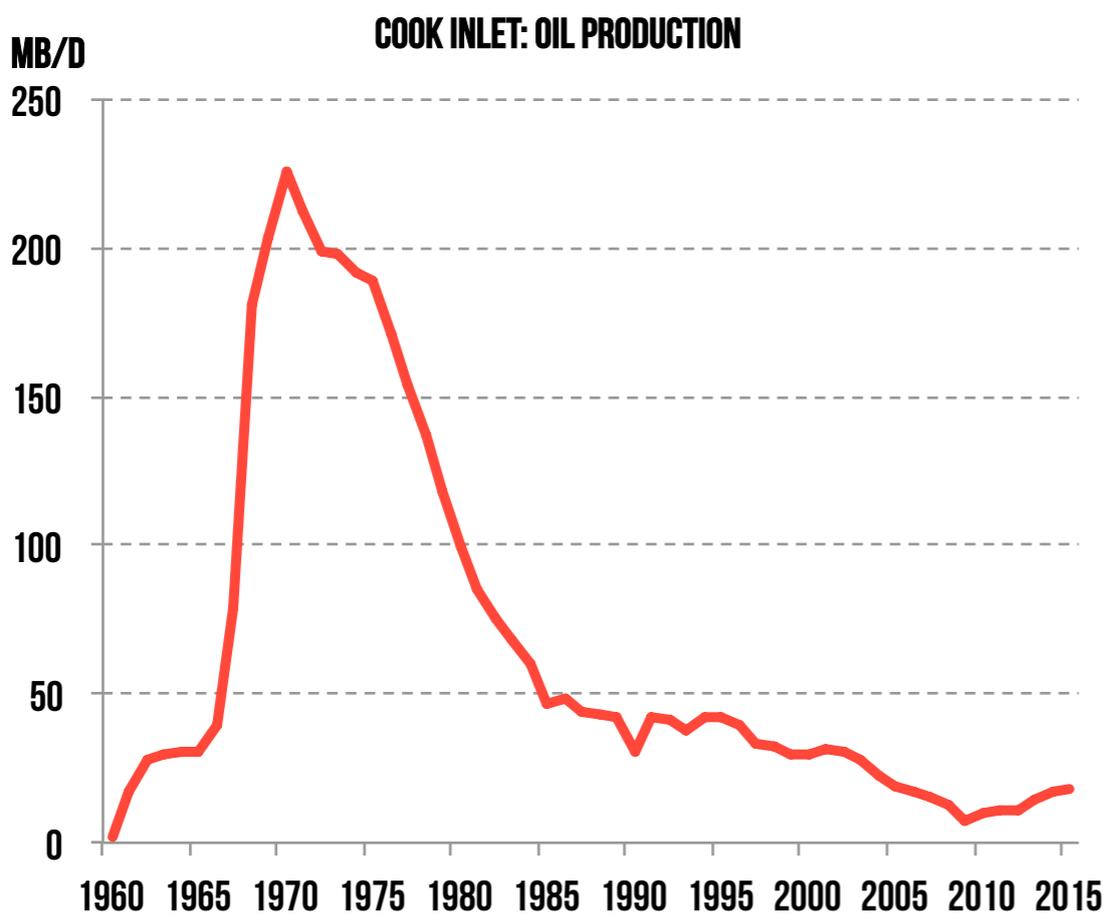
COOK INLET: WELLS BY YEAR OF FIRST OIL/GAS



SOURCE: ALASKA OIL AND GAS CONSERVATION COMMISSION, OIL AND GAS DATA WEB APPLICATION (DATA THROUGH DECEMBER 2015)

COOK INLET OIL AND GAS PRODUCTION: BASIC FACTS

- Oil** Peak in 1970 at 226 mb/d; trough in 2009 at 7.5 mb/d; upturn post 2010 (+10.5 mb/d)
- Gross Gas** Peak in 1990 at 853 mmcf/d; big drops in 1994–1998 and 2005–2013; stable in 2014–15
- Net Gas** Peak in 1996; 1990s plateau from blowdown at Swanson River; fall post 2005, then stable



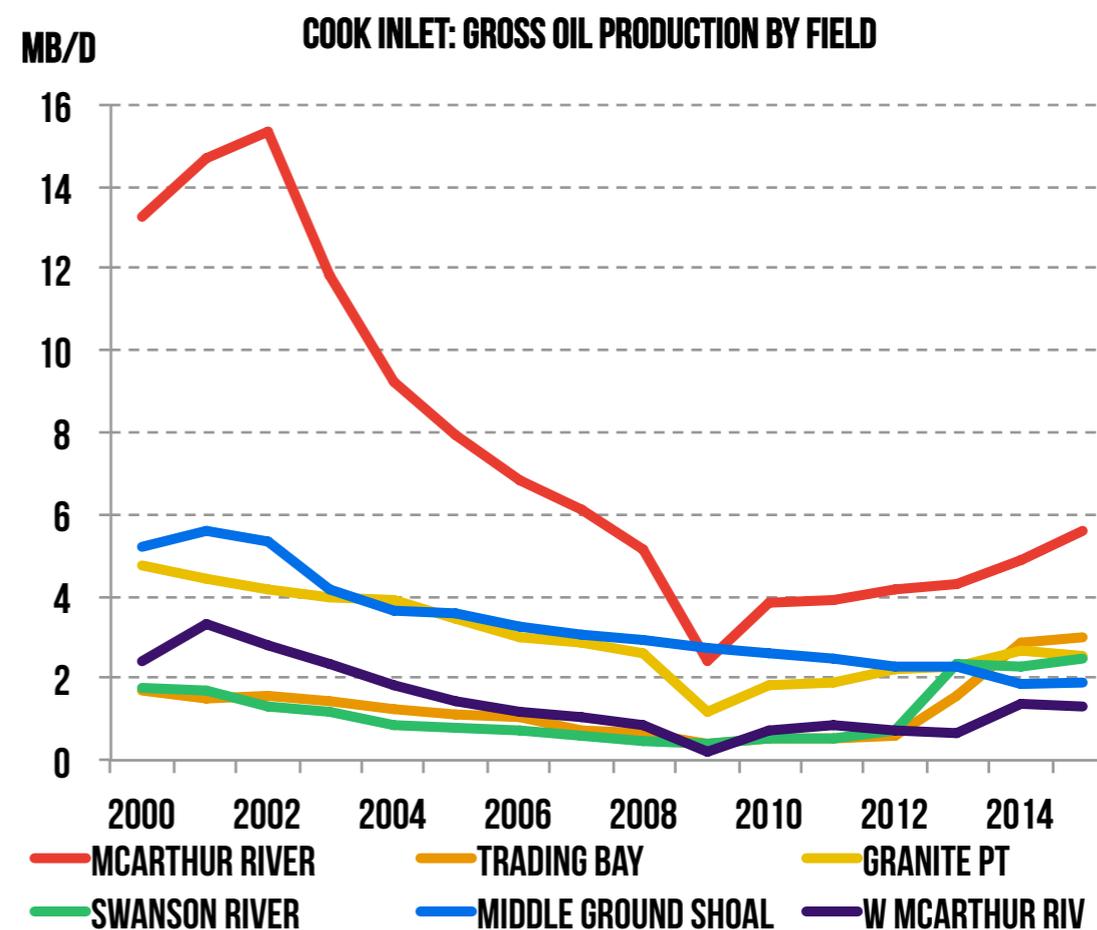
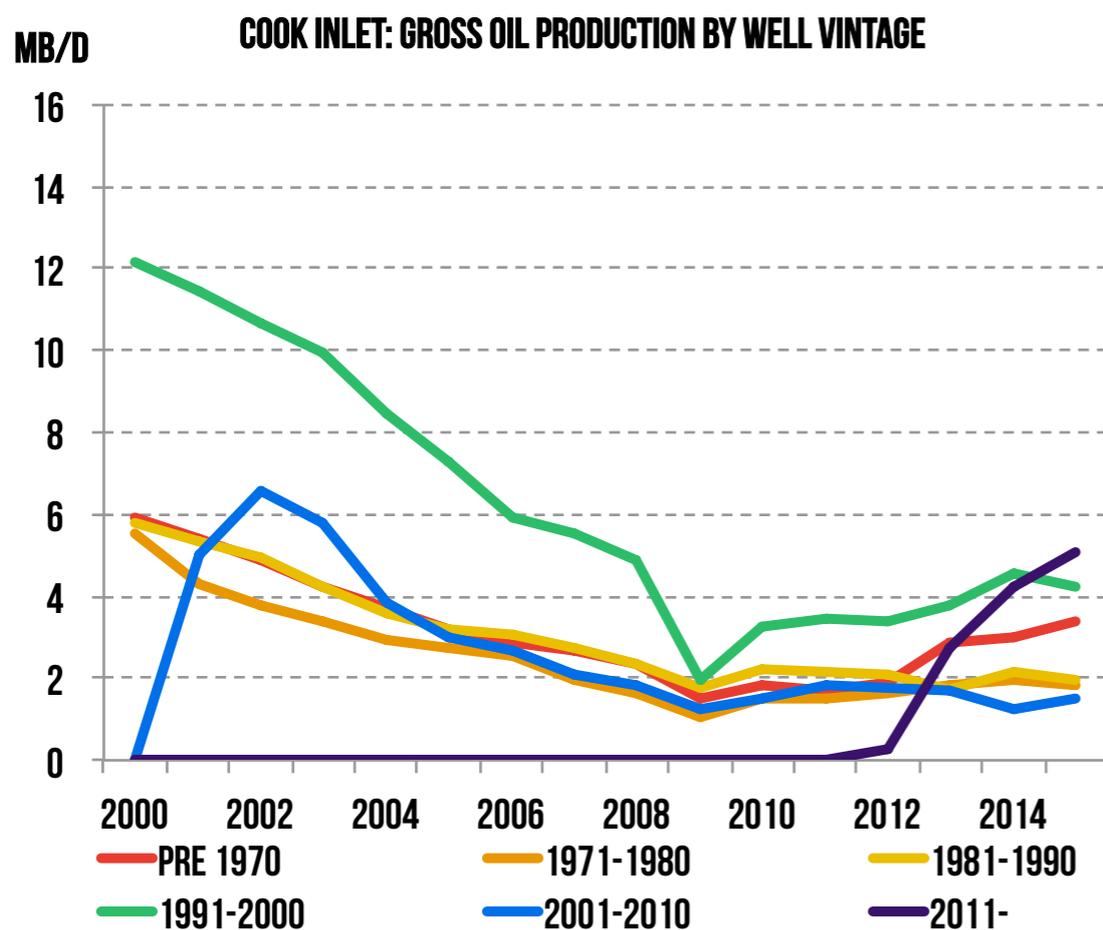
SOURCE: ALASKA OIL AND GAS CONSERVATION COMMISSION, OIL AND GAS DATA WEB APPLICATION (DATA THROUGH DECEMBER 2015)

OIL UP FROM WORKOVERS, NEW WELLS IN EXISTING FIELDS

Production from old wells has risen, especially from wells drilled before 1970 and in 1990s

New wells drilled after 2011 have also added about 5 mb/d of production

Production is up in most fields; biggest gains from McArthur River field



SOURCE: ALASKA OIL AND GAS CONSERVATION COMMISSION, OIL AND GAS DATA WEB APPLICATION (DATA THROUGH DECEMBER 2015)

