

E85 Deployment



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EIA Biofuels Workshop

3/20/2013

E85 Infrastructure

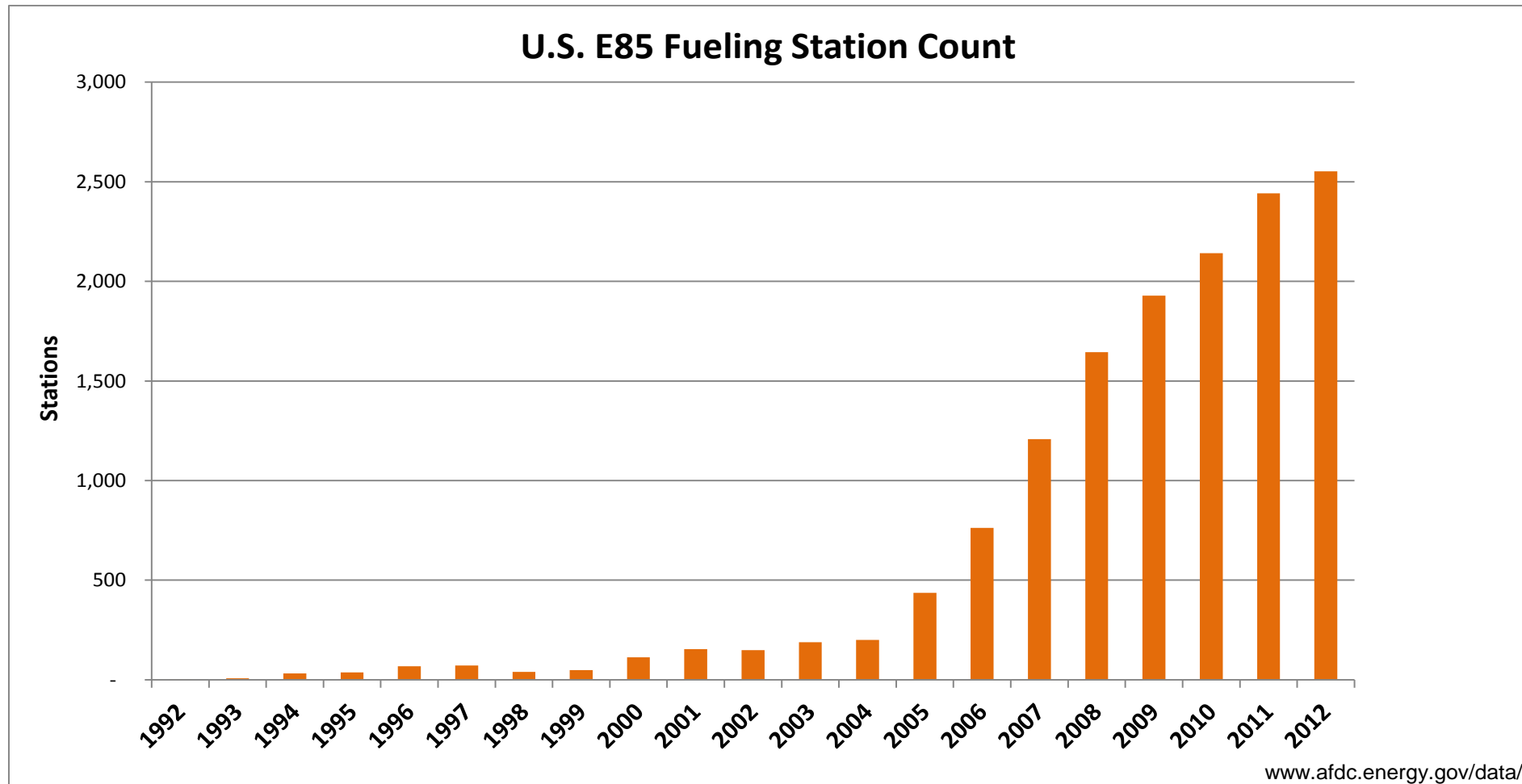
- **Station locations, growth, vehicles, and pricing**
- **Regulations, codes, and standards**
- **Fueling equipment**
- **Links**

