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A MARKETING CAMPAIGN TO
REDUCE VEHICLE FUEL USE

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A Marketing Campaign to Reduce Vehicle Fuel Use

Executive Summary

We propose a national marketing campaign to better inform consumers about measures that can decrease fuel use, particularly during a rapid increase in fuel prices (an “oil shock”). The federal government should initiate a marketing campaign, either in conjunction with the Ad Council or as a separate public-private partnership. Its objective would be to inform consumers how they can alter the manner and frequency of their driving. The cost of such a campaign would be modest in comparison to its potential role in a) mitigating the effects of higher transportation costs and b) empowering consumers to take greater control of their expenditures on fuel.

An Abundance of Helpful Demand-Side Measures

There are a number of steps that consumers can take to limit the deleterious effects of high and quickly rising fuel prices. Measures include so-called “smart driving,” such as accelerating gradually and adhering to the speed limit to maximize fuel mileage; improvement in routine maintenance; the use of new technologies, such as those providing real-time feedback on fuel consumption; ridesharing (carpooling) to reduce vehicle use; and telecommuting and/or compressed worked schedules to decrease the number of commutes. These also yield other benefits such as improved safety, better air quality, lower carbon dioxide emissions, and reduced congestion.

Need for a Marketing Campaign

There is no shortage of information about these measures or even programs to promote them, but the information is mainly found on websites that can be difficult to find unless consumers are specifically searching for them. A number of countries, notably in Western Europe, have already undertaken more concerted efforts. Additional market research should be conducted before rolling out the campaign. Such research would also focus on the development of a consolidated, user-friendly website.

Poorly Prepared for an Oil Shock

The United States is ill-prepared for another “oil shock” driven by instability in major petroleum-producing regions, notably the Middle East. Given the importance of oil to the transportation

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sector, the effects of such shocks are both widespread and substantial. An oil shock has preceded all but one recession since World War II. A release from the Strategic Petroleum Reserve (SPR) can only play a limited role in restraining short-term unexpected volatility in the price of gasoline and diesel. Together, the measures discussed here could be thought of, conceptually, as “a demand-side SPR.”

Substantial Benefits at Modest Cost

We believe that a relatively modest publicity campaign—an average Ad Council campaign, for example, receives \$25-\$30 million of donated media—could create substantial savings for consumers. Americans spent more than this on gasoline in just one hour in 2011, when their annual gasoline expenditures totaled more than \$475 billion. Studies generally show a reduction in oil consumption of 5-15 percent from smart driving. Ad Council partners who run ads exert substantial control over which advertisements are shown, and we expect that more will want to show ads about ways to lower fuel use during an oil shock.

Important Component of Broader Strategy

Would such a campaign, even if forcefully supported by a public-private alliance at the national, state, and local level, fully offset the impact of high prices or an oil shock? No. Only longer-term efforts, such as those promoting a shift to greater fuel diversification in the United States’ primary transportation sector, can move us toward this goal. But by reducing the time and effort spent by consumers looking to lower fuel costs, a publicity campaign would serve a clear economic purpose. By avoiding mandates and other regulation, it would conform to the idea of small, non-intrusive government. Not least, it would empower consumers during periods of economic hardship and individual uncertainty.

I. Introduction¹

The increase in U.S. oil production—particularly combined with what appears to be a plateau in consumption—is welcome news. Net imports of petroleum and other liquids declined from 60 percent of total supply in 2005 to 49 percent in 2010; the U.S. Department of Energy projects that net imports will fall to 36 percent by 2035.² These developments will, at the margin,

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improve our balance of payments position and generate domestic employment. They do not, however, fully insulate us from oil shocks. Why? The petroleum market is global, with prices set by world supply and demand. If world prices rise, the cost is borne by consumers in exporting and importing countries alike. Canada, for instance, is a major exporter of oil. Yet, like citizens of the United States, Canadians have experienced high volatility in oil and therefore gasoline prices, even as their economy as a whole can benefit from higher prices.³ In short, we should welcome the improved situation in the U.S. petroleum balance, but consumers cannot count on it as a panacea.

