

# Laramie Energy

EIA Energy Outlook and Modeling Conference  
Impediments to Developing Unconventional Natural Gas Resource Plays

March 27, 2006

# Agenda

- I. Laramie Energy Background
- II. Unconventional Natural Gas Resource Plays
  - I. Emerging Resource
  - II. Financial Attributes
- III. Model for Development
- IV. Impediments
  - I. Price Volatility
  - II. Market Access/Pipelines
  - III. Land Access
    - I. Regulations & Permitting
    - II. Obstructionists
  - IV. Oilfield Services
- V. Solutions
- VI. Implications

# Laramie Energy Background

- Laramie Energy, LLC. was formed to invest in primarily unconventional natural gas plays in the Rocky Mountain region. The Company was started in June 2004 and is headquartered in Denver, Colorado.
- Private Equity Capital commitments in the amount of \$150 million dollars were obtained from EnCap Investments and Credit Suisse.
- Laramie Energy's operations are focused in the Piceance Basin of northwestern Colorado where it has accumulated interests in approximately 60,000 acres of Federal and fee mineral leases.
- The Piceance Basin is primarily a basin centered tight gas sand play in the Williams Fork section of the Mesa Verde formation.
- Since starting, the company has drilled 63 wells, grown reserves to 165 Bcfe and production to 15 MMcfd.
- In 2006 Laramie will operate a 5 rig drilling program to drill 100 wells and will participate in the construction of a 20 mile pipeline and central processing facility to move 60 mmcfd beginning in August of this year.

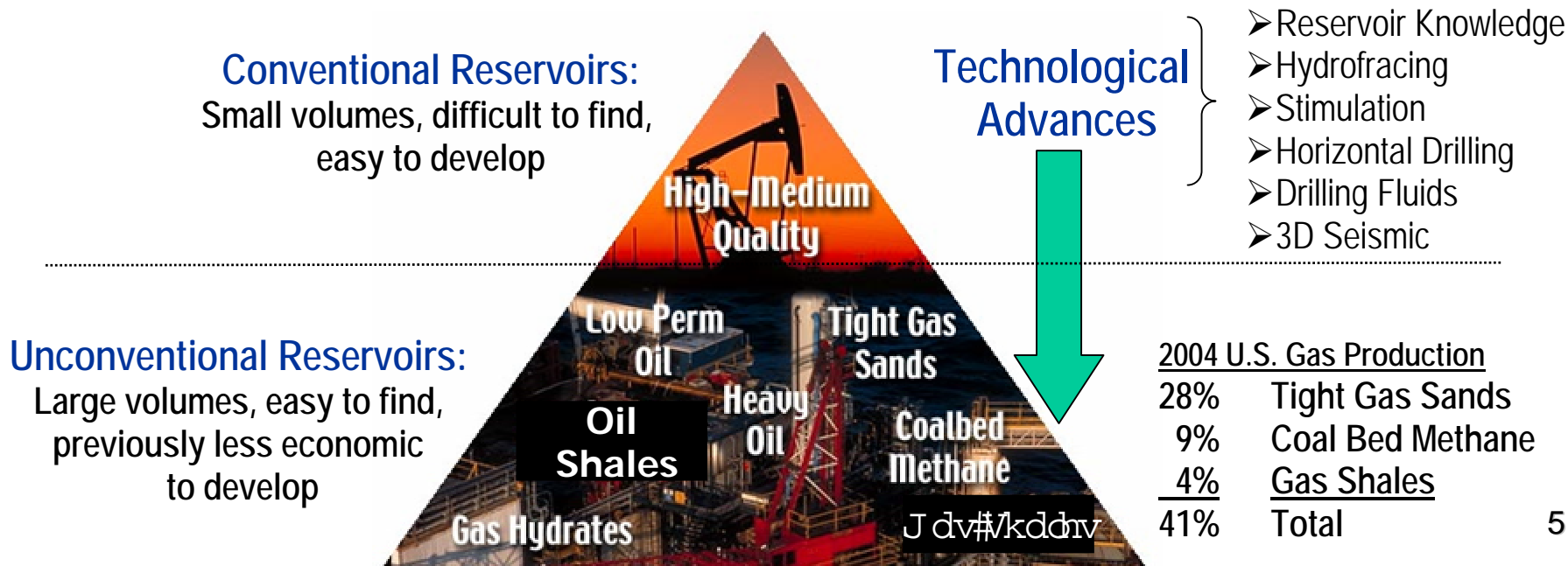
## Drilling Unconventional Indigenous Natural Gas Resources offers the Greatest Short Term Potential for Meeting the U.S. Goals of Safe, Affordable and Clean Energy

- Laramie Energy's focus is on finding and developing gas reserves from unconventional gas reservoirs in the Rockies
  - Rockies represent the largest onshore resource potential for natural gas in the lower 48.
  - Advancing technology, potential pipeline expansions, improving Federal land access, and the Lower 48's highest reserve potential provides the Country with the greatest opportunity to increase longer term supplies of natural gas.
- 80% of the Rockies Natural Gas Resource Potential Comes from Unconventional Natural Gas Resources:
  - Tight Gas Sands
  - Coalbed Methane
  - Shale Gas