Clean Cities



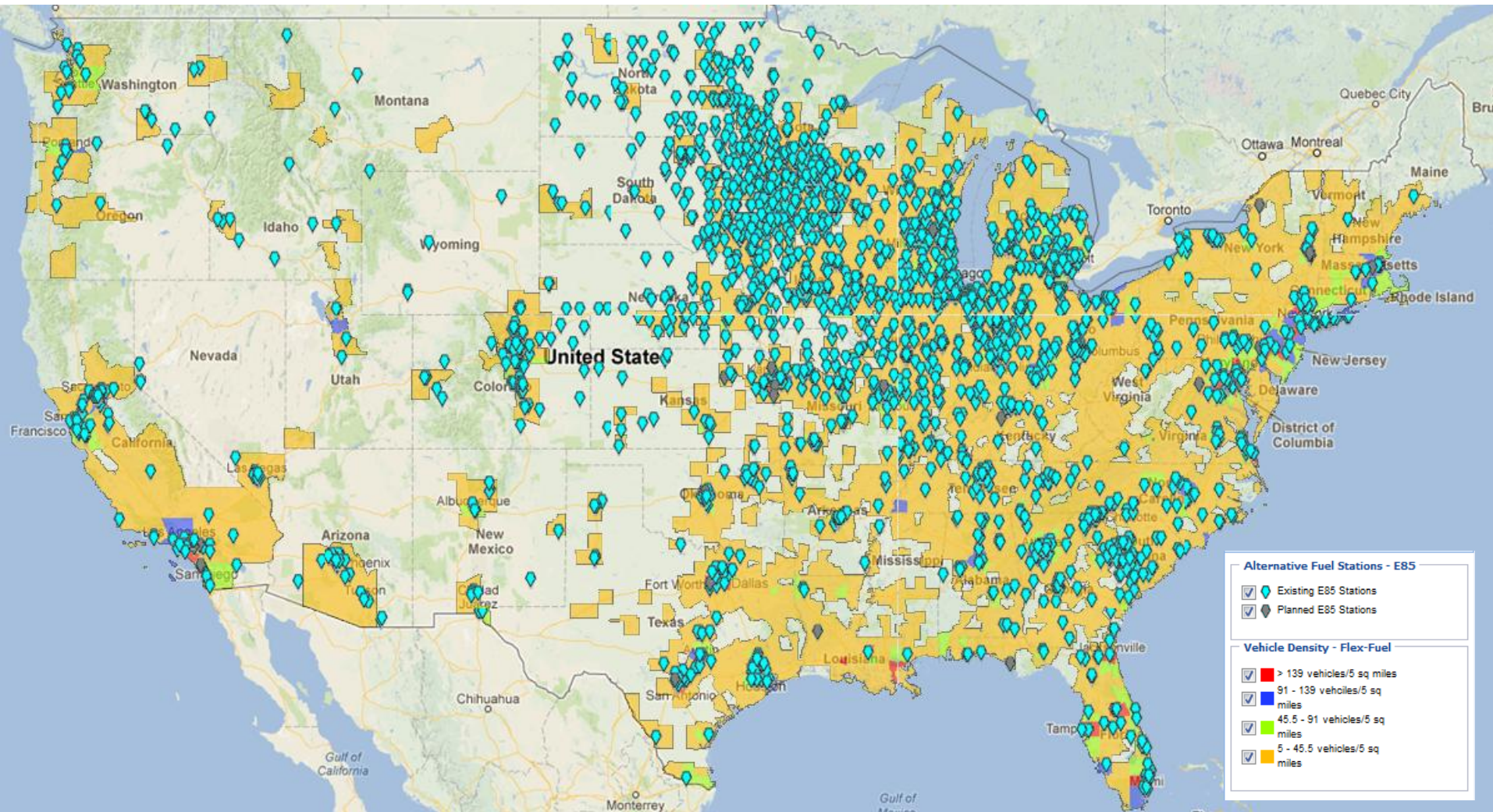
Clean Cities supports local actions through public and private partnerships to deploy alternative and renewable fuels including E85

E85 Retail Station Growth



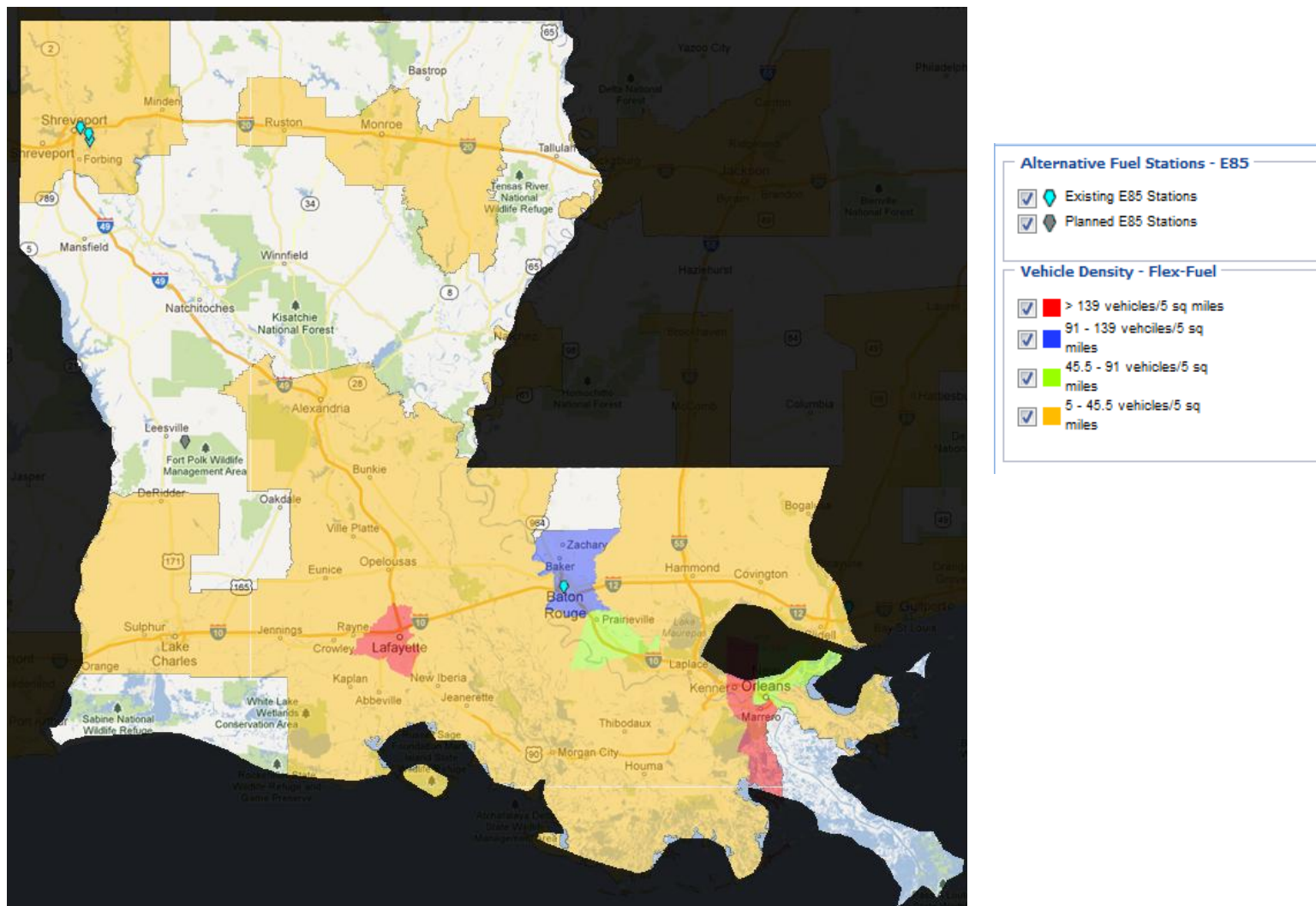
Source: Alternative Fuels Data Center: http://www.afdc.energy.gov/data/tab/fuels-infrastructure/data_set/10332

