

Utah Oil Sands Social and Economic Factors

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Western U.S. Oil Sand Technology Transfer Meeting
February 22, 2008

What is Economics?

- Engineers' Definition

 - Capital Costs

 - Costs of Production or Operations

 - Profitability

- Social and Economic Impacts

 - Population

 - Employment and Wages (direct and indirect)

 - Social Costs – boom and bust cycles

Production Economics – Canadian Experience

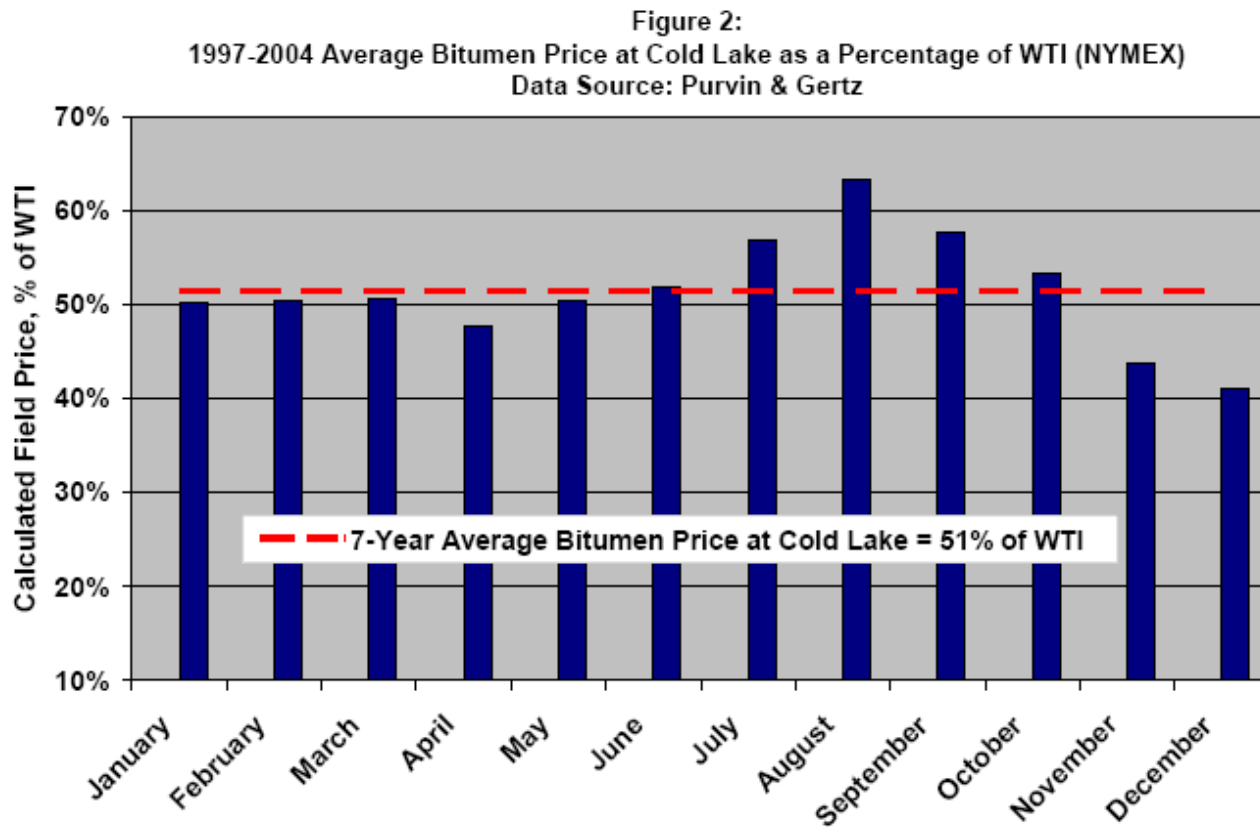
C\$(2005) per barrel, Plant Gate	Product	Operating Cost	Supply Cost
Cold Production	Bitumen	6 to 9	14 to 18
CHOPS	Bitumen	18 to 10	16 to 19
Cyclic Steam	Bitumen	10 to 14	20 to 24
SAGD	Bitumen	10 to 14	18 to 22
Mining/Extraction	Bitumen	9 to 12	18 to 20
Integrated Mining/Upgrading	Synthetic	18 to 22	36 to 40

Source: Canadian National Energy Board

Canadian Economics – Applicable to Utah?

