

Institute for Policy Integrity

new york university school of law

October 29, 2010

VIA ELECTRONIC SUBMISSION

Environmental Protection Agency
Attn: Tad Wyso, Office of Transportation and Air Quality

Subject: Comments on the Notice of Intent to Conduct a Joint Rulemaking on 2017 and Later Model Year Light Duty Vehicle GHG Emissions and CAFE Standards, 75 Fed. Reg. 62,739 (Oct. 13, 2010), Docket No. EPA-HQ-OAR-0799

In their first notice of intent to propose new fuel economy standards for light-duty vehicles Model Year 2017 and later, EPA and NHTSA ask for comments on their research plan for the coming months and raise crucial questions, such as why the private market does not currently provide for more fuel-efficient vehicles and whether there are any “unidentified additional costs” of fuel-efficient technologies.¹

The Institute for Policy Integrity will continue researching these issues and plans to provide more detailed commentary at future stages in this regulatory proceeding. This first round of comments highlights the importance of understanding the energy efficiency paradox, the positional goods effect, and the bandwagon effect in evaluating consumer choices in the automobile market. The agencies should investigate these phenomena—both theoretically and empirically—as part of their research agenda.

The Institute for Policy Integrity at New York University School of Law (“Policy Integrity”) is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy.

The Potential Lost Consumer Welfare

Manufacturers will respond to new fuel economy standards in three ways: (1) adding fuel-efficient technologies, thereby increasing vehicle prices; (2) changing vehicle design (particularly size and power) to increase fuel efficiency; and (3) raising prices of fuel-inefficient models.² As a result, consumers can expect either increased vehicle purchase prices or different vehicle design features (or some combination thereof). In the former case, consumers could experience lost welfare if the fuel savings and other private benefits from greater fuel efficiency do not fully compensate them for the increased purchase price.³ In the latter case, consumers could experience lost welfare if they do

¹ Notice of Intent to Conduct a Joint Rulemaking on 2017 and Later Model Year Light Duty Vehicle GHG Emissions and CAFE Standards, 75 Fed. Reg. 62,739, 62,746 (Oct. 13, 2010).

² The agencies mostly focus their cost estimates on the first compliance strategy, but others do exist. See Christopher R. Knittel, *Automobiles on Steroids: Product Attribute Trade-Offs and Technological Progress in the Automobile Sector* (U.C. Davis Inst. of Transportation Studies UCD-ITS-RR-09-16, 2009).

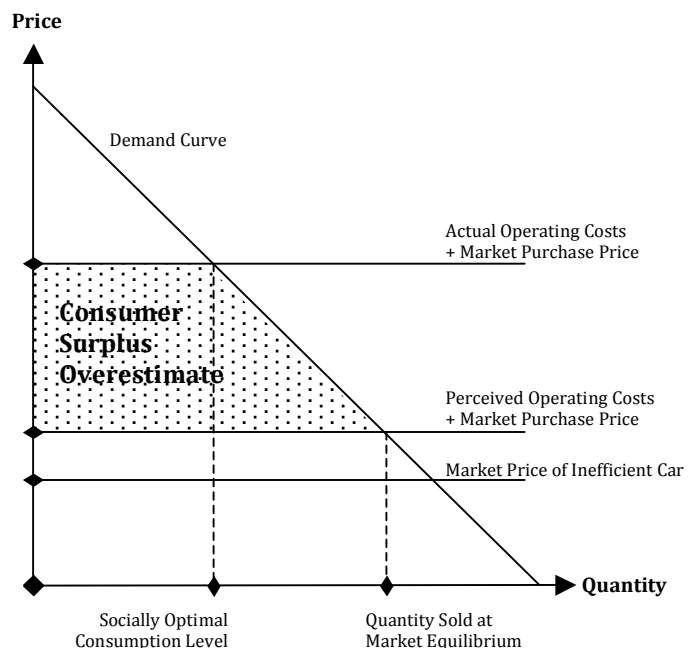
³ Of course, if consumers are fully compensated (and we expect they likely are), there should be no deadweight loss. Also, over time, the effect of new technologies on purchase price should be limited. See M.E. Porter & C.V.D. Linde, *Toward a New Conception of the Environment-Competitiveness Relationship*, 9 J. OF ECON. PERSPECTIVES 97 (1995); Daniel Sperling et

