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# Williams Offgas Business in the Oil Sands

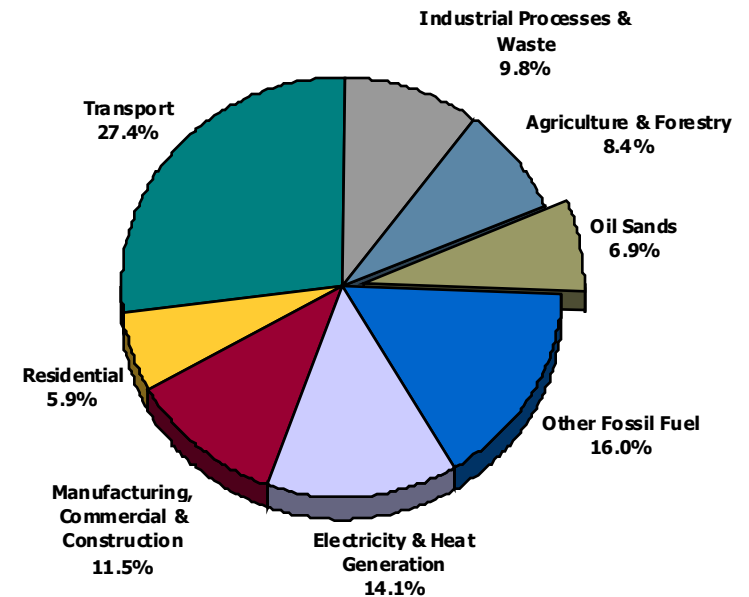
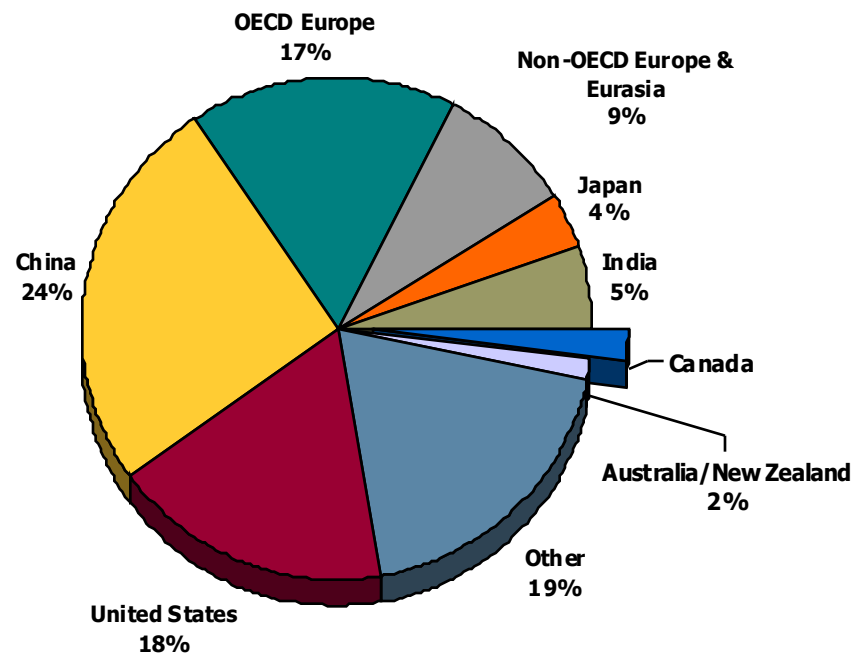
**Presentation to CSG-West, Energy and Public Lands Committee**

**July 22, 2012**

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Williams Energy Canada**

- > Energy infrastructure company focused on connecting significant hydrocarbon resource plays to growing markets
  - Natural gas, NGLs, Olefins
  - Operations span from Gulf Coast to Canadian oil sands
  - Midstream gathering and processing plants provide petrochemical feedstocks
  - 15,000 miles of interstate natural gas pipelines deliver more than 14% of natural gas consumed in the United States
  
- > More than 100 years operating experience

# Putting GHG emissions in context



**GHG emissions from oil sands:**

- just over 1/1000th of global GHG emissions
- 6.9% of Canada's GHG emissions
- 26% reduction in intensity from 1990

Sources:  
 1. U.S. Dept. of Energy/EIA  
 2. Environment Canada



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## Governments and industry are:

### Reducing GHG Emissions

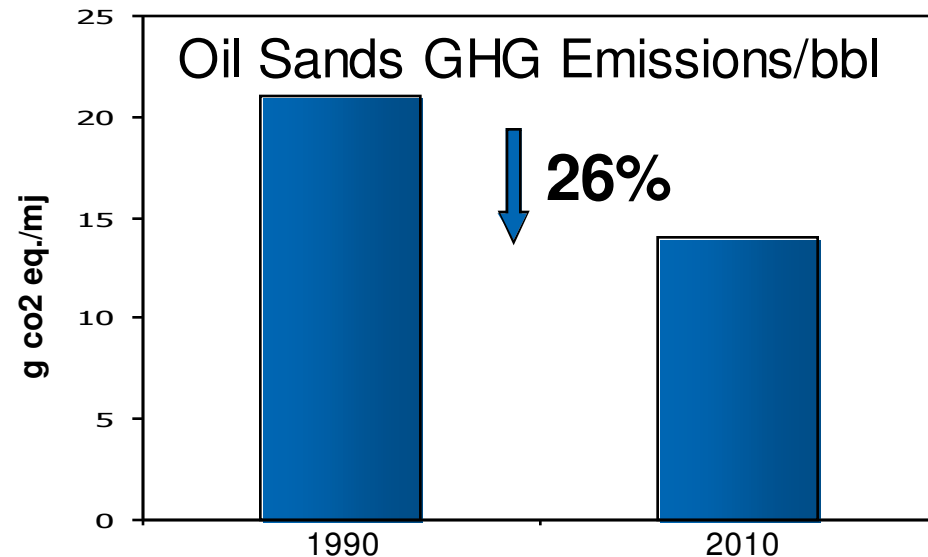
- > Using less energy input
- > Using energy more efficiently
- > Carbon regulation with pricing
  - Mandatory 12% reduction
  - Carbon price since July 2007

### Capturing CO<sub>2</sub>

- > Governments investing over \$3 billion – partners with industry

### Encouraging and funding technology and innovation

- > Alignment of lower cost and lower environmental impact



# Williams in Canada



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# Chemistry



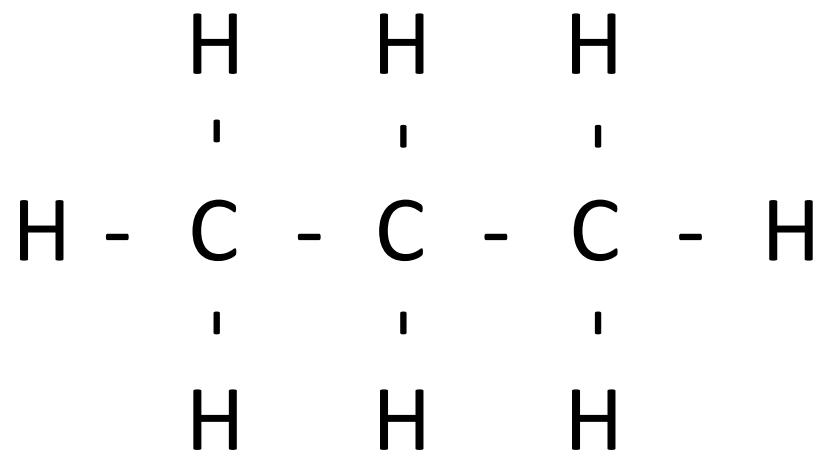
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<b>Common Name</b>	<b>Methane (natural gas)</b>	<b>Ethane</b>	<b>Propane</b>	<b>Butane</b>	<b>Bitumen</b>
Chemical make-up	C1H4	C2H6	C3H8	C4H10	C2000+
Short name	C1	C2	C3	C4	



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## Propane (C3)

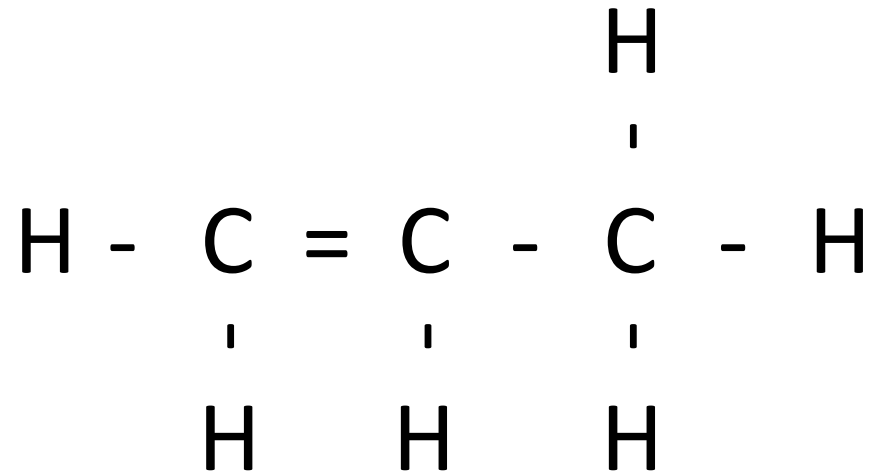


Known as a paraffin



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## Propylene (C3=)



