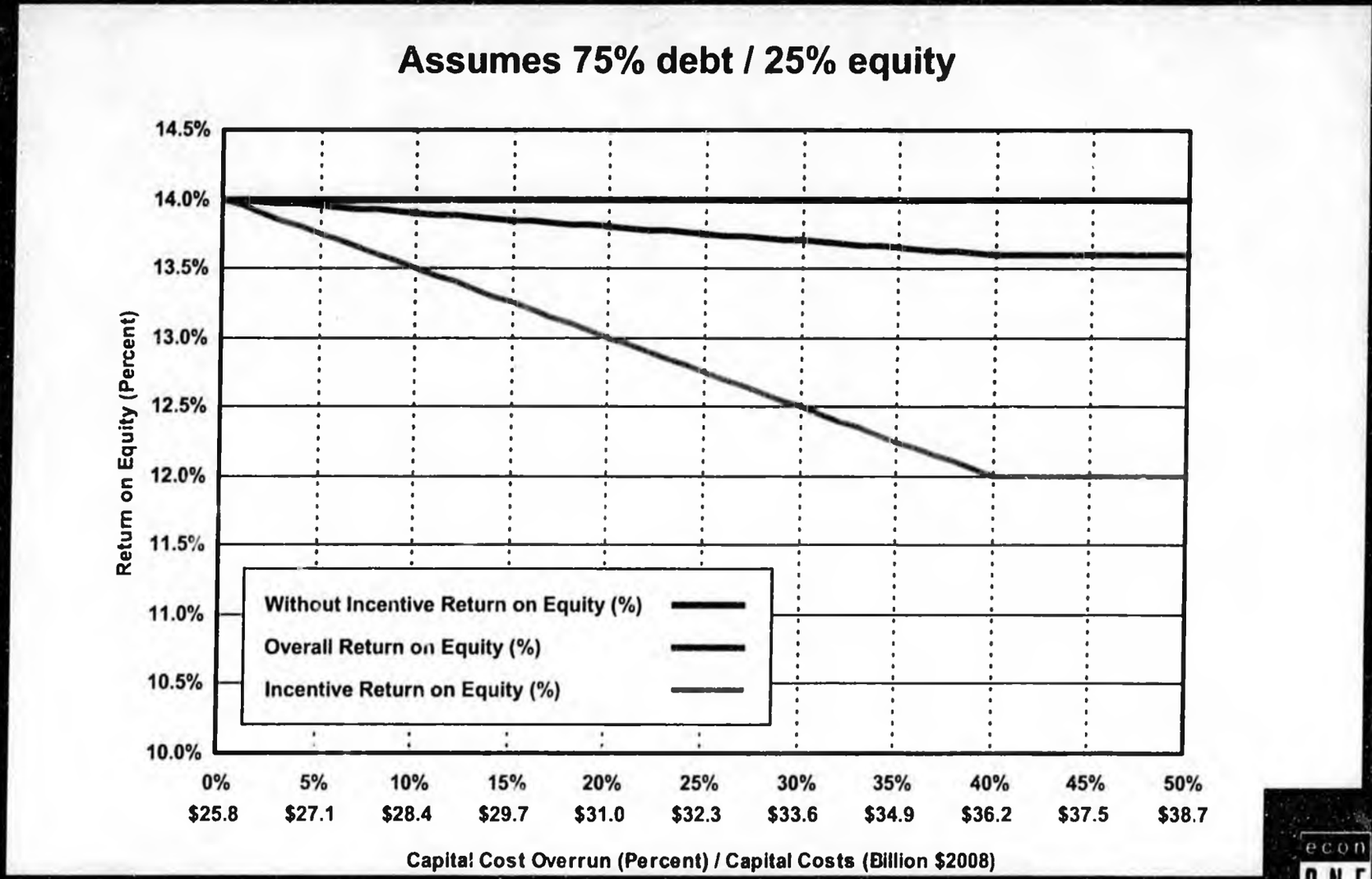
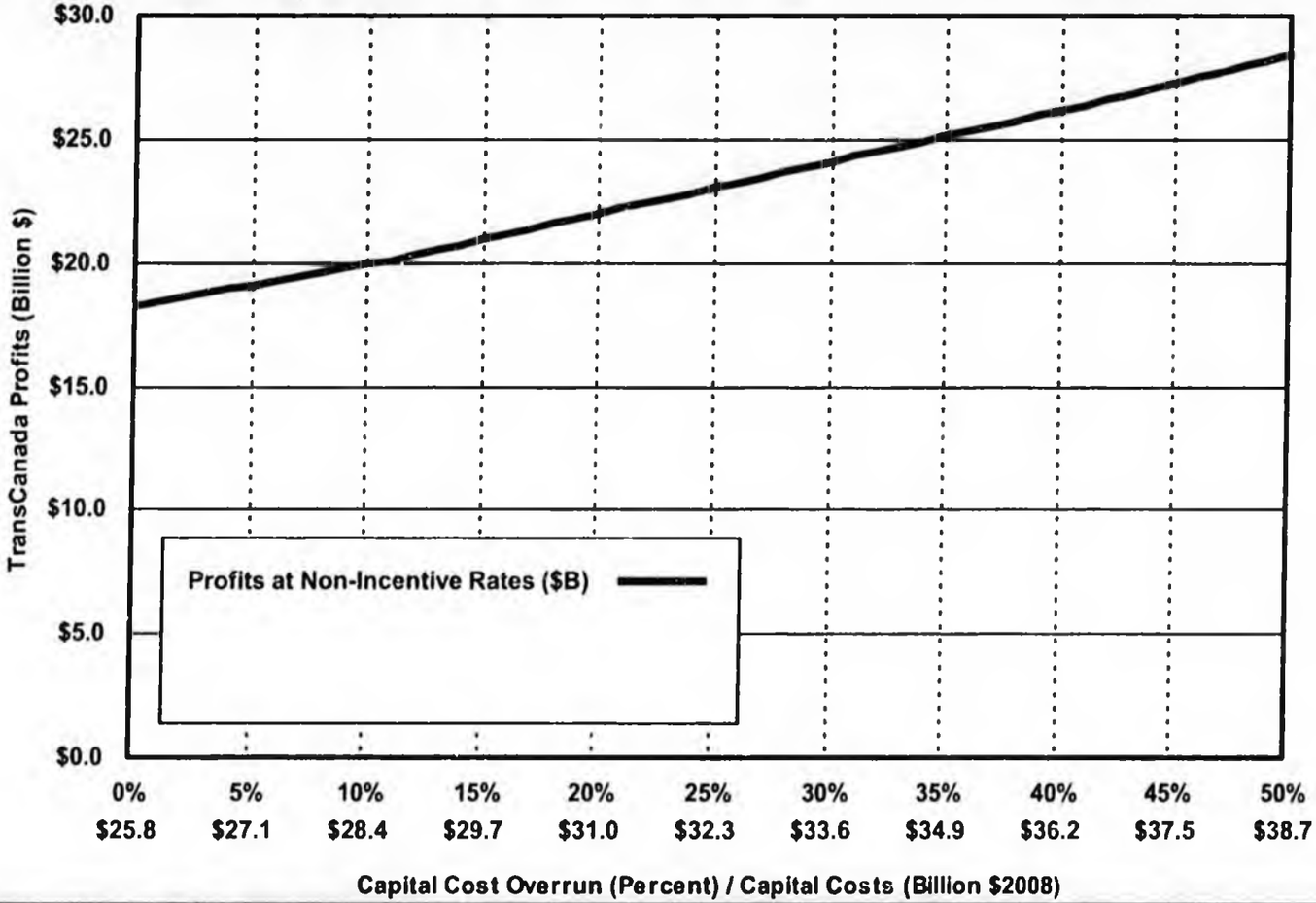
Incentive Adjustments to Return on Equity



econ ONE

Incentive Adjustments to Return on Equity

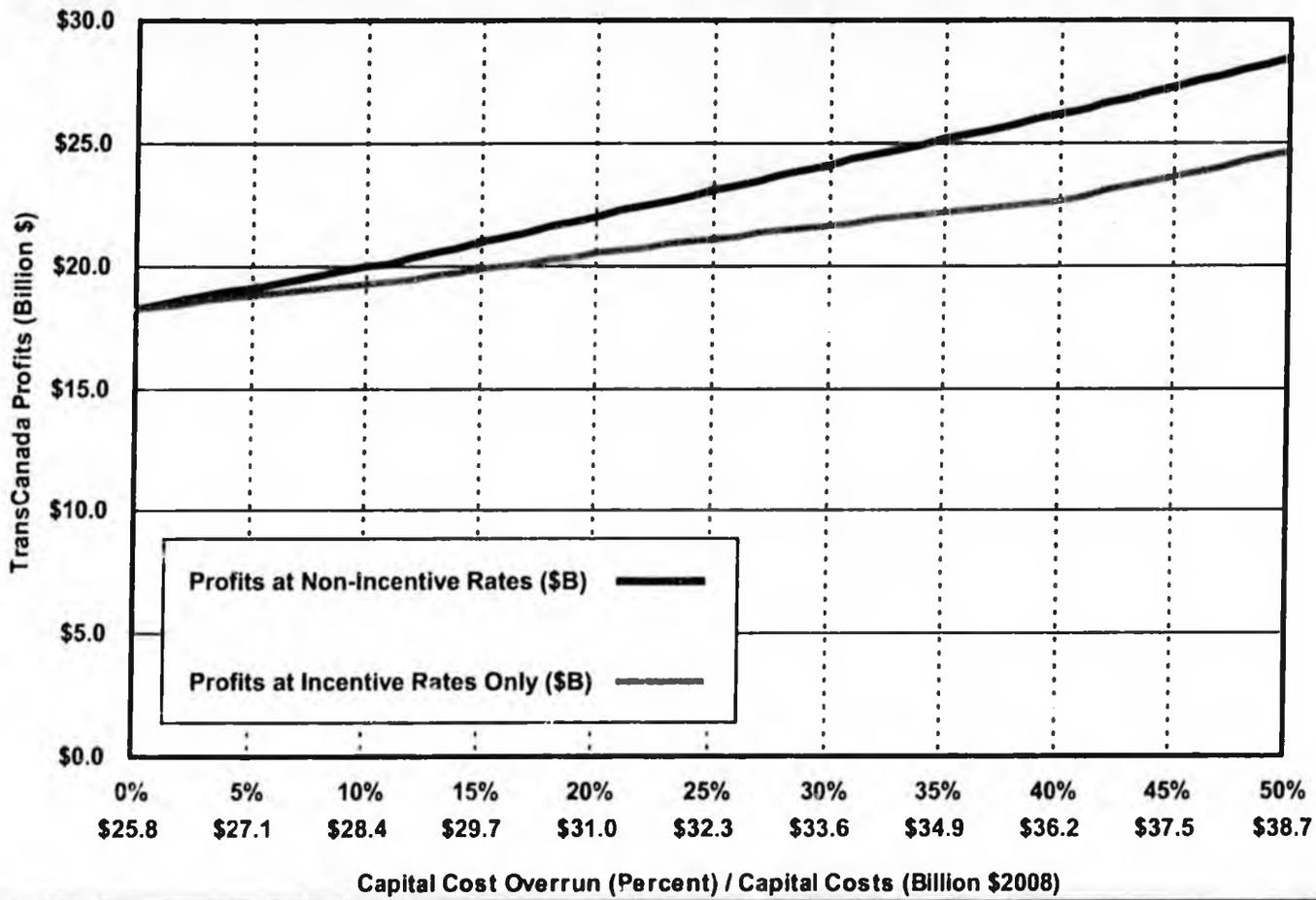
TransCanada proposes to reduce its allowed return on equity by up to 200 basis points (2%) over first 5 years in the event of cost overruns



econ ONE

Incentive Adjustments to Return on Equity

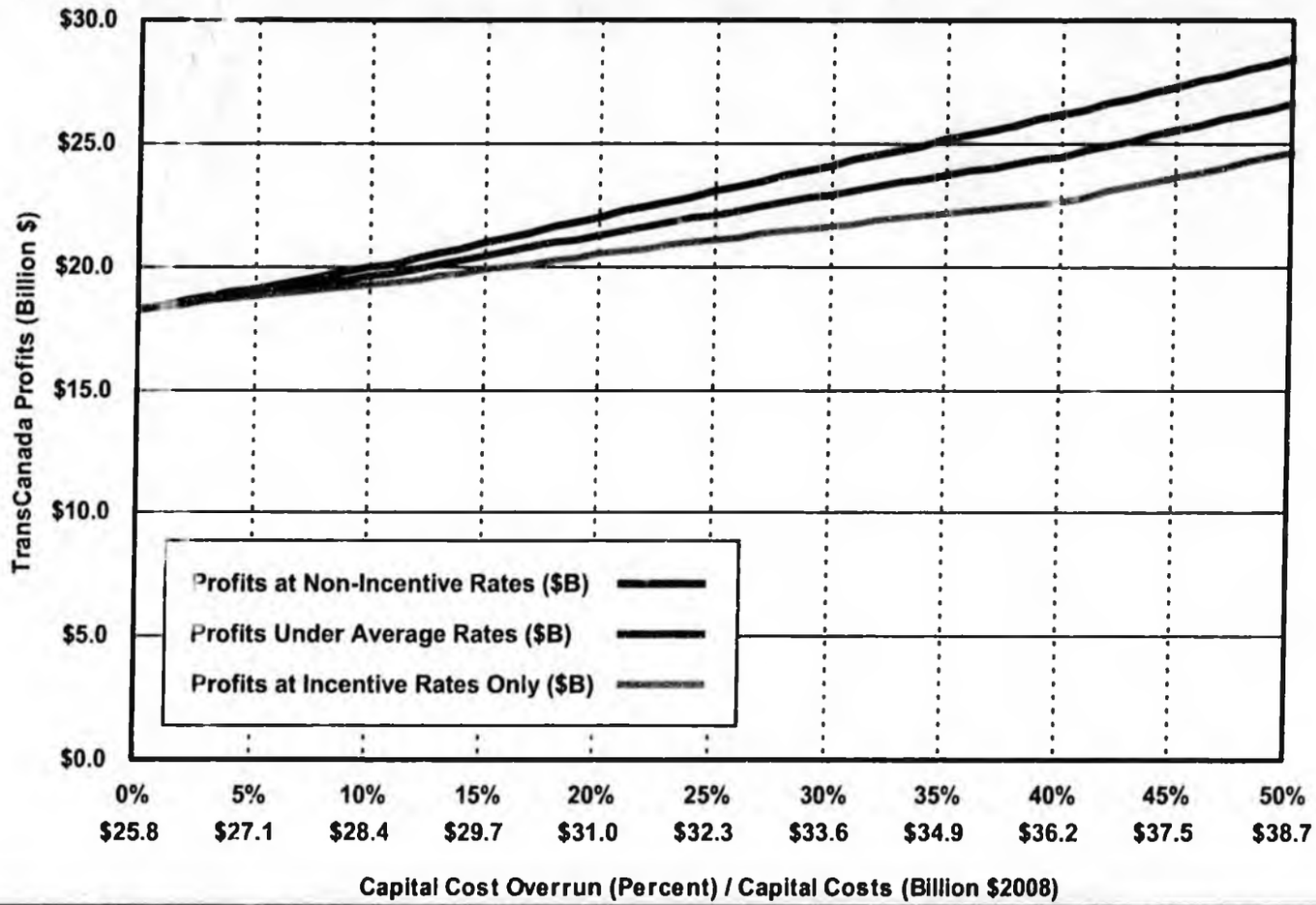
TransCanada proposes to reduce its allowed return on equity by up to 200 basis points (2%) over first 5 years in the event of cost overruns



econ ONE

Incentive Adjustments to Return on Equity

TransCanada proposes to reduce its allowed return on equity by up to 200 basis points (2%) over first 5 years in the event of cost overruns



econ ONE

Potential to Use Government Guaranteed Loan for Cost Overruns

- TransCanada proposes to use Government guaranteed loans to cover potential overruns
- $18 billion made available in $2004
- Would be approximately $20 billion in $2008
- Assuming 75% debt financing overall, a project of $26.8 billion ($2008) would absorb the full guarantee amount
- TransCanada's proposal amounts to $25.8 billion ($2008)
- Accordingly, reservation of Government guaranteed loans for any significant cost overruns would require use of more expensive non-guaranteed debt

Potential to Use Government Guaranteed Loan for Cost Overruns (cont'd)

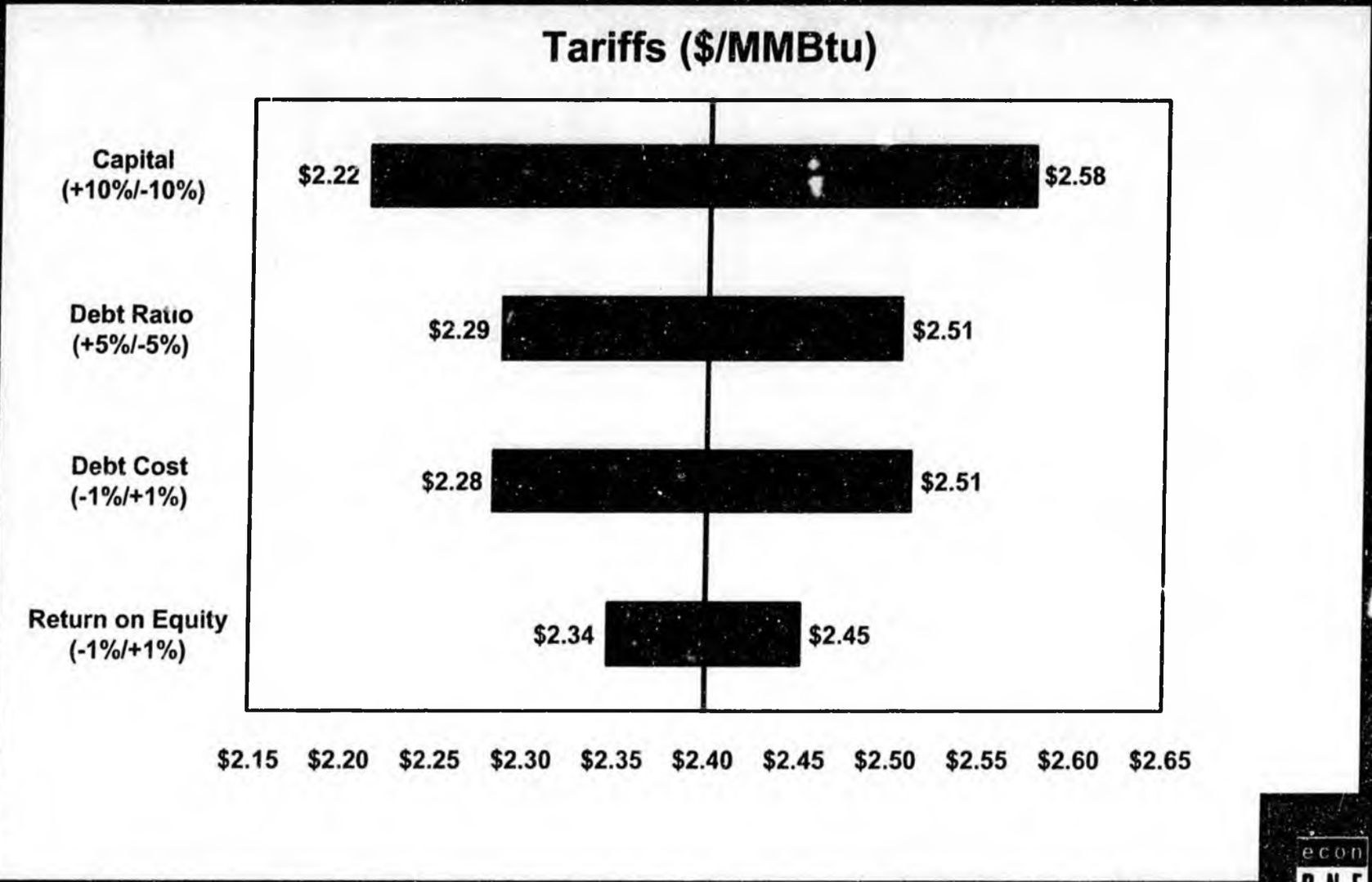
Total Capital ($2008 Bn) (1)	Overrun (Percent) (2)	Amount of Debt at 75% D/E Ratio (3)	Amount of Loan Guarantee ($2008 Billion) (4)	Non-Guaranteed Debt (5)	Average Debt Rate (Percent) (6)
$25.8	0%	$19.4	$20.1	$0.0	4.7%
$28.4	10%	$21.3	$20.1	$1.2	4.8%
$31.0	20%	$23.2	$20.1	$3.1	4.9%
$33.6	30%	$25.2	$20.1	$5.1	5.0%
$36.2	40%	$27.1	$20.1	$7.0	5.1%
$38.7	50%	$29.1	$20.1	$9.0	5.2%

Note: Uses TransCanada estimated debt costs.

