

West Chester University's Alternative Fuel Vehicle Program

Compressed Natural Gas
BioDiesel B20



University Garage
West Chester University
West Chester, PA.

Larry Krackov 3/2012

West Chester University of Pennsylvania

Founded 1871



Pennsylvania State System of Higher Education (PASSHE)

Fourteen Universities owned and operated by the Commonwealth of Pennsylvania

Approx. 15,100 degree seeking students: 2,266 graduate and 12,834 undergraduate (Fall 2011)

More than 800 full and part time faculty More than 600 full and part time support staff

403 acres located 25 miles west of Philadelphia

West Chester University has been a leader in this region for more than a decade in using Compressed Natural Gas (CNG) fueled vehicles as an environmentally friendly alternative to traditional gasoline cars and light trucks.





On April 24, 1998 WCU celebrated the grand opening of its compressed natural gas refueling center, becoming the first Pennsylvania college or university east of Pittsburgh to start a CNG vehicle program, and bringing WCU in compliance with the Clean Air Act Amendments of 1990 and the National Energy Policy Act of 1992.



Station was moved from center of campus to present location on March 13th, 2008.



T. Boone Pickens talks energy at WCU

Listening to motor pool manager Larry Krackov, at right, at the Transportation Garage and Motor Pool in West Goshen on Friday are, from left, West Chester University facilities director Greg Cuprak, WCU President Greg Weisenstein, Congressman Patrick Meehan, investor T. Boone Pickens and Congressman Jim Gerlach.

Staff Photo by Larry McDevitt/Daily Local News



ANGI International Fast Fill Station

ANGI Int'l of Janesville, WI

**Ingersoll-Rand Model 20H40NG Air Cooled 4 Stage Reciprocating Compressor
30 hp Electric Motor Inlet Pressure 16 psi /Discharge Pressure 4,100 psi Approx. 40 SCFM
ANGI Built Dispenser w/MicroMotion Mass Flow and Density Sensor
with Storage built in McKeesport, PA**



FuelMaker Time Fill Unit

Available in 3000 and 3600 psi configuration

Available with one and two fill hoses

**WCU staff modified unit to include an hour meter for monitoring use -
approx. .9 gge/hour**



WCU has 22 vehicles capable of running on CNG, reflecting 26% of its total fleet of 82 vehicles.



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Full Size GM Bi-Fuel CNG Pickup

**6.0 Liter V8 BiFuel Gas/CNG
Available both 2 and 4 wd
With both Gasoline and CNG
tanks full, this truck traveled
more than**





WCU Plows with CNG!!



Fleet and Commercial



FLEET



DODGE



ALTECH-ECO CORPORATION
A Division of TransCo Energy



Natural Gas Conversion Systems for Vehicles 888 594-8300



BAF

A CLEAN ENERGY COMPANY

BAYTECH
CORPORATION

QUANTUM
TECHNOLOGIES

The U.S. Environmental Protection Agency (EPA) estimates that light duty natural gas vehicles emit 60 to 90 percent fewer smog-producing pollutants and 30 to 40 percent fewer greenhouse-gas emissions.

