# Natural Gas Markets in Transition: Gas Transmission Challenges

CAMPUT
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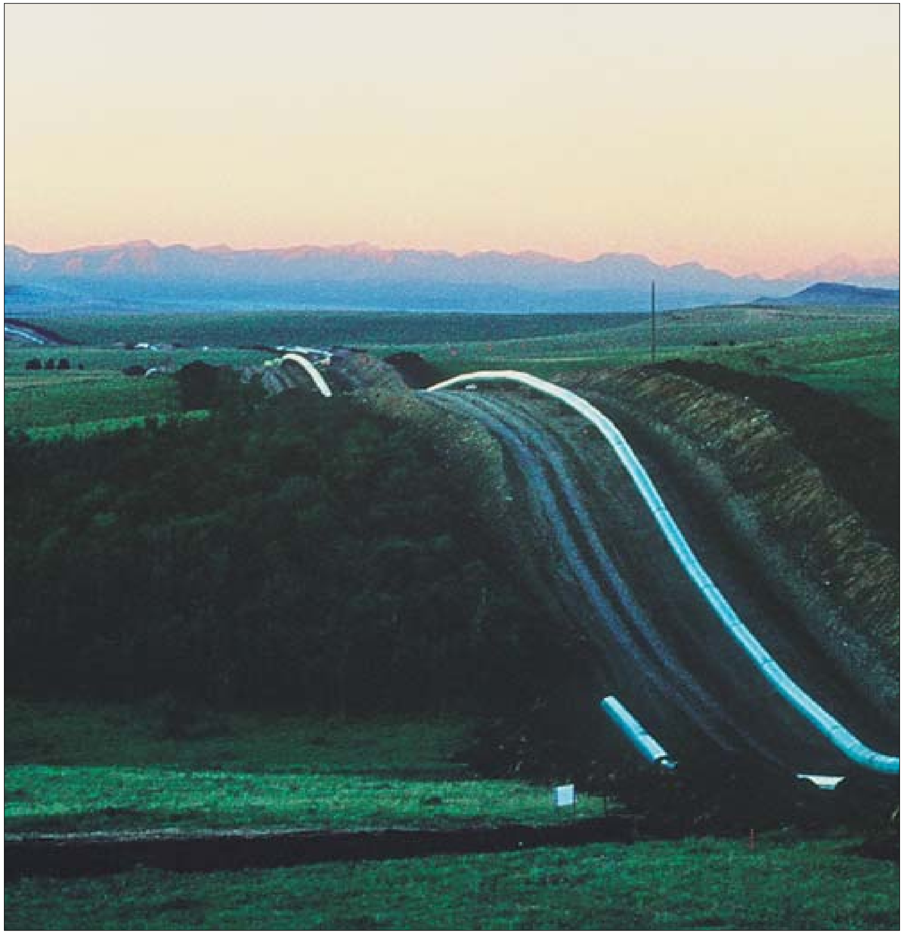

Hal Kvisle, President & Chief Executive Officer

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# Natural Gas Markets in Transition
# Gas Supply / Gas Transmission Challenges

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- Supply challenged to keep up with demand growth
- Pipelines and producers need to make major investments to bring supply to market
- Frontier field developments are highly levered to commodity markets
- Long haul pipeline developments face uncertain financial returns over long life cycles
- Who builds/owns new pipelines?
- Who underpins new pipelines?