not value the new fuel efficiency as highly as they value the design features that have been sacrificed. These comments will address three economic concepts that will affect the measurement of consumer valuations: the Energy Efficiency Paradox, the Positional Goods Effect, and the Bandwagon Effect. As a result of such effects, any lost consumer surplus should be much smaller and more temporary than classic economic theory might predict, and considerable net private benefits will exist.

The Energy Efficiency Paradox

All other things equal, fully informed and perfectly rational consumers should be indifferent between a \$1 increase in vehicle purchase price and a \$1 savings in net present value of fuel costs. Yet a growing body of evidence suggests that consumers under-weigh costs that are less salient or accrue in the future, such as shipping and handles charges, management fees, sales tax, electricity, and fuel.⁴ One recent study using a novel design and conservative assumptions found a significant average undervaluation of vehicle operating costs: consumers were willing to pay only 25 cents extra to reduce the net present value of expected gas costs by \$1.⁵

This discrepancy—called the Energy Efficiency Paradox—can be depicted graphically. At a car’s market price, some consumers will not buy, and others would actually be willing to pay more. The area between the demand curve and the market price—the “consumer surplus”—defines the value consumers attach to a good above its market price. Consumers will buy a car up the point where the purchase price plus the perceived operating costs equals their willingness to pay. However, if *actual* operating costs are much higher than *perceived* operating costs, consumers will buy more of this particular car model than they rationally should. Moreover, economic studies that look only at consumers’ choices would overestimate consumer surplus and would therefore overestimate the lost consumer welfare from restricting the consumers’ ability to select that particular model.



Explanations for the Energy Efficiency Paradox will inform the appropriate regulatory response. NHTSA at one time raised the possibility that no paradox exists: rather, consumers might be making a rational choice given uncertainty about future fuel prices and their vehicle’s expected lifetime and usage.⁶ Consumers might compare the known, irreversible, upfront purchase price

al., *Analysis of Auto Industry and Consumer Response to Regulations and Technological Change* (U.C. Davis Inst. of Transportation Studies UCD-ITS-RR-04-17, 2004).

⁴ See Hunt Allcott & Nathan Wozny, *Gasoline Prices, Fuel Economy, and the Energy Paradox*, Nov. 4, 2009, available at <http://web.mit.edu/allcott/www/papers.html> (reviewing the relevant literature).

⁵ *Id.* at 5.

⁶ Proposed Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 74 Fed. Reg. 49,453, 49,724 (proposed Sep. 28, 2009) (to be codified at 40 C.F.R. pts. 86, 531, 533, 537-38, and 600).

against an unknowable future stream of fuel savings, and choose to minimize the former. Regulations restricting such a choice would reduce consumer welfare. The current empirical evidence for such an explanation seems mixed at best:⁷ The agencies should consider whether the evidence is sufficient to warrant adjusting their estimate of the Energy Efficiency Paradox, but overall support does not seem to justify a conclusion that no paradox exists.

Another possible explanation is that consumers lack the necessary information to make a rational choice, do not fully appreciate the information presented, or are unable to translate information on fuel efficiency into expected fuel savings. This almost certainly is part of the problem, and the agencies should continue their efforts to improve the labeling and information available to consumers, especially in light of recent research demonstrating how mere differences in the presentation of numbers can alter consumer valuations.⁸

But even if consumers had full information, the Energy Efficiency Paradox might persist if consumers apply a high discount rate to operating costs or are especially averse to short-term loss. In such a case, there is a legitimate role for government regulation to encourage consumers to consider the long-term costs of car ownership. And, as explored more fully in the next section, government regulation may be necessary to correct market failures that lead consumers to make sub-optimal choices about fuel efficiency.

