SLIDES: Costs and Benefits of Development: An Industry Perspective

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THE PROMISE AND PERIL OF OIL SHALE  
COSTS AND BENEFITS OF DEVELOPMENT  
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AN INDUSTRY PERSPECTIVE  

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Disclaimer – the views presented are the authors views, and not the views of any one industrial firm or of the National Oil Shale Association as a whole.
INTRODUCTION

- **The Promise and Peril of Oil Shale**
  - There is no oil shale industry, and never has been one in the U.S.
  - Only a huge resource and the potential for making its development economic and sustainable
  - May never be an industry

- **Technology is the Key**
  - Continuing current R&D&D is important

- **Misconceptions Abound**
  - E.g. Inferior hydrocarbon resource, federal leasing unnecessary, social impacts are all negative

- **Stigma of Black Sunday**
WHAT HAS CHANGED SINCE BLACK SUNDAY

- No Federal Government funding or rush to meet federal production mandates
- Evolution of technologies and environmental mitigation strategies and stricter regulations
- Focus on insitu technologies in the deep Piceance Basin of Colorado and need for Federal Resources in that region
- Successful commercialization of surface technologies developed abroad
- Deliberate and expensive private research, development and demonstration programs
WHY IS INDUSTRY INVESTING $MILLIONS ON R,D&D

- Long term profit potential
- New technologies with the potential of competing with conventional petroleum
- Proven non-U.S. oil shale technologies that provide less technical and investment risk
- Huge & well defined domestic resource with no discovery risk or offshore political risk
- Potential to add $billion to assets if projects are economically viable
- Potential for small commercial operations
Some allege no progress is being made on R,D&D leases.

Leases were issued by BLM in 2007 - 10 year leases.

State and BLM requirements:
- 4-quarters of hydo data
- Detailed development plan
- Permit approvals
- Reclamation bonding

Example - AMSO has all permits to begin work.

Other projects are also moving ahead.
Historically oil shale has been more expensive than conventional oil & gas production.

Detailed cost estimates were performed by developers in the 1970’s but they are of little use today.

Current R&D and D is focused upon improving economic return, reducing investment risk, and proving environmental mitigation strategies.

Estimated costs of shale oil production range from $20 to around $80 per barrel depending upon the technology and level of project maturation.

Initial demonstration plants are needed to define costs and technical parameters.
OIL SHALE BENEFITS FOR THE PUBLIC

- Revenues from taxes, royalties and fees
- High paying jobs
- Infrastructure improvements
- Long lived industry/large reserve base
- Security of oil supply
- Potential to drive down gasoline prices long term

Battlement Mesa, Colorado – a town built for oil shale development in the 1980’s
OBSTACLES FACING INDUSTRY

- Technical
  - Few commercially demonstrated technologies – long lead times
- Political
  - Federal and regional opposition, and stigma of 1980’s collapse
- Environmental
  - Carbon management, water, air & wildlife issues have technical solutions that will be expensive
- Regulatory
  - Limited access to federal oil shale resources
- Social & Economic
  - Social benefits obscured by external emphasis upon impacts
- Investment Risk

Estonian Oil Shale Plant
SUMMARY AND CONCLUSIONS

- Petroleum is becoming harder to find and more expensive.
- 94% of the U.S. transportation system runs on liquid fuels made from petroleum.
- Oil shale is one of the U.S. domestic energy resources that can reduce the societal cost of increasing oil importation.
- A balance between public costs and benefits is the desired end result.
- Technology is the key to whether oil shale will in the end become competitive with petroleum.

94% of Transportation Fuels in the US come from Petroleum.

National Oil Shale Association
www.oilshaleassoc.org
CONTACT INFORMATION

NOSA IS A NOT-FOR-PROFIT ORGANIZATION THAT STANDS FOR RESPONSIBLE DEVELOPMENT OF U.S. OIL SHALE TO BENEFIT THE LONG TERM ENERGY NEEDS OF THE NATION.

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Enshale

*BLM R,D&D Lease Holder

Shell Mahogany Project Freeze Wall 2009

National Oil Shale Association
www.oilshaleassoc.org
ADDITIONAL OIL SHALE PROJECTS

- Schlumberger
- AuraSource
- Quasar Energy LLC
- Percy Kean Clean Technologies
- IEP
- Mountain West Energy
- PetroProbe
- University of Denver
- Phoenix-Wyoming
- Natural Resources Recovery
- Millennium Synfuels
- Chattanooga Corporation
- CRE Energy
- Global Resources
- Natural Soda/Sentient
- General Synfuels International
- ConocoPhillips
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