



ULSD in Rural Alaska

Challenges of Providing a New Low-Volume Product to Very Small Market



Marine Transport Along All of Alaska's Coast

- With purchase of Yukon Fuel Company, CMS now serves over 150 villages
- Operates 15 fuel terminals in Western Alaska
- Approximately 100 marine vessels in Alaska
- Statewide marine transport of 250MM gallons



Supply Chain Segments

- Line-haul barge from Cook Inlet to Bering Sea
- Lighterage barge from coast to village
- Terminal storage at destination
- Local distribution



Line-haul from Cook Inlet to Bering Sea

- Key Issue: Dedicated tanks and equipment
 - Requires a pair of tanks in a given barge
 - Dedicated space between 290-440k gallons
 - Requires dedicated piping, pumps & hoses
 - Cleaning is time consuming & expensive
 - Not possible to “wash” clean

Lighterage Barge From Coast to Village

- Key Issue: Dedicated tanks and equipment
 - Tank size from 22-35k gallons
 - Requires dedicated pumps, etc.
 - Tank cleaning almost impossible in the field
 - Smaller barges have 4-8 tanks
 - Profound load & trim issues

Terminal Storage at Destination

- Key Issue: Dedicated storage & piping
 - Will require additional header, pipeline, containment, tank, rack line, and meter
 - Larger facilities may be able to dedicate an existing tank, many will require new tanks
 - Denali Commission construction benchmarks are as high as \$12 per gallon

Local Distribution

- Key Issue: Dedicated transport and dispensers
 - With the difficulty of thorough cleaning, a dedicated transport truck is most efficient
 - Retailers have the same requirements as Terminals
 - A completely discrete additional system from tanks to retail dispenser

Cost Estimates (Marine Transport)

- Line-haul & lighterage barge requirements
 - Dry dock, gas free, and equipment installation
 - Two or three ULSD tank cleanings
 - Loss of capacity efficiency of 5% in line-hauls
 - Loss of capacity efficiency of 10% in lighterage
- Transportation rates up 5% across the board
- ULSD specific costs will add another 50%

Cost Estimates (Shore-side)

- Consider village with 250k ULSD needs
 - 300k capacity relates to \$2.55MM cost
 - DC benchmark of \$8.5/gallon
 - Cost recovery over a 10yr period
- “Napkin Math” storage cost exceed \$1.00/gal
 - Retail costs could add another \$.20