TransAtlas



Source: TransAtlas: <http://maps.nrel.gov/transatlas>

Identifying Deployment Opportunities

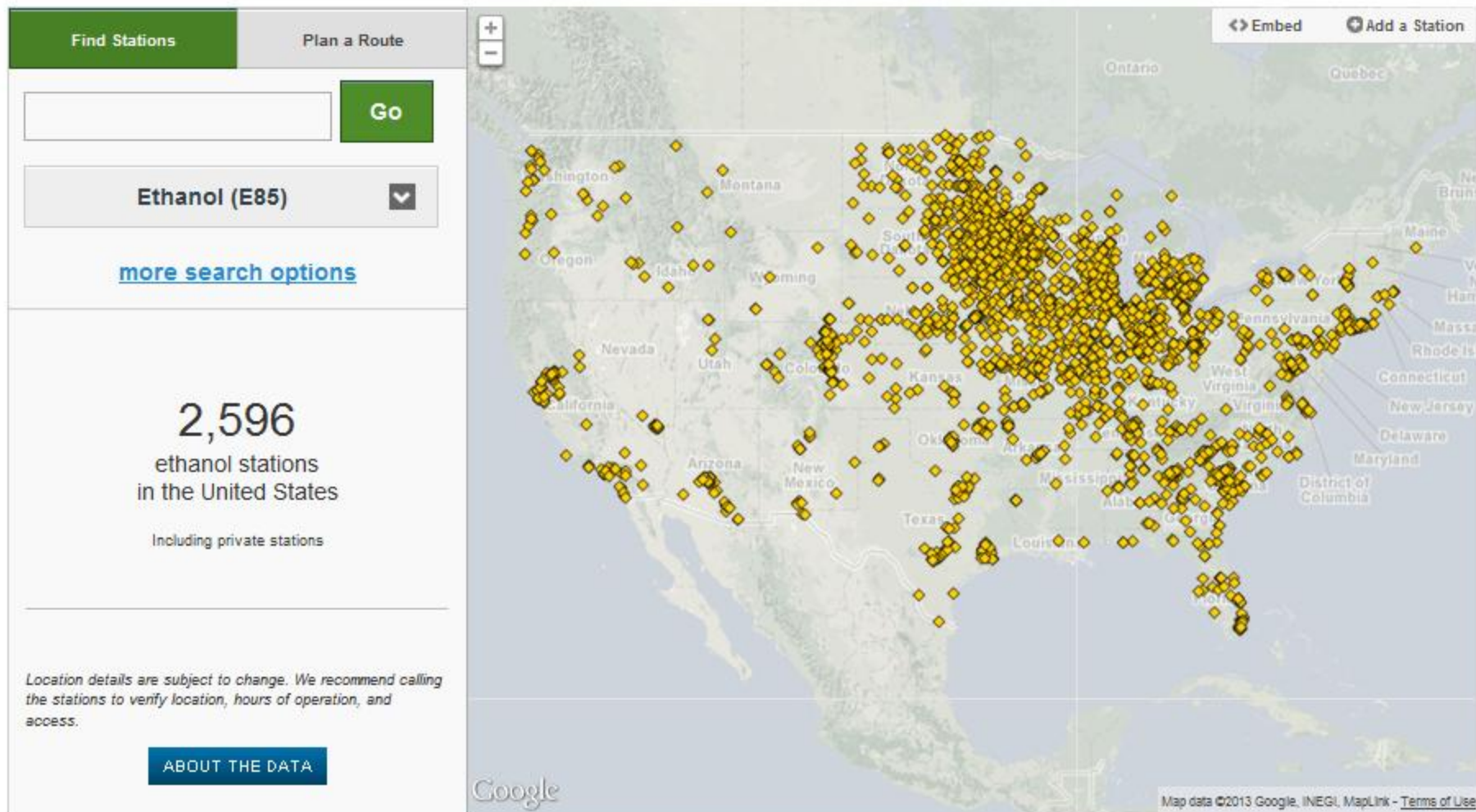


Source: TransAtlas: <http://maps.nrel.gov/transatlas>

Station Locator

Alternative Fueling Station Locator

Find alternative fueling stations near an address or ZIP code or along a route in the United States. Enter a state to see a station count.



Source: <http://www.afdc.energy.gov/locator/stations/>

[Data Download](#)

[Developer Tools](#)

Trip Planner

Alternative Fueling Station Locator

Find alternative fueling stations near an address or ZIP code or along a route in the United States. Enter a state to see a station count.

Find Stations

Plan a Route

Washington, D.C.

