

Methane Emissions Management at TransCanada

by Jim Cormack

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Methane Emissions Management at TransCanada



Agenda

- TransCanada
 - Introduction & Background
- Methane Emissions Management Strategies
- TransCanada Climate Change Strategy
- TransCanada's Experience
 - Control Methodologies
 - Research & Development
 - Relationships: Methane savings, plant efficiency, GHG's
- Conclusions

Natural Gas Transmission Assets



41,000 km of wholly owned pipeline; 11.5 Bcf/day

Natural Gas Transmission Assets



TransCanada 22 plants; 4,700 MW
(including LP and plants in development)

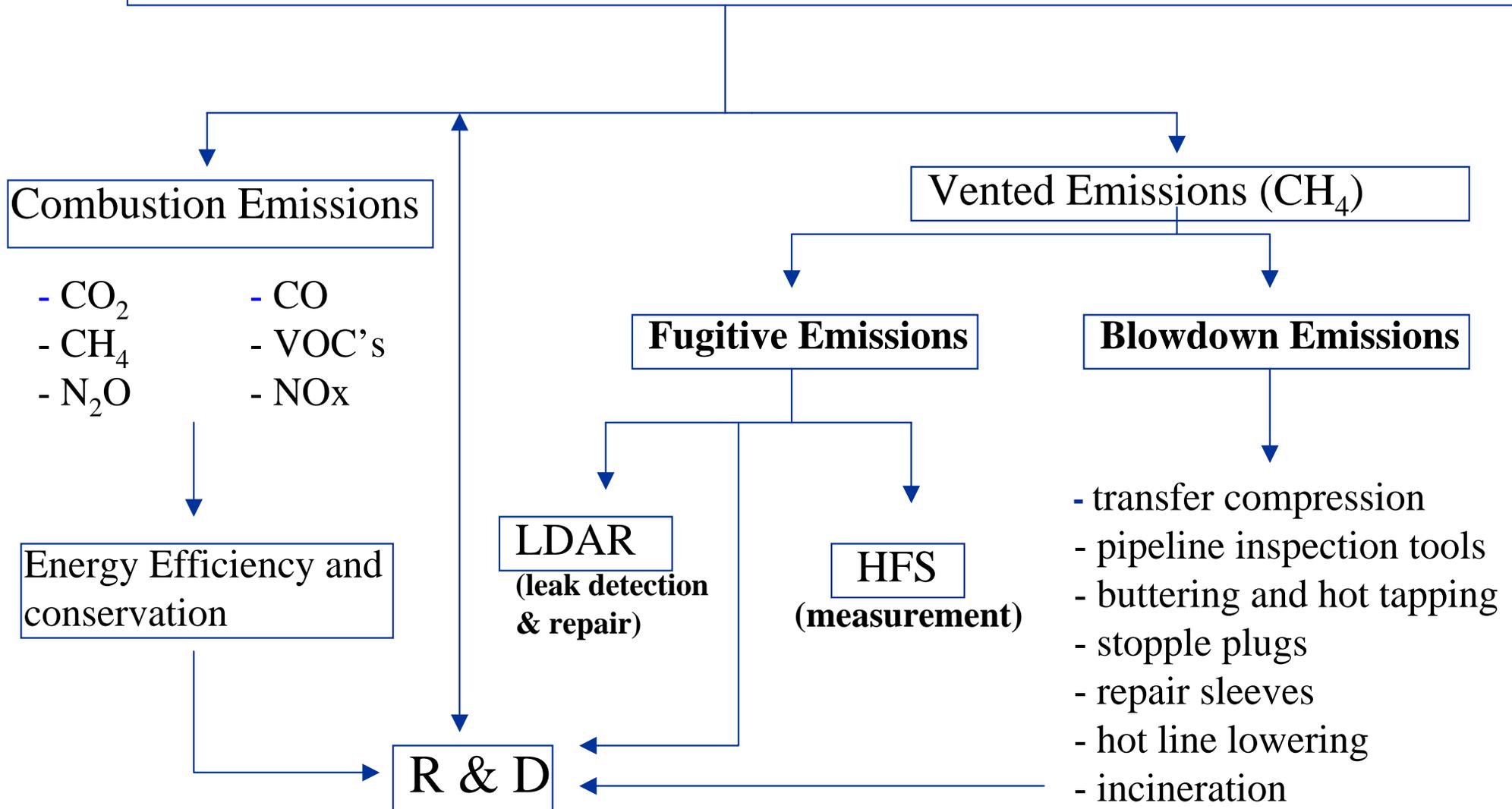


TransCanada Power, L.P.
11 plants; 744 MW

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TransCanada Emissions Management System



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Blowdown Emissions Management (Control Methods and Technologies Used)

- Scheduling Practices
- Operational Adjustments
- Transfer (Pull-down) Compressors
- Buttered Stubs
- Hot Tapping
- Sleeves
- Stopples
- Hot line lowering



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Fugitive Emissions Management (LDAR vs Measurement)

