



Gasification Technologies  
Conference

*October 2006*

Kenai Blue Sky

# Project Summary

The Agrium logo is located in the bottom right corner of the image. It features a stylized green 'A' followed by the word 'grium' in a white, serif font.

# Who is Agrium?



## **Agrium is a leading global fertilizer company:**

- **Wholesale Production Business**
  - Global Fertilizer Production
  - 12 Production Facilities in Three Countries
- **Retail Distribution Business**
  - Largest Agricultural Retailer in the United States
    - Over 500 Stores in 31 States
  - Over 30 Stores in South America
- **7,000 employees worldwide**
- **Agrium in Alaska**
  - One of the largest manufacturers in Alaska
  - Facility constructed in 1968 and expanded in 1977
  - Agrium purchased the Kenai Nitrogen Operations (KNO) from Unocal in 2000
  - 1.2 million tonnes of nitrogen sold into Pacific Rim markets annually



# Agrium KNO Markets



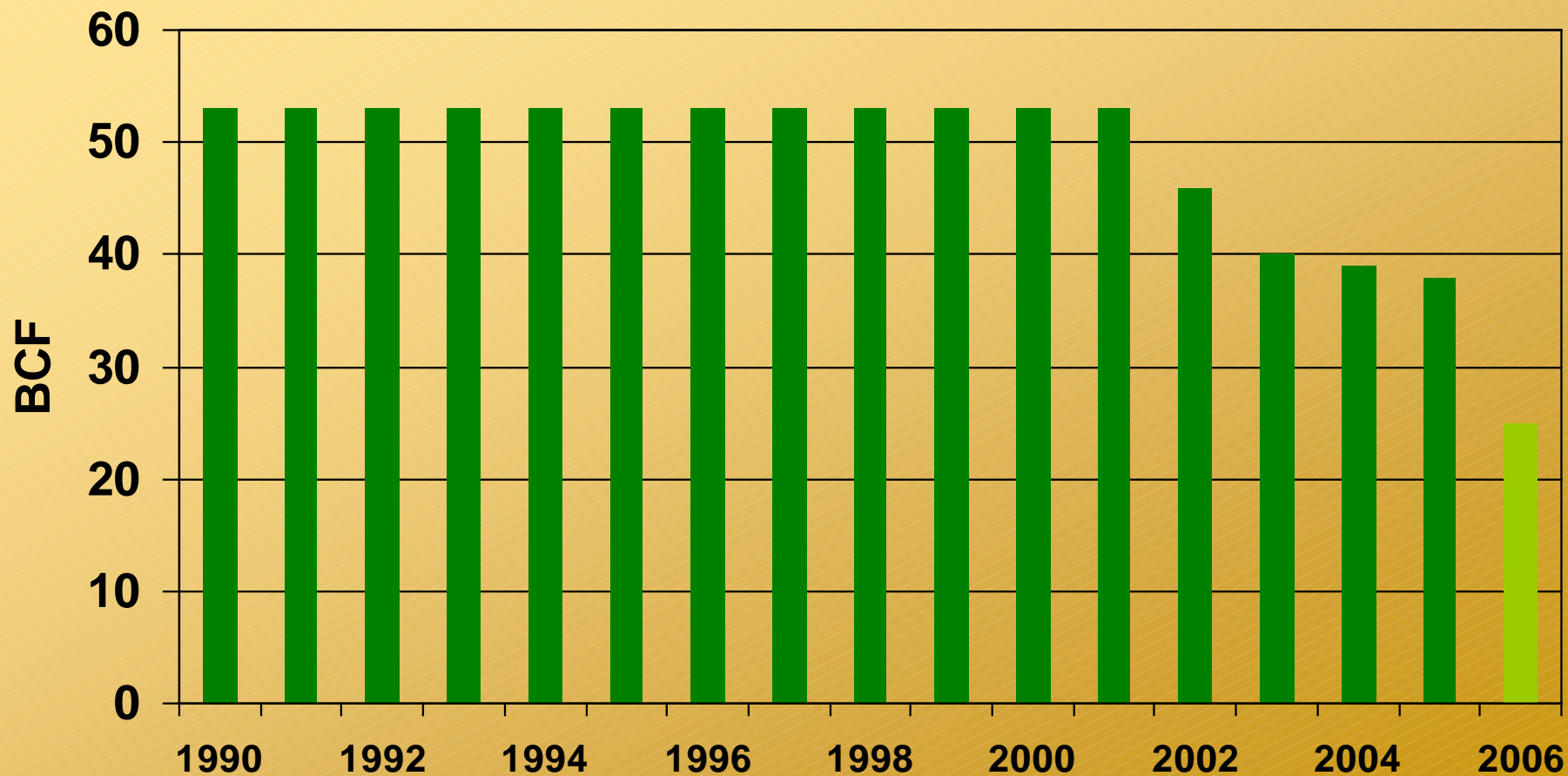
# Cook Inlet Gas Supply & Demand



- **Declining Supply**
  - Large reservoirs depleted
  - Historic pricing structure did not promote exploration
- **Increasing Demand**
  - Electric Power Production
  - Commercial and Residential Uses
    - Electrical
    - Heating
- **LNG Export**
  - LNG exports to Japan



# Kenai Nitrogen Operations (KNO) Gas Consumption



# Blue Sky Project Drivers



- **Severe decline in Cook Inlet natural gas supplies**