# Business Rationale

## E&P Business is Being Revolutionized

- *Unconventional reservoirs* ("UCRs") to be largest U.S. gas source within 10 years
  - Production from *UCRs has increased to 41%* of natural gas output, from 15% in 1990
  - Production from *conventional reservoirs has declined 15%* since 1995
- Technological advances are shifting the E&P industry to **UCRs** to fill U.S. gas supply gap



# UCR Gas – Lower Production Rates Longer Life Reserves

- *UCR's have the following characteristics:*
  - Lower drilling, completion, and operating risk (*+98% drilling success rate with UCR*)
  - Lower finding costs per Mcfe of reserves added
  - Lower reserve decline rates with tight sands and gas shale reservoirs
  - More predictable cash flow and capital expenditure programs
- Yet requires a different corporate mindset than conventionally focused companies
  - Operations built around large scale development drilling (i.e. gas manufacturing projects)
    - Individual plays cover a wide aerial extent
    - Engineering project management, acreage inventory, and UCR technological expertise are key value drivers, not wildcat geologic prospecting

# Unconventional Natural Gas Resources Project Development Model

## Basin / Play Analysis

- Identification of Play Types
- G&G/Engineering Evaluation
- Reservoir Analysis
- Review of Acreage Availability
  - Federal/State/Private
  - Farm-in
  - Acquisition
- Market Access
  - Pipeline
  - Road
  - Field Infrastructure
  - Environmental
- Commerciality Assessment
  - Technology Applications
    - Seismic
    - Drilling
    - Logging
    - Completion
    - Production
  - Economic Model
    - Risk Assessment
    - Number of Wells Needed to Evaluate
    - Field Development Model
    - Return Expectations

## Project Evaluation

- Acreage Procurement
- Well / Prospect Generation
- Location Identification
- Permitting / EIS
- Proof of Concept
  - Field Study
  - Testing
  - Project Economic Evaluation
  - Development Model
  - Technology Alternatives
  - Multi-well Drilling Program
  - Assessments / Testing

