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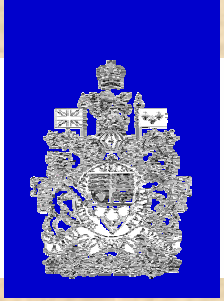

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Natural Gas Pipeline Regulation: Costs and Benefits of the Canadian Approach

Glenn Booth
Chief Economist
National Energy Board
Gold Coast, July 2004

Canada

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Outline

1. Mandate and Goals of the NEB
2. Canadian natural gas market
3. Economic objectives of pipeline regulation: framework for assessing costs and benefits
4. An assessment of the Canadian experience
5. Conclusions

Note: All views expressed in this talk are mine and do not necessarily express those of NEB Board Members

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Mandate of the National Energy Board

- Regulate interprovincial and international pipelines: construction, tolls, terms of service, environmental & safety considerations
- Regulation of gas, oil & electricity exports
- Monitoring of Canadian energy markets
- Created in 1959
- Located in Calgary, Alberta

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Rocky Mountains from Calgary

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National Energy Board Goals

1) NEB-regulated pipeline facilities are safe and perceived to be safe
2) NEB-regulated pipelines are built and operated in a manner that protects the environment and respects the rights of those affected
3) Canadians derive the benefits of economic efficiency (from pipeline regulation)
4) The NEB meets the needs of the public to engage in NEB matters

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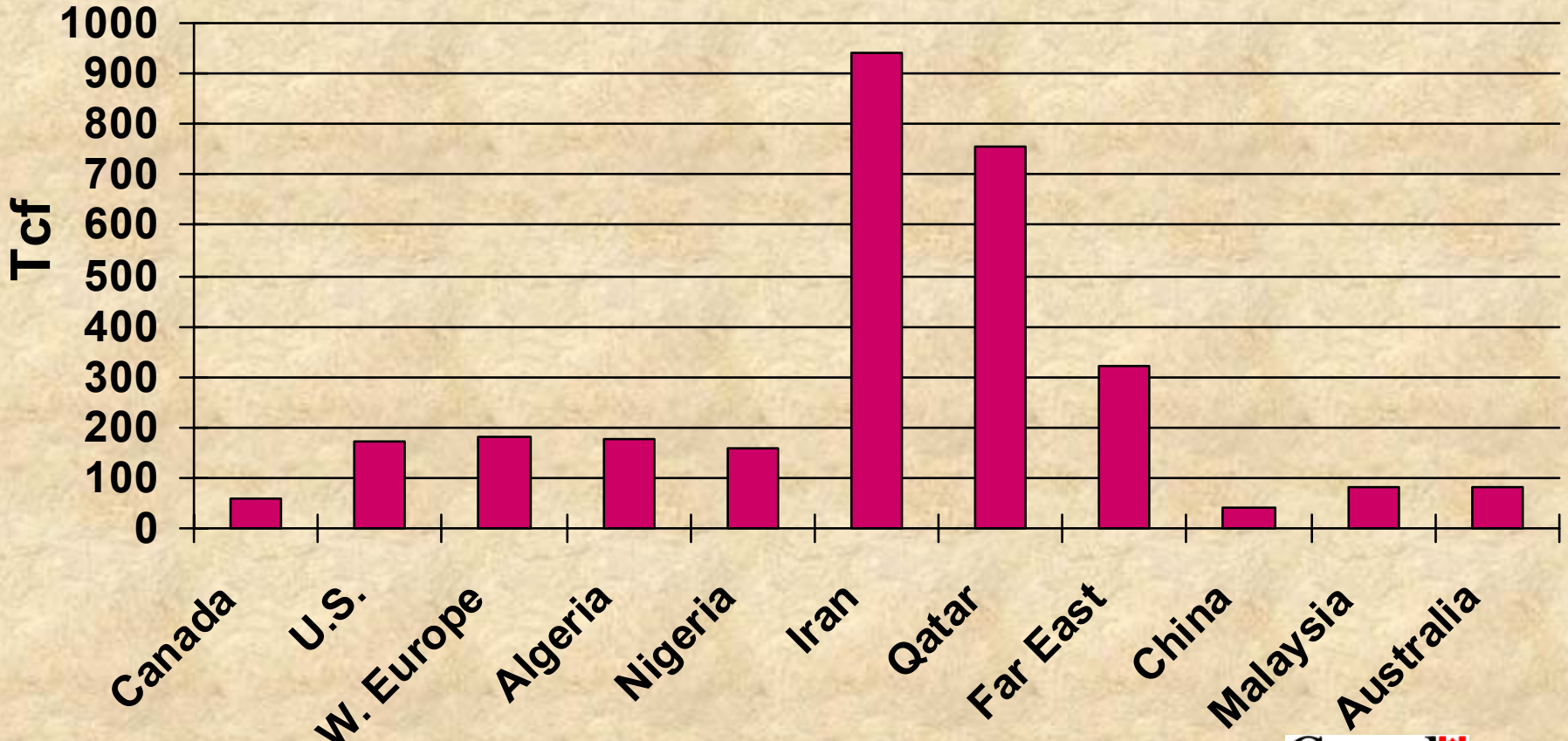
2001 Worldwide Natural Gas Reserves



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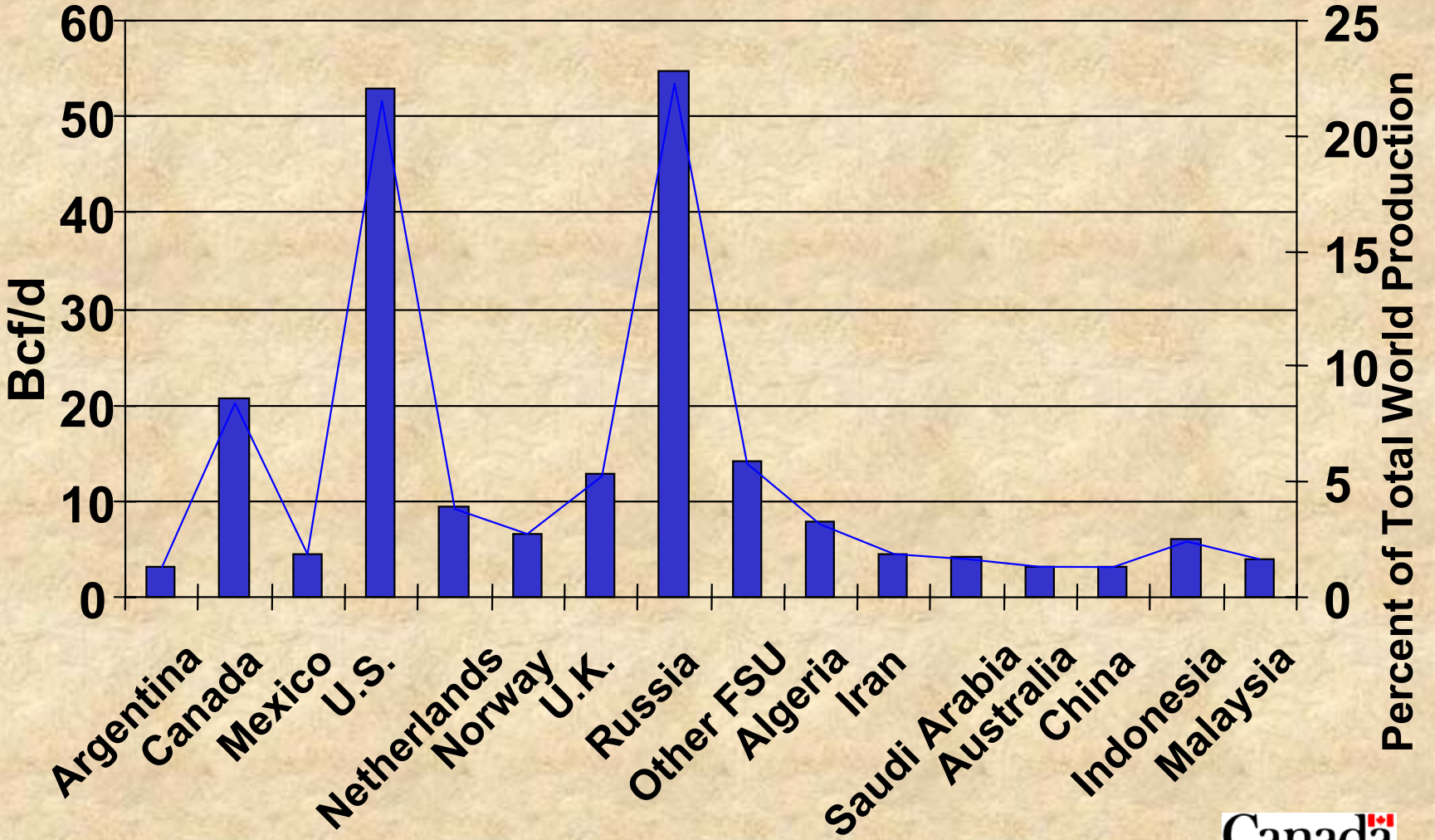
2001 Worldwide Gas Production