- **Agrium operations may close October 31, 2007 due to lack of natural gas feedstock**
  - Facility currently operating at 50%
  - No supply secured beyond October 31, 2007
- **Post-2007 operations are year to year, subject to short-term natural gas contracts**
- **Agrium KNO shutdown impact on Alaska**
  - 230 Direct jobs eliminated
  - 420 Indirect jobs eliminated
  - Substantial tax base of Kenai Peninsula Borough eliminated



# Blue Sky Project Drivers (cont.)



- **Project capitalizes on long-term supply of low cost coal in Cook Inlet.**
- **Abundance of compelling project components**
  - Second largest nitrogen manufacturing complex in North America
  - Alaskan market demand for low cost power alternative
  - 13 Cook Inlet oil fields may produce an additional 300 million barrels through CO<sub>2</sub> enhanced oil recovery
  - Additional market opportunities
- **Strong Federal and State Support**
  - U.S. Department of Energy Studies
  - \$5 million from State of Alaska
  - \$2 million from Denali Commission



# Location of Blue Sky Project



# Kenai Industrial Area



# Feasibility Study Process Configurations



- **Alaskan Coal**
  - 7,650 BTU HHV / lb as-received
  - 27%w moisture, 10%w ash, 0.13%w sulfur, as-received
- **Shell Coal Gasification**
- **Gas Treating Options**
  - Rectisol & Nitrogen Wash
  - Genosorb & PSA
  - MDEA & Methanation (existing equipment)
- **Power Generation Options**
  - Combined Cycle
  - Combustion Turbine & HRSG
  - Subcritical PC Boiler(s)