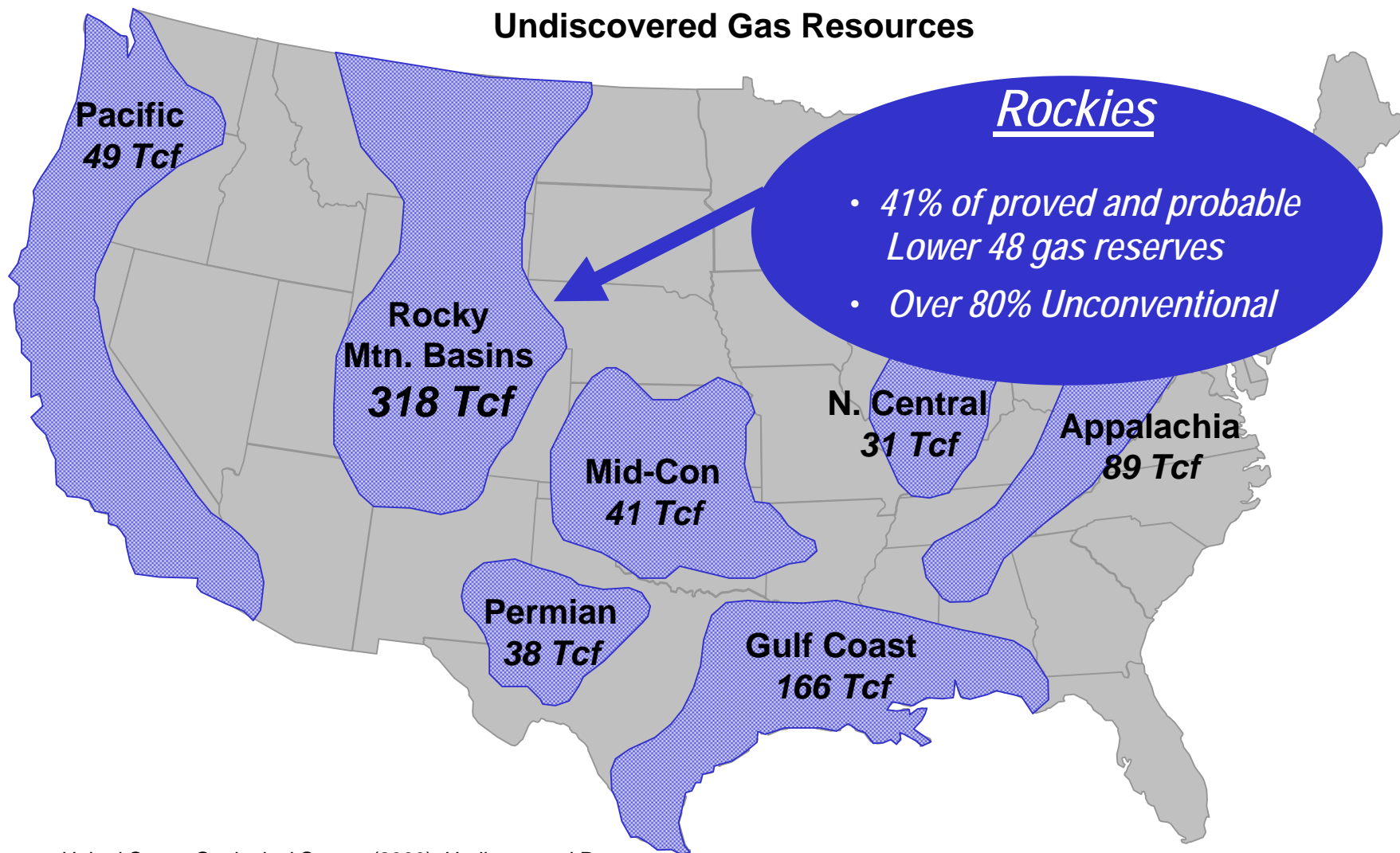
## Project Execution

- Multi-Rig Drilling Program
- Construction of Infrastructure for Processing & Market Access
- Service Contractor Alignment / Negotiations
- Sales / Marketing Agreements
- Field Operations