The Positional Goods Effect

A “positional good” is something whose value depends strongly on how it compares with the things owned by others.⁹ Smith might be relatively happy with her house’s size if it matches the neighborhood’s average size, but she might value the same house less if a mansion goes up next door: housing size is positional. By comparison, Smith might not care how many vacation days her neighbors have so long as she gets the amount she wants: vacation days are non-positional.

Positionality and status matter for reasons that go beyond psychology, biological hardwiring, or envy—although those factors should not be ignored.¹⁰ Status can be “instrumental,” in that higher status itself can create better consumption opportunities and access to better employment opportunities.¹¹ “Conspicuous consumption” of positional goods thus becomes a signal for status:

When an individual’s ability level cannot be observed directly, such observable components of his consumption bundle constitute a signal to others about his total income level, and on average, therefore, about his level of ability....[I]mperfect information about ability might create incentives for people to rearrange consumption patterns to favor observable goods.¹²

⁷ *Id.* (citing theory and evidence both for and against this proposition).

⁸ See Christopher K. Hsee et al., *Specification Seeking: How Product Specifications Influence Consumer Preference*, 35 J. OF CONSUMER RES. (2009) (reporting, for example, that people are willing to pay more to get the same large pizza instead of a small pizza if square inches are given (180 versus 100) compared to if the diameter is given (13.75 versus 11.25)).

⁹ Robert H. Frank, *The Demand for Unobservable and Other Nonpositional Goods*, 75 AM. ECON. REV. 101, 101 (1985).

¹⁰ Envy certainly may be a factor, and status may be an end into itself. The case for biological and psychological hardwiring is also strong: natural selection rewards those who compete for higher status that carries better or more mating opportunities, as well as those who compete for status for their offspring, to ensure success of their progeny.

¹¹ Ed Hopkins & Tatiana Kornienko, *Running to Keep in the Same Place: Consumer Choice as a Game of Status*, 94 AM. ECON. REV. 1085, 1087 (2004) (noting also that quality marriage opportunities might depend on status).

¹² Frank, *supra* note 9, at 107. Consumption patterns might vary depending on the relevant population in the status competition. People might compete among friends, neighbors, and coworkers; within their socio-economic class; with higher classes; or on a society-wide basis. See Fredrik Carlsson et al., *Do You Enjoy Having More than Others? Survey Evidence of Positional Goods*, 74 ECONOMICA 586, 590 (2007). If a particular population has more reliable, independent information on abilities or income, consumption patterns for observable goods might shift. Frank, *supra* note 9, at 108.

In other words, theory predicts that more visible goods will be more positional, and that people will over-consume visible goods. Visibility depends not necessarily on physical visibility, but on whether “society has direct means to correctly assess the expenditure involved.”¹³

According to a recent U.S. survey on the visibility of 31 expenditure categories (from food to mobile phones), new or used motor vehicle purchases was the second most visible expenditure; related expenditures on gasoline/diesel, vehicle maintenance, and insurance were all substantially less visible.¹⁴ Surveys also consistently confirm that cars are highly positional goods, that people prefer a relative increase in a car’s value to an absolute increase,¹⁵ and that the more visible features of cars are more positional.¹⁶ Financial savings, in contrast, are typically considered non-positional.¹⁷

The more observable prestige features of vehicles include newness, brand, size, design, and power. While all these traits have functional value (such as capacity, safety, and performance),¹⁸ they also all have relative value: consumers value power not just for speed but for the status signal and for the ability to out-accelerate others at a traffic light; consumers do not necessarily want a *big* car, but they do want a *bigger* car.¹⁹ As Bob Lutz, Vice Chairman of General Motors, has stated, “aspirational aspects overwhelm the functional differences” when customers choose cars.²⁰ Importantly, many vehicle prestige features—especially larger size and increased performance—reduce fuel efficiency.²¹ And given the low visibility of gasoline expenditures and of financial savings, fuel efficiency itself is currently a relatively non-positional good.