# Natural Gas Markets in Transition
# TransCanada View of Regulatory Challenges

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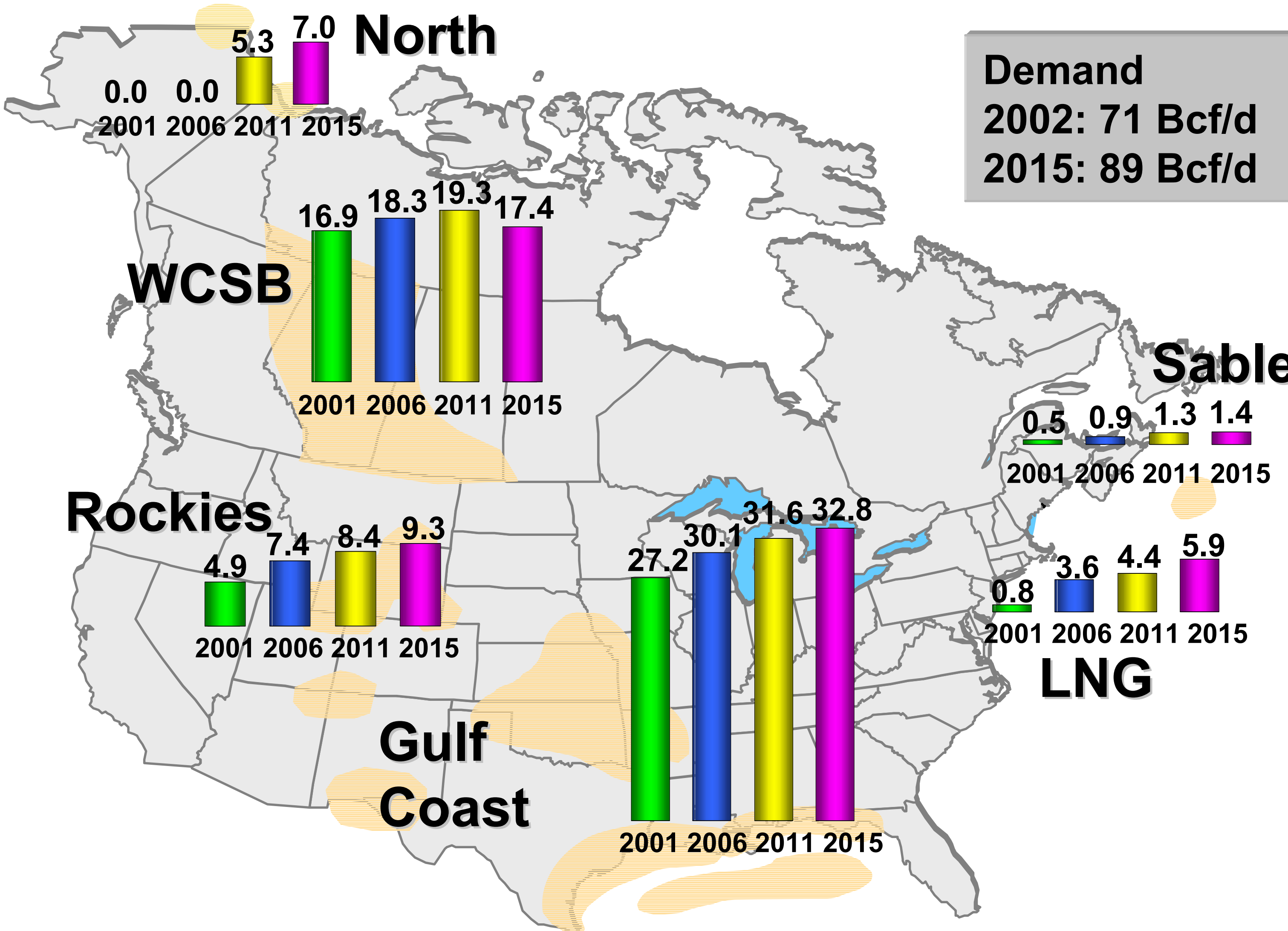
- Maintain a regulatory environment that
  - reduces regulatory uncertainty, minimizes business risk
  - attracts low risk, low cost capital
  - minimizes life cycle costs to shippers
  - provides a reasonable opportunity for recovery of and on capital

- Balance policy perspectives and market realities
  - encourage appropriate long run capacity development
  - shorten the regulatory approval cycle
  - recognize historic realities