In particular, oil consuming countries like the United States remain vulnerable to instability in the Middle East, home to a high percentage of world oil production and, importantly, almost all its spare productive capacity. With output of roughly 27 million barrels a day (b/d) in 2011, Middle Eastern countries represented about 30 percent of world petroleum supply. At three million b/d, estimated spare productive capacity in the region—most of it in Saudi Arabia—approached 100 percent of the world total.⁴ This makes the region the world's only "swing supplier" capable of ramping up production to mitigate disruptions in global supply. Developments in the Middle East—from the domestic unrest associated with the so-called "Arab Spring" to rising tensions between Iran and the international community over Tehran's nuclear program—suggest that another major "oil shock," above and beyond the sharp increase in oil prices during recent years, remains a distinct possibility. For instance, international efforts have contributed to a roughly 50 percent decline in Iranian exports over the last several years.⁵ Were actual conflict to break out, Iranian exports would almost certainly decline further. Hostilities would also threaten the security of the Straits of Hormuz, through which roughly 17 million barrels of oil pass daily.⁶

The United States is ill-prepared for such shocks. In the longer-term, of course, there are government policies that can mitigate the consequences of higher petroleum prices. On the demand side, such measures include stricter fuel efficiency standards and expanded mass transit. These measures can take years or, in the case of fuel efficiency standards, decades to reach their full potential. On the supply side, measures often discussed include boosting domestic production and promoting greater diversity. Given the lag time between initial exploration and

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full exploitation of oil fields—particularly in technologically, financially, and environmentally challenging environments, such as deep water and arctic regions—these measures can take substantial periods of time. In the short- to medium-run, however, most of the burden will be borne by households and businesses that will see welfare and profits, respectively, decline.

There is one major short-term option available to the federal government: a release from the Strategic Petroleum Reserve (SPR). But such releases are rare. Countries with strategic reserves appear uneasy with major depletions of their petroleum reserves in all but the most extreme of circumstances. In recent years, for instance, the U.S. government has released 11 million barrels in response to Hurricane Katrina in 2005 and 30 million barrels in 2011 to help offset declines in Libyan production. The latter release represented less than 5 percent of the reserve and less than two days of U.S. petroleum consumption. When using their petroleum reserves, governments have to be wary that conditions could deteriorate further. For instance, the steep declines in Iranian production in the wake of the 1979 revolution seemed like a “worst-case scenario” until only a couple of years later when the Iraq-Iran war led to Iraqi production declines of roughly two-thirds.⁷ Political leaders might be tempted to use strategic reserves to mitigate public concerns about higher fuel prices; but they are also aware of the risk of depleting reserves and still not reducing prices significantly, an outcome that would leave their countries more vulnerable to future shocks and, in addition, make the leaders themselves seem ineffective.

Are there other ways we can respond to a rise in fuel prices? Specifically, are there low-cost ways to provide households and businesses with information and options that can help mitigate the effect of higher prices at the pump?

We believe there are such measures available and that they will encourage what could be called “dynamic demand responses” from individual and corporate consumers alike. A marketing campaign can better familiarize individuals with driving techniques, maintenance practices, alternative work arrangements, and smart phone apps that will improve efficiency and help reduce miles driven. Operators of corporate fleets can follow similar advice and could likely be more effective due to their ability to coordinate fleet responses. Companies can benefit from easier access to information on alternative transportation options for employees.

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We advocate the federal government initiate a marketing campaign, either in conjunction with the Ad Council, which distributes public service announcements for nonprofits and government agencies, or as a separate public-private partnership. Both of these options can leverage the resources of various stakeholders into a more effective campaign. As we will discuss, there are numerous potential partners in a collaborative effort to reduce fuel use.

II. Fostering Dynamic Demand Responses

Studies have found that gasoline use does not drop very much during a shock.⁸ In the language of economics, short-term gasoline demand is very “inelastic.” Part of this inelasticity is a result of the fixed nature of some trips; people have to drive to work, pick up their kids from school, go to the grocery store, etc. But likely some also is a result of drivers receiving little guidance on what they can do to reduce their gasoline use—how they can drive their vehicles and plan their trips more efficiently and what options are available if they would like to investigate alternative work schedules. We believe that there are ways to make gasoline demand more elastic by fostering more dynamic responses by consumers.

On-road fuel use represents more than 60 percent of total oil consumption in the United States.⁹ Our approach focuses on the significant portion that is dedicated to driving by households. Does this mean that we should ignore the importance of business fleets in our fuel use equation? No. Indeed, many of the measures we recommend are applicable to the commercial sector. And that sector should be a target of any campaign. But household use remains key, not only because of its importance to overall fuel consumption but also because households are relatively low-information consumers compared to businesses. And lower information costs—to resort to the terminology of economics—lie at the heart of our proposals.

