



**U.S. Resource Acquisition Strategy  
August 2008 Board Meeting**

Cleanly Unlocking the Value of Coal



# SES Strategy

CHINA



Transportation Fuel

US



\* Transportation Fuel

*\*( No MeOh blending expected )*

U-Gas  
Proprietary

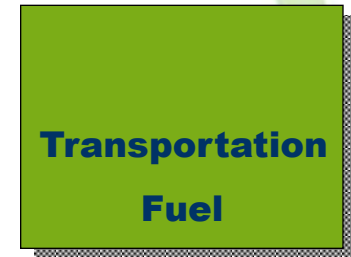
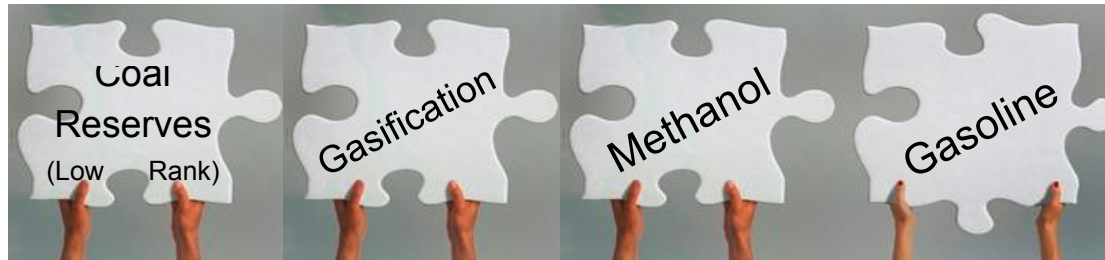
Off – the –  
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# Primary Objective

CHINA



US



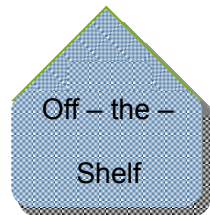
*\* ( No MeOh blending expected )*



- Capture the reserve
- Eliminate transfer pricing
- Capture upside in coal price



Process



Technology



- Proprietary process
- Mitigate chemical hedging risk
- Increased depth of market

- Vertical integration of technologies
- Decreased "time-to-market" with plant standardization.

