Badlands NGLs, LLC

THE BAKKEN

Conference & Expo

July 28, 2015

Grand Forks, North Dakota

TOPICS

- 2015-2020 Bakken Oil and Gas, NGL and Ethane Supply and Demand Estimates
- Economically and Physically Stranded NGL's and Ethane
- The "Marcellus/Bakken Disparity"
- Badlands Facility Plans and Schedules
- Challenges and Opportunities- Value Added Hydrocarbons in North Dakota
- By-Product Opportunities in North Dakota
- Potential Customer Interest in North Dakota polyethylene ("PE")

2015-2020 Bakken Oil and Gas, NGL and Ethane Supply and Demand Estimates

- Three 2020 WTI Scenarios- $95/BBL, $70 BBL, $65/BBL
- Badlands "Base Case" assumes $70/BBL WTI in 2020
- 2020 Oil Production- 2.05 Mmbd, 1.7 Mmbd, 1.4 Mmbd
- 2020 Gas Production- 2.8 Bcf, 2.4 Bcf, 1.9 Bcf
- 2020 NGL Production- 734 Mb/d, 629 Mb/d, 498 Mb/d
- 2020 Ethane Production- 367 Mb/d, 314 Mb/d, 249 Mb/d

Bakken 2015-2020 Ethane Macroeconomics

- In 2015, Bakken ethane sold at Ventura BTU value "nets back" to producers at $0.15-$0.17/gal.
- In 2015, Bakken ethane exported from North Dakota "nets back" to producers at ($0.10)/gal. to ($0.15)/gal.
- *By 2020, using today's WTI pricing, if all Bakken ethane were transported to the Gulf Coast at today's pricing disparity; the net loss to producers would equal the value of losing 50 Mb/d of crude oil production ($8 billion loss)*

Economically Stranded Bakken NGLs

- By 2020, Northern Border "NB") gas sales will be constrained by excessive heat content- 1100+BTU/cu.ft. at not less than 200 Mb/d of ethane content….*despite 100% capacity ethane export to Canada, Illinois and Texas, and*
- If NB ethane content is limited to 120 Mb/d, interstate NGL take-away will need to almost double from 165 Mb/d to 240 Mb/d *at very low NGL prices, and*
- At 200 Mb/d of 2020 NB ethane content, Bakken NGL take away *would still need to double, and*
- Producers *and Wall Street* will have no patience for the Marcellus/Bakken "Disparity"

Physically Stranded Bakken NGLs

- Even with full Bakken ethane export to Canada, Illinois and Texas, Northern Border ethane content of not less than 200 Mb/d exceeds Ventura heat standards- ethane is physically stranded, *and*
- NGL export to Texas requires 240 Mb/d of demand capacity versus 165 Mb/d of actual capacity- NGLs are physically stranded, *and*
- *How does one justify new NGL export CAPEX and OPEX in a $0.50/gal. NGL world where producers lose money?*

The Marcellus/Bakken "Disparity"

- Build polyolefins only on the Gulf Coast? …Shell Marcellus and Braskem Marcellus support the idea of building polyolefins close to production
- Marcellus ethane- 60 Mb/d and 240 Mb/d of ten year *committed*, take or pay export to Europe (25% of European capacity) and India
- Who pays?- European and Indian PE manufacturers pay BTU ethane *plus $0.35/gal.* transportation costs
- *Canadian, Midwestern and Gulf Coast PE producers ethane purchases are being subsidized by Bakken oil and gas producers and North Dakota Mineral Rights holders*

2020 Bakken Ethane Supply

- *Marcellus/Bakken Disparity is non sustainable*
- Northern Border- 200 Mb/d of Ethane and NB heat content in excess of 1100 BTU/cu.ft., despite full Chicago, Vantage and Gulf Coast exports, *and*
- Canadian 2020 Ethane Production to increase by 100 Mb/d over 2015, *and*
- Several Canadian pipelines, midstream service providers and oil and gas producers have expressed strong interest in selling Canadian ethane to Badlands in North Dakota

Badlands Plans

- Two World Scale PE facilities- 1.5+ million MT of ethane feedstock ethylene and corresponding PE assets
- Two locations- North Dakota and "Shangri-La"
- First- Shangri-La- on the "water," existing cracker 1.5 million MT design, modular construction, 36 months to hydrocarbons
- Second- North Dakota- not on the "water"- 2 million MT single train cracker- 135 Mb/d ethane
- *Nova Alberta- 2.2 million MT of ethylene (multi-line crackers) and 1 million MT of PE products (additional almost 1 million MT ethylene in Ontario, total of 3 million MT of Canadian value added ethylene)*

