
EPA's Biofuels Efforts and E85

MSTRS Subcommittee Meeting

October 4, 2006

Sarah Dunham

Director, Transportation and Climate Division

EPA Office of Transportation and Air Quality

Introduction

- Why is EPA interested in biofuels?
 - Many biofuels have significant environmental benefits
 - Reductions in certain criteria and toxics emissions
 - Reductions in greenhouse gas emissions
 - Potential for even greater benefits as cellulosic ethanol and other technologies are developed
 - Energy security
 - Economic opportunities
 - EPA is working on a number of biofuels efforts:
 1. Regulatory activities
 2. Analytical & outreach efforts
 3. Voluntary partnerships
-

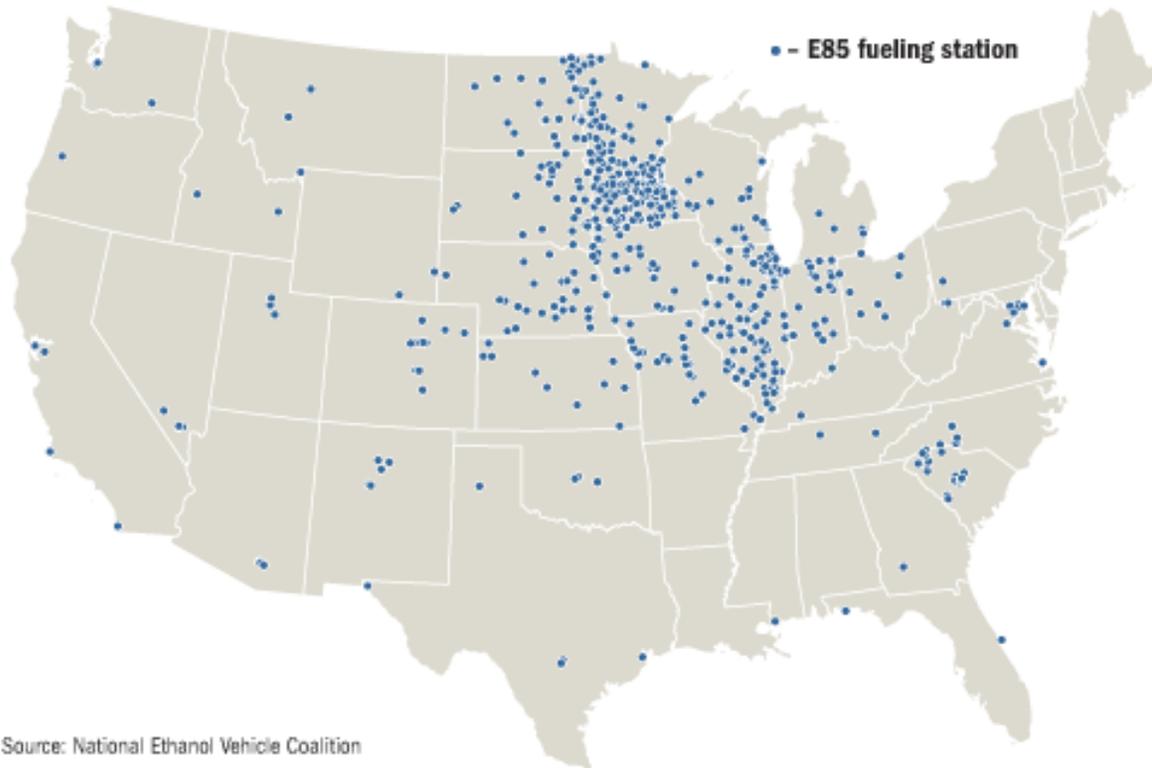
Background on E85

- E85 is a blend of 85% renewable ethanol and 15% gasoline
 - Vehicles must be “flexible fuel” capable to use E85
 - Over 5 million flex-fueled vehicles (FFVs) are currently on the road
 - **But, prior to this year, only about 1% of FFVs were fueled with E85...**
 - Limited E85 fueling over the past several years can be attributed to:
 - Lack of awareness
 - Many FFV drivers are not aware that their vehicle can run on E85
 - Lack of awareness among the general public regarding E85’s environmental and energy security benefits
 - Lack of infrastructure
 - Only 800 out of approximately 170,000 gas stations in the US offer E85
 - Most of these are independent stations concentrated in the Midwest
 - Lack of an economic incentive
 - Because of E85’s reduced fuel economy, it must be priced significantly lower than gasoline (15-25% to break even)
-

Map of E85 Stations

Fueling Up With Ethanol

More than 600 gasoline stations in the U.S. now also sell the ethanol mix known as E85. Most are concentrated in the Midwest.



