

CNG

Infrastructure & Vehicle ROI

Natural Gas for Transportation Roundtable

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Dane County's CNG History

- Experience with landfill gas and digesters
- Pipeline quality gas project
- Continued to evaluate options
- Pilot bioCNG project
- Funding from SEO and WCTP
 - CNG station, bioCNG station, and vehicles

Vehicles

- 24 vehicles in fleet
 - All Dual-fuel
 - F150s, F250s, F350s, Ford Fusion, Transit Connect
 - 7 Departments
- Will add 15-20 in 2013
 - Some dedicated CNG
 - Plow Trucks, van, pickups, passenger car
- Conversion cost
 - \$10,500 - \$13,500 each
 - \$262,000 from SEO and WCTP



Vehicle ROI

- Variables
 - Initial Conversion Cost
 - Dedicated or Dual-fuel
 - Miles driven per year
 - MPG
 - Fuel Savings ~\$2.00/gal



Vehicle ROI Examples

Vehicle	Conversion Cost	MPG	Miles/yr	GGE/yr	Payback
Car	\$10,000	25	15,000	600	8.33 yrs
Pickup	\$13,000	15	15,000	1,000	6.5 yrs
Pickup	\$13,000	15	30,000	2,000	3.25 yrs
Garbage Truck	\$50,000	3	30,000	10,000	5 yrs
Delivery Van	\$30,000	6	25,000	4,200	3.6 yrs

Note: Does not include any grant funds or maintenance costs

Infrastructure ROI

- Components of CNG cost
 - Supply Gas
 - Electricity
 - O&M
 - Capital Ammortization (grants)
 - Taxes and Tax Credits
 - Other incentives



Dane County's CNG Station

- Natural gas only
- 2 hoses
- Fast-fill
- 100 GGE storage
- 30 GGE/hr from compressor
- Funding
 - ~\$280,000 grant from SEO and WCTP
 - ~\$42,000 from County funds



Fueling Station ROI Results

	Stephe Yborra Values	CNG w/ Grant	CNG w/o Grant
Natural Gas	\$0.81-\$0.89	\$0.709	\$0.709
Electricity	\$0.04-\$0.30	\$0.376	\$0.376
Capital	\$0.35-\$0.65	\$0.129	\$0.987
WI Taxes	\$0.247	\$0.247	\$0.247
Federal Taxes	\$0.183	\$0.183	\$0.183
Tax Credits	-\$0.50	-\$0.50	-\$0.50
O&M	\$0.30-\$0.65	\$0.60	\$0.60
Total	\$1.24-\$2.24	\$1.561	\$2.419

What if we increase CNG Usage?

	CNG w/o Grant 2000 GGE/month	CNG w/o Grant 5000 GGE/month
Natural Gas	\$0.709	\$0.70
Electricity	\$0.376	\$0.22
Capital	\$0.756	\$0.30
WI Taxes	\$0.247	\$0.247
Federal Taxes	\$0.183	\$0.183
Tax Credits	-\$0.50	-\$0.50
O&M	\$0.60	\$0.60
Total	\$2.188	\$1.567

Dane County's BioCNG Station

- Pilot System

- Biogas from landfill
 - 5 GGE/hr
- 1 hose
- Fast-fill
- 40 GGE storage
- Funding
 - All Dane County

- New System

- Biogas from landfill
 - 10 GGE/hr
- Pipeline gas backup
- 2 fast-fill hoses
- 4 slow-fill hoses
- 200 GGE storage
- Funding
 - \$150,000 from SEO



Old System



New System



BioCNG Differences

- Extra Capital
- Extra O&M Costs
- Cheaper Gas?
 - Other revenue potential for gas?
 - RINs

Fueling Station ROI Results

	CNG w/o Grant	BioCNG w/o Grant
Natural Gas / Biogas	\$0.709	-
Electricity	\$0.376	\$1.04
Capital	\$0.987	\$1.974
WI Taxes	\$0.247	\$0.247
Federal Taxes	\$0.183	\$0.183
Tax Credits	-\$0.50	-\$0.50
RINs	-	-\$0.75
O&M	\$0.60	\$0.91
Total	\$2.419	\$2.921

Soft Costs

- Vehicle maintenance
 - Tools and training
- Building Modifications
- Training
 - Technicians, drivers,
Department heads, etc



Hurdles

- Vehicle Procurement Process
- Training
 - Infrastructure & vehicle maintenance
- Learning Curve
 - Permitting, codes, regulatory agencies, taxes, maintenance, etc

Future of CNG in Dane County

- Dane County - 10 yr Strategic Plan
 - Convert almost entire fleet to CNG
 - Looking for partners – fueling stations
 - Looking for bioCNG opportunities



Questions?

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