

# Pipeline Adding Value

**Wayne Sartore**  
**Vice President**  
**Northern Pipeline Development**  
**Enbridge Inc.**

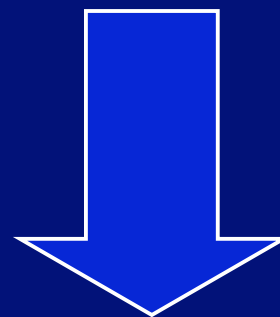
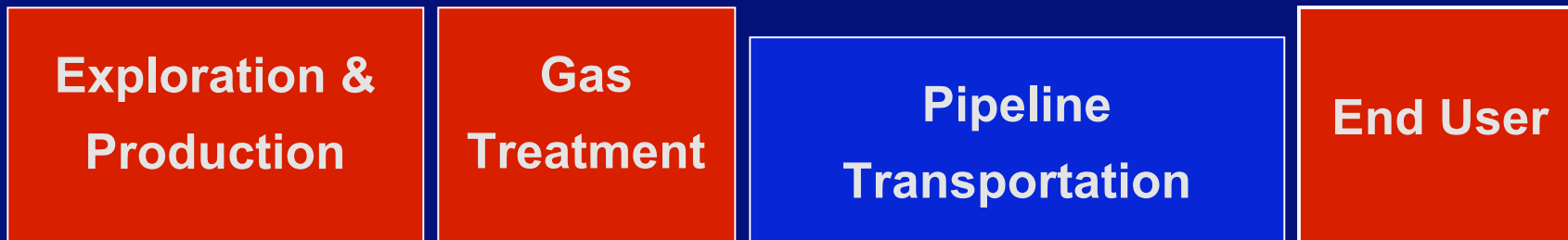
**Resource Development Council**  
**22nd Annual Conference**  
**November 29, 2001**  
**Anchorage, Alaska**



**Enbridge:**

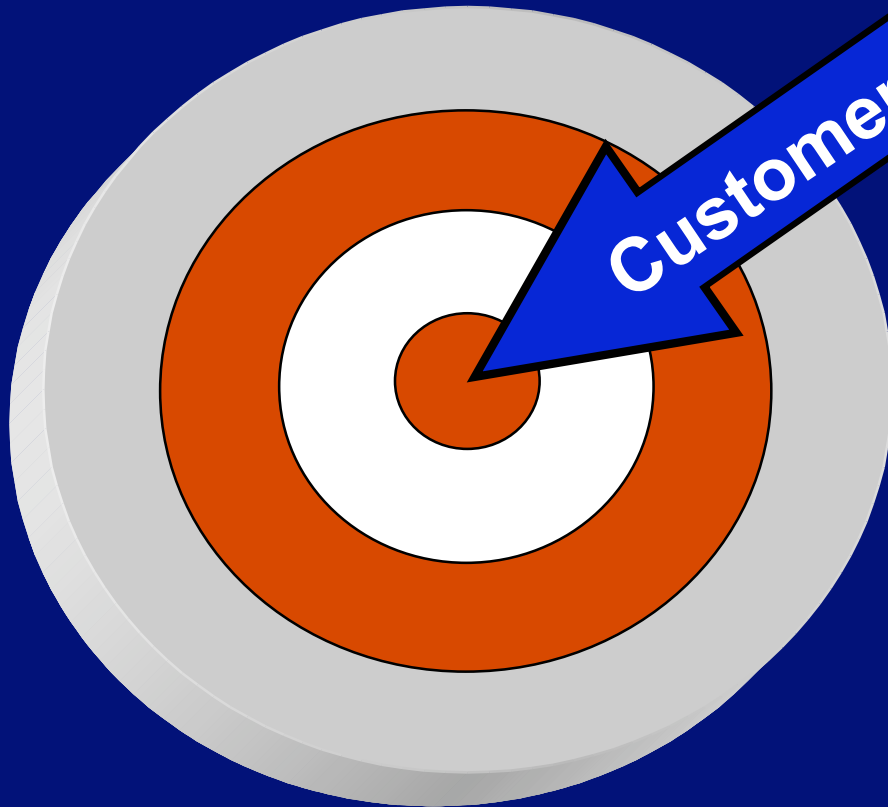
**North & South  
America**

# Energy Value Chain



*Enbridge*

# Customer Service



Customer requirements

- Safety Excellence
- Environmental Stewardship
- Cost Effective
- Reliability of Operation
- Stakeholder Relations
- Creative and Innovative
- "World Class" Service

