



(CNG) at UNH: FY 2018 Update

Funding provided by USDOT (CMAQ), FTA, USDOE, NHDES
Combined investments of \$4.8M (\$3.7M fleet) (approx. 75% federal)
18 year UNH fuel savings: \$460,000 fuel /1,900 tons CO2 emissions

CNG use fell slightly in in FY18 due to transit service reductions; however this trend will reverse in FY19 as UNH takes delivery of four new full-size transit vehicles replacing B20 powered units. UTS has made a commitment to discontinue diesel engine vehicle purchases moving forward.



Fall 2014 Newest Wildcat Transit CNG



Phase II CNG Fuel Station – fall 2010



Phase III High Pressure Dispenser – fall 2011

CNG at UNH: A growing component of our Eco-Cat™ program commitment:

- UNH has operated CNG fleet vehicles since 2000. As of July 2018, we operate 25 CNG vehicle including transit buses, bi-fuel pickup trucks and passenger cars. In FY 2018, CNG vehicles logged over 420,000 miles and used over 47,000 gas gallon equivalents of CNG (replacing primarily diesel/B20).
The use of CNG in the UNH fleet over the past 18 years has reduced an estimated 1,900 tons1 of CO2 emissions and 385,000 gallons of gas/diesel fuel with estimated net fleet fuel savings of over \$460,000
The estimated fuel cost savings for this CNG fleet to UNH is approximately \$29,000 in FY 182.
Transit is our largest CNG user - 96% of total UNH CNG gge. In FY 18.

Table with 4 columns: Fiscal Year, CNG (gge)3, % Total fleet fuel share4, % Transit fleet fuel share5. Rows include years 2007, 2011, 2015, 2016, 2017, 2018, and 2019 est6.

1 Based on gas-diesel-B20 average of 25 lbs,CO2/gallon burned and CNG of 14.6 lbs.
2 2018 UNH retail price of CNG was \$1.69/gge and B20/diesel/gas was \$2.30 excluding CNG station costs
3 Based on Unitil fuel station meter invoices, or subsequent pump dispense reports from UNH
4 Use NHDOT+WEX provided UNH-Durham only liquid fuel data share as of FY18 invoice-based CNG data
5 estimate of CNG gge versus NHDOT UTS Transit only - liquid fuel consumption (gasoline, diesel and B20)
6 UNH is taking possession of four new CNG buses mid way through the year – this will increase CNG share/use in FY 19



US grown low emission biodiesel

### Biodiesel at UNH: FY 2018 Update

*In cooperation with NHDOT fueling  
12 year UNH fuel savings: \$64,000  
estimated 3,600 tons CO<sub>2</sub> emissions reduction*

In August 2006, in coordination with NHDOT, the first state owned fuel station to offer B20 opened in Durham and UNH began transition of its diesel fleet to year-round B20 operation. In FY 2007, most diesel transit vehicles switched to B20 and UNH took possession of its first dedicated B20 fueled, California Air Resource Board Certified (CARB) low emission buses. In succeeding years, UNH Transit embarked on balanced fleet procurement - half B20 and half CNG. UNH continues a transition of all post-1990 diesel vehicles to B20. As of July 2018, UNH utilized B20 for approximately 76% of diesel engine requirements.



UNH consumed over **800,000 gallons of B20** over the twelve years. This translates to a petroleum diesel consumption reduction of just over **160,000 gallons** and estimated emission savings of **3,600 tons<sup>7</sup>** of CO<sub>2</sub>. (Last year, the price of B20 inched above that of ULSD for the first time in five years. However, the 11 year average price of B20 remains slightly below ULSD. )

UNH Diesel Fleet - Diesel, B20 and overall Biofuel Use (gallons)						
Fiscal Year	Petro-diesel (ULSD)	B20 Biodiesel	Combined	B20 share of diesel fueling	Petrodiesel (ULSD)	Biofuel
2007	51,368	51,805	103,173	50%	92,812	10,361
2011 <sup>8</sup>	18,949	85,561	104,510	82%	87,398	17,112
2015	39,622	68,850	108,472	63%	94,702	13,770
2016	17,244	73,304	90,548	81%	75,857	14,661
2017	23,363	62,889	85,152	74%	72,574	12,578
<b>2018</b>	<b>19,921</b>	<b>61,834</b>	<b>81,755</b>	<b>76%</b>	<b>69,388</b>	<b>12,367</b>

The UNH-Durham fleet consists of just under 300 on-road registered non-farm vehicles (12% diesel engine). *Approximately 25% of the overall fleet mileage is run on alternative fuel – that figure is 50% when B20 is included<sup>9</sup>* - our Eco-Cat™ fleet – part of our climate education practice. UNH strives to exceed EPA requirements and state fleet efficiency goals. The UNH vehicle fleet has reduced petroleum use with both environmental and fiscal benefit. After heating, cooling and electricity, fleet fuel use is one of UNH’s biggest energy sectors.

