



Alternative Fuel Case Study

Natasha Lippitt, Business Development

Who We Are

Barnes Inc.: Landscape, Lawn Maintenance, & Snow Removal

- Mark Barnes, President/CEO
- **Founded:** 1981
- **Employees:** 150
- **Revenues:** Average \$8.5M over past 4 years

www.barnesinc.net



Barnes Green Energy (BGE):

- Mark Barnes, President/CEO
- **Founded:** 2012
- Furnish and install EPA certified CNG fueling system conversion kits
- Furnish & install Propane fueling system conversion kits

www.barnesgreenenergy.com



Case Study



Annual Fuel Savings Vehicle Fleet Mower Fleet



Fleet Overview



Barnes Inc. Vehicle Fleet

- Total fleet of 145 trucks
 - 50 CNG Lt. duty trucks
 - 6 Propane Lt/Md duty trucks
- **38%** of our vehicle fleet runs on alternative fuels
- **62%** of our vehicle fleet runs on petroleum

Petroleum	CNG	Propane
\$2.50/gal	\$.90/gal	\$1.00/gal

- Spring, Summer, Fall=avg. 2000gal/mo. TOTAL 16,000gal
- Winter=avg. 1250gal/mo. TOTAL 5000gal
- **TOTAL 21,000 gal/yr in alt. fuels**

Vehicle Type	Gas at \$2.25	Gas at \$3.50
CNG trucks	Total Savings \$30,000	\$55,000
Propane trucks	Total Savings \$6,500	\$15,000



Converted Vehicles

- BGE has converted a variety of trucks for other Fleet Owners such as WI Propane Education Research Council (WIPERC) Dane Co. Highway, Dane Co. Parks, City of Janesville-Water Division, Black Hills Energy, Steinhafels, Great Lakes Conservation Corp., UW Provision, Center Point Energies, UW-Oshkosh, and others.



Barnes, Inc. Mowers



Video credit: Propane Education Research Council

Mowers

- Total mower fleet 60 mowers
 - 35 walkbehind (36,48,52)= ALL run on propane
 - 25 riders= 12 run on propane
 - 47 TOTAL mowers run on propane
- 78% Barnes, Inc mower fleet runs on propane

Off-road Petroleum	Off-road Propane
\$2.25/gal	\$1.00/gal



On-Road Propane Fueling Station-2000gal



Off-Road Equipment Propane Fueling Station-1000 gal

Mowers con't

- Riders
 - 400gal/wk x26wks= 10,400 gal/yr
- Walk behinds
 - 600 gal/wk x26wks=15,600 gal/yr
- **TOTAL 26,000 gal/yr**

Off-road Petroleum Fuel Costs	Off-road Propane Fuel Costs
\$58,500/yr w/gas at \$2.25	\$26,000/yr w/propane at \$1.00

Fleet Type	Gas at \$2.25	Gas at \$3.50
Propane Mowers	Total Savings \$32,500	Total Savings \$65,000



Time-Fill Station



Bauer C22 Duplex Compressor



Barnes, Inc. Time-Fill Station



Dual Fuel Posts

- On site private CNG Time-Fill Station completed Fall of 2016
 - Simultaneously fill up to 20 vehicles in 10-12hr fueling cycle
 - 10 Dual Fuel Posts
 - Bauer C22 Duplex Compressor
 - Each vehicle fills up to 20 GGE (gas gallon equivalent)
- ex: 20 trucks filling will dispense 2GGE/hr

Summary



With gas at current rate of \$2.25/ gal

ANNUAL FUEL SAVINGS \$82,000-\$85,000

Propane Mowers =\$32,000-\$35,000

CNG Vehicles= \$40,000

Propane Vehicles= \$6,500

With gas at current rate of \$3.50/ gal

ANNUAL FUEL SAVINGS \$140,000-\$150,000

Propane Mowers =\$62,500

CNG Vehicles= \$60,000

Propane Vehicles= \$15,000

- Actual fuel savings go directly to bottom line
- Stability in fuels costs
- Cleaner burning
- Business, Employee, Customer, Environmental benefits

Other Considerations

- Tax Credits, Incentives, Rebates
 - Currently mower rebate through State/Federal
- Routine Maintenance
 - Replace filters - every year or 15,000 miles
 - Tank Inspection - every three years or 36,000 miles
 - System Inspection - once a year
- Stability in fuel costs with on-site fueling
- Pass savings on to customers
- Reduction in our Carbon Footprint