Charleston, SC

Ethanol (E85)

[more search options](#)

12

Ethanol stations along the route

Excluding private stations

[Download spreadsheet of matching stations](#)

Ohio

West Virginia

Kentucky

Virginia

North Carolina

South Carolina

Georgia

Maryland

New Jersey

Delaware

A

B

Google

Map data ©2013 Google, INEGI - Terms of Use

Source: <http://www.afdc.energy.gov/locator/stations/>

[Data Download](#) [Developer Tools](#)

I65 Corridor

- **Several Clean Cities Coalitions and State Agencies combined to apply for a grant**
- **21 E85 stations and 5 B20 Stations along 886 miles of interstate 60**
- **Partnered with DOE and retail fuel providers to fund the entire project**



Incentives

•Federal

- Tax credit up to 30% of the costs to install E85 infrastructure not to exceed \$30,000. Expires 12/31/2013
- USDA REAP program provides grants for blender pumps (which offer E85) up to 25% of project costs for communities with populations of 50,000 or less

•State

- The following states offer E85 infrastructure financial incentives: AZ, AR, CA, CO, FL, IL, IA, KS, LA, MI, MN, NM, NY, NC, ND, OH, OR, PA, SC, TN, WI
- Many states tax biofuels at lower rates than petroleum fuels

- Visit the following site to identify incentives in your area:
<http://www.afdc.energy.gov/laws/>

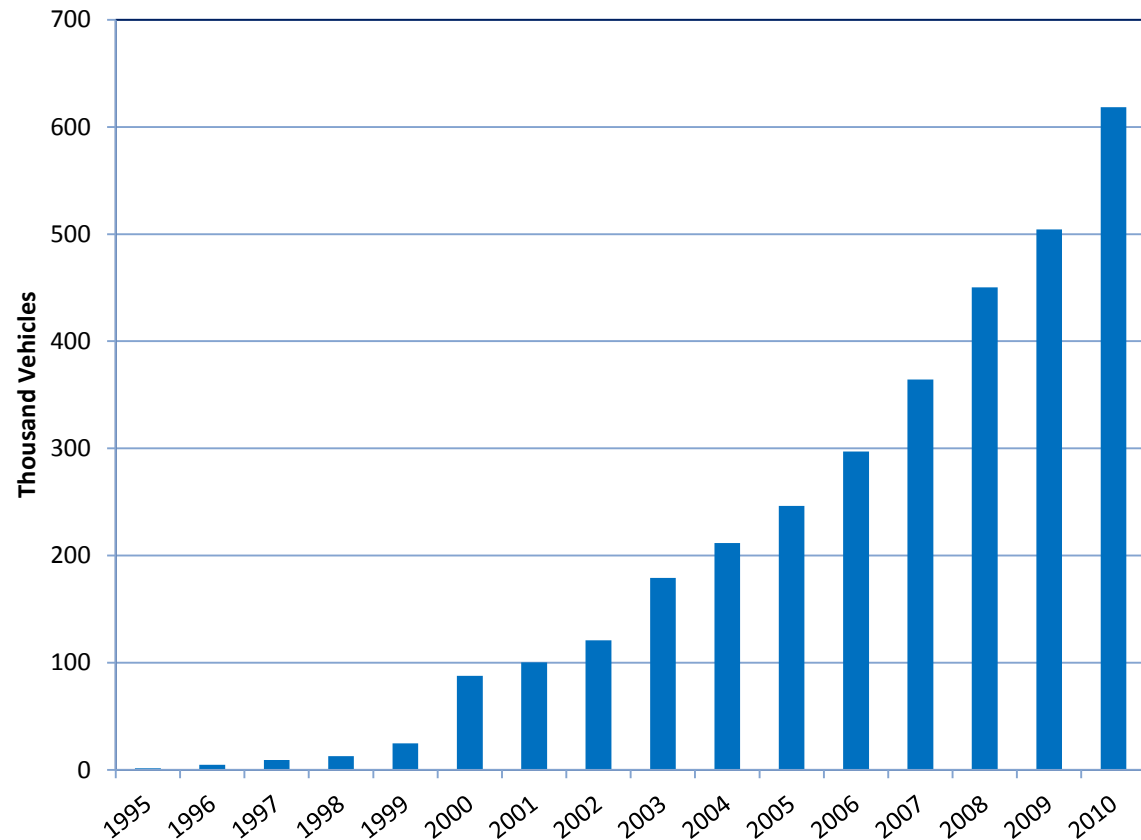
FFV Growth

**E85 FFVs Manufactured and in Use
in the United States 1998-2009**

Year	Light-Duty E85 FFVs produced	Light-Duty E85 FFVs net annual increase*	Total fleet E85 FFVs in use
1998	216,165	144,000	144,000
1999	426,724	306,149	450,148
2000	600,832	456,947	907,096
2001	581,774	466,203	1,373,299
2002	834,976	700,719	2,074,018
2003	859,261	750,437	2,824,455
2004	674,678	609,437	3,433,892
2005	735,693	683,217	4,117,109
2006	1,011,399	960,287	5,077,396
2007	1,115,069	1,076,902	6,154,298
2008	1,175,345	1,149,389	7,303,687
2009	1,049,478	1,049,478	8,353,165
Total	9,281,394	8,353,165	8,353,165