Strategy confirmation

- Consol
- North American Coal Quintana

- Call with Gov. Barbour's Office and the Gov. Hoeven
- Meeting

Validation

EMRE- MTG

DuPont submits firm offer  
For MeOh offtake

# SES Target Zone



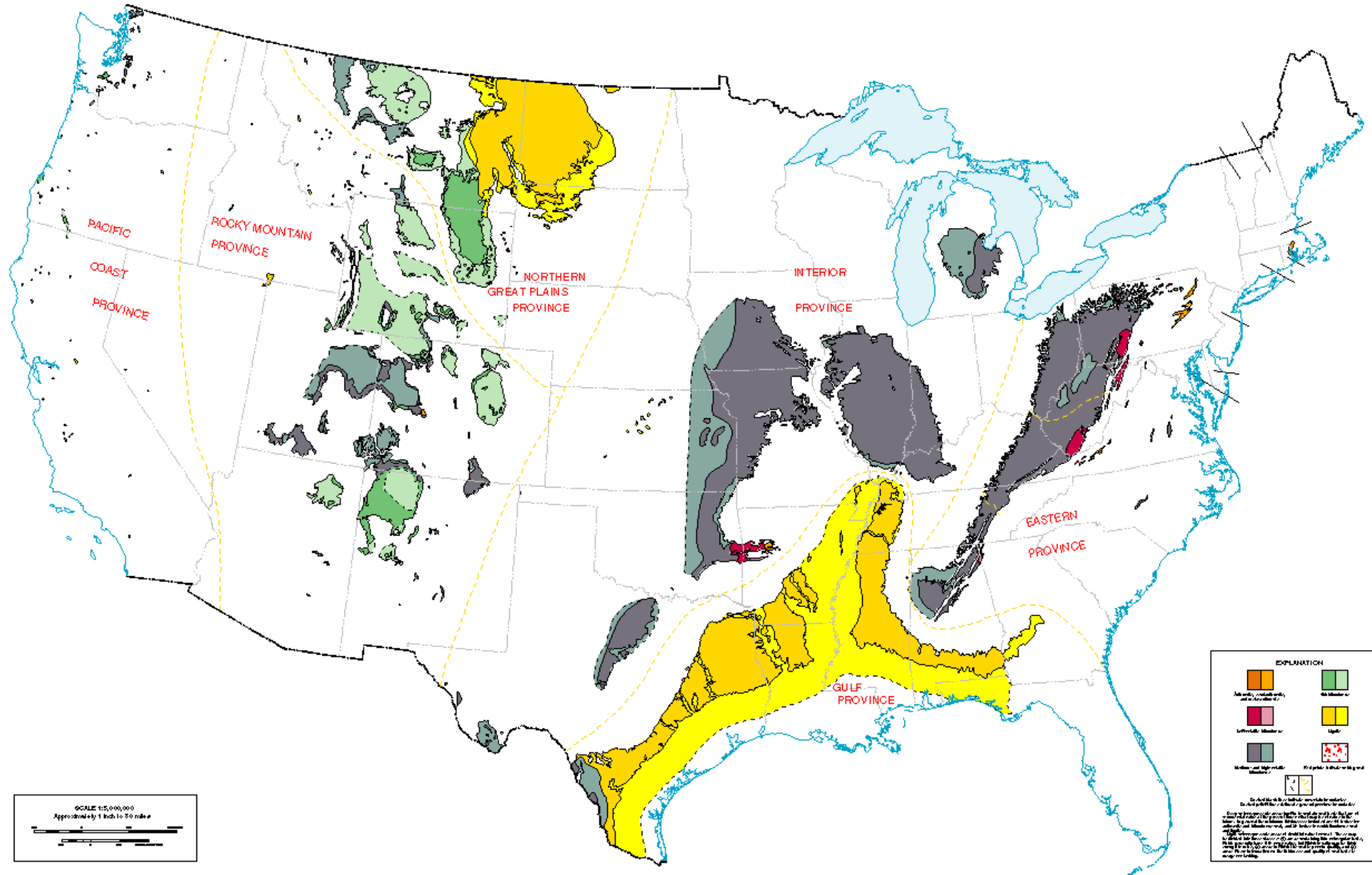
*Bituminous*

*Lignite*

*Sub-Bituminous*

*Anthracite*

# U.S. Coal Basins

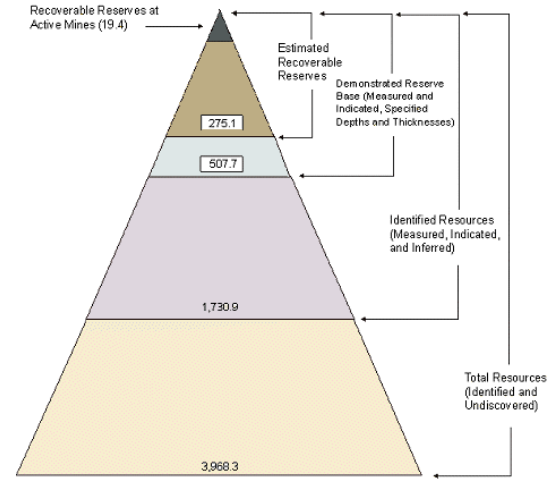


# U.S Coal Facts & Figures

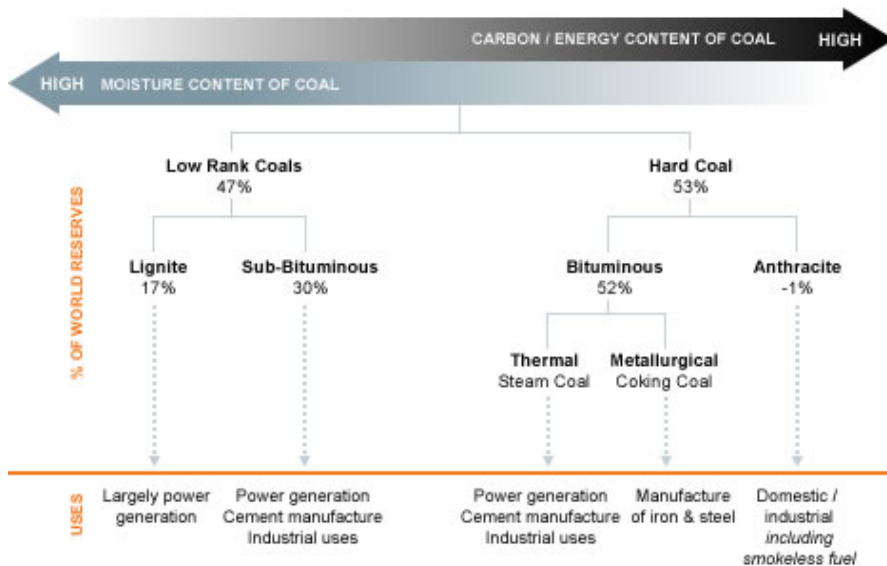
## Coal Reserves & Production

State	Reserve Base (Billions of Tons)	Rank by Reserve Base	2003 Production (Millions of Tons)	Rank by Production
Montana	119.3	1	37.0	6
Illinois	104.6	2	31.6	9
Wyoming	64.8	3	376.3	1
West Virginia	33.5	4	139.7	2
Kentucky	30.6	5	112.7	3
Pennsylvania	27.7	6	63.7	4
Ohio	23.4	7	22.0	13
Colorado	16.4	8	35.8	7
Texas	12.5	9	47.5	5
New Mexico	12.2	10	26.4	11
Indiana	9.6	11	35.4	8
North Dakota	9.1	12	30.8	10
Alaska	6.1	13	1.1	14
Missouri	6.0	14	.1	15
Utah	5.5	15	23.1	12