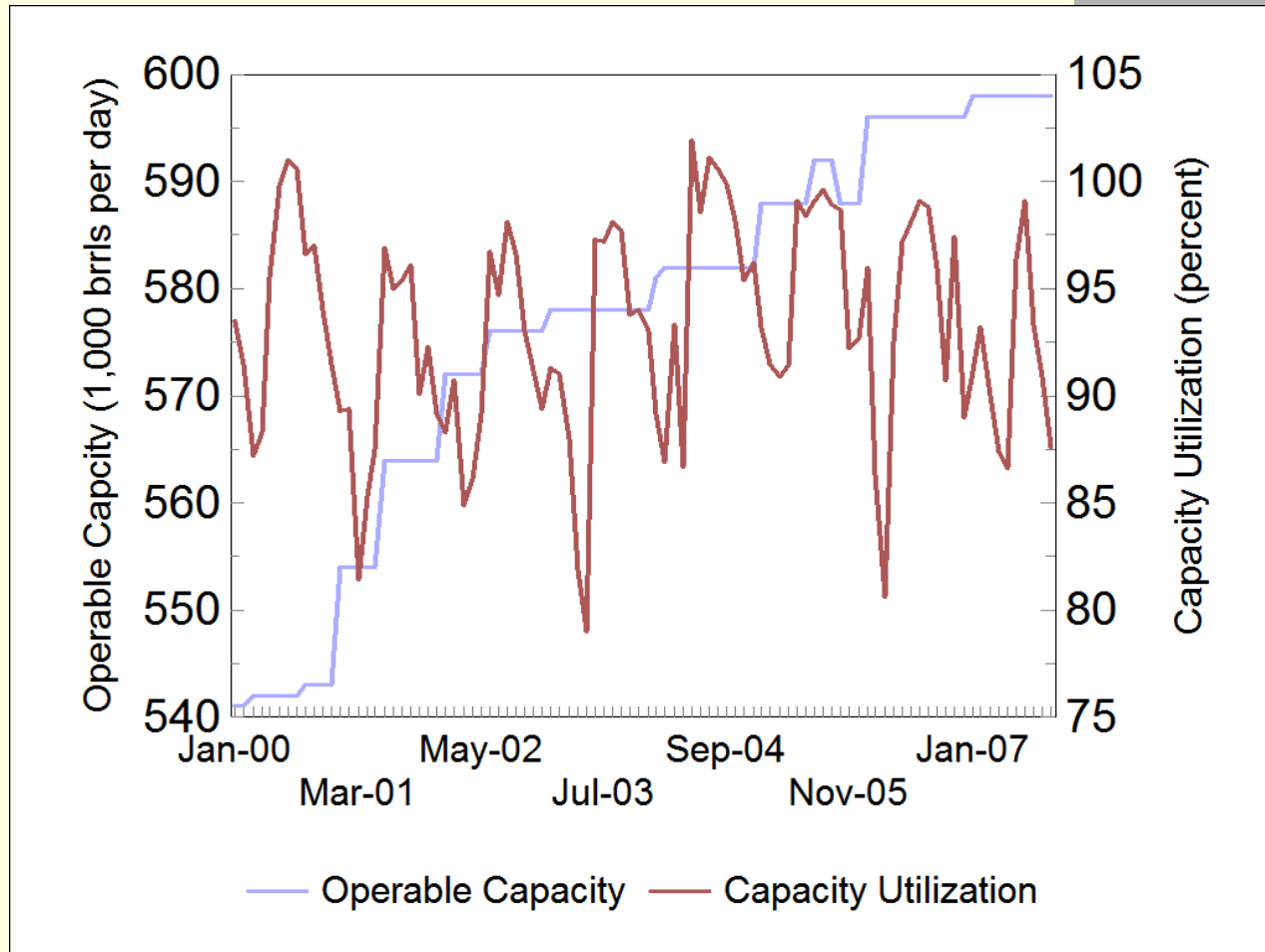
Alberta	Utah	Impact on Utah Oil Sands
Unconsolidated	Consolidated	Higher Mining Costs
Prairie	Mountainous	Higher Development Costs
Large Deposits	Smaller Deposits	Less Economies of Scale
Well Understood Technology	New Technology	Greater Risk
Conclusion: Higher costs in Utah when compared to Alberta and more unknowns.		

Bitumen Pricing



Source: Canadian Association of Petroleum Producers

PADD IV Refinery Capacity



Source: Energy Information Administration

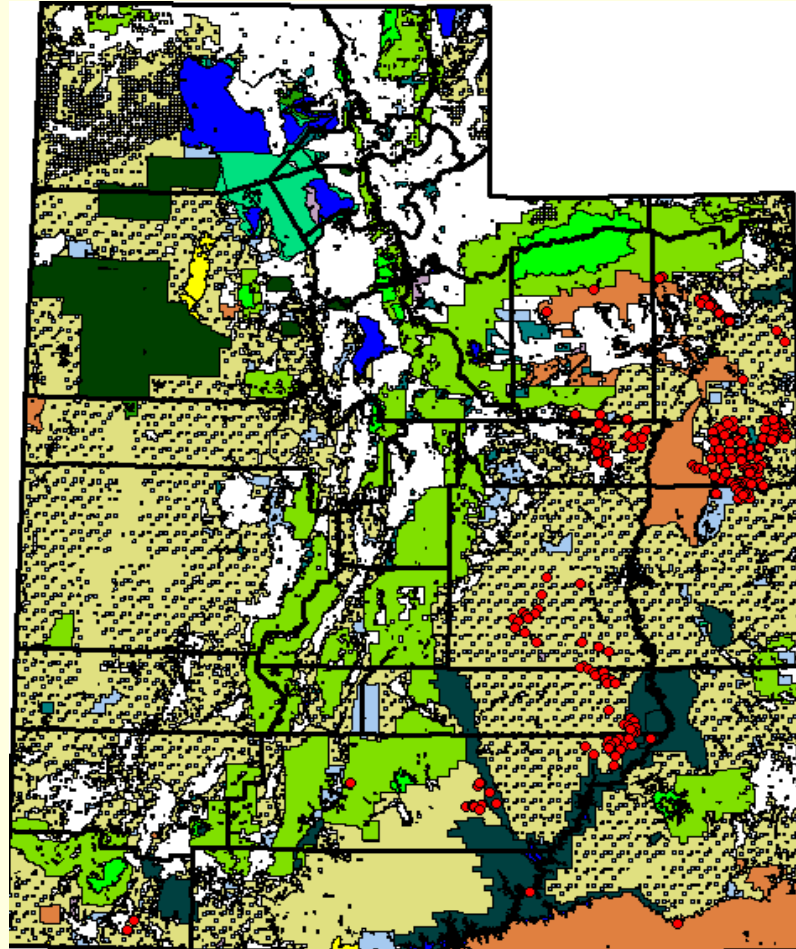
Social and Economic Factors – Alberta Experience

- Fort McMurray Population
34,000 in early 1996
64,400 in May 2006
- Housing Prices – Average Single Family
C\$632,000 in Fort McMurray
C\$382,000 in Edmonton
- Rental – Average Two Bedroom
C\$2,085 in Fort McMurray
C\$958 in Edmonton

Source: Alberta Oil Sands Industry Update, December 2007

Will Similar Impacts Occur in Utah?