¹³ Ori Heffetz, *A Test of Conspicuous Consumption: Visibility and Income Elasticities* 9 (2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1004543.

¹⁴ *Id.* at 13, 17, 34 (vehicle purchase had a visibility index of 0.73, second only to tobacco products (0.76); gasoline/diesel had a visibility index of 0.39).

¹⁵ Specifically, a majority of people surveyed would prefer a world in which their car is superior to other people’s but less valuable overall, versus a world in which their car has more absolute value but is inferior to the societal average. *See, e.g.*, Carlsson et al., *supra* note 12, at 588, 593 (reporting results of a Swedish survey); Francisco Alpizar et al., *How Much Do We Care About Absolute Versus Relative Income and Consumption?*, 56 J. OF ECON. BEHAVIOR & ORG. 405, 412 (2005) (reporting results of Costa Rican survey). Though some such surveys were conducted in other countries, if anything positionality for cars could be stronger in the United States, given the American affinity for cars and the income distribution. *See* Reid R. Heffner et al., *Effects of Vehicle Image in Gasoline-Hybrid Electric Vehicles* 2 (U.C. Davis Inst. of Transportation Studies UCD-ITS-RR-05-08, 2005) (“In the words of automobile psychologist G. Clotaire Rapaille, Americans are in ‘a permanent search of an identity’ and ‘cars are very key...[they are] maybe the best way for Americans to express themselves.’”); Hopkins & Kornienko, *supra* note 11 (noting that positional effects increase as society’s income increases, because the portion of income spent on conspicuous consumption increases). On the other hand, cars are often more a necessity and less a luxury in the United States than in other countries. *See* Mark Grinblatt et al., *Interpersonal Effects in Consumption: Evidence from the Automobile Purchases of Neighbors* (Yale ICF Working Paper No. 04-10, 2004).

¹⁶ Carlsson et al., *supra* note 12, at 588, 593 (finding support for hypothesis that “visible goods and their characteristics, such as the value of cars, are more positional than less visible goods and their characteristics, such as car safety.”).

¹⁷ *See, e.g.* Omer Moav & Zvika Neeman, *Savings Rates and Poverty: The Role of Conspicuous Consumption and Human Capital* (2009), available at http://www.hecer.fi/Seminars/Papers/moav_paper.pdf.

¹⁸ Carlsson et al., *supra* note 12, at 595, could not provide a clear answer to the question of whether cars are completely positional. On average cars are highly positional, but that reflects a good deal of heterogeneity: cars may be completely positional for some people, but are possibly completely non-positional for others. *Id.* at 596.

¹⁹ Erik Verhoef & Bert van Wee, *Car Ownership and Status: Implications for Fuel Efficiency Policies from the Viewpoint of Theories of Happiness and Welfare Economics* 4 (Tinbergen Institute Discussion Paper TI 2000-076/3, 2000) (“However, most cars in most Western countries have engines with much more power than needed, given the characteristics of infrastructure, speed limits, and travel distances.”).

²⁰ George Will, *Americans and Their Cars*, TOWNHALL DAILY, Apr. 18, 2002, available at http://townhall.com/columnists/GeorgeWill/2002/04/18/americans_and_their_cars.

