

Testimony of John D. Graham, Ph.D, Dean, Indiana University School of Public and Environmental Affairs

Hearing Title: Examining Federal Rulemaking Challenges and Areas of Improvement within the Existing Regulatory Process

Date: March 19, 2015

Subcommittee on Regulatory Affairs and Federal Management, Committee on Homeland Security and Governmental Affairs, United States Senate, Washington, DC.

My name is John D. Graham. I am Dean of the School of Public and Environmental Affairs, Indiana University (Bloomington and Indianapolis). From 2001 to 2006 I served as the Senate-confirmed Administrator, Office of Information and Regulatory Affairs (OIRA), US Office of Management and Budget (OMB). Prior to serving at OMB, I was the founding Director of the Center for Risk Analysis at the Harvard School of Public Health (1990-2001). I have published ten books and hundreds of articles on topics related to regulatory reform, especially on topics related to health, safety, and environmental regulation. I earned my BA in economics and politics from Wake Forest University, my Master's degree in public affairs from Duke University, and my Ph.D. in public affairs from Carnegie-Mellon University. My doctoral dissertation was one of the early analyses of the benefits and costs of the automobile airbag.

In my testimony today, I would like to suggest some directions for improvement in the federal rulemaking process. I will not present any detailed, formal recommendations but instead focus on several broad themes for the Subcommittee's consideration.

Throughout my testimony, I will use the term "regulatory impact analysis" (RIA) to refer to the many ways that analysis can support rulemaking. A wide range of analyses might be included in an RIA, such as a risk assessment, an engineering feasibility analysis, a technology assessment, a benefit-cost analysis, a cost-effectiveness analysis, a value-of-information analysis, a small-business impact analysis, an environmental impact analysis, an analysis of paperwork burdens, and a distributional equity analysis. Thus, I will be using the term RIA more broadly than it is sometimes used. I have taught several of these analytic tools in the classroom for over thirty years, and I have seen their practical value at OMB. I strongly believe that they can offer insights to policy makers that are not always evident through use of common sense and intuitive judgment.

If regulation was cost-free, it would not be necessary to require that new regulations be subjected to RIA. We could allow regulations to be enacted whenever regulators felt that they had identified a correctable problem. In reality, regulations are typically costly for the organizations that must comply with them (e.g., state and local governments, non-profit organizations, and businesses) and those costs are typically passed on to the consumers or taxpayers.

The critical question for regulations is whether the benefits are sufficient to justify the costs, and whether there is a regulatory alternative that might be preferable in its benefit-cost profile

(Sunstein, 2002). Often, the most critical contribution that OIRA/OMB makes is to suggest a regulatory alternative that had not previously been considered by the regulatory agency— one that is more effective and/or less costly (Sunstein, 2012; Dudley, SE, 2013). In some cases, RIAs help regulators find ways to save more lives and reduce compliance costs at the same time (Graham, 2008)!

Now I shall now turn to five themes or promising directions for regulatory reform, each supported by real-world case studies to give life to the theme.

Theme #1: The U.S. Congress should explore ways to strengthen its own capabilities and requirements regarding regulatory impact analysis (RIA).

The federal rulemaking process does not proceed unless the U.S. Congress provides a federal department/agency with statutory authority to regulate (Croley, 2008). Some of the problems we face in rulemaking relate to how Congress crafts an agency's statutory authority. In particular, Congress sometimes writes highly detailed regulations into statute, providing the executive branch with limited discretion as to how a complex problem is to be solved. When a new statute is passed on the heels of an emotional crisis (e.g., 9/11 or Katrina), Congress may use legislative language that suggests that a problem shall be solved, regardless of what it costs the public – even though that is impractical (Graham, 2008). And Congress does not require that new regulatory legislation be subject to benefit-cost analysis of alternatives before members vote on new laws.

When Congress regulates in the dark, bad things can happen.

Ethanol Case Study

Ethanol, often made from corn, can be used as a motor fuel (alone or in blends with gasoline). It has several advantages compared to gasoline: (1) it is a renewable fuel (meaning that it is not physically limited in long-run supply like oil is), (2) it can be produced in the US (instead of relying on imports), (3) it burns more cleanly than gasoline (e.g., fewer smog-forming pollutants), and (4) it supplies a source of oxygen that improves engine operation.