Utah Deposits



Current Economic Base

- Duchesne and Uintah Counties
Oil and Gas Extraction
- Carbon and Emery Counties
Coal Mining, Power Plants
Gas Production in Rising
- Grand County
Tourism – National Parks, Biking, Rafting
- Garfield and Wayne Counties
Tourism – National Parks

Economic and Fiscal Impacts

- Exogenous Spending is Necessary

- Expressed as Jobs and Wages

- Multiplier Effect

 - Direct Impacts – Company Employment

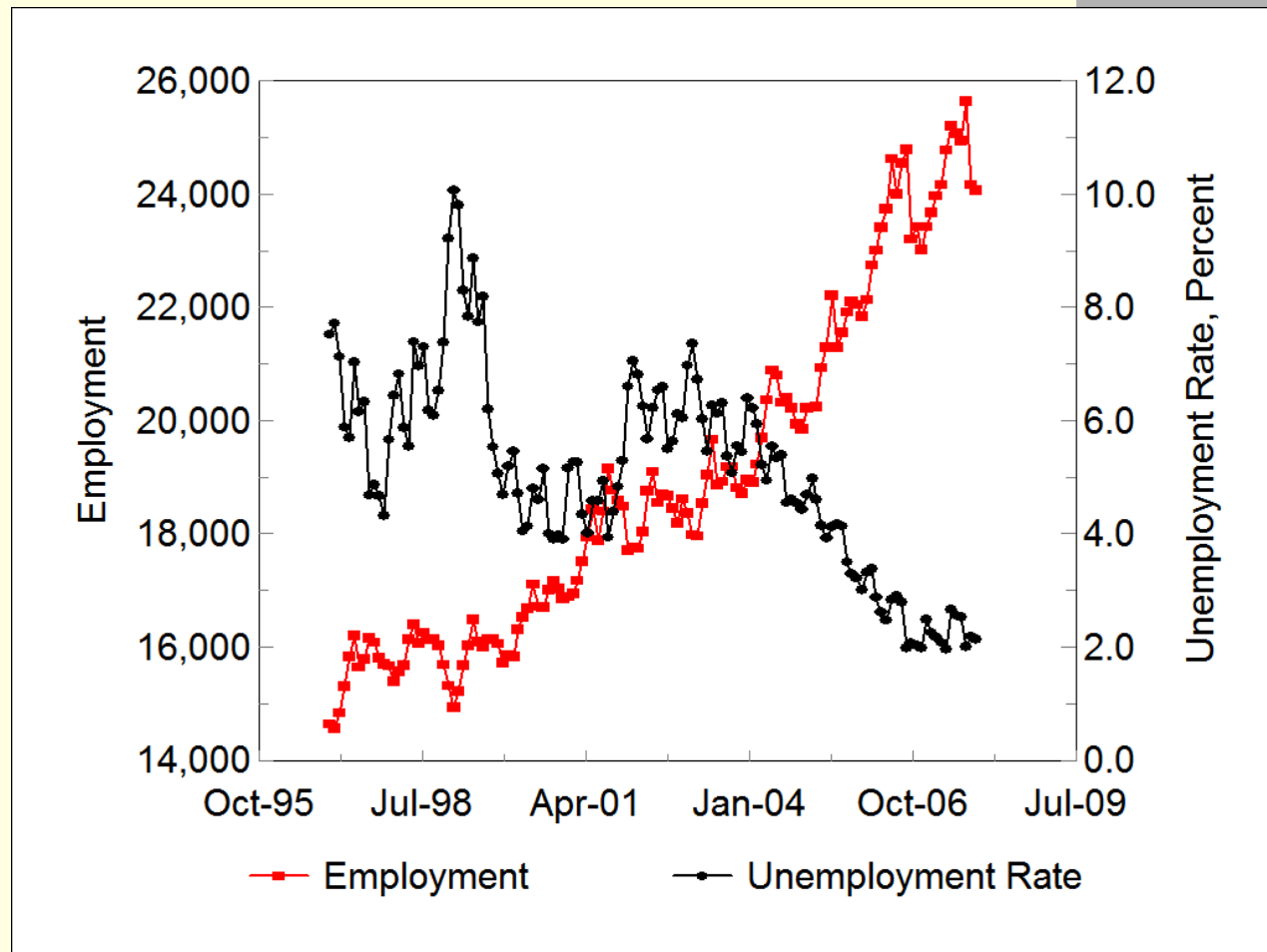
 - Indirect Impacts – Company Spending

 - Induced Impacts – Employee Spending

- Fiscal Impacts

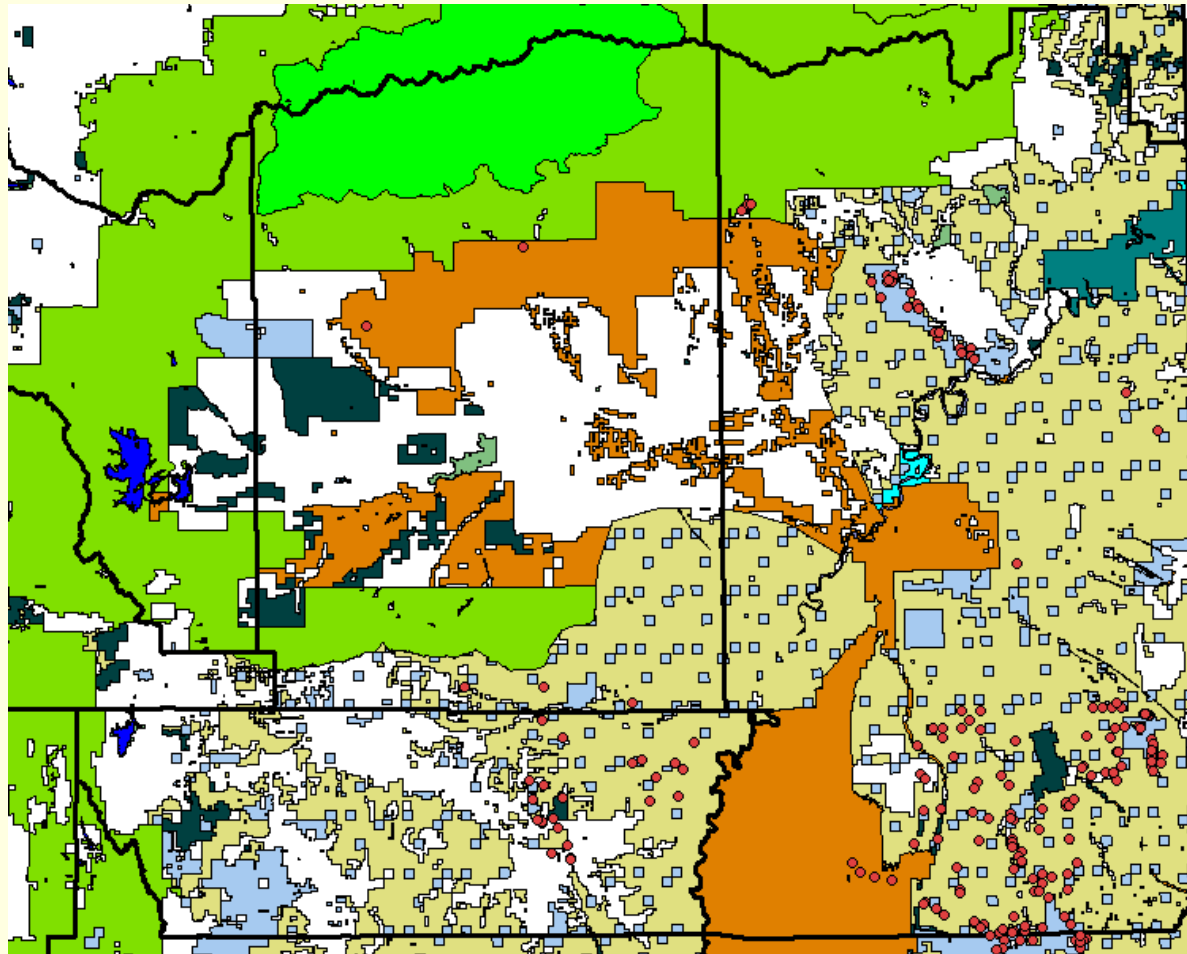
 - Tax collections, Royalty Payments, etc.