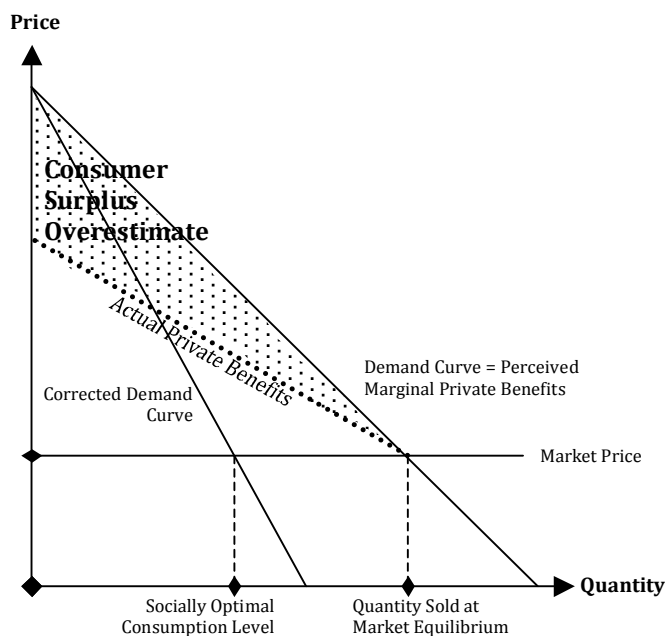
²¹ *See* Knittel, *supra* note 2.

A vehicle's size and weight are also positional for safety reasons, in addition to status motivations. To the extent smaller cars fare worse in crashes with bigger cars,²² consumers may value bigger cars not because of any intrinsic safety value, but because of the average fleet size.

The problem with positional goods is that an increase in aggregate consumption does not necessarily increase consumer welfare. If Smith invests in a positional good to move up the status hierarchy, Jones will feel relatively worse off and so will match that investment to catch up. As a result, both consumers spend resources without actually improving their relative status.²³

The conspicuous consumption status competition is wasteful because consumers invest more in positional goods than they would if they were motivated purely by the goods' functional value, as consumers try to capture a status advantage that never materializes. In the end, positional goods do not produce the welfare that consumers expect, due to a negative externality caused by positionality: as soon as the second consumer also buys the big car, it reduces the value to the first consumer of her big car.²⁴

This negative externality can be depicted graphically. Consider a good where status depends on exclusivity of ownership. For such a status good, each subsequent consumer is willing to pay a little less, as exclusivity decreases. But each subsequent purchase also retroactively reduces the welfare of previous consumers by reducing exclusivity. Thus, the actual private benefits enjoyed by consumers (dotted line) is lower than they had originally perceived. As a result, traditional economic models might overestimate consumer surplus (by the shaded area). Moreover, if this negative externality could be accounted for, the corrected demand curve would be defined by aggregating actual private benefits, resulting in a lower optimal consumption level.²⁵



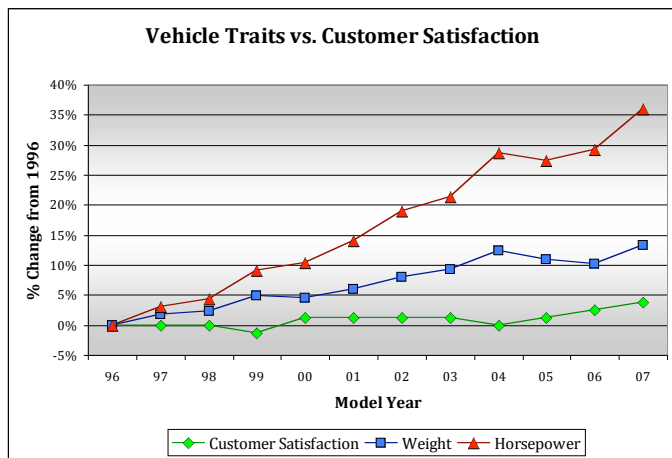
²² Proposed Rulemaking, 74 Fed. Reg. 49,462.

²³ See Frank, *supra* note 9, at 104, 108 (“One individual’s ‘offensive’ signal is cancelled by another’s ‘defensive’ signal, and in the end too many resources are devoted to the consumption of observable goods.”).

²⁴ See Hopkins & Kornienko, *supra* note 11 (“[E]ach individual consumer in turn marginally affects the utility from consumption enjoyed by others, but does not take these effects into account when deciding on the particular variant and quantity to be consumed.”); Verhoef & van Wee, *supra* note 19, at 5-6.