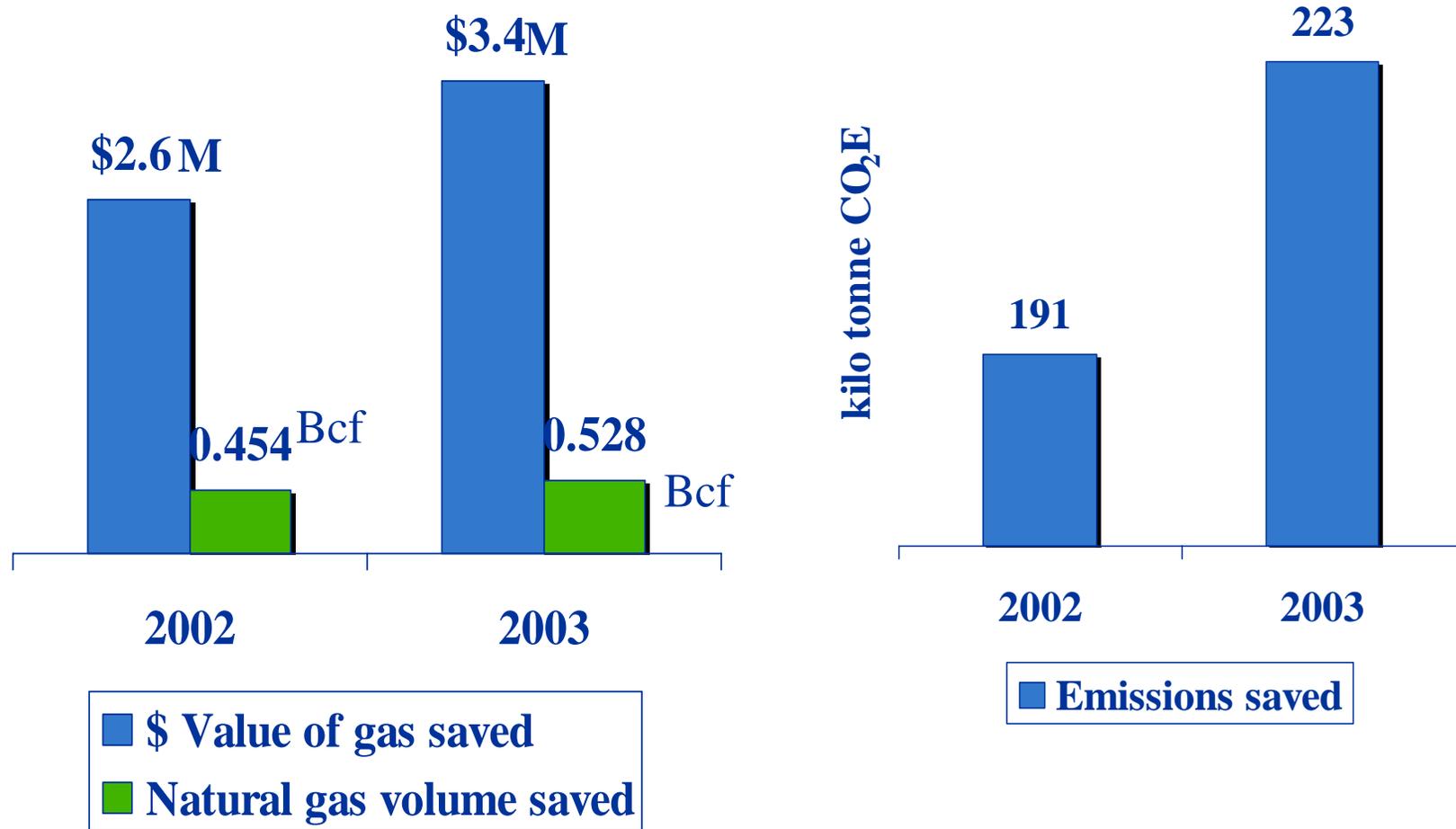
- Regular Leak Detection is easy to do and very cost effective.
- High Flow Sampler Measurement of leaks is slightly more costly and time consuming, but is very good at identifying cost effective fixes. 80/20 rule!
- Bacharach High Flow Sampler - NEW



