

## SABER Petrochemical Project.

**It is the first refinery to be designed and built to capture full value from the unique properties of bitumen from the Alberta Oil Sands. It uses advanced technology, and will minimize its environmental footprint.**

### 1. DESCRIPTION:

- a. SCALE-Process 100,000 + BPD Bitumen, 150,000 BPD diluted bitumen
  - i. Designed to maximize petrochemical pre-cursors and Ultra Low Sulphur Diesel
  - ii. Capital cost preliminary estimate is approximately \$10 B
  - iii. After \$10/BBL operating costs, EBITDA is \$2 billion, 20%, or \$35/BBL, for cost of capital and return
- b. RAW MATERIALS:
  - i. Bitumen from Alberta Oil Sands, sufficiently diluted to be pumped through the Enbridge pipe line system.
    1. Available now from the Enbridge system through line 6B.
    2. Alberta producers are the source, primarily the SAGD (Steam Assisted Gravity Drainage) producers who are not forward integrated and don't have upgrading capability. This refinery represents a market for about 10% of their planned production growth.
  - ii. Natural gas is the primary source of hydrogen and energy:
    1. Available from existing pipelines from both Alberta and the Marcellus and Utica shale, giving the option of having two competing supply sources. - Shale gas may dominate
    2. Storage is available locally in the Dawn storage system, the third largest in NA.
- c. MARKETS
  - i. FUELS -Half of the North American market is within a days drive.
    1. Ontario is an importer of both gasoline and diesel fuel
    2. The refinery would make about 115,000 BPD of gasoline and ultra low sulphur diesel.
    3. Adjacent USA markets- (PADD II –the area including Ohio to Iowa, and Minnesota to Tennessee and Oklahoma)- import over 13% of consumption of ultra low sulphur diesel and gasoline, approximately 500,000 BPD.
    4. Diesel is the preferred fuel product, forecasts predict highest margins for it.
    5. Products can be shipped by marine, pipeline, truck, and rail to nearby markets. World markets are accessible via the St. Lawrence Seaway.
  - ii. PETROCHEMICALS
    1. The conversion of the Corunna NOVA Chemicals to natural gas based feedstocks has eliminated their supply of benzene to Styrolutions, leaving them short. It has also removed the supply of

raw materials for the LanXess rubber plant. These illustrate local demands that might be supplied from the new refinery depending on what options they find to maintain production until the new refinery is built.

2. The general conversion of the North American ethylene industry from crude oil based feedstocks to natural gas based feedstocks provides new demands for refinery petrochemicals including propylene, benzene, toluene, xylenes, and a range of other petrochemical precursors which can be extracted from the bitumen.
3. Bitumen contains asphaltenes, and coke is an undesirable byproduct of the refining process. Both can be gasified into chemicals which can be made available to the two local ethylene plants, and represent raw material streams for new projects.

iii. COMPETITION –

1. Imports to PADD II come from US Gulf Coast refiners, who prefer export markets where they have a competitive advantage, are highly profitable, and are expanding sales.
2. Exports of diesel and gasoline are expected to exceed 3 million BPD rate by year end.
3. Marathon and Valero are doubling export infrastructure capability, and there are at least two independent export terminals being refurbished.

d. ENVIRONMENTAL APPROVAL-

- i. The community is very supportive of this project. Approval is judged to be obtainable if done properly, as previous Shell Canada feasibility study found.
- ii. Community has supported refining since crude oil was discovered in the area in the 1860's.