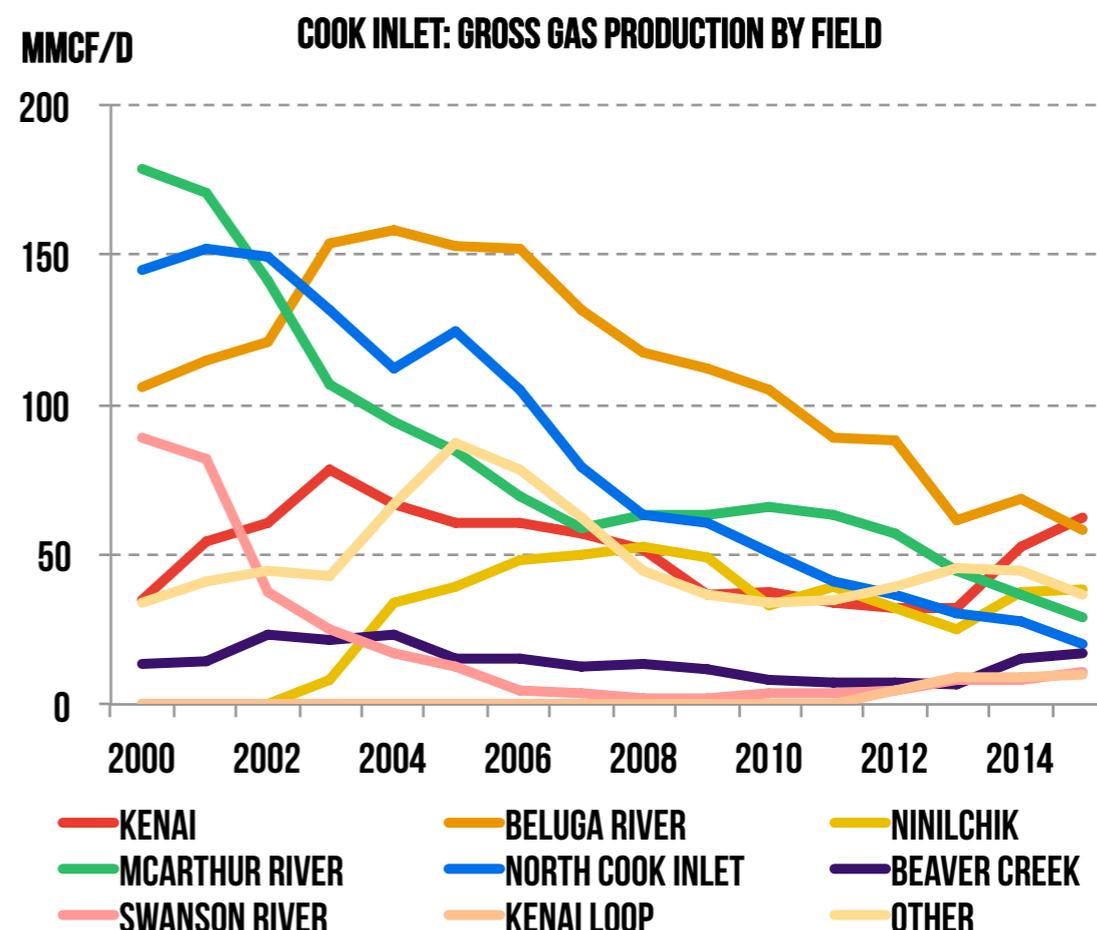
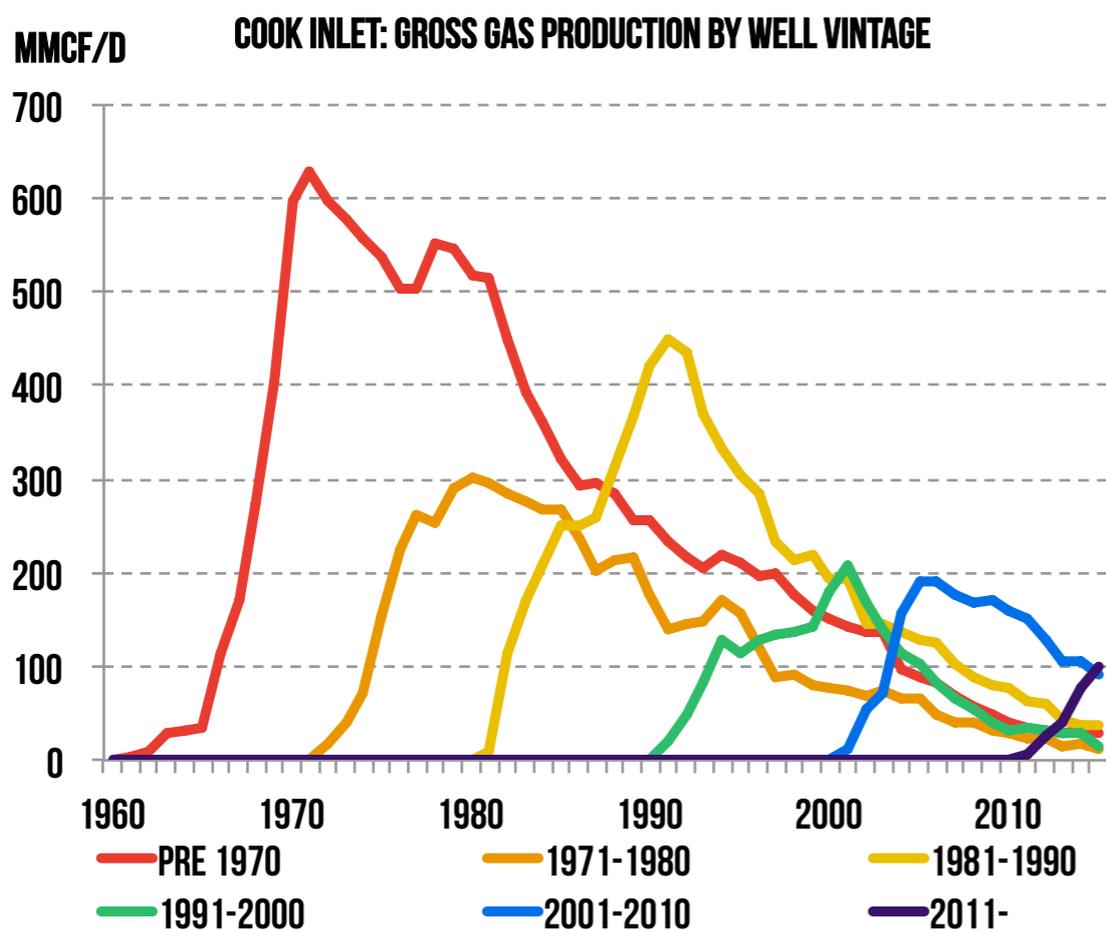
GAS FLATTENING FROM NEW WELLS IN EXISTING FIELDS

Wells drilled after 2011 have added about 100 mmcf/d of new production

Production from Beluga River, Ninilchik, and North Cook Inlet declined by 85.7 mmcf/d in 2011–2015

Growth from Kenai (+28 mmcf/d), Beaver Creek (+10), Kenai Loop (+9.7), and Swanson River (+7.3)

Only Kenai Loop is (major) new field (first gas in 2012); other growth from workovers and new wells



SOURCE: ALASKA OIL AND GAS CONSERVATION COMMISSION, OIL AND GAS DATA WEB APPLICATION (DATA THROUGH DECEMBER 2015)

COOK INLET GAS HAS GONE THROUGH **MAJOR TRANSITION**

Old Cook Inlet Gas Market

Surplus gas exported (via LNG and Agrium)

Low wellhead prices

Market view is that gas is long

Gas produced by large, international players

Secure local supply via long-term contracts

Producers offered high seasonal flex

Seasonal flex coming largely from supply

New Cook Inlet Gas Market

Limited surplus; gas absorbed in local market

High wellhead prices

Market view is that gas is short

Gas produced by smaller, focused players

Shorter term sales contracts b/w producers, utilities

Mature fields have much more limited seasonal flex

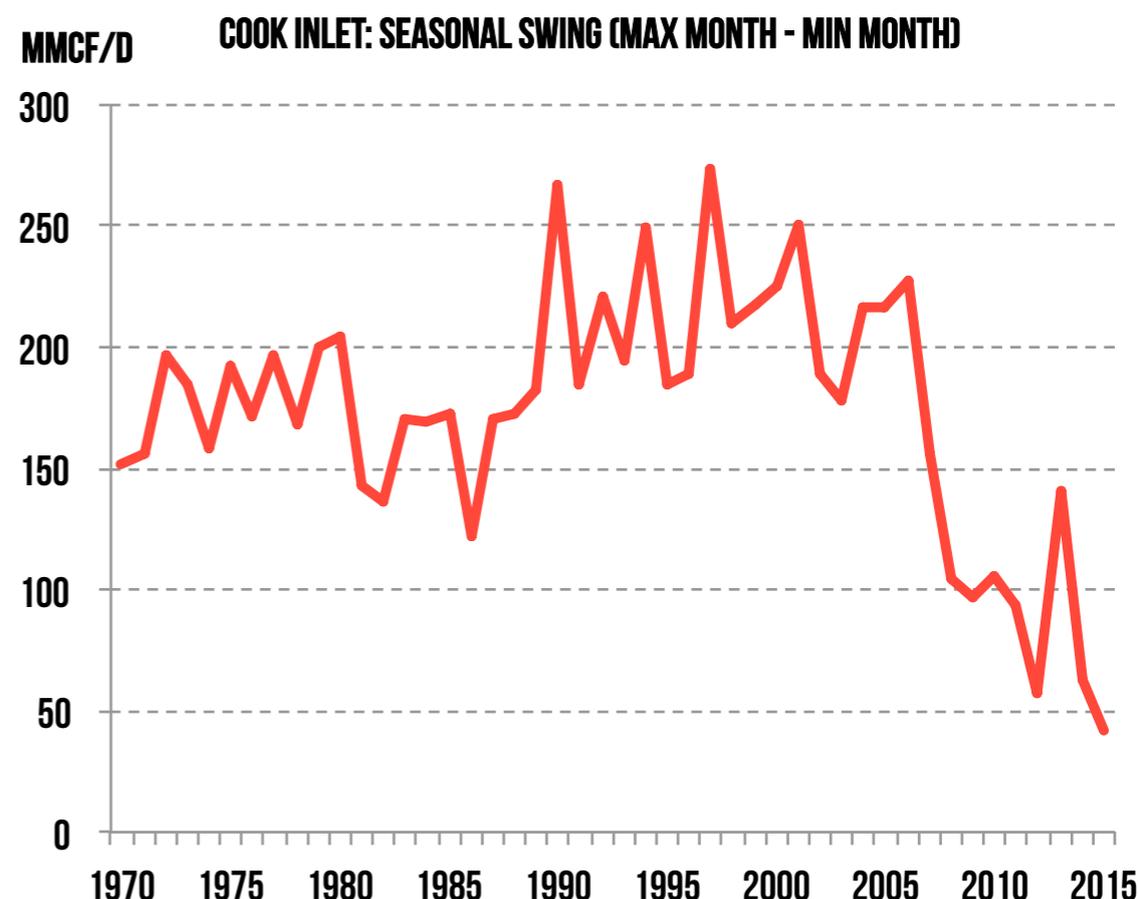
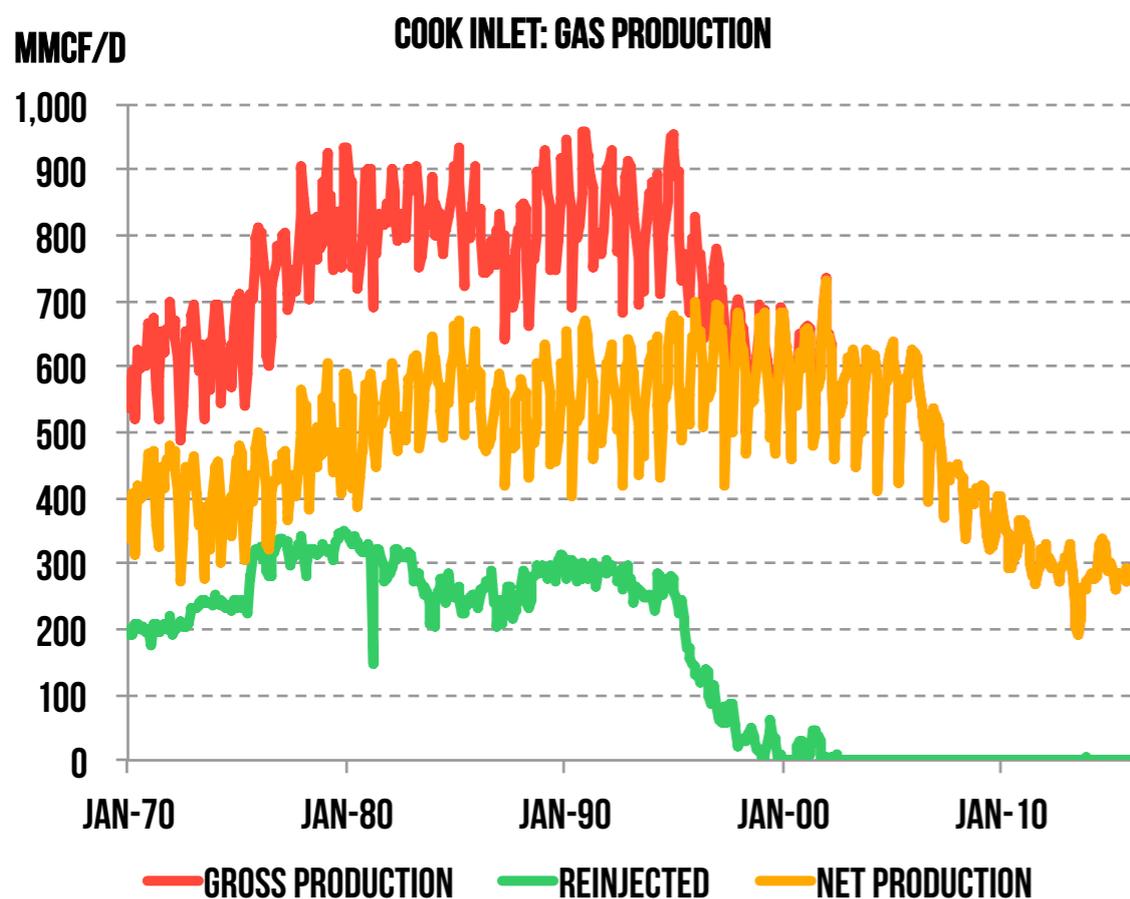
Seasonal flex largely from storage and demand