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LDAR Program Achievements

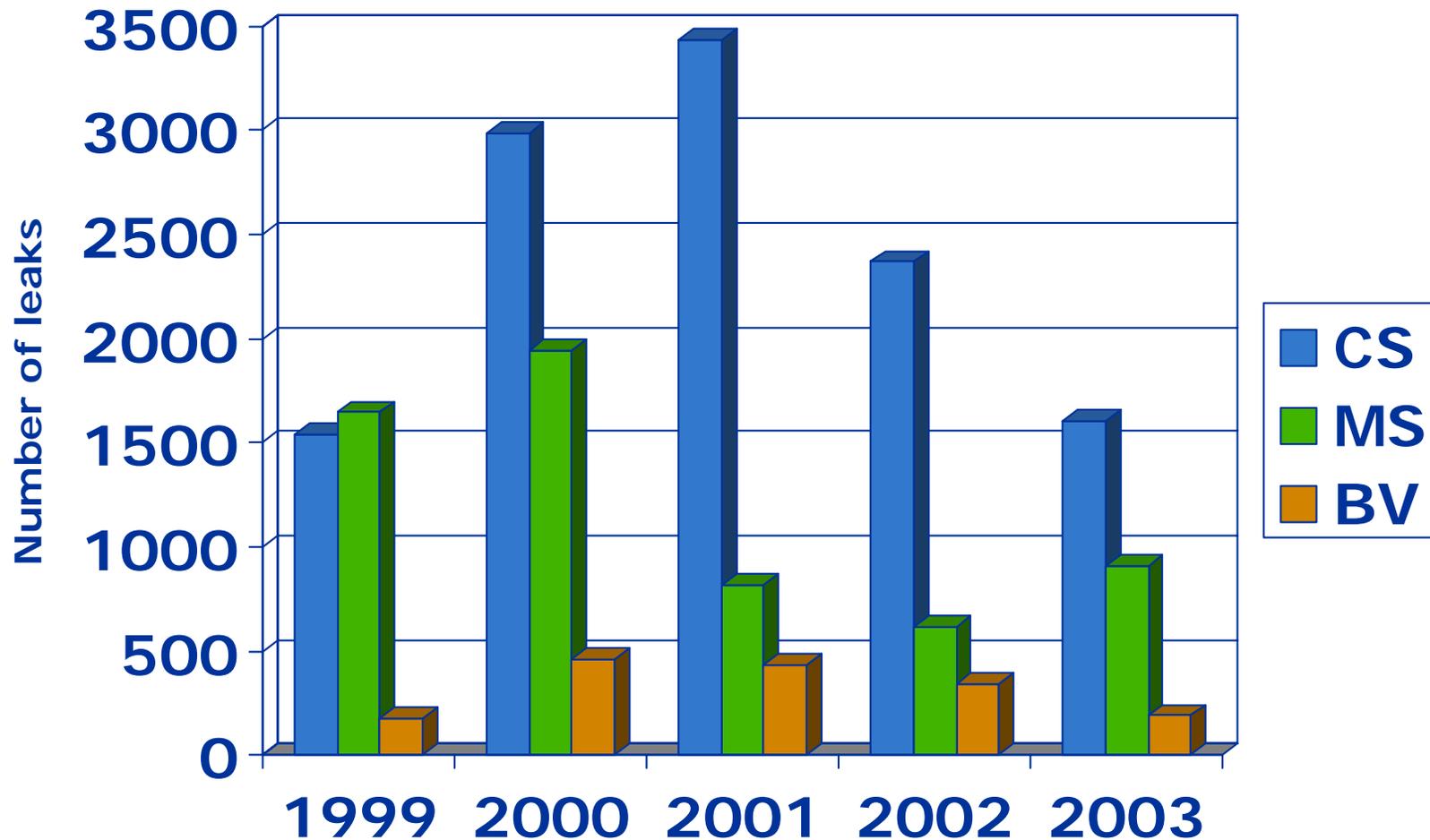


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High Flow Sampler Data (1999-2003)

Total leaking components measured: 19457



Methane Emissions Management



Combustion Emissions Management (Efficiency measures and Technologies used)

