Alternative Fuel Road Signage Policies & Programs

in

Georgia, Kentucky, North Carolina, South Carolina, Tennessee, and Virginia

Prepared by:
Anne Tazewell, Marcy Bauer
North Carolina Solar Center / NC State University
July 24, 2014

Content Contributors:
Don Francis, Clean Cities Atlanta
Melissa Howell, Kentucky Clean Fuels Coalition
Jennifer Taraskiewicz, Palmetto State Clean Fuels Coalition
Jonathan Overly, East Tennessee Clean Fuels Coalition
Alleyn Harned, Virginia Clean Cities Coalition

Special thanks for information provided to support this report:
JR Jarvis, Interstate Logos
Ron King, North Carolina Department of Transportation

This document was prepared as part of the Alternative Fuel Implementation Team project, sponsored by the U.S. Department of Energy's Clean Cities program. The U.S. Government nor any agency thereof, assumes any legal liability or responsibility for the usefulness of any information Reference herein to any specific commercial product does not necessarily constitute or imply its endorsement.

Contents

Executive Summary

The purpose of this report and its related activities is to clarify road signage procedures, take account of existing signage for stations offering alternative fuels, and coordinate activities to enhance alternative fuel signing opportunities for the motoring public. As part of the U.S. Department of Energy sponsored Alternative Fuel Implementation Team (AFIT) project led by the NC Solar Center/NC State University, U.S. DOE Clean Cities coordinators in Kentucky, North Carolina, South Carolina, Tennessee and Virginia compiled and assessed information about alternative fuel road signage policy from their respective states. Details of each state's road signage programs and activities are broken out by participating state in the body of this report, including specific related state contacts and images of existing signage.

Generally states follow road signage guidance provided on the federal level through the Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD is developed and approved by the Federal Highway Administration (FHWA) as the national standard for the placement and standardization of all signs. States are encouraged to follow the MUTCD as a guide for implementation of road signage policies and procedures, but most state Departments of Transportation surveyed in this report follow it exactly as it is written. While the MUTCD has approved pictograph images for E85 (85% ethanol/15% gasoline) compressed natural gas (CNG), and electric vehicle (EV) charging it does not have text or graphic images for biodiesel, propane (LPG) as a transportation fuel, liquefied natural gas (LNG), or the various levels of electric vehicle charging.

This report surveys activities allowed through three road signage opportunities characterized in the MUTCD:

- General Service
- Specific Services (also commonly referred to as Logo, or Blue Logo), and
- Tourist Oriented Directional Signs (TODS)

All states providing information for this report manage General Service, Logo, and TODS programs that could provide opportunities for alternative fuel supplemental messages and signing options. However, in many cases federal and state rules, as they are written, are such that a number of existing alternative fuel stations open to the motoring public are considered ineligible for highway signage.

In order for alternative fuels to be eligible for signage they should meet the standards for "GAS" as set forth in the MUTCD: Vehicle services such as gas, oil, and water; modern sanitary facilities and drinking water; continuous operations at least 16 hours per day, 7 days per week; and public telephone are required. In addition, some alternative transportation fuels are not currently listed in the MUTCD. Given these conditions, there are a variety of challenges to more widespread road signage utilization, especially for three alternative fuel types:

Electricity: Most electric vehicle service equipment (EVSE) in commercial (e.g. shopping centers) and public locations (e.g. city centers) do not meet the criteria for "GAS" as designated in the MUTCD. A restrictive stance in some states (VA for example) has prohibited having EVSE indicated in supplemental signage allowed in "LODGING" and "FOOD" Logo signing programs, even though amenities are allowed in supplemental signage.

However, a recent broader road signage policy adopted by NC is allowing EVSE supplemental signage on "FOOD" and "LODGING" Logo Program signage.

Propane (LPG/Autogas): Currently only indicated in a cylinder graphic in the MUTCD. Many propane (and natural gas) fueling stations, while available for fueling to the motoring public, do not meet MUTCD requirements for "GAS", and are therefore not allowed in General Service or Logo signing program. However, a 2014 decision by NC DOT starts the process for providing a "Scarce Fuel" category which will allow for General Services signage for propane, natural gas and electric vehicle refueling stations that do not meet all the MUTCD "GAS" guidelines.

Natural Gas: Currently the only designated signage form of natural gas used for transportation fuel is compressed natural gas (CNG), which does not accommodate the national effort underway to expand liquefied natural gas (LNG) stations at truck stops and service stations serving the long distance trucking industry.

The majority of alternative fuel road signage currently in use in the states participating in the preparation of this report is located at commercial service stations selling biofuels. The table below summarizes all known alternative fuel signage in the six-state area.

Table 1. Known alternative fuel signage posted along roadsides in Kentucky, North Carolina, South Carolina, Tennessee and Virginia.

Sign Type	***GA***	***KY***	***NC***	***SC***	***TN***	***VA***
E85 or e85 on supplemental signage	X	X	X	No alt fuel signage currently posted	X	X
"Biodiesel" or "B20" on supplemental signage		X	X		X	
"LP" (propane) on supplemental signage					X	X
"BIOFUEL" pictograph on supplemental signage					X	
Level 1 electric vehicle charging signage, general service						X

Recommendations, Plans, Action Steps – A National Strategy

Detailed state-based recommendations are outlined under the specific state states highlighted in this report. They include recommendations such as developing a priority list of alternative fuel stations in South Carolina for General Service and Logo signing, supporting NC DOT plans to create a "Scarce Fuel" category to facilitate alternative fuel signage, evaluating the outcomes of a highway signage related to a biofuels corridor project in Tennessee, and having retailers participating in the Logo program in Kentucky request a change in nomenclature from "GAS" to "FUEL". It is recommended that states make adjustments to their signage policies/programs to take advantage of the flexibility offered in the FHWA-approved MUTCD (for the most part states have defaulted directly to the nearly 900-page manual).There is also an opportunity to broaden the federal guidelines so that states feel more comfortable approving alternative fuel station signage.