# Largest U.S. Gas Resource Opportunities

## UCR Gas from Rockies – Our Principal Focus

### Undiscovered Gas Resources





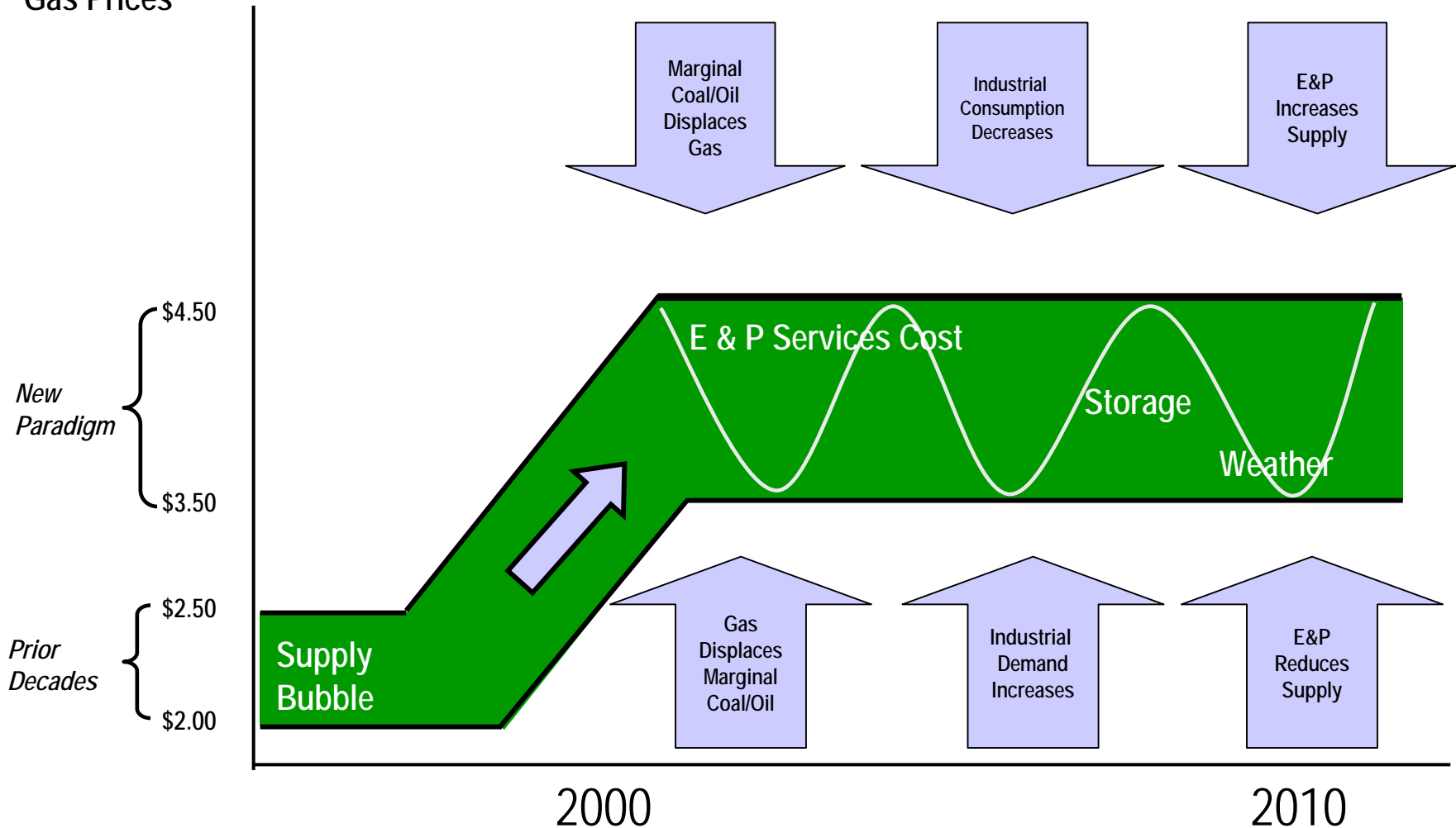
# Impediments – Price Volatility

- Natural Gas is a commodity
- Natural Gas has demonstrated the highest volatility of any commodity traded -62%
  - Demand is dependent upon weather
  - Market access/pipeline availability creates large regional differences in prices
  - Crude oil and fuel oil prices impact natural gas prices
- Price volatility makes it difficult to budget and plan drilling programs
  - Hedging can help stabilize cash flows but accounting regulations are difficult to understand and cause significant variability in earnings
  - Combination of exploration risk and price volatility creates need to keep debt levels low and fund capital expenditures from cash flow
  - Large changes in capital spending make it difficult to make long term commitments for infrastructure and oil field services.
- While natural gas prices have increased significantly recently, so have oilfield service costs.
  - In today's market the average unconventional resource play breaks even at \$4/Mmbtu and requires in excess of \$7/Mmbtu to achieve a 20% rate of return at the wellhead.

