OSD Clean Fuels Initiative
Total Energy Development (TED)
Overview

Total Energy Development
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DoD Concerns

• By 2025 the US will import 70% of crude oil – half from possibly unstable sources
• Has the world’s oil supply peaked?
• Demand competition from China & India
• US refineries are concentrated in vulnerable, coastal mega-complexes
• Domestic environmental regulations waivers may not be renewed for US-based equipment
• Activities of deployed forces may be curtailed by environmental issues
Problem Statement
~ Rising Fuel Costs ~

Fuel Costs Have Risen Dramatically to $1.74/Gallon (+91%)!
Possible Solutions

• Use indigenous feed stocks to produce ultra-clean, low cost fuel through new technology
• Integrated Gasification Combined Cycle power + fuel/chemicals = Polygeneration
• In-situ and surface retort of oil shale
• Secure, distributed production in center of country
• Reduce reliance on high cost/volatility of imported crude
• Low cost feedstocks: coal, petroleum coke, heavy oil, biomass + Predictable, cost -effective “manufacturing” = Long-term fuel price stability + Affordable budgets
US Energy Resources

Domestic Resources

- 1 trillion barrels (shale)
- 800 billion barrels of FT (coal)
- 0.2 billion barrels (pet coke)
- 23 billion barrels oil reserves
- 32 billion barrels of oil (EOR)
- Total 1.9 trillion barrels
Fischer-Tropsch Fuel Technology
No Sulfur – Low NOX – Reduced Particulate

Natural Gas
Coal
Pet Coke
Biomass

Synthesis Gas Production

Oxygen Plant

Air

CO
H₂

O₂

Hydrogen Separation

An Option

FT Liquid Synthesis

Product Recovery

Power Generation

Tail Gas

Wax Hydrocracking

Liquid Fuels

Wax

H₂

Hydrogen Recovery

H₂

Transportation Fuels

Liquid Fuels
Energy Policy Act H.R.6 Sec 369

• Declaration of Policy – Congress declares that it is the policy of the United States that

United States oil shale, tar sands, and other unconventional fuels are strategically important domestic resources that should be developed to reduce the growing dependence of the United States on politically and economically unstable sources of foreign oil imports
H.R.6 Sec 2398a Procurement of Fuel Derived from Coal, Oil Shale and Tar Sands

• (a) …The Secretary of Defense shall develop a strategy to use fuel produced, in whole or in part, from coal, oil shale, and tar sands …to assist in meeting the fuel requirements of the Department of Defense …

• (b) Authority to Procure – The Secretary of Defense may enter into 1 or more contracts …to procure a covered fuel to meet 1 or more fuel requirement of the Department of Defense

• (c) Clean Fuel Requirements – A covered fuel may be procured under subsection (b) only if the covered fuel meets such standards for clean fuel produced from domestic sources…

• (d) Multi-year Contract Authority – Subject to applicable provisions of law, any contract or other agreement for procurements of covered fuel under subsection (b) may be for 1 or more years at the election of the Secretary of Defense
Total Energy Development (TED)  
Basic Mission

- DoD needs **300,000 bbl/day** of domestic jet fuel
- Plants: cost **$2+ billion** each – **5 Years** to build
- Launch **first plant by 2011** – **Build10 by 2021**
- Examine all indigenous hydrocarbons sources
- BUFF Program - **fuel specification** and testing
- Collaborate with Depts. of: Energy, Interior, Transportation + EPA, OMB & GAO - **MOU**
- **Cooperate** with state governments (PUC/EPA)
- Plan/Launch DoD Fuel Procurement Program IPT
- Polygeneration **program viability**, due diligence
- Performance finance incentives with low budget scoring
Bridging the Valley of Death
Industry Program IPT

Additional S&T in DoD and DOE

Industry Programs

Technology Development

Technology Deployment
Bridging the Valley of Death
Industry Program IPT

Additional S&T in DoD and DOE

Technology Development

Certification and Demonstration

Issue Long Term Contracts
Invest in Plants – Title 3
Price Incentives
Tax Incentives
Loan Guarantees
Secured Loans
Lines of Credit
Direct Investment
Siting and Permitting
Incentives/long term off takes
Direct Investment

Technology Deployment

Industry Programs

DOD

Congressional

DOE

State and Federal Agency IPT

State

Catalyze the Construction of the First Six Plants