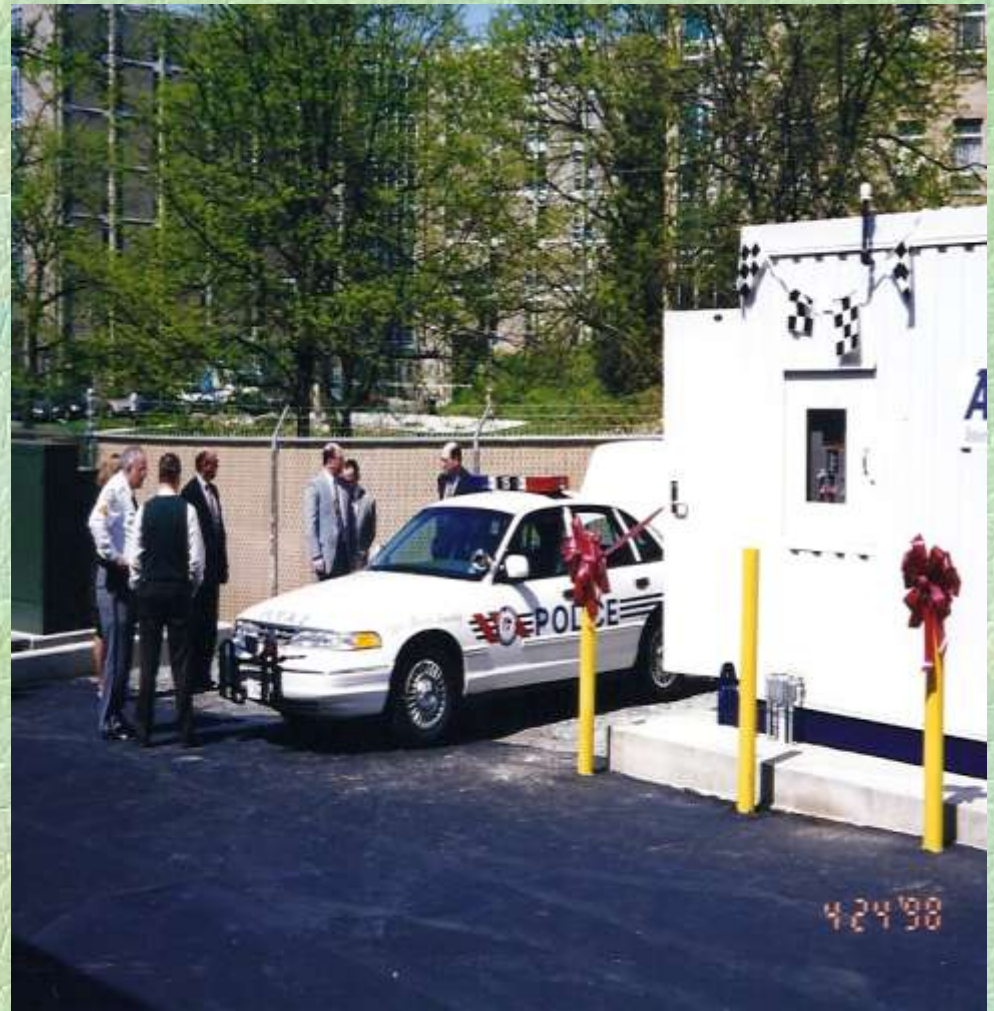
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An average dedicated natural-gas vehicle emits about 70 percent less carbon monoxide and 87 percent less NO_x (nitrogen oxides) than a gasoline-engine car



Initial investment in infrastructure was costly, but long term savings for the University are being realized.

Historically, natural gas has consistently been 20 to 45 percent less costly than its gasoline gallon equivalent (gge). As an example, when gasoline was peaking at over \$4.00/gallon during summer 2008, PECO Energy's published rate on July 31st, 2008 for selling CNG retail at its facility in Coatesville, PA was \$2.30/gge, a savings of more than \$1.70/gallon.



West Chester University has also embraced BioDiesel B20 as a cleaner alternative to traditional Diesel fuel. WCU currently uses this fuel in five medium and heavy duty trucks and nearly a dozen pieces of grounds equipment.



WCU replaced traditional Diesel fuel with BioDiesel B20 in April, 2008.

WCU Fuel Consumption

WCU's use of Gasoline and Diesel fuels has been offset by the increased use of cleaner burning CNG and BioDiesel B20 !



	<u>2001</u>	<u>2008</u>	<u>Difference</u>
■ Gasoline	37289	29381	-7908
■ Diesel/B20	5462	5032	-430
■ CNG	1737	10321	+8584
■ Total Pumped	44489	44734	+245

WCU used more than 10,000 Gasoline Gallon Equivalency of CNG in FY 2008.

From 2001 to 2006, WCU *increased* the number of vehicles using diesel type fuel, and *decreased* the amount of diesel type fuel being used.

Why Use Alternative Fuels?



- For Compliance with EPAct 92 and Clean Air legislation
- For Clean Air
- Reduce dependence on foreign oil
- For lower fuel costs



“...the last public land link to Penn’s Woods.”

Challenges of CNG



- Acceptance – Using CNG isn't harder, it's just *different*.
- Costs of Ownership
- Infrastructure – vehicle and refueling
- Parts Availability - Longevity
- Training and technical resources for technicians and station operators.

Challenges of CNG



- Learning curve for manufacturers
- Marketing
- Regulatory – Testing and inspection of cylinders, relief valves, compressor equipment, conversion installations.
- Liability



EXPECT EXCELLENCE

WCU



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