How Drivers Can Quickly Save Gasoline

In the short-run, most drivers can improve the on-road gas mileage of their existing vehicles through various driving techniques and maintenance practices. We prefer calling this “smart driving,” although the term “eco-driving” is often used. Consumers can also reduce the number

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of miles they drive to work and for other purposes. Many cell phone apps are now on the market to facilitate reduced gasoline use such as Carticipate and Gas Cubby.¹⁰

Drivers following smart driving practices use techniques such as accelerating and decelerating gradually, deploying cruise control when possible, observing speed limits on the highway, and limiting the amount of excess weight the vehicle is carrying.¹¹ Vehicle maintenance tips include properly inflating tires and using the recommended grade of motor oil.

A variety of possibilities exist for reducing the number of miles people drive, particularly to and from their offices. Instead of driving alone five days a week to the office, certain drivers can telework (work from home), rideshare (which includes both carpooling and vanpooling), or have a compressed work schedule. Common examples of compressed work schedules involve taking one day off every week or two weeks. For example, a “9/80” means an employee would work 80 hours over nine days in a two-week period, usually by working about nine hours each day. Although it does not reduce miles to the office, employees who arrive and leave at off-peak hours can avoid traffic and also save gasoline. According to the Texas Transportation Institute, congestion wasted 1.9 billion gallons of fuel in 2010.¹² Collectively, these four options—teleworking, ridesharing, having a compressed schedule, or working off-peak hours—will be called “alternative work arrangements” throughout this paper. These alternative work arrangements are broadly compatible with concepts such as a “mobile” workforce or having “flexible” work arrangements.¹³

Various diagnostic meters and cell phone apps are now available that can facilitate reduced gasoline use. Aftermarket products and gauges in vehicles like the Toyota Prius can provide real-time feedback on miles traveled per gallon. Some other new vehicles also have mpg gauges installed from the factory.¹⁴ An app called Route4me allows consumers to plan their trips in the most efficient possible way. Other apps allow for quick access to information such as public transportation schedules and parking availability.

Drivers could also benefit from more information about the amount of gasoline spent driving various distances and for different reasons. According to the National Household Travel Survey,

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only 10 percent of miles driven are for individual trips of five miles or less, while trips over 50 miles account for 25 percent; individuals may tend to overemphasize cutting back on these short trips of five miles or less when trying to save on gasoline.¹⁵

Consumers can attempt to implement all of these options quite quickly. Changing work schedules or attempting to telework may take somewhat longer, as some businesses and managers will be reluctant to alter the workplace environment in more ways than the programs they already have in place, but at least this administrative hurdle is likely to be the biggest issue facing many employees. In contrast, we specifically avoid looking at proposals such as building more public transportation infrastructure that would take years or decades to make an impact. We are looking at proposals that could reduce consumption in the next few years that more drivers could adopt in case of an oil shock.

Many of these options have multiple benefits in addition to limiting the effects of an oil shock. Changing work schedules is often family-friendly if parents can stay home more frequently or return home by the time their children come back from school. Reducing fuel use when prices are more modest or stable still saves consumers money and reduces emissions such as ozone. And smart driving is also very safe, as gradual braking and observing the speed limit should reduce the frequency and intensity of accidents.

Current Sources of Information and Possible Improvements

Federal, state, and local governments have a plethora of programs—including modest grants and small tax breaks—to encourage most of these practices. They are joined by a number of non-profit organizations and even corporations. However, many of the programs strongly emphasize public transportation and alternative means of commuting such as biking rather than focusing on smart driving or alternative work arrangements. This focus limits the potential impact of these efforts, as the Brookings Institution has found that a typical job in the 100 largest metropolitan areas of the United States is only accessible to about 27 percent of the workforce by mass transit in 90 minutes or less.¹⁶ And, in general, the efforts are small-scale, decentralized, and unambitious.

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Singularly lacking is an aggressive nationwide campaign to alert individuals and companies to the advantages of changing driving patterns. This stands in contrast to a number of other countries, notably in Western Europe, which have undertaken more concerted efforts in support of smart driving. The Netherlands, for instance, has had a campaign operating nearly continuously since 1999 called “Het Nieuwe Rijden” (“The New Driving”).¹⁷ As of 2009, Het Nieuwe Rijden had a budget of 2.5 million euros per year and had created an advertising strategy featuring a Dutch version of the *Dukes of Hazzard* in order to encourage smart driving principles. In addition, the program focused on improving driving school curricula, re-educating licensed drivers, and encouraging more efficient vehicle purchases and better in-car devices that register fuel use. The Netherlands was one of nine countries of the EU coordinating a campaign called ECODRIVEN from 2006 to 2008, and 12 EU countries are currently participating in an EU program to promote eco-driving and improved driving curricula called ECOWILL that will run through 2015.¹⁸