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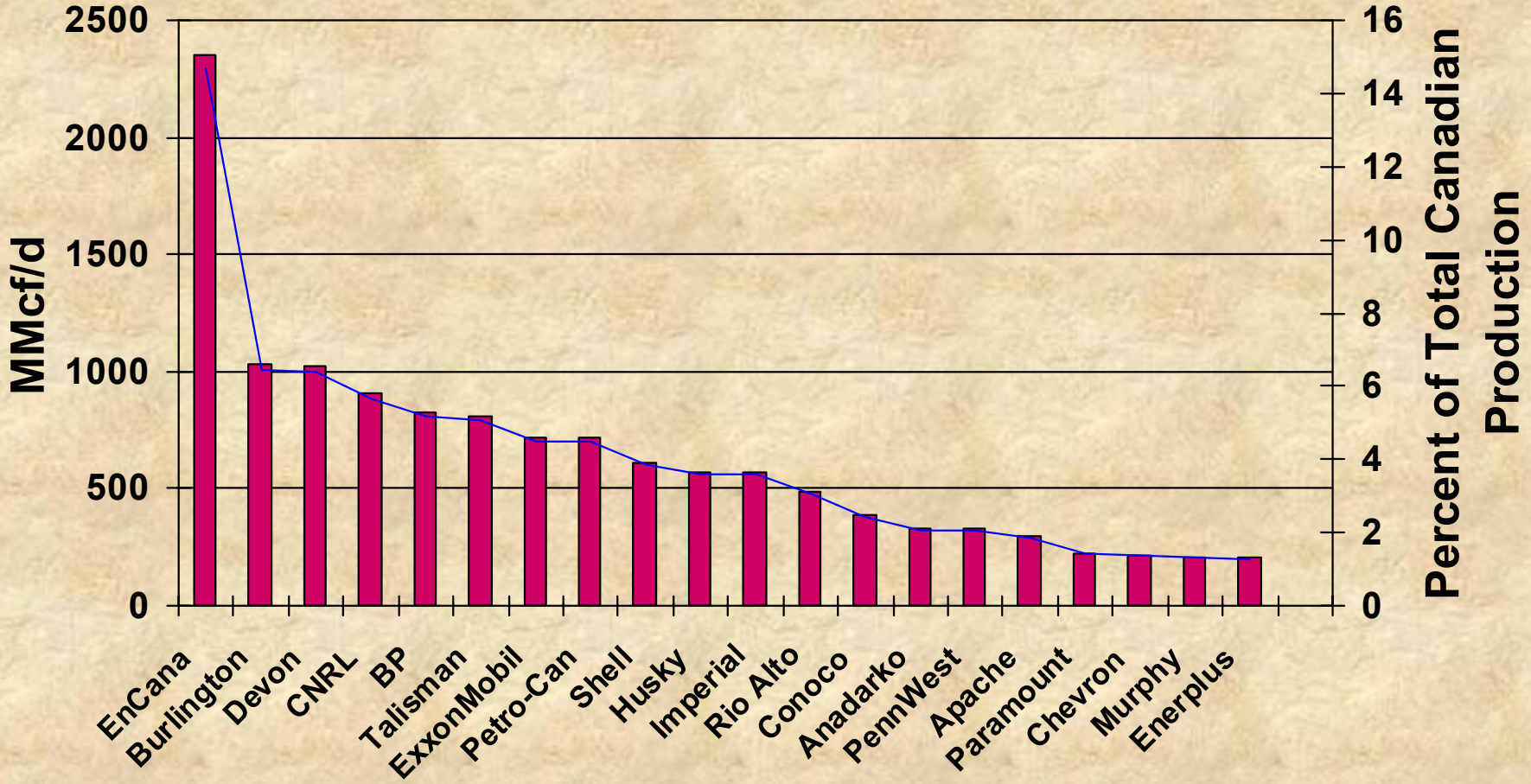
Top Gas Producers, 2001



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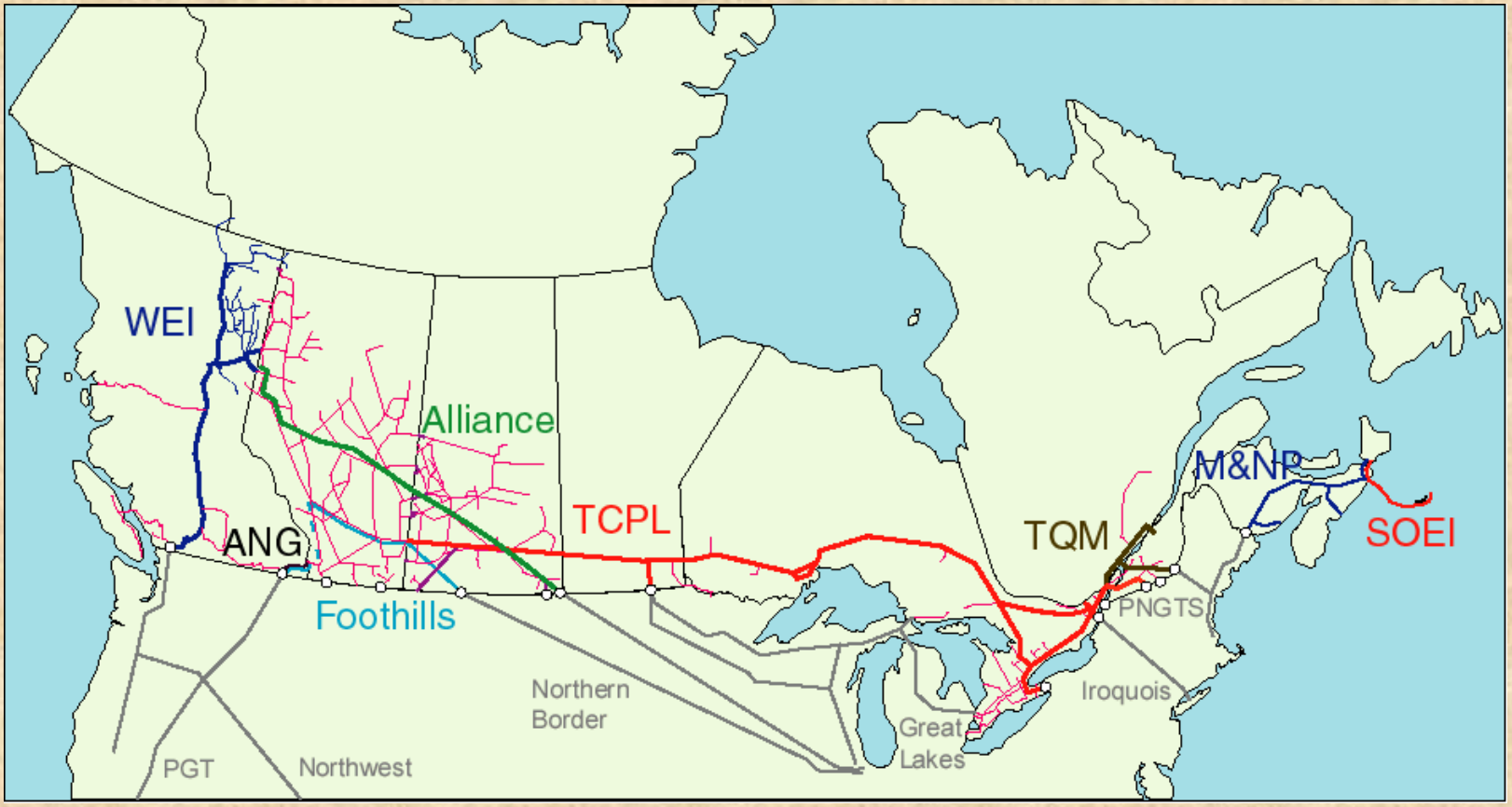
Major Natural Gas Pipelines in Canada