The following are collective and collaborative recommended actions to facilitate alternative road signage:

- Establish a working group comprised of interested stakeholders (e.g. AFIT partners, other industry stakeholders, etc.) to develop a long range plan for coordinating requests to the FHWA for changes or addendums to the MUTCD.
    - Consider re-forming the Southeast Alt Fuels Task Force[1], expanding to include Alabama, Mississippi, and Florida for a truly "Southeastern states" approach.
- Work with U.S. Department of Energy Clean Cities Coalitions and industry partners to facilitate collective and/or individual fuel-related requests to the FHWA that they:
    - Develop text and graphics for General Service signage for Biodiesel (B20, B100); Autogas (a.k.a. propane or LPG, with a dispenser graphic); EVSE charging levels (including DC Fast Charging); liquefied natural gas (LNG); and Hydrogen/Fuel Cell for inclusion in the MUTCD.

[1] A volunteer group developed in 2002 to coordinate alternative fuel development in GA, TN, SC and NC as a result of meeting of state governors and resulting "Southern Air Principles" document in 2001

- Provide specific guidance to states under the Logo Signage program to indicate that alternative fuel station signage is allowed as supplemental signage in a variety of platforms (i.e. propane at "Gas" stations and electric vehicle charging at "Lodging" and "Food" facilities) Current MUTCD references alternative fuels as optional supplemental signage only in the "Gas" category.[2]
- Create an "Alternative Fuel" or "Scarce Fuel" category for Logo, General Service and TODS signs. Having an alternative fuel designation, rather than trying to fit all alternative fuel options under the MUTCD "GAS" designation would provide valuable public benefit by informing motoring public about increasing transportation fuel choices while alleviating concern that all the amenities required of fueling locations designated through "GAS" signage are met. And/or…
- Change the reference to "GAS" in Logo, General Service and TODS signage to "FUEL" as fuel more adequately relays the growing assortment of transportation related refueling options than gas which can be interpreted to mean natural gas along with the more customary association with gasoline.[3]

Background

Signage Policies and Programs – General Information

The Manual on Uniform Traffic Control Devices (MUTCD), approved by the Federal Highway Administration (FHWA), is the national standard for the placement and standardization of all signs, and guides state implementation of road signage policies and procedures. All agencies, state or local, are *encouraged* to follow standards shown in the MUTCD or be able to justify any departures from those standards.

Way finding signage within towns and cities differ among localities. Many cities have way finding sign plans that include detailed guidance on font, colors, construction and installation.[4] Including way finding for alternative fuel refueling/recharging stations should be encouraged at the local level and could benefit from regional coordination. However, the efforts of this report focus on highway and road signage.

General service signage opportunities are guided the by Federal Highways Administration's Manual for Uniform Traffic Control Devices (MUTCD) Chapter 2I. General Service signage is typically not used at major interchanges in urban areas except in the case of providing emergency services. The MUTCD advises that "States that elect to provide General Service signage should establish policy and criteria for use", and recommends that facilities for conventional and alternative fuel signage be required to provide a restroom, continuous operation 16 hours per day, 7 days per week and a public telephone to be eligible for General Service signage.

---

[2] MUTCD http://mutcd.fhwa.dot.gov/htm/2009/part2/part2j.htm Section 2J.03 Logos and Logo sign Panels As of June 2014, NC DOT allows electric vehicle charging on supplemental signage while other states such as VA do not. An amendment or clarification to the MUTCD would provide the federal-level support States often rely on (and wait for) in order to make more rapid changes to state-level operating procedures.

[3] FHWA would need to conduct human factor testing to determine whether public perception would support using "Fuel" versus "Gas". However, according to a Michigan Energy Center report, Road Signage for Alternative Fuel Vehicles in Michigan, CA and other states have already changed "GAS" category to a more inclusive "FUEL" category reference.

[4] Wayfinding signage examples: Hillsborough, NC http://www.ci.hillsborough.nc.us/sites/default/files/Wayfinding%20sign%20design%20manual_May2011.pdf and the Town of Cary, NC http://www.townofcary.org/Assets/Planning+Department/Planning+Department+PDFs/wayfinding/wayfindingdesign.pdf

The 2009 MUTCD Part 2 specifies text and pictograph signage for General Service Signs and Plaques for the following alternative transportation fuels:

Sign or Plaque	Sign Designation
Alternative Fuel – Compressed Natural Gas	D9-11a
Electric Vehicle Charging, Plaque	D9-11b, D9-11bP
Alternative Fuel – Ethanol (E85)	D9-11c
Propane Gas[5]	D9-15

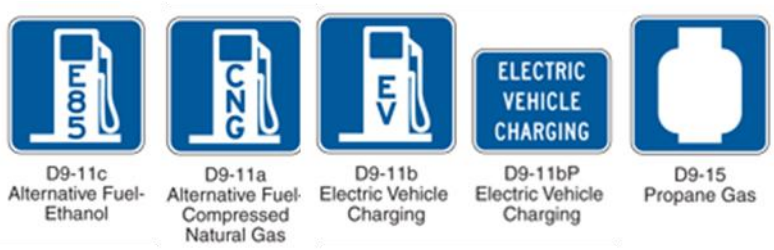


Figure 1. Graphics approved for alternative fuels under the MUTCD.

An Optional Use of an Alternative Electric Vehicle Charging General Service Symbol Sign which has an electric cord rather than fuel nozzle on dispenser graphic has also been approved for interim use by the FHWA.

The MUTCD does not have text or a graphic for biodiesel, propane (LPG) as a transportation fuel, liquefied natural gas (LNG), or the various levels of electric vehicle charging.[6] There is no central repository within or among states for existing alternative fuel signage, as signs are approved on a division level.

Page 300 of the MUTCD indicates that "individual states may sign for whatever alternative fuels are available at appropriate locations", and page 303 suggests that individual states should develop a policy for General Service Signs. It is further suggested that the state policy detail the criteria for availability, which *should* include:

> *A. Gas, Diesel, LP Gas, EV Charging, and/or other alternative fuels if all of the following are available:*
>
> *1. Vehicle services such as gas, oil, and water;*
> *2. Modern sanitary facilities and drinking water;*
> *3. Continuous operations at least 16 hours per day, 7 days per week; and*
> *4. Public telephone.*

Page 305 of the MUTCD states that "Signing for DIESEL, LP-Gas, or other alternative fuel services may be substituted for any of the general services or appended to such signs", which further represents flexibility at the state level for incorporating alternative fuel station signage. The MUTCD includes guidance for state-level Logo signage programs, suggesting that businesses have the following in order to qualify for a logo sign panel under the "GAS" category:

> *1. Vehicle services including gas and/or alternative fuels, oil and water;*
> *2. Continuous operation at least 16 hours per day, 7 days per week for freeways and expressways, and continuous operation at least 12 hours per day, 7 days per week for conventional roads;*
> *3. Modern sanitary facilities and drinking water; and*
> *4. Public telephone.*

[5] The approved propane symbol is of a propane cylinder, as would be used for a BBQ grill, as opposed to a fuel dispenser icon. It is understood that the vast majority of drivers would not recognize this symbol/sign as an indication of availability of propane for transportation fuel.
[6] Level 1 electric vehicle service equipment (EVSE) can take an entire day to charge an electric vehicle, while direct current fast charging (DCFC) can charge a vehicle in under 30 minutes.