# Natural Gas Markets in Transition
# Canada-US Supply Demand Outlook
(Bcf/d)




**Demand**
**2002: 71 Bcf/d**
**2015: 89 Bcf/d**

# Natural Gas Markets in Transition
# 30 Year Outlook

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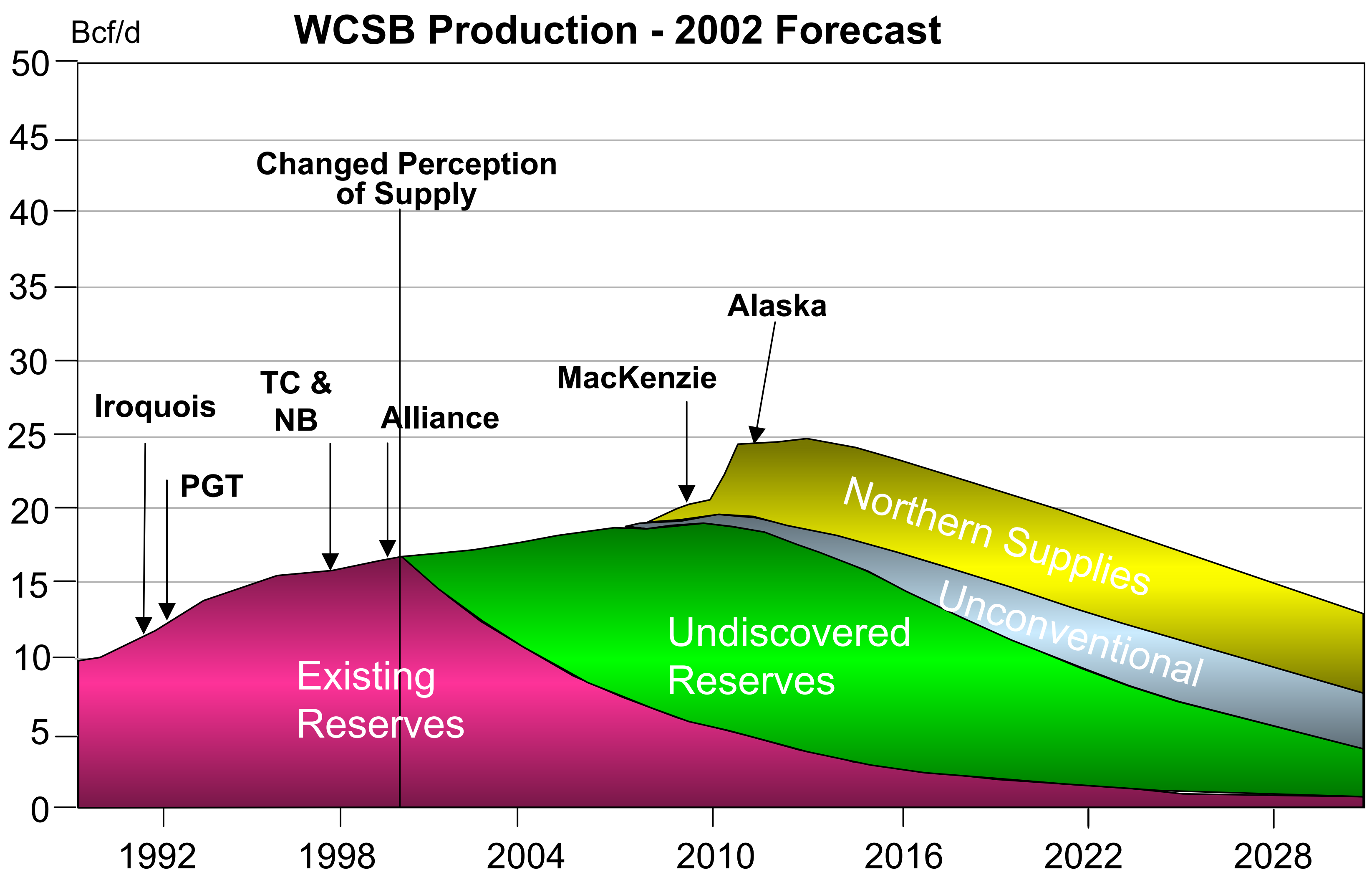