In 1979, the United States began the Driver Energy Conservation Awareness Training program, which aimed to increase public awareness of smart driving principles and conduct research on smart driving techniques and real-time fuel economy gauges. It focused on training fleets at its center in Nevada and circulated a movie featuring smart driving principles. It apparently did not make a concerted effort to educate the public, and the last available report about the program was published in 1986.¹⁹ It no longer exists, but the Alternative Fuels Data Center (AFDC) from the Department of Energy currently provides strategies for fleet managers looking to conserve fuel.²⁰

Currently, the state of Texas has an advertising campaign called Drive Clean across Texas (DCAT) with print, billboard, TV, and radio ads, as well as materials for teachers and students.²¹ The campaign in Texas began in 2001 and is sponsored by the Texas Department of Transportation, with some assistance from the Texas Commission on Environmental Quality. Its use of focus groups, media placement, and follow-up surveys can serve as a model for a national marketing campaign.²² New York City also has a program against idling vehicles called “Turn It Off” as part of its “GreeNYC” initiative.²³ Finally, starting in September 2008, the Alliance of Automobile Manufacturers launched a website called EcoDrivingUSA.com with the support of

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various state governors.²⁴ Ultimately, 16 state governors came to support the initiative but the website is no longer accessible.

Various organizations in specific cities try to provide information on local transportation options, particularly for employees, but they do not tend to focus on smart driving principles. We will highlight three of them. In the greater Houston area, Commute Solutions provides information for commuters and employers. It is operated by the Houston-Galveston Area Council, a voluntary association of nearby cities and counties. Another group, Commuter Connections, has operated in the Washington, D.C., area for decades, and Ann Arbor, Michigan, has a website called getDowntown.²⁵ Of these three, only Ann Arbor's has information on smart driving principles that correspond with those described in this paper.

Currently, the federal government has five primary sources of information for consumers who want to try to reduce their automotive fuel use: Fueleconomy.gov, the Federal Trade Commission (FTC), the AFDC, the Environmental Protection Agency (EPA), and EnergySavers.gov.²⁶ The first two are both informative, user-friendly sites, and the FTC has a cartoon that is very inviting for first-time users. The AFDC primarily takes its information from the Fueleconomy.gov website.²⁷ The EPA page has a lot of good information, but it is tucked away in PDFs, most of which are from the 1990s.²⁸ The Department of Energy's EnergySavers.gov website has a couple of articles about reducing fuel use but primarily provides tips on limiting energy consumption in residential homes.

With the websites already largely in place, a major public relations campaign to make drivers aware of the information would therefore appear to be a cost-effective approach, as explained in a following section. Federal government websites have good information about smart driving and vehicle maintenance. Fueleconomy.gov also provides links to gas prices nearby and has a tool that allows drivers to input their miles driven and gasoline used each time they fill up so they can compare their fuel economy with others who drive their vehicles. However, none of the sites has information about smart phone apps or equipment to track miles per gallon in real time, data on what activities account for the most miles driven, or more than a cursory mention about alternative work arrangements.

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Information on smart phone apps and equipment are usually found on privately-maintained websites. The National Household Travel Survey website maintained by Oak Ridge National Laboratory (ORNL) provides information on how people drive. Many websites concerning alternative work arrangements are either from nongovernmental organizations (NGO) or from the government, but these have limited usefulness for most people because they tend to advocate for increased adoption of these methods or are primarily relevant for government employees. For instance, Telework.gov has excellent, user-friendly training guides for both teleworkers and their managers, but it can be awkward for someone from the private sector to use them without additional guidance because they are specifically targeted at federal government agencies. The training includes procedures and terminology only relevant to these agencies.²⁹ Information about teleworking seems more prevalent than advice on ridesharing or compressed/shifted work schedules, even though teleworking may not be the best alternative transportation option for many employees.

The Need for a Marketing Campaign

While having a good website with easily accessible information is critical, we doubt that many people actually see this information. Finding the information requires dedicated searching and the main federal government sites are not in obvious places. As its name implies, Fueleconomy.gov is primarily responsible for providing data on the fuel economy of vehicles. The FTC is an even less obvious place to find information on smart driving. The FTC's interest in providing so much depth on the issue stems from its interest in educating consumers and protecting them from scams such as gasoline additives that claim to boost fuel economy. While the EPA seems to be an appropriate place to find information on smart driving, its page largely consists of links to PDFs, many of which are so old that consumers would likely view them with suspicion.