Uinta Basin Employment



Source: Bureau of Labor Statistics

Uinta Basin Deposits

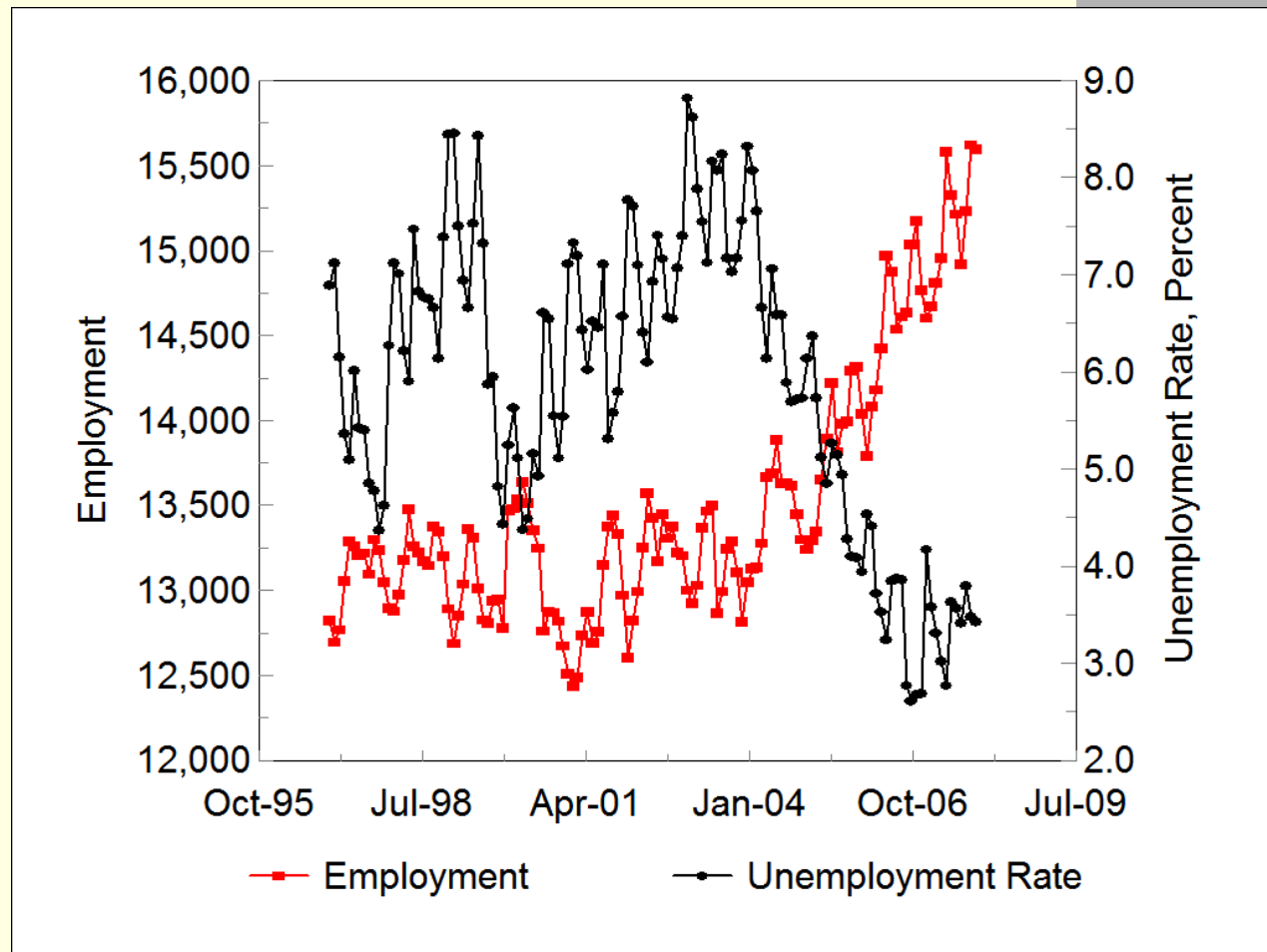


Asphalt Ridge

PR Spring

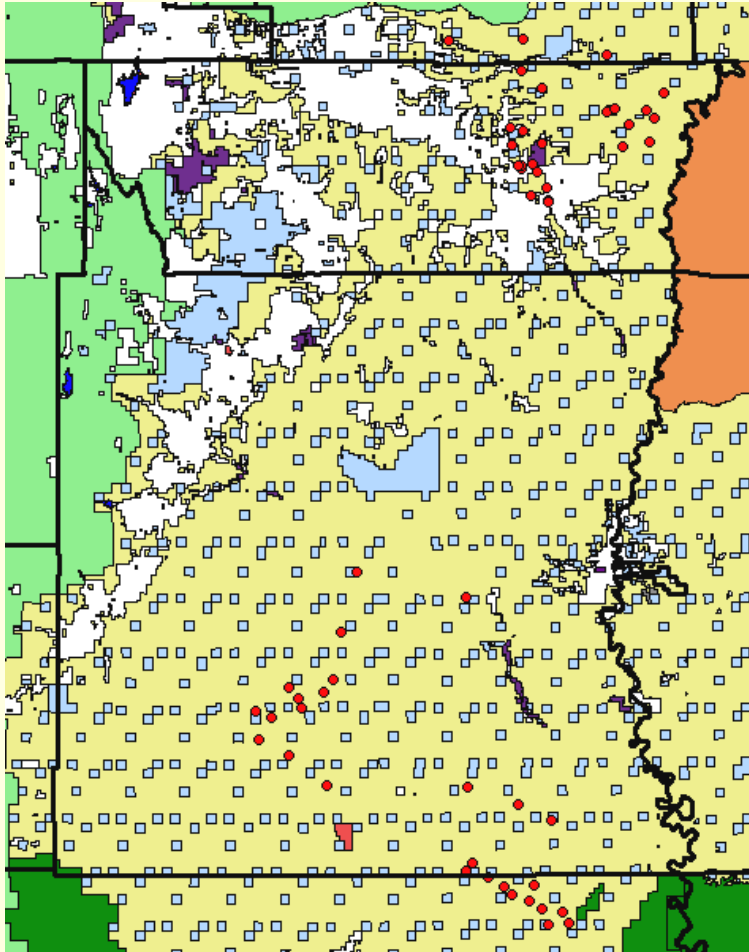