²⁵ Graph based on example from Verhoef & van Wee, *supra* note 19, at 7. (“Due to this externality, the actual benefits for an arbitrary non-marginal consumer...will have become smaller than what they would have been if this consumer were the marginal consumer himself, which is given by the $D=MPB$ curve. Instead, the benefits derived from consumption will, for example, amount to those given by the dotted curve. Note that for each consumption level considered, we must draw another dotted curve; for graphical clarity only the one applying to the free market equilibrium is shown. The MPB curve thus overestimates the consumers’ surplus (the difference between the ‘monetized’ value attached to consumption and the market price). Taking the consumption externality into account, a curve like MSB [the Corrected Demand Curve in this depiction of the graph] (below MPB , with an intersection at the vertical axis) represents the marginal social benefits

Some empirical evidence seems to bear out that consumer welfare has not increased with the addition of positional features like vehicle size or performance. This chart shows considerable changes in the average weight and horsepower of new vehicles since 1996, whereas average consumer satisfaction (for new and used vehicle purchases) has stayed relatively flat.²⁶



Because consumption decisions are made non-cooperatively but in fact alter the spending behavior of others, consumers get stuck on a “positional treadmill” that does not increase welfare.²⁷ Yet if any individual opts out of this “expenditure arms race,” it would only move that consumer backwards on the status hierarchy, which for most consumers is unacceptable.²⁸ And given limited resources and limited market options, the over-consumption of positional goods results in under-consumption of non-positional goods (such as fuel efficiency).

In short, a market failure blocks optimal investment in fuel efficiency. It can be especially hard for consumers to move themselves down the status scale voluntarily on visible, positional features like vehicle size and horsepower.²⁹ Yet if consumers could maintain their relative economic position, they might be more willing to pay for non-positional goods.³⁰

Fuel economy regulation is a cooperative solution that allows consumers to achieve what they could not in the non-cooperative open market: namely, an increase in fuel efficiency without losing position in the status hierarchy.³¹ Regulations similarly help consumers select fuel efficiency

of consumption. MSB is found by correcting MPB for the negative welfare effect for all non-marginal consumers; *i.e.* by considering the marginal impact on the area as bounded by the vertical axis, the dotted curve and D.”).

²⁶ Data for chart taken from the American Customer Satisfaction Index, Scores by Industry: Automobiles & Light Vehicles, http://www.theacsi.org/index.php?option=com_content&task=view&id=147&Itemid=155&i=Automobiles+%26+Light+Vehicles (last visited Nov. 21, 2009)); EPA OFFICE OF TRANSPORTATION & AIR QUALITY, EPA420-R-09-014 LIGHT-DUTY AUTOMOTIVE TECHNOLOGY, CARBON DIOXIDE EMISSIONS, AND FUEL ECONOMY TRENDS: 1975 THROUGH 2009 (2009).

²⁷ Robert H. Frank, *Positional Externalities Cause Large and Preventable Welfare Losses*, 95 AM. ECON. REV. 137, 137 (2005).

²⁸ Frank, *supra* note 9, at 105-06.

²⁹ See Sara J. Solnick & David Hemenway, *Is More Always Better?: A Survey On Positional Concerns*, 37 J. ECON. BEHAVIOR & ORG. 373, 379 (1998) (“[S]ubjects were more likely to select the positional situation when it was presented first (the ‘gain’ context) rather than second”); Yew-Kwang Ng & Jianguo Wang, *Relative Income, Aspiration, Environmental Quality, Individual and Political Myopia: Why May the Rat-Race for Material Growth be Welfare-Reducing?*, 26 MATHEMATICAL SOCIAL SCI. 3, 6-7 (1993) (noting that personal attitudes and aspirations for future consumption depend on current and past personal consumption, which in turn are influenced by other people’s consumption behavior).