<sup>7</sup> Based on 9 lbs./gallon decrease in CO<sub>2</sub> emission B20 versus petro-diesel.

<sup>8</sup> New methodology and future accounting excludes WENH, Granite State College, NHPTV and Systems office as of FY 2011

<sup>9</sup> Alternative is defined as propane, CNG or all-electric based on fuel sale proportion



## Overall Fleet Fuel Consumption and Mileage – FY 2018 Update

*UNH estimates a 12 year CO<sub>2</sub> emissions reduction of 5,500 tons due to its AFV fleet.*

UNH has been a leader in alternative fuel fleet as part of its Eco-Cat™ program and as a recipient of USDOT, USDOE and EPA funding for alternatively fueled vehicles and infrastructure –CNG, B20 biodiesel and electric.

UNH worked cooperatively with the NHDOT to coordinate the first ultra-low sulfur B20 fuel supply at any state operated fueling facility. In August 2006, the facility opened and UNH began a conversion of its diesel fleet to year-round B20 operation. In FY 18, UNH used B20 for approximately 81% of its diesel engine requirements (down from a high of 85% in 2013 due primarily to transit service reductions). This equated to a twelve year total of over 800,000 gals B20 – or a reduction of just over 160,000 gallons of petroleum diesel consumed and an estimated emissions savings of 3,600 tons<sup>10</sup> of CO<sub>2</sub> with net incremental fuel cost savings. *(The eleven year average price of B20 has fallen below ULSD. (The eleven year average price of B20 remains just a hair under that of ULSD for the same period)*

In fall 2015, the university completed an eleven year program to expand its CNG fueling and maintenance infrastructure permitting full maintenance and timely fueling of its growing CNG fleet. In the past eleven years, the use of CNG has led to a reduction of 385,000 gal. equivalents of gas/diesel fuel with an estimate net fleet fuel savings of over \$460,000 as well as an estimated emissions savings of 1,900 tons of CO<sub>2</sub>.

As of July 2018, UNH-Durham operates a fleet of just over 300 vehicles including licensed farm equipment. Approx. 25% of the fleet is hybrid or uses alternative fuel – 50% when B20 is included.<sup>12</sup> This fleet is branded as EcoCat™ fleet – part of the UNH' climate commitment.

UNH Fleet Mileage (All fleet)				
Fiscal Year (UNH-Durham) <sup>11</sup>	Total Odometer Miles <sup>1</sup>	% change from prior	Transit Service Miles	Transit Share miles
2014	1.64M	-.4%	630,750	38%
2015	1.79M	+9%	622,736	35%
2016	1.78M	-.5%	563,236	32%
2017	1.92M	+8%	558,572	29%
2018	1.59M	-18%	477,627	30%

UNH Fleet Fuel Consumption (all fuel types)					
Fiscal Year <sup>10</sup>	Gallon Equivalent <sup>13</sup>	Cost Dollars <sup>14</sup>	% Change (gge) from prior	% Change (\$) from prior	Transit Share (gge)
2014	264,030	\$805,649	+9%	+10%	54%
2015	263,878	\$705,296	--	-12%	53%
2016	278,125	\$617,063	+5%	-12%	45%
2017	227,825	\$490,162	-18%	-20%	52%
2018	238,759	\$518,066	+5%	+5%	46%

<sup>10</sup> Based on 9 lbs./gallon decrease in CO<sub>2</sub> emission B20 versus petro-diesel and 10 lb/gallon decrease CNG versus liquid fuels.

<sup>11</sup> Excluding Systems, Granite State College, UNH-M, GSS, Systems and WENH effective 7/1/11

<sup>12</sup> Alternative defined as propane, CNG, electric & hybrid but not b20 using vehicle count not mileage (mileage would be higher %).

<sup>13</sup> Combined unleaded gas, petrodiesel, B20 and CNG (expressed gge) includes outside retail sale (WEX) figures for FY 17

<sup>14</sup> NHDOT invoices for liquid fuel plus CNG station invoices from UNH BSC





University of  
New Hampshire

# FACILITIES