

Williams Energy Canada

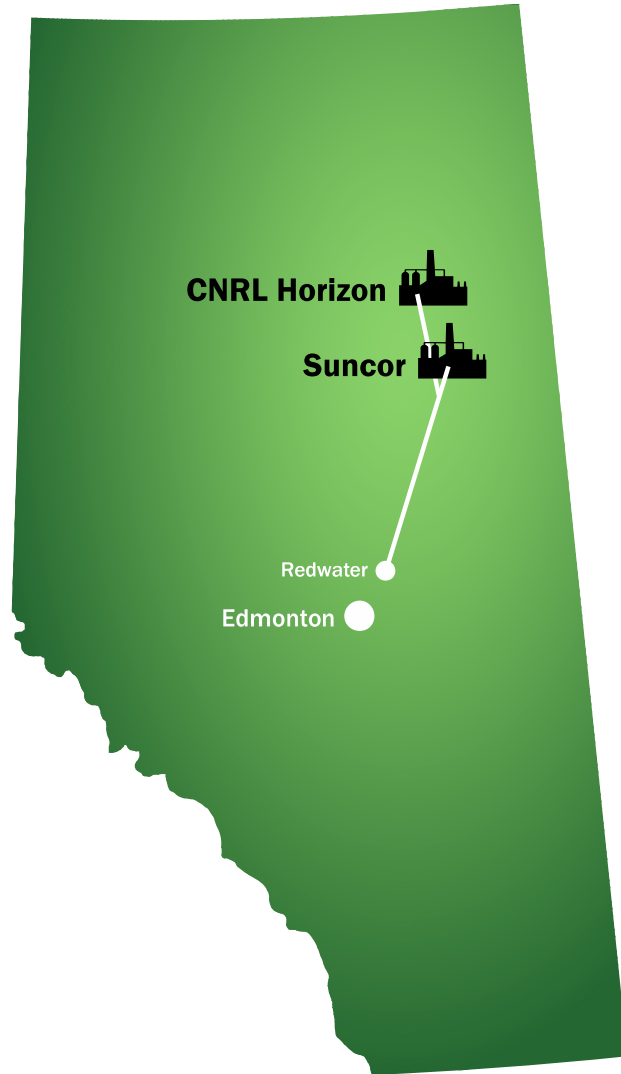
Adding Value in Alberta



Williams Assets & Operations



Williams Energy Canada



A Unique Process

- Extract Natural Gas Liquids (NGLs) and olefins from oil sands offgas
 - Offgas, previously burned, contains higher value NGLs and olefins
 - Offgas mixture extracted at upgraders and delivered on Boreal Pipeline to fractionator in Sturgeon County.
- Significant environmental and economic benefits
 - 3,200 tonnes/yr SO₂ reduction
 - 0.5 million tonnes/yr CO₂ reduction
- >\$2 billion of assets in operation

More volume in 2016



CNRL Horizon Offgas Processing

- Long-term contract up to 15,000 bbl/d NGLs/olefins
- New extraction plant, debottlenecked Redwater Olefins Fractionator and extended the Boreal pipeline
- All modules constructed in Edmonton area
- First liquid production in February 2016

Petrochemical Value Chains

NGL

Paraffin

(Gas at room temperature and pressure)

ETHANE (C₂)

PROPANE (C₃)

Olefin

Basic Petrochemical

(Gas at room temperature and pressure)

ETHYLENE (C₂=)

PROPYLENE (C₃=)