# Natural Gas Price Environment

Current Paradigm Shift

Gas Prices

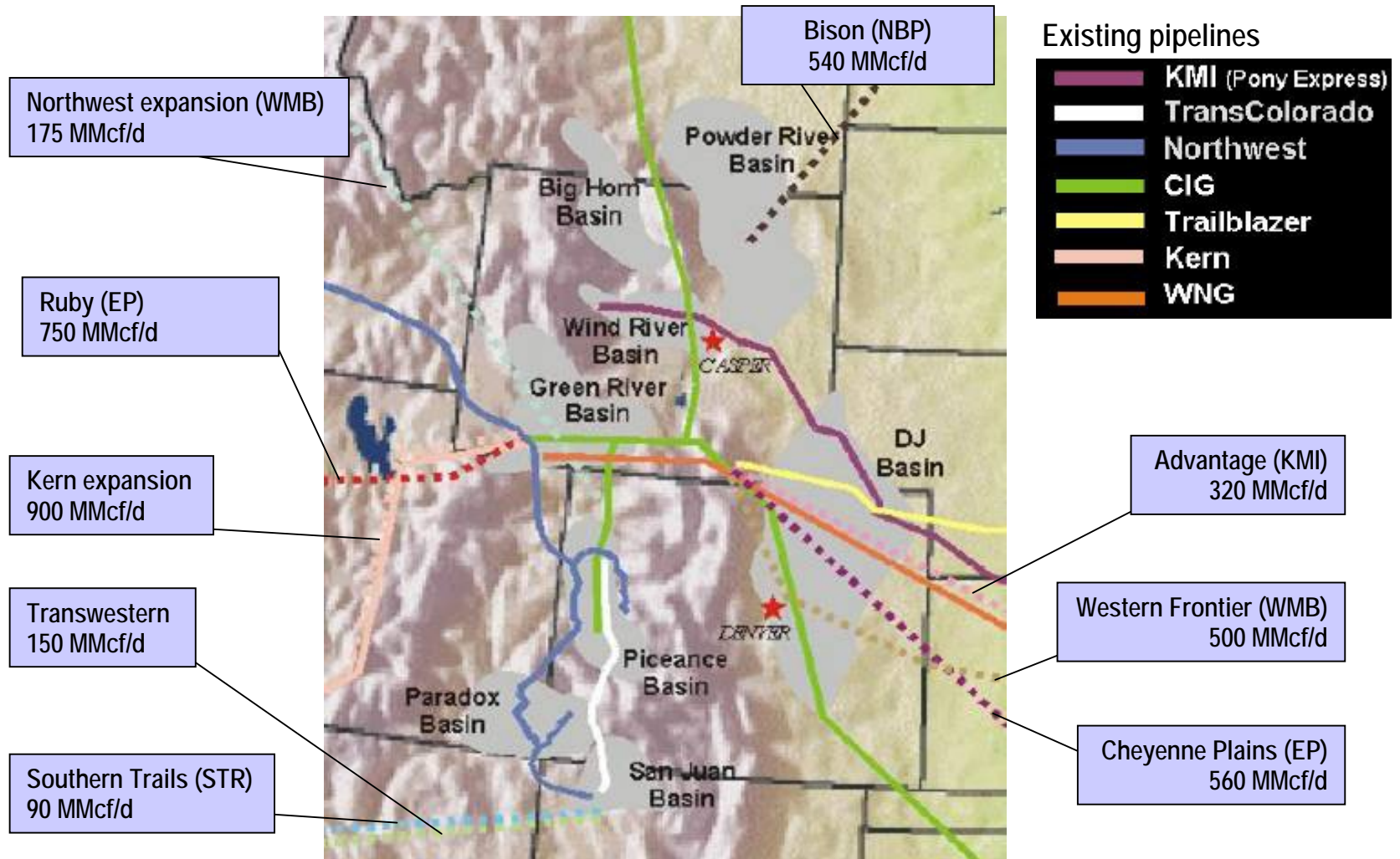


# Impediments – Market Access/Pipelines

- The largest source of unconventional natural gas is the Rocky Mountains
- Most pipelines in the Rockies flow gas to the west into lower priced markets than the eastern markets.
  - Basis differentials or price differentials for Rockies gas are significantly higher than the differentials for gas flowing from the Midcontinent and Gulf Coast areas.
    - Rockies differentials average \$1
    - Midcontinent differentials average \$.25
    - Gulf Coast differentials average \$.10 to \$.15
  - New pipeline construction will be necessary to move gas from the Rockies to the major consuming markets.

# Rockies Pipeline Infrastructure

## Map of Existing Pipelines and Capacity Expansion Projects



# Rockies Pipeline Infrastructure

- Rocky Mountain region has suffered in the past from depressed natural gas prices due to relatively immature pipeline infrastructure
- Expansion of the Kern River pipeline system in Q2 2003 dramatically improved the basis differential for Rockies gas
  - Transports gas from southwestern Wyoming to markets in central California, Nevada, Arizona, and New Mexico
- Basis differentials are projected to decrease through end of 2005, through additional capacity from planned projects

Existing Pipelines	Capacity (MMcf/d)	New Projects	Capacity (MMcf/d)
KMI (Pony Express)	450	<u>East</u>	
TransColorado	180	Ruby	750
Northwest <sup>1</sup>	1,015	Entegra/RM Express	1500
CIG	520	<u>West</u>	
Trailblazer	725	Advantage	320
Kern <sup>2</sup>	1,825	Cheyenne Plains	560
WNG	190	Western Frontier	500
Southern Trails <sup>2</sup>	90	Bison	540
<b>Total</b>	<b>4,995</b>	<b>Total</b>	<b>4170</b>

Source: Recent equity research reports

Pro forma for recently completed expansion projects

# Rocky Mountain Gas Price Differentials

CIG discount to NYMEX



# Impediments – Land Access

- Roughly 50% of the land in the west is owned by Federal and state governments
  - These lands have extensive permitting and regulatory requirements
    - Multiple agencies have regulatory and permitting requirements
      - 10 Agencies and over 100 regulations have to met to drill one well
        - » Department of Energy
        - » Department of Interior
        - » Bureau of Land Management
        - » National Forest Service
        - » National Wildlife and Fisheries
        - » Environmental Protection Agency
        - » Department of Transportation
        - » State Oil and Gas Commissions
        - » County Planning Commissions
        - » State Wildlife Agencies
        - » USGS

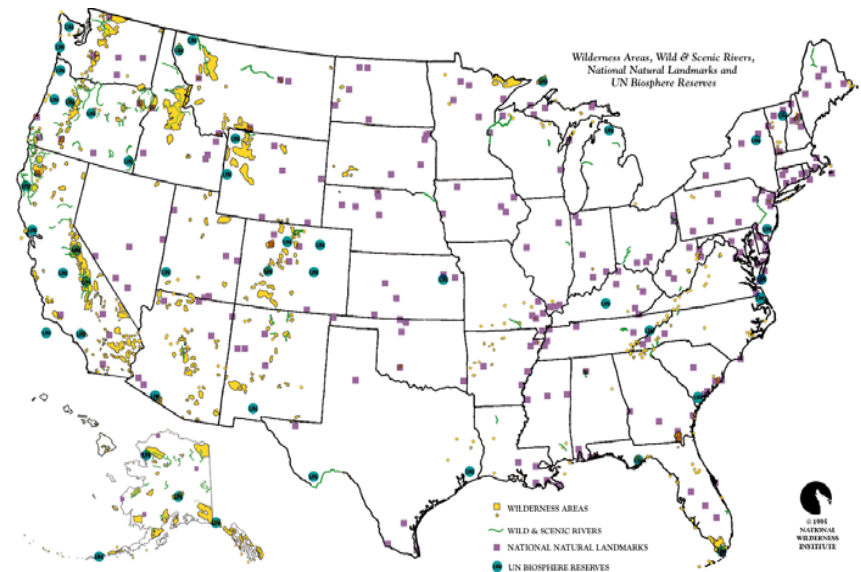
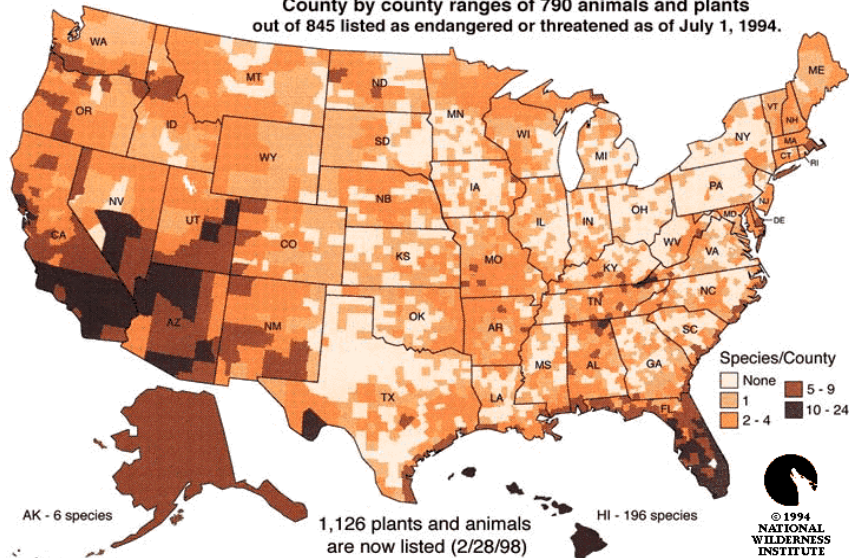
# Impediments – Land Use