Sensitivities

- As discussed above, capital costs are the biggest driver of costs. The critical elements are:
  - Overall Capital
  - Capitalization (i.e., Debt/Equity)
  - Debt Cost
  - Return on Equity

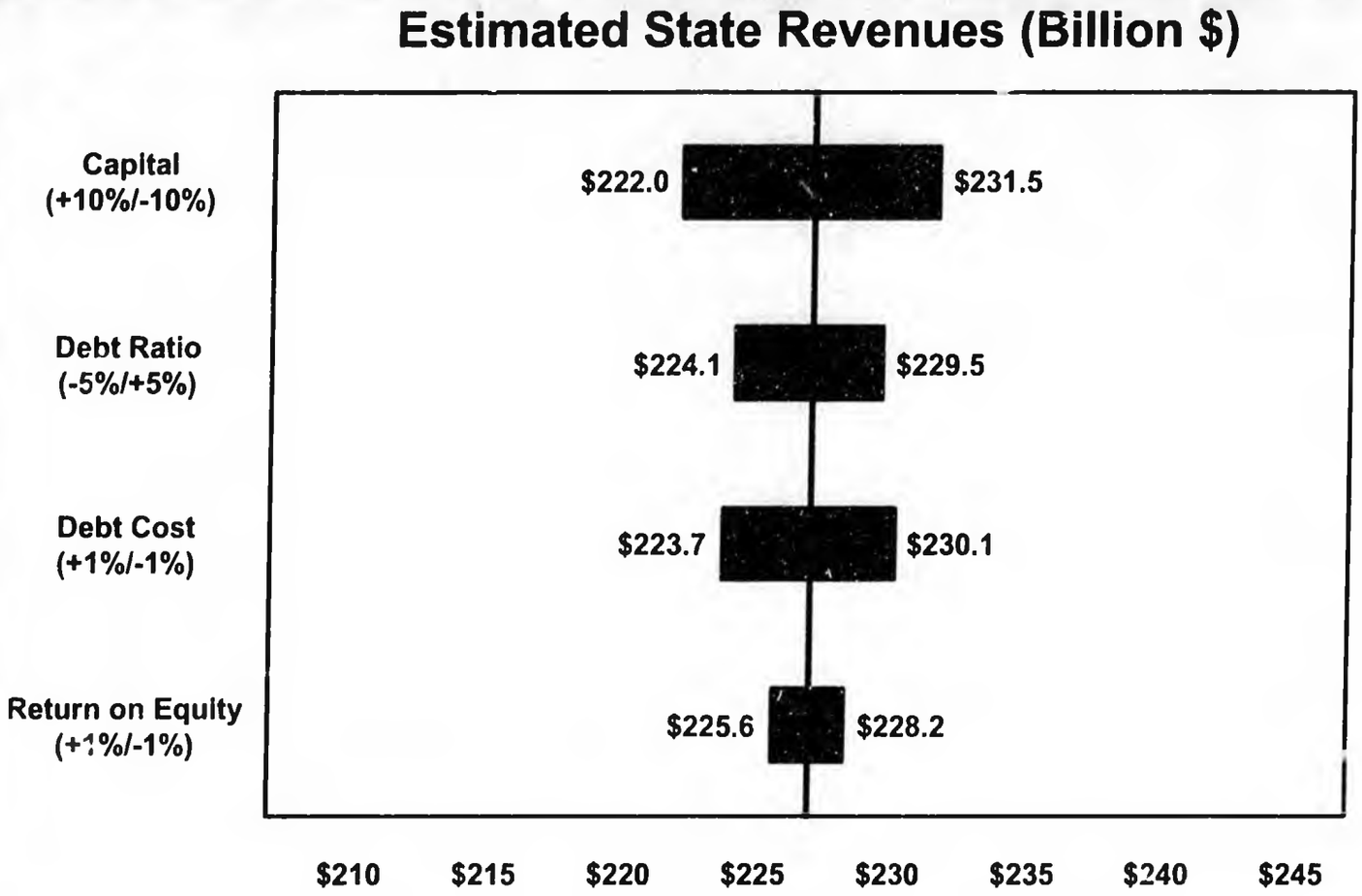
Sensitivities
(cont'd)



econ ONE

Note: Base tariff is per TransCanada assumptions re: costs, capital state and financing (i.e., $25.8bn, 75% debt / 25% equity, 4.7-6.2% debt cost, 14% return on equity).

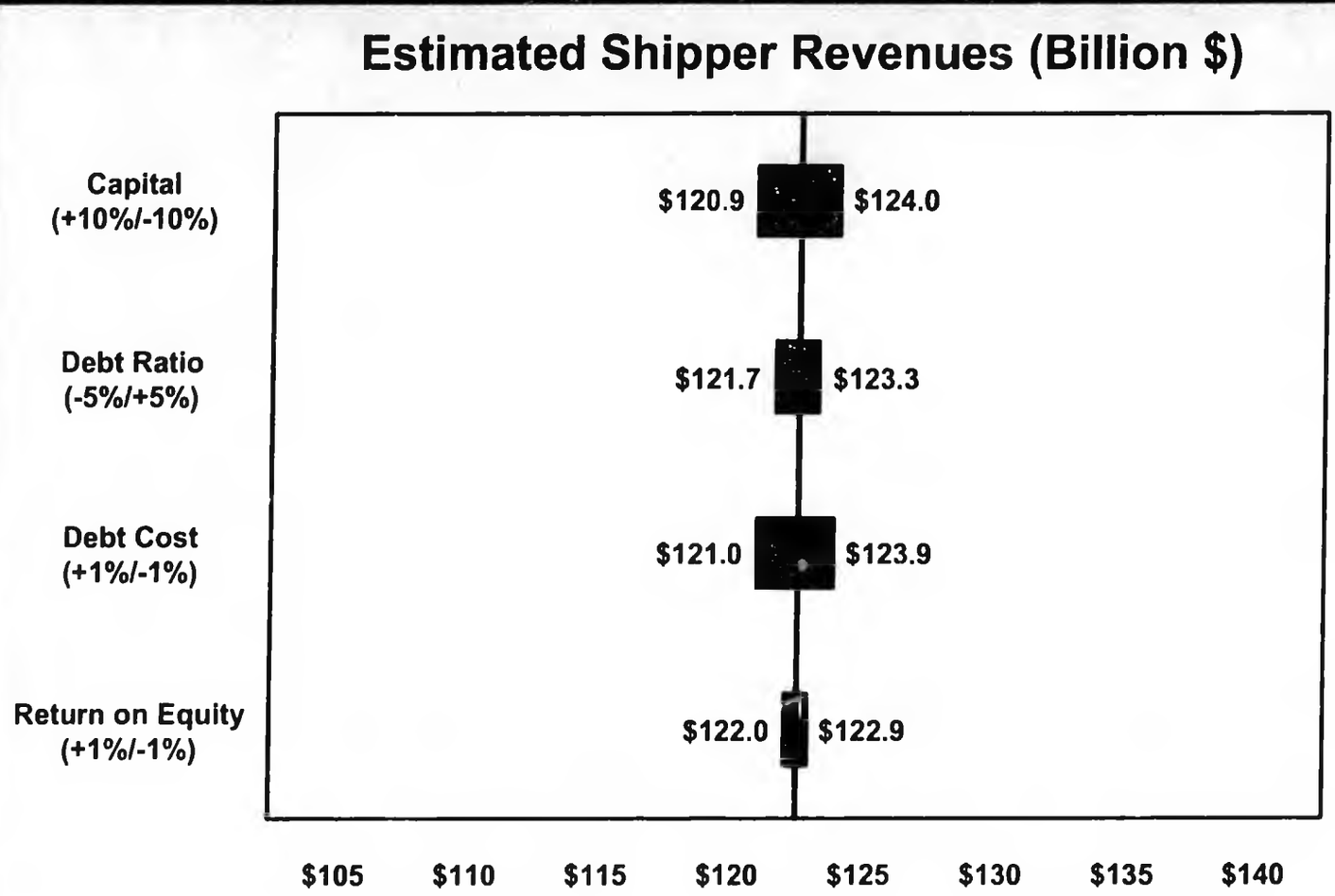
Sensitivities
(cont'd)



Note: Base ($226.9bn) is per TransCanada assumptions re: costs, capital state and financing (i.e., $25.8bn, 75% debt / 25% equity, 4.7-6.2% debt cost, 14% return on equity).

econ ONE

Sensitivities
(cont'd)



Note: Base ($122.6bn) is per TransCanada assumptions re: costs, capital state and financing (i.e., $25.6bn, 75% debt / 25% equity; 4.7-6.2% debt cost, 14% return on equity).

Expansion Issues

- Expansion of pipeline capacity would occur either via addition of compression, or through looping (i.e, additional pipeline)
- TransCanada estimates that expansions up to 5.9 bcf/day (30% increase) could occur through the addition of compression
- Expansions between 5.9 bcf/day and 6.5 bcf/day would occur through either compression or looping
  - Looping involves adding parallel pipeline sections along a portion of the main line
- Beyond 6.5 bcf/day, expansion could occur up to 7.2 bcf/day through looping

Expansion Issues
(cont'd)

- AGIA requires TransCanada to study demand for expansion every two years and offer non-binding Open Seasons if demand is warranted

- AGIA also requires TransCanada to offer "rolled-in" rates as long as they do not result in increase over original rates by more than 15% (i.e., 115% of original rates)

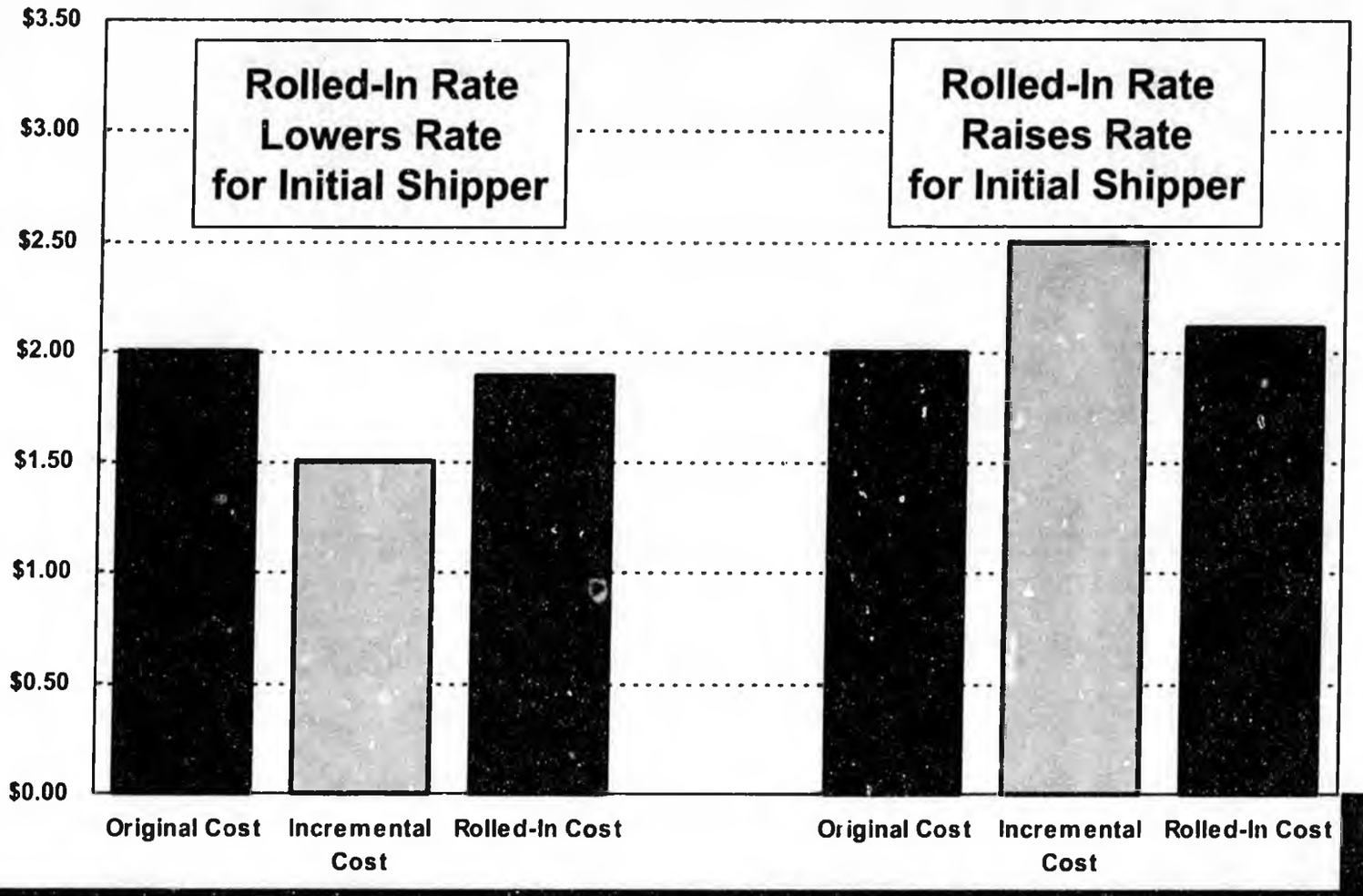
- Rolled-in rates mean that the costs of the expansion "rolled-in" with the original costs and the total is spread out over total volumes

Expansion Issues
(cont'd)

- This could result in higher or lower rates for original shippers depending on the cost of the expansion

- The alternative is incremental rates for expansion. Under incremental pricing, the shipper for the expansion capacity bear the entire cost of the expansion. Again, this could be lower or higher than the original rates

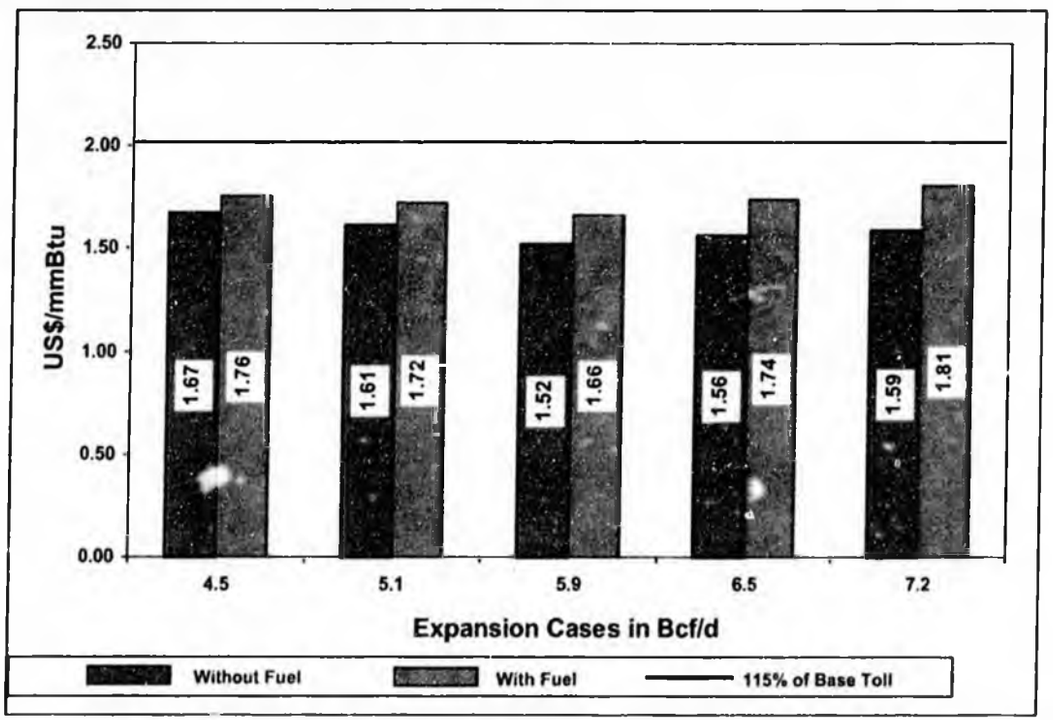
Example of Rolled-In Rate Treatment



econ ONE

Expansion Issues
(cont'd)

- TransCanada estimates that expansions up to 6.5 bcf/day (44% increase in capacity) would reduce rates on a rolled-in basis
- At 7.2 bcf/day, TransCanada estimates that rolled-in treatment of expansions could increase rates (depending on timing of expansion(s)), but by less than the 15% threshold



Note: From TransCanada Application; does not include GTP.