Based on these advantages, Congress passed regulatory legislation in 2005 and 2007 that rapidly expanded the amount of ethanol that refiners must blend with gasoline. (Technically, the requirement was for any “renewable fuel” but ethanol was known to be the most practical compliance option). Specifically, refiners were compelled to blend 9 billion gallons of ethanol by 2008, 15.2 billion gallons by 2012 and ultimately 36 billion gallons by 2022 (Graham, 2010). In the early years of the mandate, corn-based ethanol was a lawful alternative; in later years refiners were required to include “advanced” biofuels such as ethanol made from corn stover (e.g., the cob and the stalk rather than the corn) that reduce greenhouse gas emissions by 50%. In order to comply with the requirement, corn production was increased so rapidly that, in 2010, 40% of US corn output went to support ethanol production (Graham, 2010)!

Unfortunately, the renewable fuels mandate has proven to be quite costly, and has produced some pernicious side effects. For starters, ethanol is more costly to produce than gasoline and

has an energy content that is 20% less than that of gasoline, which means that a gallon of ethanol takes a car fewer miles than a gallon of gasoline. In addition, large amounts of energy are consumed in the process of growing and harvesting the corn, transporting the corn to ethanol plants, making ethanol from corn, and transporting the ethanol to refiners. The net energy balance of corn-based ethanol is not very good, which reduces its environmental advantages. And the rapid increase in corn production contributed to an unexpectedly sharp rise in the price of corn, including the many foods that use corn as an input (e.g., hogs are fattened with corn). Environmentally, some new downsides of ethanol production are now recognized, such as the release of greenhouse gas emissions into the atmosphere when new land is cleared for grow the corn used in ethanol production – though the magnitude of this effect is not known with much certainty (Dumortier, J et al, 2011).

It turns out that an analytically sound comparison of ethanol and gasoline is not straightforward and requires more than good intuition (de Gorter and Just, 2010). The combination of the downsides of corn-based ethanol has proven to be so disconcerting that Congress is now beginning to consider a relaxation or repeal of the renewable fuels mandate (Pear, 2012; EnerKnol Research, 2015). For a variety of reasons, the hoped-for “advanced biofuels” have been slow to reach the commercialization stage, and their economic competitiveness remains uncertain (Carriquiry, MA et al, 2011). With the recent surge of US oil production from shale, the energy-security rationale for ethanol has also been weakened, at least temporarily.

Before Congress voted on the renewable-fuels legislation in 2005 and 2007, and RIA should have been produced that compared the benefits and costs of corn-based ethanol with gasoline, assessed the economics of conventional and “advanced biofuels,” and considered some regulatory alternatives (e.g., a longer phase in period). In my opinion, much of the backlash against corn-based ethanol might have been lessened or avoided entirely by a simple regulatory alternative: a more gradual phase-in period that would have softened the temporary distortions in agricultural and energy markets that were experienced.

The U.S. Congressional Budget Office did perform a cost analysis in 2005, as is typical of major new legislation (e.g., see CBO, 2005). CBO, as a budget-oriented shop, focused on the fiscal impacts of the mandate on federal, state and local governments (which were minor), and devoted less attention to the larger impacts on the private sector (refiners, consumers of corn, and motorists). More importantly, CBO never estimated the benefits of the regulatory legislation. Thus, members of Congress were provided no objective assessment of whether the anticipated benefits of the mandate might justify the costs. And members of Congress were not provided a comparison of any regulatory alternatives (e.g., a slower phase-in period that would allow corn farmers and blenders to respond more gradually to the mandate). CBO did not do this RIA-like work because Congress does not require its own regulatory legislation to be subject to RIA. Moreover, CBO has never been properly organized and staffed to prepare formal benefit-cost analysis of regulatory legislation.

There are many lessons of regulatory reform that can be gleaned from the ethanol story. Here I am making a simple point: before members of Congress vote on new regulatory legislation, CBO or another objective agency should prepare a RIA. There would be an additional side benefit of a buttressed CBO: members of Congress could ask CBO to submit RIA-related

comments to federal agencies when they issue costly regulations. Bottom line: Congress needs to enhance its capabilities and requirements concerning RIA.

Theme #2: Good rulemaking requires effective use of high-quality information but federal agencies sometimes use data to inform rulemakings that do not meet minimum quality standards.

Lawyers play an important role in the rulemaking process but the quality of a rulemaking sometimes hinges greatly on the accuracy and relevance of the scientific, engineering, behavioral, and economic information (National Research Council, 2009). The federal government has access to tremendous expertise, both inside and outside of the government but that does not mean that regulators always use that expertise. For a variety of reasons, regulatory agencies often resort to short-cuts that cause important rulemakings to be informed by faulty, uncertain, or misleading information. Even when regulatory agencies are supplied valid and relevant information during the public-comment process, they do not always consider that information or use it properly.

