Consumer Purchases of Alternative Fuels

AM Breakout Session
Small Scale Experiments / Phase 1

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Outline

Introductory material and context

Discussion summary: session F1

Discussion summary: session F2

More liquid fuel options are available for consumers for the first time in history…so what?

	MARKET SIZE	ALTERNATIVE FUEL BLEND OPTIONS	
GASOLINE	**137 Billion Gallons/ Year**	**E10:** 90% of gasoline sold in the U.S. contains 10% ethanol (13 billion gallons blended into gasoline in 2010); adoption is "invisible" **E15:** Approved for use in cars 2001 and newer, but adoption is "overt"	**E85:** App. 100 million gallons sold in 2010, at 2500 stations (out of 105,000, or 0.02%). Energy density is 1/3 less than gasoline, but price per gallon gasoline equivalent is increasingly competitive with gasoline. Adoption is "overt".
DIESEL	**58 Billion Gallons/ Year**	**B20:** Most of the 309 million gallons of biodiesel produced in 2010 was sold as B20 at 620 stations; B20 can be used in most diesel engines without any modifications; fuel quality standards trailed early adoption	**B100:** Neat biodiesel can be used in most engines on the road today equipped with biodiesel compatible materials; issues regarding cold temp gelling and storage significantly constrain the market opportunity

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Imagine having this choice at the pump

Purchase: $??

Gallons: 10

GAS*
$ 3.37/ga
Push to Start

E85*
$ 4.44/ga
Push to Start

- What % of people would default to the cheaper choice?

- Why would someone choose to buy the more expensive fuel? Domestic support? Carbon footprint?

*Nationwide average price in gasoline gallon equivalents from DOE Clean Cities Alternative Fuel Report Jan 2012

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Alternative fuels in the U.S. today

- How much demand is there, without infrastructure?
- How does disaggregated (consumer) demand compare with aggregated (fleet) demand?
- Is the product more important than the who sells it?

Objectives and output of this session

- Brainstorm Phase 1 research projects that:

  - ► Propose a creative modification to the fuel purchasing experience
  - ► Create hardware/software to deliver the modification
  - ► Measure the efficacy of the modification

- Define and begin to address the tough questions
  - ► How well do we know the challenges?
    - — Independent gas stations
  - ► How can we work with the existing infrastructure?
  - ► How long does it take to build the relationships needed for a physical test at a gas station?
  - ► Will this have an impact?

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Key Project Attributes

- ## Theory-Based
  - ▸ Does the project build on existing findings in transportation behavior or other areas of behavioral science?

- ## Measurable
  - ▸ Can the project demonstrate a change in vehicle adoption (not just purchase intent)?

- ## Rigorous Protocol
  - ▸ Does the project utilize sound techniques for intervention and data collect ion?

- ## Scalable
  - ▸ Are the techniques extensible to large populations?

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New ideas to reduce barriers to alternative fuel adoption

Concept	Why now?
Community/civic involvements/incentives (challenge)	Broadband/mobile computing, metrics better
Change measurement to $/mi or mi/$	More useful metric and ability to calculate and present it real time
IT approach, mobile interface (geography/selection bias)	Generational change, AFV availability
Increase entertainment value of fuel purchases	Increased awareness of fuel impacts, more relevant
Virulence of ideas/apps/videos/social networking	Attitudinal change toward perceptions of fuel
Include domestic/local content—does it matter?	
Identify the specific metrics relevant to communities	Ability to obtain and analyze macro-level data

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What could a Phase 1 project look like?

- Utilizing cell phones as a data gathering tool at point of sale

- Testing various metrics for prices ($/mi vs $/gal)

- Evaluating community challenges and metrics

- Base studies in a location that has existing infrastructure for alternative fuel distribution

- Testing responsiveness to various metrics (local impact, environmental impact, peer responses)

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New ideas to reduce barriers to alternative fuel adoption

Testable Concepts for Phase I
Buy miles instead of fuels; buy subscription/yr
Fuel labeling; Framing effects for visual advertising
Metrics that accurately capture "performance" and "meaningfulness" to consumers (connection between fuel and car)
New fuel deliveries and mechanisms; Convenience
Direct feedback, onsite from attendants
Reward program & incentives
Shareholder program for infrastructure development & ownership (voluntary $0.01-0.02/gal)
Architectural design of stations
Randomized fuel dispensing/benefit of trying it out
Capitalizing on what impacts customer decisions/behavioral levers; what are we trying to do on the "moral" side?
Social proofing and norms; IT applications

Experiment Setup

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Experimental setups

- Station design

- Information monitoring and impactfulness

- Scale and data requirements, analytics

- Fuel price structure and purchasing; including, fuel delivery

- Infrastructure ownership

- Promotion of interdisciplinary partners and retailers

- Point of intervention (ex. Kids)