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Early Development of the Gas Industry

- Large finds of oil in western Canada in 1947 and 1950s: gas found in solution
- Natural gas was largely a by-product of oil production or an accident of oil exploration
- With no pipeline out of Alberta, gas was "trapped"
- Producers were willing to sell gas very cheaply

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Challenge: Bring Gas to the Market!

- All you need is a pipeline
- So what's the problem? Where's the market failure?
- It's the "hold-up" problem
  - Once a specific large capital investment is made, each party has an incentive to renegotiate the terms of the contract
  - Shippers can threaten by-pass, search for alternatives
  - Pipeline can try to extract monopoly profits
- Result: high risk and uncertainty

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Primary Purpose of Regulation

- **Regulation reduces the uncertainty and risk associated with a huge capital outlay:**
  - **Restricts entry and thereby protects the original investor**
  - **Reduces costs associated with contract negotiation**
  - **Reduces risk and thereby reduces overall cost of financing**
- **Creates an incentive to invest and provide the desired service**

Secondary Purpose of Regulation

- **Granting monopoly franchise creates need to:**
  - **Protect shippers against monopoly abuses**
  - **Ensure right to be served**
  - **Regulate prices**
- **All of these activities will result in "second best" outcomes (but are they also second level objectives?)**

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NEB Economic Regulation Objectives

1) **Ensure adequate pipeline capacity is in place**
2) **Ensure that pipeline system provides shippers with desired services at reasonable cost**
3) **Ensure that pipelines are financially viable (are able to raise adequate capital to maintain system and finance expansion)**

Adequate Capacity

- **Belief that a little too much capacity is much better than too little**
- **Key measures of adequate capacity:**
  - **Basis differential between markets**
  - **Capacity utilization factors**

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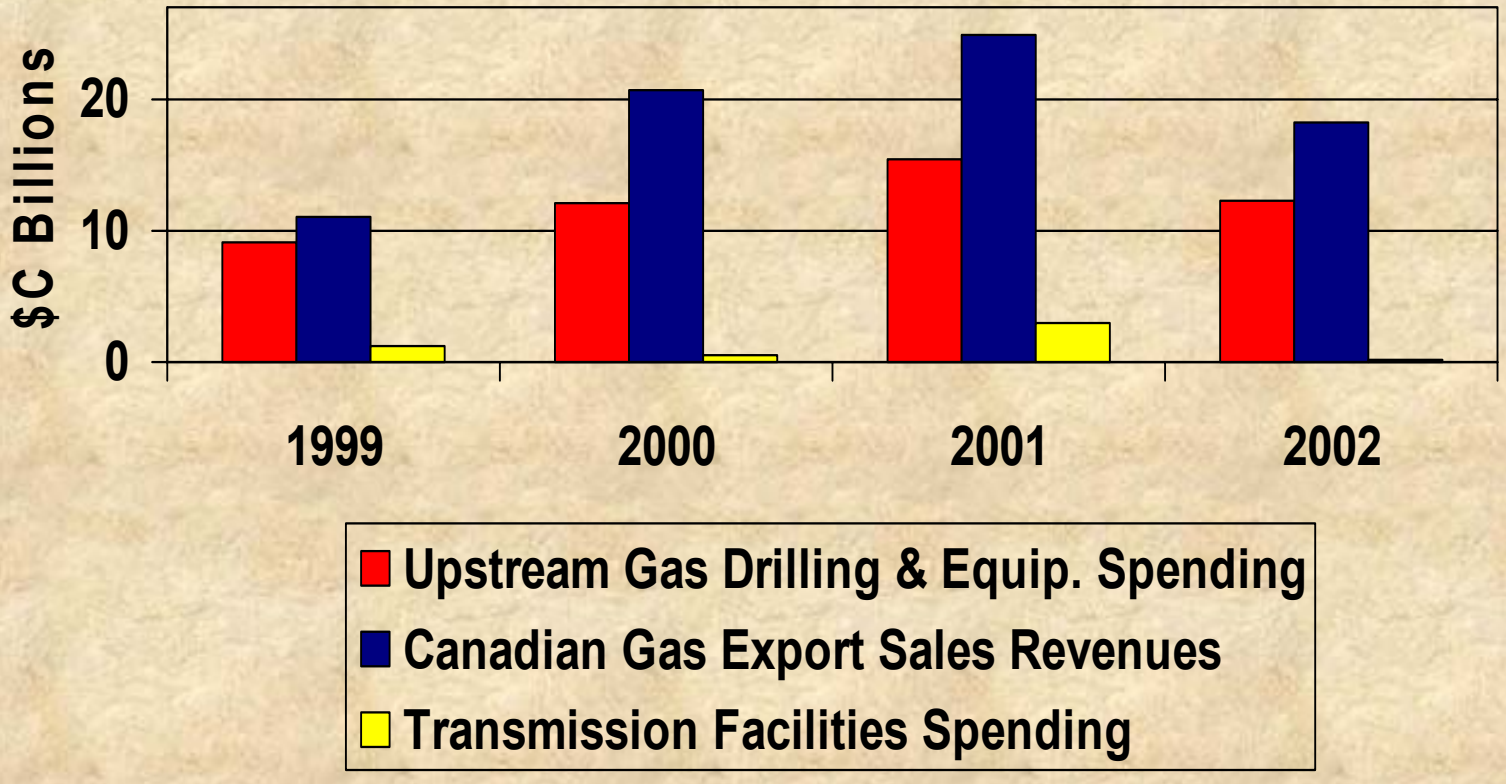
Upstream Gas Spending and Export Revenues vs. Transmission Expenditures