Rather than a passive approach that hopes drivers will stumble upon the pages or put in a lucky Google search term, a marketing campaign should give consumers key messages and a memorable URL like "drivesmart.gov." It would be wise, for purposes of this campaign, to consolidate the various federal websites into one. Many of the advertisements would likely be

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placed where average motorists could notice them, especially on the road on billboards, at gas stations, and on the radio.

The federal government has a long history of public service campaigns, often undertaken in collaboration with private sector groups.³⁰ Two of the most notable are the “Smokey the Bear” campaign—60 years old and still going—and the “Just Say No” anti-drug campaign launched under the administration of President Ronald Reagan. The overall success of these efforts has depended upon a wide variety of variables. But history suggests that a campaign of the sort we propose—if properly crafted and adequately supported—would raise public awareness of ways that consumers can save on fuel use.

The “Smokey the Bear” campaign is a partnership among the U.S. Forest Service, Ad Council, and the National Association of State Foresters.³¹ Similarly, a marketing campaign for smart driving and alternative work arrangements could be created as a collaboration between the U.S. Department of Energy and the Ad Council. One or more supporting organizations could join them, such as other nonprofit groups (e.g., the American Automobile Association or American Lung Association) or associations of state and local governments. The Ad Council already works with the Department of Energy on its “Saving Energy Saves You Money” campaign, which encourages consumers to purchase energy-efficient products for their homes.³²

Working with the Ad Council on a marketing campaign is particularly effective for limiting the impact of an oil price shock. The Ad Council does not pay for media placement but instead relies on donations of space from partners. These partners exert substantial control over which advertisements will be shown, and we expect that more will want to show ads about ways to lower fuel use during an oil shock.

If the federal government tries to develop a campaign without the Ad Council, it should foster a public-private venture. A partnership would help leverage the significant resources and expertise into a more effective and comprehensive approach. As seen with its EcoDrivingUSA website, the auto industry is willing to get behind a campaign to inform consumers. Having the auto industry and other potential stakeholders such as consumer groups and health and safety

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advocates united behind this initiative should provide additional credibility. The federal government can draw upon previous campaigns in Europe and in various states around the country, such as Texas.

Such a partnership might help overcome some of the political resistance to promoting conservation. In 2008, for instance, then-presidential candidate Barack Obama was pilloried for recommending better inflated tires and more regular tune-ups as an alternative to additional drilling. In fact, the campaign of Republican presidential candidate John McCain mockingly offered to send “Obama Energy Plan” tire gauges to anyone who donated \$25.³³ Other methods to promote conservation, such as increasing the gasoline tax, would encounter even more political hostility.

Additional Research Needed Before Embarking on Media Campaign

Authors of a recent comprehensive analysis of smart driving conducted focus groups with experts who have administered public-service campaigns.³⁴ The experts emphasized the importance of understanding the fears and misconceptions surrounding the messages being presented before beginning the advertising.

Thus, before any marketing campaign is released, additional research should look into a variety of issues:

- The number of drivers who believe that behavioral actions they take can be significant.
- How much gasoline or money must consumers be able to save in order for them to pay attention or think a program is worthwhile.
- Which messages (and messengers) resonate best with different demographics.
- How citizens interpret messages, and whether they see them as empowering or dictating.
- What biases people have (e.g., Do consumers think that cutting back on a few short errands would save a much larger amount of gasoline than it does? Do workers have misconceptions about how frequently they would be expected to telecommute?).
- How and if a public-private partnership campaign should intensify during a price shock, taking into account that it takes time to purchase billboards and radio or TV spots.

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- How many more workers would be interested in having alternative work arrangements if gasoline were more expensive, especially during a price shock.
- How many workers are compelled to ask for alternative work arrangements but feel they do not have enough information to do so or are unfamiliar with all the options available.
- How such a campaign could best be rolled out, particularly in conjunction with a series of public events featuring senior governmental and business leaders.

Existing research provides a fairly spotty picture of what consumers know about driving smart and the importance they place on it. A Gallup survey from May 2008, when gasoline prices were steadily rising to record levels, showed that 76 percent of Americans had “taken steps to increase the gas mileage of the car [they] drive, such as by driving slower, getting a tune-up, or using the air conditioning less often.”³⁵ These actions correspond with some smart driving tips. However, another Gallup study from May 2011 that asked what specific major changes drivers had taken found only 1 percent driving slower or less aggressively. Meanwhile, four of the top five options reported dealt with driving less.³⁶ These surveys suggest many individuals do not believe that their driving behavior is very significant to fuel economy or do not prefer to change their driving style. Advertising messages will have to overcome this bias. Additionally, because consumers try to drive less when gas prices are high, informing them about which trips lead to the most fuel consumption should be very useful.