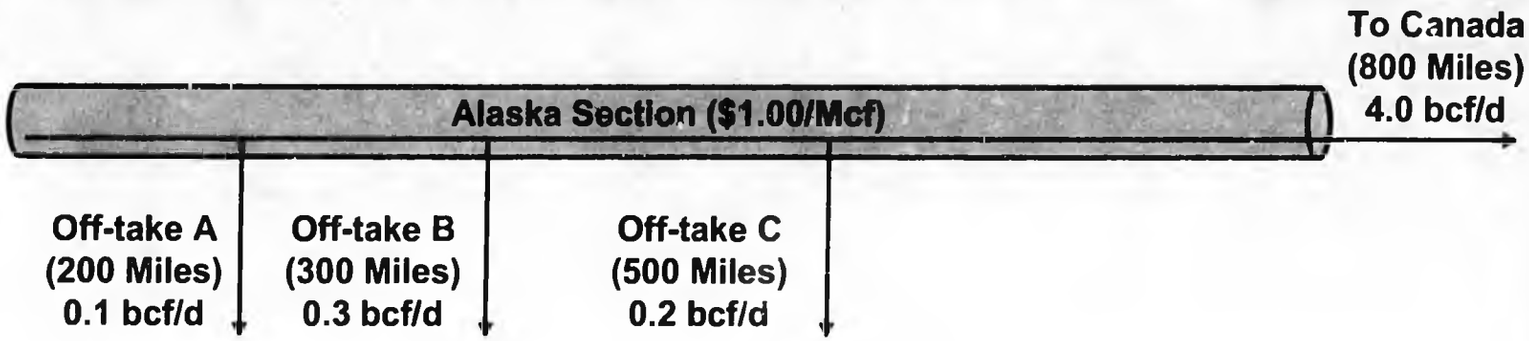
Expansion Issues
(cont'd)

- If TransCanada estimates are correct, existing shippers would be expected to be supportive of rolled-in treatment up to 6.5 bcf/day. Beyond that, they would rather see incremental pricing
  - This could differ depending on the position of the party seeking the expansion. If it is an existing shipper, it may still favor rolled-in treatment above 6.5 bcf/day depending on how much existing capacity it has relative to the amount of incremental capacity it is seeking
  - For example, if a shipper had 10% of the original capacity, but was going to have 100% of the expansion capacity, then it would likely favor rolled-in treatment even if it raised the cost for it original capacity
  - This is because it can spread the costs of the incremental (relatively expensive expansion) across others' volumes
- Neither FERC nor NEB are required to accept rolled-in treatment of rates as required by AGIA, though FERC has stated that there will be a presumption of rolled-in treatment

In-State Tariffs

- TransCanada has proposed offering at least 5 in-state "off-take" locations, one of which would accommodate a "spur" line to the Anchorage area
- In-State Study before Open Season
- Tariffs would be offered on distance sensitive basis, with a single "zonal" rate offered for all Alaska off-take locations
- Rates to the different locations would be calculated based on their relative distances to the total Alaska section, then a weighted average rate would be applied to all off-take in Alaska

In-State Tariffs
(cont'd)



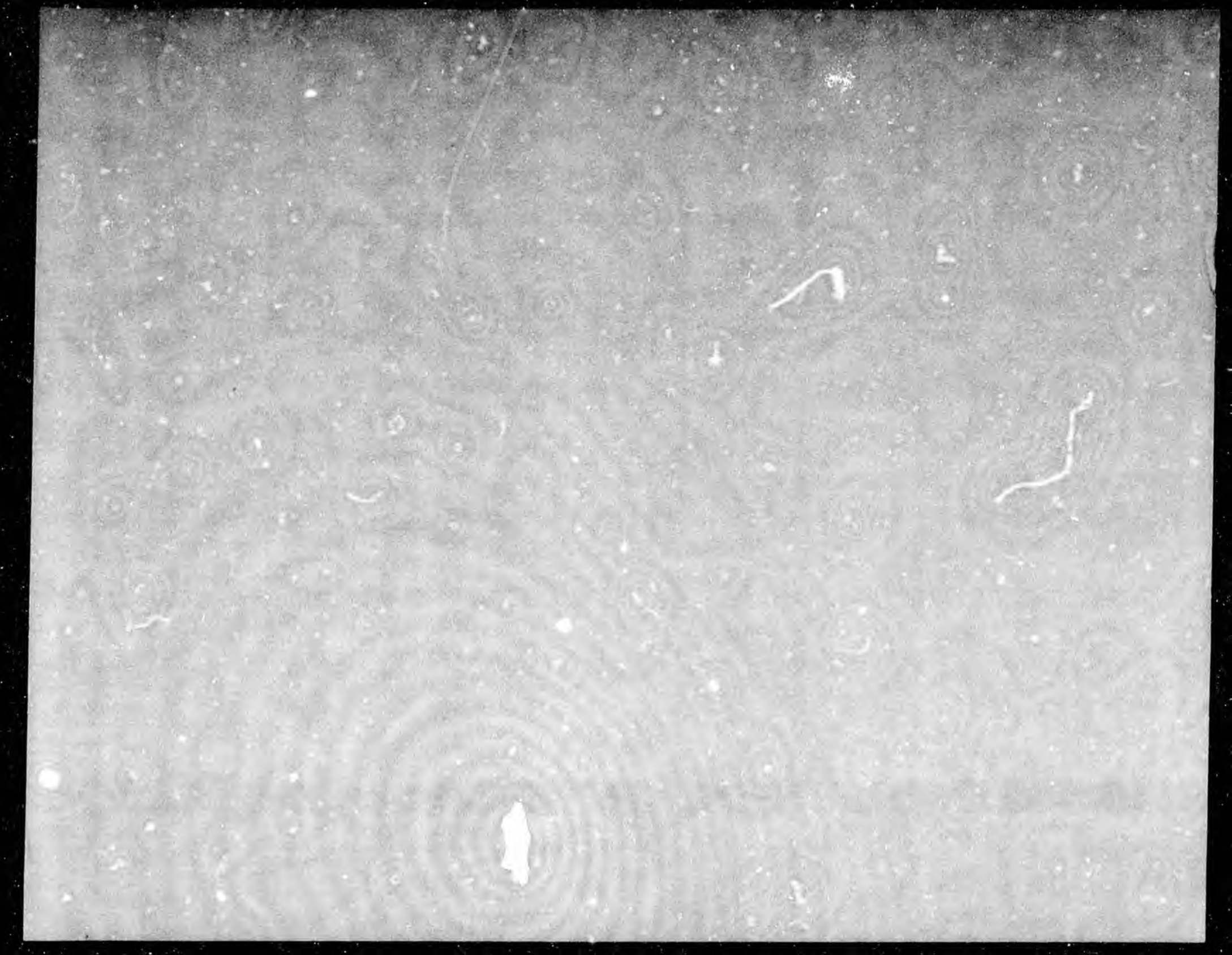
Calculation of Weighted Average

Off-take A:	0.1 bcf/d	x	200 miles =	20 bcf/d-miles
Off-take B:	0.3 bcf/d	x	300 miles =	90 bcf/d-miles
Off-take C:	0.2 bcf/d	x	500 miles =	100 bcf/d-miles
				210 bcf/d-miles
			÷	0.5 bcf/d
				420 miles

420 miles (in Alaska) ÷ 800 miles (to Canada) = 52.5%

52.5% x $1.00/Mcf (to Canada Rate) = $0.525/Mcf (Alaska Rate)

econ ONE



MUSE
STANCIL

FINANCIAL ASSESSMENT OF THE IMPACT OF THE ALASKA GAS PIPELINE

PREPARED FOR

Legislative Budget and Audit Committee
of the Alaska Legislature
Representative Ralph Samuels, Chair

June 2008

..... Real World Expertise

15455 Dallas Parkway
Suite 200
Addison, TX 75001-4690
Phone: (214) 954-4455
Fax: (214) 954-1521

Three Allen Center
Suite 4130, 333 Clay Street
Houston, TX 77002
Phone: (713) 890-1182
Fax: (713) 751-8888

48/54 Moorgate
London EC2R 7EJ
United Kingdom
Phone: 44 (0) 207-374-8994
Fax: 44 (0) 207-374-8995

Level 58 Republic Plaza
9 Raffles Place
Singapore 048619
Phone : (65) 6832-1341
Fax : (65) 6832-1491

KEY STUDY ASPECTS

- Financial Analysis of the Alaska Gas Pipeline Project from the perspective of TransCanada and Producer Project
- Assessment of the future performance of TransCanada's Canadian gas assets in two cases, With and Without Alaska Gas Supply
- High-level overview other TransCanada assets
- Evaluation of supply and demand/competition issues in North America that may impact the TransCanada pipeline assets
- Evaluation of impact of the Alaska gas on TransCanada's future earnings

FINANCIAL ANALYSIS OF THE ALASKA GAS PIPELINE

FINANCIAL ANALYSIS OF THE ALASKA GAS PIPELINE PROJECT

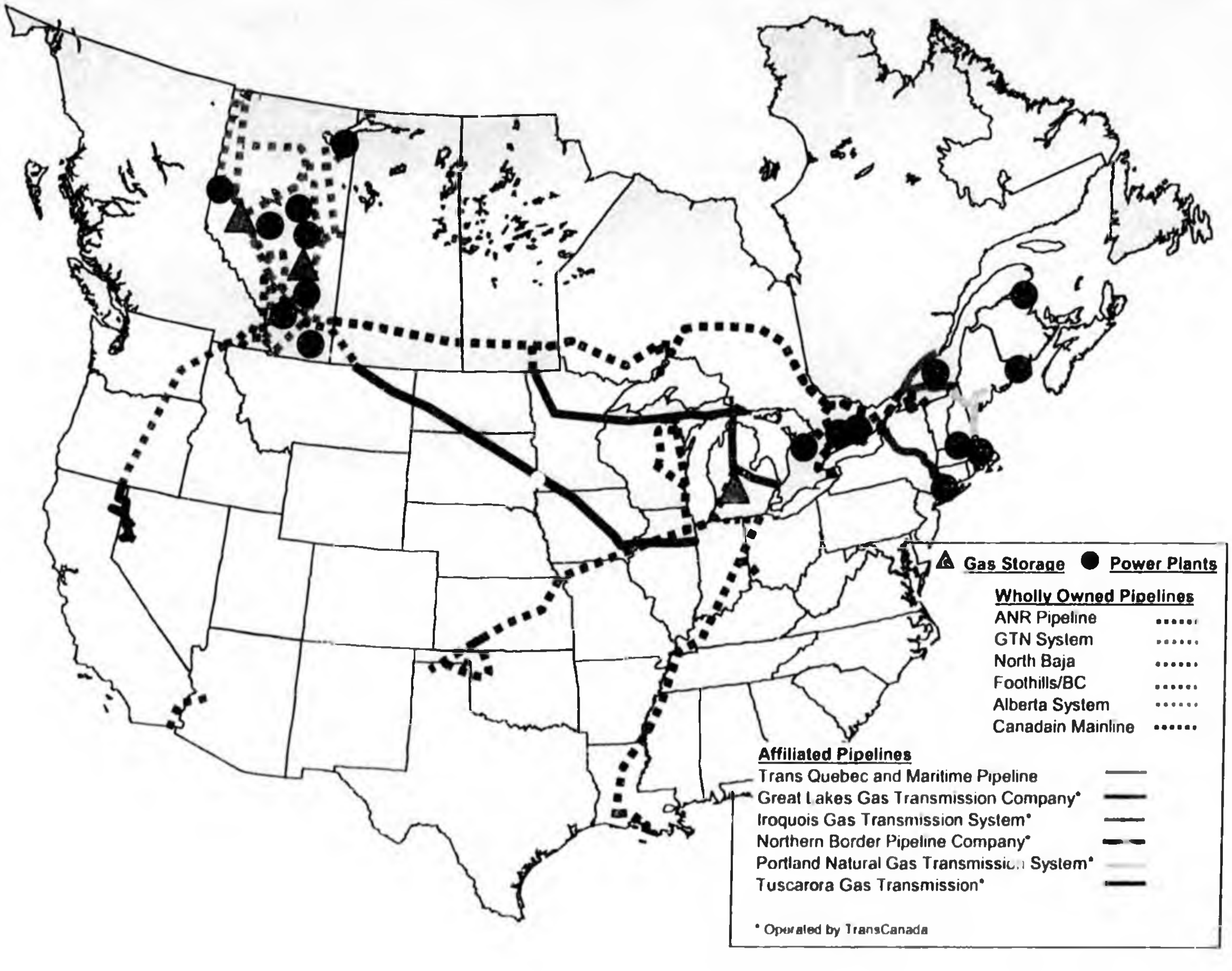
- **Assess the investment philosophy, asset portfolio, and financial structure of potential owner companies**
  - TransCanada
  - Producer Project Owner
    - ConocoPhillips (COP)
    - BP

- **Assess the risk/reward and potential return of the investment in the pipeline project**
  - Assuming certain percentage of firm transportation (FT) committed before investment
  - Assuming no FT commitment until year 2 of operations
  - Assuming all FT sold prior to initial construction

- **Evaluate the potential investment in the Alaska Pipeline Project in the context of each company's investment philosophy, asset portfolio, and financial structure**
  - Assess how investing in the project could impact each company's financial stability
  - Assess the project in light of other likely alternative project investments available to the companies

MUSE
STANCH

TRANSCANADA



MUSE STANCIL

TRANSCANADA (continued)

- **Corporate Vision and Investment Philosophy**
  - Become the leading energy infrastructure company in North America
  - Deliver strong financial performance
  - Maximize corporate financial flexibility
  - Execute on the current portfolio of large, attractive projects and initiatives
  - Create and cultivate a high-quality portfolio of future growth opportunities

- **Asset Portfolio**
  - Natural Gas Transportation
    - 36,500 miles of wholly-owned pipelines connecting North American gas producing basins to downstream markets
    - 15 billion cubic feet per day (Bcf/d) of natural gas transported in 2007
  - Natural Gas Storage
    - 355 billion cubic feet (Bcf) of storage capacity
  - Crude Oil Transportation
    - Keystone Pipeline Project linking growing Canadian oil sands supplies with refineries in the U.S. Midwest
    - New build, plus conversion of underutilized Mainline capacity
  - Power Generation
    - Assets in Canada and the U.S.
    - Diverse portfolio of nuclear, natural gas, coal, hydro, and wind
  - LNG
    - Two LNG import terminals in the development phase
    - Quebec location on the St. Lawrence River
    - New York State in Long Island Sound
  - Marketing

TRANSCANADA (continued)

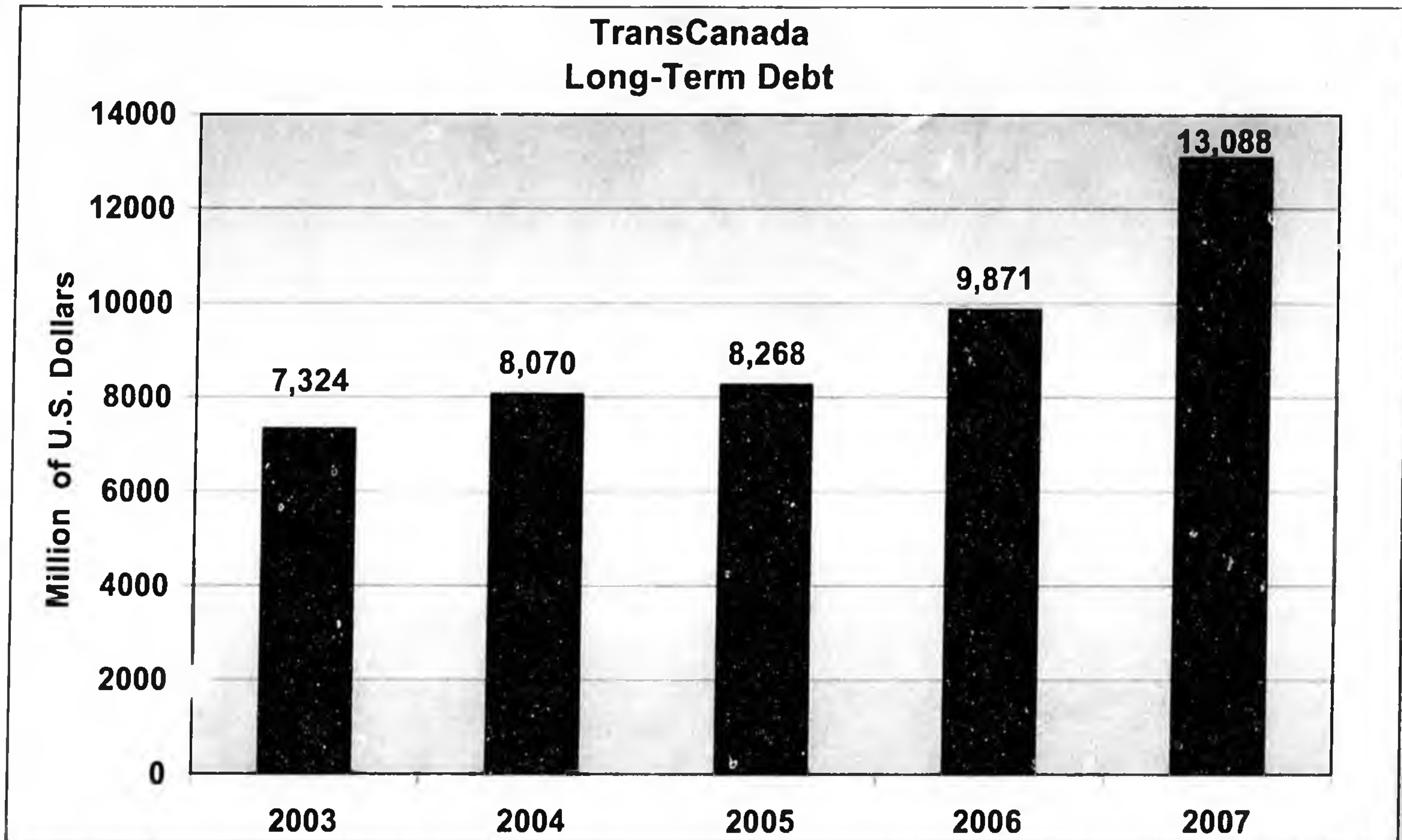
- **Key Facets of Current Portfolio**
  - Planned investment of approximately $10 billion in a number of energy infrastructure projects currently under construction throughout North America
  - Pipeline Segment
    - Approximately $5.3 billion of committed capital projects
      - Alberta System's North Central Corridor
      - Keystone Oil Pipeline
  - Energy Segment
    - Plan to invest more than $4.6 billion in a variety of projects
      - Bruce Power, Bruce A Restart and Refurbishment Project
      - Halton Hills Generating Station
      - Portlands Energy Centre
      - Cartier Wind

TRANSCANADA (continued)

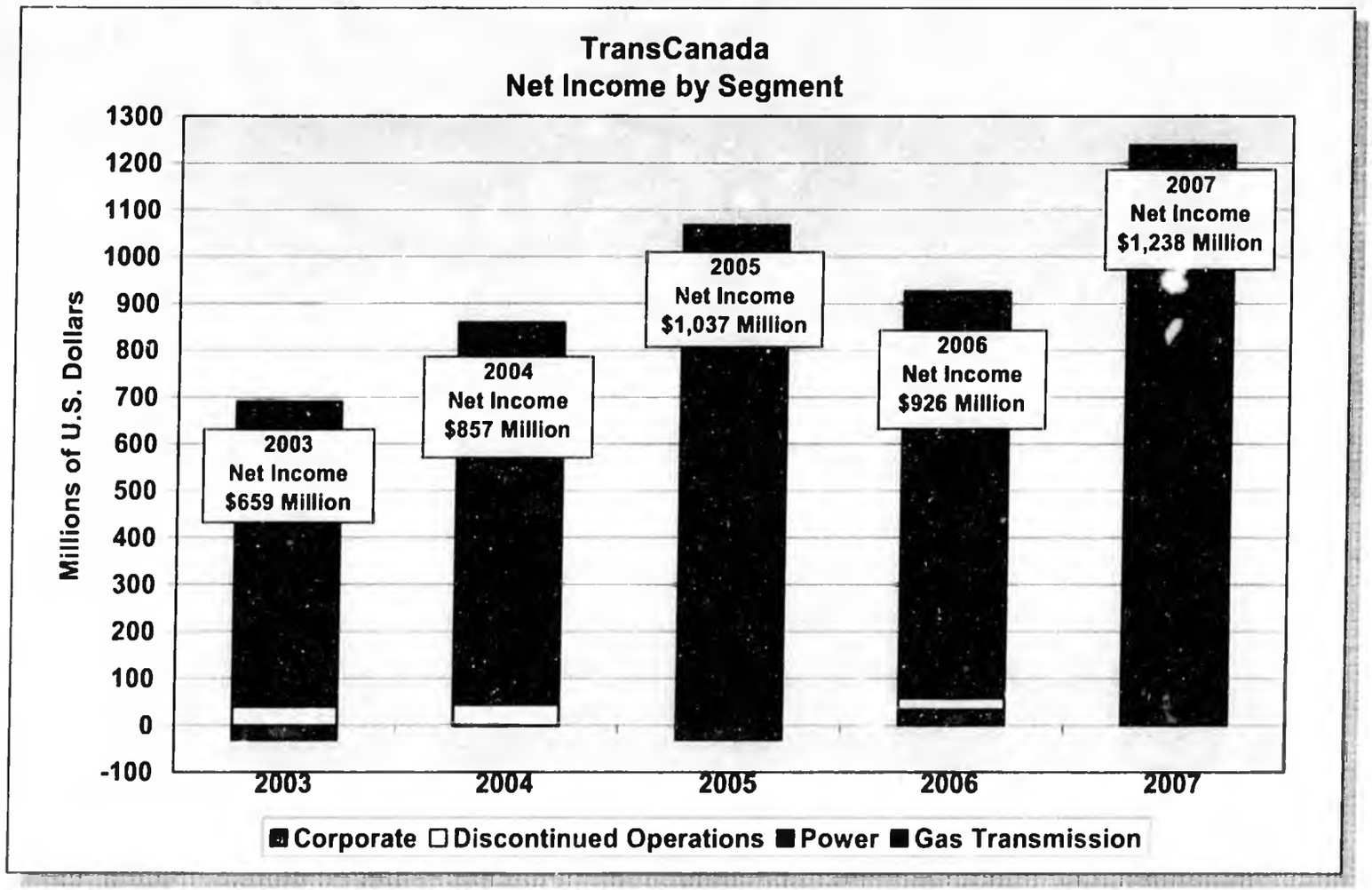
- **Future Investments Criteria**
  - Select only the very best opportunities and move those initiatives forward
  - Build on existing large and attractive portfolio of projects and investment opportunities in the Pipeline and Energy segments
  - Cultivate a portfolio that provides the opportunity to reinvest substantial discretionary cash flow into opportunities in natural gas and crude oil pipelines, power generation facilities, natural gas storage, and LNG terminals
  - Capitalize on North America's increasing demand for cleaner and more efficient energy
  - Continue to deliver strong and sustainable financial returns to shareholders