Over the years, OMB has tried to correct the information-quality problem in two ways: (1) it has issued a bulletin calling for agencies to subject their key scientific determinations to independent external peer review, and (2) it has issued information quality guidelines that require agencies to create a correction mechanism for situations where the agency has disseminated erroneous or misleading information. The OMB initiatives are a modest step in the right direction but they have little teeth because the bulletin and guidance are not enforceable in federal court. Thus, it is not difficult to find examples where regulators officially disseminate information that is of poor scientific quality.

Case Study: Injuries from Table Saw Use

The U.S. Consumer Product Safety Commission (CPSC) has access to one of the best data systems in the world on the frequency of injuries related to consumer products. It is called the National Electronic Injury Surveillance System (NEISS), and it is based on nurse-conducted interviews with patients in 100 emergency rooms around the country. Based on NEISS data, CPSC estimates that, each year, about 30,000 emergency room visits are caused by blade-related injuries from finger contact with rotating table saws. An estimated 2,000 of those cases involve the amputation of at least one digit, and thousands more involve lacerations of the tendon that are so severe that permanent functional impairment results (even after reconstructive surgery).

CPSC is exploring a possible rulemaking that would reduce the frequency and severity of table saw injuries through new technologies based on flesh detection/contact and blade removal. Stated simply, if an inattentive woodworker allows his hand to get too close to the blade, the rotating blade would stop or move out of harm's way. A cabinet saw now on the market, called SawStop, has demonstrated the feasibility of this type of automatic safety system. I came to learn about SawStop in my role as an expert witness for the insurance industry in product liability cases involving table saw injuries (Graham and Chang, 2014).

Now in the pre-rulemaking phase, CPSC is seeking to determine whether most injuries to woodworkers occur on small benchtop models or whether they occur during use of large, more expensive cabinet saws.

CPSC administered a specialized survey to a sample of injured woodworkers where the woodworkers were asked, in effect, whether the table saw they used was a benchtop model or a cabinet saw. The intention of the CPSC survey was laudable but the questionnaire was poorly designed and produced invalid results that inappropriately indicted cabinet saws. The wording of the survey caused respondents to confuse cabinet and benchtop saws.

CPSC disseminated the results of the survey without any external peer review, even though the information is highly influential, since it could cause voluntary industry safety efforts, liability suits, and a future CPSC rulemaking to be shifted from benchtop models to cabinet saws. Some of the potential harm of the CPSC's dissemination has been explained in a public comment process but the flaws in CPSC's survey design could have been prevented through a careful validation effort upfront and/or an external peer review prior to release of the results of the survey.

There are many lessons that can be drawn from CPSC's efforts to enhance table saw safety but here my point is a very limited one: Good rulemaking requires use of high quality information; dissemination of faulty information by federal agencies can be quite harmful.

Theme #3: Organizations regulated by the federal government are sometimes subject to multiple, overlapping, and duplicative regulations issued by the same federal agency, by multiple federal agencies, or by multiple federal, state and local agencies.

Since the 1960s, the federal regulatory apparatus has grown enormously in both its scope and resources. One of the growth industries in the United States is staffing at federal regulatory agencies. Regulatory activity is also growing at the state and local levels of government, and in some cases the regulatees navigate regulatory requirements at all three levels of government.

One of the drawbacks of the proliferation of regulatory activities is that it raises the cost of doing business in the United States. In addition, regulatory complexity tends to favor large companies over small ones, since small companies typically have less in-house capacity to deal with multiple regulatory systems. One of the principal objectives of regulatory reform is to find ways to streamline the regulatory process so that laudable regulatory objectives can be accomplished at less cost and time to the regulated community (Breyer, 1982; Coglianese, 2012).

To illustrate the ramifications of regulatory complexity and duplication, I shall present several short case studies concerning the use of unconventional methods to produce oil and natural gas. Due to recent technological innovations (e.g., high-pressure hydraulic fracturing and directional/horizontal drilling), the United States recently surpassed Russia and Saudi Arabia as the leading oil and gas producer in the world. However, the success of the American energy industry is being slowed by regulatory constraints on the development of the infrastructure required to support this resurgent industry.