MATURE BASIN HAS LIMITED SEASONAL PRODUCTION FLEX

Historically, gas production in Cook Inlet has provided seasonal flex

As production has matured, that seasonality has gone away

Since 2006, we have seen the seasonal swing (max-min month) drop to below 100 mmcf/d



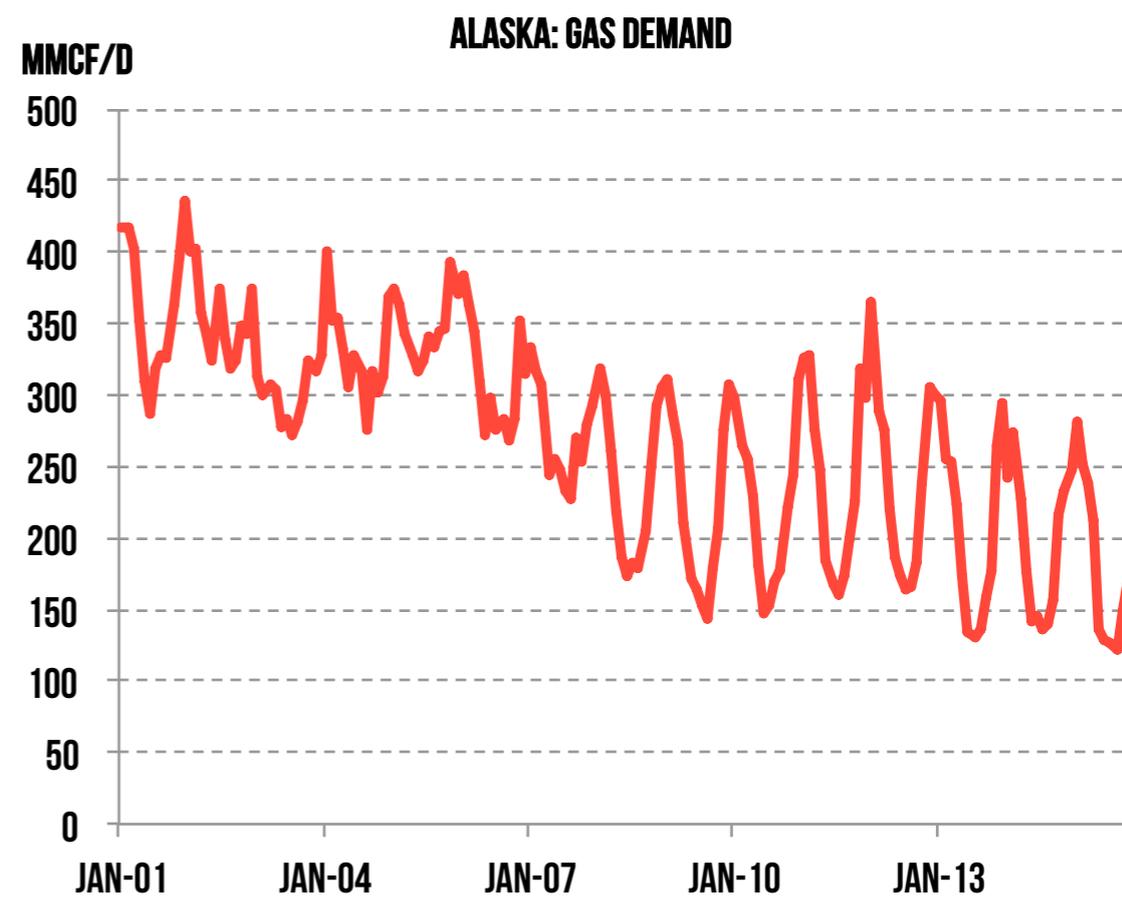
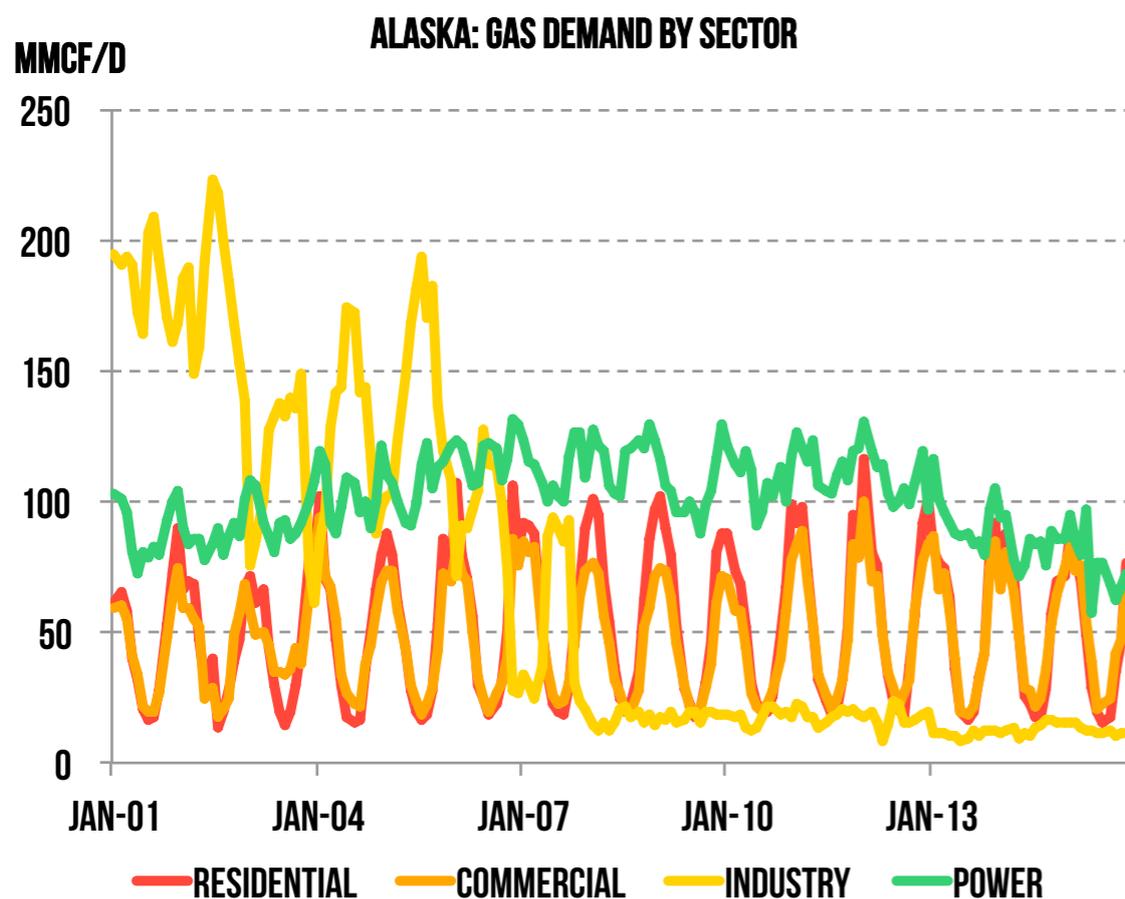
SOURCE: ALASKA OIL AND GAS CONSERVATION COMMISSION, OIL AND GAS DATA WEB APPLICATION (DATA THROUGH DECEMBER 2015)

DEMAND HAS, MEANWHILE, BECOME MORE SEASONAL

Historically, gas production was either exported or consumed in industry (nitrogen)

Lower consumption in industry has made the demand profile more seasonal (lack of “base-load” demand)

In 2003–2005, industry consumption was flexible enough to serve a seasonal purpose