TRANSCANADA (continued)

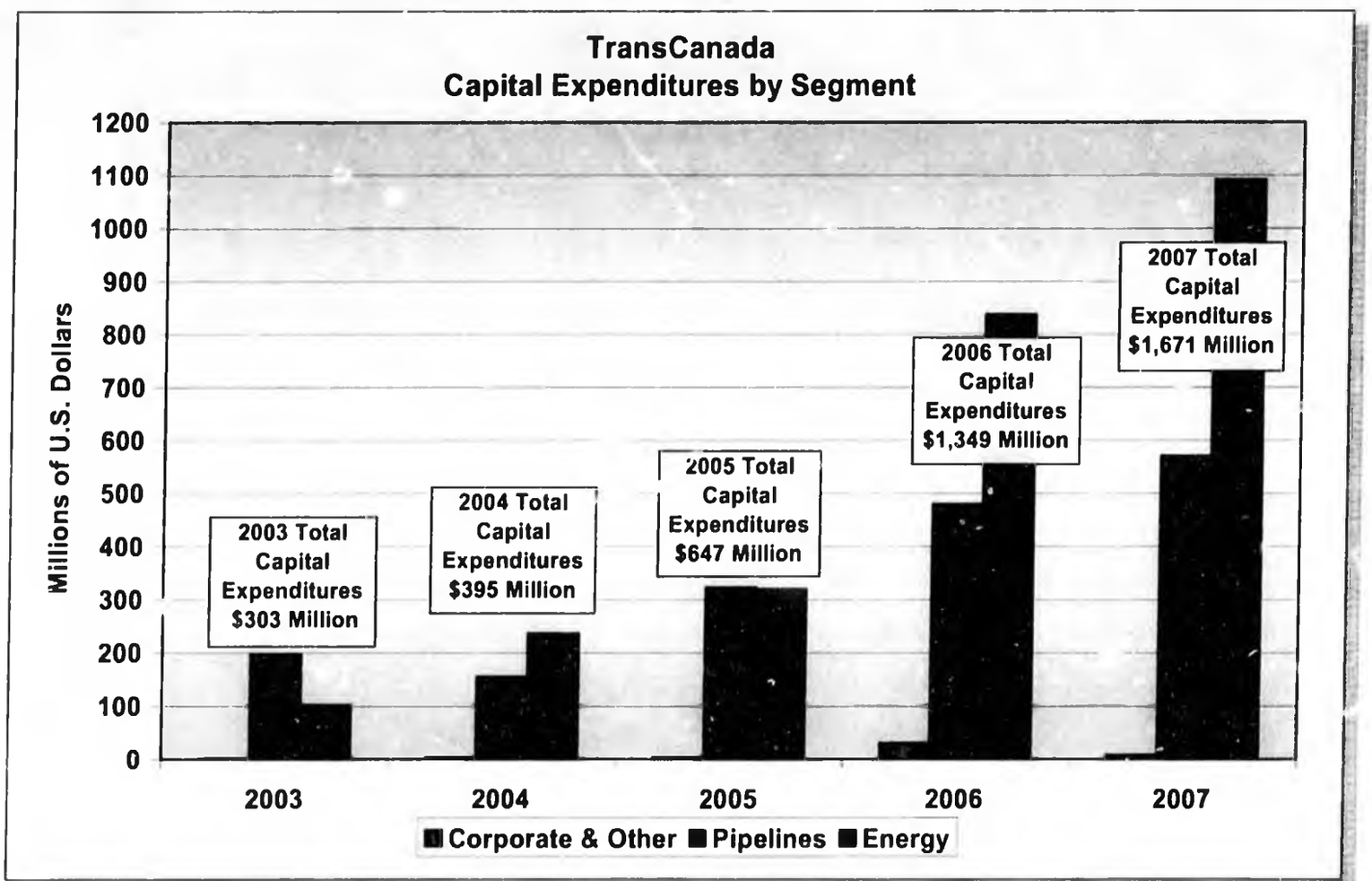
- **Financial Structure**
  - Current Market Capitalization, $23 billion
  - Long-term debt as of March 31, 2008, $13 billion
  - Detailed 2007 Financial Performance analysis located in Appendix



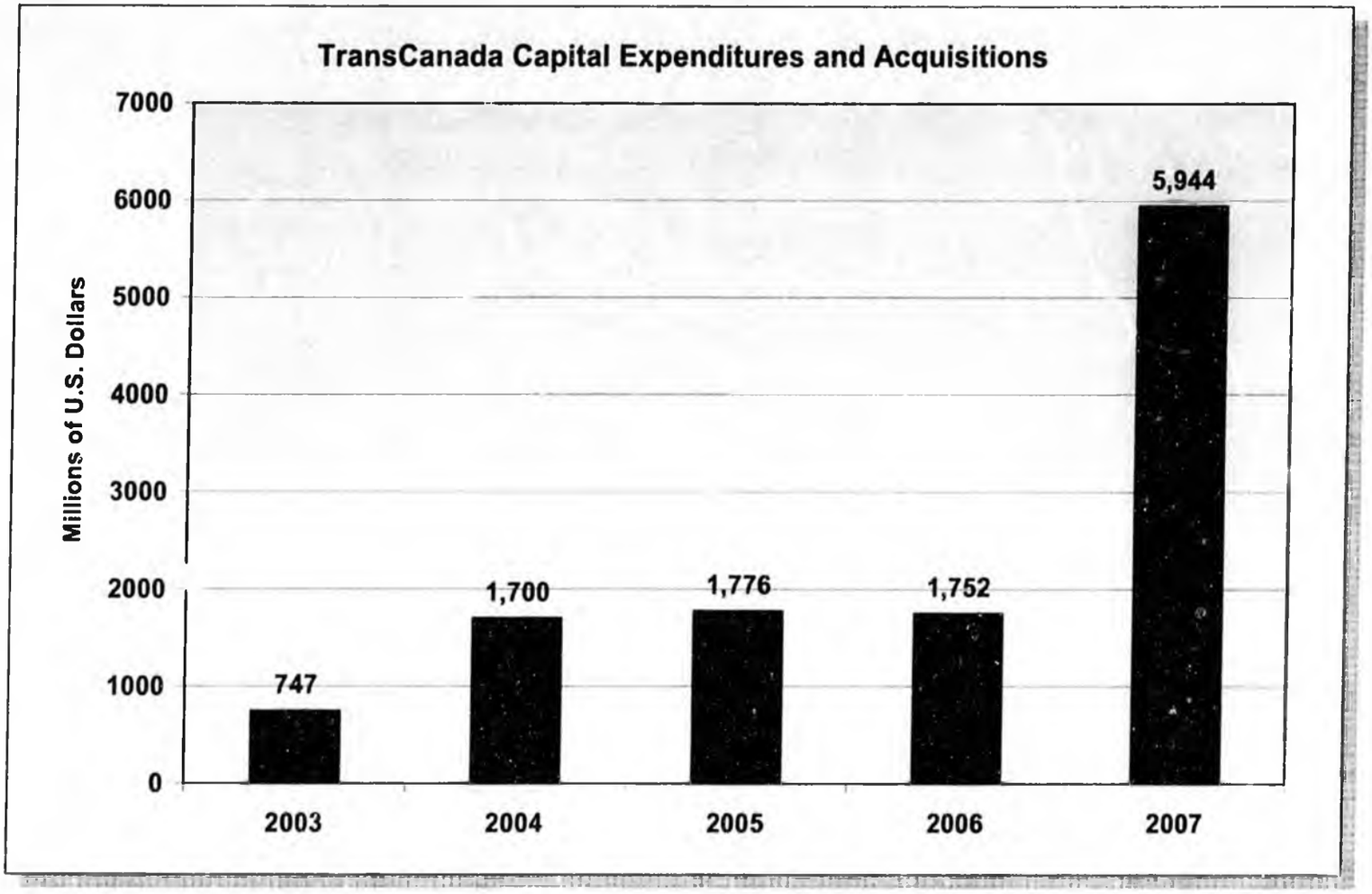
TRANSCANADA (continued)



TRANSCANADA (continued)



TRANSCANADA (continued)



MUSE STANCIL

FINANCIAL ANALYSIS OF POTENTIAL OWNER COMPANIES

- **Producer Project Owners**
  - ConocoPhillips
  - BP

ConocoPhillips Asset Portfolio

- **Exploration activities in 23 countries**

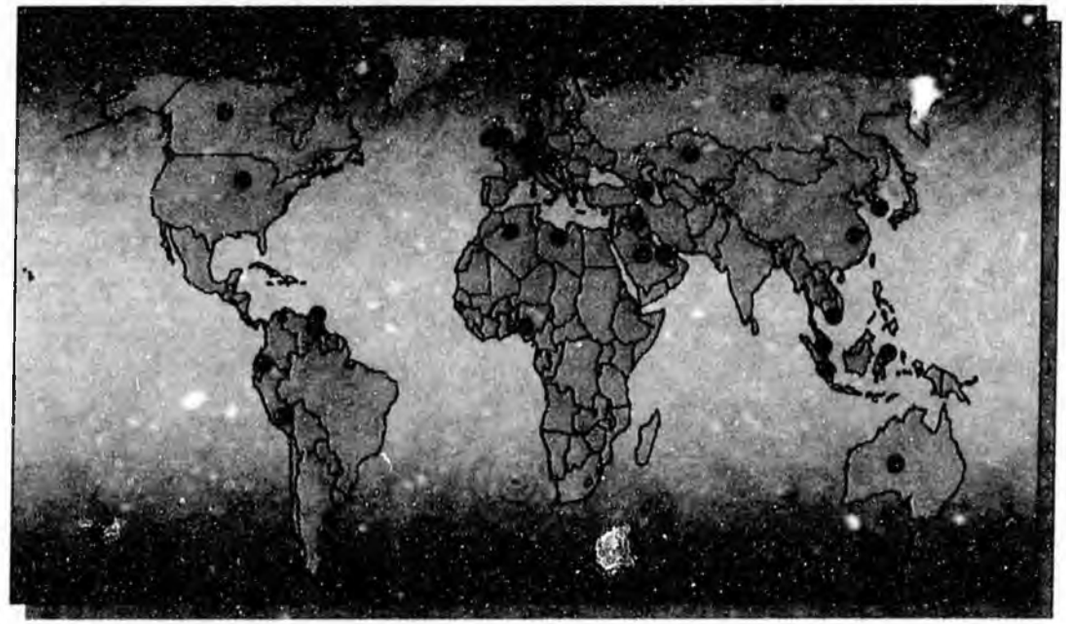
- **Production activities in 16 countries**
  - Total 2007 production 2.3 million barrels per oil equivalent day
  - Including Lukoil and Syncrude

- **Refineries**
  - 12 in the U.S.
  - 4 in Europe
  - 1 in Asia
  - 2007 Refining Capacity 2.7 million barrels per day (MMbp/d)
    - 2.04 MMbp/d in U.S.
    - 669 thousand barrels per day (Mbp/d) Internationa

- **As of December 31, 2007:**
  - Third-largest integrated energy company in the U.S.
    - Market capitalization
    - Oil and natural gas reserves
    - Oil and natural gas production
  - Fourth-largest refiner in the world
  - Sixth-largest worldwide reserves holder, non-government-controlled company

- **Refined Products Marketing**
  - U.S., Europe, and Malaysia
  - Phillips 66, Conoco, 76, and JET brands

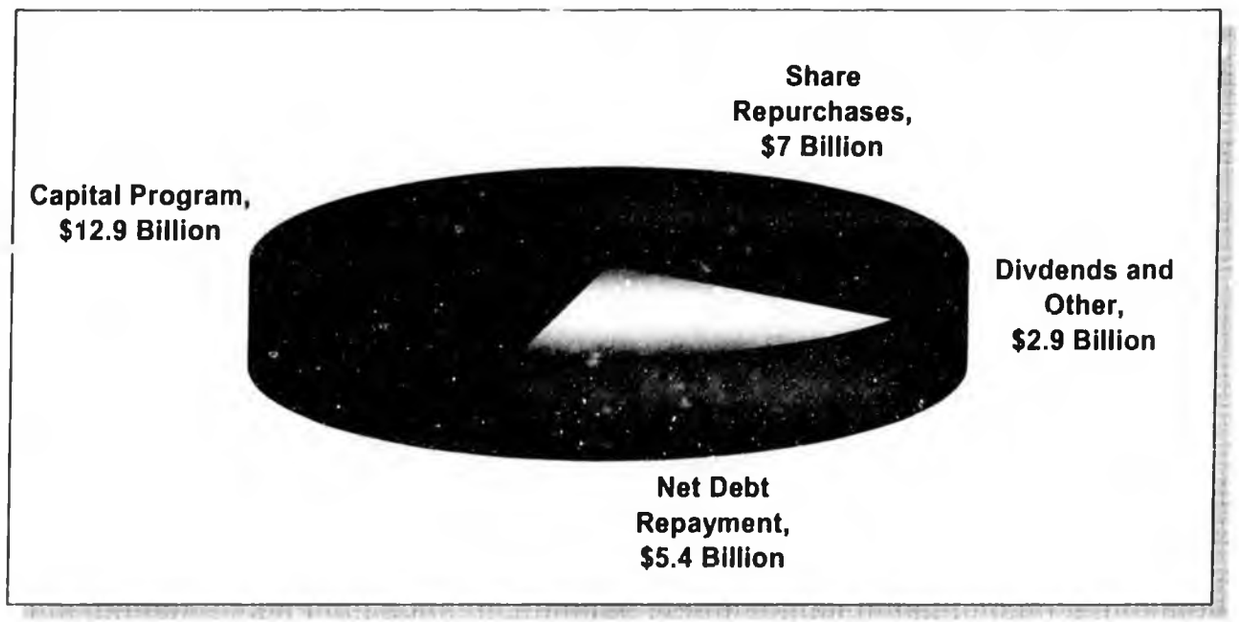
- **Joint Venture Operations**
  - DCP Midstream in the U.S., 50 percent Interest
    - 63 Natural Gas Processing Plants
    - 58,000 miles of natural gas gathering
  - Chevron Phillips Chemical Company, 50 percent Interest
    - 36 Production Facilities in 7 countries
    - 6 Research and Technology Centers



MUSE

ConocoPhillips (continued)

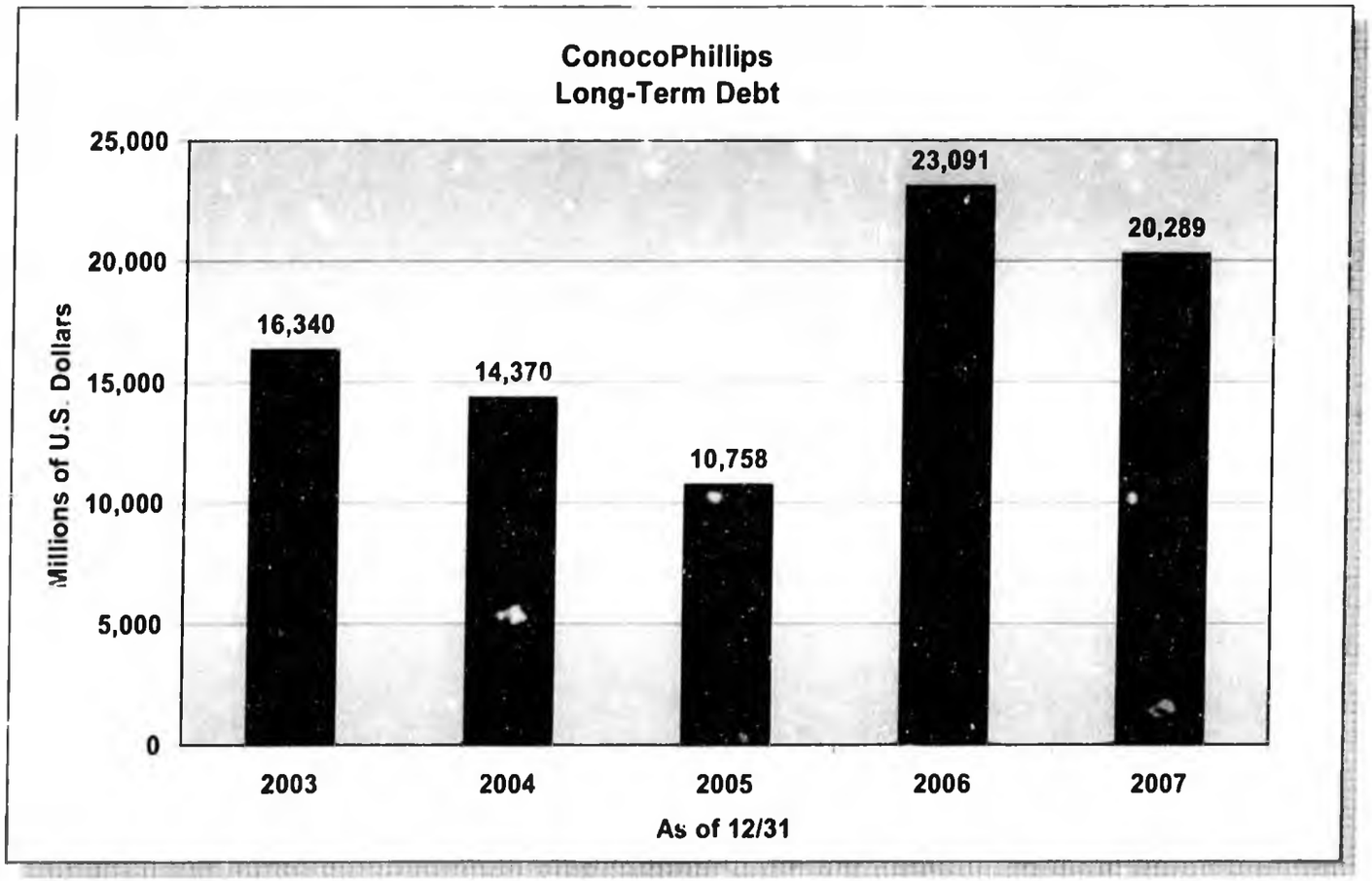
- **Corporate Vision and Investment Philosophy**
  - Exercised a consistent, proven investment strategy that balances allocations of cash flow
    - Grow the asset base
    - Return capital to shareholders through dividends and share repurchases
    - Manage debt
  - Investment allocations are based upon the dynamic industry environment including identification of new investment opportunities
  - In the recent past, the company has completed key acquisitions and new investments while reducing corporate debt
  - 2007 Uses of Cash are summarized in the chart below