Oil and Gas
Infrastructure

Carbon and Emery Employment



Source: Bureau of Labor Statistics

Carbon and Emery Counties



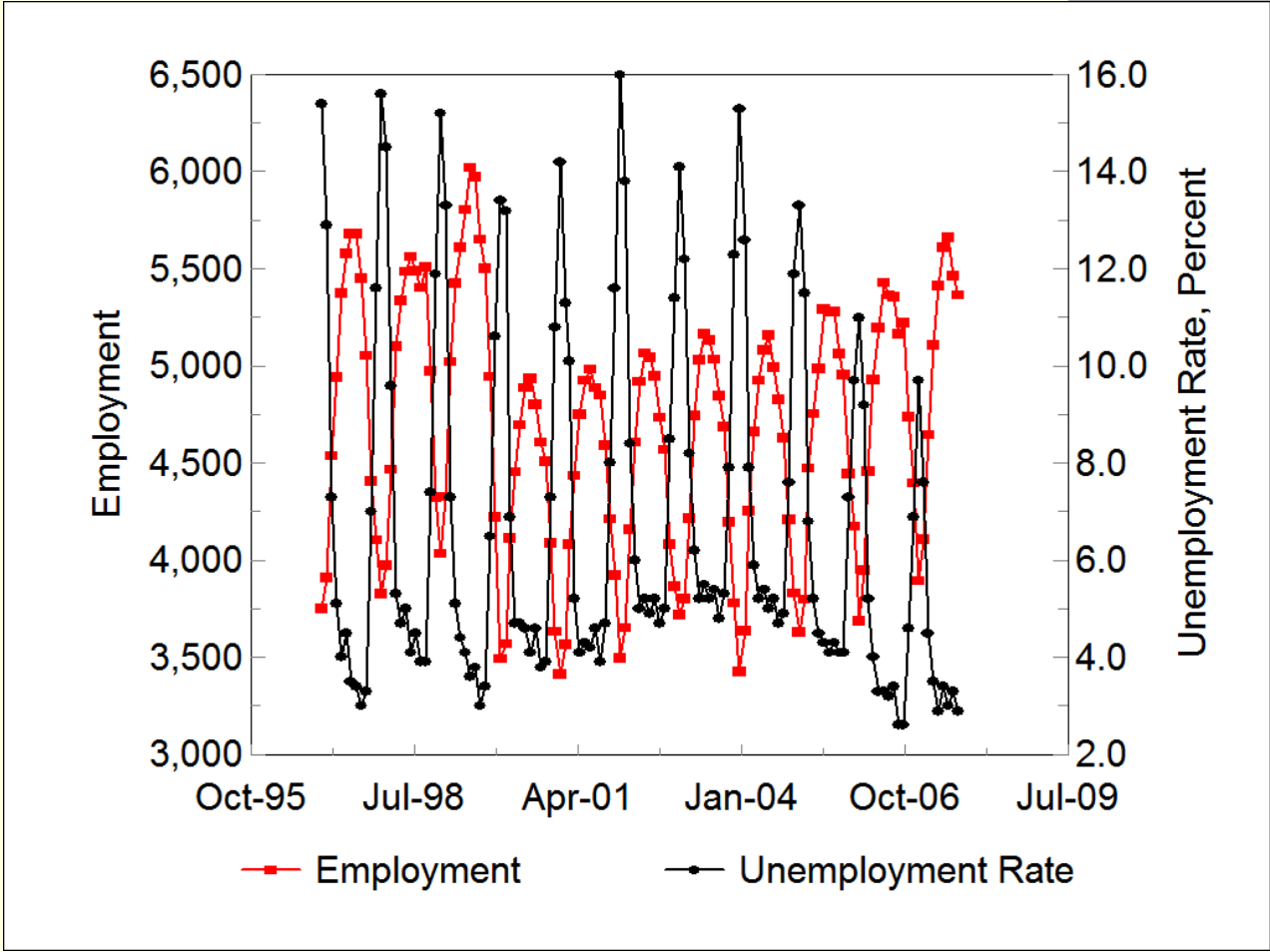
