

Consumer Incentives for H2: Lessons from AFVs, EVs, and hybrids



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A level playing field is one end-state

- A level playing field may or may not be necessary, and in any event is an outcome, not an input
 - We've spent the past 100 years building a playing field specialized and adapted to petroleum based-fuels
- We start a transition by tilting the playing field in favor of the new thing
- Two ways to tilt the field:
 - Exploit inherent advantages of the new thing
 - Incentives to overcome disadvantages

Do H2 and fuel cells have advantages?

- A new form of mobility
 - A transition is more likely if the new thing gives us something we all want
- Integration of three of the major socio-technological systems built during the 20th Century
 - Mobility
 - Communications
 - Energy, and specifically, electricity
- Mobile Electricity; Hybrid Activity Locales; Integrated Information, Mobility, and Electricity Platforms

**What will you do—
when you can do anything, anywhere, anytime?**



Winogrand, 1964

The advantage of non-incremental change

- Some consumers are drawn to non-incremental change
- Early hybrid buyers value their vehicles out of all proportion to gasoline cost savings
- Early EV lessees valued their EVs despite “limits”
- Non-incremental improvements in emissions and fuel economy serve as badges and symbols of change
 - Hybrid buyers aren't buying lower fuel cost, they're buying a piece of the future

Incentives

- Incentives can help the shift, but what have we learned from past incentives offered for AFV/EVs?
- Since none of these entered the market successfully, did we provide the wrong incentives? Or, did we offer right incentives, just not enough of them?
- Can we design a set of complementary incentives, offered in the right amount, to the right people, at the right time?

Overall structure to shift playing field

National conversation on why a transition to hydrogen
Air quality, climate change, geopolitics of oil...

Initiate, support, and sustain networks around initial customers

System of complementary place-based, diffuse, and person-based incentives

1. The most important incentive...

- ...a reason to care.
- Initiate and sustain a national conversation about why a transition to hydrogen matters
 - Local air quality
 - Climate change
 - Geo-politics of oil
 - ...

2. Nurture initial customers

- Marketing creates only (initial) awareness...
- Sustained markets are propelled more by interpersonal networks
- So, find a way to create, foster, and sustain networks built around the first customers:
 - Insure first H2 FCV customers have a good experience
 - Help them act as ambassadors

3. Systems of complementary incentives

- Two complementary types of incentives:
 - place-based
 - person-based
- General and specific.
- Early and later?

Place-based incentives

- *Use incentives* are not targeted at a specific person but are more generally available to anyone who buys the new thing.
 - Can create more general awareness among a larger population, and can be linked to commitment to the new fuel.
- Refueling sites, parking and HOV lane privileges
 - CNG in Canada, New Zealand, and California
 - Neighborhood EVs

Diffuse incentives, e.g., fuel prices

- Fuel prices are a special example of a more general, diffuse incentive that are typically not place-based
 - Price differentials
 - Gasoline price floors
 - Alternative fuel price ceilings
- Extremely influential in several instances
 - Diesel passenger cars in the US
 - CNG in Canada and New Zealand
 - Less influential with CNG in California because of another strong place-based incentive: HOV lane access.

Person-based incentives

- Most common is probably financial incentives aimed at vehicle purchase.
- Financial incentives are targeted at a specific person, at a specific (and usually late) point in their purchase process.
 - Difficult to sustain expenditure over time
 - Often inefficient because they are aimed at the wrong people
 - Preferred by automobile manufacturers--and that is part of the problem
 - Vehicle purchase incentives have become a long-term (permanent?) feature of the market for conventional vehicles

Research agenda to support incentives

- Assess novel mobility and lifestyle values created by H2 FCVs. Which values are unique to H2FCVs? Which can be provided by improved gasoline ICEVs?
- Listen to the national conversation.
 - What are citizen/consumers saying? What are their questions, ideas, hopes, and fears about hydrogen, fuel cells, and new mobility values? Design messages, media, and networks to address these.
- Explicitly evaluate outreach efforts, e.g., developing and sustaining opinion leaders and their networks
 - What information is passing through the network, what effect is this information having, how effective is this network?

Research agenda to support incentives

- Later, monitor effectiveness of place-based incentives.
 - Are their clues to where the next place should be?
- Later still, estimate financial incentives; monitor effectiveness.
- Evaluate complementary relationship between place-based and person-based incentives; adjust allocation of resources over time.