Though electric vehicle service equipment (EVSE)-charging stations are often co-located in areas with food and lodging, there is no specific language in the MUTCD supporting or discouraging alternative fuel station signage in conjunction with these other non-fuel businesses.

Generally, states follow MUTCD criteria for Gas, Food, Lodging, Phone, Hospital, and Camping (and in some states, 24-Hour Pharmacy) when establishing their policies, standards and programs. As described above, states may develop their own criteria, and often do so through a state rule-making process and/or state DOT division or board approval process.

All states providing information for this report offer fee-based, criteria-driven Logo and Tourist Oriented Directional Signing (TODS) programs that provide opportunities for supplemental messaging for alternative fuel options. In addition, Virginia offers a fee-based General Services Signing program. North Carolina administers a General Services Signing program at no cost to eligible entities, but currently alternative fuel signage is effectively ineligible in this program; however, efforts are underway to revise the Policy on General Service signs to allow signing of scarce fuel sources (EVSE, CNG, and LP). There is no standardized text or font size among states for supplemental Logo sign messaging for alternative fuels among the stations.[7]

With the current lack of signage for alternative fuel stations, it is important to evaluate other methods for drivers to find the stations. The NC Solar Center's Clean Transportation program, with collaboration from clean transportation partners from neighboring states, conducted an on-line survey to explore the use of on line technology and "apps" to locate alternative fuel stations. Of the 42 respondents, only 26% reported using mobile applications to locate alternative fuel stations. A complete summary of the responses can be found in Appendix A.

!!!
93% of respondents to the Alternative Fuel Mobile Apps Survey indicated that alternative fuel station signage is important (responses as of December 2013)

Note the FHWA contact for alternative fuel signage in the MUTCD is: Kevin Sylvester[8]: kevin.sylvester@dot.gov, (202)366-2161. Individual State FHWA Division Office contacts[9] on MUTCD are listed in state sections below.

Skip to state sections:

[7] North Carolina requires that supplemental signage text be a minimum of 5 inches high.
[8] http://mutcd.fhwa.dot.gov/team.htm
[9] http://mutcd.fhwa.dot.gov/res-divisonoffices.htm

Georgia

Background
Georgia follows the federal MUTCD and has posted a detailed GDOT Constructions Standards and Details document on the FHWA website.[10] The design and installation of logo signs are a function of Georgia Logo Signing, which designs, installs and maintains these signs on highway right-of-ways. The Georgia Logo Signing Program offers signing opportunities for Gas, Food, Lodging, Camping and Attractions. A table of eligibility requirements is located at: http://www.interstatelogos.com/interstatelogofiles/pdfs/participation/187_None_Eligibility%20Criteria.pdf. Annual fees for the Georgia Logo program are $1,200.

Alternative Fuel Signage
There are two independently owned and operated E85 stations off of Interstate 75 through Macon that indicate E85 availability through supplemental signage text.

State Specific Plans and Recommendations
- Georgia Clean Cities will encourage potentially eligible hotels and restaurants that have EVSE to request Georgia Logos to add supplemental signage indicating electric vehicle charging availability.

Contact Information
Georgia Logo General Manager, Bill Jones; billjones@interstatelogos.com 800-783,2361 or 770-447-6399
Georgia's Alternative Fuel Implementation Team project contact: Don Francis, Director Georgia Clean Cities; don@cleancitiesatlanta.net 404-906-0656

Georgia's FWHA division: Georgia.FHWA@fhwa.dot.gov, (404) 562-3630 Georgia Division, 61 Forsyth Street SW Suite 17T100, Atlanta, Georgia 30303-3104

Kentucky

Background
Kentucky's signage program follows the MUTCD – including signage on city and county roads –which has been adopted by Kentucky Revised Statutes (KRS). All road signage policies can be found at www.kentuckyinterstatesignagelogos.com. Kentucky Logos, a contractor to the Kentucky Transportation Cabinet, handles all design and implementation of interstate signage, including signage for alternative fuel/advanced technology sites. General Services Signage is used in rural areas where Logo signs are not posted. Tourist oriented signs are brown. Neither includes fueling locations.

Alternative Fuel Signage
Alternative fuel availability is approved for notation as a supplemental line at the bottom of Logo signs, which are paid for and designed by the retailer/business. There are no specific standardization requirements for these extra notations to Logo signs, so if additional retailers opt for logo signage they are free to do what they want in the supplemental sign space at the bottom. Thus far, only E85 has been featured on Logo signs in

[10] http://mutcd.fhwa.dot.gov/resources/state_info/georgia/ga.htm

Kentucky, on signs for Thornton's 11 fuel stations (10 off of highway I65 around Louisville, and one in northern Kentucky off of highway 171). On all of these signs, E85 is characterized with yellow and black text at the bottom of the logo.

Figure 2. E85 notation at the bottom of the Logo sign.

State-Specific Plans and Recommendations

Retailers 'call the shots' with Logo signage, and there have been no requests or discussions about expanding alternative fuel station signage within the General Service Signage program. The most efficient and engaging way to incorporate additional alternative fuel signage across Kentucky will be to:

- Encourage retailers to request that KDOT change all "Gas" language to "Fuel" in Kentucky related road signage
- Include graphic icon options for B20 (biodiesel) and LPG (propane) to indicate these refueling options when used as motor vehicle fuel

Contact information

Kentucky's signs program (general services, supplemental and tourism) is administered by the Kentucky Transportation Cabinet, Division of Traffic Operations: (502)564-3020. Logo signs are handled by Kentucky Logos' J. R. Jarvis: (859)421-3599, jjarvis@interstatelogos.com.

Kentucky's Alternative Fuel Implementation Team project contact: Melissa Howell, Executive Director, Kentucky Clean Fuels Coalition mhowell@kentuckycleanfuels.org, (502)452-9152.