Known as an olefin or a basic petrochemical





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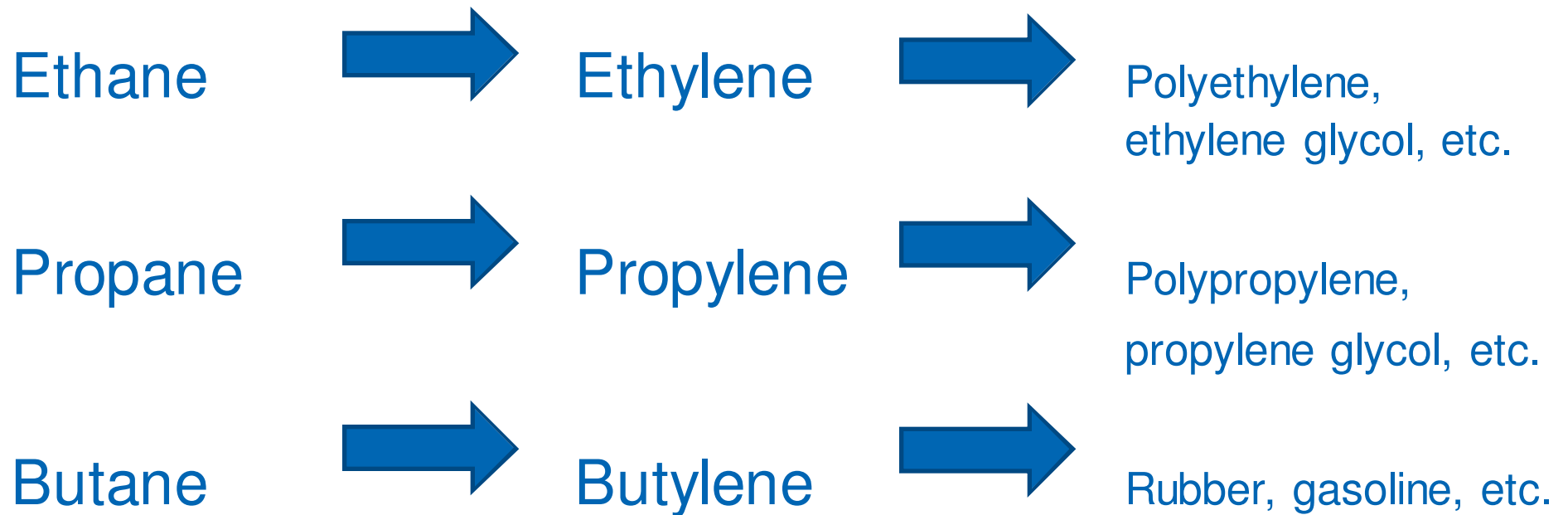
# Petrochemicals

## NGL (Paraffin)

## Olefin

## Derivatives

(Plastics, etc.)



## Oil sands offgas

- > Byproduct of upgrading bitumen is a gas (offgas)
  - Offgas contains approximately:
    - 20% hydrogen
    - 40% methane
    - 40% NGLs and olefins
    - Sulphurs
- > Offgas can either be used as fuel in the upgrader or processed
- > Processing offgas removes higher value NGLs and olefins
- > Processing offgas results in significant environmental benefits
  - Reduces CO<sub>2</sub> and SO<sub>2</sub> emissions
  - More environmental pressure = more desire to process offgas



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## Environmental benefit

The capture and processing of offgas is, and will, result in significant environmental benefit

Currently at upgrader:

- CO<sub>2</sub> emissions reduced 0.2 million tonnes/year (> 0.1M net)\*
- SO<sub>2</sub> emissions reduced 4,000 tonnes/year

If next three upgraders capture offgas:

- CO<sub>2</sub> emissions reduced 1 million tonnes/year (> 0.5M net)
- SO<sub>2</sub> emissions reduced 10,636 tonnes/year