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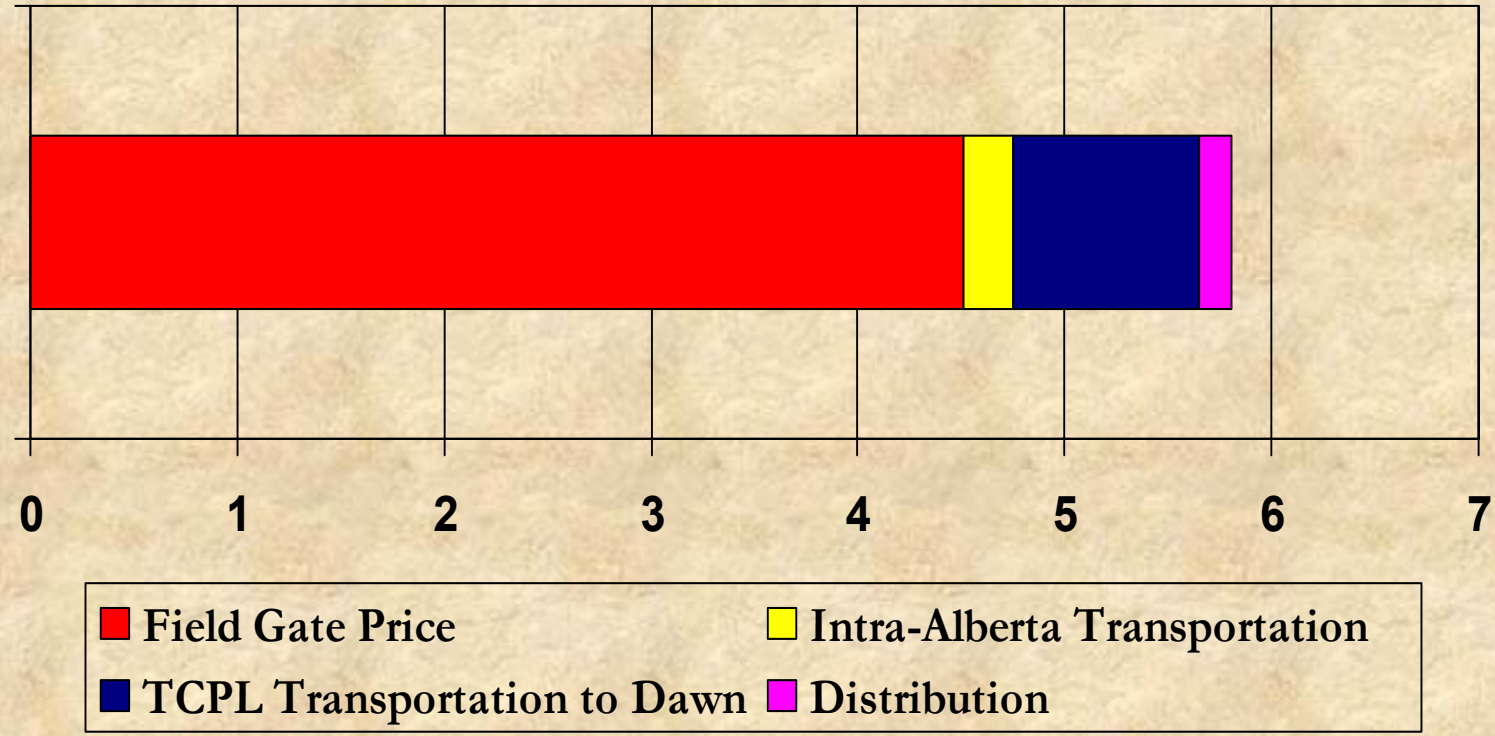
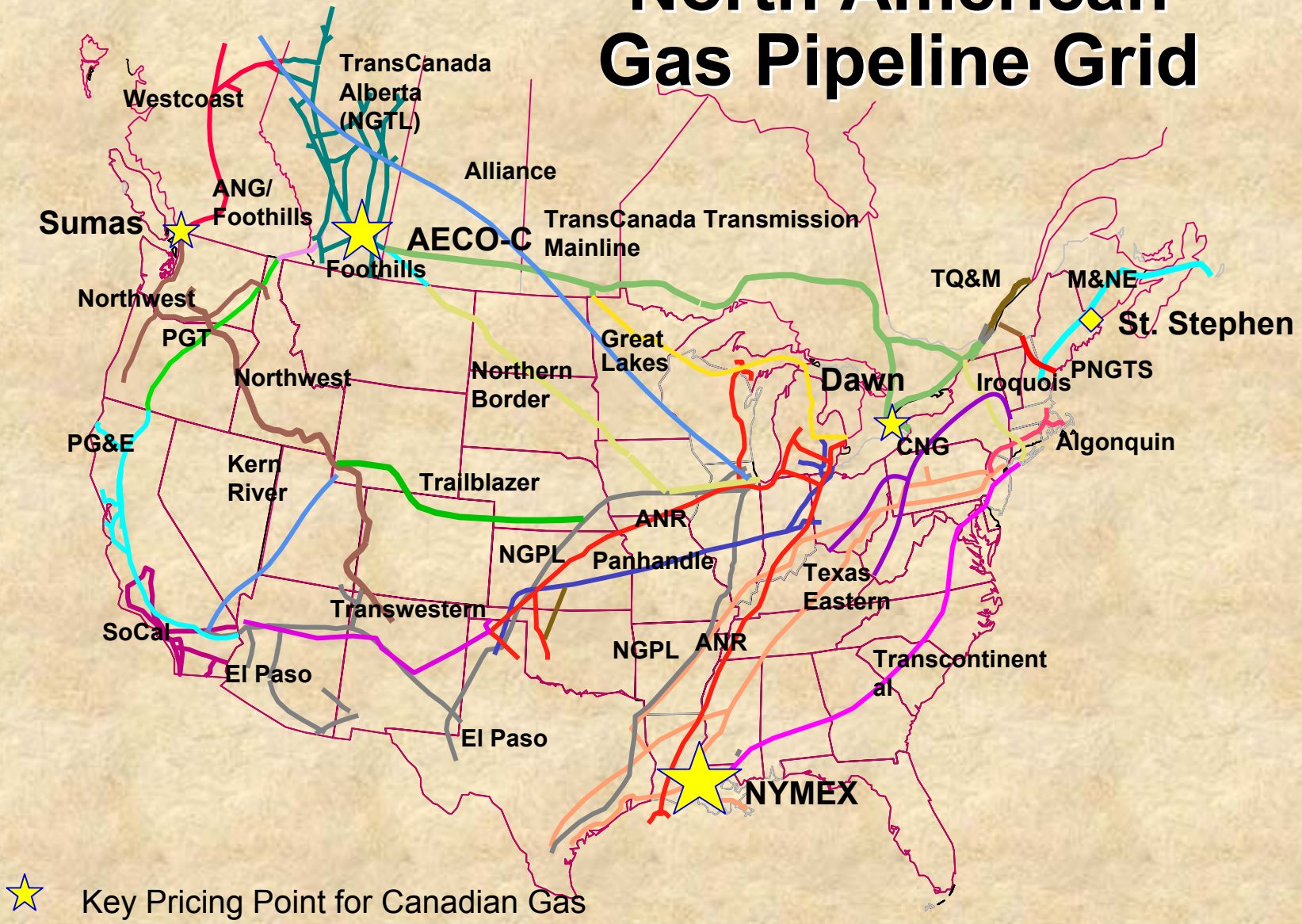
Gas Cost Components[1] ($/GJ)