# Types Of Coals



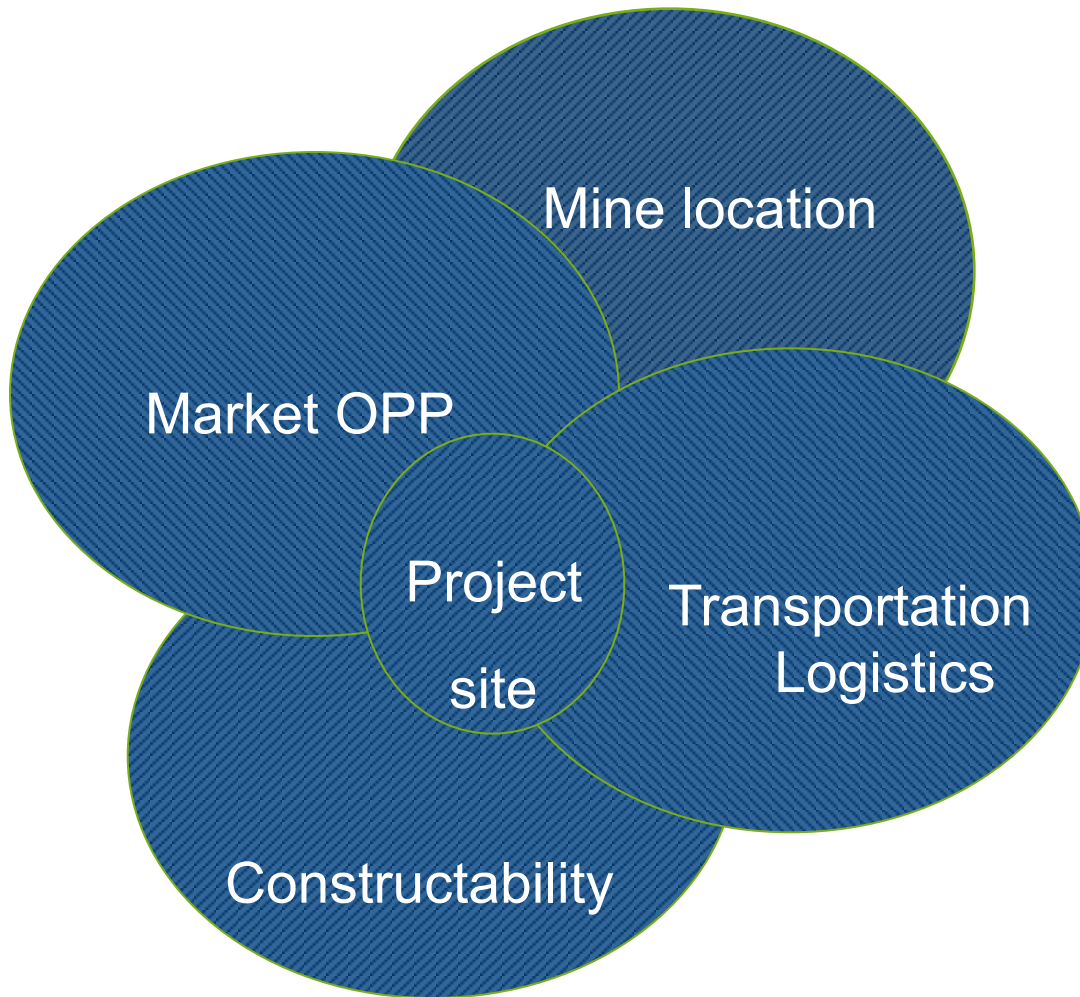
## Types of Coal



# U.S. Coal Reserves = Gasoline



# Location Strategy



# Project Structure

## Resource Owner

## SES

Reserves

Mining Equipment  
Rolling Stock  
Coal preparation

Human Capital

Equity

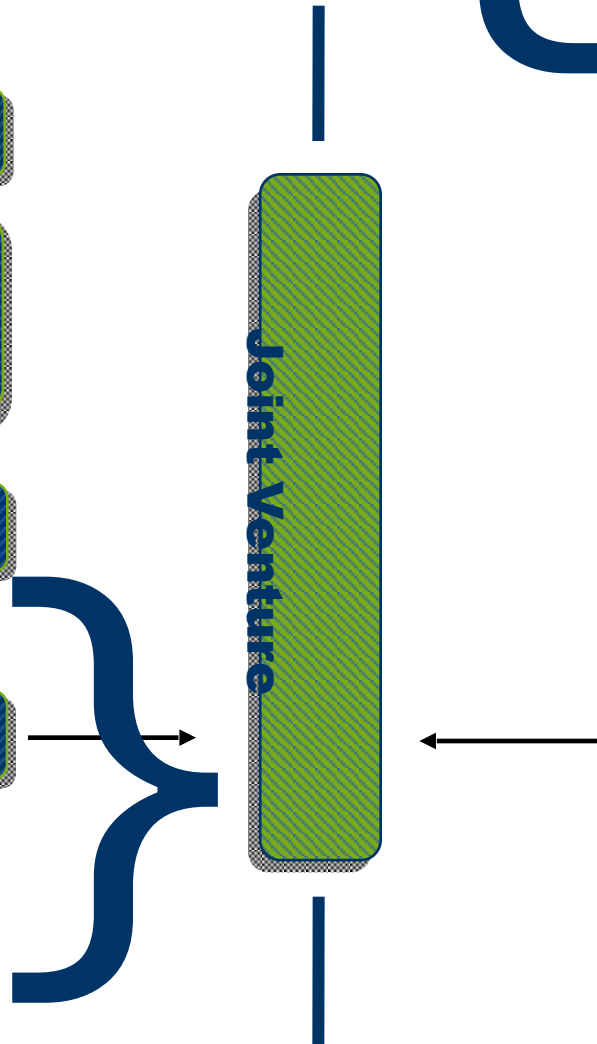
Joint Venture

Technology

Project Development

Human Capital

Equity



Structure provides tangible assets to leverage against and allows SES to monetize intangible assets

# Structural Benefits

- Capture reserves
- Eliminate transfer pricing
- Realize upside fuel price
- Capitalize on the vast quantity of “target fuel”



## Background

- CNX is the largest bituminous coal operator in the US.
- CNX owns or controls 4.5 billion tons of coal reserves and produces approximately 70 million tons per year.
- The majority of CNX’s mining operations are in Northern Appalachia.
- SES and CNX have formed North Appalachia Fuel, LLC to develop a coal-to-gasoline plant at the Shoemaker Mine in Benwood, Marshall County, WV.



## Milestone Review

- Completed Pre-FEED study on coal-gasoline plant
  - Total Installed Cost = \$800 million
  - Time for completion = 3.5 yrs (inc. FEED)
- Ongoing discussions with methanol off-takers (DuPont, Hexion, Southern Chemical Corp.) to hedge revenues.
  - Firm offer from DuPont for MeOH
- Ready to license ExxonMobil’s methanol-to-gasoline process (“MTG”) as primary process.
- Acquired an option to purchase 23 acres and adjacent site (60 acres).
- Joint Venture Company (Northern Appalachia Fuel LLC) operating agreements being completed and NAF staffing plan and budget being developed.
- Big media roll-out of project with Governor Mansion and Senator Rockefeller making the project announce.

# CNX Project – Northern Appalachia Fuel, LLC



## Coal-to-Synthetic Gasoline Projects Economics

### Timetable

Activity	Start	Duration
Project FEED approval	<i>Jun 08</i>	<i>NA</i>
Complete MTG Pre-FEED	<i>Jun 08</i>	<i>2 mths</i>
Licenser Package	<i>Sep 08</i>	<i>3 mths</i>
FEED	<i>Jul 08</i>	<i>10 mths</i>
Early Procurement	<i>Jan 09</i>	<i>24 mths</i>
Detailed Engineering	<i>Mar 09</i>	<i>12 mths</i>
Construction	<i>Aug 09</i>	<i>16 mths</i>
Mechanical Completion	<i>Dec 2011</i>	<i>NA</i>

Capital: \$750 million  
MeOH output: 790K STPY  
MeOH price: \$400 / MT

Year	EBITDA (\$ million)
<b>2012</b>	<b>142</b>
<b>2013</b>	<b>172</b>
<b>2014</b>	<b>204</b>
<b>2015</b>	<b>210</b>

- **Commercial operation in 2012**
- **24.2% after-tax IRR**

## Next Steps:

- Execute Operating Agreements with Consol
- Approve 1<sup>st</sup> Budget & Timeline (thru 2009)
- Execute EMRE “License Rights Agreement” and assign 1<sup>st</sup> MTG License
- Execute SES U-Gas License with NAF
- Begin FEED study on Project

## Next Deliverables:

- NAF’s submittal of permit application(s) – Nov/Dec 2008
- Aker Solutions FEED conclusion – May 2009
- Engage Banker for Project Finance – Q4 2008
- Financial Close – Q2 2009

## *“License Rights Agreement”-Between SES & EMRE*

- Provides SES the right to acquire 15 future MTG license options for SES projects (*Consol or otherwise*)
- 10 year term to execute future licenses
- Fixed License Fee - \$400 per BPD (indexed to PPI), min-\$5.0M

## *“MTG Process License and engineering Agreement”*

- 1st License: 6730 BPD - \$5.0M
- Future license credit of \$1.1M or full credit for expansion
- Payment Terms
  - *25% at signing (\$1.25M)*
  - *25% after delivery of PDP*
  - *25% at mechanical completion (or 4th anniversary)*
  - *25% at the 1st anniversary of startup (or 5th anniversary)*
- L/C required at OpCo (subject to license cancelation)
- License is transferable and cancelable after 2nd payment
  