SOURCE: ENERGY INFORMATION ADMINISTRATION, ALASKA NATURAL GAS CONSUMPTION BY END USE

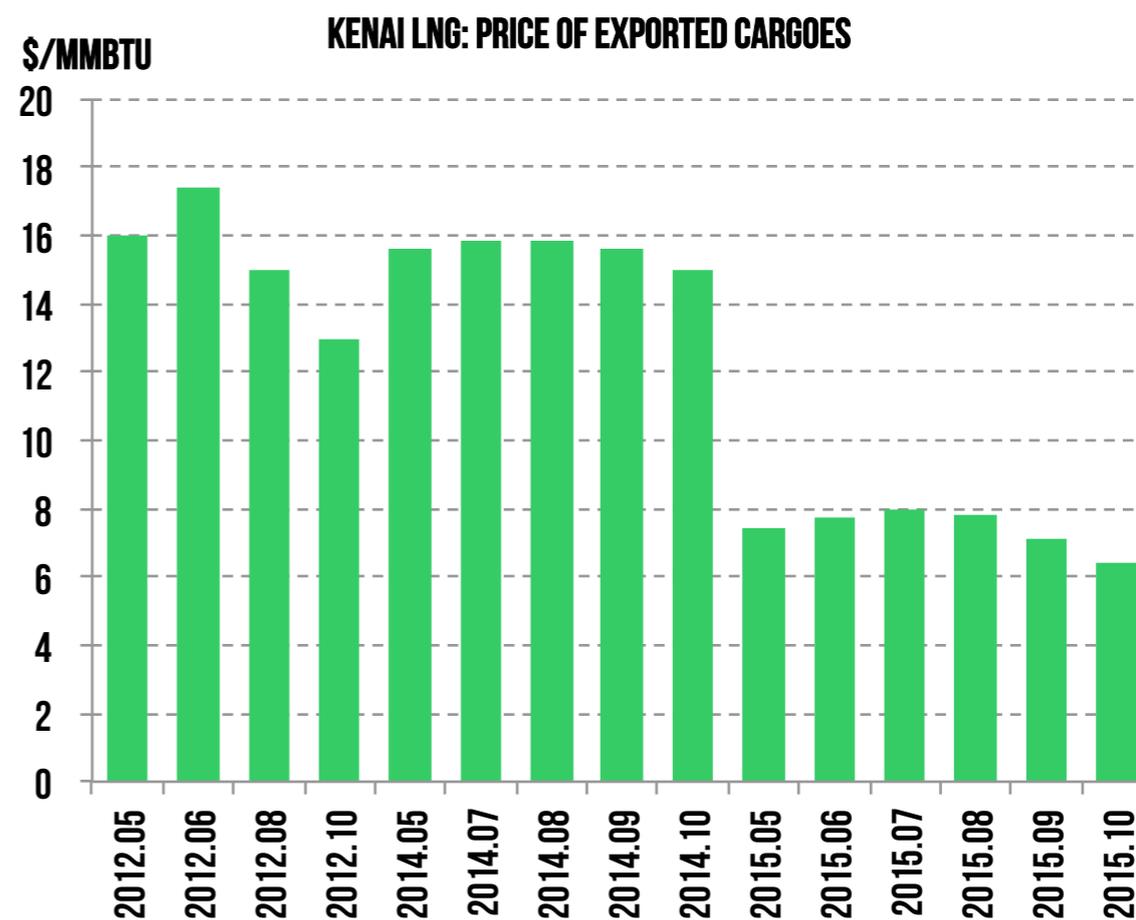
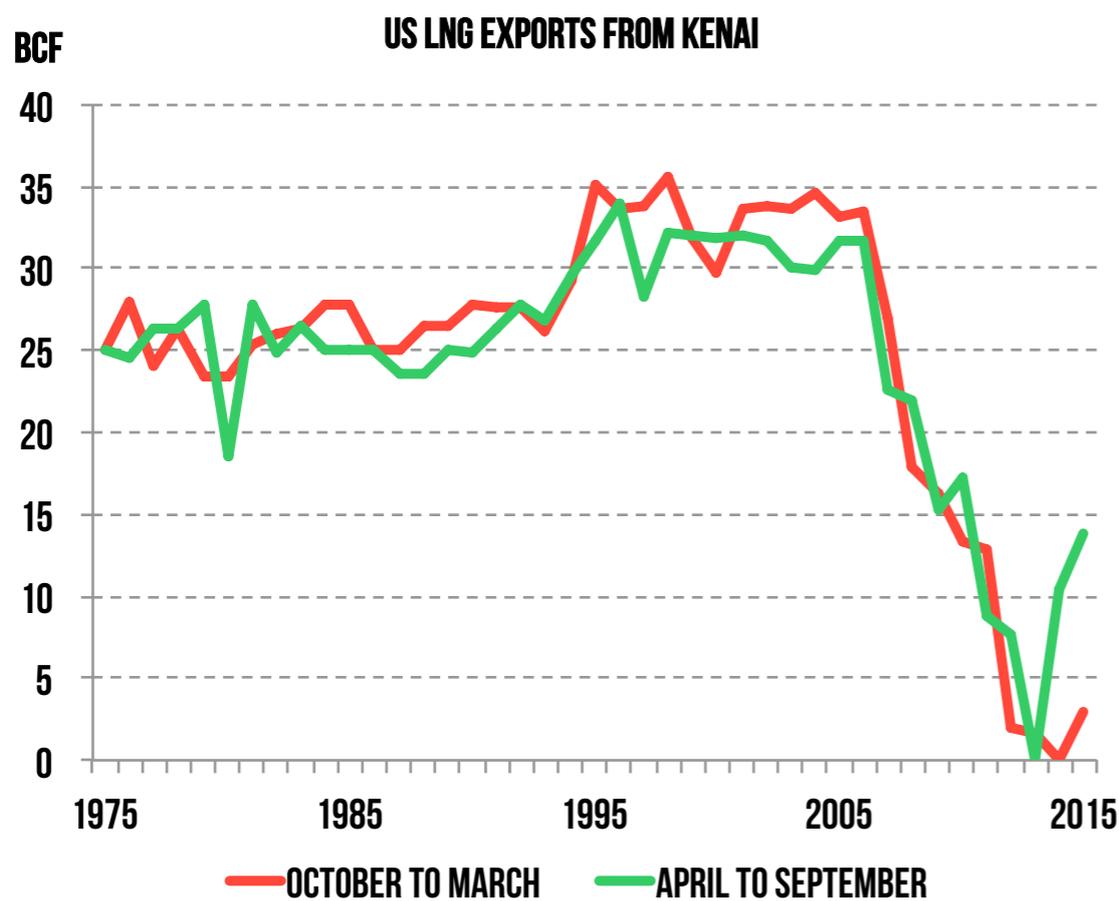
RECENTLY, EXPORTS HAVE OFFERED A SEASONAL OUTLET

Historically, LNG exports were not particularly seasonal: exports in winter and summer were similar

Since 2012, LNG exports have taken place largely in the summer

In 2014 and 2015, Kenai exported 13 and 16 bcf respectively, helping to support seasonal flexibility

How will lower prices and ConocoPhillips' divestment of upstream in Cook Inlet impact this outlet?



SOURCE: ENERGY INFORMATION ADMINISTRATION

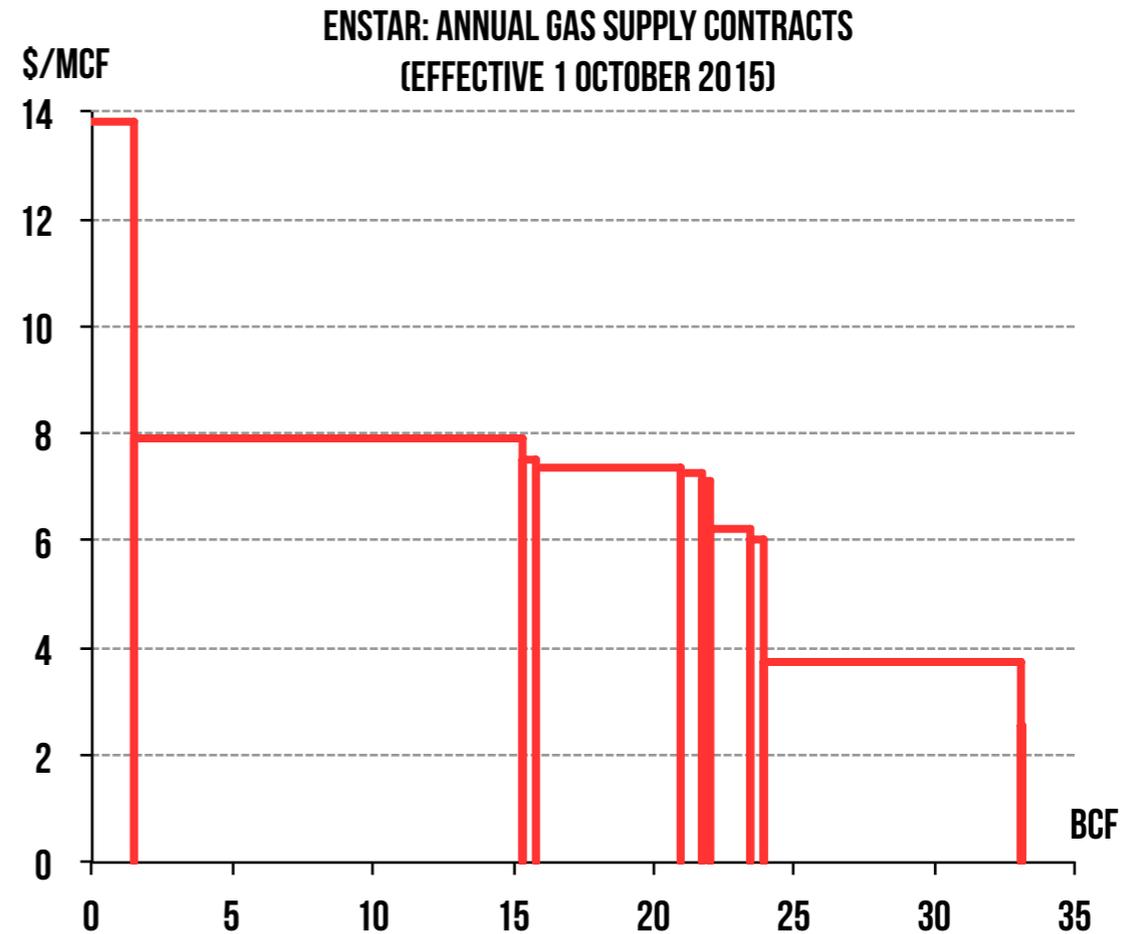
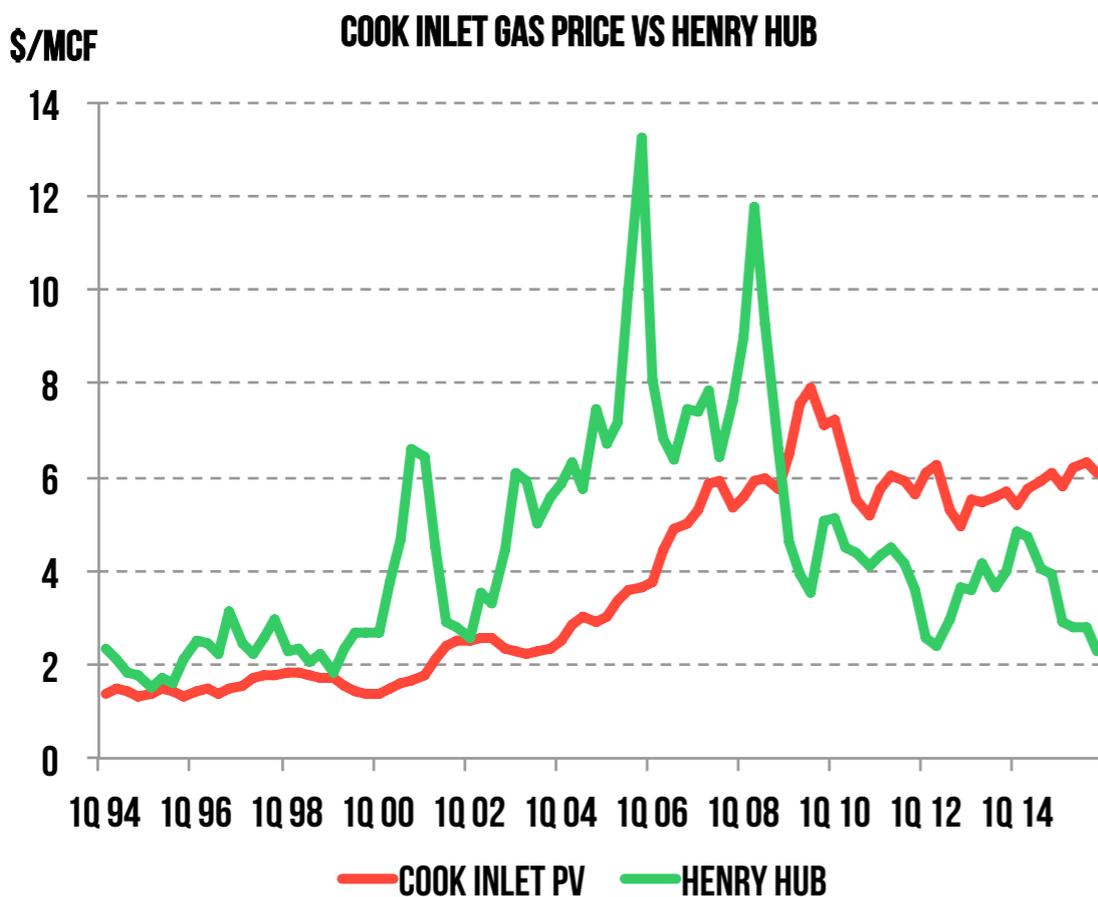
GAS PRICES HAVE RISEN CONSIDERABLY POST 2004

Historically, gas prices in Cook Inlet have been equal to or (more often) below Henry Hub

Since 2004, there has been a steady rise in gas prices; since 2010, prices were between \$5 and \$6/mcf

But there is considerable supply trading above this level, at \$8+ (and rising depending on contract)

Other jurisdictions have found \$5-\$7/mcf is sufficient to produce most expensive gas (shale, deepwater)



SOURCE: ALASKA DEPARTMENT OF REVENUE, TAX DIVISION (COOK INLET PV); ENERGY INFORMATION ADMINISTRATION (HENRY HUB); ENSTAR, DETERMINATION OF GAS COST ADJUSTMENT

GAS SUPPLY AND DEMAND DYNAMICS IN COOK INLET

Supply and resources

2015 production: 103 bcf

Estimated 2P reserves: 1,600 bcf (DNR, 2015)

Legacy fields: 1,183 bcf

Kitchen Lights/Cosmo: 417 bcf (ballpark)

Yet to find estimates are much higher

Existing + new fields should be enough for current demand 10+ years; demand upside needs more gas

Demand

2015 consumption around 100 bcf

In-state demand: 80-85 bcf/yr

Exports: 13–16 bcf (2014–2015)

AGDC 2030 forecast: 115 to 130 bcf/yr (ex. nitrogen)

Nitrogen demand upside: 28 bcf/yr per train (2 trains)

State support due to gas “shortage,” yet developers say they lack markets to develop new fields; why?