[1] Average cost components to Toronto industrial consumer in 2003

North American Gas Pipeline Grid



Key Pricing Point for Canadian Gas

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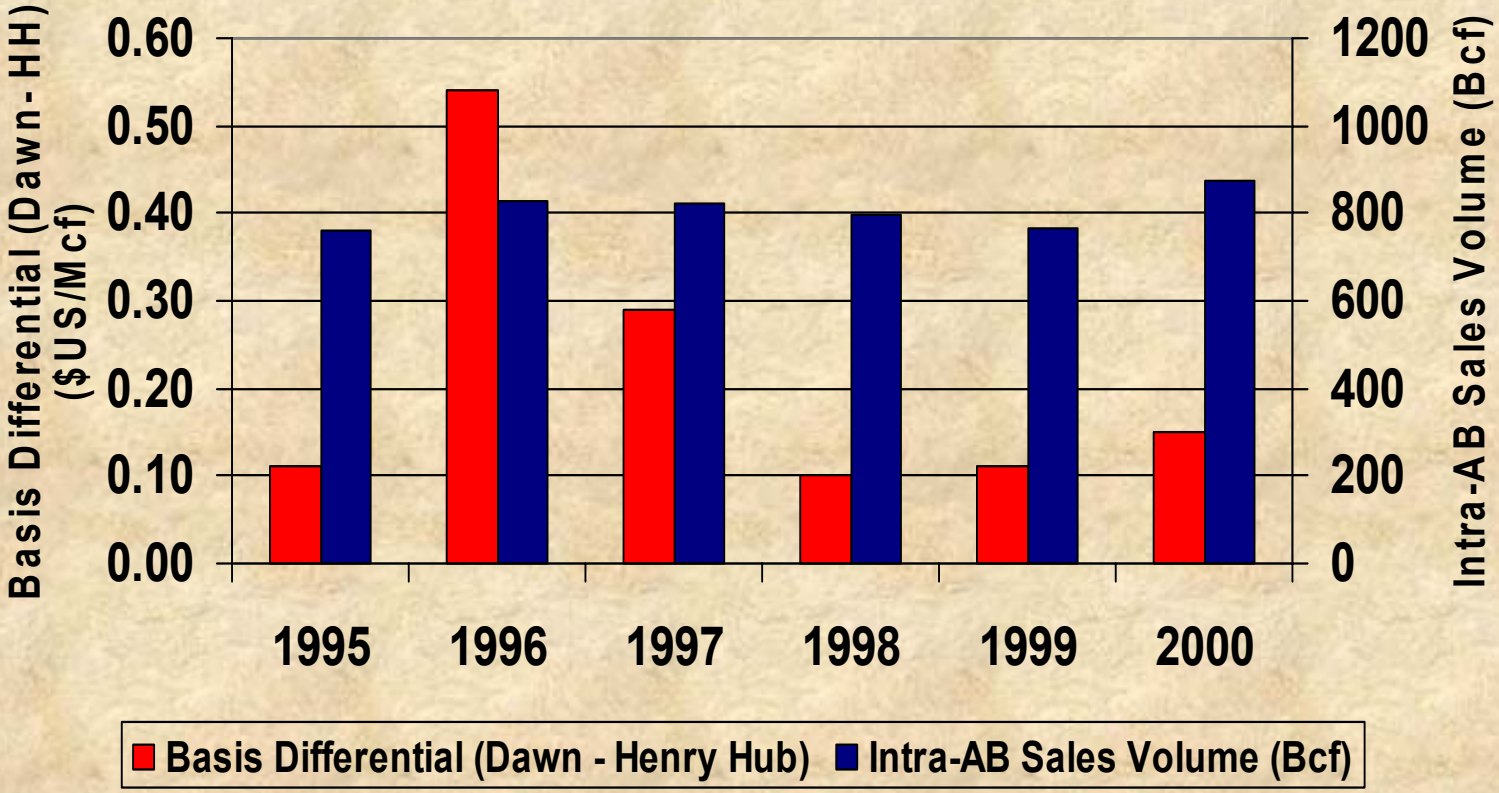
Importance of Adequate Capacity



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Example: Benefits of Adequate Capacity

Difference in basis differential = roughly $0.40

Minimum:

800 Bcf (intra-Alberta sales) x $0.40 = $320 million

Maximum:

5.8 Tcf (all sales) x $0.40 = $2.3 billion/year

$2.3 billion better estimate of "deadweight" losses

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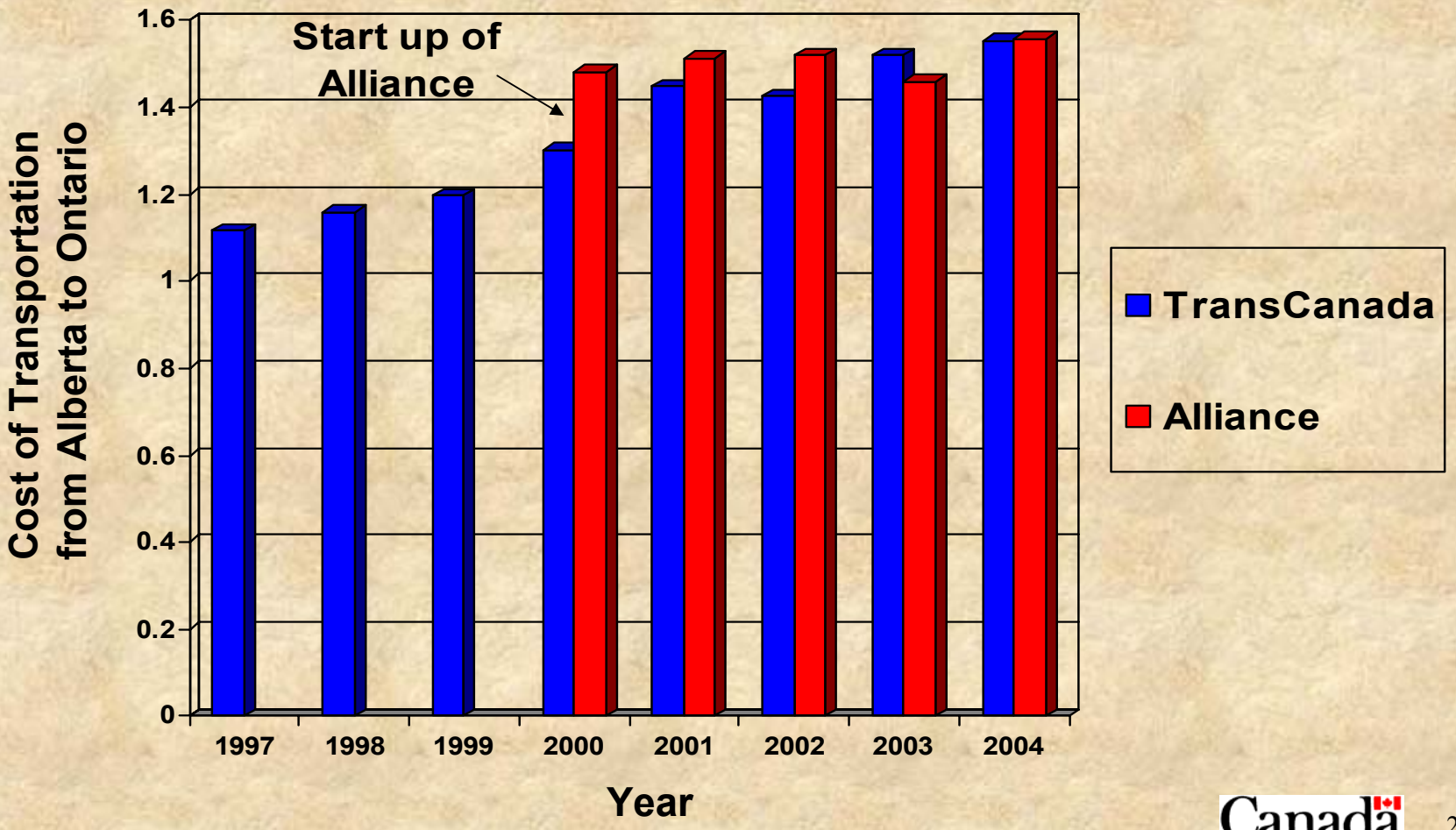
Competition and Canadian Gas Pipeline Tolls