MUSE STANCIL

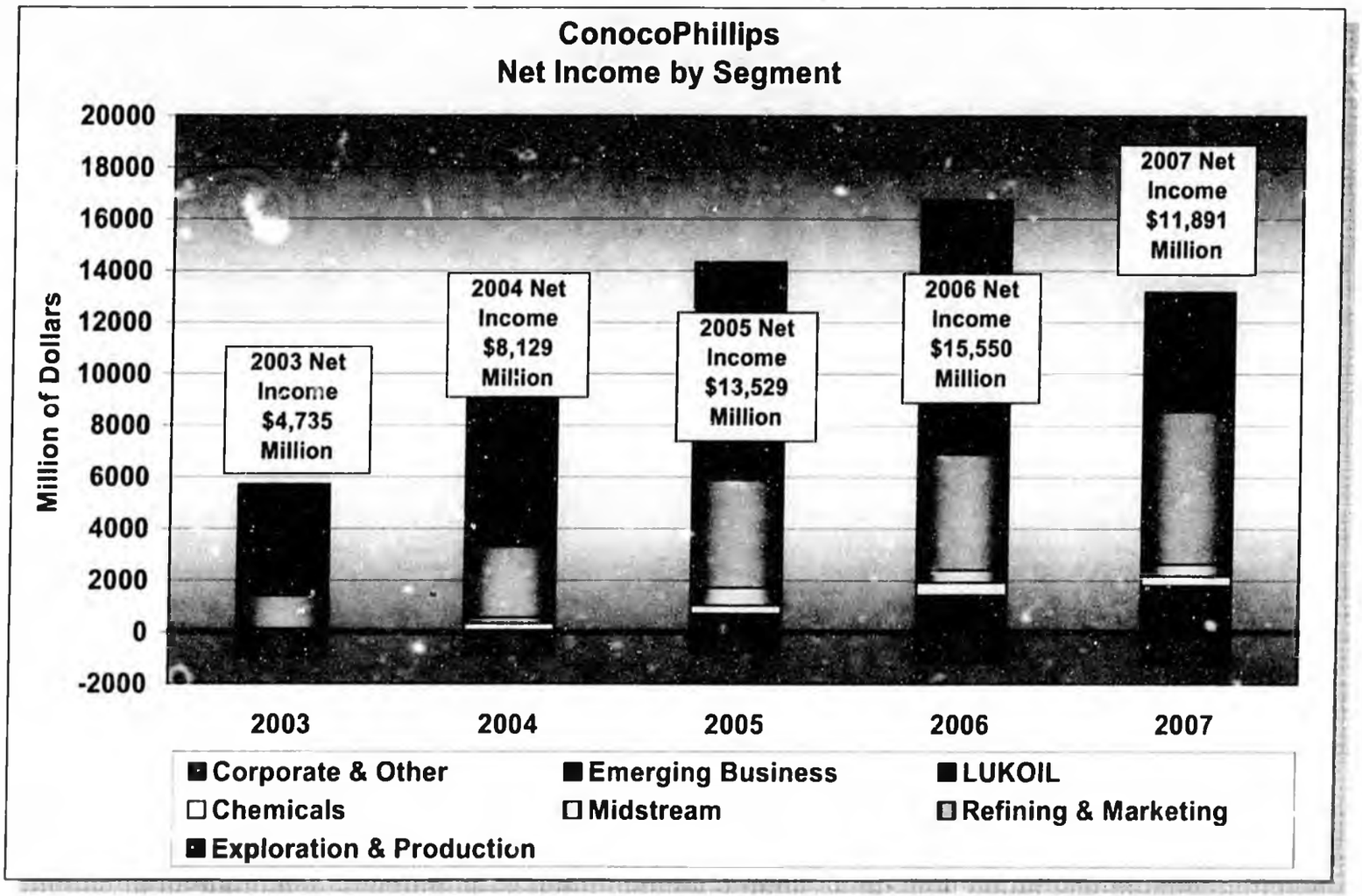
CONOCOPHILLIPS ASSET PORTFOLIO (continued)

- **Financial Structure**
  - Current market capitalization, $144 billion
  - Debt as of March 31, 2008, $ 22 billion
  - Long-term debt, $ 20 billion

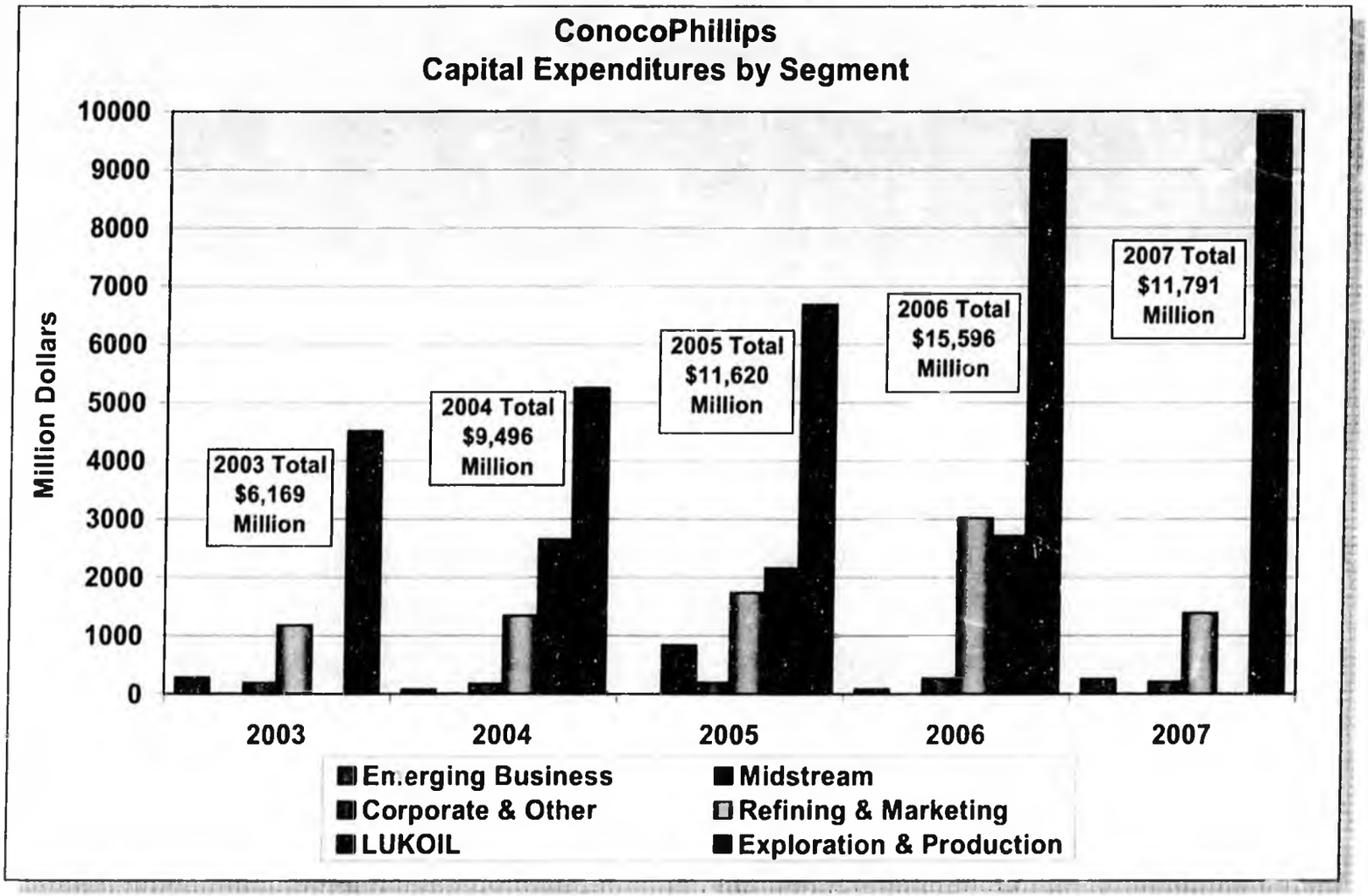


MUSE STANCIL

ConocoPhillips Asset Portfolio (continued)

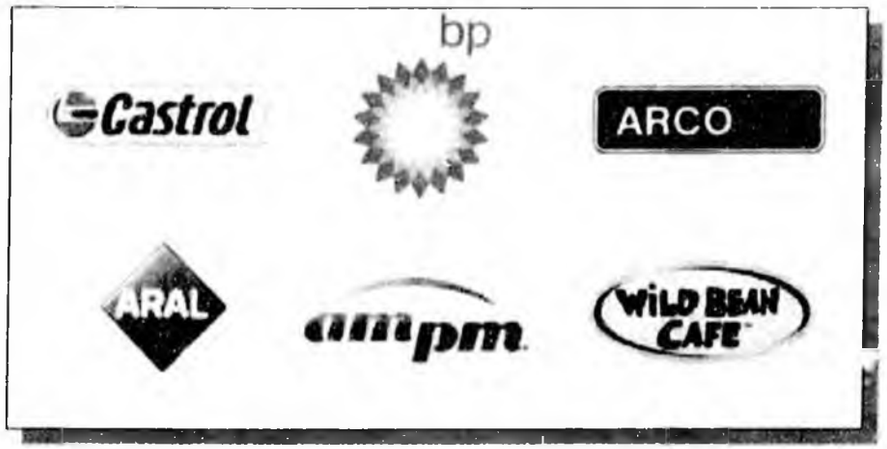


ConocoPhillips Asset Portfolio (continued)



BP WORLDWIDE

- **Exploration activities in 29 countries**
- **Over 24,000 service stations worldwide**
- **Interest in 17 crude oil refineries**
- **Corporate Vision and Investment Philosophy**
  - Continue to support the strong list of projects under development and coming on stream
  - Newly delineated the business into groups to emphasize the key drivers of the business
    - Upstream
    - Downstream
    - Alternative Energy
  - Investments in alternative energy to provide a focus on technology to support the existing business as well as the development of the supply of low-carbon energy for the future
  - Focus on evaluation of long-term strategy given increased oil prices and the trends in the world economy, including the identification of the right opportunities in a challenging marketplace
  - Cash flows from BP's strong asset base are allowing the company to increase investment in future growth and shareholder dividends
  - Returning cash to shareholders through dividends and buybacks
    - Increased the quarterly dividend (March 2008) to 13.525 cents per share, compared with 10.325 cents per share in 2007, a 16 percent increase
    - $7.5 billion of shares were repurchased for cancellation in 2007



BP WORLDWIDE ASSET PORTFOLIO

- **Africa**
  - Exploration and Production - Algeria, Angola, and Egypt
  - Refining and Marketing – Southern Africa
  - Marketing Operations for lubricants, oil and gas products, and solar panels across the continent

- **Asia**
  - Exploration and Production - China, Indonesia, Vietnam, and Pakistan
  - Chemicals manufacturing - China, the Philippines, South Korea, and Malaysia
  - LNG – China
  - Joint Venture opportunities in many countries including Kuwait and United Arab Emirates
  - BP Solar – India
  - Lubricants and oil products marketing throughout the region
  - Major retail operations - India and China

- **Australasia**
  - Exploration and Production - Australia and New Zealand
  - BP Solar – Australia
  - Sales and marketing of lubricants and oil products takes place throughout the region
  - Major retail operations in both Australia and New Zealand

- **Europe**
  - London is where BP's corporate headquarters are located, and the UK is, therefore, a center for trading, legal, finance, and other mainstream business functions. The UK is also home to three of BP's major global research and technology groups
  - Exploration and Production - the North Sea, the UK and Norway, The Netherlands, and Azerbaijan
  - Leader of the Baku-Tbilisi-Ceyhan (BTC) pipeline project
  - Joint Venture - Russia (50 percent ownership of TNK-BP)

BP WORLDWIDE ASSET PORTFOLIO (continued)

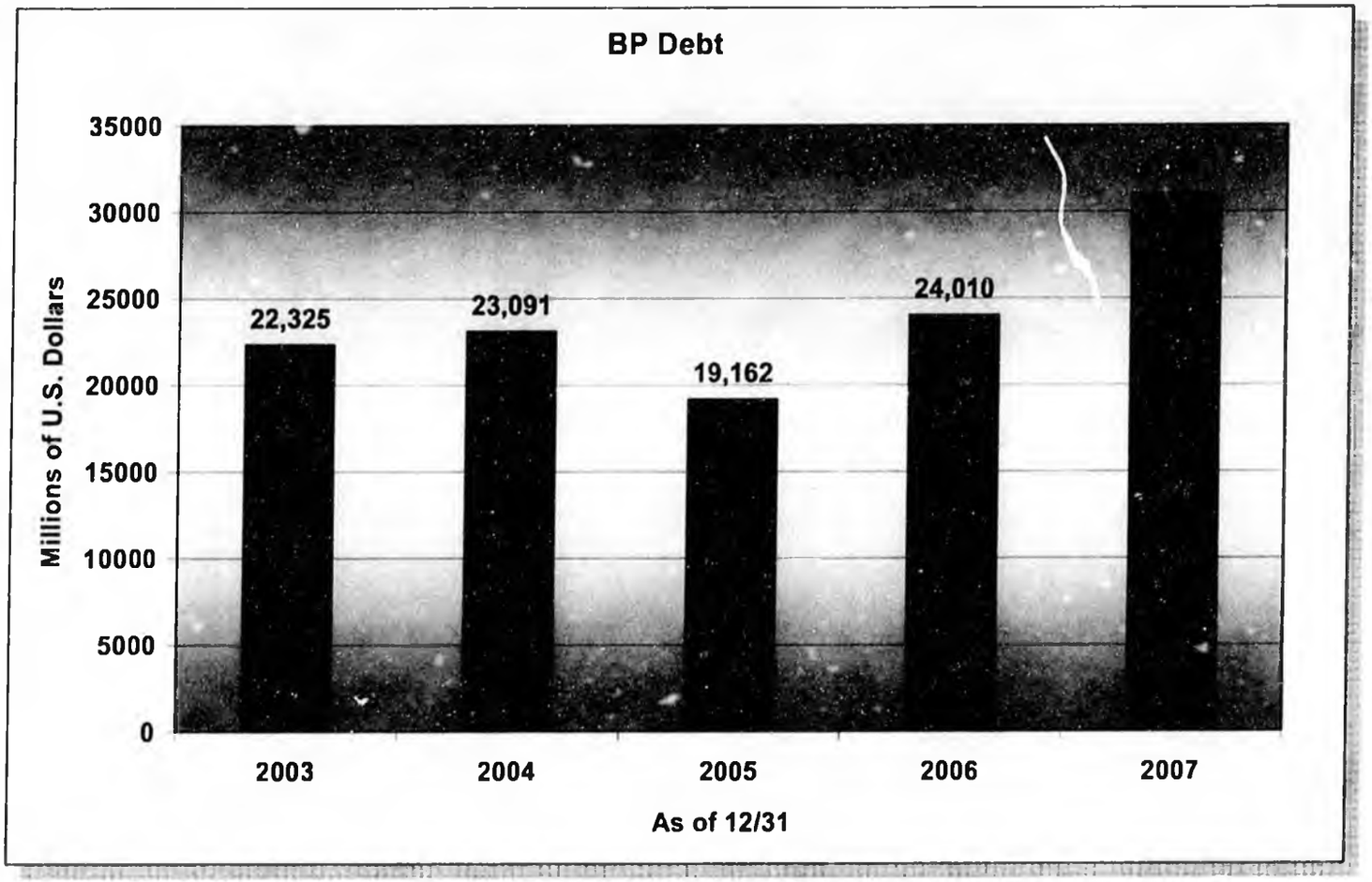
- **Europe (continued)**
  - Refining – BP owns, or has a stake in nine regional refinery operations
  - Marketing - BP retail sites are a common sight in several European countries and in Germany BP markets under the Aral brand
  - Wholesale and retail lubricants and other oil products are sold throughout Europe to both consumers and business customers
  - BP Solar – Spain
  - Numerous chemical plants within the region

- **North America**
  - Exploration and Production - The BP group is the largest oil and gas producer and one of the largest gasoline retailers in the United States, and has significant natural gas production in Canada
  - The largest non-US company on the New York Stock Exchange
  - BP Alternative Energy business operations center - Houston, and solar manufacturing facilities in the U.S.
  - Canadian activities focus on the production of natural gas and derivatives
  - Exploration and production work is a core aspect of BP's presence in Trinidad and Tobago – where BP is a major local producer
  - BP is a major

- **South America**
  - Exploration and production work is a core aspect of BP's presence in Colombia and Venezuela
  - In Brazil, BP has a chemicals joint venture and significant solar projects. Elsewhere in South America, activities center on the sale of oil, lubricants, and oil products

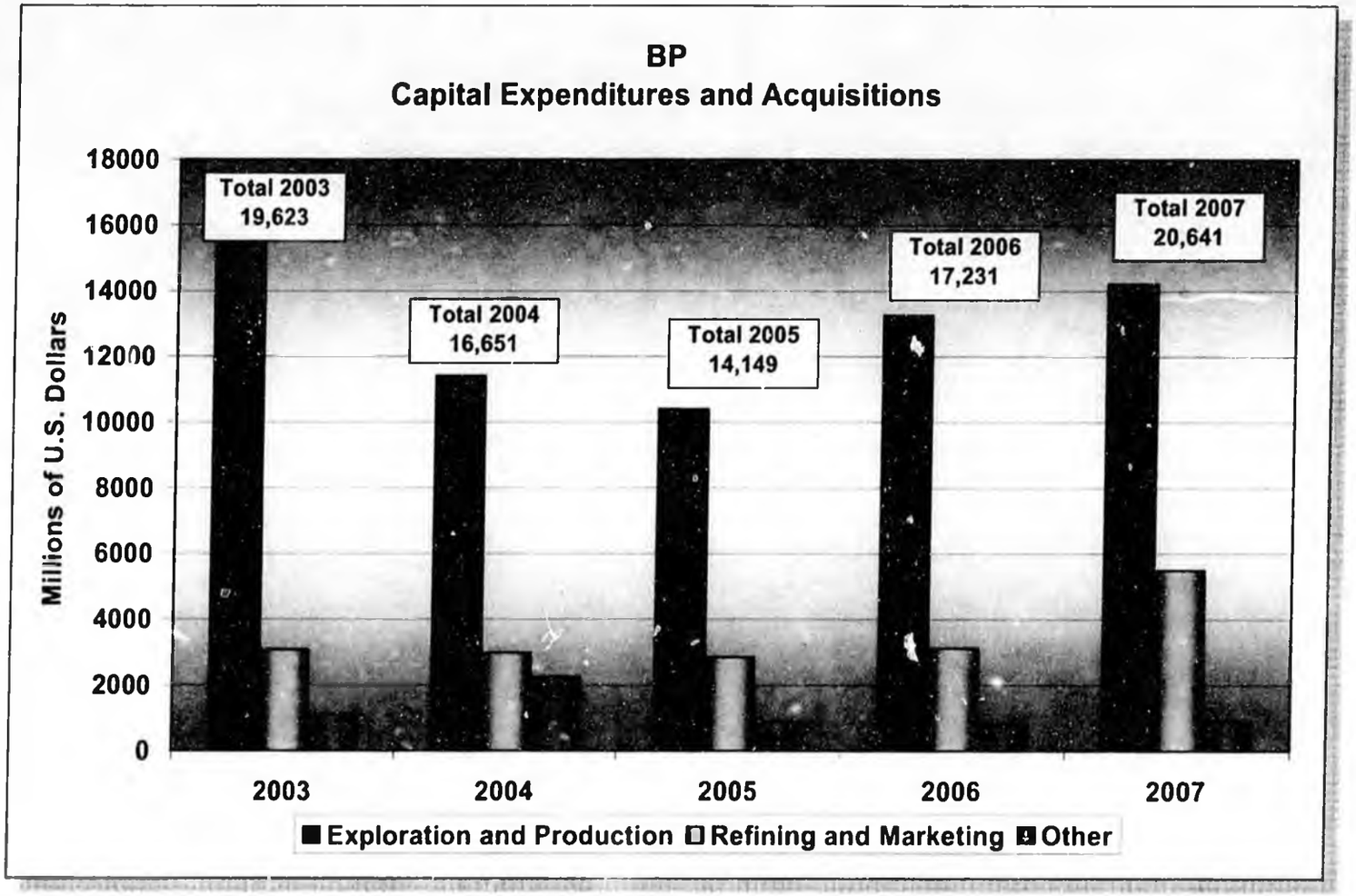
BP WORLDWIDE ASSET PORTFOLIO (continued)

