



# Greening your Fleet

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# What does this mean?

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- Fuel Options
- Vehicle Options
- Funding Options



## 3 E's and a Q

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- Public Transportation saves 900,000 automobile fill-ups each day
- Public Transportation saves 4.2 billion gallons of gasoline annually
- Public Transportation saves 37 metric tons of carbon dioxide annually
- Alternative fuels help reduce our country's dependence on foreign oil



# Fuel Options

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- CNG
- Liquid Propane
- Biodiesel



# Compressed Natural Gas (CNG)

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## ○ Pros

- Significant reductions in toxic emissions
  - Reduces Carbon Monoxide by 90%-97%
  - Reduces Carbon Dioxide by 25%
  - Reduces Nitrogen Oxide by 35%-60%
  - Non-Methane Hydrocarbon by 50%-75%
  - Emits little to no particulate matter
- CNG fuel costs are less expensive than gasoline or diesel
- Reduces maintenance costs
- Produced domestically



# CNG continued...

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## ○ Cons

- Expensive market and aftermarket conversions
- Aftermarket conversions of regular Para-Transit vehicles eliminate some seat capacity making it impracticable
  - If CNG vehicles are desired it is best to have conversions done straight from the manufacturer
  - Conversions are ideally performed on LTV's because of larger chassis
- Limited fueling infrastructure across NC



# Liquid Propane Gas (LPN)

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## ○ Pros

- Reduces toxic emissions
  - Reduces Carbon Monoxide by 20%-40%
  - Reduces Particulate Matter by 80%
- Aftermarket conversions are reasonably priced and can be easily transferred from vehicle to vehicle
- Adequate fueling infrastructure across NC and be installed onsite
- Fuel costs are sometime less expensive than gasoline (i.e. summer months)
- Reduces maintenance costs
- Produced domestically



## Liquid Propane continued...

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### ○ Cons

- Fuel costs are sometimes greater than gasoline (i.e. usually winter months)
- Not much data available in regard to performance within the Para-transit industry
- Liquid Propane only delivers up to 90% of gasoline's miles per gallon



# Biodiesel

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## ○ Pros

- Safer and cleaner than petroleum diesel. Depending on the blend (i.e. B20, B50, B100, etc.) there are various emission reduction. See the next slide.
- Biodiesel can be used in vehicles made after 1993 without any conversions
- Does not require special storage and can be mixed with petroleum diesel
- Adequate availability across NC
- Produced domestically



# Biodiesel continued...

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## AVERAGE BIODIESEL EMISSIONS COMPARED TO CONVENTIONAL DIESEL, ACCORDING TO EPA

Emission Type	B100	B20
<b><i>Regulated</i></b>		
Total Unburned Hydrocarbons	-67%	-20%
Carbon Monoxide	-48%	-12%
Particulate Matter	-47%	-12%
Nox	+10%	+2% to -2%
<b><i>Non-Regulated</i></b>		
Sulfates	-100%	-20%
PAH (Polycyclic Aromatic Hydrocarbons)	-80%	-13%
nPAH (nitrated PAH's)	-90%	-50%
Ozone potential of speciated HC	-50%	-10%



## Biodiesel continued...

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- Cons

- Negatively affected by cold temperatures causing for lower blends or additives to be used
- Can sometimes be more costly than conventional diesel
- Some manufacturers will void engine warranties if damage is caused due to use of biodiesel.
  - Ford currently honors a blend of B5 biodiesel as an acceptable alternative fuel



# Impacts from Mountain Mobility

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- Converting 11 vehicles in our fleet to CNG
- Reduce our annual emissions of CO<sub>2</sub> by 317 tons annually
- Reduce CO<sub>2</sub> emissions over the life of the project by 2,219 tons
- For each dollar investment into CNG vehicles CO<sub>2</sub> emissions are reduced by 4.41 pounds
- Save 36,000 gallons of gasoline annually



## How to make it happen?

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- Apply for Grants to purchase alternative fuel vehicles
- Apply for Grants to retrofit existing vehicles
- Urge NCDOT PTD to add alternative fuel vehicles to the procurement process
- Voice your opinion to your local representatives



# Sources

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## ○ General Information

- <http://www.epa.gov/otaq/index.htm>
- <http://www.eere.energy.gov/>

## ○ CNG

- [http://www.afdc.energy.gov/afdc/vehicles/natural\\_gas\\_emissions.html](http://www.afdc.energy.gov/afdc/vehicles/natural_gas_emissions.html)
- <http://www.ngvc.org/>

## ○ Liquid Propane

- [http://www.afdc.energy.gov/afdc/vehicles/emissions\\_propane.html](http://www.afdc.energy.gov/afdc/vehicles/emissions_propane.html)
- <http://www.propanecouncil.org/>

## ○ Biodiesel

- <http://www.biodiesel.org/>



# Contact Information

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