Case Study: Permits for New Sand Mines

When hydraulic fracturing is employed, the developer uses a combination of water, sand, and chemicals to coax the oil and/or gas from sedimentary rock thousands of feet below the earth's surface. The sand that is ideal for this purpose is called "Northern White" (round crystal), a type of sand that can withstand the severe heat and pressure of an underground oil and gas operation. As a rough rule of thumb, the more Northern White that is used by the developer, the more output the developer tends to obtain from a well. Much of this sand is located in two states: Wisconsin and Minnesota (Sider, 2014). The companies engaged in sand mining are required to obtain the appropriate permits from regulatory authorities to produce their product.

I recently asked a graduate student at IU-SPEA, Scott Perry, to outline for me the number of regulatory agencies that may be involved in permitting of a sand mining operation in this region. For illustrative purposes, we chose the State of Minnesota, which appears to have somewhat more complex requirements than the neighboring state of Wisconsin. Here is a summary of his preliminary analysis.

1. A conditional land use permit must be secured from the relevant local government authority (e.g., a county planning or zoning office). That permit typically requires information on the mining plan, hours of operation, noise, traffic, dust, and a reclamation plan.
2. A water appropriation permit must be obtained from the Minnesota Department of Natural Resources if a significant amount of water will be consumed during the mining activity and reclamation phase.
3. A protected waters permit must be obtained from the Minnesota Department of Natural Resources if the mining activity will impact a protected body of water.
4. A burning permit must be obtained from the Minnesota Department of Natural Resources if an applicant will need to burn brush from clearing and stripping operations.
5. A trout stream setback permit must be obtained from the Minnesota Department of Natural Resources if sand mining will occur within a mile of a designated trout stream.
6. An endangered or threatened species permit must be obtained from the Minnesota Department of Natural Resources if the mining activity will jeopardize the continued existence of any endangered or threatened species or result in adverse modification of critical habitat.
7. A wetland permit must be obtained from the Minnesota Board of Water and Soil Resources by demonstrating that impacts on wetlands will be avoided or that unavoidable impacts will be minimized, including mitigation measures for any loss of wetlands.
8. A fuel and hazardous materials management permit must be obtained from the Minnesota Pollution Control Agency, demonstrating containment, storage, recycling, and disposal of used oil, lubricants, antifreeze, paint, solvents and other hazardous materials.
9. A liquid storage tank permit must be obtained from the Minnesota Pollution Control Agency for both above-ground and below-ground storage tanks.
10. An air quality permit must be obtained from the Minnesota Pollution Control Agency demonstrating appropriate control of numerous air pollutants.
11. A water quality permit must be obtained from the Minnesota Pollution Control Agency if any discharge will occur for a variety of reasons (e.g., from washing materials that leave

- the mine, whether by gravity flow or pumping; storm water runoff from mine stock piles and pit walls; and generation of wastewater by air emission control systems).
12. An environmental review by the Minnesota Environmental Quality Board is required when mining is expected to exceed 40 acres in size to a mean depth of 10 feet.
 13. An environmental impact statement is mandatory for operations exceeding 160 acres.
 14. A permit may be required from the Minnesota Department of Transportation if silica sand is transported in a vehicle that exceeds specified size and weight limits.
 15. A federal Army Corps of Engineers permit (a “Section 404 Permit”) is required if discharge of dredged or fill material or excavation occurs within waters and wetlands.

Each of the 15 steps may seem reasonable but the combination of the fifteen steps (or even half of the steps) constitutes a major undertaking that can require many days of work by teams of lawyers, engineers, and scientists. For small mining operations, the required task of obtaining and implementing these permits is formidable.

Regulatory reform asks the following question: is there a creative way to streamline this process without any detriment to public/environmental protection? One way to explore this question is to compare the Minnesota requirements to the requirements in one or more neighboring states. Note that it is not appropriate for the federal government to ignore this issue on the argument that the permits are being required by state and local agencies in Minnesota. A close reading of the process will reveal that a variety of the 15 steps are required by federal laws such as the Clean Water Act, the Clean Air Act and the Endangered Species Act. Mining operations in the United States are a classic illustration of multiple, overlapping regulatory systems.

Case Study: Pipelines to Transport Oil and Gas

Pipelines are the safest and most cost-effective way to transport oil and gas from the drilling pad to a refinery or user. The commercial value of new drilling activity is diminished if pipelines do not exist to transport product to the marketplace. In recent years, it has become much more time consuming and expensive for pipeline companies to obtain permission from regulators to upgrade existing pipelines or install new ones, particularly pipelines that cross state lines. The years of controversy about the Keystone pipeline project have drawn some public attention to this issue but recent evidence suggests that the delays in the Keystone pipeline are not an aberration (Holland and Hart, 2013).