Maybe issue is timing (market covered by existing contracts, window opens later)

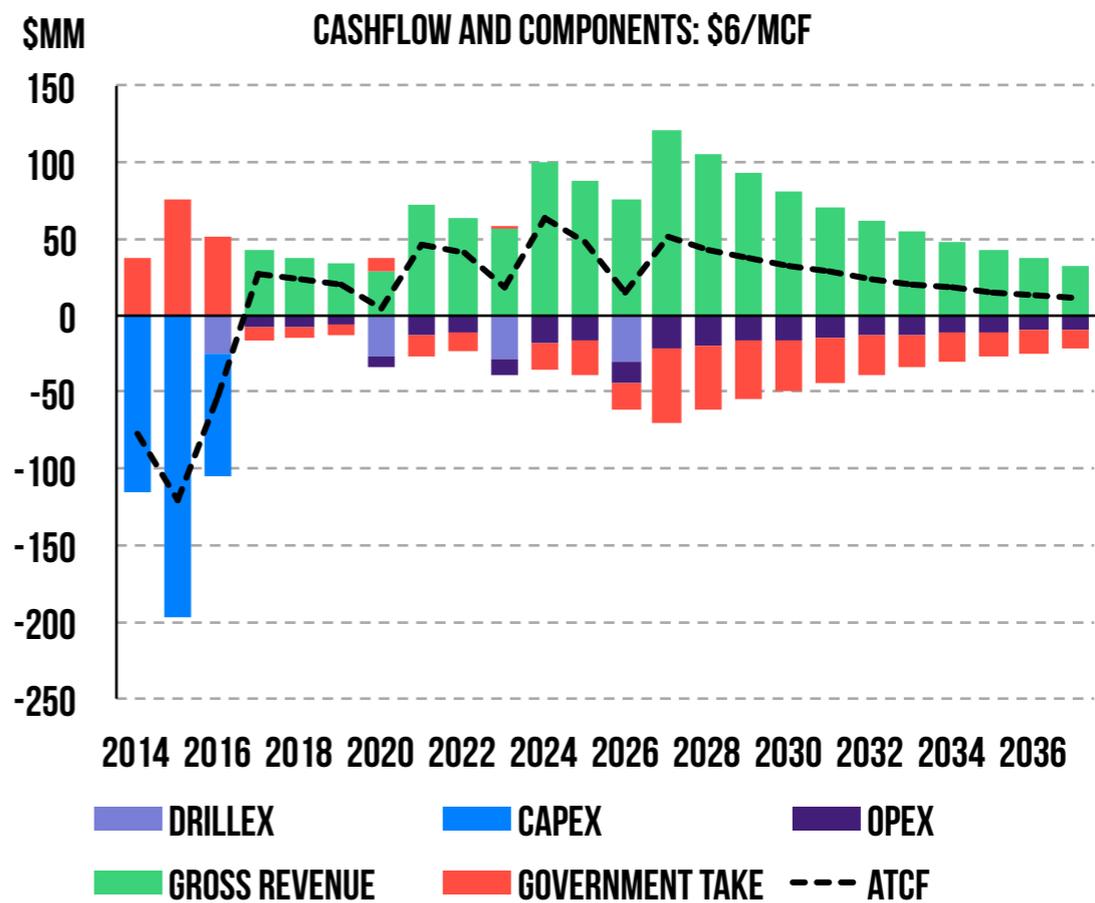
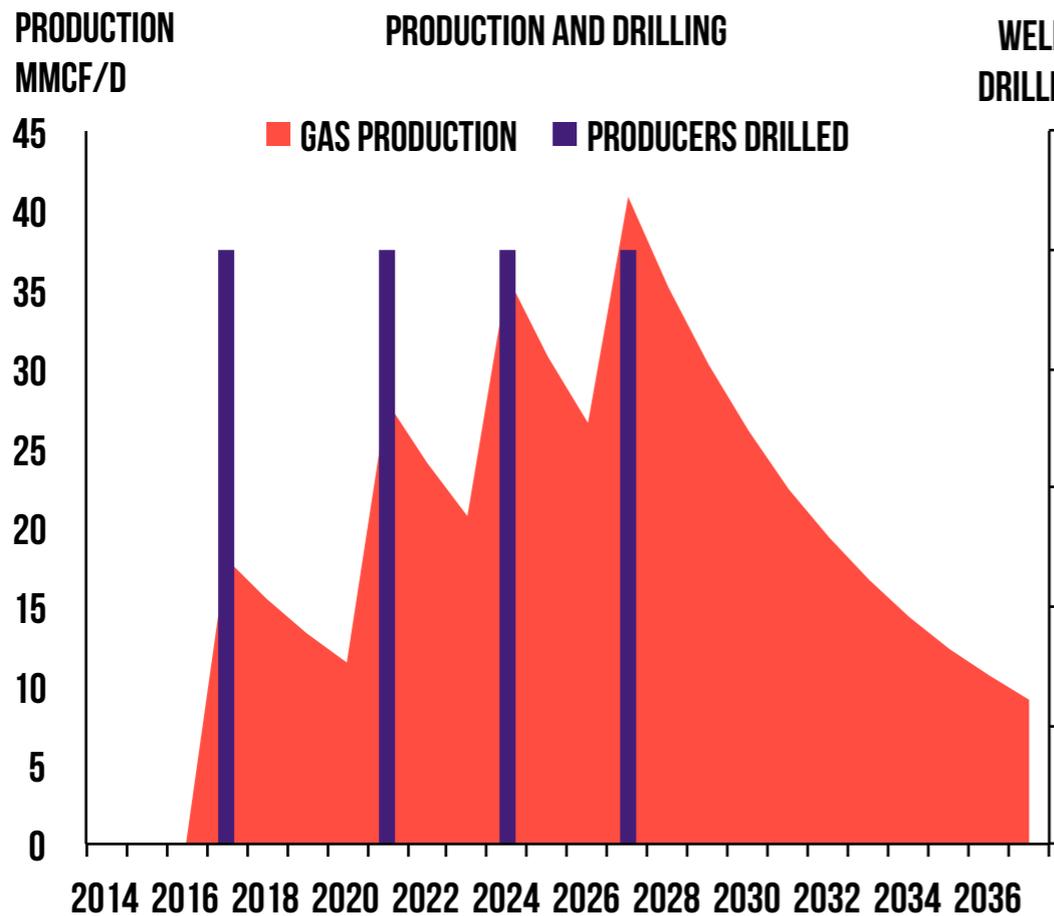
Or a natural negotiation process (buyers and sellers looking for the “right” pricing point)

Or different views about resource certainty, especially for developing new demand (Agrium)

PROJECT #1: MARKET CONSTRAINED (ASSUMPTIONS)

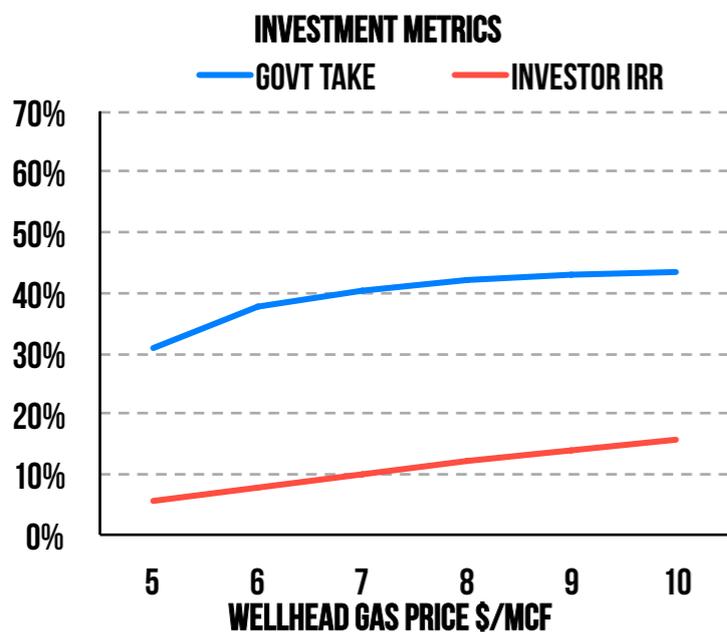
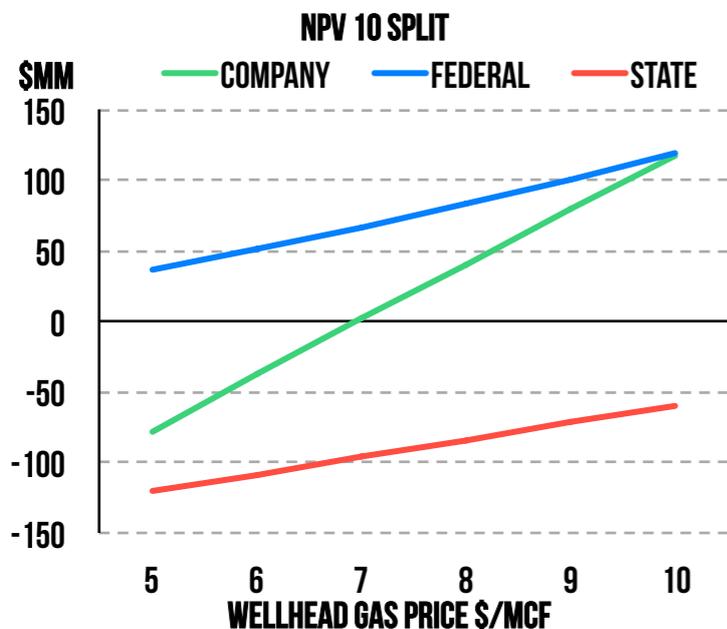
Large upfront investment but constrained gas market

Limited ability to sell gas: can only drill a well every few years

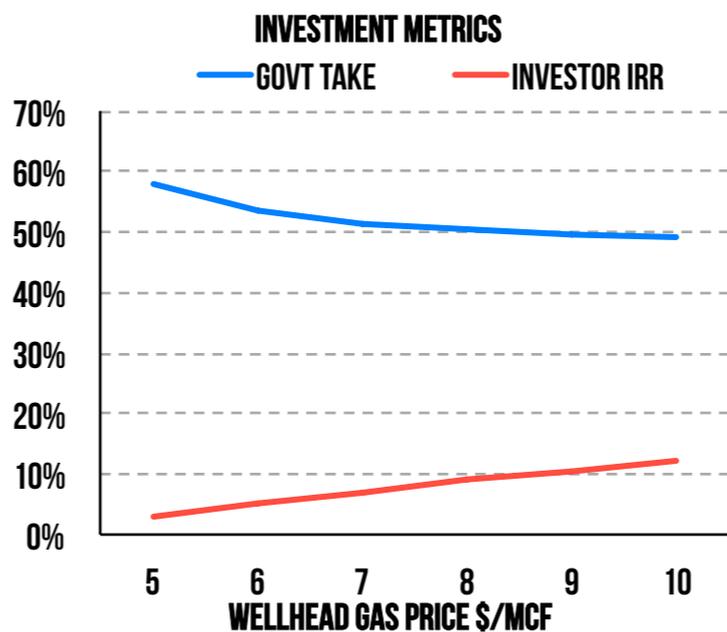
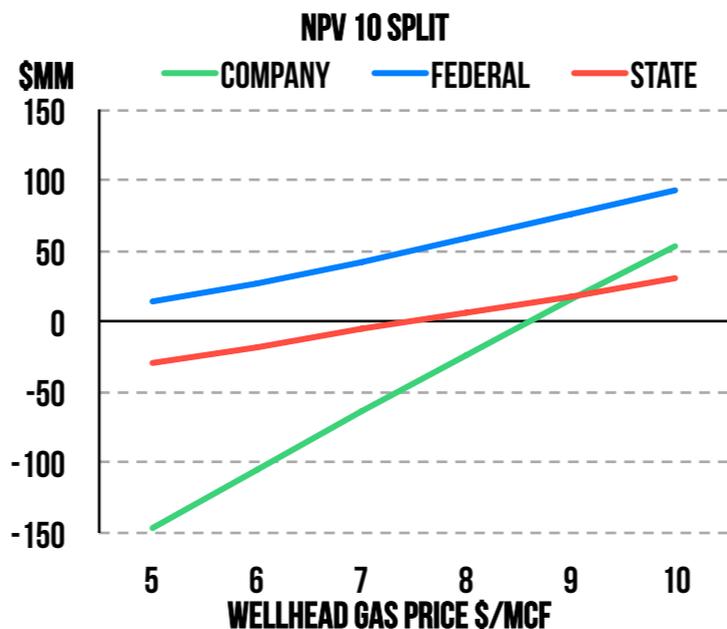