Badlands Plans- Technology

- "Name Brand" cracker technology- examples of "name brands" include Technip and Linde.
- "Name Brand" PE technology- examples of "name brands" include INEOS and Univation.
- Captive Co-Monomer Manufacture- "Name Brand"
- Product Off-Take- "Name Brand"

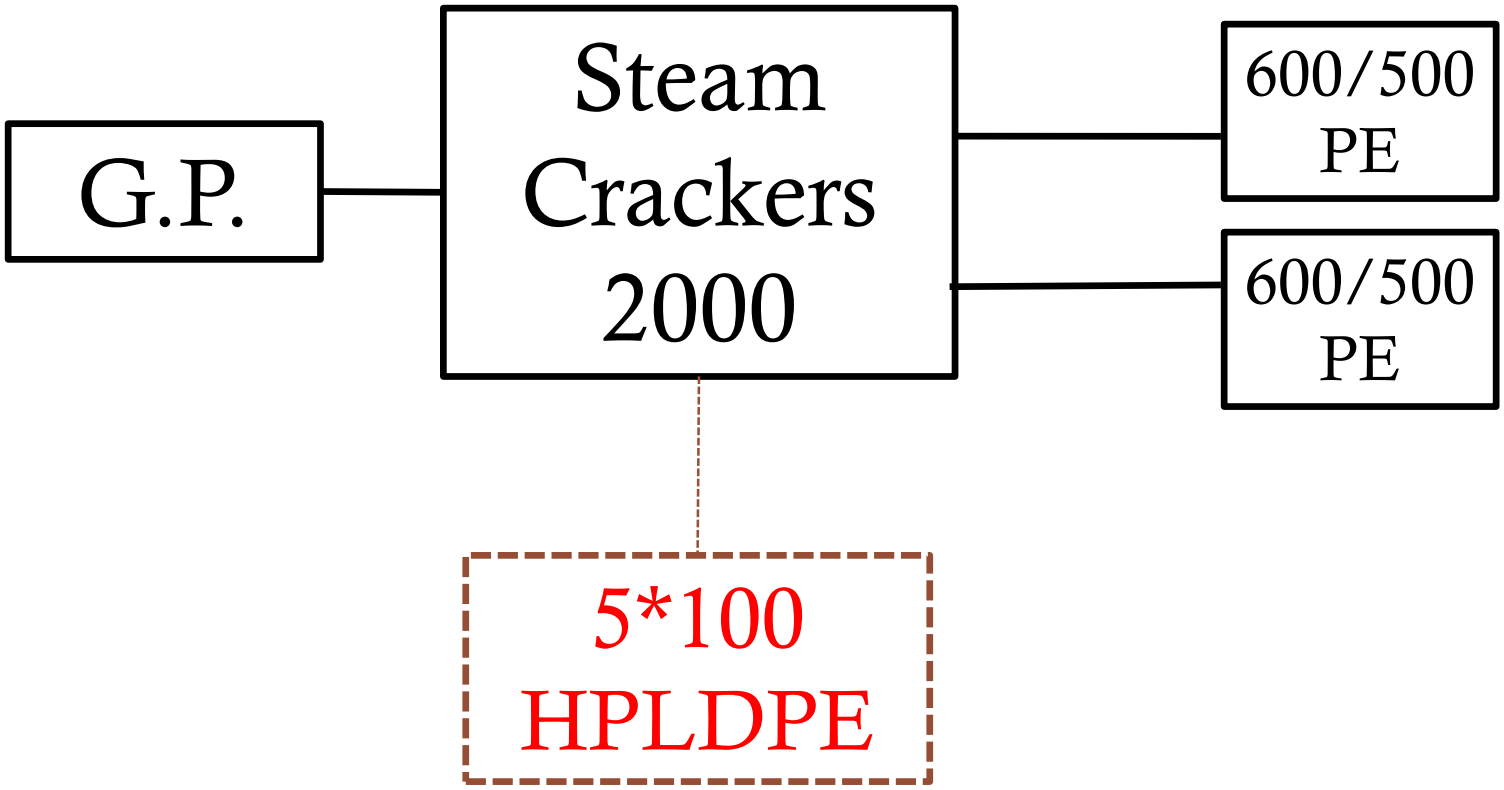
Badlands Plans- Agreements

- Feedstock Agreement(s)- Shangri-La 10 year evergreen requirements MOU signed, first North Dakota producer MOU signed, other agreements in discussion
- EPC- Agreement in principal, *lump sum turn key*
- Financing- advanced stage
- Site Selection- Advanced stage, Shangri-La site selected, North Dakota close to selection