- **Financial Structure**
  - Current Ma :et Capitalization, $228 billion
  - Debt as of December , 2007, $31 billion



MUSE STANCII

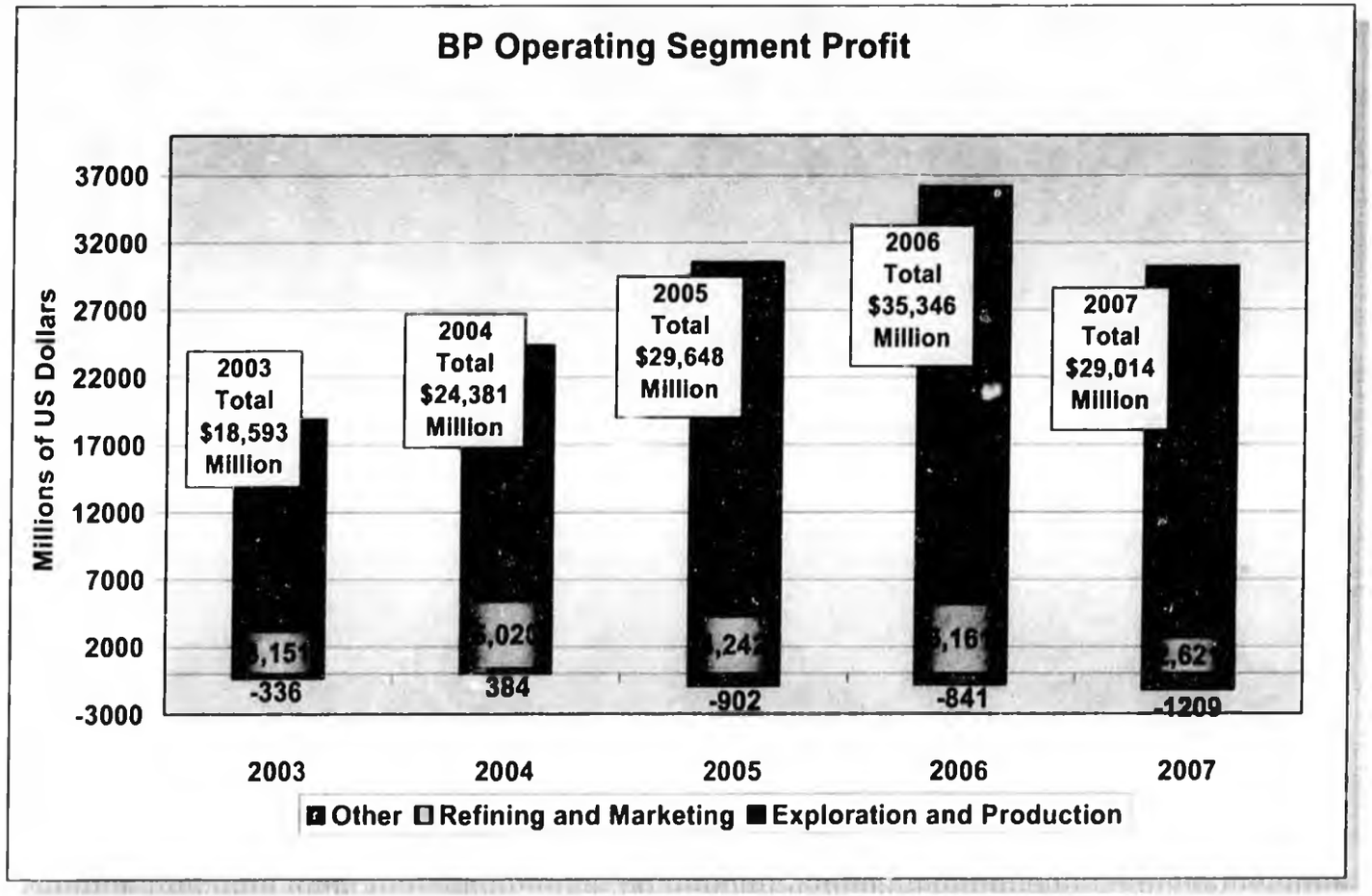
BP WORLDWIDE ASSET PORTFOLIO (continued)



MUSE
STANCII

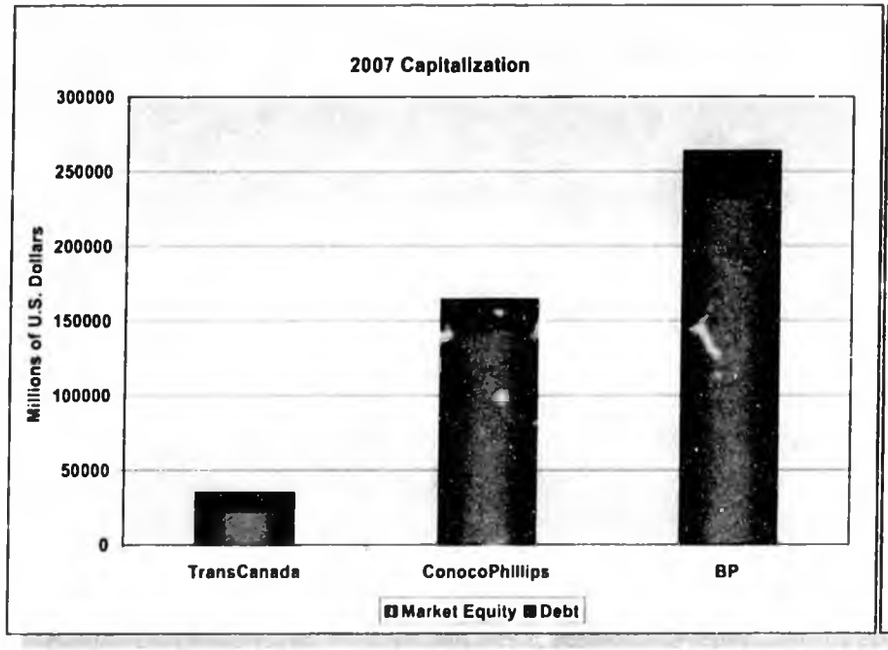
BP (continued)

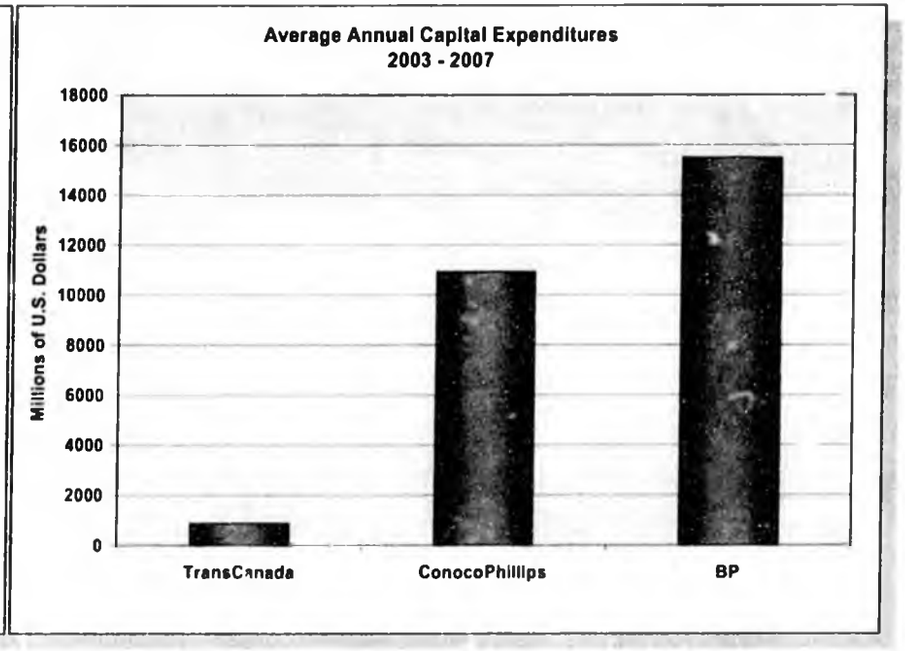
- **Operating Profit by Segment**



NOTES: Figures are before tax (EBIT)
BP states Segment Operating Profit on an inventory replacement basis of current pricing

COMPANY FINANCIAL COMPARISON





MUSE

RISK/REWARD AND POTENTIAL PROJECT RETURN

- **Assuming certain percentage of FT committed before investment**
  - Revenue Risk is reduced, but not eliminated
  - Some Revenue Upside is lost as the result of likely lower overall negotiated tariff rates for FT shippers
  - Some Revenue Upside is retained as uncommitted operational capacity may be sold to spot shippers at base tariff rates
  - Some Capacity Risk may be eliminated depending upon the Project Developer's final technical design relative to overall system FT commitments
  - The Project Developer still faces significant risks
    - Construction risk – weather delays, design delays, construction quality issues, material/equipment availability delays, etc.
    - Capital Cost risk – raw material costs, labor, interest rate risk
    - Operating Cost risk – depending upon how FT is structured, negotiated rates will leave operational risk with Project Developer
    - Credit risk that is assessed based upon the creditworthiness of the companies standing behind the FT commitment
    - Regulatory risk

- **Assuming no FT commitment until year 2 of operations**
  - Not a valid reference case
  - The pipeline project is not likely to be built without throughput commitments, therefore, the risk is very, very high for any project sponsor looking to proceed with development in this case

RISK/REWARD AND POTENTIAL PROJECT RETURN (continued)

- **Assuming all FT sold prior to initial construction**
  - If all of the FT capacity on the system is sold prior to initial construction, revenue risk is mitigated
  - Capacity risk is reduced as project can be "right-sized" to meet committed market demand with expansion capabilities
  - The Project Developer still faces significant risks
    - Construction risk – weather delays, design delays, construction quality issues, material/equipment availability delays, etc.
    - Capital Cost risk – raw material costs, labor, interest rate risk
    - Operating Cost risk – depending upon how FT is structured, negotiated rates will leave operational risk with Project Developer
    - Credit risk that is assessed based upon the creditworthiness of the companies standing behind the FT commitments
    - Regulatory risk

POTENTIAL COMPANY INVESTMENT

- **Evaluate the potential investment in the Alaska Pipeline Project in the context of each company's investment philosophy, asset portfolio, and financial structure**
  - Assess how investing in the project could impact each company's financial stability
  - Assess the project in light of other likely alternative project investments available to the companies
- **TransCanada**
- **COP**
- **BP**

MUSE STANCH

POTENTIAL COMPANY INVESTMENT - TRANSCANADA

- **Financial Stability**
  - In the last five years, net income has doubled and the company has been able to take on additional debt, almost doubling long-term debt in the same period
  - The company has also been able to define and capture new opportunities that have provided a solid foundation for new equity
  - The "midstream" energy services sector has been in favor with investors
  - More than 60 percent of TransCanada's equity is held by institutional investors
    - Favor predictable, stable returns
    - Favor low risk investments for the majority of their portfolios
    - Sometimes take on medium to high risk investments, but do so in "small bites"
  - A project the size of the Alaska Gas Pipeline dwarfs cumulative total TransCanada capital spending in the last 5 years
  - On a stand-alone basis, at today's market capitalization, taking on this project will be highly leveraging to TransCanada, both positive and negative, in contrast to historical investments
    - Would likely require raising additional equity
    - Would likely impact equity returns in the medium-term, dependent upon project timeline and cash funding needs

- **Relative to other TransCanada Investments**
  - Complements existing Canadian gas pipeline and storage assets, owned by TransCanada and others
  - Long lead time does not provide support for near- to medium-term earnings growth; TransCanada would have to identify, consummate, and execute other projects in the interim
  - May provide needed infusion of natural gas liquids into Alberta
    - Supports expected supply shortfall in petrochemical feedstock
    - May provide some supply to meet heavy crude diluent demand

MUSE

Note: Diluent is pentanes plus NGL used to mix with heavy crude for shipment

POTENTIAL COMPANY INVESTMENT - CONOCOPHILLIPS

- **Financial Stability**
  - COP routinely takes on large, medium- to high-risk projects; however, as a large, integrated multi-national corporation, such higher risk projects are offset by long-term producing reserves, midstream assets, and other investments
  - Approximately 80 percent of COP equity is held by institutional and mutual fund investors that own the stock because of the corporation's ability to manage such risks
  - The capital required for execution of the project is of the same order of magnitude as COP's current capital budget
  - In any case, the financial risk of the Alaska Gas Pipeline Project will ride on the shoulders of those companies that own or control the majority of the gas reserves in the state
    - Companies like BP are used to taking on such risks in return for developing reserves
    - Investors in companies like BP expect corporations to take on such risk to develop the reserves, but also trust the established track record of these companies in assessing and managing development risk

- **Relative to other ConocoPhillips Investments**
  - The COP investment philosophy is based upon allocation of capital
  - COP has been investing in stock buybacks in the last couple of years suggests that management views returning recent cash increases to investors to be more profitable than investing in additional new projects
  - COP likely views the Alaska Gas Pipeline Project as leveraging and important to the company's future reserve position as they have allocated the initial capital to pursue the first phases of the Denali project development

POTENTIAL COMPANY INVESTMENT - BP

- **Financial Stability**
  - Even larger than COP, BP is one of the largest, integrated multi-national energy corporations and does take on medium- to high-risk projects in balance with the corporation's total portfolio risk
  - The capital required for execution of the project is in line with BP's current capital budget
  - In any case, the financial risk of Alaska Gas Pipeline Project will ride on the shoulders of those companies that own or control the majority of the gas reserves in the state
    - Companies like COP are used to taking on such risks in return for developing reserves
    - Investors in companies like COP expect corporations to take on such risk to develop the reserves, but also trust the established track record of these companies in assessing and managing development risk

- **Relative to other BP Investments**
  - Like COP, BP has also been buying back stock
  - BP also invests, as do most large, integrated companies, based upon an allocation model that considers the health of each asset sector and the ranking of available projects on a risk/return basis
  - Stock buyback typically signals board confidence in the existing asset base and a preference for returning recent cash increases to investors rather than increasing capital spending with additional new investments

FUTURE PERFORMANCE OF TRANSCANADA'S CANADIAN GAS ASSETS

FUTURE PERFORMANCE OF TRANSCANADA'S CANADIAN GAS ASSETS

- **TransCanada Gas Pipeline and Storage Assets**

- **Forecast of future natural gas production in Canada, specifically with respect to Western Canadian Sedimentary Basin gas and potential McKenzie Delta gas**
  - Forecast of Canadian regional gas demand, including oil sands project demand, based upon likely scenarios for the rate of development of those projects and associated natural gas demand
  - Address the status of announced oil sands projects as the result of:
    - The impact of ballooning capital costs
    - The impact of carbon dioxide (CO_2) sequestration

- **Evaluation of existing natural gas storage locations and future supply/demand for storage**

- **Future Performance of TransCanada's Canadian Gas Assets**
  - Without Alaska Gas Supply
  - With Alaska Gas Supply

MUSE STANCH

TRANSCANADA GAS PIPELINE AND STORAGE ASSETS

- Gas pipeline assets are either wholly-owned by or affiliated with the parent
- TransCanada's gas pipeline assets are summarized in the table at the right
- TransCanada is also general partner and a common unit holder of TC PipeLines, LP, a publicly held limited partnership with interests in the Tuscarora, Northern Border Pipelines and Great Lakes Gas Transmission Company
- Specific information associated with each of these assets is provided in the Appendix – Natural Gas Pipelines

Pipeline System	Length	Average Throughput (2006)
Alberta System	23,498 km	11.1 Bcf/d
Canadian Mainline	14,957 km	8.1 Bcf/d
Foothills System*	1,241 km	3.8 Bcf/d
ANR Pipeline	17,000 km	4.0 Bcf/d
GTN	2,174 km	2.2 Bcf/d
North Baja	129 km	0.3 Bcf/d
Tamazunchale Pipeline	130 km	In service December 2006

*This information includes 2006 data from the B.C. System assets, which were integrated with the Foothills System on April 1, 2007.