FFVs and E85—A Growth Industry

- In July, the three major domestic automakers sent a letter to Congress promising to double their annual production of alternative-fuel vehicles to 2 million by 2010.
 - The number of E85 pumps is also growing
 - Upwards of 200 new pumps built in the last year
 - Several states have their own E85 incentives, including rebates, sales tax breaks, etc
 - The # of E85 pumps in IL alone grew from 18-123 in one year
 - A majority of the recent energy bills introduced in Congress include E85/FFV mandates and/or incentives
 - OTAQ is receiving growing inquiries from many stakeholders about E85 fuel quality, FFV technology, fueling pumps, etc
-

1. EPA's Regulatory Activities

EPA has several regulatory responsibilities regarding biofuels:

- Renewable Fuel Standard (RFS)
 - The RFS, part of the Energy Policy Act of 2005, requires EPA to develop a program to double renewable fuel use by 2012
 - The NPRM was recently announced, and EPA is now working on the final rule
 - Within this process, we are also analyzing the impacts of increased renewable fuel use
 - Fuel Quality
 - Through guidance and fuel registration, EPA ensures that biofuels do not adversely affect emissions performance
-

E85 Fuel Specification

- EPA currently has no fuel specs for E85
 - How is E85 regulated in our fuels programs?
 - E85 is not covered under EPA's fuel and fuel additive registration program (CAA 211(a)) (Only gasoline and diesel fuel have been designated by the Administrator under the registration program.)
 - E85 as a finished blend is not gasoline, and not subject to our gasoline regulations (40 CFR Parts 79 & 80).
 - E85 as a finished blend is subject to "sub-sim"
 - CAA 211(f) requires fuel manufacturers to produce fuels that are substantially similar ("sub-sim") to fuels used for vehicle certification
 - Since we're anticipating expanded E85 use, it's appropriate to ensure E85 fuel quality
 - We're considering ways to clarify E85 fuel requirements
 - Auto manufacturers very supportive of E85 fuel specs
-

EPA's Regulatory Activities (cont')

- Alternative Fuel Vehicle Certification
 - Alt fuel vehicles, including Flex Fuel Vehicles (FFVs), are certified for emissions compliance
 - E85 and biodiesel conversion kits are also currently being considered for certification

 - Resolving regulatory issues
 - e.g. Stage II Vapor Recovery
 - The CAA requires Stage II Vapor Recovery on fuel pumps located in ozone non-attainment areas
 - However, there are no certified E85 pumps
 - Currently evaluating whether Stage II vapor recovery is needed for E85 pumps
-

2. EPA's Analytical & Public Information Efforts

- Lifecycle modeling
 - Public education
 - “Sharing the environmental story of biofuels”
 - OTAQ Alternative Fuels webpage
 - Updating E85 and biodiesel fact sheets
 - Emissions Analysis
-

E85 Emissions Analysis

- We've investigated existing data to better understand the potential benefits of E85
 - Assessed per-vehicle emissions impacts of gasoline (E0) vs. E85
 - Auto manufacturers (GM, Ford, DCX) have been very cooperative and supplied limited data
 - We've identified a few regulatory gaps & areas for further data collection
-

Emissions Impacts of E85 (vs E0)

■ **Criteria emissions**

- Generally similar to gasoline emissions
- But, significant reductions in carbon monoxide
- Preliminary data indicates NO_x emissions from E85 may be lower than E0 or E10

■ **Toxics**

- Significant reductions in benzene and other harmful air toxics
 - Acetaldehyde emissions increase
-

Emissions Impacts of E85 (cont)

- **Greenhouse Gases (GHGs)**

- E85 made from corn: 15-20% reductions compared to gasoline
- E85 made from cellulose: About 70% reduction compared to gasoline

- **Areas planned for further study**

- Cold start NMOG emissions
 - Emissions performance under different test cycles
 - E85-E10 comparison
 - Direct and secondary PM
-

Fuel Economy

- Fuel economy on E85 is typically ~25% lower than on gasoline
 - Due to lower energy density of E85
 - ~29% lower than gasoline
 - 82,000 Btu/gal (E85) vs. 115,000 Btu/gal (Gasoline)
 - So consumers using E85 will experience decreased driving range between fill-ups
-

3. EPA's Voluntary Partnerships

- SmartWay Transport Partnership—
 - Over 400 fleet partners
 - Many interested in selling biofuels, and/or using them in their fleets— tremendous demand source for biofuels
 - Biodiesel is already a verified strategy for fleets' SmartWay commitments, and we are looking at including E85
 - National Clean Diesel Campaign
 - Regional public-private partnerships focused on reducing emissions from the transportation sector
 - West Coast Clean Diesel Collaborative, Blue Skyways Collaborative, Southeast Diesel Collaborative, etc
 - These collaboratives are working to bring about greater access to biodiesel and E85 along key transportation corridors.
-