Kentucky's FHWA liaison: Robert Farley, 502-223-6744, Robert.farley@fhwa.dot.gov, John C. Watts Federal Building and U.S. Courthouse, 330 W. Broadway, Frankfort KY 40601

North Carolina

Background

The state of North Carolina operates and maintains an extensive road system including highways, primary and secondary roads throughout the State's 100 counties.[11] Road signage in North Carolina is coordinated through the Signing and Delineation Unit within the Transportation and Mobility section of the Highways Division in the NC Department of Transportation (NCDOT). There are three programs relating to road signage in North Carolina, all guided by provisions in the federally-administered MUTCD.

- Tourist Oriented Directional Signage Program. TODS are intended for installation in rural areas at intersections. They are not allowed on freeways, interchanges, or on ramps. To qualify, a facility must be a tourist attraction, such as an amusement park, a cultural center, or a natural phenomenon, or one that derives its major portion of income or visitors from road users not residing in the area. A Lodging or Camping facility is required to have a minimum of two tourist amenities (such as hiking or a spa) in order to qualify. The annual cost to participate in this NCDOT-administered signing program is $200/sign.[12]
- Logo Signing Program applies to controlled access highways though Specific Services Sign provisions adopted at both the state and federal level. Currently business logo panels are installed for Gas, Food,

[11] Refer to the this link for North Carolina road maps as well as maps of NC Department of Transportation (NCDOT) Divisions, through which construction, maintenance and road signage procedures are conducted: http://www.ncdot.gov/travel/statemapping.
[12] For rural un-incorporated areas with towns of populations less than 40,000.

Lodging, Camping, and Attraction services. Logo signs must be located within three miles of the highway for rural interchange approaches, and within one mile of the highway at urban interchange approaches in either direction (via an all-weather road). In rural areas where no qualifying services exist within three miles, the maximum distance is increased to six miles, whereas in urban areas the distance is increased to three miles. An annual fee of $300 is charged to qualifying businesses for each mainline, ramp and trailblazer sign, resulting in a total annual rental cost of $1,200. Gas and associated services require on-premises restroom, attendant, phone and 16 hours per day continuous operation. Lodging facilities require a minimum of 10 units (except Bed and Breakfasts) and year-round operation.

- General Motorist Service Signs are installed free of charge by NCDOT to provide directional information for essential motorist services such as Fuel, Food, Hospital, Phone, Tourist Information Center. North Carolina General Service's signage is guided by **19A NCAC 02B.0221 General Motorist Services Sign** administrative rules, which currently do not provide for alternative fuel signage to be included as part of general service signs. However, in July 2013 a state law was passed to enhance effectiveness and efficiency of state government, which would allow NCDOT to remove general motorist service signs from the administrative code procedure. As of March 2014, NC DOT was in the process of revising the language to allow alternative fuel signage for businesses providing scarce fuel sources. The revisions are expected to allow "GAS," "FOOD", and "LODGING" businesses to use approved symbols and supplemental signage for alternative fuel services, primarily EV charging, CNG, and LP, mostly in rural areas.

Alternative Fuel Signage

With the only current opportunity for alternative fuel road signage coming through the Logo Signing Program, there are few such signs in the state.[13] Holmes Oil sells both E85 and B20 at its Cruizer's (Mobile) station located at 1914 Sedwick Road at Rt NC-55, and participates in the Logo Signing Program. The signs are located on both sides of I40 (east and westbound) at Exit 278 (Route 55 and Route 54). These are the only known alternative fuel related road signs currently in place in North Carolina.[14]

Figure 3. Supplemental biofuel signage along I-40, exit to Apex Route 55.

State-Specific Plans and Recommendations

- A written request by the NC Solar Center to NCDOT Secretary was submitted April 10, 2013 to change **19A NCAC 02B.0221 General Motorist Services Sign** rules to allow signing for alternative fuel services. A response was received recommending the Center work with appropriate DOT division on this issue.
- The NC Solar Center is working with NCDOT Signing and Delineation program on policy revisions that could accommodate alternative fuel signage for CNG, LPG and EVSE in General Service signs as a "Scarce Fuel" source.
- The NC Solar Center encouraged NCDOT to consider EVSE as an "amenity" if located at a FOOD or LODGING location at a participating logo signing program location. The Center is working with Advanced Energy and retail partners to request supplemental signage on Logo signs for any appropriate electric vehicle charging station (i.e. those co-located at hotels and restaurants which already have or would want to purchase highway Logo signs). As of June, 2014 the Gateway Centre Hotel Complex off of I95 in Rocky Mount has requested and been granted approval for supplemental signage for EVSE on logo sign.

[13] In June 2014 NCDOT indicated that they will be considering allowing General Service signage for "scarce fuels", to include CNG, LPG and EVSEs.
[14] At the time of report completion, one hotel complex in NC had requested supplemental EVSE signage for a LODGING sign that received preliminary approval from NCDOT.

Contact information

To participate in the Logo Signing Program, businesses must submit a written request to the NC Division Engineer responsible for the specific interchange where the sign will be located. The request must include the exit number and type of service. The Division Engineer will meet with eligible applicants to go over all the details and procedures associated with the program. At this point the Division Engineer will ask or applicant may request supplemental signing to indicate any alternative fuels that may be available at location.

NCDOT Signage contact: Ron King, State Signing and Delineation Engineer, ronking@ncdot.gov, (919)662-4335.

Alternative Fuel Implementation Team project contact: Anne Tazewell, Transportation Program Manager, NC Solar Center/NCSU, anne_tazewell@ncsu.edu, (919)513-7831.

Contact information for coordinators of the Logo and TODS programs can be found at this website: https://connect.ncdot.gov/resources/safety/Pages/Signing-and-Delineation.aspx [click on Division Logo and TODS Program Coordinators].