- *“Process Design Package”* – Estimated at \$3M
- *“Process Guarantee” (under negotiation)*
- 10 Year Term to execute license
- All Regions
- All applications

# EMRE - Total Financial Exposure

## NAF MTG License - \$5.0 M

<i>1st Payment at signing</i>	<i>\$1.25M</i>
<i>2nd Payment after delivery of PDP</i>	<i>\$1.25M</i>

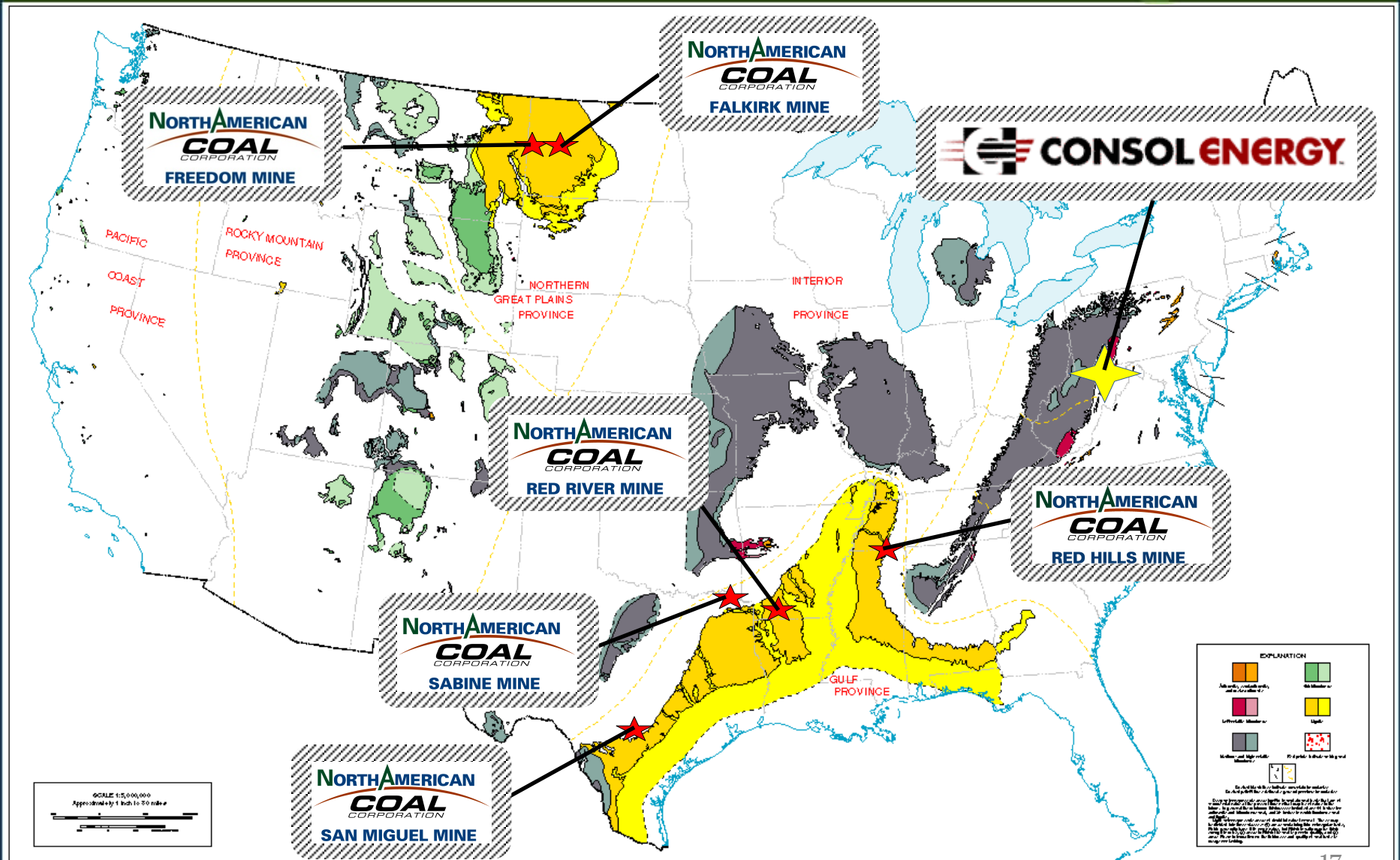
## Agreement can be Terminated or Transferred at this point

<i>3rd Payment - mechanical completion (or 4th anniversary)</i>	<i>\$1.25M</i>
<i>4th Payment - 1st anniversary of startup (or 5th anniversary)</i>	<i>\$1.25M</i>





# North American Coal Locations



## *NYSE:NC*

- Gross Sales \$3.6B
- Enterprise Value \$860M
- Outstanding Shares 8.28M
- 52 wk range \$69-131
- Ave daily Volume 36,000
- P/E 10.11
- EBITDA \$153M

## *Operating Companies*

- North American Coal
- Hyster/Yale Lift Trucks
- HamiltonBeach – Kitchen Collection Housewares

# Projects Considered

## Red Hills Mine, MS

- 3290 BPD Gasoline
- \$562M Project Costs
- 13% IRR
- M&A opportunity around reserves