# “Northern” Pipeline Challenges



**Enbridge is route neutral**

## Unique “Northern” P/L Issues

- Capital Cost
- Geography, Remote Access
- Permafrost

## Enbridge Northern Expertise

- Norman Wells Pipeline
- Inuvik Gas

## Experience Applied to the Future

- Sub-surface construction in permafrost
- Pipeline integrity monitoring
- Innovative cost reduction opportunities



# Northern Expertise

- Built 1985 – only major pipeline in NWT



- Right-of-Way = 869 km (540 mi)
- Pump stations = 3
- Pumps = 6
- Employees = 20
- 2000 payroll = \$1.5M
- 2000 capital costs = \$568,000
- 2000 property taxes = \$1.4M
- 2000 power costs = \$760,000

## Northern Expertise

- Involved in production, processing, transmission and distribution of northern natural gas to town of Inuvik.



### Cdn \$44 million project:

- Two wells
- Production facility
- 50 kilometre pipeline
- 25 km distribution system
- 500th customer Aug. 2001

### Owners

- Inuvialuit Petroleum Corp.
- AltaGas Services
- Enbridge

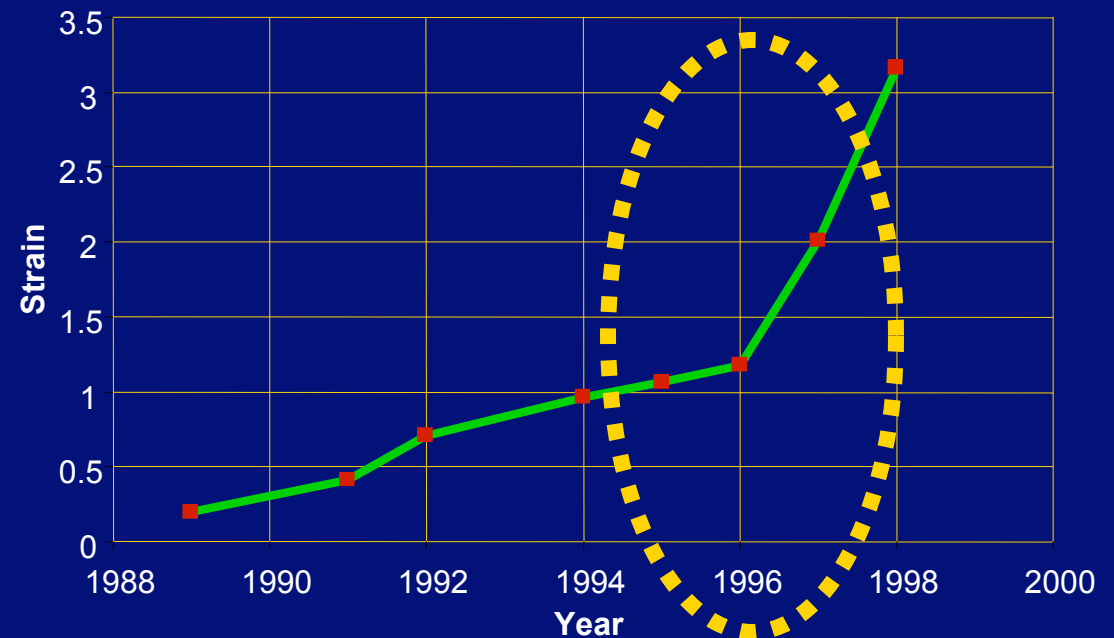
# Northern Pipelines - Operations



- Integrity Management in permafrost
  - Geo-pig



% Strain vs. Time for Slope 92





# Northern Pipelines - Operations

- Geo-pig
- scheduled pipeline repair



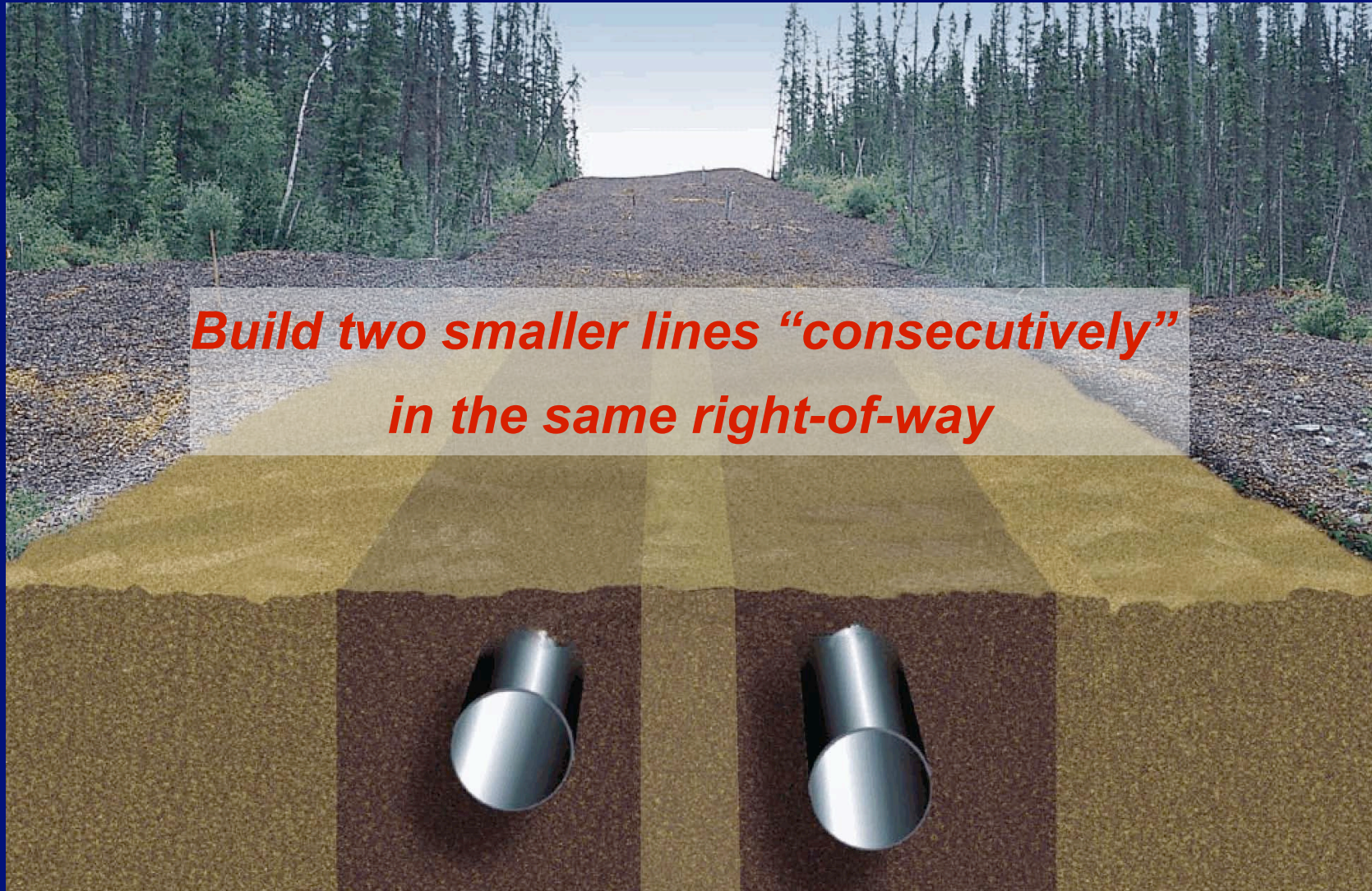
# Northern Pipelines - Maintenance

- access equipment
- pipeline repair techniques





# The “Measured Approach”



# The “Measured Approach”

*Build two smaller lines “consecutively”  
in the same right-of-way*

## BENEFITS

- Cost estimates 48-inch vs. 2x36-inch within 7%
- Reduced project risks
- Socio-economic benefits
- Improved schedule for first gas to market
- Pipeline capacity better matched to market needs



## Success requires:

- Continental decision-making
- Robust project economics
- A Producer decision to proceed
- Common understanding
- Cooperation of all stakeholders





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