Affiliated Pipelines	Length	Average Throughput (2006)
Great Lakes Gas Transmission Company* (53.55% direct; 6.2% indirect ownership)	3,404 km	2.2 Bcf/d
Iroquois Gas Transmission System (44.5% ownership)	666 km	1.1 Bcf/d
Northern Border Pipeline Company* (6.7% indirect ownership)	2,250 km	2.2 Bcf/d
Portland Natural Gas Transmission System* (61.71% ownership)	474 km	0.1 Bcf/d
Trans Québec and Maritimes Pipeline (TQM)* (50% ownership)	572 km	0.4 Bcf/d
Tuscarora Gas Transmission* (1% direct; 13.1% indirect ownership)	491 km	0.1 Bcf/d

*Operated by TransCanada

Source: TransCanada

CANADIAN GAS PIPELINES

- **Alberta System - gathers natural gas for use within the province for delivery to provincial boundary points. Connects with**
  - Canadian Mainline
  - BC System
  - Foothills System
  - Other pipelines

- **Canadian Mainline – extends from the Alberta/Saskatchewan border east to the Québec/Vermont border and connects with other natural gas pipelines in Canada and the U.S.**

- **Foothills - carries natural gas for export from central Alberta to the U.S. border serving markets in the U.S. Midwest, Pacific Northwest, California and Nevada. Western leg runs through British Columbia to connect to Gas Transmission Network (GTN) and the Eastern leg runs through Saskatchewan connecting with Northern Border Pipeline Company (NBP)**

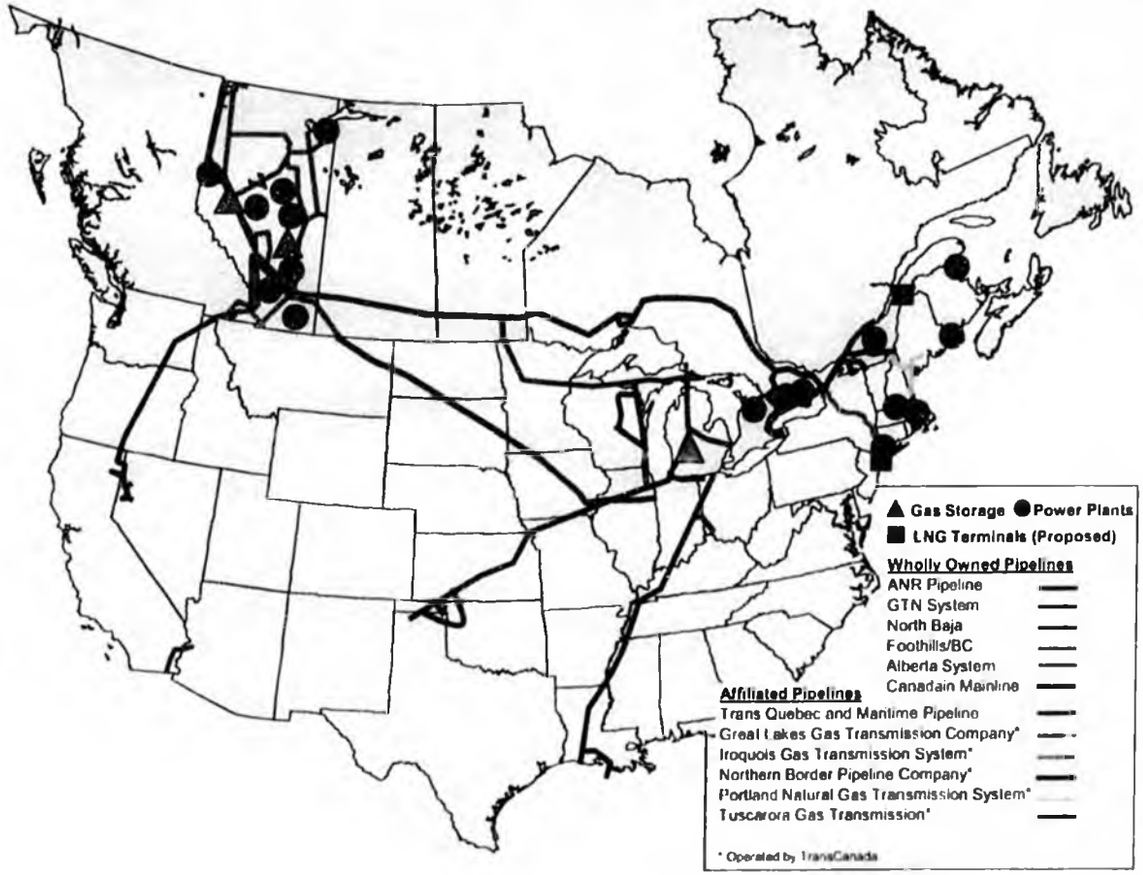
- **Ventures LP – supplies natural gas in Alberta to the oil sands region and a petrochemical complex at Joffre**

- **TQM – transports gas from interconnection with Canadian Mainline at Montreal to Quebec City and connects to the Portland system**

- **Additional background information is located in the Appendix**

GAS STORAGE OVERVIEW

- **Canadian Natural Gas Storage**
  - 120 Bcf capacity
    - 100 percent owned Edson facility
      - 50 Bcf capacity
      - 725 million Standard cubic feet per day (MMScf/d) injection/ withdrawal
    - 60 percent owned Crossalta facility
      - 32 Bcf capacity (net)
      - 288 MMScf/d injection/ withdrawal (net)
    - Contracted storage
      - 38 Bcf capacity (net)

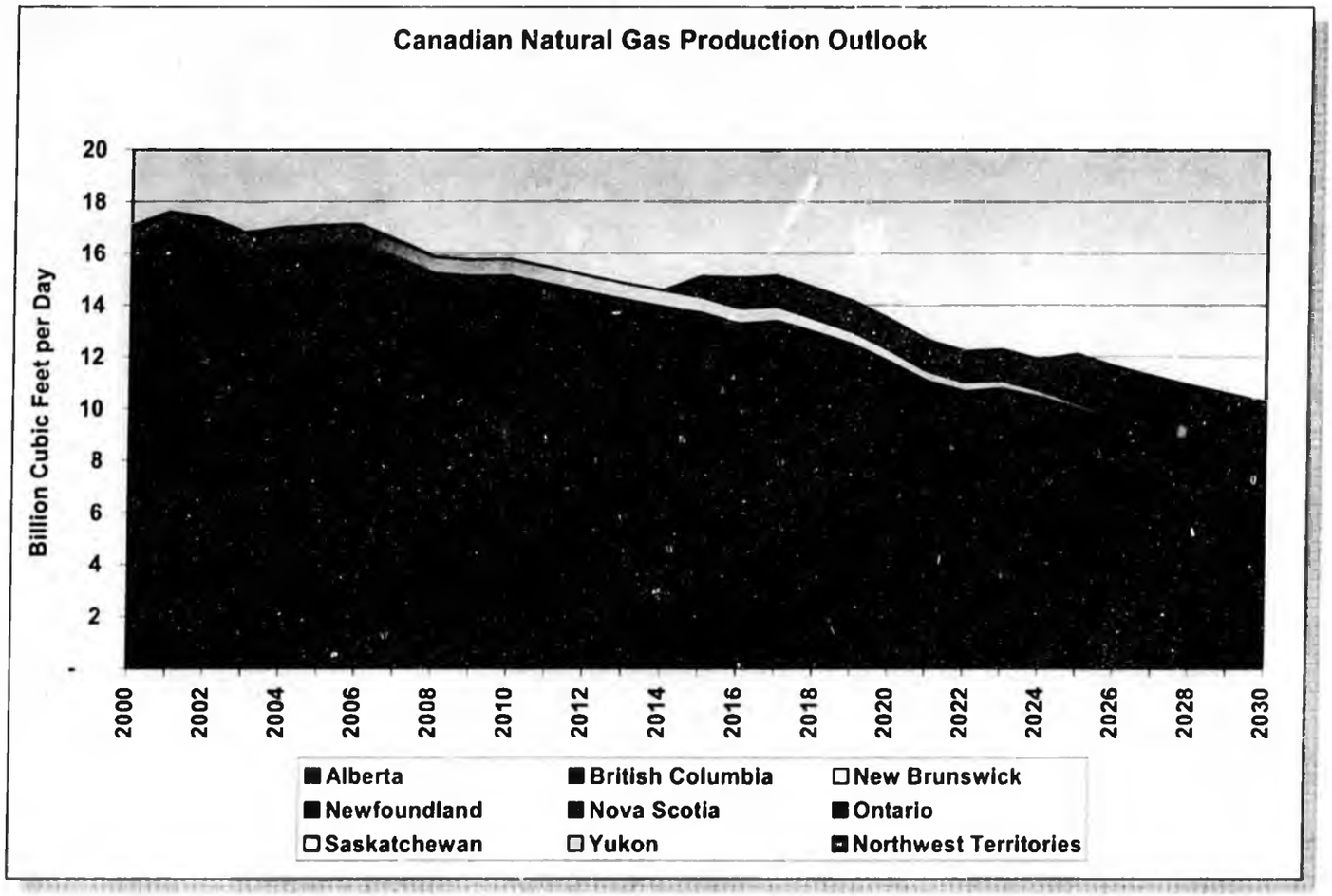


FORECAST OF CANADIAN GAS PRODUCTION

- Production by Province
- Western Canada Natural Gas Production Outlook
- Western Canada Gas Demand
- Alberta Gas Demand
- Alberta Hub and Export Capacity
- Alberta Gas Supply Forecast
- Impact of Oil Sands Project Demand

PRODUCTION BY PROVINCE

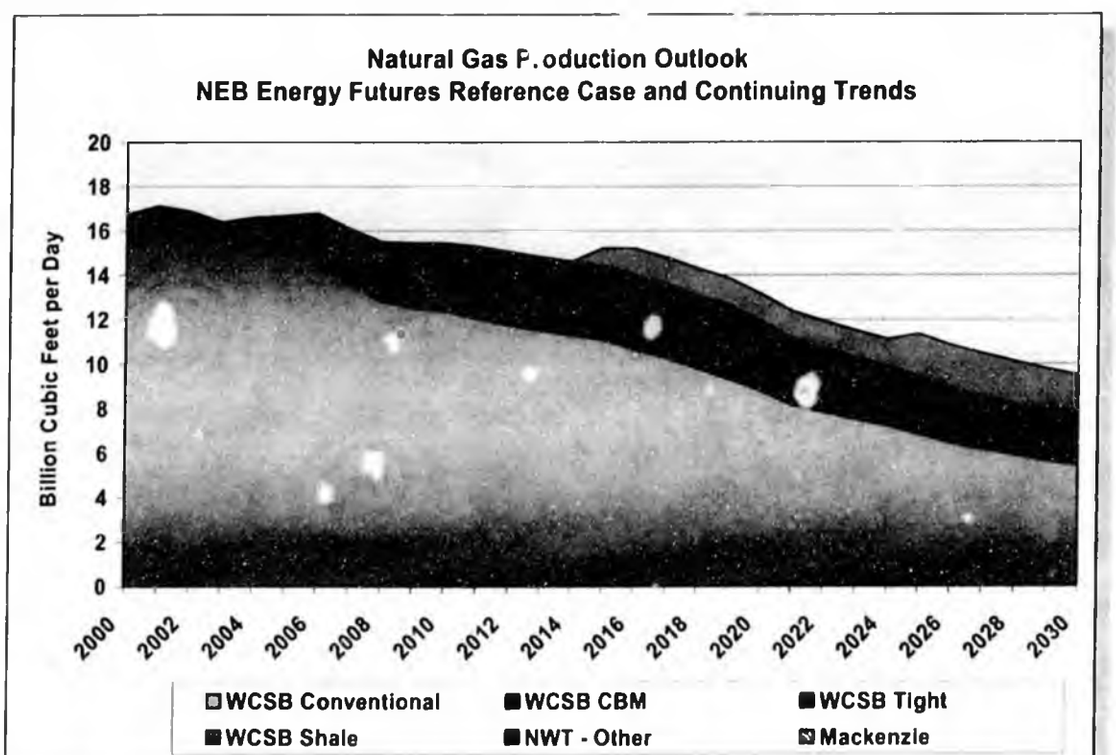
- **The largest proportion of Western Canadian production is from Alberta**
  - Alberta produces almost 75 percent of Western Canadian production



MUSE STANCIL

WESTERN CANADA NATURAL GAS PRODUCTION OUTLOOK

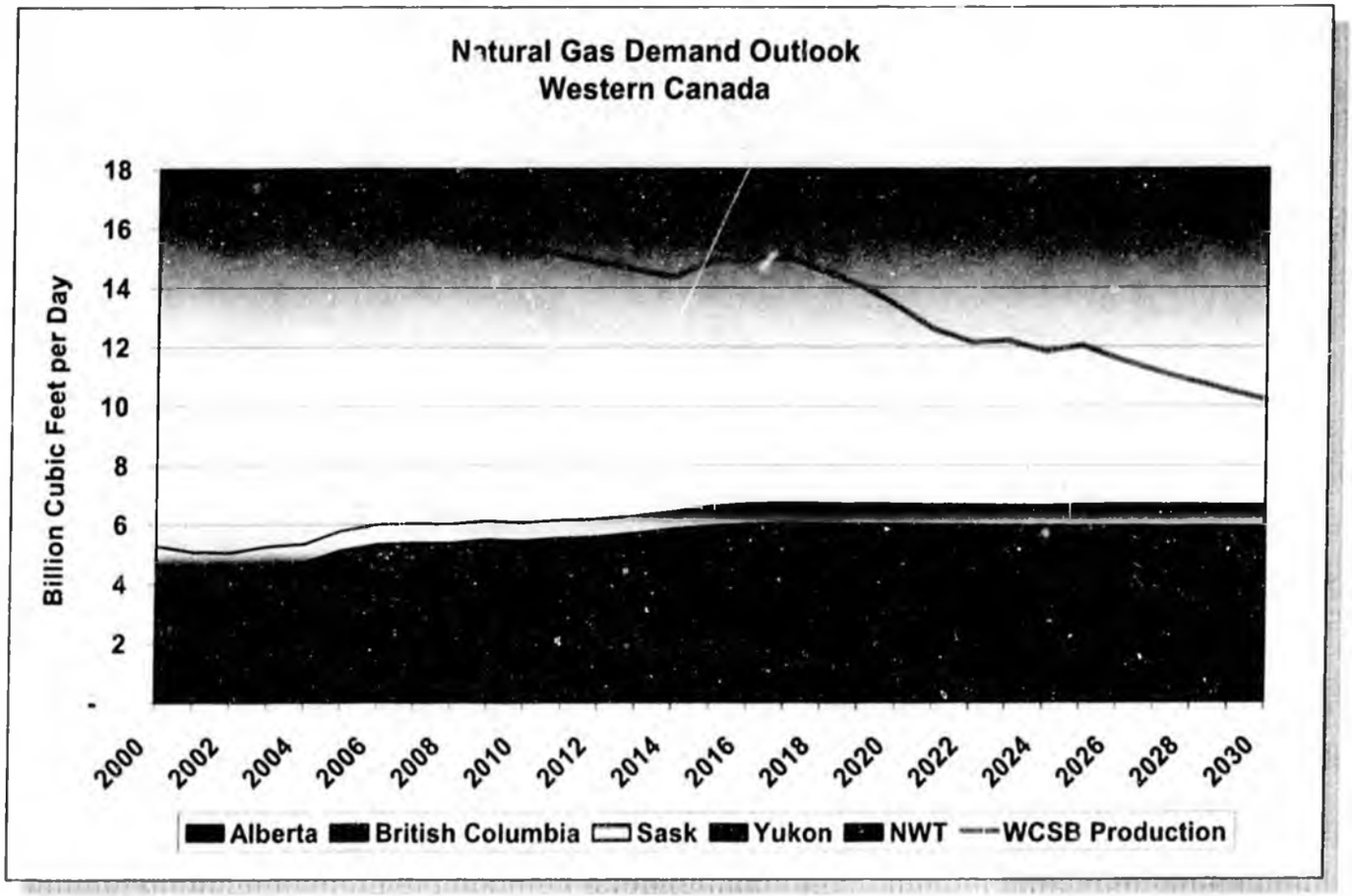
- **Forecast of future natural gas production in Western Canada by National Energy Board (NEB) completed in November 2007**
  - Mackenzie gas production beginning in 2015 at 1.2 Bcf/d with an expansion to 1.9 Bcf/d in 2025
- **The NEB has forecast declining Western Canadian gas production despite increases in tight gas and coal bed methane production. The NEB forecast is based on flat real Henry Hub price of $7.00 per million British thermal units (MMBtu) in 2005 dollars**
- **Mackenzie gas, currently projected on stream in 2015 at 1.2 Bcf/d, only partially offsets the expected production decline**
- **Shale gas, in northeastern British Columbia, is a promising new trend that is not captured in the NEB forecast**



Source: NEB Canada's Energy Future 2007, Reference and Continuing Trends Case

WESTERN CANADA GAS DEMAND

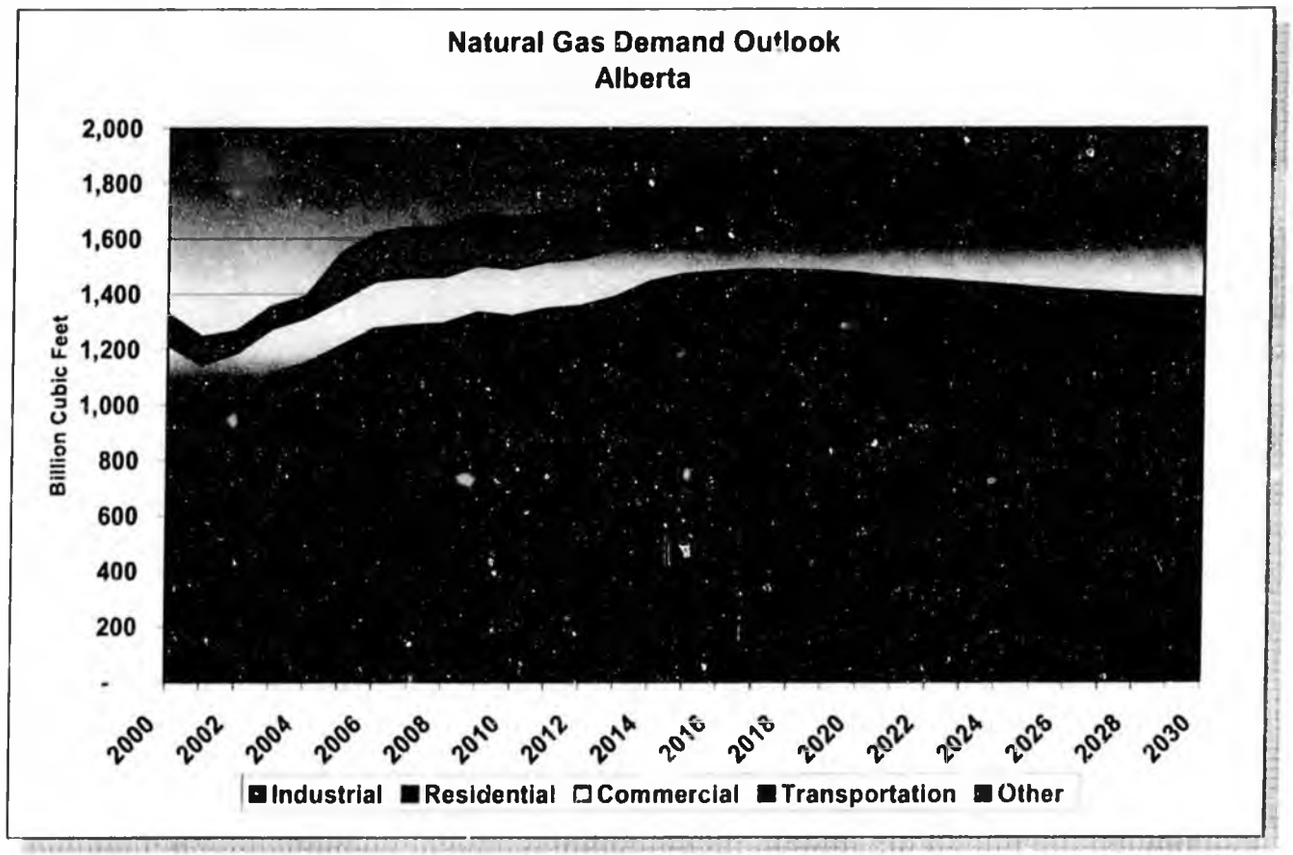
- **Western Canadian natural gas demand grows by almost 1.1 percent per year for the next 10 years**
  - Growth is driven by Alberta demand with 92 percent of increased demand in the next 10 years
  - Demand growth slows in later years of forecast due to continuing energy improvements