Sunnyside Deposits

Population Center

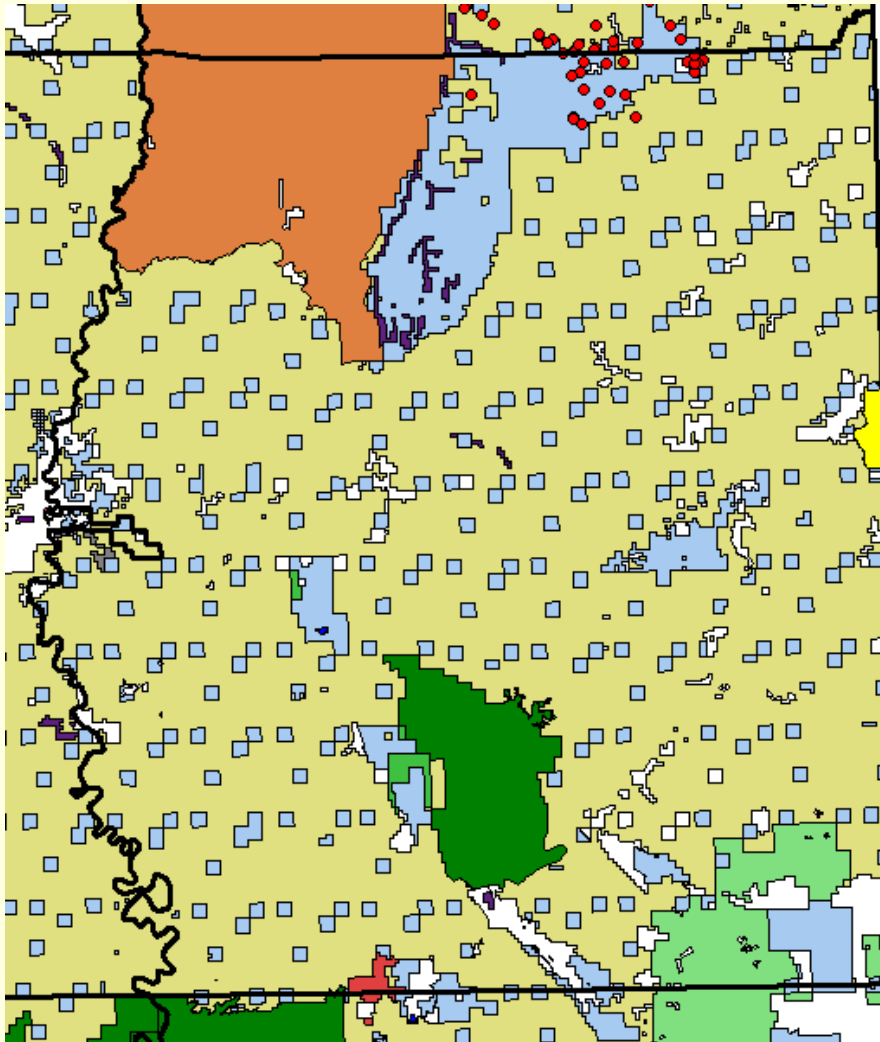
Price – 19,000

Sunnyside – 1,800

Grand County Employment