PROJECT #1: MARKET CONSTRAINED (RESULTS)

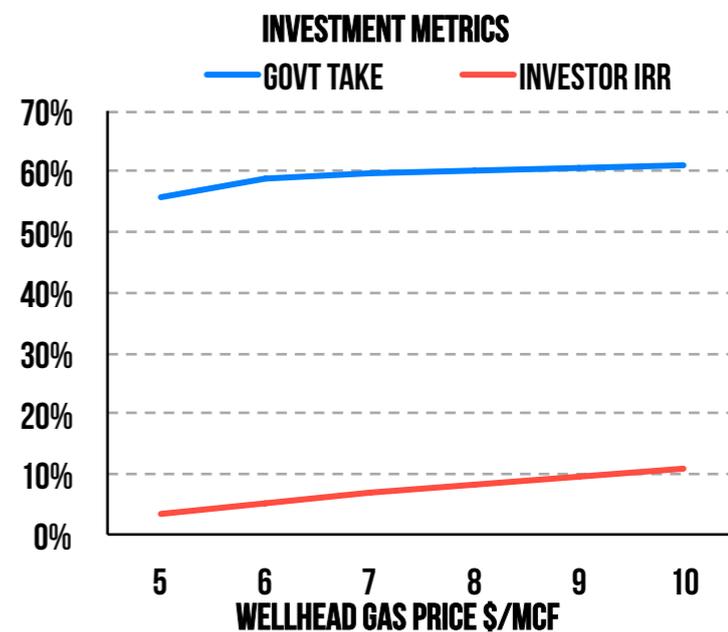
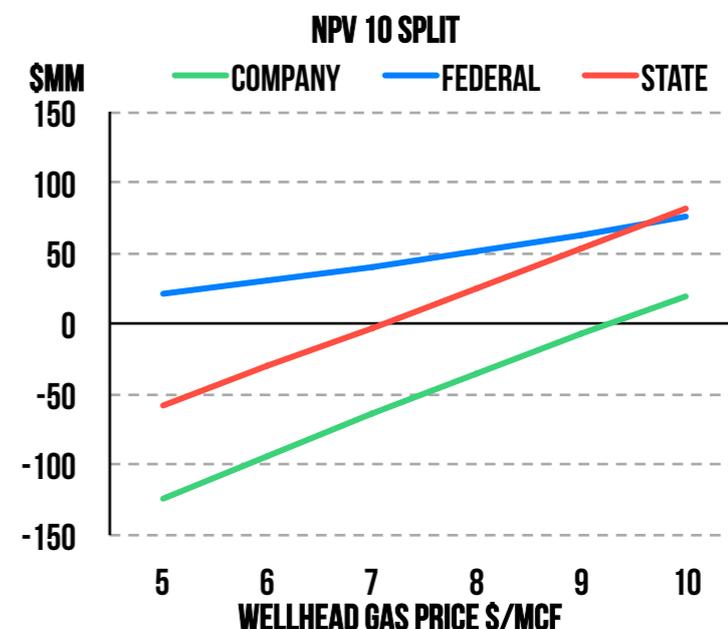
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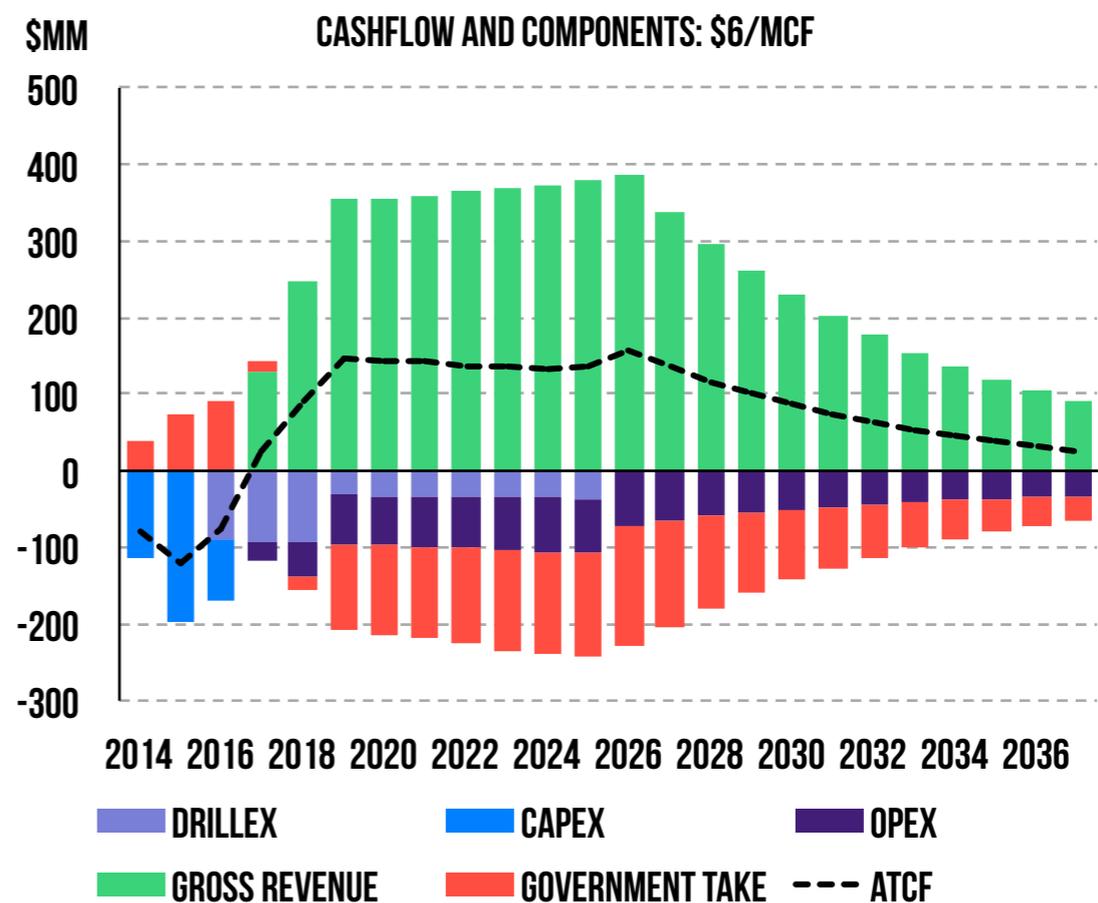
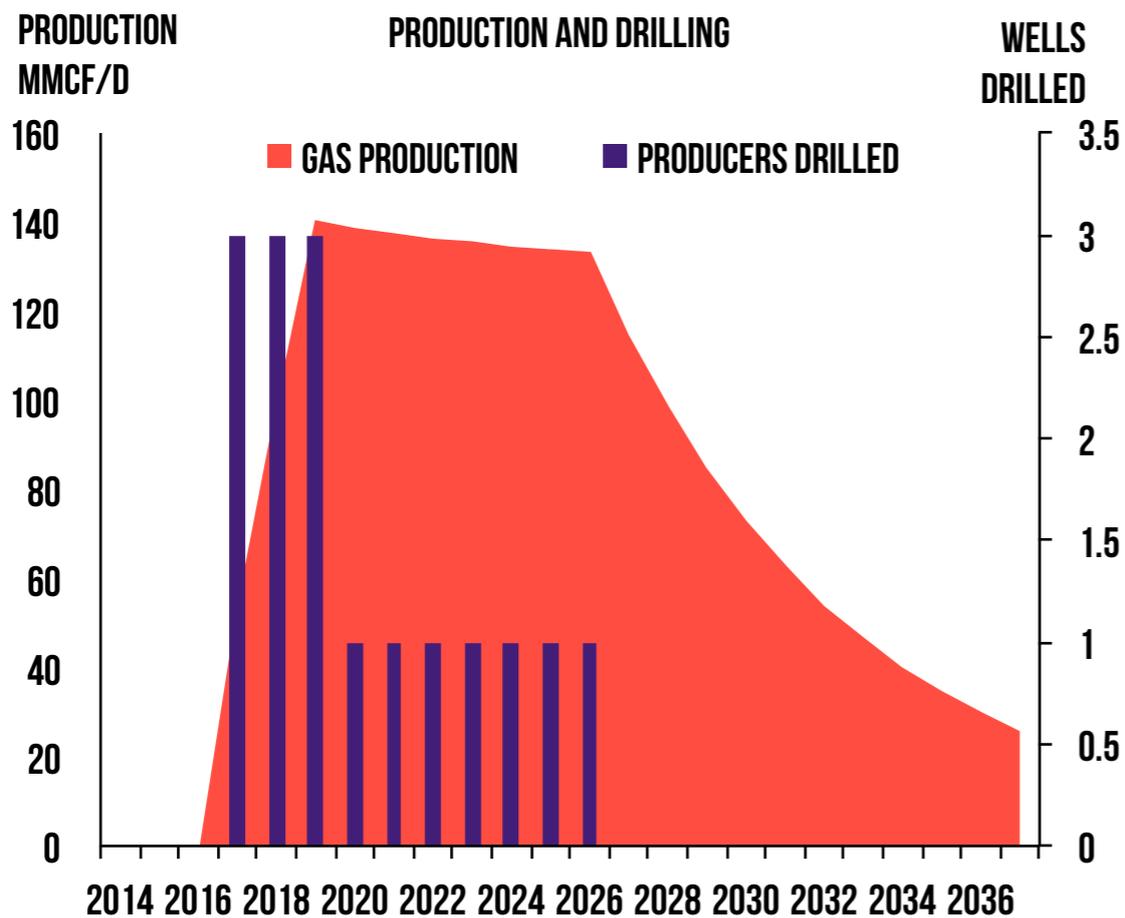
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PROJECT #2: MARKET UN-CONSTRAINED (ASSUMPTIONS)