- Permitting requirements are extensive on Federal and State lands
  - Environmental Impact Statements
  - Environmental Assessment Statements
  - Plans of Development
  - Drilling Permits
  - Air Quality Permits
  - Surface Use Agreements
  - Wildlife Stipulations
  - Endangered Species
  - Etc.



# Endangered Species, Wilderness and other Land Use Restrictions

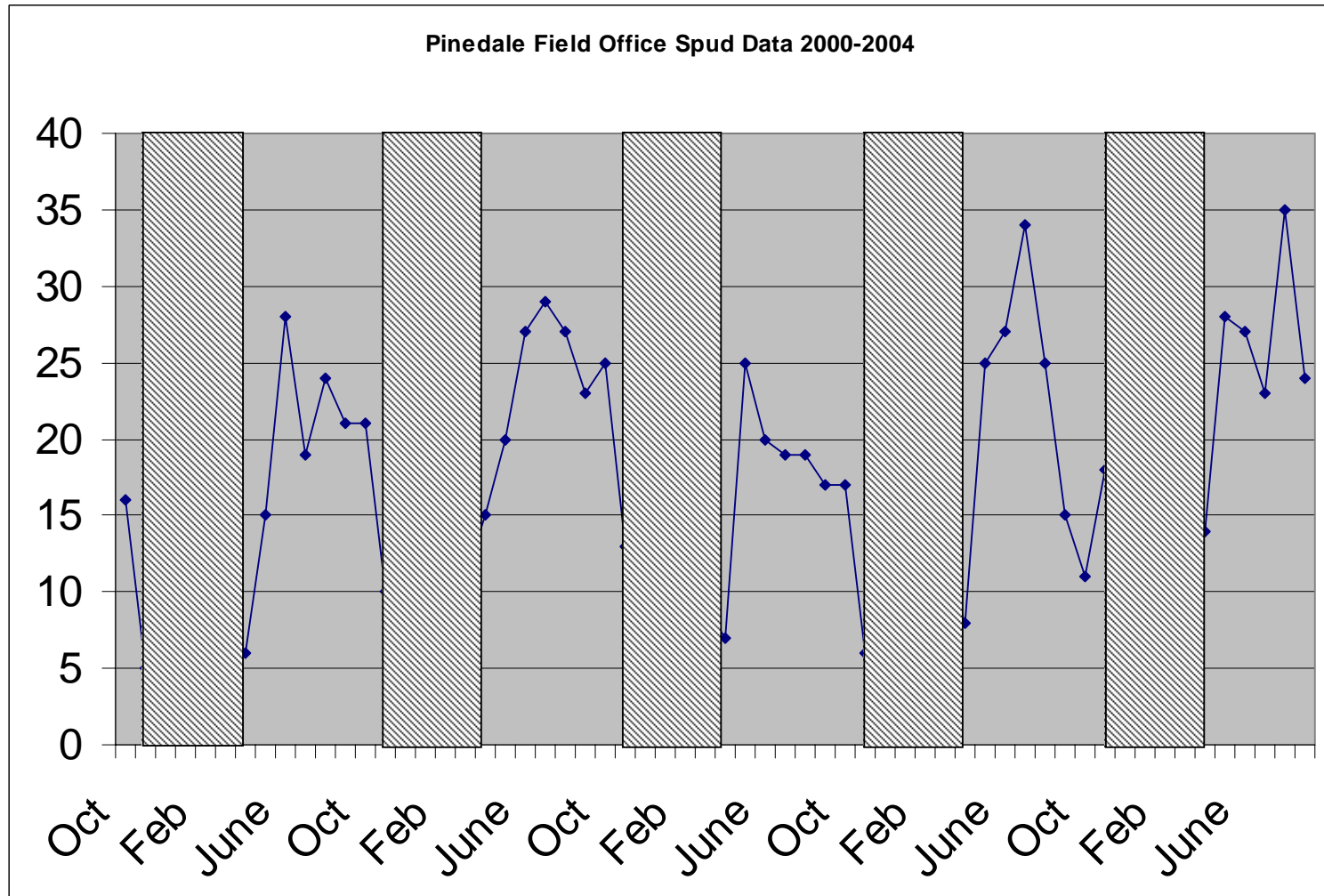
County by county ranges of 790 animals and plants out of 845 listed as endangered or threatened as of July 1, 1994.