Some studies have shown that messages can change attitudes and behaviors. The authors of a San Jose State University paper conducted a survey of roughly 100 University of California, Berkeley, faculty, staff, and students, half of whom were sent to the EcoDrivingUSA website to report on their attitudes about it, and half that served as a control group. The study found that 71 percent of those who looked at the site reported that their driving behavior was still altered three months later, with the most common changes being accelerating and braking more gradually.³⁷ Researchers analyzing Drive Clean Across Texas found that of the people who had heard of the campaign, about 45 percent had followed at least one of the recommendations.³⁸ An older study from Australia found small but statistically significant effects of a television campaign on their intention to save fuel and self-reported conservation behaviors.³⁹

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A few surveys have looked into who teleworks and shares rides to the office, but it is unclear how many more workers would want the opportunity to have alternative work arrangements during a price shock. The Telework Research Network in 2011 found that, while 50 million U.S. employees want to work from home, and 45 percent of jobs are compatible with teleworking, only 2.9 million consider their home their primary place of work.⁴⁰ Ridesharing now accounts for 10 percent of work trips.⁴¹ A White House Council of Economic Advisers study found that less than one-third of those with full-time jobs report having flexible hours in terms of when, where or how much employees work.⁴²

Any marketing campaign needs to be sensitive to the fact that significant segments of the population are very averse to sensing that the government is telling them how to live their lives. We envision a marketing campaign and website to provide people options for what they *can* do, not what they necessarily *should* do. We see this project as providing a free market where people can easily choose which tools suit them best without wasting a lot of time finding the information on their own. However, this approach could easily be misinterpreted, and research looking into how various populations interpret messages is necessary to make sure the campaign is successful.

The Costs and Benefits of the Media Campaign

Costs

A Congressional Research Service report from March 2012 reports that the federal government spent more than \$900 million on contracts for advertising in fiscal year 2010, a figure that does not include all agency expenditures.⁴³ The Department of Defense, for instance, spent \$545 million, primarily on recruiting new soldiers. From 1998 through 2006, the federal government spent \$1.4 billion on the National Youth Anti-Drug Media Campaign, or over \$150 million each year.⁴⁴

In comparison with these expenditures, as well as to the cost of gasoline to consumers in 2011, which was more than \$475 billion,⁴⁵ the anticipated cost of the public-private partnership marketing plan of about \$50 million/year is quite small.⁴⁶ U.S. consumers spend less on

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gasoline in one hour. Working with the Ad Council would even be substantially cheaper for the federal government.

Benefits

Given how small the costs are compared to the expense of paying for fuel, even if the public-private partnership media plan only reduces consumption by 1 percent, it still will pay for itself about 100 times! An average campaign with the Ad Council receives about \$25-\$30 million in donated media per year, which means a decline in gasoline use of a miniscule 0.01 percent would still make the campaign cost-effective.⁴⁷

Existing studies do not provide a clear indication of how much the campaign will reduce consumption, though they do provide an upper bound of how effective it could be. Most of the available studies analyze the short-run impact of driving classes in which small groups of people are taught smart driving principles in a classroom setting, often with driving instructors. These studies generally show a reduction in oil consumption of 5-15 percent.⁴⁸ EcoDrivingUSA, for instance, claimed, “A typical EcoDriver can increase fuel efficiency by 15 percent or more.”⁴⁹ The National Renewable Energy Laboratory recently published a study of fuel savings from a variety of smart driving techniques and in-car devices, estimating that consumption could be reduced 5-10 percent for most drivers and about 20 percent for those with aggressive driving styles.⁵⁰

This campaign relies on marketing rather than small classes, so we cannot expect it to have quite as much of an effect. A 2007 analysis of the *Het Nieuwe Rijden* campaign in the Netherlands did not explicitly measure fuel savings but found that it saved about 0.3 million metric tons of CO₂.⁵¹ This figure is equal to a little less than 1 percent of traffic and transport CO₂ emissions in the Netherlands in 2010.⁵²

We are particularly interested in the impact during a price shock. The International Energy Agency (IEA) suggests that quick demand responses could be more substantial. In its 2005 study titled *Saving Oil in a Hurry*, it estimated that in North America during a crisis, teleworking could save 4.4 percent, a compressed four-day work week 2.8 percent, and carpooling 1 percent of

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transport fuel.⁵³ The consensus estimate for the impact of a comprehensive ecodriving campaign was a decline in transport fuel use of 5.0 percent. While these estimates are not additive, any fuel use reductions of these magnitudes would vastly outweigh the costs of a marketing campaign. The IEA put the cost of an ecodriving campaign that cost about \$3 million at an amazingly low \$0.06/barrel of oil saved.