($/Mcf)



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Cost of Competition and Excess Capacity

- Cost = extra cost of capacity as reflected in higher tolls
- Approximately $0.20/Mcf
- Cost = 5.0 Tcf (ex-Alberta sales) x $0.20 = $1 billion/year

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Costs of Too Much Capacity vs. Inadequate Capacity

Annual Cost of Inadequate Capacity:

$320 million to $2.3 billion/yr

Annual Cost of Excess Capacity:

5.0 Tcf (ex-Alberta sales) x $0.20 = $1 billion/yr

Is it a wash?? We don't think so!

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Full Costs & Benefits of Inadequate vs. Adequate Capacity

Costs

- Foregone sales revenue
- Foregone royalties
- Inefficient allocation of supply
- Negative signal to upstream investors

Benefits

- All gas/oil receives full market value
- Maximization of royalties
- Efficient allocation of supply
- Positive signal to upstream and downstream investors

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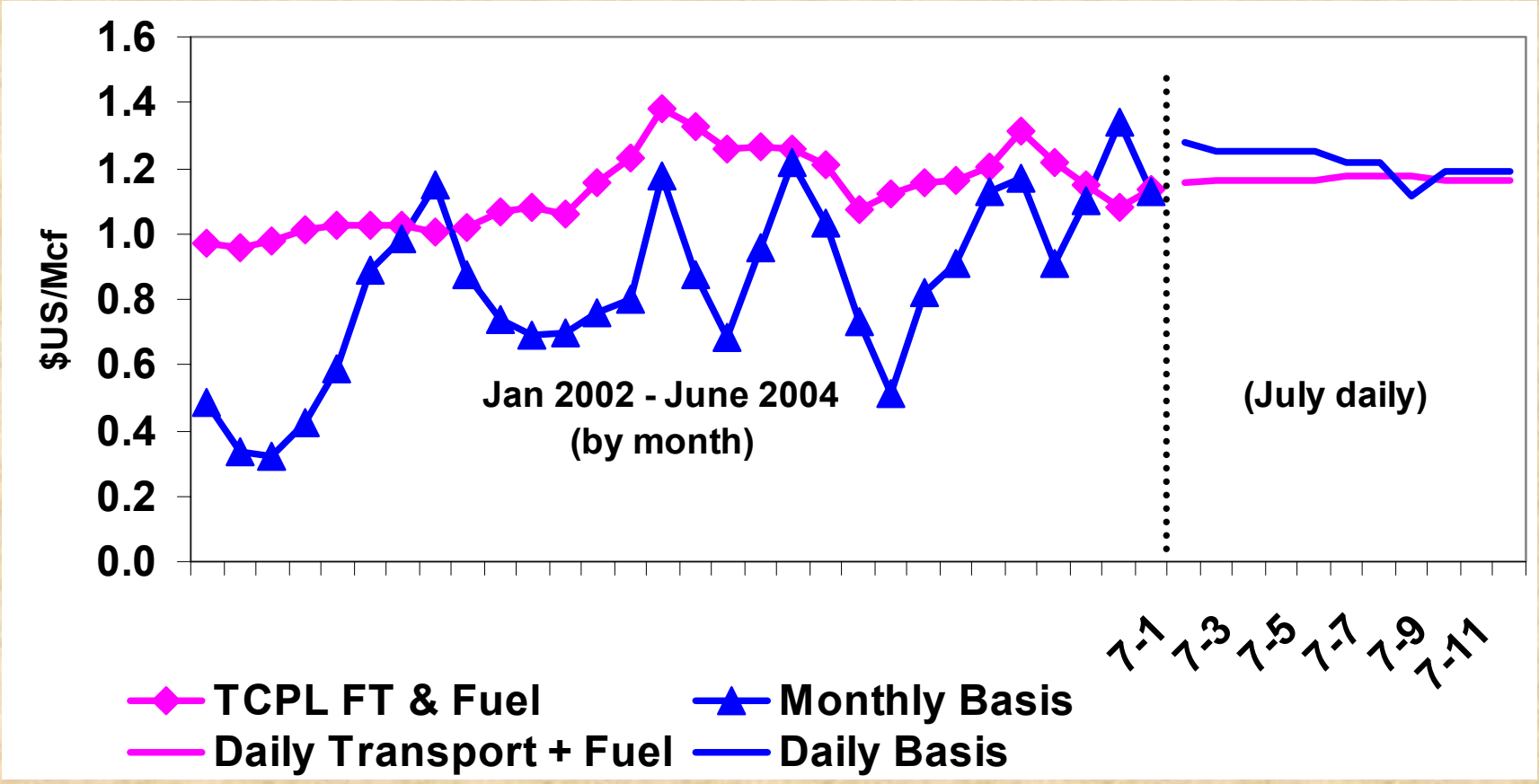
Implicit Alberta to Ontario T-Value



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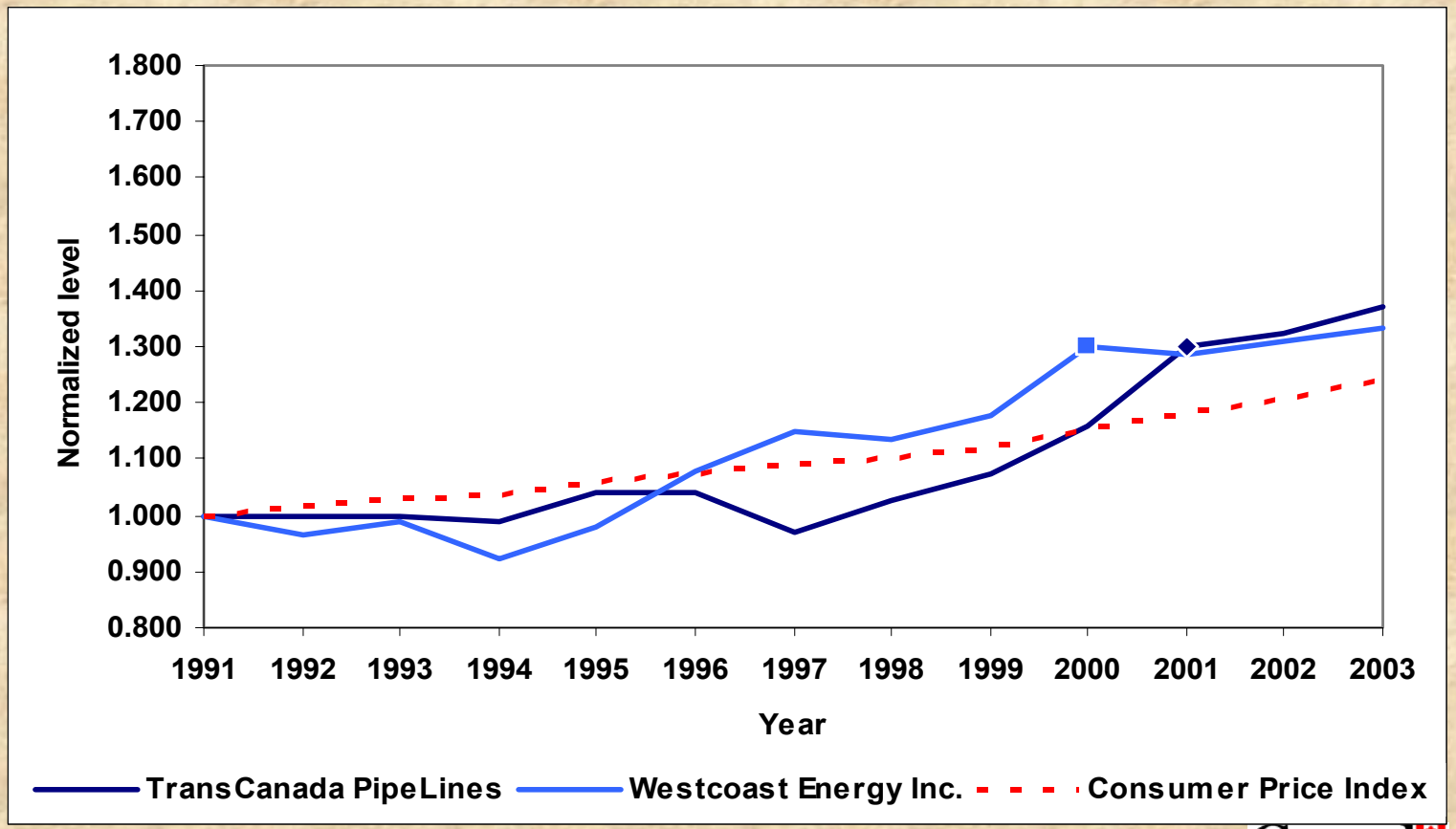
Gas Pipeline Tolls and the CPI

