

Report Out II: Infrastructure (Vehicle and Fuel Use Focus)

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A Scenario for Supplying 30% of 2004
Motor Gasoline with Biofuels by 2030

Biomass

Infrastructure Fuels

- **Ethanol E85 (focus)**
- Bio-diesel/green diesel
- Bio-butanol

Infrastructure Issue Areas

- Vehicle Availability
- Vehicle Emissions
- Distribution / Fuel Availability / Use
- Fuel Quality
- Education / Communication

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Infrastructure: Barriers and Actions

Vehicle Availability

- » Extension of CAFE credits or appropriate incentives
- » Critical mass of FFVs
- » Vehicles with engines optimized for fuel characteristics
- Extend CAFE credits through 2030
 - » Near-term 2011 – 2013
 - » Long-term address breath of portfolio (create dilution?)
- Fully fund FFV tax incentives as define in the Energy Bill
- Define critical milestones for FFV production (numbers)
- Phase out CAFE credit and define alternative incentives
- Research on low cost options to take better advantage of ethanol / E85 octane

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Infrastructure: Barriers and Actions

Vehicle Emissions

- » Evaporative emissions
- » Tailpipe emissions to near zero level
- » PZEV/AT-PZEV certification for FFVs
- Develop bio-fuel appropriate emission standards
 - » Adjust evaporative emission protocol to test FFVs on E-0 and E-85 only
 - » Treat ethanol like methane and discount from tailpipe emissions
 - » Review 50F vs. 75F multipliers

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Infrastructure: Barriers and Actions

Distribution/Availability/Use

- » Critical mass of fueling stations
- » Fuel price at pump
- » Maximize E-10 first
- Extend infrastructure tax credit through 2030 (ACRS)
- Amnesty for violations discovered as a result of tank retro
- Adjust fuel tax structure to be Btu based
- Implement public policy to expand E-10 over time
- Explore carbon tax approaches
 - » All carbon vs. fossil carbon
 - » Fossil carbon vs. petroleum carbon
- Explore counter cyclical incentives (relative to oil price) or substantial increase to blending tax credit
- Drive toward 70% price ratio E-85 to regular gasoline

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Infrastructure: Barriers and Actions

Fuel Quality

- » Refine Ethnaol/E-85 specifications (ASTM)
- » Vehicle mis-fueling with wrong or illegal ethanol content
- » Impurities
- R&D for quick field detection of impurities
- Enforce “Substantially Similar” rule in Clean air act relative to ethanol concentration
- Support SAE effort to refine pump nozzle to vehicle filler neck interface on FFVs.
- Drive states to adopt ASTM fuel specification for ethanol/E85 as law & enforce

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Infrastructure: Ethanol Barriers and Actions

Education/Communication

- » Lack of consumer awareness
- » Lack of law maker (Congress) sustain interest
- National campaign in support of bio-fuels
 - » Homegrown / Energy Security / Balance of Trade / Imported Oil
 - » Greenhouse Gas / CO2 / Energy Density / Energy Efficiency
 - » Bio-fuel feed stream education (Starch, Cellulosic . . .)
 - » Guidance on use of E85 and E10
- Better marketing of FFVs
- D.O.E. sponsored “Speakers Bureau” for grass roots communication (by region)
- Use “Clean-Cities” approach for a similar “Bio-Cities” effort
- Use LCA (Well-to-Wheels) approach to create “Energy Star” rating for fuels.

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Infrastructure: Stake Holders

- Consumers
- Federal Government
 - » DOE
 - » DOT (NHTSA, Pipeline . . .)
 - » EPA
 - » USDA
 - » NSF
 - » Congress
- State Government
- Municipalities
- Academia
- Industry (Bio-refining, Petroleum, Auto)