North Carolina's FHWA liaison: Brad Hibbs, 919-747-7006, 310 New Bern Avenue Suite 410, Raleigh NC 27601 (http://www.fhwa.dot.gov/ncdiv/staff.cfm)

South Carolina

Background

Most of the roadways in South Carolina (SC) are under state jurisdiction, with the SC Department of Transportation (SCDOT) in charge of more than 40,000 of the 60,000 miles of existing roads. On May 1, 2011 the SC Code of Laws authorized the SCDOT to adopt a state supplement to the federal MUTCD, which includes a policy for Specific Service Signing (Logo). General Service Signs are not used on controlled access facilities with the exception of Hospital, Rest Area, Tourist Information, and Welcome Center signage.[15,16]

One of the few exceptions to South Carolina's law banning advertising on the public right of way is the Logo program. SC regulations allow businesses that provide Gas, Food, Lodging, Camping, or Attraction services to display a Logo sign along designated sections of fully controlled access highways. Participating businesses pay for the signs posted under the Logo program. More information on Logo program is available at: http://www.scdot.org/getting/logoProgram.aspx.

If a local town or entity wishes to place a roadside sign that does not fall within the General Service or Logo sign programs (i.e. a sign for an electric vehicle charging station that is not located at a regular fuel/service station), then that entity can request a special permit from the SCDOT to install their sign along a SCDOT maintained roadway. There is no fee for submitting a permit request, but if the permit is approved the requesting entity will have to pay for the sign, sign post(s), and installation of the signage.

The SCDOT does not provide the signs or offer installation services – the entity requesting the sign bears the burden of cost and installation. South Carolina's Prison Industries program makes roadside signs, charging as little as $10/ft^2$ depending on the sign. Local municipalities often have installation crews that can install signs on existing posts for around $60. Total signage cost could be as little as $100-150 depending on size and location.

[15] SC Code of Law Section 56-5-920 Section 2I.01 General Service Signs
[16] http://www.scdot.org/doing/tecnicalPDFs/mutcdSupp/supplement_mutcd.pdf

Alternative Fuel Signage

As part of the Hydrogen Highway effort in 2009, there was an attempt to erect General Service signs along I-20 between existing stations in Aiken and Columbia. This effort was never realized, so instead the City of Columbia installed tourist-oriented signs within the city limits.

Figure 4. Roadside and station signage for Hydrogen fueling station in Columbia, SC.

State-Specific Plans and Recommendations

With so much of South Carolina's roadways under state jurisdiction, any effort to increase the number of alternative fuel station signs must start with fully engaging the SCDOT. The Palmetto State Clean Fuels Coalition (PSCFC), housed within a state entity, is in the best position to spearhead this effort.

- PSCFC will draft an alternative fuel station location list, and identify priority signage locations for the MUTCD standard 2I.01 signs on SCDOT-maintained roadways. PSCFC will also contact entities already participating in the Logo sign program that could request the addition of alternative fuel text.
- PSCFC will initiate signage requests with the SCDOT (Director of Traffic Engineering), which will be considered on a case-by-case basis.
- PSCFC will request that the SCDOT to use "FUEL" instead of "GAS" on Logo signage.
- PSCFC will provide guidance documents to publicly owned parking garages with EV Charging Stations to help them order MUTCD standard EV signs (for installation adjacent to blue 'P' Parking sign, and/or Public Parking roadside signs).
    - PSCFC will foster local government partnerships (even for locations along state-owned roads) before initiating MUTCD standard sign requests.

Contact Information

South Carolina's Alternative Fuels Implementation Team contact: Jennifer Taraskiewicz**,** Clean Cities Coordinator Palmetto State Clean Fuels Coalition jtraraskiewicz@energy.sc.gov, 803-737-8037

SCDOT: Tony Sheppard (Director of Traffic Engineering, (803)737-1462).

South Carolina's FHWA liaison: Dan Hinton, Daniel.Hinton@dot.gov, 803-253-3887 (direct line), 803-253-3885 (main line).

Tennessee

Background

The Tennessee Department of Transportation (TDOT) consistently wins awards for its innovative approach to transportation. Tennessee's Highway System includes the following:

- Interstate miles: 1,104
- State maintained highway miles: 13,877
- Total highway miles: 95,492

Logo signage in Tennessee is managed by TDOT, while General Service and Tourist-Oriented Direction sign programs are largely managed by local jurisdictions. This is because the requests for General Service and TODS are primarily for roads that are maintained by municipalities, counties, etc.

Alternative fuel availability can appear as supplemental signs under the Logo sign program. There are no font or color requirements for these supplemental signs – participating businesses can choose – but terminology approved by TDOT must be used (currently only "E85" and "B20" are approved).

Alternative Fuel Signage

The only alternative fuel station signs in Tennessee appear alongside interstate roads and are part of the Logo sign program. Biofuels station signage along these interstates is largely a result of involvement from TDOT's Alan Jones and Linda Tidwell, who after several years of coordination garnered approval for additional text at the bottom of Logo signs as well as supplemental blue biofuel signs to go on the main Logo program sign. The proposed purpose for the text and signs was to direct corridor travelers to E85 and B20 stations. Participating stations were required to put their logos on all 4 of the existing Logo signs (2 in each direction, 1 on the interstate and 1 on the exit ramp), and include either "E85" or "B20" at the bottom as supplemental text. For qualifying stations, TDOT also installed approved blue "Biofuel" signs to the top of each of the 4 Logo signs at that exit (see below).

Figure 5. Left: Logo sign on the interstate (no arrow), note that the Weigels logo has E85 as supplemental text. Right: Logo sign on the exit ramp (arrow included), note that the Zommerz sign has B20 and E85 as supplemental text.

Below is a list of stations known to have the biofuels text and blue supplemental biofuels signs (the total number of these signs is unknown):

- Zoomerz, 2306 Sullivan Gardens Pkwy, Kingsport, TN (B20 & E85)
- Zoomerz, 13425 W Andrew Johnson Hwy, Bulls Gap, TN (B20 & E85)
- Weigel's, 2409 Anderson Hwy, Clinton, TN (E85)
- Zoomerz, 935 N Kentucky St, Kingston, TN (B20 & E85)
- Thorntons, 243 Highway 109, Lebanon, TN (E85)

State-Specific Plan and Recommendations

- Convene a forum with TDOT staff to:
  - Revisit the outcomes of the biofuels corridor signage efforts
  - Identify and address obstacles to adding more alt fuel signage along Tennessee roads
  - Discuss adding natural gas, propane and electric vehicle charging signs to interstates and non-interstates

- Reach out to oil companies to persuade them to support station requests for the supplemental biofuels text and signage for their Logo signs.[17]
- Consider proposing state law requiring stations that advertise under the Logo sign program to include supplemental alternative fuel text and/or sign where applicable.