Another important benefit is the extent to which these measures could empower households. This is, admittedly, an intangible benefit that is extremely difficult to quantify. But we believe it an important benefit nonetheless. One of the effects of an oil shock is to raise uncertainty—about future prices, general economic conditions, and, importantly, household well-being. Confronting such uncertainty with few options for mitigation can inculcate a sense of powerlessness or even hopelessness associated with a loss of control over one’s current situation and future prospects. On the margin, the measures we suggest will help ameliorate this loss of control by giving households real tools to reduce their fuel consumption. Such a benefit, we should stress, may not itself justify our proposal. But we believe it to be an important and positive side effect.

We believe, moreover, that such a campaign could offer a “teaching moment” for our political leaders, should they choose to seize the opportunity. The experience of candidate Obama in 2008, mentioned above, suggests that leaders may be wary of such an approach. But we believe that, if couched in terms of individual choice and empowerment, such a message would resonate with the public.

Not least, our suggestions—and, in particular, their avoidance of direct regulation—are consistent with a small-government approach that could find support across the political spectrum.

Other Options We Considered but Decided Against

This project did not begin with any intent to advocate a media campaign and improved websites. We searched for ways to encourage businesses to offer more commuting options to their employees, but ultimately decided that there was little that the government could usefully do.

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Businesses likely see alternative work arrangements as perks for their employees. Many employees prefer extra time with their family and a chance to avoid rush hour.

One possibility we considered was that it could make sense for the government to help pay for additional technology that would enable teleworking. However, the impact of an oil shock on a company's employees only matters in certain cases, such as when a company happens to have many people who need to drive a long distance to get to their jobs. In this case, the company itself should realize that reluctance to change would lead to the possibility of losing important employees or hurting employee morale.

Additionally, multiple sources have almost unanimously noted that the greatest barrier to teleworking is the uneasiness that middle managers have not being able to see their employees working, not lack of technology.⁵⁴ While the Council of Economic Advisers finds that almost one-third of firms cite limited funds or costs as impediments to implementation of more flexible work schedules, giving tax credits for technology could also provide money for companies that already would have let employees telework.

In a tight fiscal environment, tax credits for technology would also be much more expensive than a marketing campaign. If the federal government passed the Telework Tax Incentive Act (HR 710), which gives tax credits of up to \$1,000 for teleworking, the bill could cost the same as our proposed marketing plan and benefit fewer than one in every 2,500 employees in the United States.⁵⁵

The benefits of paying significant sums to encourage teleworking would also not be particularly promising. Employees who can telework are white-collar and tend to be more educated and have higher incomes, so they should be the least affected during an oil shock. The total possible mileage reduction is modest when one considers that work-related driving accounts for about one-third of total driving from personal vehicles, but only about one-half of employees could telework, and most who currently telework only do so one to three times a week.⁵⁶

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Under law, employers in the United Kingdom, New Zealand, and Australia must grant a meeting with employees who want a change in their work schedules.⁵⁷ The employer does not have to agree to the actual request, but the process is formalized. This system seems very reasonable, but we doubt that the prospect of a future oil shock could be the impetus to implement such a policy in the United States. Broader social forces would be needed, likely concerning work-life balance, to get a policy like this passed.

Various countries in Europe also encourage drivers to take classes on smart driving techniques. Such an approach is extremely expensive and would require the training of many new teachers.