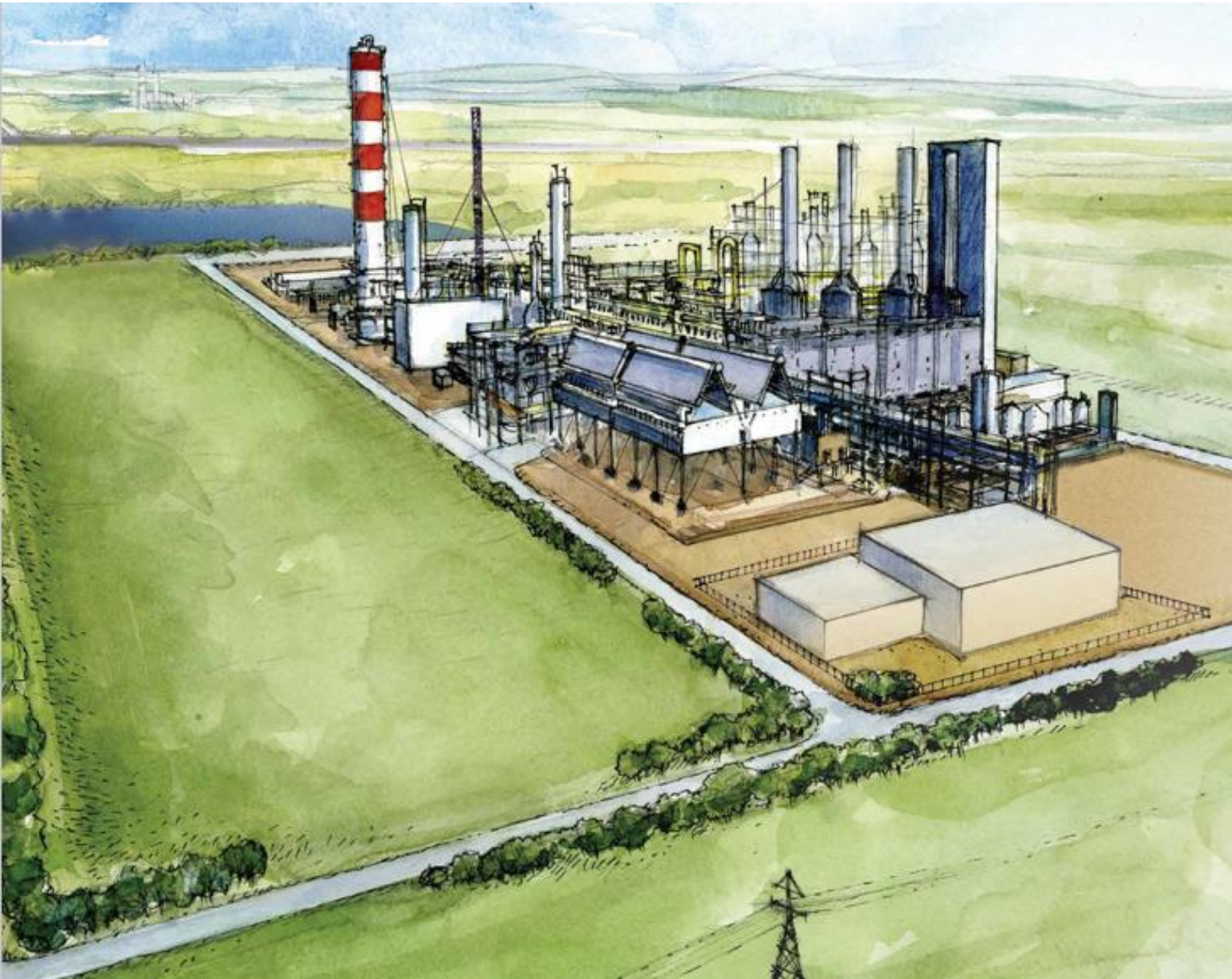
Derivatives

(Plastics and liquid)

**POLYETHYLENE, ETHYLENE
GLYCOL, and OTHERS**

**POLYPROPYLENE, PROPYLENE
GLYCOL, and OTHERS**

Alberta PDH: Propane Dehydrogenation



Adding value to propane

- Strathcona County in AIH
- Only complex of its kind in Canada, world-scale
- Formal agreement between Williams and NAPP
- Produce 1.1 billion pounds of polymer grade propylene and 1.0 billion pounds of polypropylene/year
- PP finished product (recyclable plastic: pellets) will be transported to North American and global markets
- 2016 plan