Contact Information

Tennessee AFIT project contact: Jonathan G. Overly, Director East Tennessee Clean Fuels Coalition jonathan@etcleanfuels.org 865-974-3625

Tennessee Department of Transportation (to inquire about the current biofuels signage opportunities): Linda Tidwell, Environmental Division, Environment and Planning Bureau, linda.tidwell@tn.gov; (615)253-2860; James K. Polk Building, Suite 900, 505 Deaderick Street, Nashville, TN 37243-0334.

TDOT Logo signage program rules and regulations, sign company contact information: http://www.tdot.state.tn.us/maintenance/LogoSignProgram.htm

Tennessee's FHWA liaison: Karen Brunelle, 615-781-5770, 640 Grassmere Park Road Suite 112, Nashville TN 37211-3568

Virginia

Background

Control over signage in highway right-of-ways in Virginia depends on the type and location of the road. Virginia Department of Transportation controls the right-of-ways for all Interstate, primary and secondary routes, with the following exceptions:

- Routes inside incorporated Cities or Towns with a population of 5,000 or less
- Secondary routes in Henrico County
- Secondary routes in Arlington County

Signs installed on routes outside of VDOT right of way would require approval from the appropriate municipality.

The Integrated Directional Signing Program (IDSP) is a fee based program, consisting of four categories:

- General Motorist Service Signage (GMSS)
  - Fee-based[18]
  - Information: http://www.virginiaspecial.interstatelogos.com/state/home.aspx
- Specific Travel Services (Logo) signage
  - More information: http://www.virginiadot.org/programs/sign-programs.asp
- Tourist-Oriented Directional Signs (TODS)
  - Information: http://www.virginialogos.com/DesktopDefault.aspx?tabid=23
- Special programs (i.e. trails, and signage for Watersheds and Scenic Rivers)

Diesel, LP Gas, CNG and E85 can be displayed under these programs as supplemental messages only. There is not currently a statewide program that allows for other alternative fuel services to be displayed on signs in VDOT-controlled roadsides, with a single exception. The New Kent Safety Rest Area, which has a Level 1

[17] In the past, some station owners wanted the biofuels annotation/signs, but the parent oil company prohibited it.

[18] In the past VDOT provided General Service signage for Hospitals at no cost, but found that providing the complimentary service to both public and privately owned hospitals to be cost prohibitive.

electric vehicle charging station, displays the FHWA-approved EV symbol sign on I-64. This charging station was the result of a cooperative agreement between Dominion Power and the VDOT Maintenance Division (VDOT is responsible for rest areas). Facilities not qualifying for signage under the GMSS, Logo, TODS, or SGS Programs cannot obtain signs at this time.

Alternative Fuel Signage

There is no central database of alternative fuel related signage in Virginia. Below are photos of the only alternative fuel station signage known to Virginia Clean Cities staff, which were both approved under the Logo program with supplemental messaging indicating the availability of alternative fuels.

Figure 6. E85 at Sheetz station, LP at a BP station in Toano, VA.

Figure 7. EVSE signage for stations located at rest area along I-64 driving west, New Kent VA.

State-Specific Plans and Recommendations

VDOT does not currently have a program solely for alternative fuel road signage at this time, other than what is currently allowed under the IDSP. The implementation of a new program would help facilitate more signage for these services.

- Virginia Clean Cities, working with interns and/or volunteers where appropriate, will:
  - Document additional alternative fuel stations in Virginia.
  - Document stations that have highway signs (visually or using Google streets).
  - Reach out to station owner to inquire about interest in alternative fuel signage.
  - Request that station owner call Virginia Logos (see below) to request supplemental messaging on their signs.

Contact Information

Virginia Logos (administers the IDSP for VDOT): Jason Newcomb, General Manager, 804-754-0970, (toll free phone number is 800-229-2809), main local number is 804-754-0970, http://www.virginialogos.com/DesktopDefault.aspx

VDOT IDSP web site: http://www.virginiadot.org/programs/sign-faqs.asp

State FHWA contact on MUTCD: Karen King, Safety Engineer, phone: 804-775-3342; email Karen.king@dot.gov .

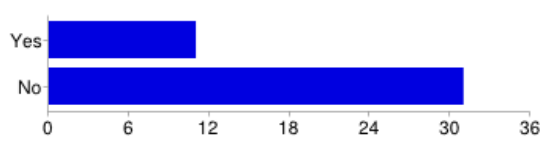
Appendix A – Survey Summary, Alternative Fuel Station Finder Mobile Applications

42 responses

Publish analytics

Summary

Do you currently use any mobile applications to locate/and /or track alternative fuel and electric vehicle charging stations?

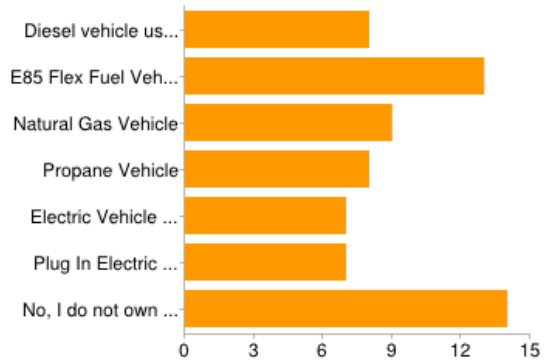


Yes	11	26%
No	31	74%

If you answered yes, which apps do you currently use?

CNG Now | Plug Share | CarStations, Recargo, Blink and ChargePoint network smartphone apps. | Blink, PlugShare, CNGNow Fuel Finder (plus some created Google maps) | CNG Now | cngprices altfuelprices | cngnow | plugshare | Recargo | CNG Now Fuel Finder App for the iPhone (also available for android) | PlugShare, ChargePoint, and Octane by WEX

Do you own or drive an alternative fuel vehicle at work?