MUSE STANCIL

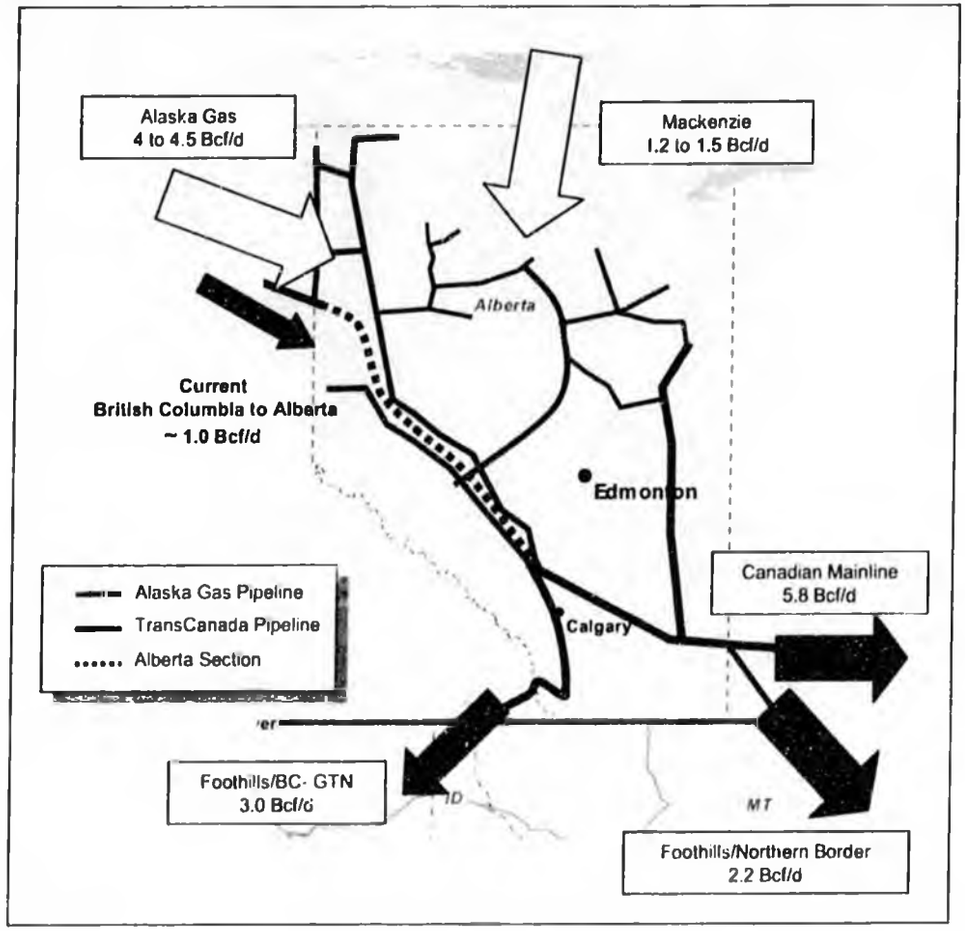
ALBERTA GAS DEMAND

- **Industrial demand growth reflects growing natural gas demand for oil sands developments**
  - Forecast of oil sands natural gas demand reflects continuing increases in fuel use efficiencies in oil sands production at the rate of 1 percent improvement per year, the historical rate of fuel efficiency improvement
  - Total oil sands development natural gas purchases are projected to increase from 0.65 Bcf/d in 2005 to 1.8 Bcf/d in 2015, despite use of alternative technologies such as coal gasification in some developments



ALBERTA HUB AND EXPORT CAPACITY

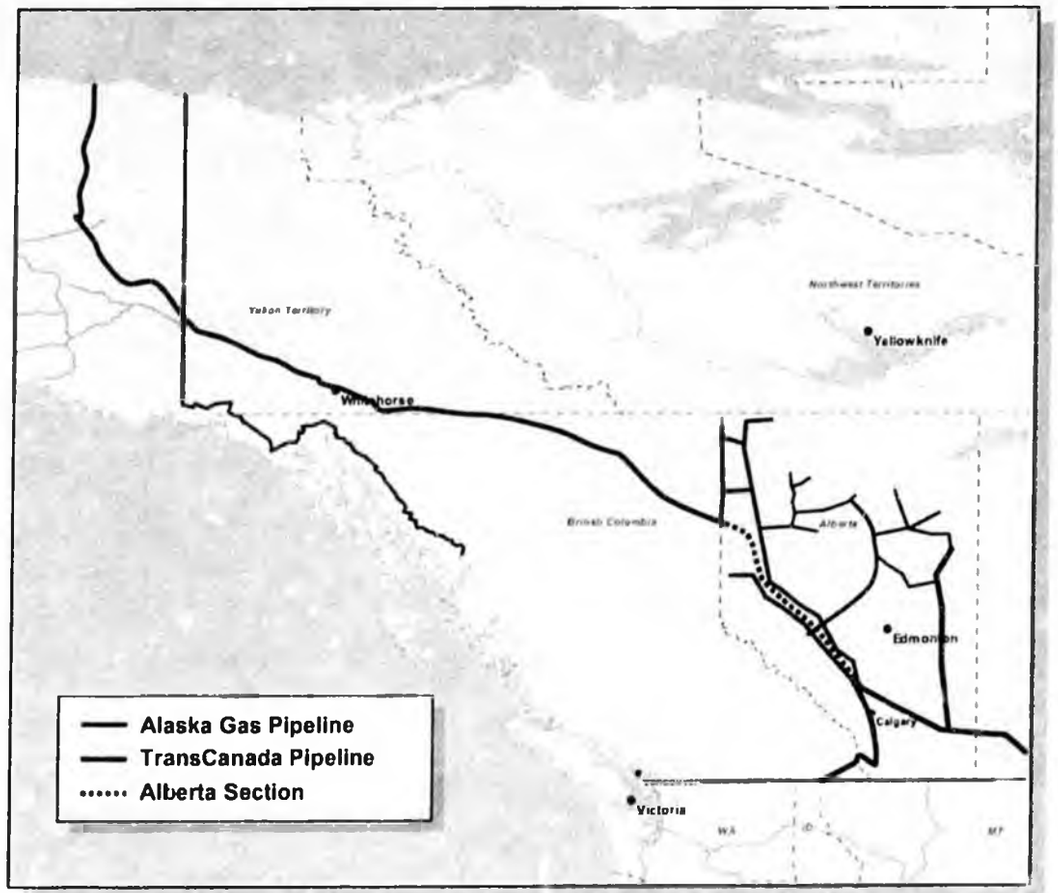
- **Current Alberta Hub supply comes from Alberta production and northeastern British Columbia production**
- **Total export capacity out of Alberta of 11 Bcf/d post conversion of a portion of Canadian Mainline gas export capacity to crude service for the Keystone Project**
- **New gas supply**
  - Mackenzie gas will come into the northern part of Alberta
  - Alaska gas under the TransCanada proposal will come into the Alberta Hub at Boundary Lake
- **Available capacity to be utilized for Alaska gas will be dependent upon projections of local production in Alberta and Northeastern British Columbia, development timeline for Mackenzie gas, and growing Alberta demand**



MUSE STANCIL

PROPOSED ALASKA GAS PIPELINE ROUTE

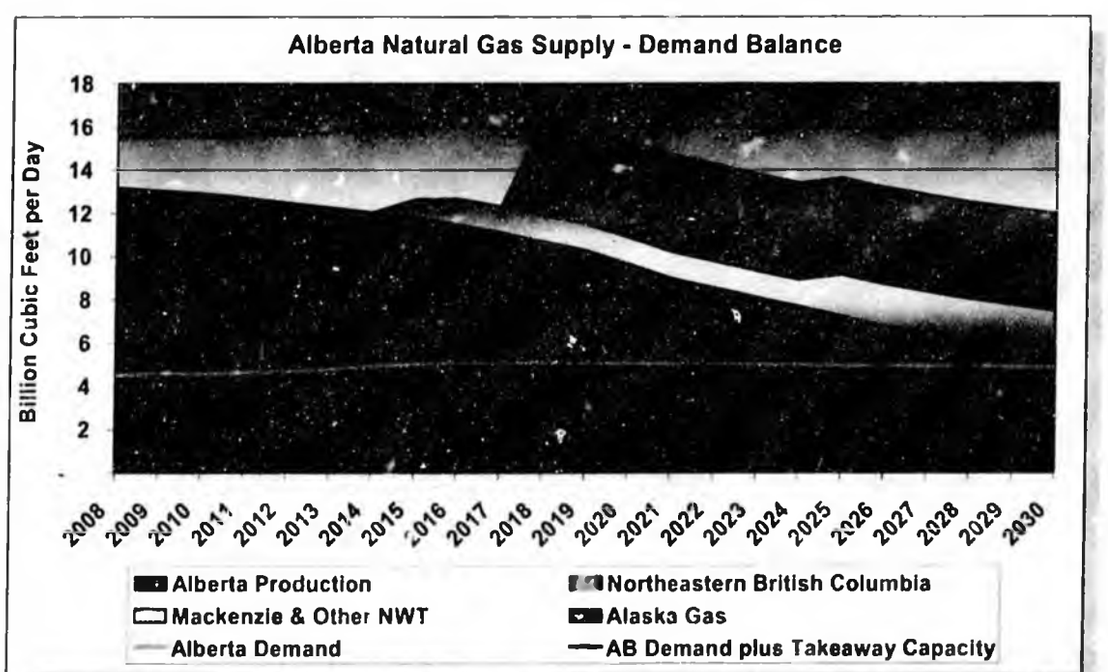
- Alaska Gas Pipeline will connect with Alberta Hub at Boundary Lake and utilize a combination of new build and pre-build existing pipe to allow connection to markets in Alberta on the Alberta system, Canadian markets east of Alberta, and U.S. markets in the Midwest, Northeast, Pacific Northwest, and California



MUSE STANCIL

ALBERTA GAS SUPPLY FORECAST

- **Alberta Hub supply consists of local Alberta gas production, anticipated production from northeastern British Columbia, Mackenzie gas, and Alaska gas**
- **Alberta Hub demand includes Alberta natural gas demand and Alberta export capacity on Canadian Mainline and Foothills**
- **Under NEB reference case projections of production and demand, Alberta Hub supply will exceed total demand and take away capacity by 0.3 Bcf/d in the first year of Alaska gas flows**
  - Reference case forecast is a lower production scenario than would be projected at the higher prices utilized in the Alaska gas line evaluations
  - A higher gas price forecast would result in higher production and require additional Alberta gas export capacity with Alaska gas



FUTURE PERFORMANCE OF TRANSCANADA'S CANADIAN GAS ASSETS

- **Status of oil sand development**
  - Impact of capital costs
    - Recent work completely by Muse concluded
      - Approximately two-thirds of the bitumen expected will be realized by 2020 due to the combination of capital cost increases and oil price predictions
      - Bitumen production is likely to be higher if the recent high oil price environment is sustained in the medium to long term
      - Similarly, bitumen upgrader capacity development will also be impacted; if prices remain at relatively high levels, the capacity will likely be developed but project schedules will be impacted
  - Impact of CO_2 sequestration
    - The Canadian government has considered various methods to meets commitments under the Kyoto Accord
    - Canada's current government has stated that emissions would be cut by up to 65 percent from 2006 levels by 2050 and in January 2008 government officials suggested that the focus will be on industrial regulation rather implementation of a carbon tax
    - In February 2008, British Columbia unveiled a provincial comprehensive tax program aimed at curbing emissions of greenhouse gases
      - Beginning July 1st, 2008, businesses and residents of British Columbia will be taxed $10 per metric ton of carbon emitted by fuels such as gasoline, diesel, natural gas, coal, propane, and home heating fuel and the tax will increase yearly by $5 per ton to $30 per ton in 2012, at which point the government will re-evaluate the tax rate
      - The plan is said to be designed to be revenue neutral with income generated returned in the form of tax cuts and environmental rebates

FUTURE PERFORMANCE OF TRANSCANADA'S CANADIAN GAS ASSETS

- **Status of oil sand development**
  - Impact of CO_2 sequestration (continued)
    - Existing tar sands development is concentrated in Alberta, therefore, the current regulations will not impact oil sands development
    - Future industrial regulation could impact project costs, but are not likely to impact oil sands development
      - Near- to medium-term disposal is likely focused on injection into geologic reservoirs
      - Alberta has a long history of reservoir development, potential for tertiary recovery, and available technological resources to implement underground sequestration programs
      - Technological advances are also expected to both limit the production of and develop new economic uses for such gas streams

EVALUATION OF NATURAL GAS STORAGE AND OUTLOOK

- **Existing Canadian gas storage locations**
  - TransCanada owns approximately one-third of all gas storage capacity in Alberta
  - Existing Edson and CrossAlta facilities provide much needed flexibility in existing gas delivery infrastructure
  - These facilities are expected to remain vital to the region and profitable in the future

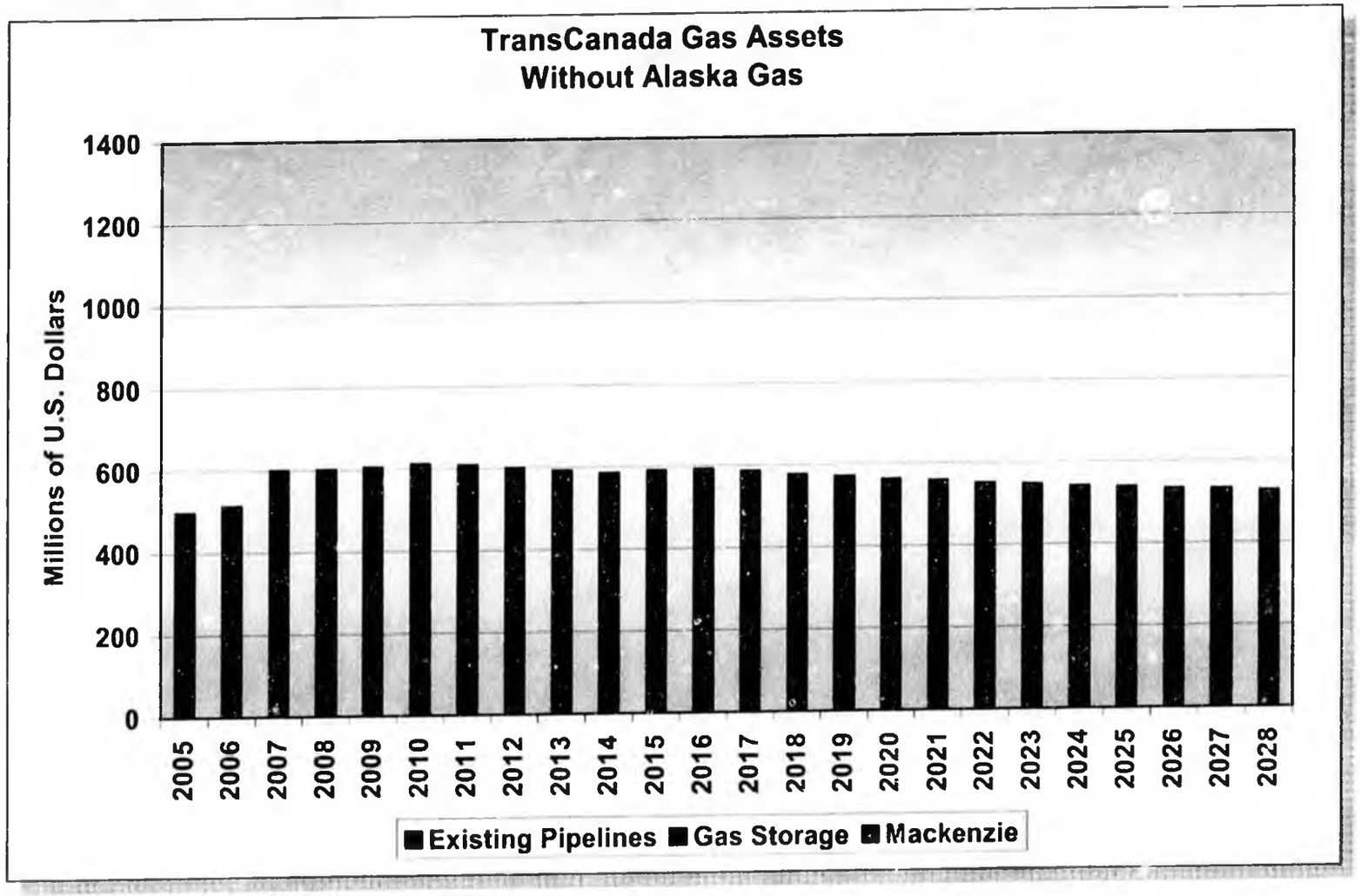
- **Future supply/demand for storage**
  - As provincial supply sources shift over time, well-located gas storage capacity will increase in importance with respect to maintaining the relative supply/demand balance in the region
  - Continue to realize significant synergistic benefit in association with TransCanada's Alberta power assets

FUTURE PERFORMANCE OF TRANSCANADA'S CANADIAN GAS ASSETS

- Without Alaska Gas Pipeline
- With Alaska Gas Pipeline

TransCanada's Canadian Gas Assets Without Alaska Gas Supply

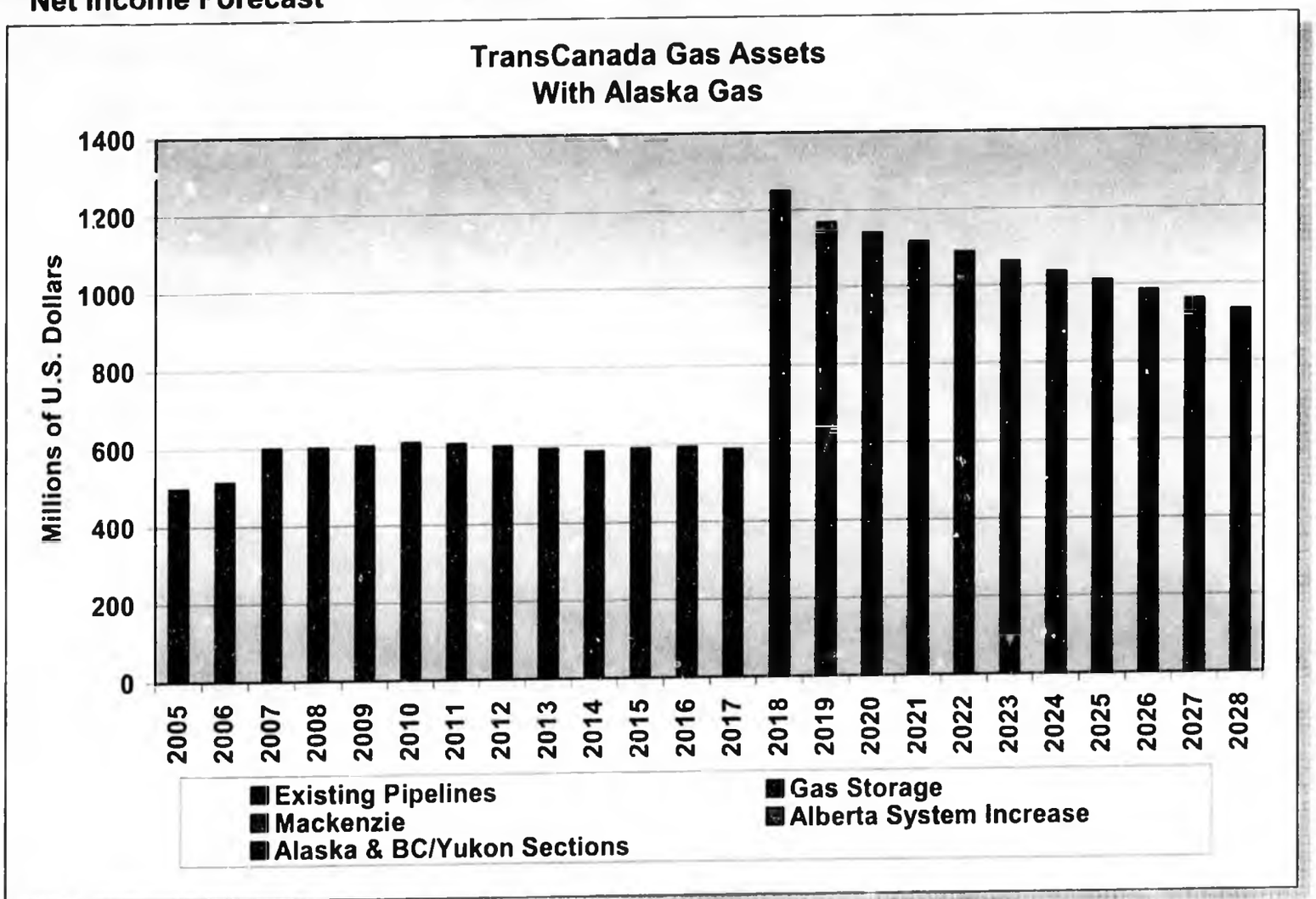
- Net Income Forecast



MUSE

TRANSCANADA'S CANADIAN GAS ASSETS WITH ALASKA GAS SUPPLY

- Net Income Forecast



MUSE STANCIL

OVERVIEW OTHER TRANSCANADA ASSETS