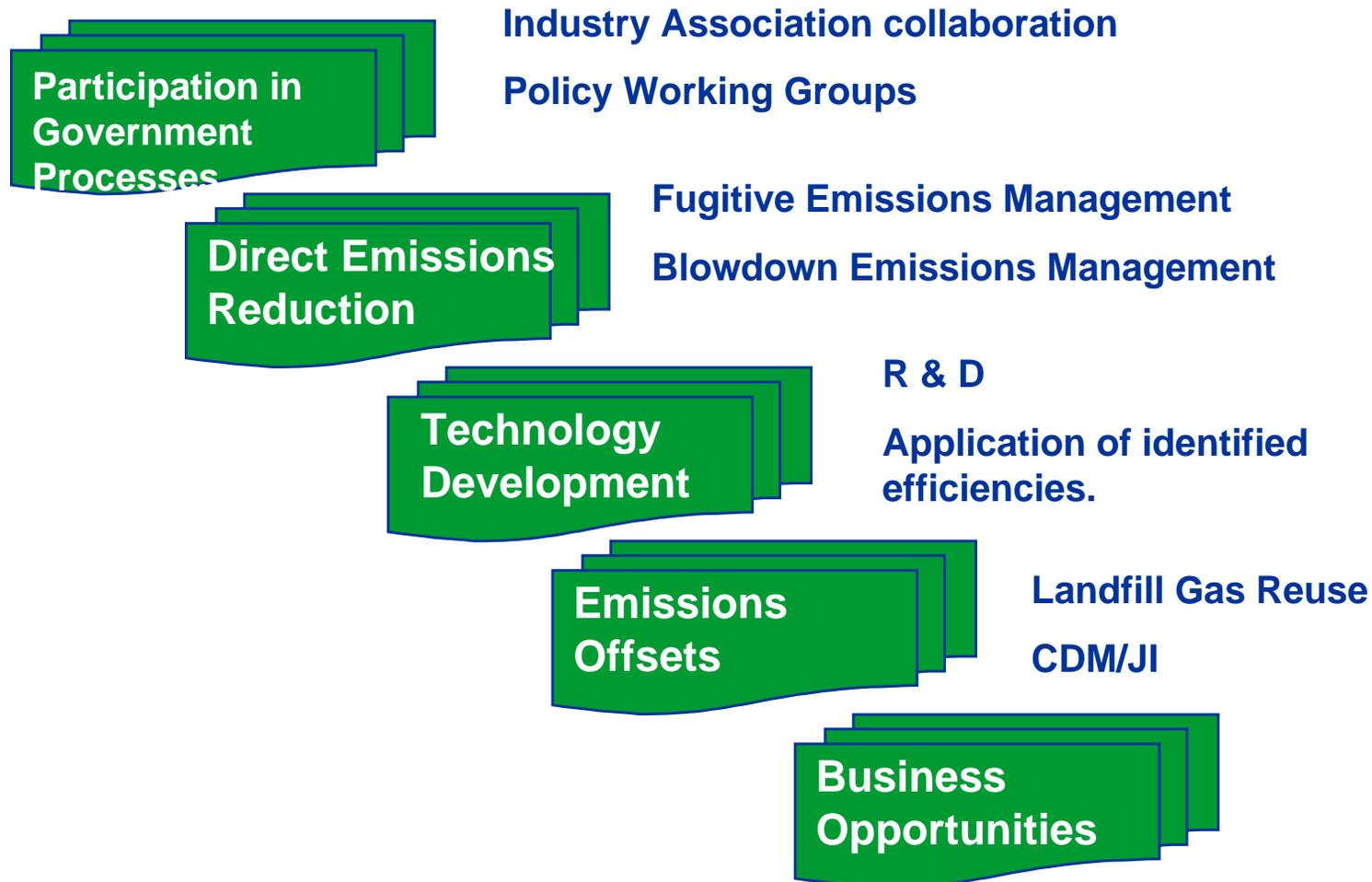
- High efficiency gas turbine engines.
- High strength pipe materials.
- High operating pressures on transmission lines.



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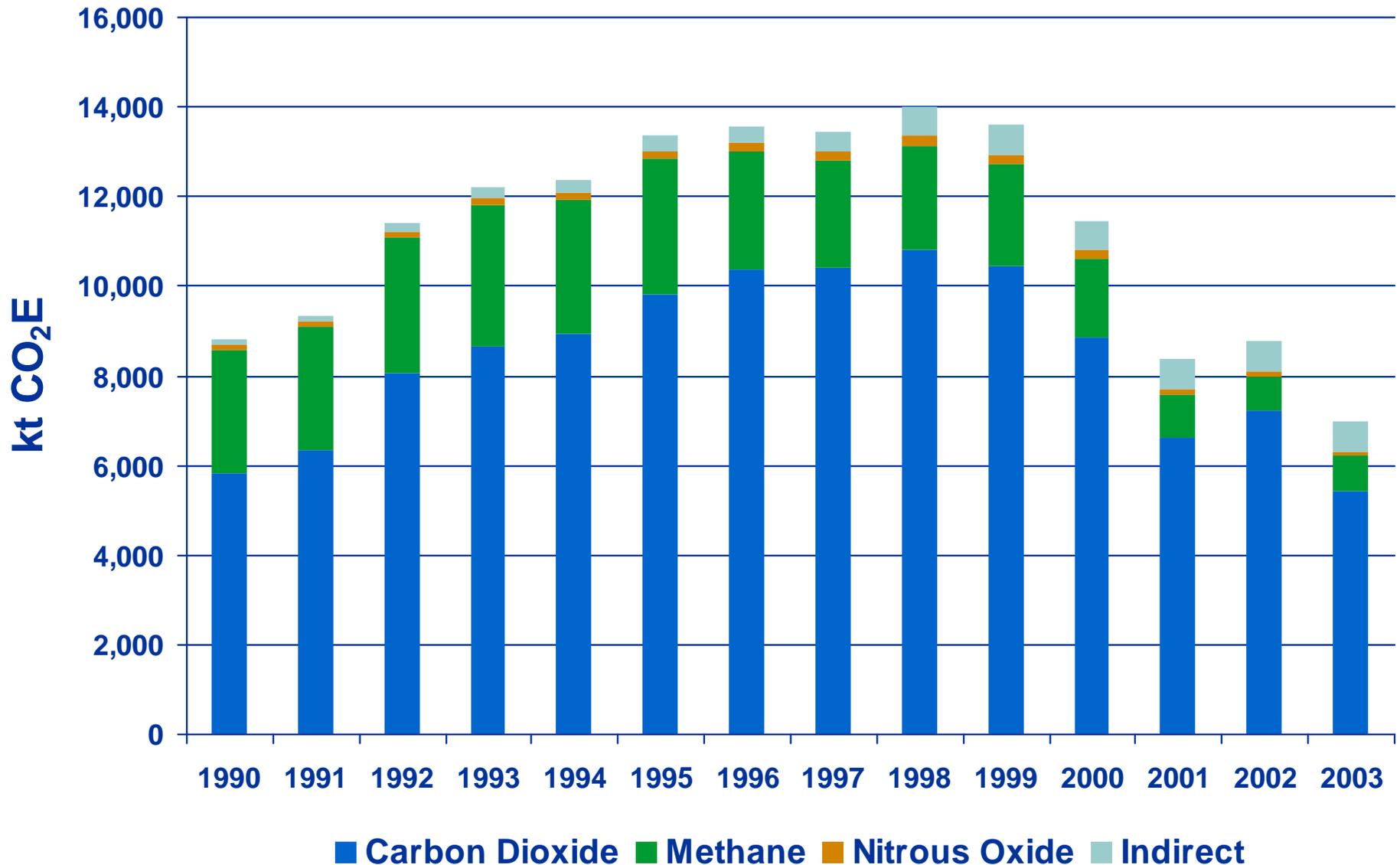
Climate Change Strategy