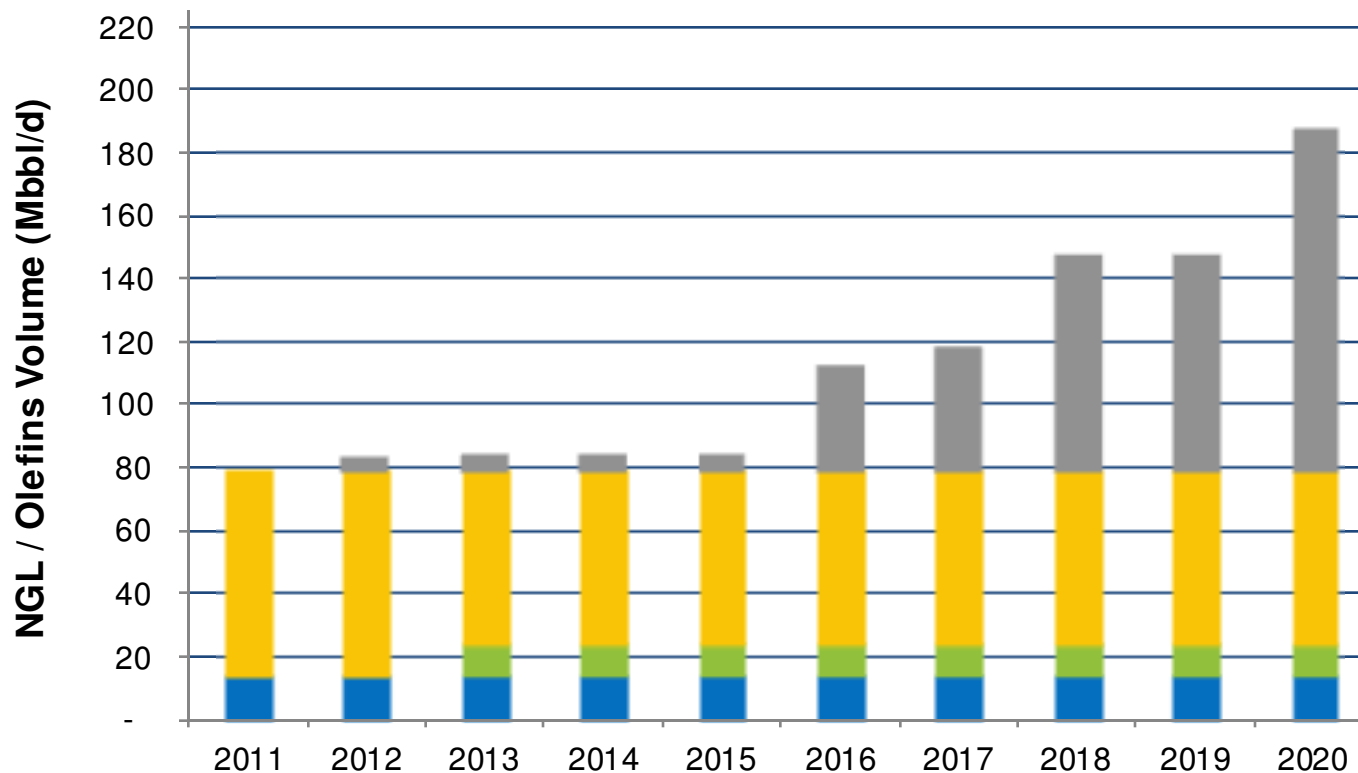
*That future CO<sub>2</sub> reduction is 10% of Alberta's commitment under its Specified Gas Emitters Regulation (SGER)*

\* Source: Pembina Institute study. Based on forecasted volumes at upgraders that are subject to change



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# Plenty of offgas liquids to recover today and tomorrow



Barrels from expansions and new upgraders

Existing barrels beyond Williams' current operations

Future barrels at existing Williams operations (ethane recovery)

Barrels at existing Williams operations (C3+)

# Fort McMurray Offgas Processing



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# Redwater Fractionator, Storage and Distribution



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## Summary

- > Good news story regarding oil sands:
  - Valuable commodities extracted from offgas
  - SO<sub>2</sub> and CO<sub>2</sub> emissions reduced significantly
  - Higher value products available for more value add in Alberta:
    - Long-term jobs
    - Spin off economic effect
    - Taxes



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**Thank you**