³⁰ Robert H. Frank & Cass R. Sunstein, *Cost-Benefit Analysis and Relative Position*, 68 UNIV. OF CHICAGO LAW REV. 323, 326 (2001) (“If people could maintain their relative economic position, they would be willing to pay more, and possibly a great deal more, to purchase many of the goods that regulation attempts to deliver....[W]hen an individual buys additional safety in isolation, he experiences not only an absolute decline in the amounts of other goods and services he can buy, but also a decline in his relative living standards. In contrast, when a regulation requires *all* workers to purchase additional safety, each worker gives up the same amount of other goods, so no worker experiences a decline in relative living standards. If relative living standards matter, then an individual will value an across-the-board increase in safety more highly than an increase in safety that he alone purchases.”).

³¹ Correcting for negative externalities and collective action problems is a classic case for regulation. “Analytically, positional externalities are no different from ordinary environmental pollutants.” *Id.* at 364. Such regulation is not about taking public action just because one consumer’s increased consumption makes another consumer unhappy or envious; rather, regulation is justified to address a market failure. *Id.* at 365. Even if not everyone wants to solve this particular collective action problem, “we do not require unanimity as a precondition for unquestionably legitimate collective action

without falling behind in the safety/size rankings, since with time the average fleet size will shift. Regulations also correct a supply-side problem, since theory predicts manufacturers will devote their research and development budget to status goods until government adjusts the incentives.³²

Finally, regulations help counteract the high discount rate that consumers place on future fuel savings. In a non-cooperative market, a consumer's desire to invest in future savings must compete against the desire to invest in immediate, conspicuous, positional goods.³³ Regulations allow consumers to enjoy the private benefits of fuel efficiency without risking long-term lost welfare.

The Positional Goods Effect predicts that actual consumer surplus from fuel-inefficient vehicles is limited, and that many potential losses to consumer surplus will disappear over time as relative preferences shift. In particular, increasing fuel economy standards will have the following effects:

- In the short-term, new buyers may have to choose less prestigious cars, with some lost status. But as average vehicle size and power decrease, all existing car owners will feel slightly better about their car status, since their size will improve relative to the mean.³⁴ The latter status gains could partially offset the former status losses.³⁵
- In the long-term, consumers will simply rank themselves around a new status distribution for positional vehicle attributes like size and power. The first wave of buyers who initially felt some status loss will mostly find themselves restored to their original position.³⁶
- The regulations could reduce the positional benefits some current hybrid vehicle owners enjoy from exclusivity of ownership.³⁷
- With time and under new labeling requirements that could increase the visibility of fuel efficiency, it is possible fuel efficiency may emerge as an increasingly positional trait.³⁸

in other spheres." *Id.* at 366. *See also* Verhoef & van Wee, *supra* note 19, at 13-14. ("On the free market, consumers would inefficiently strongly stimulate each other to purchase more luxurious variants. Corrective taxes [or a CAFE standard with tradable permits] may protect consumers against such treadmills.").

³² Ben Cooper et al., *Status Effects and Negative Utility Growth*, 111 *ECON. J.* 642 (2001).

³³ *See* Frank, *supra* note 27, at 115. ("[F]orced savings programs might have a coherent role to play even in a world populated by rigidly disciplined consumers with perfect foresight. The problem of inadequate savings arose here not because of character defects, but because of a divergence between individual and collective incentives to save.").

³⁴ Verhoef & van Wee, *supra* note 19, at 10 ("[I]f consumption externalities occur, an individual's benefits of consumption *increase* in the consumption of inferior qualities [by others], and *decrease* in the consumption of superior qualities.").

³⁵ Since consumers value losses more than gains, the offset might not be perfectly equivalent. *See* Frank & Sunstein, *supra* note 30, at 340-41 ("It is now well-established that people dislike losses more than they like corresponding gains....But loss aversion does not undermine our basic claims. Even if people dislike losses from the status quo more than they like equivalent gains, people's fears that losses will produce significant subjective losses is not borne out by reality.").

³⁶ The positional treadmill will likely restart, though the regulation slowed it down for a few years, saving waste and improving fuel efficiency. *Id.* at 327 ("Many actual and imaginable laws can stop or slow down the positional treadmill, thus maintaining people's relative position while also giving them something of value.").