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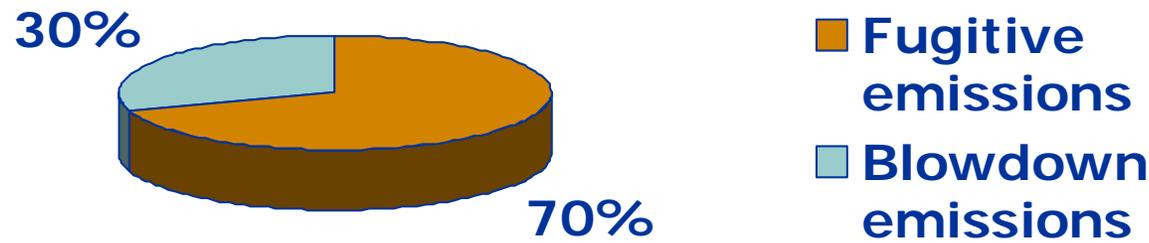
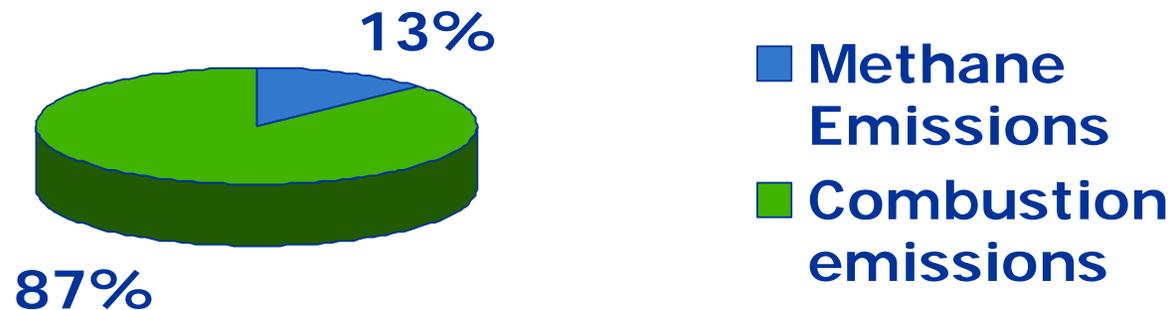
Greenhouse Gas Emissions from Pipeline Operations