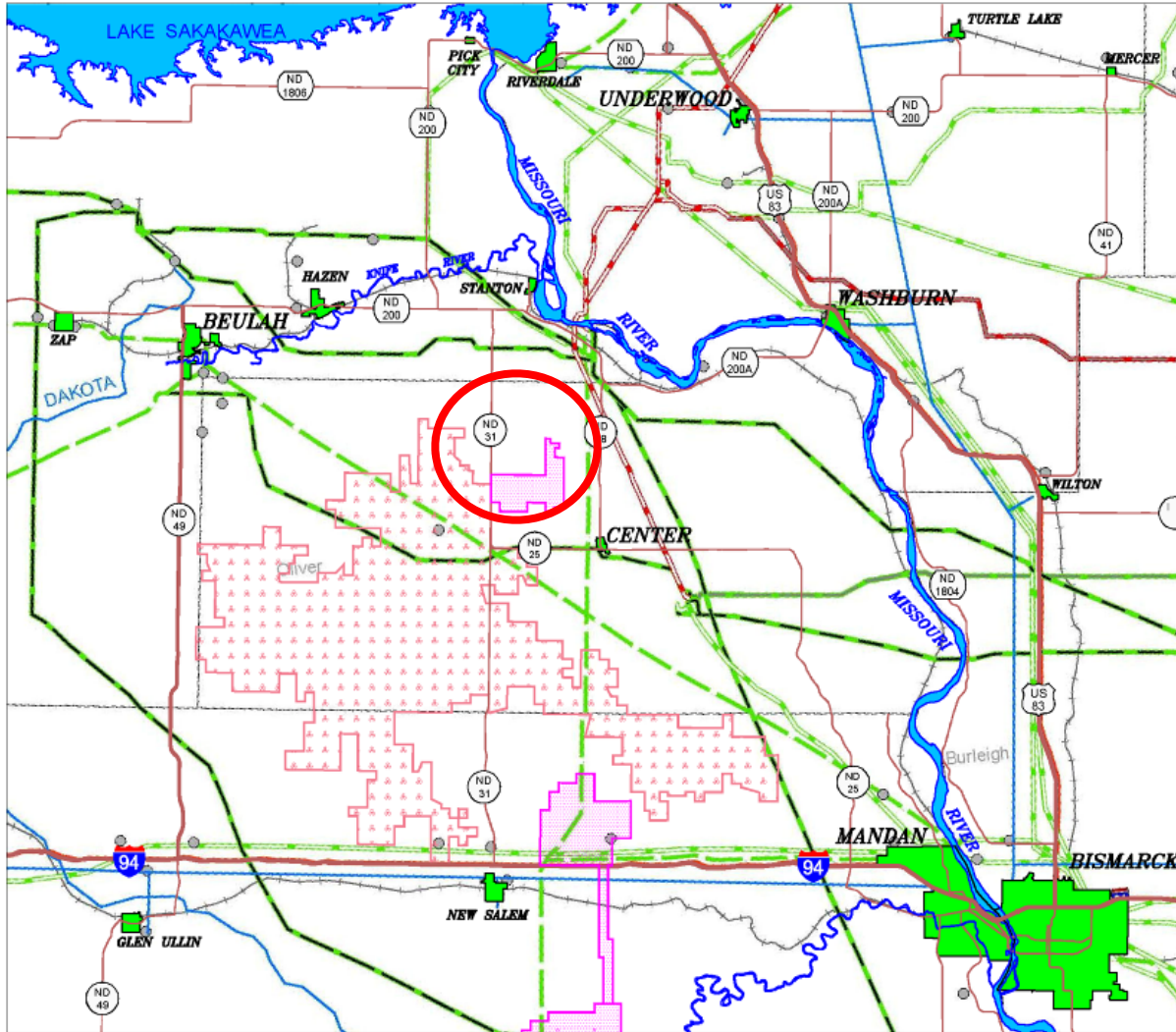
## Falkirk Mine, ND

- 7000 BPD Gasoline
- \$800M Project Cost
- 25% IRR
- No reserves available for contribution into JV

## Red Hills Mine, MS

- 7000 BPD Gasoline
- \$800M Project Costs
- 25% IRR
- Reserves available for contribution into JV
- Incremental 1M tpy coal sales opportunity for power plant could provide early revenue to offset project development costs

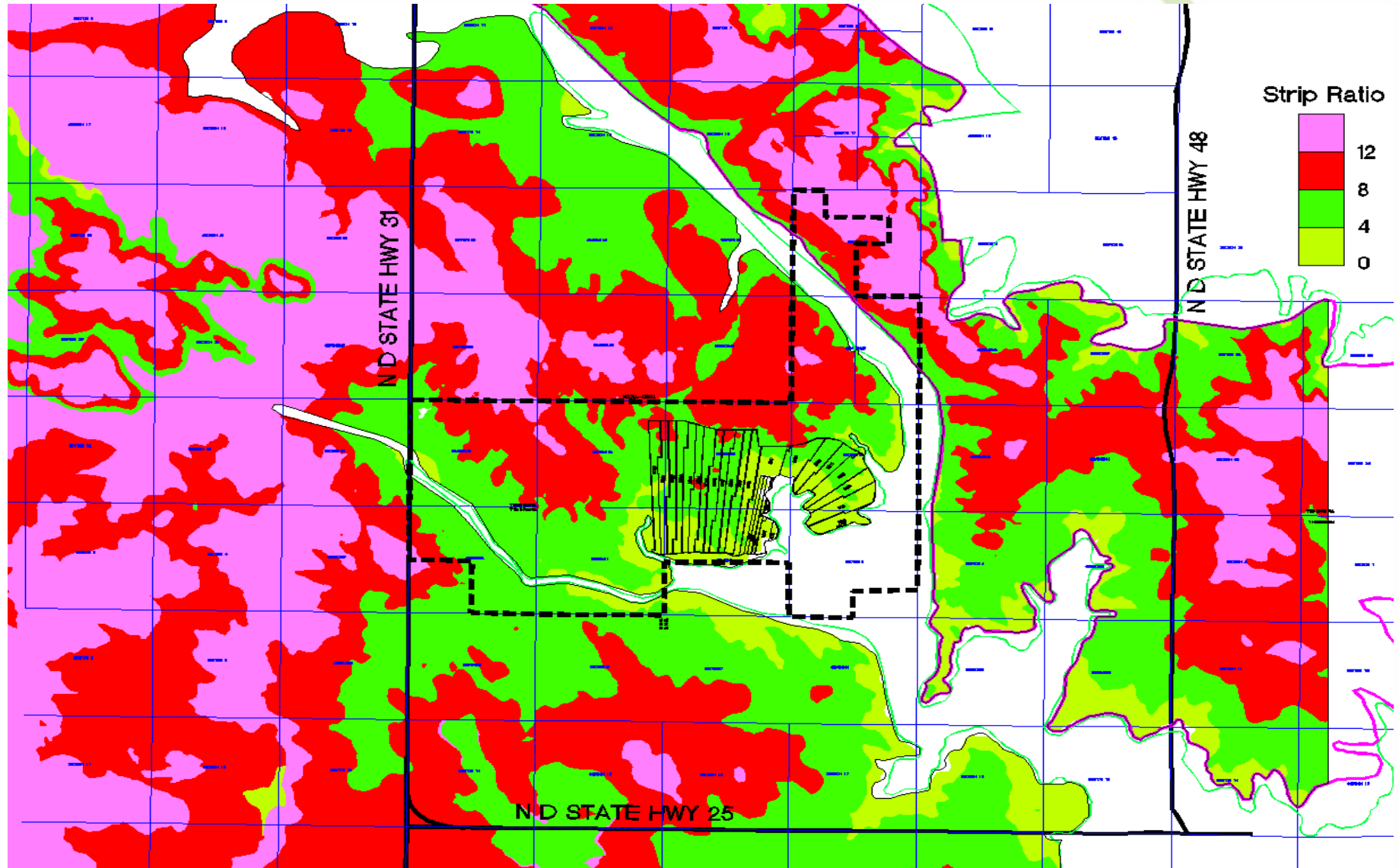
# Otter Creek Mine



## Issues

- NAC is capital constrained
- NAC willing to sell assets in JV
- Good Governmental Support
- “In-State” 3<sup>rd</sup> Party Equity might make sense