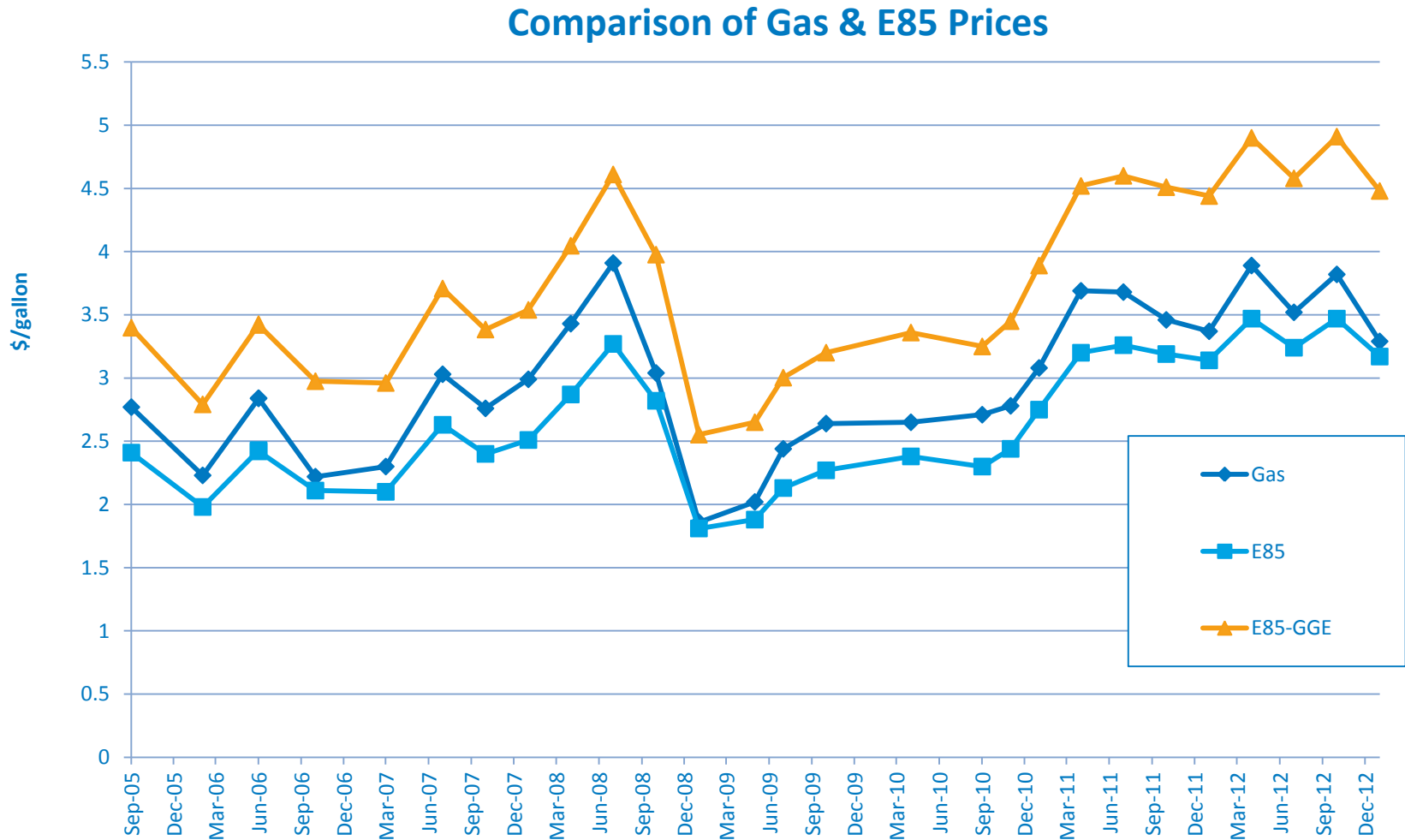
Note: * Net increase is new FFVs manufactured discounted by the survival rate.

