Reader's Guide: Public policy decisions made based on a fixed and unchallengeable definition like America's MPG fuel-economy standards illustrate an absence of both foresight and wisdom. U.S. Courts have to rely upon legal precedent even to the point of going back to Dr. Johnson's original eighteen century English Dictionary to decide a case's Constitutionality. The rest of America's government, however, is free to apply new and improved definitions to enhance the effectiveness of their policies. The impact would be immense. (1,300 words) Other definitions: MPG, GPHM, CAFE, emissions, efficiency, effectiveness, autopilot, taxes, Mini Van and SUV.

Auto Autopilot Decision – MPG versus GPHM

Change is coming. U.S. President Barack Obama announced in May, 2009 that automakers must meet average U.S. CAFE fuel-economy standards of 35.5 miles per gallon (MPG) by 2016, four years sooner than previously planned. This has been hailed as a bold step that will reduce green house gases, dampen oil imports and spur auto innovation. The U.S. Administration has estimated that this will also increase the price of a new vehicle by $1,300. This does not include the cost of existing federal Gas Guzzler Taxes (from which it is notable that SUVs are excluded).

The decision to base auto federal fuel efficiency standards on MPG was made on autopilot. After all, this is also how gasoline consumption for a new car sold in the U.S. is posted – MPG City and MPG Highway. Many definitions like MPG are simply deeply ingrained.

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CAFE (Corporate Average Fuel Economy) standards are based on a wide range of factors, including what is considered to be technically possible at a "reasonable" cost. The affect these standards have on influencing a buyer's purchasing decision has regrettably not been a factor.

Continuing to set fuel-economy standards in MPG will predictably exacerbate many unintended consequences. What really matters for car buyers, but more importantly the U.S. economy and the environment is actual gas usage *not* miles per gallon. Usage is best based on gallons [used] per hundred miles (GPHM). The counter point made by critics of this would-be-change in definitions is that the actual fuel used will be the same whichever metric is chosen. That is only partially correct. However, what is completely overlooked by the standard setters is the impact a different definition can have on the two most important decisions: deciding what kind of car to buy and then - to a lesser extent - how much and far to drive it.

There has been research into using this alternative auto fuel efficiency definition, GPHM by both Duke University and by a Washington, D.C. think tank – RESOURCES for the Future. Both found that most other countries measure not MPG or an equivalent, but how many standard units

of fuel are used to drive a specified set distance. This is also standard setting; it's just not based on American precedent.

Researchers at Duke University say that consumers misinterpret miles per gallon estimates, assuming that the efficiency improvement is the same for a 5 mile per gallon difference between 15 MPG and 20 MPG and a 5 mile per gallon difference between 45 and 50 MPG (Larrick and Soll, 2008). It isn't. Thus, fuel economy improvements tend to be undervalued for low MPG vehicles relative to higher MPG vehicles. What matters most of course is how much gasoline is burned overall, period.

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A quick YouTube video primer on the advantage of GPHM follows.
http://www.youtube.com/watch?v=K2XSuw02vKA

The likely and unintended consequences of the MPG decision are significant. In the upcoming decade consumers with only smaller, more expensive cars from which to choose are more likely to keep on driving older, larger, heavy polluting and less fuel-efficient cars much longer. That is bad news for a car company wanting to sell new cars, but good news for repair shops, auto parts stores and most of all oil companies. Of course, this assumes that gasoline prices don't skyrocket forcing the obsolescence of gas guzzlers at a faster rate. The impact on overall energy consumption and pollution are much more complex equations. Much of an auto's lifecycle energy cost is embodied in raw and finished materials, vehicle production and disposal.

Car companies whose domestic market is comprised of smaller cars like the Japanese are also likely to benefit more from Obama's plan because they are better positioned to produce smaller cars. This is more bad news for U.S. auto makers as well as the U.S. taxpayer since the federal government is currently also the largest stakeholder in two of the three major auto companies.

This decision may ultimately also result in both more lives lost on U.S. highways and an increase in medical service usage since auto accident deaths increase as vehicle size decreases. This is another important issue that is again a non-factor in setting CAFE MPG standards. Of course, improved auto safety technologies should diminish this affect over time; all things being equal.

Poorly constructed definitions cause unforeseen negative consequences in spite of even the best of public policy intentions.

All but overlooked is the fact that major U.S. metro areas now also require vehicles to pass emissions inspections. One result is that the very worst clunkers often end up in more rural areas where these autos do not have to pass an inspection. This shifts more pollution to rural America. Of course, these accelerated CAFE standards could reduce actual emissions in both rural and urban areas. That is, if total American miles driven stay in the same current range. Yes, poorly

constructed definitions cause unforeseen negative consequences in spite of even the best of public policy intentions.

This is a case where CAFE regulations have been set in MPG since they were first established in 1975. Originally this excluded commercial vehicles. Speaking of unintended consequences created by definitions, Mini Vans and SUVs both started out their lives as light trucks (light trucks have significantly lower MPG fleet requirements). And – at least for SUVs - as the MPG standards were tightened their weight was increased to push them out of the manufacturer's 'defined' and measurable pool of vehicles produced. Does anyone think heavier Sports Utility Vehicles don't use a lot more gas per hundred miles travelled?

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If the overreaching U.S. goals are to reduce carbon dioxide emissions while also using less oil then the best solution would be for Americans to drive fewer miles in more fuel efficient autos. The quickest way, however, to accomplish this is to dramatically raise the price of oil by hiking taxes. The alternative and considerably less politically difficult approach is to remove or replace as many of the worst fuel inefficient vehicles as possible. By choosing to measure our progress in GPHM used rather than MPG the odds of reaching the latter would significantly improve.

Using GPHM would also shift the focus to all vehicles on the road, which ultimately could result in tax and other incentives to push clunkers, gas guzzlers and the worst polluters off U.S. roads. GPHM helps everyone including legislators and Congress to better understand the true pocket book implications of trading one car for another new or used vehicle.

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This would be an easier decision if new cars (and not surprisingly also both used and in-use cars) showed fuel efficiency in terms of GPHM. For example, it doesn't take a math wizard to figure if you drive a car that uses three gallons per hundred miles for 1,000 miles (or ten one hundred miles) a month and gas costs $3 a gallon your monthly fuel bill will be $90. If the car uses five gallons per hundred miles it would burn twenty more gallons of gas and the cost would be $150.

Definitions matter in often unforeseen ways. The existence of ***Open4Definition*** prompts yet another question. What would the impact be if this auto fuel efficiency mandate were stated, for example, in terms like gallons per hundred miles traveled *safely*? While GPHM is significantly

better than MPG there is likely an even better definition and measure of auto effectiveness (not just efficiency) available. It would make sense to systematically find it and then apply this sapient definition. For instance, what if GPHM were posted on each car's new license plate? Few among us are immune to peer pressure so this would indirectly influence consumption. That is what ***Open4Definition*** is all about - systematically leveraging the application of definitions for the common good.

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Change can be compromised when the selection of the definitions used in critical public policies are chosen on autopilot. All too often the definition(s) chosen determines the result. Wouldn't it therefore make sense to pay more attention to the definitions used in U.S. public policies? Obviously, ***Open4Definition*** believes that it would. Let's take auto fuel consumption policy off autopilot. Now that would be change to revel in.