# Otter Creek Strip Ratios



# Otter Creek Reserves – North American Coal, North Dakota

## NAC – Otter Creek

Reserves – 700 Tons  
50M tons permitted 2010

Dragline Equipment  
Mining Vehicles  
Production Mgmt  
Environmental Mgmt  
Mine Safety  
~\$90M

3rd Party Equity

Joint Venture

Technology  
~\$20M

Project Development  
~\$15M

3rd Party Equity

Structure provides funds to execute FEED and other project related tasks ~ \$40M

# Otter Creek Mine – CTL Project

## Coal-to-gasoline project economics

### Timetable

Activity	Start	Duration
Project Pre-FEED	Sep 08	2 Mths
Submit for State Economic Support	Oct 08	3 Mths
Mining Permits	Nov 08	9 Mths
FEED	Jan 09	10 Mths
Mining Begins	Aug 09	NA
Detailed Engineering / Construction	Jan 10	30 Mths
First Coal Sales	Jun 10	NA
Plant Operations	Q2/3 – 2012	NA

Capital: \$760M (excluding mining ops)

Gasoline Output: 100M Gals/Yr.

Price: \$2.75 / Gal

Year	EBITDA (\$ million)
2012	142
2013	172
2014	204
2015	210

- Commercial operation in 2012
- 24.2% after-tax IRR

# Otter Creek Mine Statistics – 3.0M tpy

## Structure

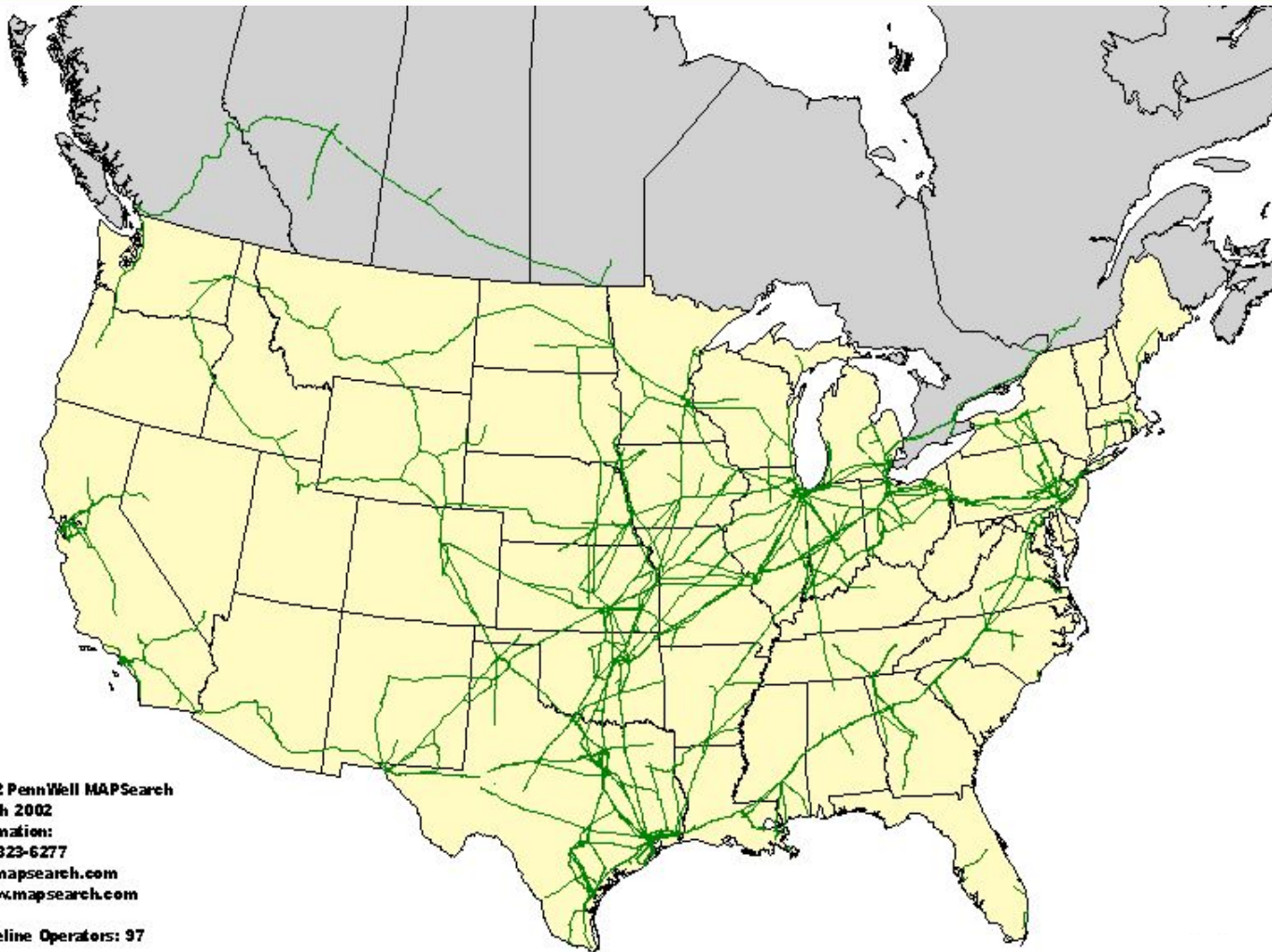
- Overburden Thickness – 69.3 Feet
- Two Coal Seams
  - Upper Seam – Kinneman Creek
    - 6.5 Feet Thick
    - 75% Recovery
  - Lower Seam – Hagel
    - 8.7 Feet Thick
    - 85% Recovery
- Inter-burden Thickness – 1.04 Feet
- Total Coal Thickness – 15.2 Feet
- Effective Strip Ratio = 6.6 : 1

## Delivered Coal Quality

- Sulfur: 0.92%
- Sodium: 2.18%
- BTU: 6,434
- Ash: 9.92%



# Refined Products Pipelines



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Revised: March 2002  
For More Information:  
Phone: 1-800-823-6277  
E-Mail: [sales@mapsearch.com](mailto:sales@mapsearch.com)  
Web Site: [www.mapsearch.com](http://www.mapsearch.com)