E85 Fleet Vehicles in Use



http://www.afdc.energy.gov/data/#tab/vehicles/data_set/10300

E85 Retail Prices



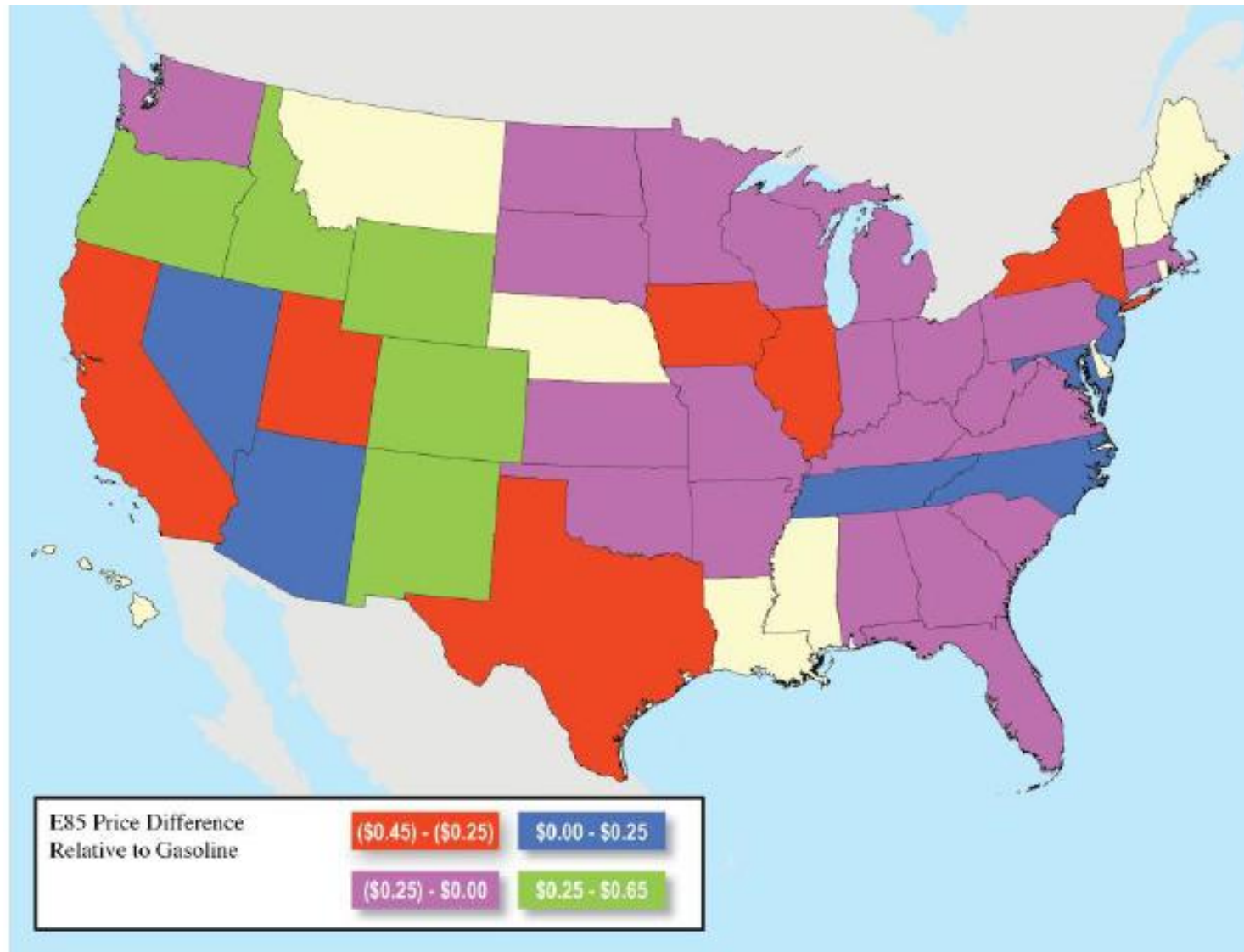
Source: Clean Cities Alternative Fuel Price Reports

E85 Retail Prices

	<i>Ethanol (E85) Information Reported by Clean Cities (\$ per gal)</i>		<i>Regular Gasoline Information Reported by Clean Cities (\$ per gal)</i>	
	<i>Average Price/ Standard Deviation of Price</i>	<i>Number of Data Points</i>	<i>Average Price/ Standard Deviation of Price</i>	<i>Number of Data Points</i>
New England	\$3.38 / 0.09	3	\$3.65 / 0.15	38
Central Atlantic	\$3.35 / 0.22	83	\$3.56 / 0.21	70
Lower Atlantic	\$3.24 / 0.20	64	\$3.34 / 0.15	112
Midwest	\$3.04 / 0.15	176	\$3.19 / 0.15	208
Gulf Coast	\$3.02 / 0.13	45	\$3.11 / 0.10	64
Rocky Mountain	\$3.11 / 0.21	60	\$2.89 / 0.21	98
West Coast	\$3.34 / 0.25	63	\$3.54 / 0.28	122
NATIONAL AVERAGE	\$3.17 / 0.23	494	\$3.29 / 0.30	712

Source: Clean Cities Alternative Fuel Price Report January 2013

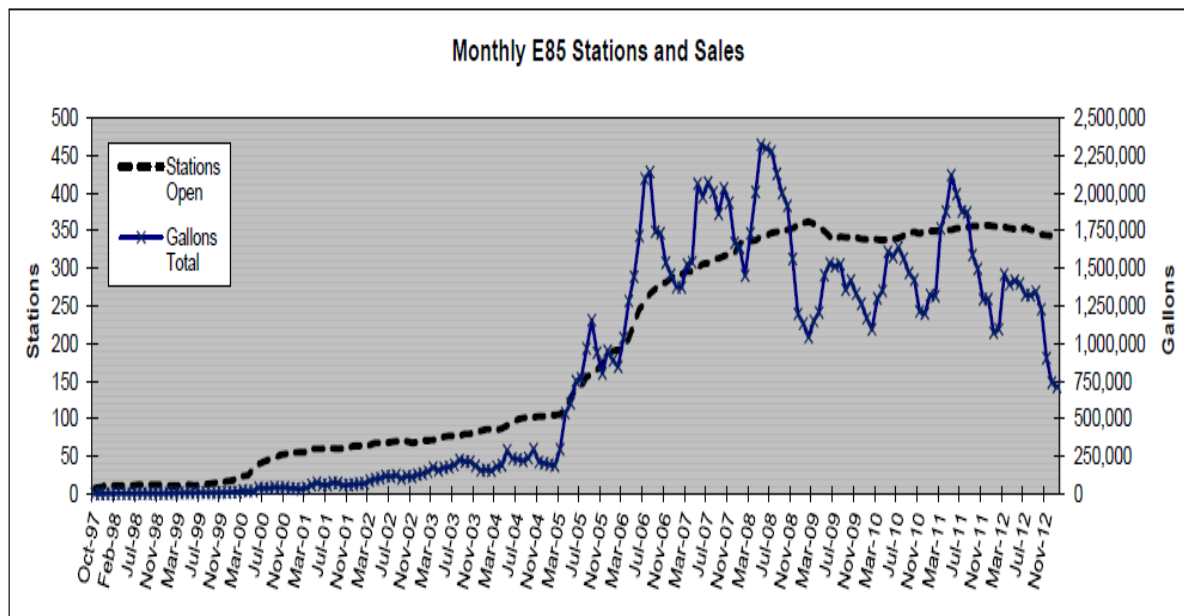
E85 Retail Prices



Source: Clean Cities Alternative Fuel Price Report January 2013

E85 Sales

- Most states track total ethanol sales; not E85 sales
- E85 sales are likely less than 1% of total ethanol sales
- Minnesota Department of Commerce E85 Data