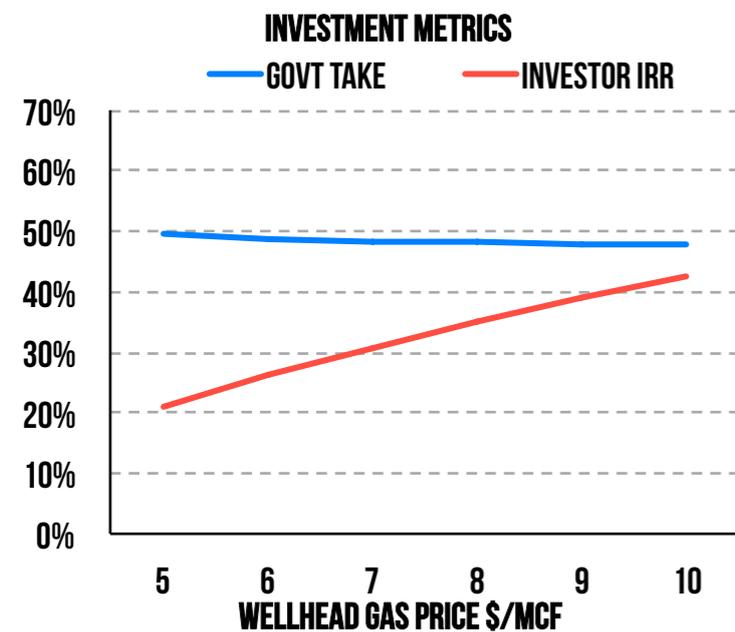
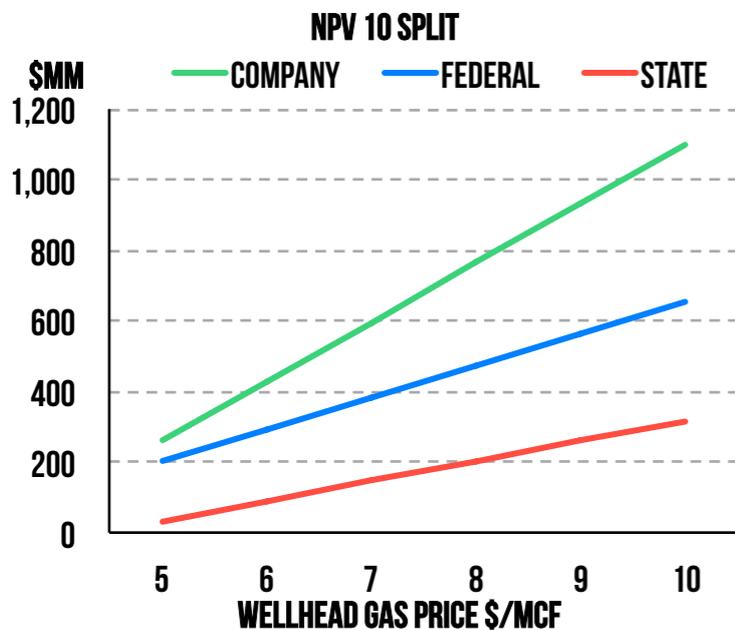
Large upfront investment but un-constrained gas market

Continued drilling lead to a plateau of 130 mmcf/d

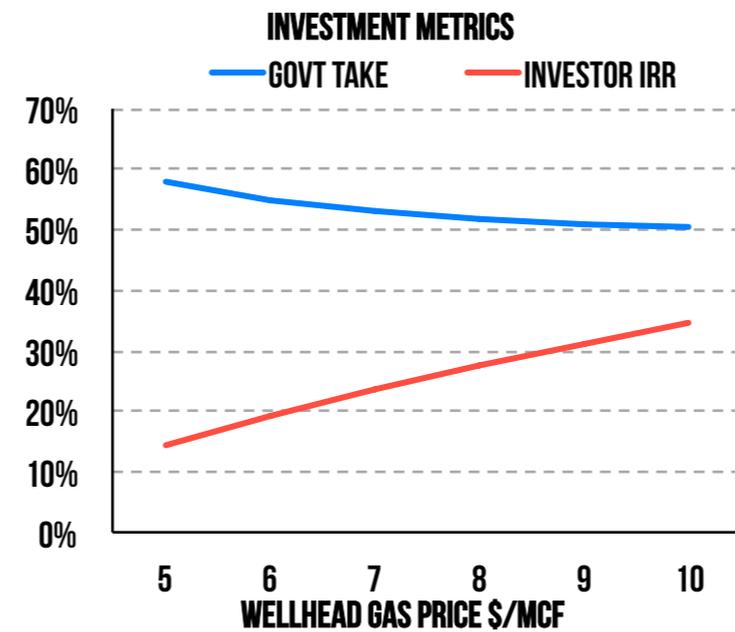
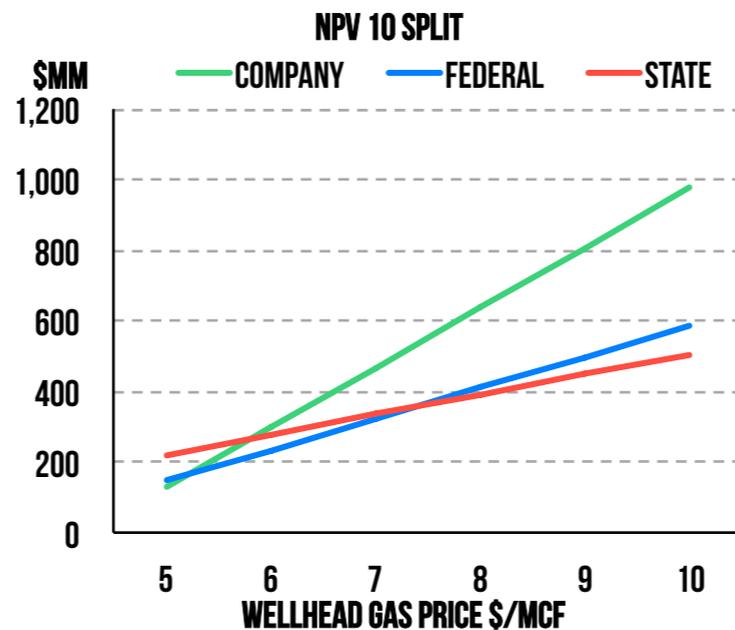


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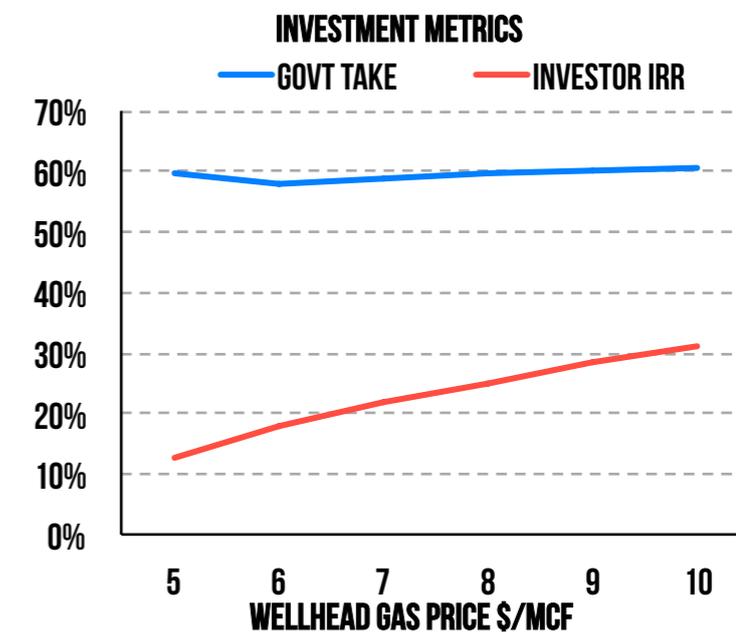
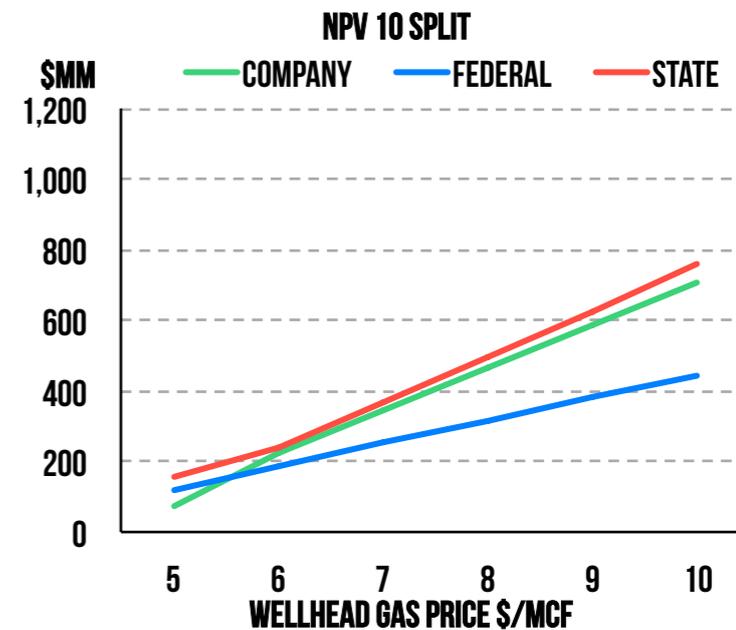
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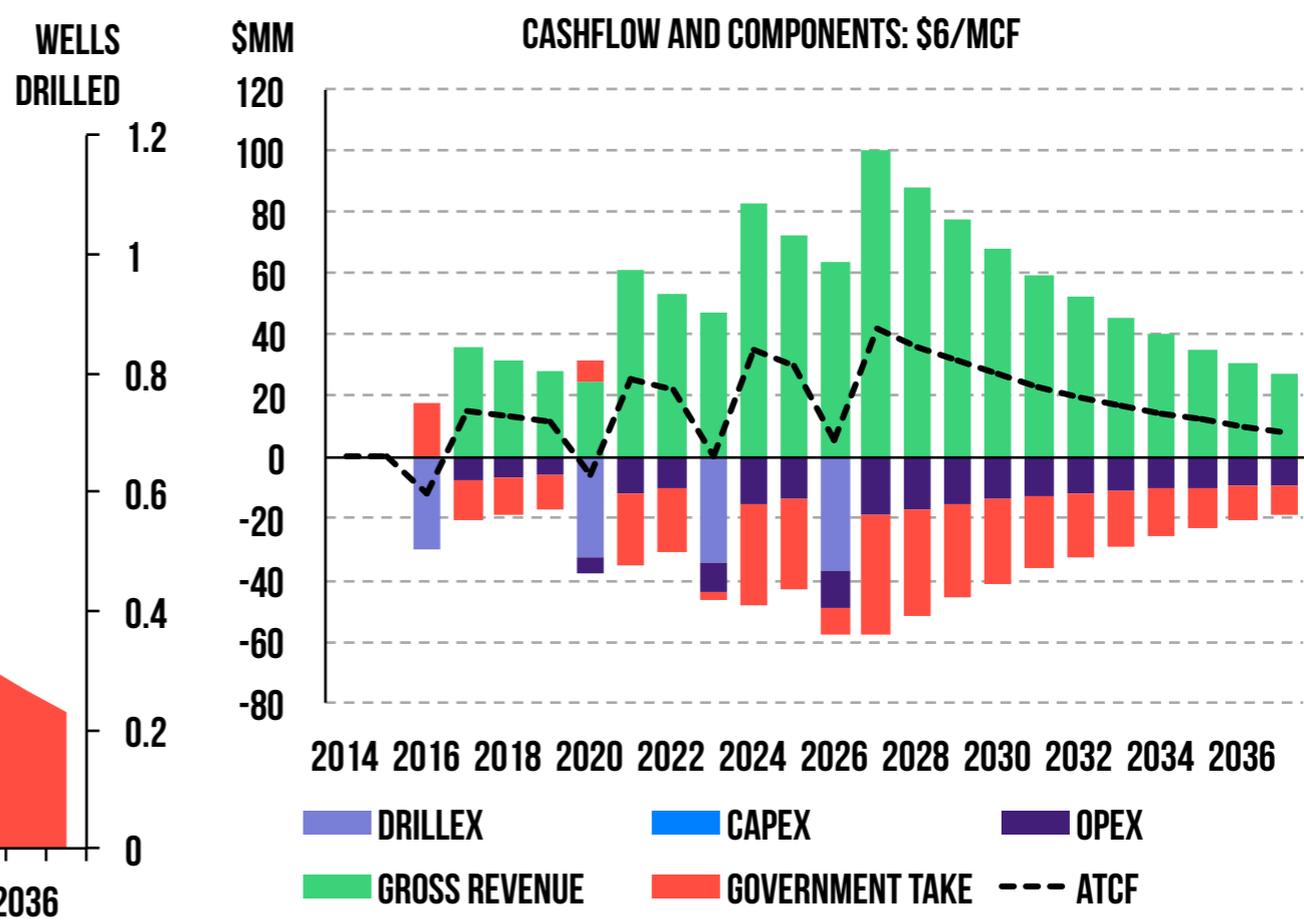
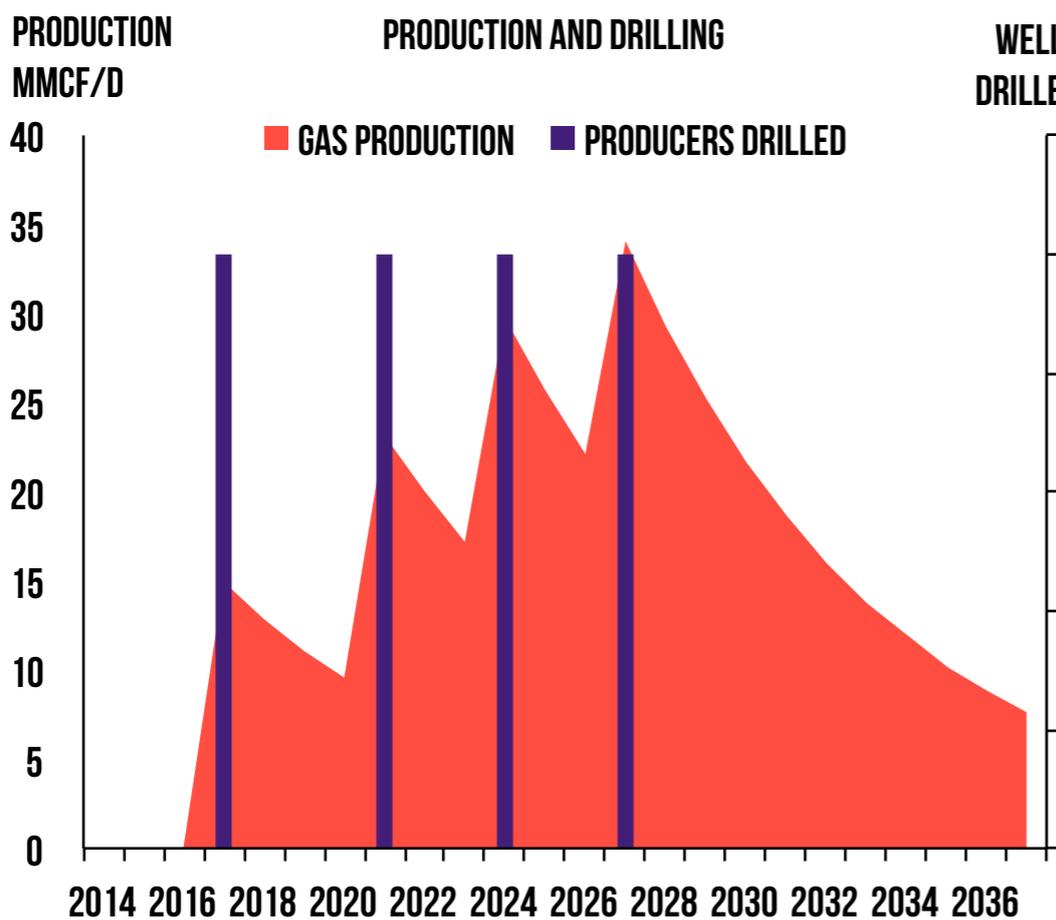