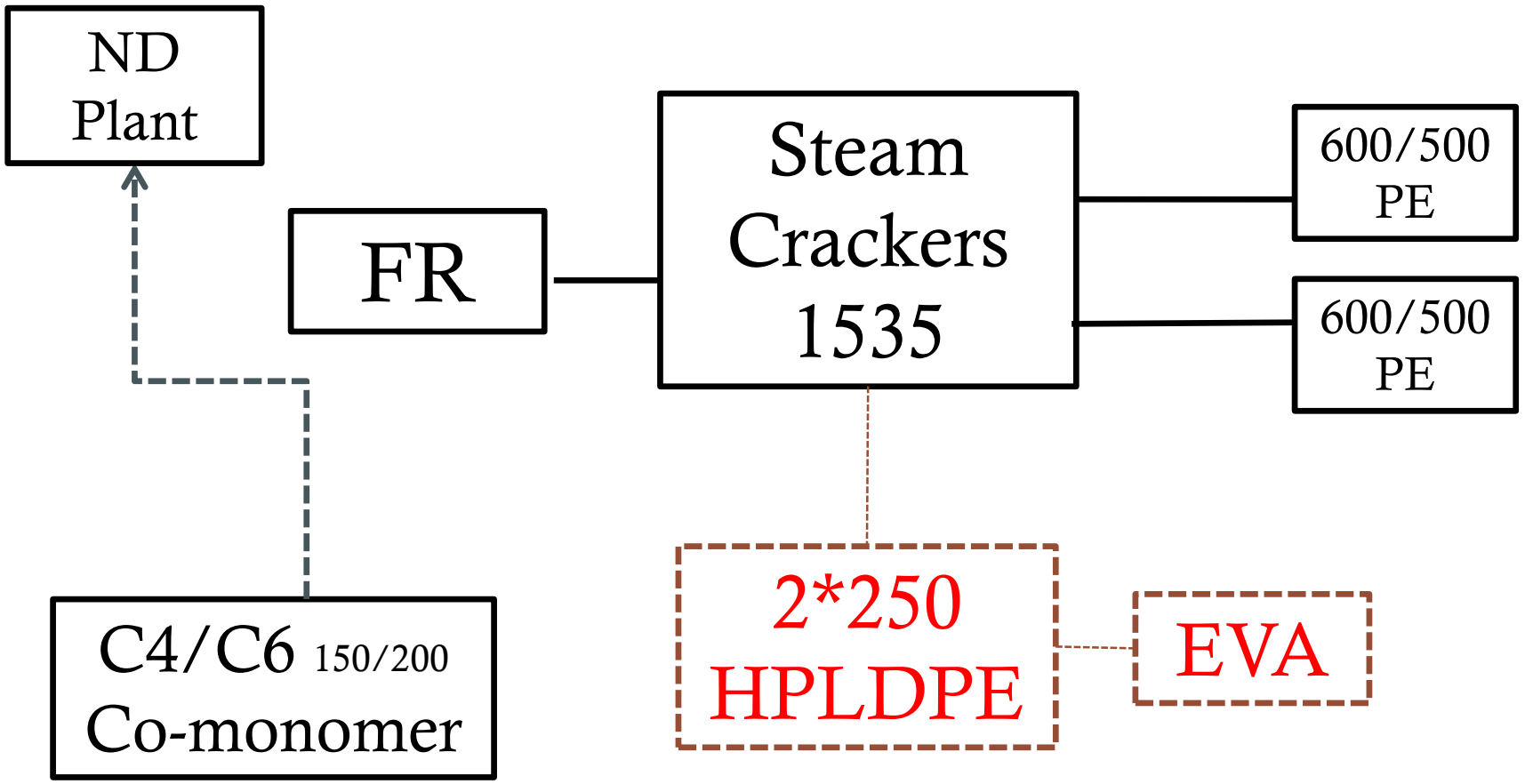
Badlands Plans- Strategy

- Shangri-La- 36 Months to Hydrocarbons
- FEED/OBE Engineering in 2015-2015 (12 months)
- Long Lead Equipment (both sites) in 2015
- Shangri-La modules delivered "on the water" to site that has already been identified.
- North Dakota- As quickly as sufficient *binding* ethane agreements are signed