# Natural Gas Markets in Transition
# Need For Mega Investments

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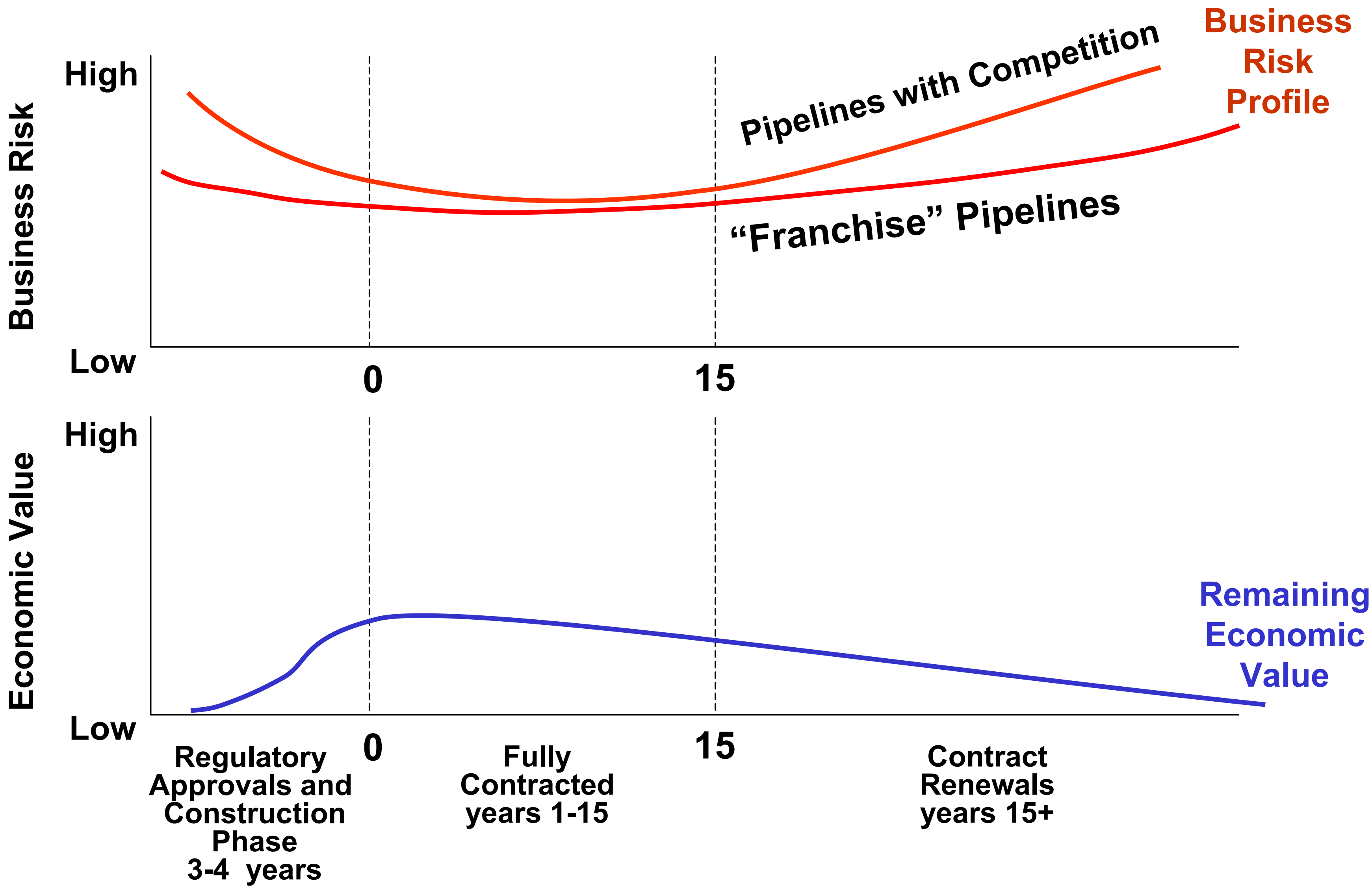
| | | |
|---|---|---|
| • Mackenzie | Cdn $3 Billion | |
| • Alaska | Cdn $25-30 Billion | |
| • LNG (7 Bcf) | N.American infrastructure | Cdn $ 5-7 Billion |
| | Upstream infrastructure | Cdn $15-20 Billion |