A Significant Value-Add Opportunity

\$250M
PER YEAR



\$750M
PER YEAR



\$900M
PER YEAR

22,000
PROPANE BPD

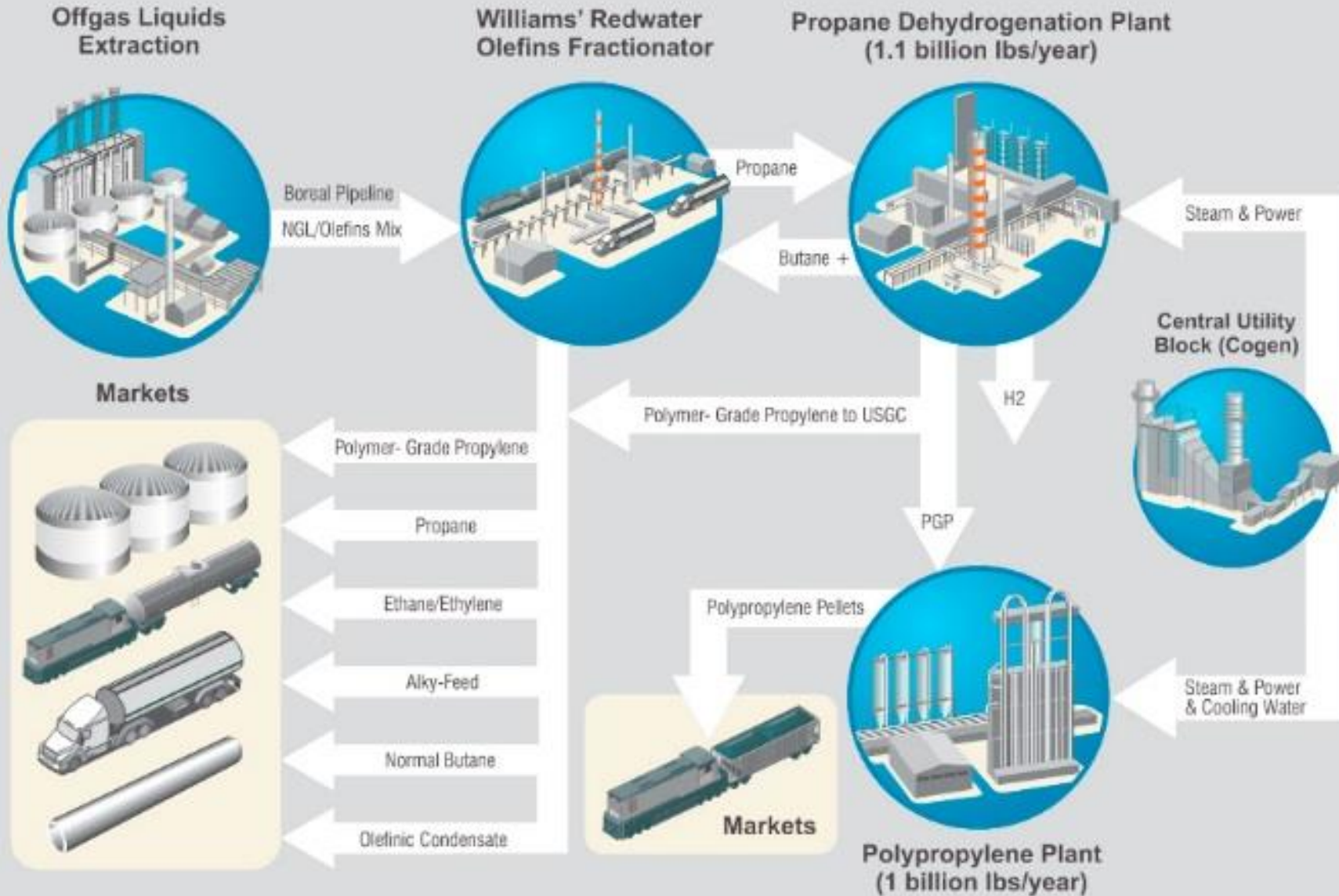
PROPYLENE

POLYPROPYLENE

TOTAL PROJECTED VALUE ADD:

+ **\$650M**
PER YEAR

Overview of Williams' Value Added Business



Benefits to Alberta and Canada of processing resources in Alberta

- Access to global markets with high value product
- Providing a base for additional propane-based growth in Alberta
- Sourcing majority of capital cost in Canada
- Jobs and investment at a critical time of need in the province
- Smooth out resource boom and bust cycles by diversifying economy

Challenge:

- Added value products need to compete globally
- Challenging capital costs in Alberta

Petrochemical Diversification Program by Alberta Government

Just as with the launching of Alberta's ethane-based petrochemical industry in the 1970's, there is a moment now for Canada and Alberta to grab this opportunity.

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Thank You