# Surface Use/Restrictions

Wildlife Restrictions	January	February	March	April	May	June	July	August	September	October	November	December
Big Game Winter Range												
Sage Grouse Lek												
Sage Grouse Nesting												
Mountain Plover Breeding												
Mountain Plover Nesting												
Raptor Nesting												
a) Borrowing Owl												
Archaeology Weather Restriction												
Section 7 Prairie Dog Avoidance												
Typical 8000' Well												
Typical Deep Horizontal Well												

# Winter Wildlife Stipulations Effects on Drilling



# Rockies Surface Use

Category	Colorado	Montana	New Mexico	Utah	Wyoming	Total
Private	37,431,830	63,706,253	51,592,782	13,974,492	30,910,657	197,616,014
Federal Oil and Gas						325,000
State Forest/Park	342,000	44,000	121,000	97,000	120,000	724,000
Fish and Wildlife Service	66,624	611,711	326,855	103,243	56,343	1,164,776
USFS Grasslands	633,000	0	136,500	0	550,000	1,319,500
National Monuments	297,047	76,578	108,669	1,757,966	1,428,522	3,668,782
Military	265,340	17,722	3,081,479	1,836,380	44,903	5,245,824
BLM WSA	621,737	450,823	970,532	3,255,490	575,841	5,874,423
National Parks	592,953	1,223,422	381,331	2,092,034	2,391,478	6,681,218
USFS Wilderness	3,157,204	3,375,699	1,391,043	773,124	3,112,561	11,809,631
Tribal	4,829,474	3,490,753		4,200,000		12,520,227
USFS Roadless	4,433,000	6,397,000	1,597,000	4,013,000	3,257,000	19,697,000
USFS Other	6,274,178	7,091,712	6,198,619	3,321,189	2,339,594	25,225,292
BLM Other	7,679,613	7,623,767	11,916,910	18,914,642	17,817,261	63,952,193
<b>Total</b>	<b>66,624,000</b>	<b>94,109,440</b>	<b>77,822,720</b>	<b>54,338,560</b>	<b>62,604,160</b>	<b>355,498,880</b>

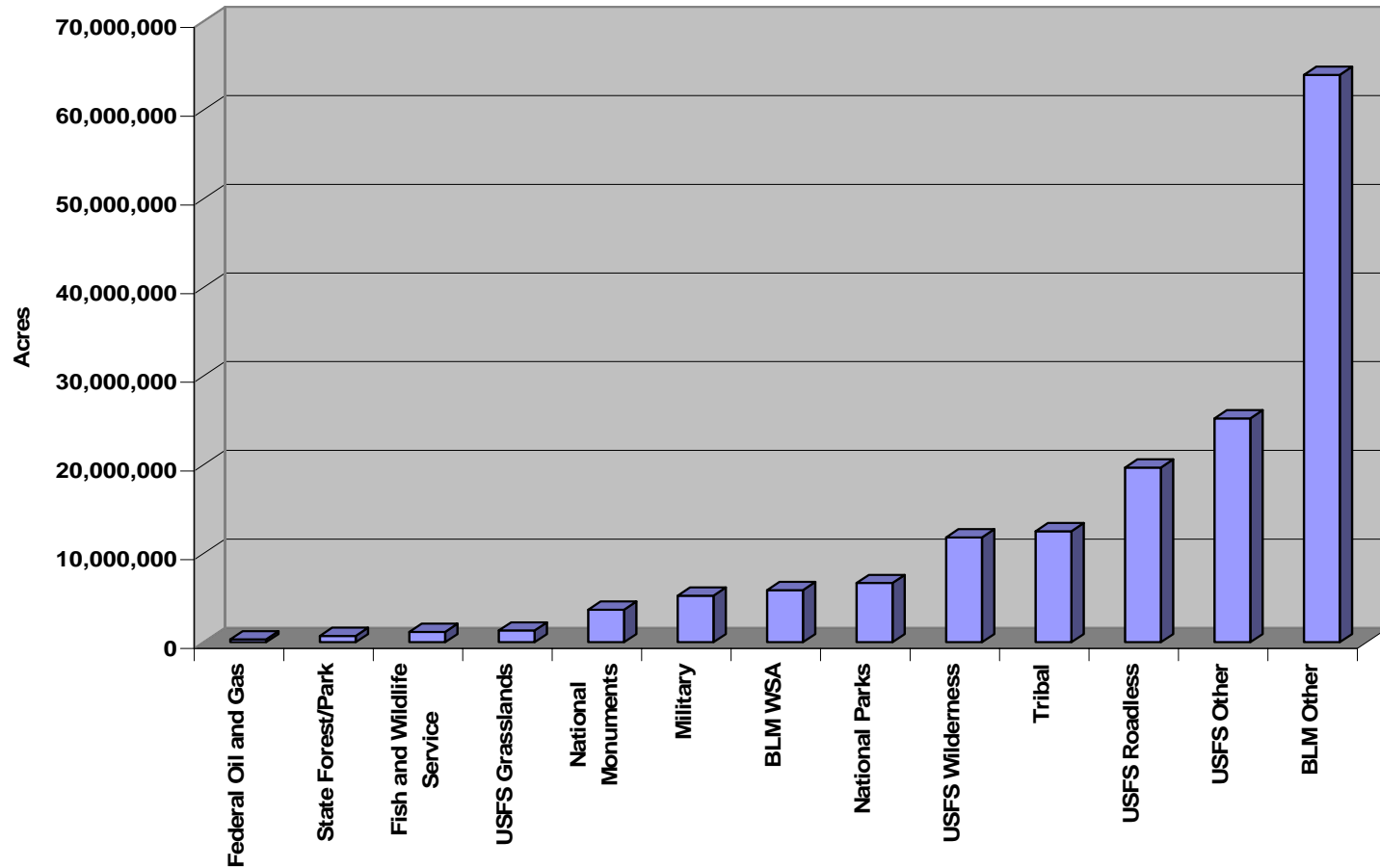
Federal oil and gas total is based on actual acres of disturbance