³⁷ Heffner et al., *supra* note 15, at 2 ("Another study indicates that HEV owners are motivated more by 'a commitment to be pioneers' and by their perception of the gasoline hybrid as 'the right vehicle for society' than by economic benefits such as fuel cost savings."). It is possible they will be driven to pursue even higher fuel-efficient vehicles.

³⁸ *See* Carlsson et al., *supra* note 12, at 596 ("[W]e found that the mean degree of positionality for car safety is significantly larger than zero. This may in part be due to the fact that car safety has become more visible recently, when safety has become an important sales argument and various safety tests are frequently discussed in advertisement and in media more generally."); Heffner et al., *supra* note 15, at 5 ("All participants recognized some symbolic benefits rooted in their HEVs' reputation as 'green' environmental vehicles, an image which is reinforced by automakers, the media, and a growing list of vocal celebrity owners. This image is distinct from the vehicles' function, but related to it.").

Overall, the Positional Goods Effect suggests that any consumer welfare loss will be limited and temporary. A final analytical concept, explored next, builds on the last bullet point from above: increased fuel economy itself may cause consumers to value fuel efficiency more highly than they did before.

The Bandwagon Effect

If fuel efficiency becomes a sufficiently visibility trait, it is possible that consumers could start competing for the highest fuel efficiency. But even if that does not happen, consumers' valuation of fuel efficiency will undoubtedly change over time and as a result of new fuel economy standards.³⁹

The Bandwagon Effect occurs when the perceived attractiveness of a good increases as more people consume it. Growing empirical evidence suggests an environmental bandwagon: people are more likely to make environmental choices when they think everyone else is doing the same.⁴⁰

The separate though conceptually related effects of information diffusion and habit formation might also affect the market for more fuel-efficient vehicles. Car choices are strongly influenced by the purchases of peers,⁴¹ perhaps because consumers often deal with the need to justify their choices by deferring to the preferences of others.⁴² Consumers might currently have a negative opinion of vehicles running on unknown technology or of unknown model types;⁴³ but once more fuel-efficient vehicles increase market share and become more familiar to consumers as a result of regulation, new consumer habits will form, and willingness to pay for fuel efficiency might increase.

Lost Consumer Welfare: Quantifiable, Limited, and Temporary

Due to the Energy Efficiency Paradox, the Positional Goods Effect, and the Bandwagon Effect, economic theory predicts that any lost consumer welfare will be limited and temporary; overall, new fuel economy standards should deliver significant net private benefits. As the agencies develop new regulations, they should continue to explore these economic concepts.

Respectfully submitted,

Michael A. Livermore
Jason A Schwartz

INSTITUTE FOR POLICY INTEGRITY AT
NEW YORK UNIVERSITY SCHOOL OF LAW

³⁹ Heffner et al., *supra* note 15, at 3. ("As more hybrid models enter the market, the meanings of HEVs are likely to evolve.").

⁴⁰ For example, when hotel guests are told they should "join their fellow citizens" in saving water by reusing towels, reuse rates increase by 34%; similarly, when electric bills present a comparison of neighborhood consumptions, usage decreases by 2%. See Hunt Allcott & Sendhil Mullainathan, *Behavioral Science and Energy Conservation*, (MIT Working Paper July 2009); Allcott, *Social Norms and Energy Conservation* (MIT Ctr. for Energy & Env'tl. Policy Res. 09-014, 2009).

⁴¹ Grinblatt et al., *supra* note 15 (reporting results of study in Finland that found car purchases strongly influenced by purchases of neighbors, most likely because of information sharing).

⁴² James Bettman et al., *Constructive Consumer Choice Processes*, 25 J. CONSUMER RES. 3 (1998).

⁴³ Eugenio Miravete & Maria Moral, *Qualitative Effects of Cash-For-Clunkers Programs* (2009), available at <http://www.eugeniomiravete.com/papers/EJM-MJM-Clunkers.pdf>.