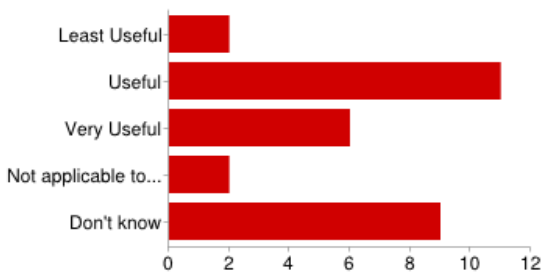


Diesel vehicle using biodiesel	8	12%
E85 Flex Fuel Vehicle	13	20%
Natural Gas Vehicle	9	14%
Propane Vehicle	8	12%
Electric Vehicle (dedicated no range extender ICE)	7	11%
Plug In Electric Vehicle- (hybrid & extended range)	7	11%
No, I do not own or drive an AFV at work	14	21%

[19]

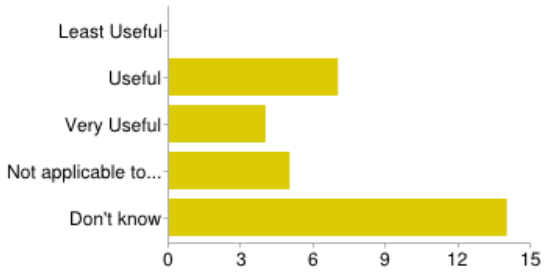
[19] Excluding non-AFV drivers from responses to question #1 ("Do you currently use any mobile applications…") increases the "Yes" response rate to 38% (11 out of 29).

US DOE Alternative Fuel Station Locator http://www.afdc.energy.gov/locator/stations/ ; http://apps.usa.gov/alternative-fuel-locator.shtml [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



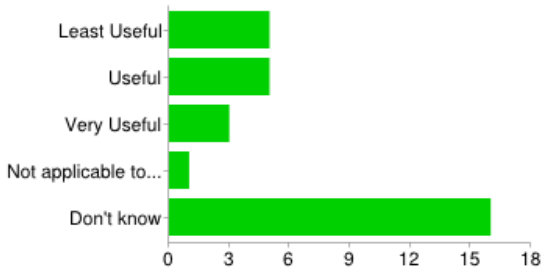
Least Useful	2	7%
Useful	11	37%
Very Useful	6	20%
Not applicable to type of AFV I drive	2	7%
Don't know	9	30%

Plug Share Plug in vehicle charging https://play.google.com/store/apps/details?id=com.xatori.Plugshare&hl=en [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



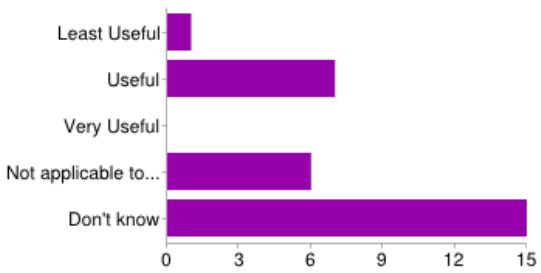
Least Useful	0	0%
Useful	7	23%
Very Useful	4	13%
Not applicable to type of AFV I drive	5	17%
Don't know	14	47%

Alt Fuel Prices and Filling Stations http://www.altfuelprices.com/ [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



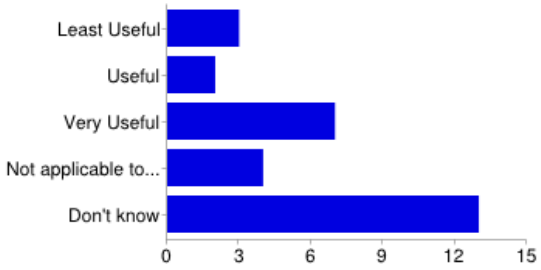
Least Useful	5	17%
Useful	5	17%
Very Useful	3	10%
Not applicable to type of AFV I drive	1	3%
Don't know	16	53%

FlexFinder (E85 stations) http://www.ethanolretailer.com/flex-fuel-station-finder [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



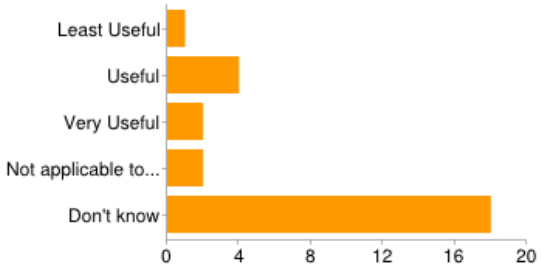
Least Useful	1	3%
Useful	7	24%
Very Useful	0	0%
Not applicable to type of AFV I drive	6	21%
Don't know	15	52%

CNGNOW Fuel Finder http://www.cngnow.com/stations/apps/details?id=com.cngnow.activity&hl=en [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



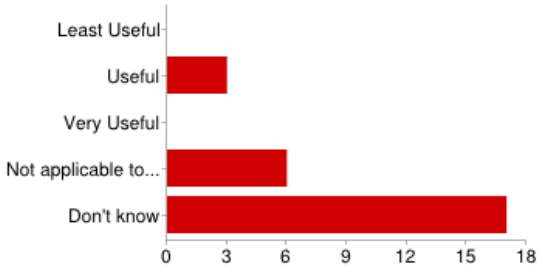
Least Useful	3	10%
Useful	2	7%
Very Useful	7	24%
Not applicable to type of AFV I drive	4	14%
Don't know	13	45%

Alternative Fuel Finder https://itunes.apple.com/us/app/alternative-fuel-finder/id527690974?mt=8 [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



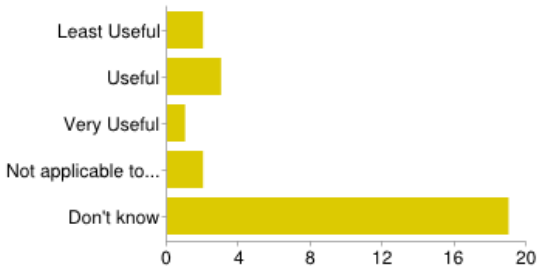
Least Useful	1	4%
Useful	4	15%
Very Useful	2	7%
Not applicable to type of AFV I drive	2	7%
Don't know	18	67%

Biodiesel NOW station finder http://app.biodiesel.org/ [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



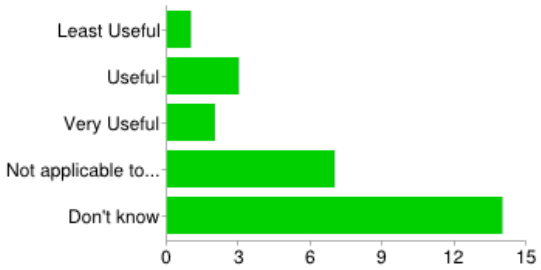
Least Useful	0	0%
Useful	3	12%
Very Useful	0	0%
Not applicable to type of AFV I drive	6	23%
Don't know	17	65%