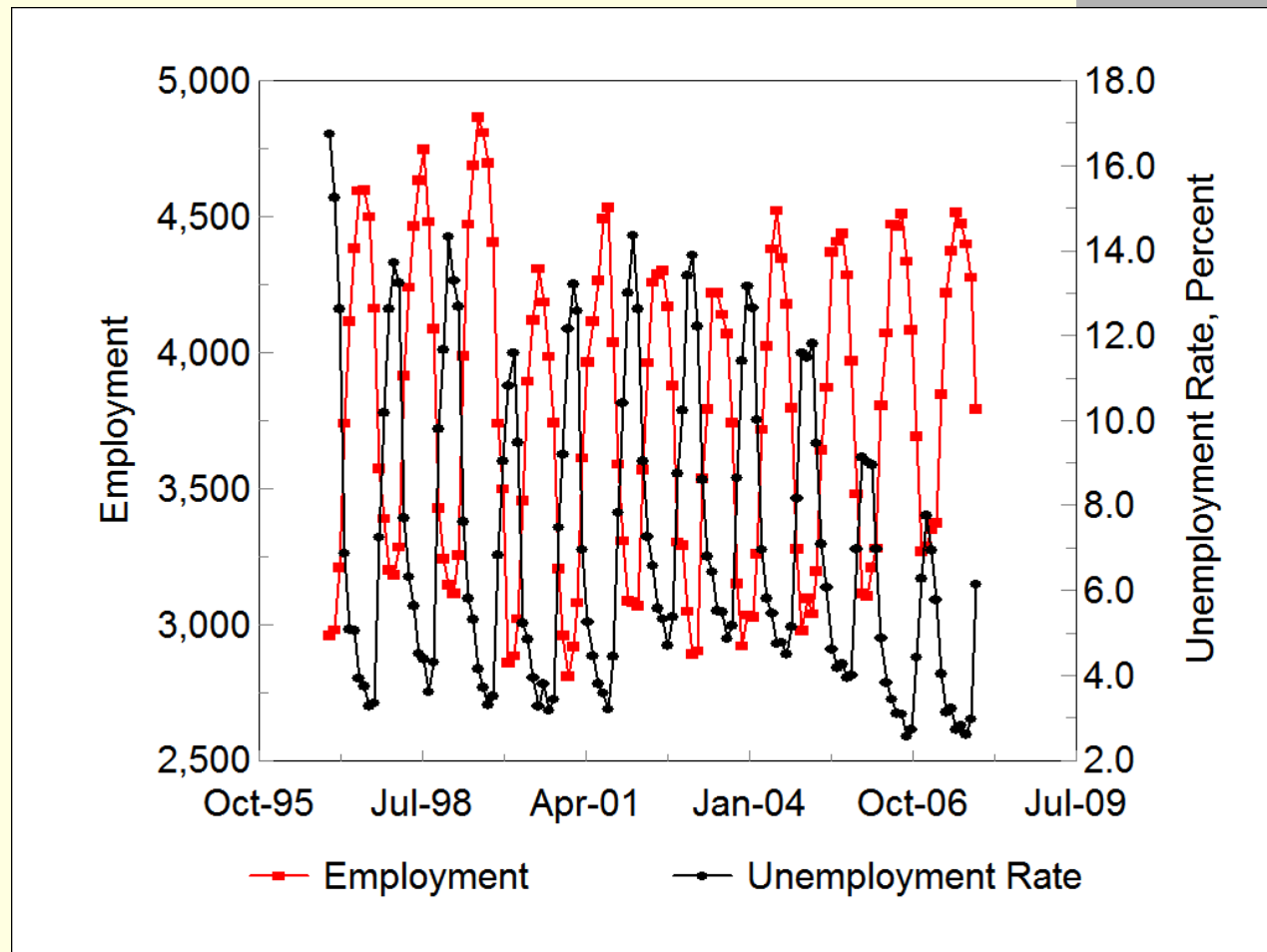
Grand County



95 percent
population lives in
Moab

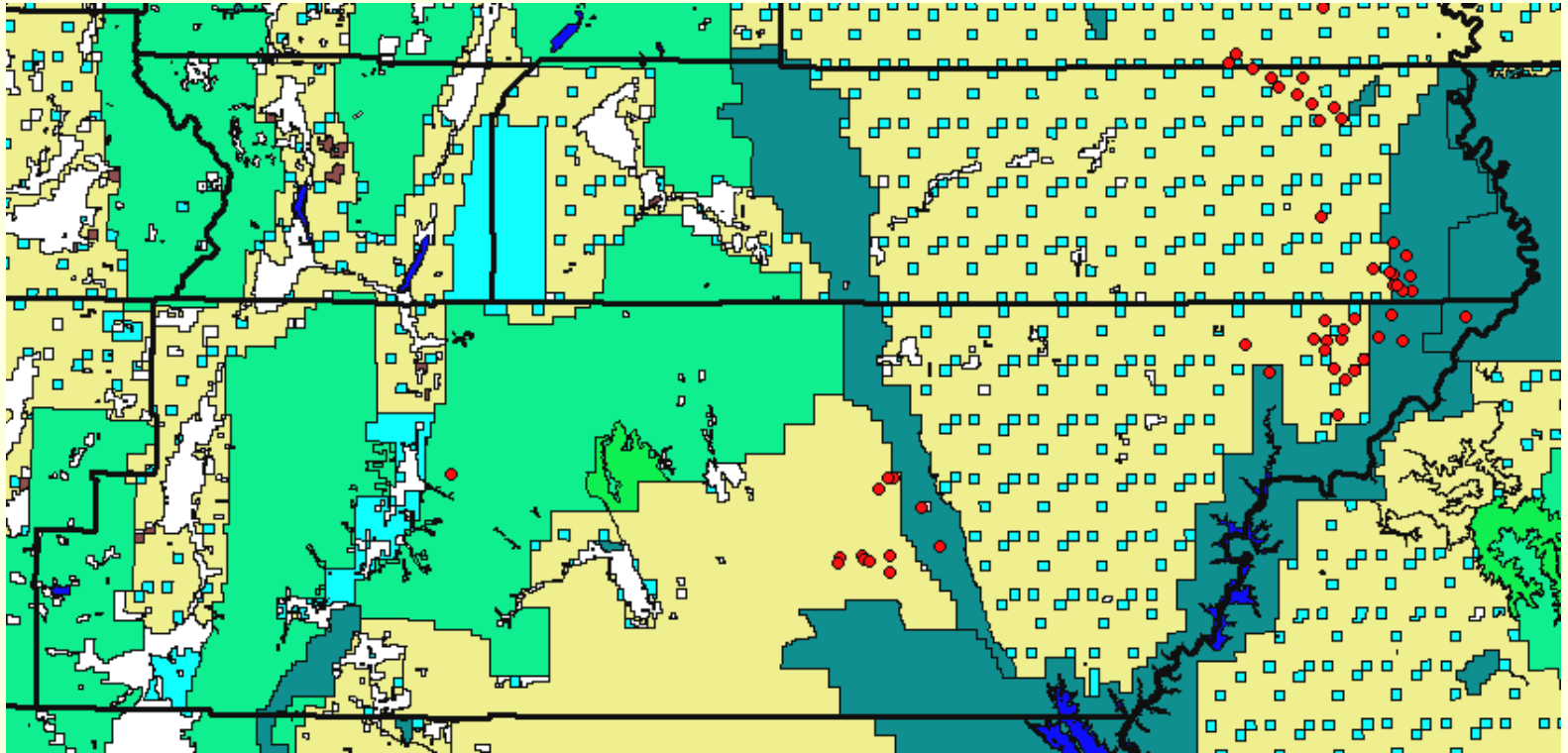
Oil sands deposits
are closer to
Grand Junction,
Colorado