Methane Emissions Distribution

Greenhouse Gases



Outcome from Reduction Programs



2003 Summary of Savings from Methane Emission Reduction Programs

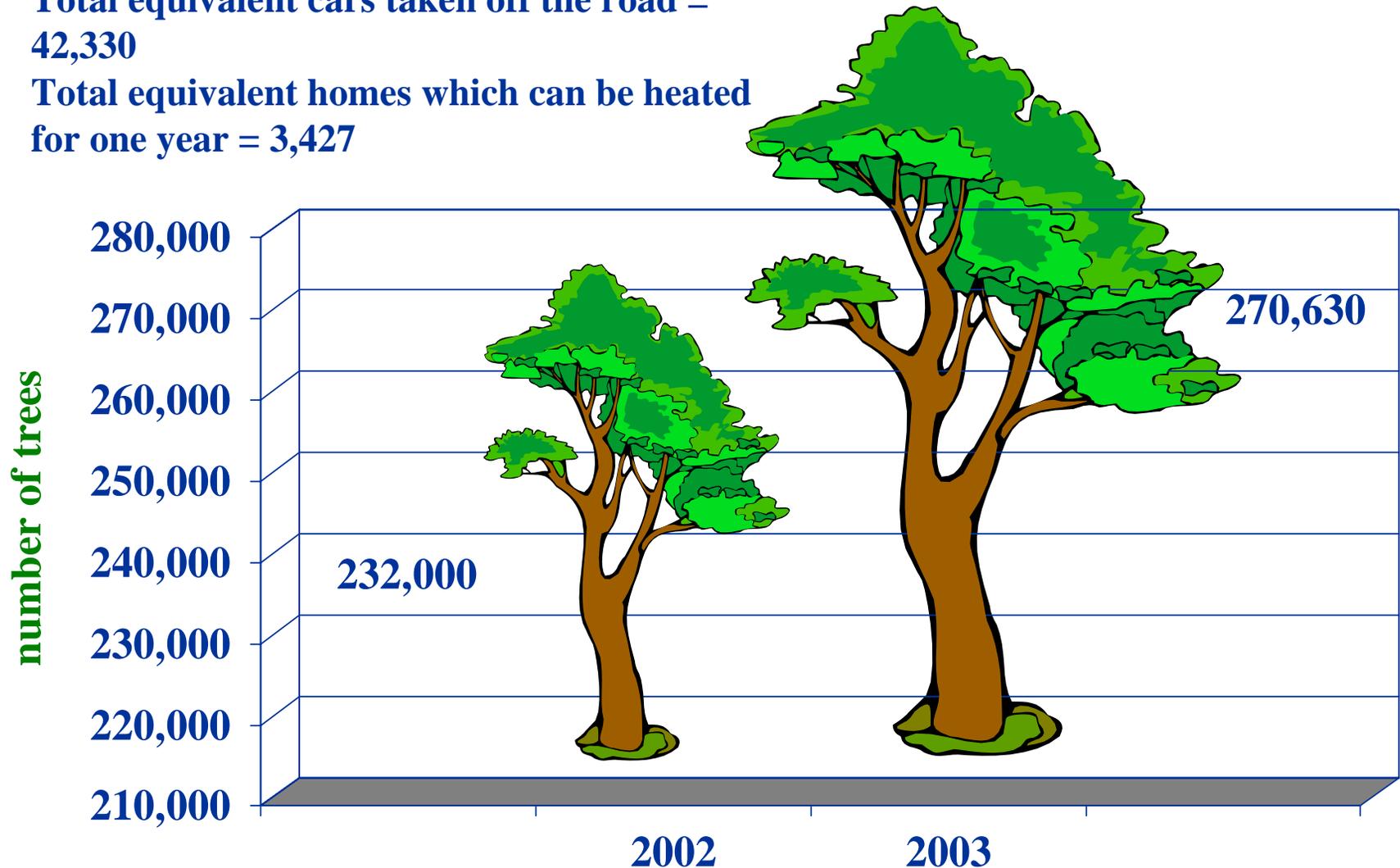
Minimizing Blowdown Emissions	1,132 tonnes of CO ₂ E
Transfer Compression	626,966
Valve Sealing	61,678
Buttering & Hot Tapping	154,632
Repair Sleeves	164,949
Reducing Fugitive Emissions	223,270

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Emissions Saved in Number of Tree Equivalents

- Total equivalent cars taken off the road = 42,330
- Total equivalent homes which can be heated for one year = 3,427





Research & Development

- **Incineration of Blowdown Gas using new Technology**
- **Biofilter for Meter station methane emissions oxidation**
- **Dry Gas Seal Emissions capture technology**
- **Incineration Methane emissions by the use of CH₄Reactor**
- **Fuel Cells in remote locations.**

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Biofilter Pilot Plant for Methane Emissions Reduction