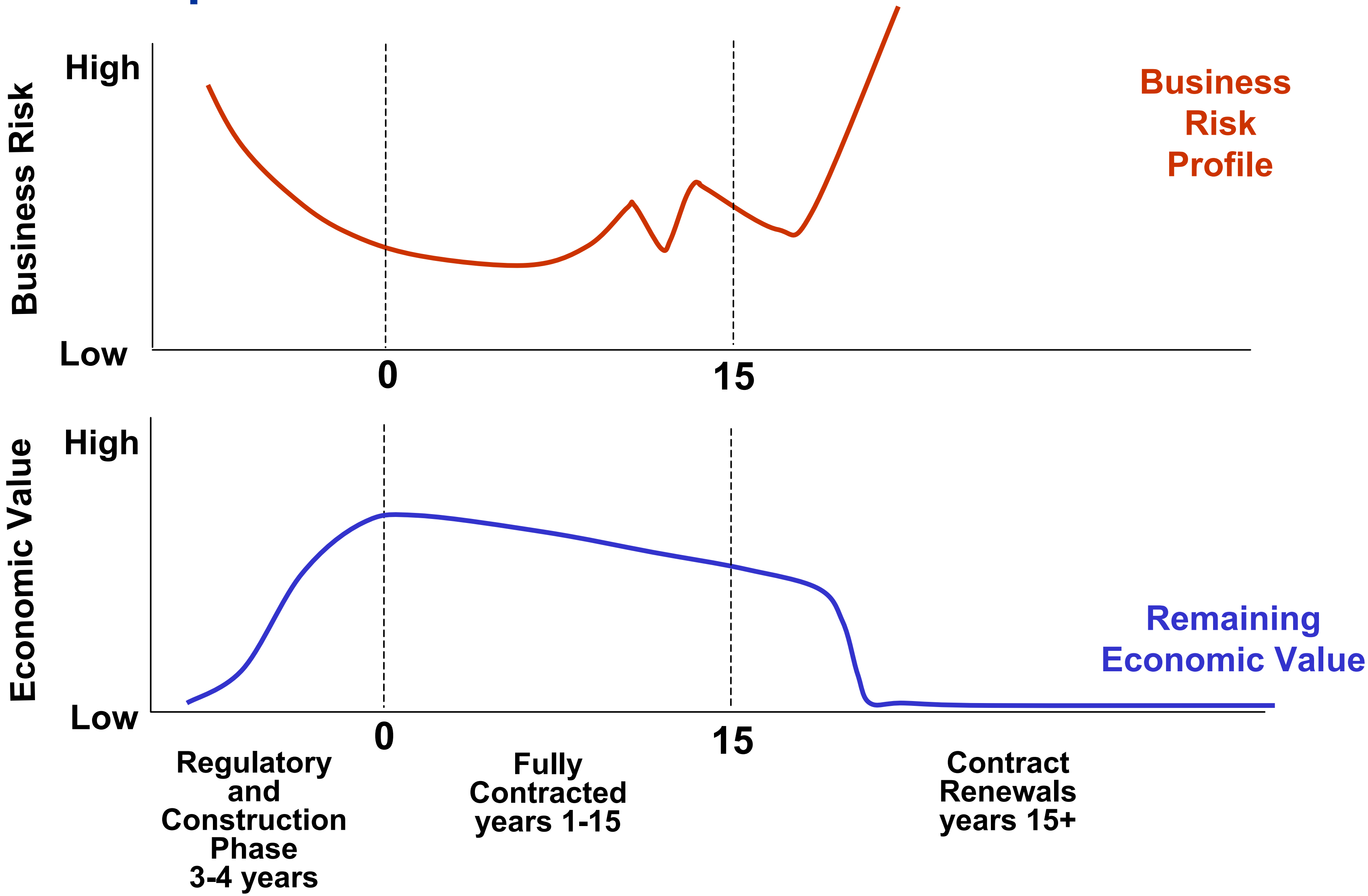
**Investors looking for:**

- **assurance of long term capital recovery**
- **comfort with medium term business model**
- **a "fair" return relative to medium term/long term risks**

# Natural Gas Markets in Transition
# Pipeline Life Cycle



# Natural Gas Markets in Transition
# Pipeline Life Cycle - Catastrophic Failure



# Natural Gas Markets in Transition
## *Our World Has Changed!*

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**From**

- Growing WCSB Production
- Growing ex-Alberta Flows
- Abundant, Low-cost Gas
- TCPL “Franchise” ex-Alberta
- Integrated East-West Pricing
- \$2.40 - \$0.90 = \$1.50
- 8% Fuel = 12 cents
- 50 Years of Steady Growth
- Long-term Contracts
- Maximize Near-term ROE

**To**

- Flat Production
- Declining Flows
- A Scarce and Valuable Fuel
- Pipe of Last Resort
- Market Pricing, Volatile Netbacks
- \$7.20 - \$1.20 = \$6.00
- 6% Fuel = 36 cents
- Uncertain 5 Year Outlook
- Few Contracts, Few Counterparties
- Mitigate Long-term Risk

# Thank you

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# Natural Gas Markets in Transition
# Pipeline Economics

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1) Cost structure of gas transmission
   - Financial Cost = 80-90%
     - return on capital = interest + ROE
     - return of capital = depreciation
   - Operating Cost = 10-20%
     - higher percentage for older pipelines
2) Asset life
   - Contracts for 10 to 20 years on new pipelines
   - Short term contracts on many older pipelines
   - Initial financial commitments
     - debt: typically 20 years, renewable
     - equity: 30-40 years
   - Nature of risk
     - catastrophic failure to recover capital
     - driven by supply failures
     - exacerbated by bypass
     - often difficult to forecast, capital recovery-return tradeoff

# Natural Gas Markets in Transition
# Mix of Pipeline Business Models

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### New pipelines

- match contract term to recovery of capital

### Producers/LDC's

- contract on new pipelines to ensure sufficient capacity
- manage supply risk through level of contracting on old pipelines

### Older pipelines

- contract term dependent upon shippers managing supply risk
- contract term not matched to capital recovery
- risk of unrecovered capital costs

**Regulatory challenge is balancing the different capital recovery models as the supply sources shift**

# Natural Gas Markets in Transition Implications of Competitive Pressures on "Franchise" Pipelines

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## Regulatory Goals

- Fairness to customers and investors as a substitute for competition
    - "right investments"
    - "right costs"
    - "right timing"

## Competitive Pressures

- Ex-post competition may improve variable costs, difficult to change overall economics
- Better infrastructure planning
- Improved capital efficiency
- Higher cost of capital and higher risk
- Elastic versus inelastic operating costs determines savings
- Incentives may work better than forced competition