Garfield and Wayne Counties Employment



Source: Bureau of Labor Statistics

Garfield and Wayne Counties



75 percent of population in western portion of counties

Little population, infrastructure etc in eastern portion of counties

Oil Sands Impacts

- Deposits are small than in Canada
- Remote from developed infrastructure
- Many of the counties do not have support industry
- Grand, Garfield, Wayne
- Large scale economic boom that causes social issues due to oil sands in Utah is unlikely
- But....

Oil Shale

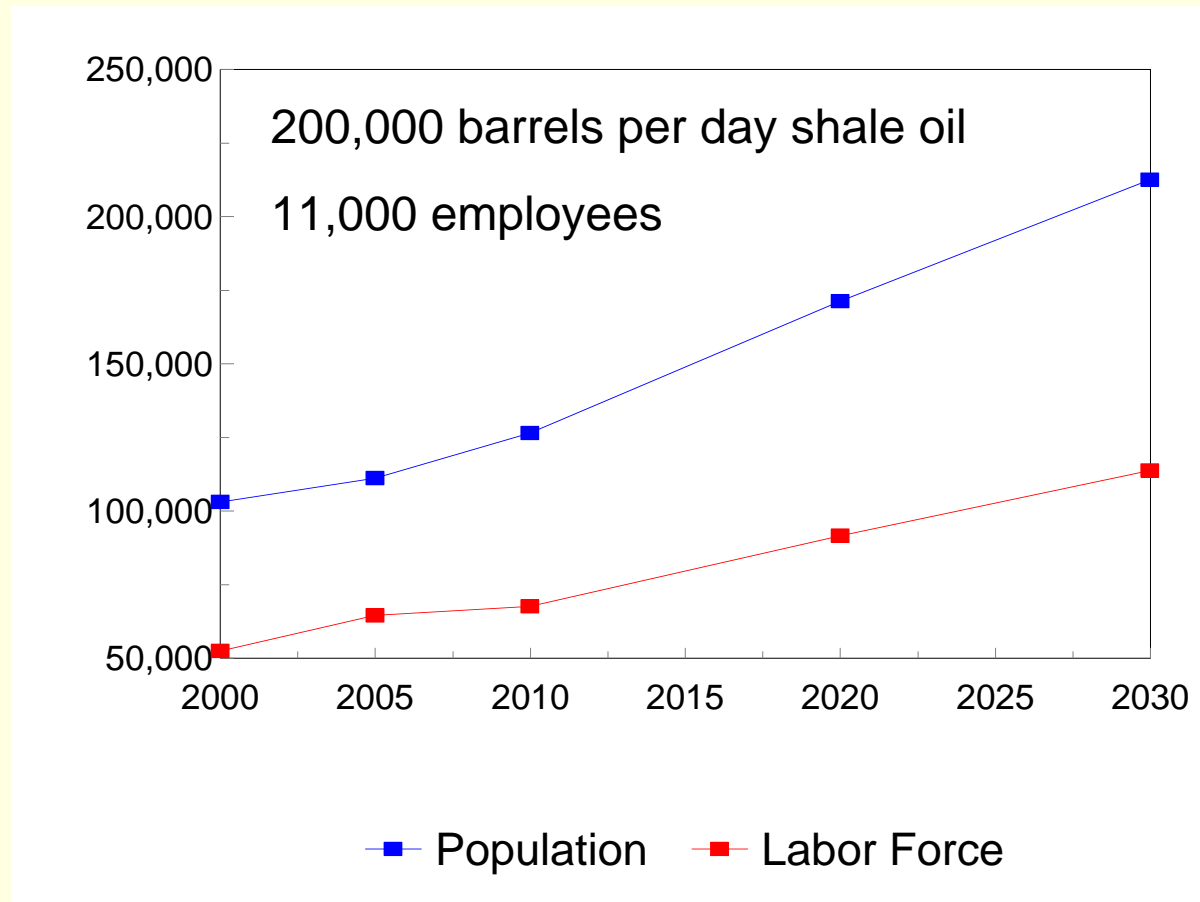
- Estimates 1.5 trillion barrels in place
Colorado, Utah, Wyoming
- Kerogen – a solid that requires retorting and upgrading to be acceptable to refineries
- Projections of up to several million barrels a day
- Colorado, Utah, Wyoming 258,000 barrels per day of conventional

Oil Shale Area

- Garfield, Moffat, Rio Blanco Counties, Colorado; Duchesne, Uintah Counties, Utah
- Population (2007) – 115,424
- Workforce (Dec. 2007) – 75,720
- Local Economy
- Duchesne and Uintah – Oil and Gas
- Moffat and Rio Blanco – Oil, Gas, Coal, Power
- Garfield – Tourism, Oil, Gas, Coal, Agriculture

Future Population and Labor Force

(Duchesne, Uintah, Garfield, Moffat, Rio Blanco Counties)



Source: Utah GOPB, Colorado State Demography Office

Utah Heavy Oil Program

- Analysis of Environmental, Legal, Socioeconomic and Policy Issues Critical to the Development of Commercial Oil Shale Leasing on the Public Lands in Colorado, Utah and Wyoming under the Mandates of the Energy Policy Act of 2005