Research at University of Calgary



Meter Station, Alberta

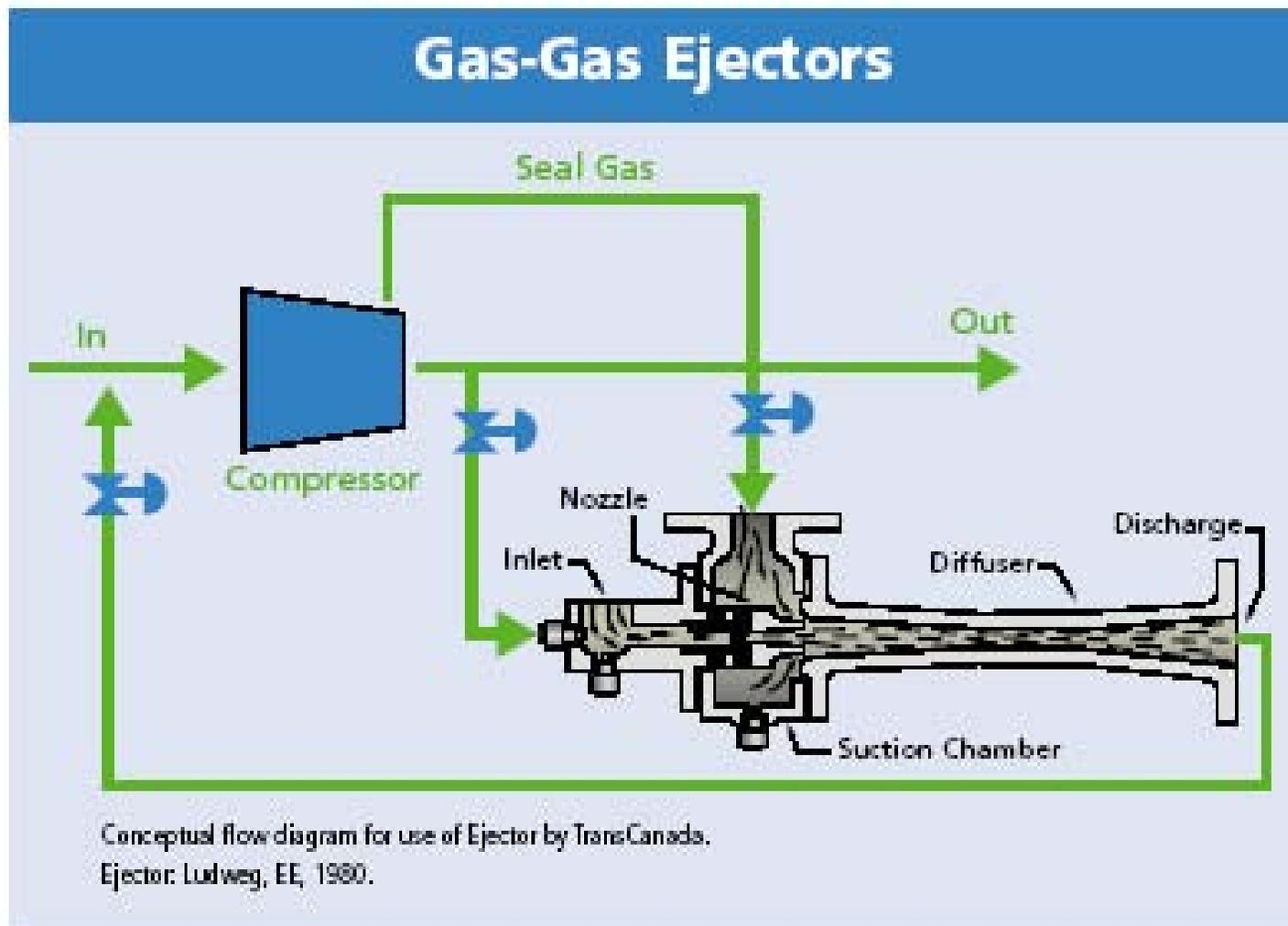


Biofilter

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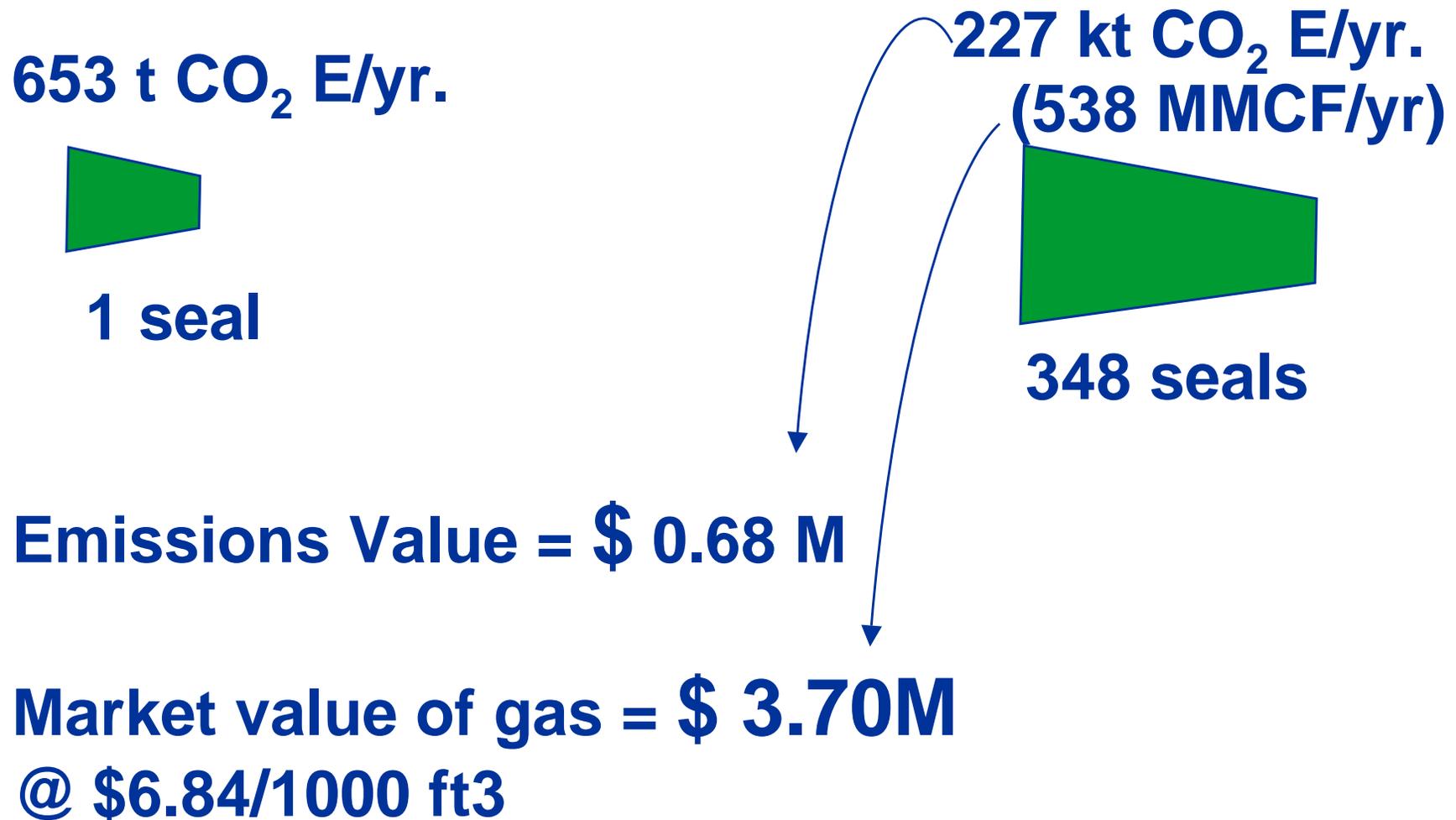