PROJECT #3: DRILLING IN EXISTING FIELD (ASSUMPTIONS)

Drilling expenditures at existing production—smaller upfront investment

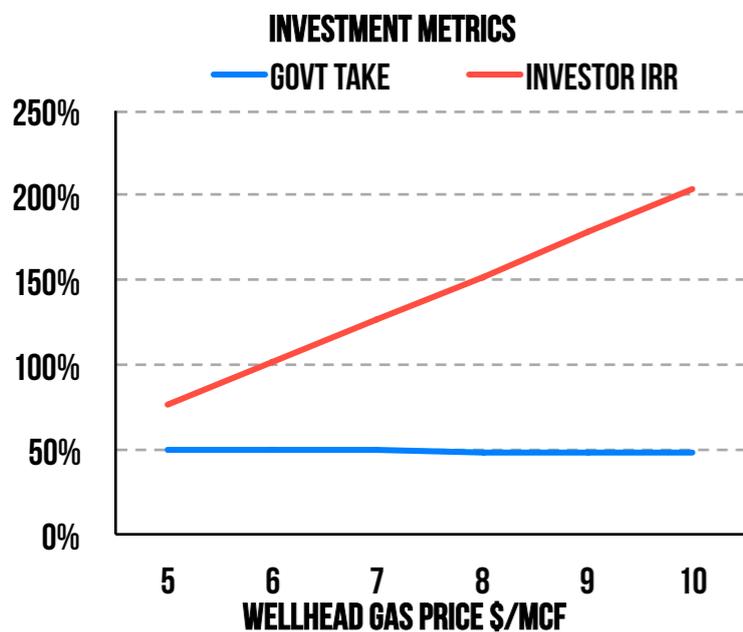
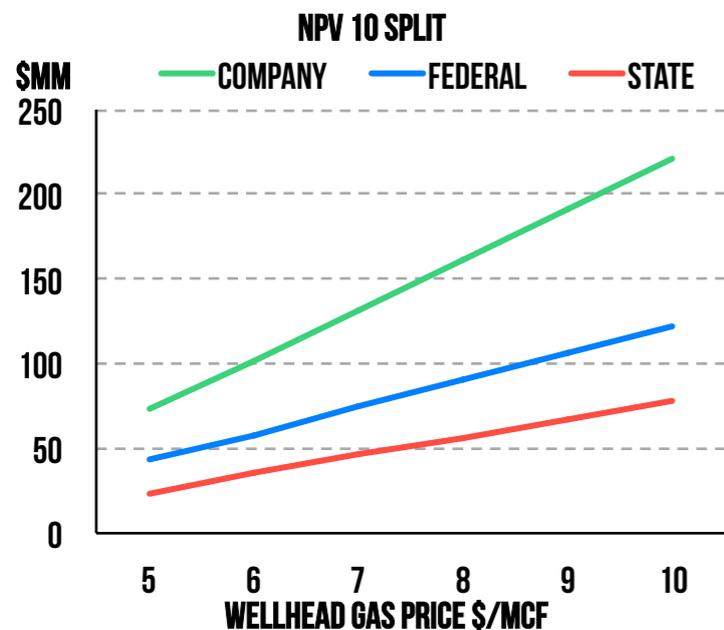
No market constrains assumed

This is a point-forward analysis—it ignores sunk, entry or acquisition costs

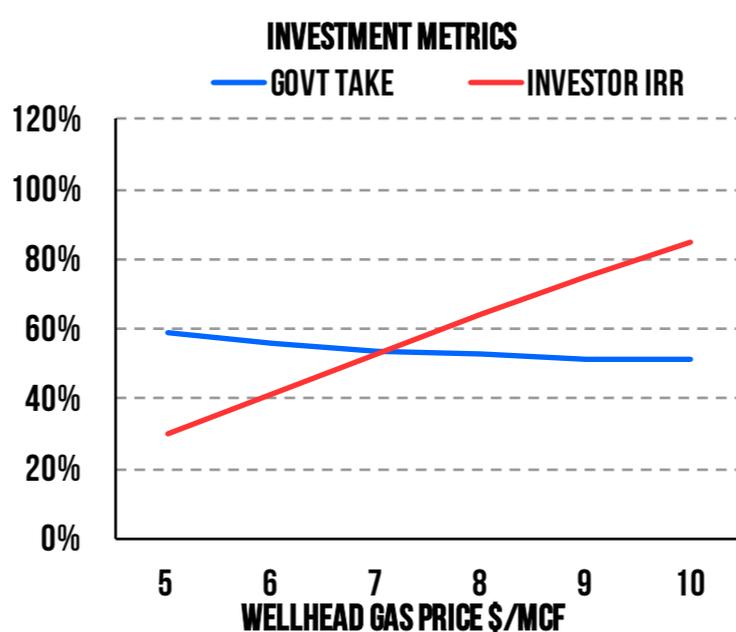
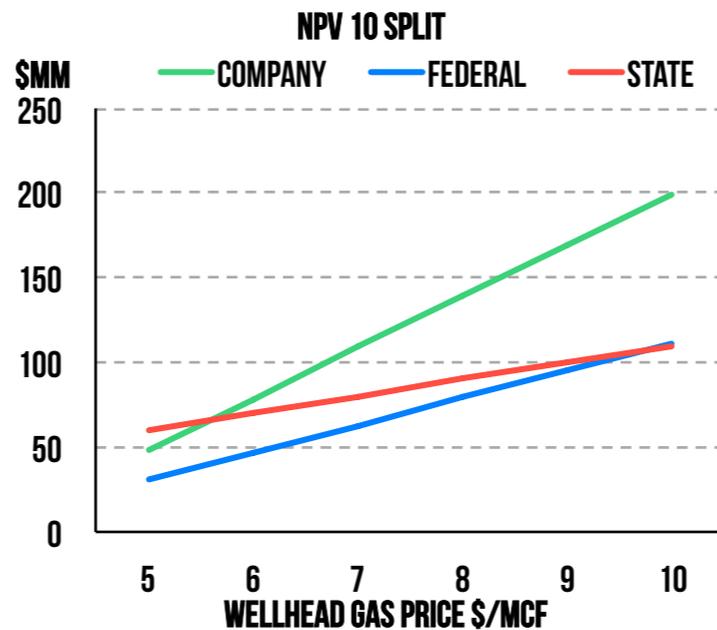


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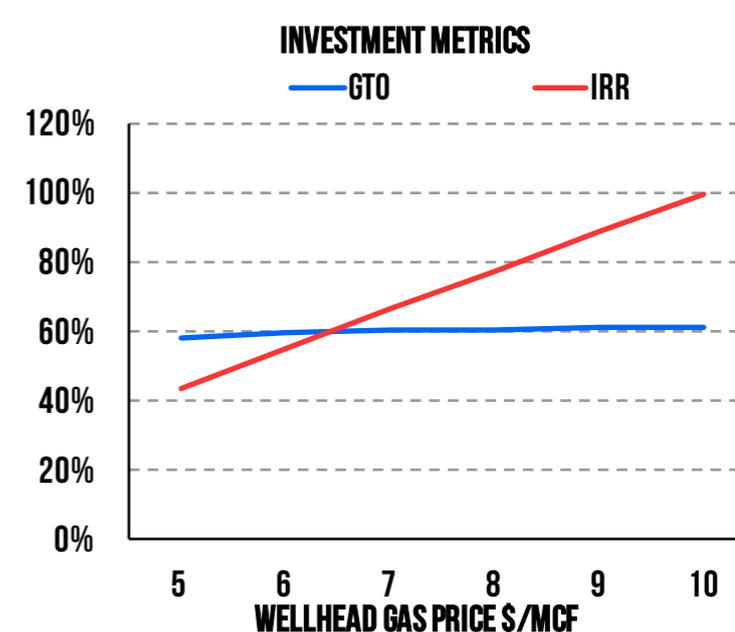
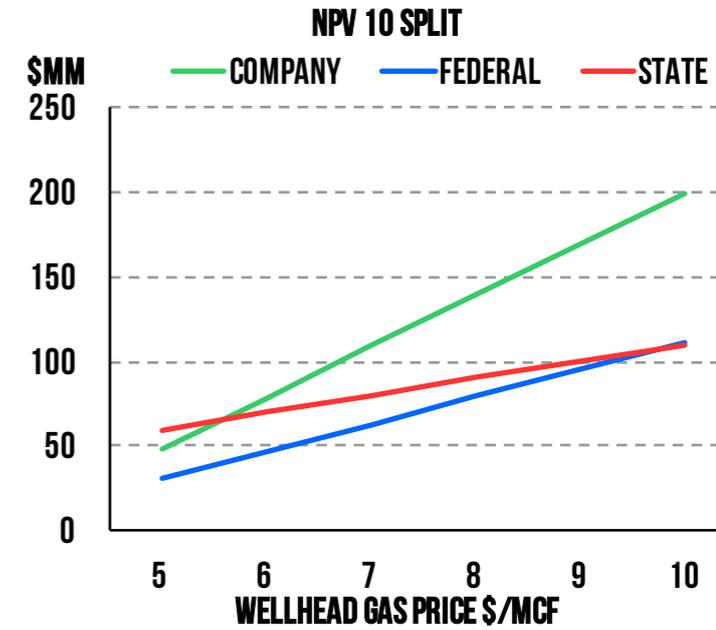
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