KeenDriver (Green-Driver, paid version) alt fuel station locator http://www.keendriver.com/ [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



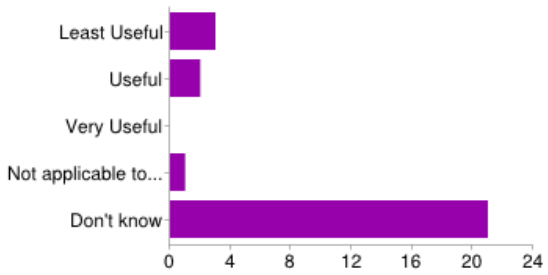
Least Useful	2	7%
Useful	3	11%
Very Useful	1	4%
Not applicable to type of AFV I drive	2	7%
Don't know	19	70%

Recargo EV station locator https://play.google.com/store/apps/details?id=com.recargo.recargo&hl=en [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



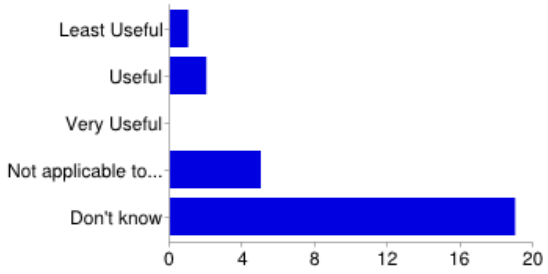
Least Useful	1	4%
Useful	3	11%
Very Useful	2	7%
Not applicable to type of AFV I drive	7	26%
Don't know	14	52%

DriveAlternatives https://play.google.com/store/apps/details?id=com.drivealternatives.drivealternatives&hl=en [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



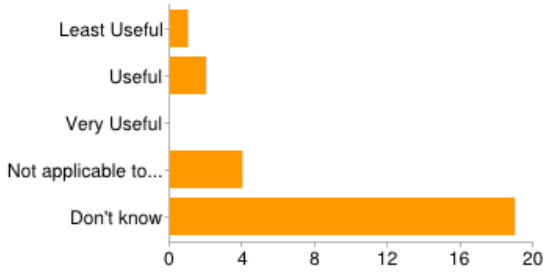
Least Useful	3	11%
Useful	2	7%
Very Useful	0	0%
Not applicable to type of AFV I drive	1	4%
Don't know	21	78%

Map Muse Propane http://mapmuse.com/interest/propane [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



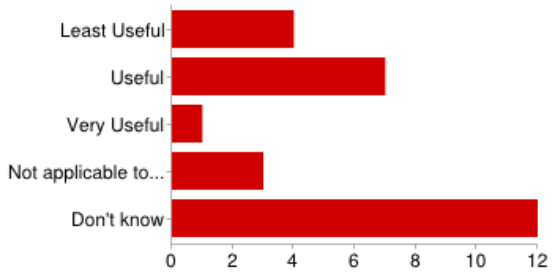
Least Useful	1	4%
Useful	2	7%
Very Useful	0	0%
Not applicable to type of AFV I drive	5	19%
Don't know	19	70%

Near Bio http://www.nearbio.com [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



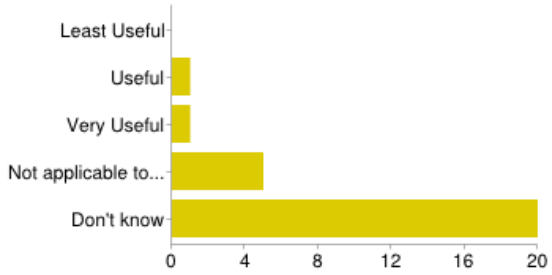
Least Useful	1	4%
Useful	2	8%
Very Useful	0	0%
Not applicable to type of AFV I drive	4	15%
Don't know	19	73%

CNG Prices http://www.cngprices.com/station_map.php [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



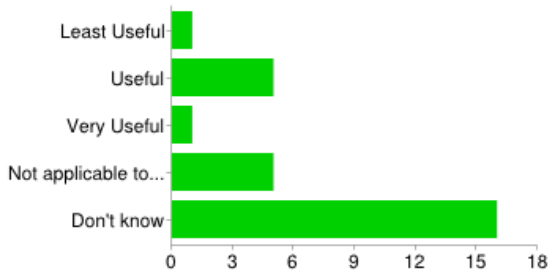
Least Useful	4	15%
Useful	7	26%
Very Useful	1	4%
Not applicable to type of AFV I drive	3	11%
Don't know	12	44%

Propane Refill Station Locator http://www.appszoom.com/android_applications/travel/propane-refill-station-locator_cyayr.html [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



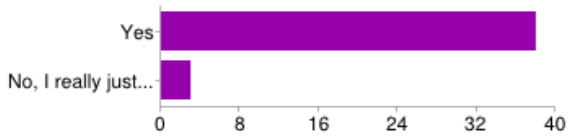
Least Useful	0	0%
Useful	1	4%
Very Useful	1	4%
Not applicable to type of AFV I drive	5	19%
Don't know	20	74%

E85 Prices http://e85prices.com/ [Which mobile applications or websites do you consider the best for locating alternative fuels: electric charging station, biodiesel, E85, natural gas and propane station]



Least Useful	1	4%
Useful	5	18%
Very Useful	1	4%
Not applicable to type of AFV I drive	5	18%
Don't know	16	57%

Do you think alternative fuel station signage is important to have on interstate and limited access roadways?



Yes	38	93%
No, I really just rely on mobile apps	3	7%

Add any alternative fuel mobile apps that you think are very useful that were not included previously in this survey

ChargePoint | I ask Siri | CarStations | Fast charing signs may be useful. | e85prices.com is a useful website

Number of daily responses

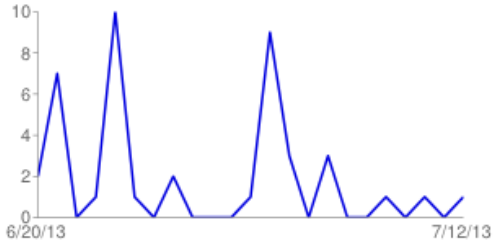


Figure 8. The last question, “Do you think alternative fuel state signage is important to have…”, is extremely telling. Despite the availability of a variety of alternative fuel station finder apps, it was nearly unanimous that highway road signage for these stations is important.