Number of Pipeline Operators: 97

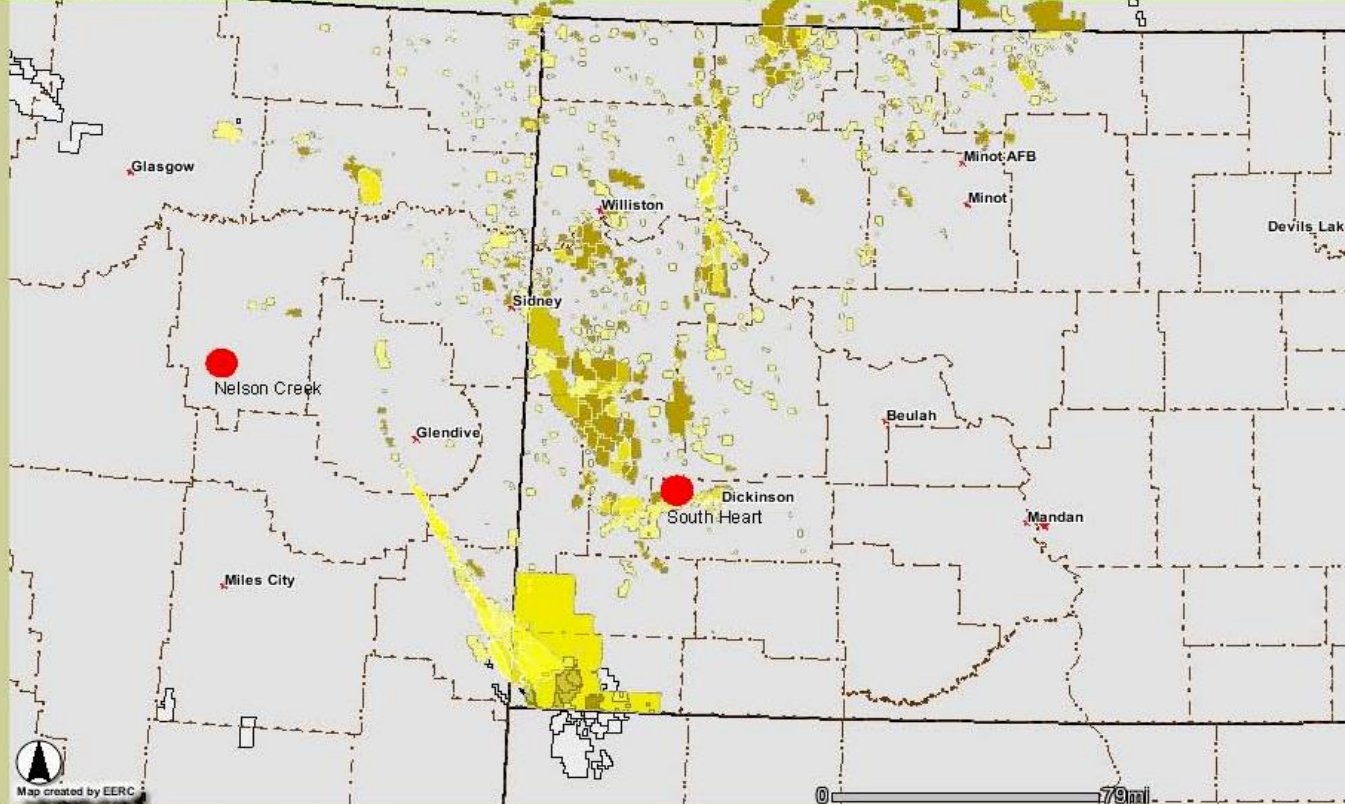
# South Heart CO2 Sequestration / EOR Opportunities



## Plains CO2 Reduction Partnership

Save Bookmark | GIS Help | Metadata

- Overview Map
- Legend/Layer
- Zoom In
- Zoom Out
- Full Extent
- Last Extent
- Pan
- Select
- Buffer
- Clear Selection



**Thematic Maps**  
Oil Fields By EOR Cap (tons)

**Legend**

- Selected Features
- Towns
- > 3,000
- Counties
- State/Province
- Oil and Gas Fields
- No production or NA
- Less than 55,725,000
- Between 55,725,000 and 111,450,000
- Greater than 111,450,000
- Wyodak-Anderson Coal
- 5,045,000,000 tons
- 933,000,000 tons
- 0 tons

Map created by EERC

Active Layer: Oil and Gas Fields

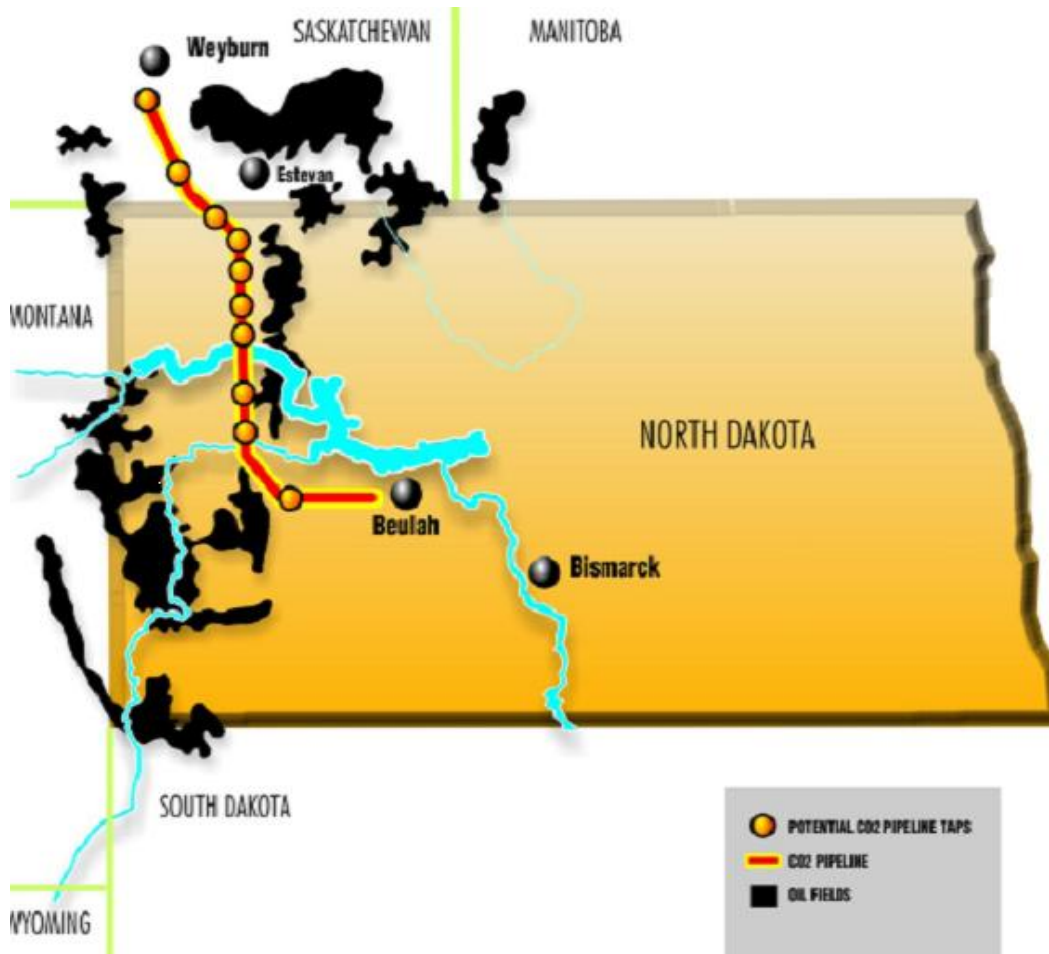
Oil and Gas Field Name | State Prov | Unit Status | Cum. Oil (barrels) | Est Cap Mass  tons | Est Cap Vol  MMcf | Est EOR Cap Mass  tons | Est EOR Cap Vol  MMcf