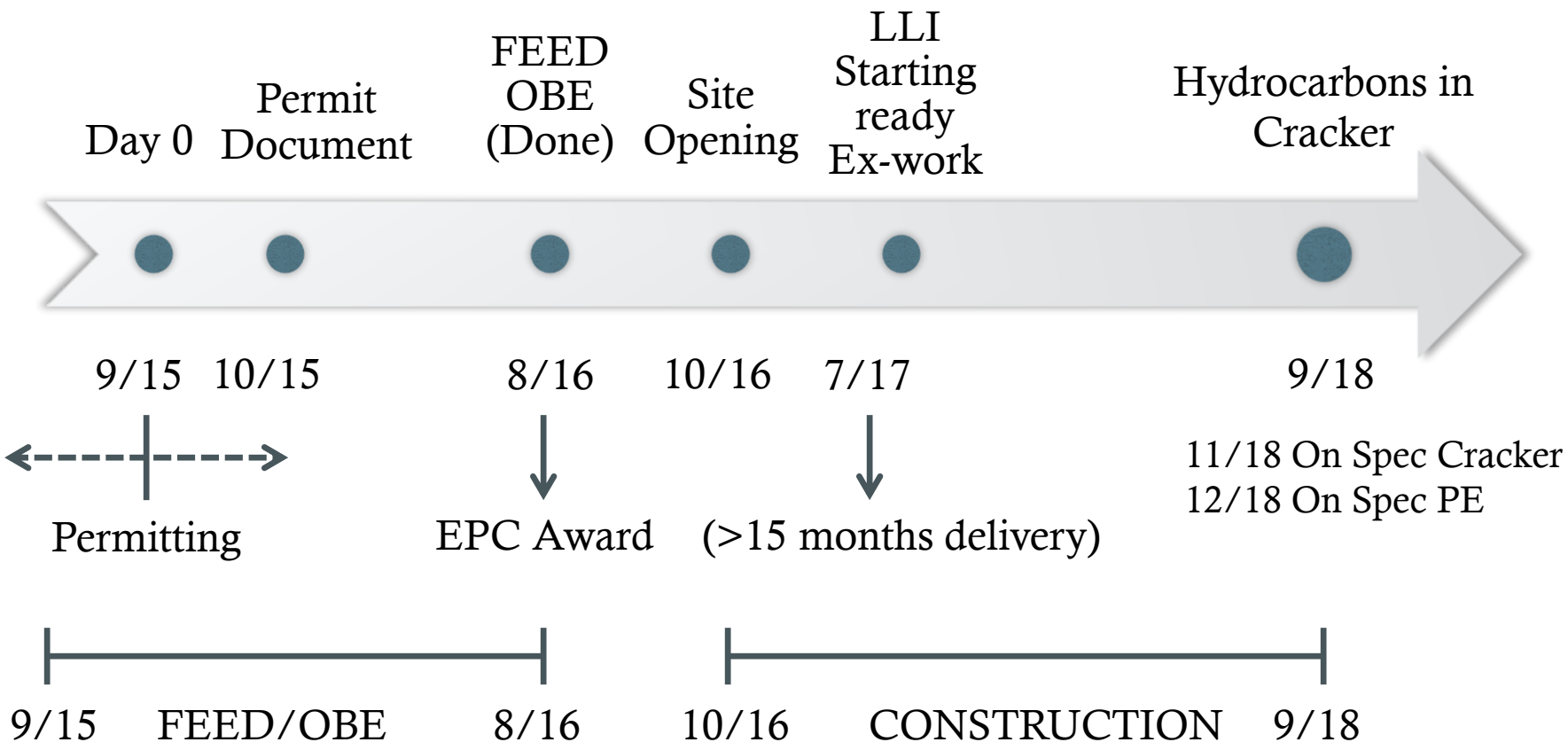
Badlands North Dakota



Badlands Shangri-La



Badlands Plan - Schedule



North Dakota PE Challenges

- Unlike Shangri-La, no "On the Water" module delivery possible
- Gulf Coast "stick built"- Peak construction headcount over 9000, some target counties have less than 2000 population
- Code Welders and similar crafts, skills & trades during construction
- Climate
- *Marcellus/Bakken Disparity*

North Dakota PE Opportunities

- Excellent permanent work force available State Wide
- Higher Education system ideal to support value added hydrocarbons
- Support of elected officials from both political parties
- Excellent Regulatory environment- Entire State rated "Attainment" by US EPA
- *North Dakota PE facility closer to U.S. and Asian markets- Less expensive and faster rail and ship transport options*

North Dakota By-Products

- Hydrogen- Used to manufacture ammonia fertilizer and to isomerize N-butane to Iso-butane
- Nitrogen- Used to manufacture ammonia fertilizer
- CO2- Oilfield EOR
- Merchant Power
- Typical Cracker By-Products- Propylene, C4's, pyrolysis gas, propane

Market Interest

- 15 year, 100% product off-take MOU signed
- Additional significant interest in export PE
- With decline in oil prices most Gulf Coast projects on-hold- Economics of cracking mixed gases compare favorably with cracking ethane….but not in North Dakota
- After tax PE margins remain high- $0.55-$0.65/lb. in first half of 2015