(Normalized to the Year 1991)



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Are Services Meeting Shippers' Needs?

- **Services on TransCanada:**
  - Long-term firm, short-term firm
  - Biddable interruptible
  - Parking and loans
  - Multiple delivery points, multiple "handshakes"
  - Firm and interruptible backhaul
  - Active secondary market – efficient allocation
- **Services on Alliance**
  - NGL transportation in gas stream
  - Authorized overrun service (free overrun)

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What do Shippers Think?

- NEB is requiring pipelines to survey their shippers
- NEB has designed questions on:
  - Satisfaction with service
  - Satisfaction with value for service
  - Satisfaction with NEB's role
- First results to be received for 2004
- We also informally meet with shippers

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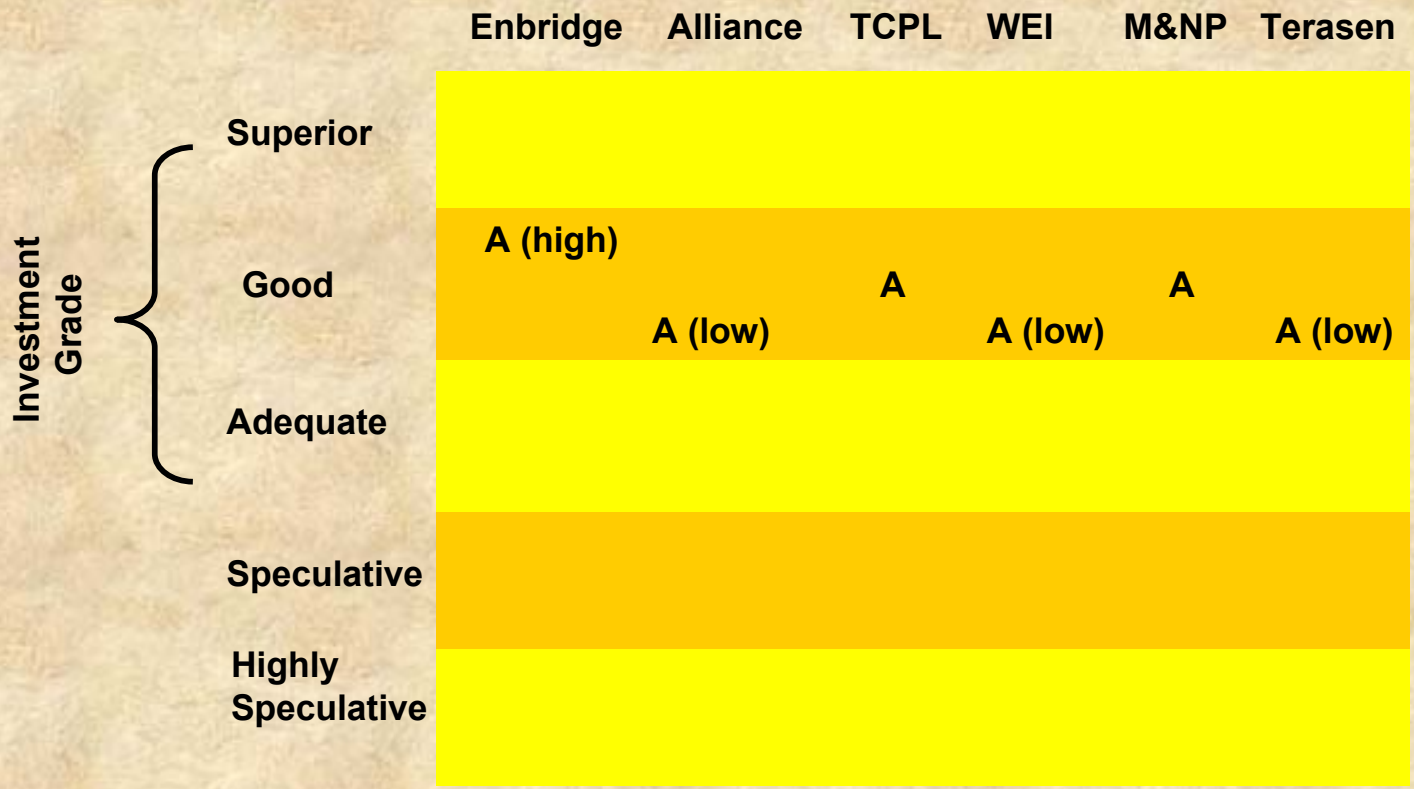
Financial Integrity: DBRS Debt Ratings



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Financial Viability of Cdn. Pipelines

- Return on equity determined by formula
  - Currently 9.56%
- Deemed equity components from 25 to 35%
- Low by international standards
- Possible due to stable regulatory framework
- Lower ROE and equity components translate into lower tolls

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Conclusions (1)

- Regulation has placed emphasis on adequate infrastructure
- Canada has a strong natural gas & oil pipeline infrastructure enabling it to transport about $100 billion of product annually
- Large investment in upstream, putting Canada as 3rd ranked gas producer in world
- Upstream investors have confidence in infrastructure

Conclusions (2)

- Tolls have increased with introduction of competition
- Satisfaction with services is under study
- Pipeline sector is financially viable

Conclusions - Final

- **Bottom line is that you need to know your key objectives**
- **We believe we have met the key objectives**
- **Canada has an efficient pipeline infrastructure that is meeting the needs of Canadian producers and buyers**