Other Useful Policies

In terms of what could be acceptable actions in addition to the media campaign, there are a few small suggestions other groups have made, but they should be less important than the media campaign itself. Teleworkers in certain states are double-taxed. Though most states with income taxes tax income in proportion to the amount of time spent working in a state, some like New York tax all of the income of nonresident teleworkers who may live in a neighboring state.⁵⁸ The two senators from Connecticut introduced a bill in 2011 to eliminate this practice with the Teleworker Tax Fairness Act (S. 811). The Senate held hearings, but the bill remains in the Health, Education, Labor, and Pensions Committee.⁵⁹

The Ridesharing Institute, which is the premier institute focused on the issue and has ties with the automotive industry, military and various transportation officials is encouraging the Department of Transportation to designate a staffer who specifically focuses on ridesharing issues.⁶⁰ Some of the media campaigns in Europe include competitions and events that could be useful to a U.S. advertising campaign in certain circumstances.⁶¹

III. Other Policies that Deserve Study and May Belong in a Comprehensive Petroleum Shock Response Plan

In addition to a media plan, one other demand side policy that merits inclusion in a comprehensive oil shock response plan (despite the fact that it does not fall under the rubric of

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dynamic demand response) is a “cash for clunkers program.” During an oil crisis, consumers tend to acquire fewer new vehicles, causing damage to the auto industry and the economy at large. The leading expert on the negative macroeconomic impacts of oil shocks, economist Jim Hamilton, argues that if it weren’t for reduced auto purchases, it is unlikely there would have been recessions in 1980 or 1990-1.⁶² He says even the most recent recession would have started months later if consumers had not cut back on new vehicle purchases.

In 2009, Congress enacted such a cash-for-clunkers program. It provided subsidies for the purchase of new, more fuel-efficient vehicles. The scrapped vehicle had to have an average fuel economy of 18 mpg or less, and the consumer received a rebate of \$3,500 or \$4,500 depending on the fuel economy improvement.⁶³ The program had several goals: the first was to give a boost to a struggling national economy; the second was to aid the ailing U.S. automotive sector; the third was to increase the fuel efficiency of the U.S. automotive fleet. The program was very popular with consumers. Indeed, Congress extended it because of popular demand. However, the program’s economic and environmental impacts have been subject to contradictory critiques.⁶⁴

On the supply side, there has also been some discussion of creating a strategic reserve for refined products. In 2005, Hurricane Katrina revealed the vulnerability of Gulf Coast refineries and therefore the U.S. economy to extreme weather. On the other hand, the United States is now a modest net exporter of refined products, including gasoline; in 2011, U.S. exports of products exceeded imports by about 200,000 b/d.⁶⁵ Moreover, there is a significant glut in global refining capacity.⁶⁶

Still, there might be a need for a modest stockpile of “boutique” fuels that would be difficult to acquire even in a world awash in refined products, or a decision to increase flexibility during a shock. One estimate is that there are about 15 types of gasoline due to various regulations, resulting in 45 different blends once different grades of gasoline (regular, mid-grade, and premium) are accounted for.⁶⁷ Maps show a complex array of fuels that are needed around the country.⁶⁸ Some of these blends are only produced by a small number of refineries, so if those refiners need to shut down because of a natural disaster or mechanical problem, those localities

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can suffer. The recent rapid price increases in California following a fire at one refinery and a power failure at another is a case in point.⁶⁹

IV. Conclusion

We must stress again that these proposals do not represent a comprehensive solution to our oil dependency. But we must also point out that even these longer-term solutions leave us vulnerable to oil shocks. That vulnerability will be with us as long as a) petroleum fuels most of our transportation and b) world supply is prey to instability in major producing regions like the Middle East. The U.S. ability to control events in the Middle East is clearly constrained. Even substantial U.S. military force was severely tested by the U.S. invasion and occupation of Iraq; as of this writing, Iran continues to resist U.S.-led international efforts to curb its nuclear program. The Arab Spring took the United States by surprise. The United States may have great influence in the region. But, if the past is any guide, the United States is not in a position to either predict crises or dictate their outcomes.

Pervasive use of electric vehicles would clearly reduce the dependence of the U.S. transportation sector on petroleum. But as the Department of Energy's Quadrennial Technology Review stresses, increased efficiency of internal combustion engines, as well as the adoption of alternative fuels, can also play an important role in longer-term demand- and supply-side policies that will be key to reducing that dependency.⁷⁰ In the 1980s, increased fuel efficiency standards, for instance, made an important contribution to restraining U.S. demand for petroleum. Higher standards enacted under the Obama administration are likely to have the same effect in the future.⁷¹

All this said, we do believe that the policies we have discussed bear serious consideration. These measures could be called, collectively, "A Demand-Side Strategic Petroleum Reserve." They will, in fact, reduce fuel use on the margin. They will reduce costs to consumers. And they will give households greater sense of control over their response to increased oil prices. The value of the last may be hard to quantify; but it can be real and significant. A marketing campaign represents a low-cost, small-government approach that can help achieve all these goals.

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