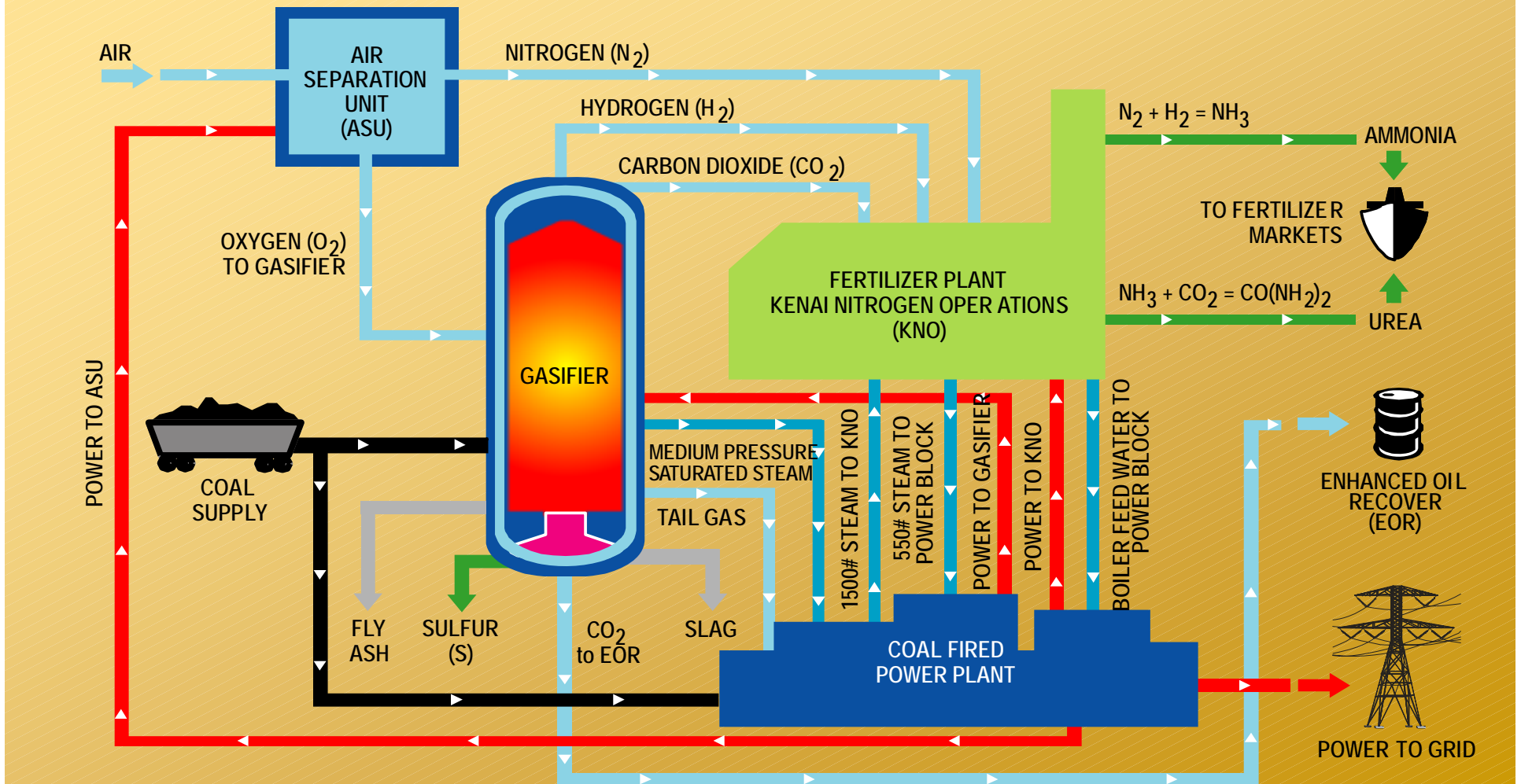
# Feasibility Study Plant Capacities



- **Coal**  
7,000 to 15,000 mtpd as-received
- **Ammonia**  
2,000 to 4,000 mtpd gross  
320 to 2,100 mtpd net to sales
- **Urea**  
3,200 to 5,100 mtpd to sales
- **Electricity**  
55 to 240 MW net to sales



# Project Components



# Feasibility Study

## Selected Configuration



- **Coal Use**
  - 4,750 mtpd to Gasification
  - 3,920 mtpd to PC Boiler
  - 8,670 mtpd total
- **Gas Treating**
  - MDEA & Methanation (existing equipment)
- **Products**
  - 2,600 mtpd ammonia, gross
  - 917 mtpd ammonia, net to sales
  - 3,200 mtpd urea to sales
  - 62 MW net electricity to sales



# Project Approach



- **Phase 1** Feasibility Study Completed by Black&Veatch and Uhde
- **Phase 2** – Front End Engineering Design (FEED) Package and Permitting
- **Phase 3** – Detailed Engineering and Final Permitting
- **Phase 4** – Construction and Startup



# Conclusions



- **Phase 1 Feasibility Study Shows Viable Project**
- **Phase 2 – Front End Engineering Design (FEED)**
  - Engineering will begin very soon
  - Coal & Power Partnerships developing
  - Screening strategic gasification partners
- **Capital Cost and Coal Cost are Key**





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