Historical E85 Sales

Year	# Stations Year-End	Total Yearly Volume Est.
1997	11	6,607
1998	12	37,353
1999	17	99,514
2000	55	377,653
2001	64	704,120
2002	69	1,257,065
2003	84	2,168,305
2004	103	2,626,550
2005	181	8,154,977
2006	287	17,913,153
2007	320	21,412,686
2008	357	22,515,438
2009	339	15,925,119
2010	349	16,643,232
2011	357	19,804,100
2012	343	14,691,585
2013	342	711,360

Blender Pumps



- Provide FFV owners with more fuel choices
- Fuel is mixed from an E85 tank and an E10 tank to produce E20, E30 or similar
- Only FFVs can use fuels above E15

E15

- Approved for use in light duty trucks and vehicles 2001 and newer
- Only a few stations in midwest states are offering E15
- Not approved for use in motorcycles, boats, snowmobiles, small engines such as lawn mowers, leaf blowers, or similar
- There are several steps for retailers to provide E15 which can be found in the E15 Retailer Handbook:
http://ethanolrfa.3cdn.net/62e6e5d16c896ef941_tzm6vusyl.pdf



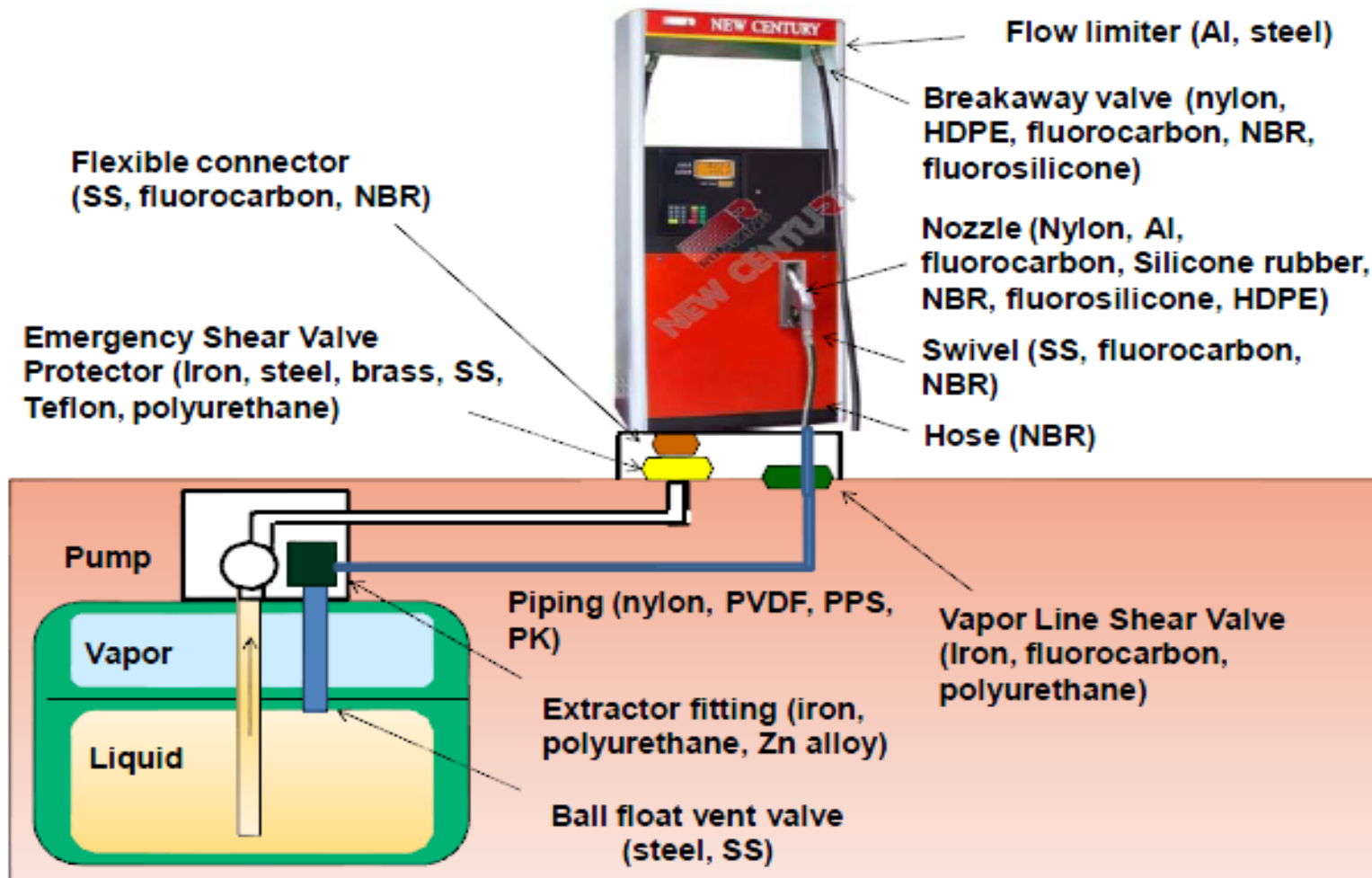
Regulations for Infrastructure

- **Local Authorities having Jurisdiction (AHJs)**
 - Fire marshals, state energy/environmental offices, weights & measures
- **Occupational Safety and Health Administration (OSHA)**
 - OSHA regulation 1910.106 (g)(3)(iv)(b)(1) requires dispensers, breakaways, and nozzles to be listed by a third-party for specific fuels.
 - OSHA 1910.106(b)(1)(iii)(a) covers steel tanks and requires sound engineering