New Mexico Tribal total included in Colorado

Montana Tribal included in Wyoming total

# Federal Land Uses In the Rockies

Federal Land Uses Compared with Oil and Gas Operations



# Leasing of Federal Lands

- Federal practices for the leasing of government lands need to be updated.
  - Current practices:
    - Open bids
    - 10 year leases
    - 12.5% royalties
    - Leases held by production even if wells are shut-in if royalties are paid
    - Large areas can be unitized to hold lands and avoid Federal limitations of 250,000 acres per state
    - No commitment to drill or develop
  - Lands bought by speculators with no intention of development
  - Large companies amass huge acreage positions

# Obstructionists

## environMENTALists

- “Man is always and everywhere a blight on the landscape” –John Muir, founder of the Sierra Club
- “Human beings as a species have no more value than slugs” –John Davis, Editor of Earth First
- I do not believe that a human being has a right to life...I would rather have medical experiments done on our children than on animals.” –PETA (People for the Ethical Treatment of Animals)
- “Giving society cheap, abundant energy would be the equivalent of giving an idiot child a machine gun.” -Dr. Paul Ehrlich, Stanford Professor of Biology
- “Complex technology of any sort is an assault on human dignity. It would be a little short of disastrous for us to discover the source of clean, cheap, abundant energy, because of what we might do with it.”-Amory Lovins, Rocky Mountain Institute
- “Isn't the only hope for the planet that the industrialized civilizations collapse? Isn't it our responsibility to bring that about?”- Maurice Strong, head of 1992 Earth Summit and Executive Officer for Reform in the office of the Secretary General of the United Nations.
- Etc.

Source: The Environmentalists' Little Green Book –Compiled by the US Chamber of Commerce

# Impediments – Oilfield Services

- The Oil and Gas Industry employs approximately 1.5 million people in the U.S.
- The downturn in the 1980's reduced employment by over 700,000 people
- "Green hands and worn out iron are syndromes from the downturn"
  - In the late 70's and early 80's in excess of 4000 drilling rigs were operating
  - Today the rig count is approximately 1500
  - The biggest constraint is finding skilled workers to man the rigs
- Oilfield service prices have roughly doubled over the past two years but the biggest costs increases are generally due to human errors related to a work force in training and to pushing older equipment to its limits.



# Solutions

- Price Volatility – put in place tax incentives that offset marginal economic returns when prices dip below certain levels or variable royalties on Federal lands.
- Market Access – encourage the development of pipeline infrastructure and consolidate the regulatory processes for permitting under a single agency.
- Land access – the number one constraint on new supply:
  - Revise Federal leasing policies
  - Identify regions for development and streamline the regulatory requirements for development
  - Lease the lands under five year work programs with the that requirement that capital be spent on the evaluation and development of lands (Canadian frontier model)
- Oilfield Services – work with industry to establish job training programs.

# Implications

Failure to act will result in:

- Higher energy prices
- Increased imports
- Potential economic disruptions for unreliable foreign sources
- Less efficient development of indigenous resources