Compressor Dry Gas Seal Emissions Mitigation Research Project





Compressor Dry Gas Seal Emissions Mitigation Research Project



Relationships – They all work together!



System efficiency

Research and Development

Methane savings

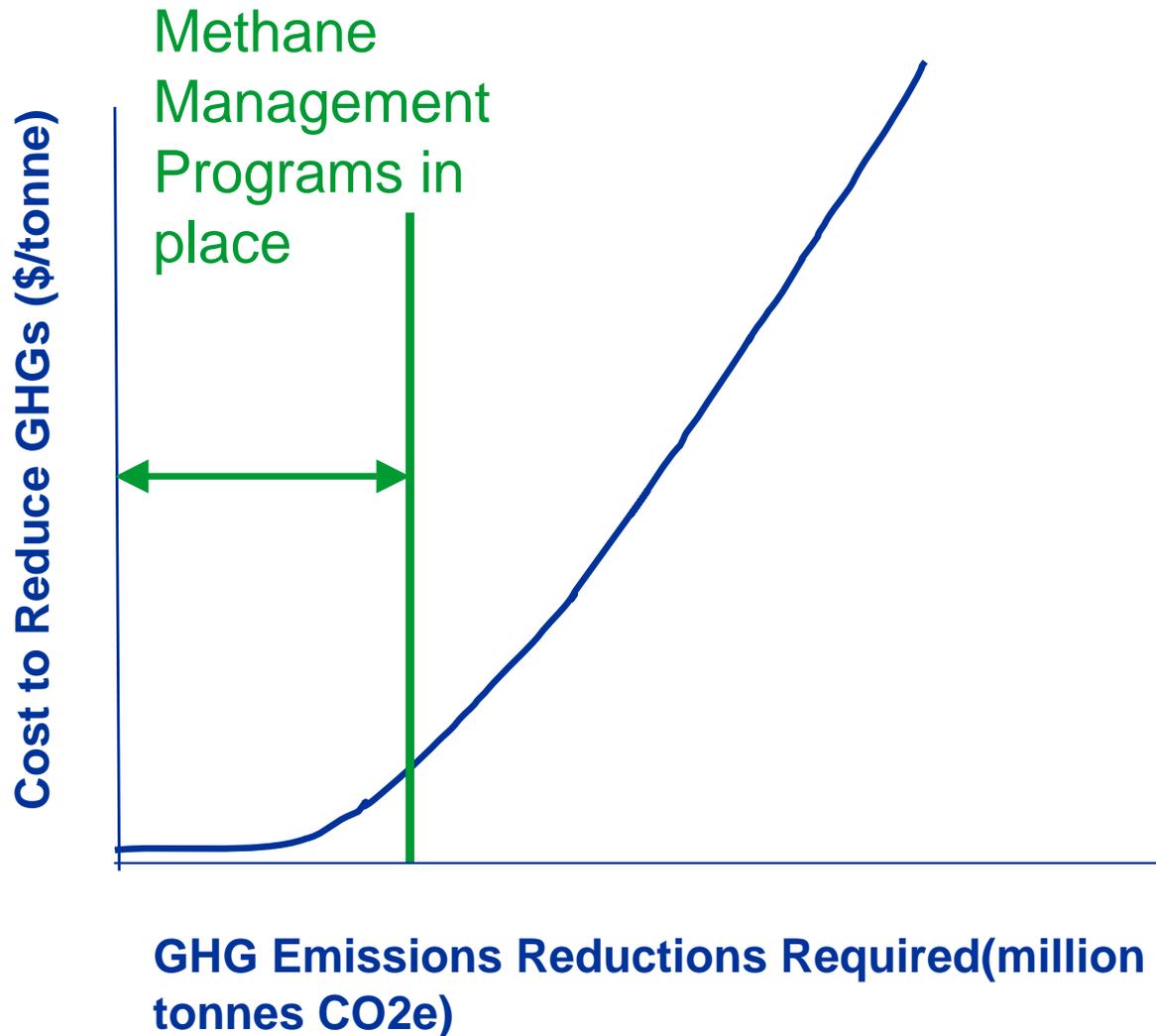
Emissions Reduction



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Conclusion - Cost Curve



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Questions ?