Codes and Standards for Infrastructure



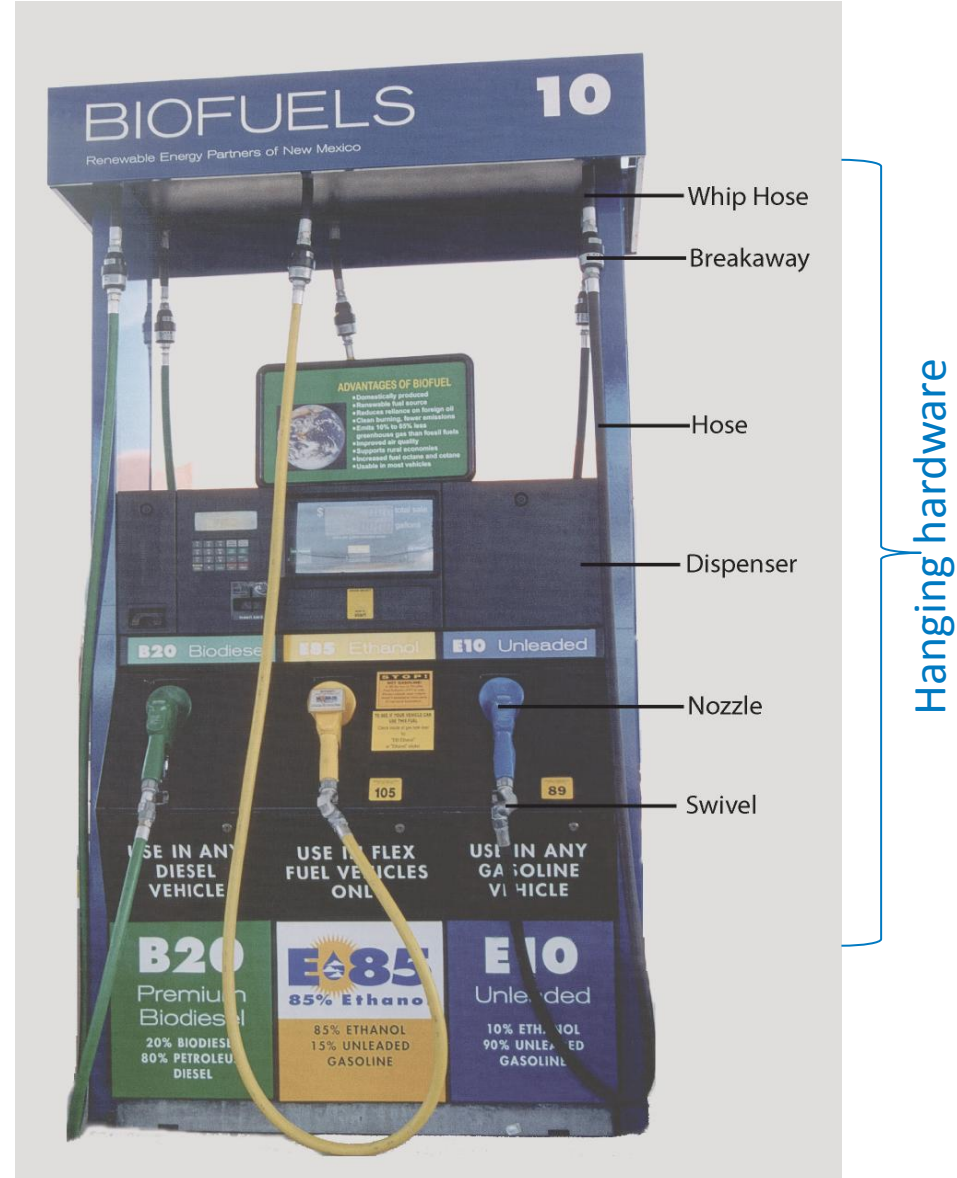
Materials in Fueling Systems



Courtesy of Oakridge National Laboratory

UL Testing & Listed Equipment

- UL Subject 87A
- 15 week fuel exposure at 60°C
- Performance testing unique for each equipment type
- E85 UL listed equipment is available from multiple manufacturers



Status of Tanks

- **EPA Office of Underground Storage Tanks (OUST) Guidance - Compatibility Of UST Systems With Biofuel Blends**
 - Guidance was developed to cover blends above E10 and Biodiesel blends above 20%
 - Allows tank owners to meet 40 CFR Part 280
 - Compliance is achieved by
 - A letter from the equipment manufacturer with an affirmative statement of compatibility
 - Use of components certified by a nationally recognized independent testing laboratory
- **All tank manufacturers have provided letters stating compatibility with E85**

Useful Links

- Department of Energy Alternative Fuels Data Center:
<http://www.afdc.energy.gov/>
- Renewable Fuels Association E85:
http://ethanolrfa.3cdn.net/89258bdc8d0d998df2_8zm6y14xr.pdf
- EPA OUST Biofuels Guidance Document
<http://www.epa.gov/oust/altfuels/biofuelsguidance.htm>
- Steel Tank Institute Letters Stating Compatibility:
<http://www.steeltank.com/Publications/E85BioDieselandAlternativeFuels/ManufacturerStatementsofCompatibility/tabid/468/Default.aspx>
- Petroleum Equipment Institute Letters Stating Compatibility:
<http://www.pei.org/PublicationsResources/ComplianceFunding/USTComponentCompatibilityLibrary/tabid/882/Default.aspx>