Total Records: 808    [Next 25](#)   [Display All](#)   [Zoom to selected](#)    EXPORT: [Help](#) | [Fields](#) | [Field Wells](#) | [Field Pools](#) | [Field Pool Drive Mech](#)

Unit Status: M Mixed, U Unitized, N Non Unitized    \* Incomplete Pool Data    Volume conversions are taken at standard conditions 32°F and 1 atm.

Oil and Gas Field Name	State Prov	Unit Status	Cum. Oil (barrels)	Est Cap Mass	Est Cap Vol	Est EOR Cap Mass	Est EOR Cap Vol
Alexander	ND	N	802,589				
Alkali Coulee	MT	N	53,229				
Alkali Creek	ND	N	8,583				
Ambrose	ND	N	1,386,305	2,094,423	34,160	691,622*	11,280*
Amidon	ND	N	19,675				
Antelope	ND	N	40,604,606	90,751,397	1,480,155	47,421,456*	773,444*
Antelope Creek	ND	N	77,912				

# CO2 Pipeline



- 205 Miles
- 14' and 12' carbon steel pipe
- MAOP 2700 *psing* & 2964 *psing*
- Strategically routed through Williston Basin oil Fields

# Possible Larger Transaction

## Acquire North American Coal

- Financing Implications
  - Leveragable
  - Requires some equity issuance
- EPC/Cash Flow Implications
  - Early on – highly accretive
  - Dilutive against “base-case” scenario
  - Potential to significantly “de-risk” SES development plan

## Highlights

- 2 Billion Tons of Lignite Reserves
  - Operates six surface lignite coal mines
  - America's largest miner of lignite coal and the 8th largest coal producer nationwide
  - Operations North Dakota, Texas, Louisiana and Mississippi
  - Existing contracts structured to minimize exposure to fluctuations in coal prices

<b>Revenue (2007)</b>	<b>137.1</b>
Ave Total Capital deployed	<b>177.1</b>
Return on Deployed Capital	<b>19.9%</b>
Net Income	<b>31.0</b>
Debt	<b>109.3</b>
Cash Flow before financing	<b>26.7</b>

2 Billion Tons of Reserves = 100 Billion Gallons Gasoline

# The Great Northern Entities

- **Great Northern Properties**
  - Former railroad land grant lands
  - Nation's largest private coal owner
  - 20 billion tons of identified and mineable coal
  - ~ 5 million mineral & ~ 200,000 surface acres

- **Natural Resource Partners (NRP) and Appalachian and Illinois Basin Coal Reserve Holders**
  - Great Northern Power Development –coal gasification project developer
  - Over 75 MMTY mined on all affiliated companies
  - Quintana Energy Partners - \$650 million private equity fund –natural resource/energy based

## Major Holders of Recoverable U.S. Coal Reserves

	Estimated Reserves (billion short tons)
<b>1. U.S. Government</b>	<b>88.0</b>
<b>2. Great Northern Properties LP</b>	<b>20.0</b>
<b>3. Peabody Energy Corp.</b>	<b>8.2</b>
<b>4. CONSOL Energy Inc.</b>	<b>4.422</b>
<b>5. Arch Coal, Inc.</b>	<b>2.9</b>
<b>6. The North American Coal Corp.</b>	<b>2.4</b>
<b>7. Massey Energy Co.</b>	<b>2.3</b>
<b>8. Natural Resource Partners LP</b>	<b>2.1</b>
<b>9. Pocahontas Land Corp. (Norfolk Southern)</b>	<b>1.73</b>
<b>10. Murray Energy Corp.</b>	<b>1.685</b>
<b>11. Foundation Coal Company</b>	<b>1.585</b>
<b>12. Rio Tinto Energy America</b>	<b>1.4</b>
<b>13. Luminant Mining (formerly Peabody Mines)</b>	<b>1.3</b>
<b>14. Patriot Coal Corp (formerly Peabody Mines)</b>	<b>1.263</b>

➤ **Nelson Creek Mine-Mouth Lignite**

➤ **S. Heart Mine Mouth Lignite**



## Background

- Owned by Koch Industries
- Flint Hills Resources Refining Complexes
  - North Pole, Alaska
  - Rosemount, Minnesota
  - Corpus Christi, Texas (Corpus Christi)
- Combined Crude Oil Processing Capacity      800,000 bpd of crude oil

## Problem

- The refinery's energy costs are heavily dependent upon the value of ANS crude. Increases in crude value have created a potential opportunity to diversify the refinery's energy supply by supplying coal-based energy. FHR is currently paying \$15/mmbtu to fuel furnaces.

## Solution

- Install air-blown gasification at ~\$6/mmbtu and share in the savings

# FHR – High Level Economics

## Refinery Re-Powering

### Timetable

Activity	Start	Duration
Project Pre-FEED	Sept 08	2 mths
FEED	Jan 09	8 mths
Detailed Engineering/ construction	Nov 10	20 mths
Plant Operations	Q1 - 2012	NA

Capital: \$300M  
SynGas: 1000 mmbtu/hr

Year	EBITDA (\$ million)
2012	40-45

- Project is being pursued on a “work-for-hire” basis eliminating development risk

- **[Process drawing]**