NEB website

www.neb-one.gc.ca

gbooth@neb-one.gc.ca

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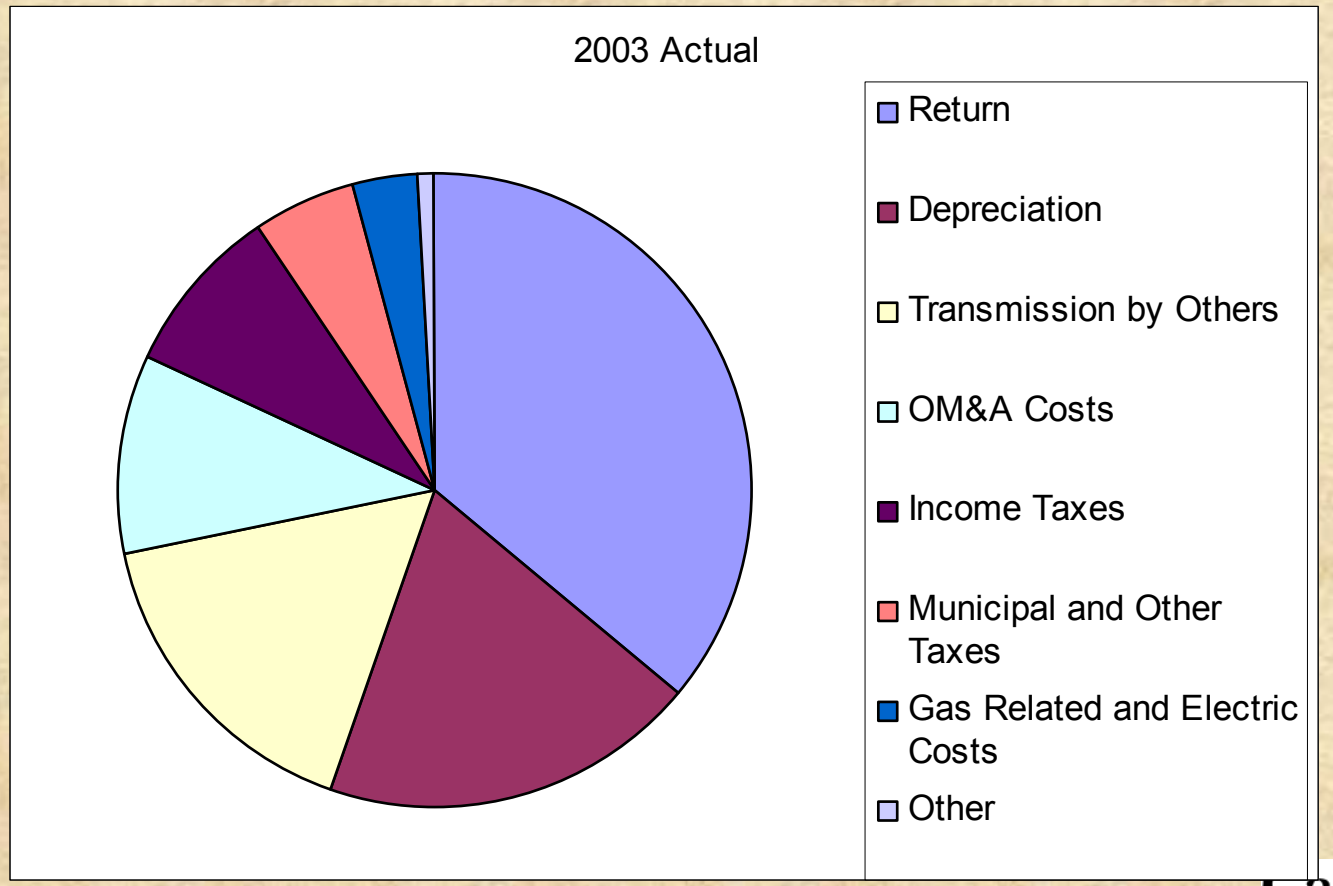
TransCanada PipeLines
Revenue Requirement Items



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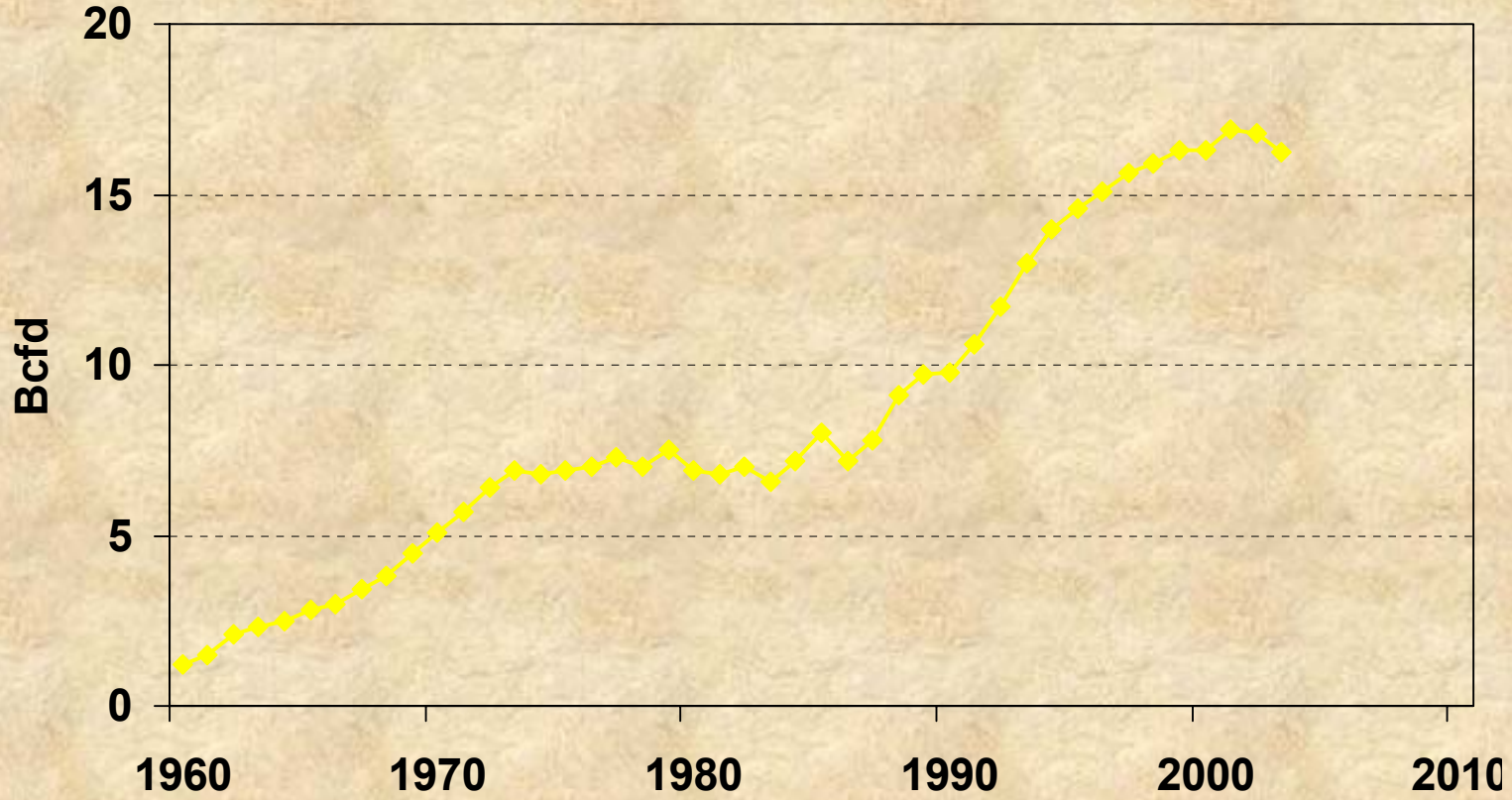
Gas production from WCSB



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