In the Bakken oil fields of North Dakota, oil and natural gas liquids can be transported to Gulf coast refineries, or to the east and west coasts, via rail, truck or barge. However, those methods of transport are typically less safe and often more than twice as expensive as transport by pipeline. In the Bakken, developers producing oil sometimes must co-produce natural gas as part of the system. However, North Dakota lacks the pipeline infrastructure to bring natural gas to markets where it is needed (Johnson, 2014). As a result, numerous developers flare (burn with no use of the energy) the gas rather than capture it, even though flaring is wasteful and bad for local air quality (Sider, 2014). The practice of flaring gas may soon be minimized by new regulatory requirements in North Dakota but part of the flaring problem is induced by a regulatory problem: the lack of a permitted pipeline network to move natural gas to markets where it can be sold to consumers, industry and utilities (Dawson, 2014).

The growing resistance to oil and gas pipelines in the United States is not simply the natural resistance of local residents and community leaders to the nuisance of pipeline construction and the occasional mishaps that occur due to defects in pipeline construction or inadequate maintenance and repair of pipelines. Recent news articles have documented a growing amount of collaboration between local activists and national environmental groups that oppose expanded production of oil and gas. The national groups are providing money and expertise to local groups, enhancing their ability to slow down the process of permitting pipelines (Harder, 2014). In the future, regulatory reformers need to be aware that multiple permitting requirements can provide multiple points of intervention for activist groups, whose objective is to delay permitting processes (Moore, 2013). The current regulatory structure is designed to assess the technical requirements for creating infrastructure for oil and gas development and not the social impacts, which may be the primary concern of activist groups.

A good example of a state whose economic future may be influenced by its ability to acquire numerous new pipelines is Ohio. The Utica Shale in eastern Ohio is now recognized as a profitable new source of “wet gas,” meaning that valuable liquids (ethane, butane, pentane and propane) can be separated out for use in industry while the dry gas can be sold to consumers and to generate electricity (Schneider, 2013). From 2012 to 2013, the amount of natural gas produced in Ohio more than doubled (from 87 to 172 billion cubic feet), mostly due to the application of hydraulic fracturing and horizontal drilling in the Utica Shale (Funk, 2014). Environmentally, Ohio is an attractive state for oil and gas development since its geology offers numerous sites suitable for safe deep-well injection of wastewater that is produced along with the gas (Downing, 2013). The neighboring state of Pennsylvania has a persistent waste-management challenge due to the lack of deep-well injection sites.

What Ohio does not have is a robust network of pipelines that can transport oil and gas to appropriate refiners, processors, and users. At the present time, there are three multi-billion dollar interstate pipeline projects under review at the Federal Energy Regulatory Commission (FERC), where the pipelines would serve different parts of the Utica Shale (Chavez, 2014). The FERC serves as the lead agency under which numerous other federal agencies permitting activities are “coordinated,” at times not very effectively. The resulting process has become quite complicated, with layers of review at both FERC and within other federal agencies. The Ohio example provides a practical example of how economic activity in a state, the region and the nation as a whole, is linked to an increasingly complex federal regulatory process.

Theme #4: Federal agencies sometimes make quasi-regulatory determinations of large economic import but with no supporting benefit-cost analysis.

I recently co-authored an article on the phenomenon of “stealth regulation,” defined as low-visibility federal regulatory activities that are not subject to any cost-benefit analysis requirements and are not typically subject to intensive OMB review (Graham and Liu, 2014). The phenomenon is worrisome because regulatory agencies, who sometimes fear the oversight, scrutiny, and delay associated with OMB review, may look to such quasi-regulatory actions to accomplish their policy objectives. Typically, the activities entail issuance of guidance documents, policy statements, waivers for state/local regulation, and the signing of

consent decrees that compel regulation (and hence reduce the effectiveness of OMB review) (Noe and Graham, 2008). Let me provide one simple but interesting example: the decision of a federal agency to allow the State of California to enact a distinctive regulatory program.

Case Study: California's Zero Emission Vehicle (ZEV) Program

The federal government has taken a variety of aggressive steps to promote the commercialization of the electric car. The policy rationales relate to both energy security and environmental protection (Sandalow, 2009). Specific measures include: up to \$7,500 in federal income tax credits for purchasers of electric vehicles; \$2.1 billion in subsidies for battery manufacturing projects, vehicle component production, construction of production facilities, and community demonstration projects where electric cars and charging stations are subsidized for citizens and community leaders; and billions more in federal loan guarantees for electric car facilities were granted to companies such as Nissan, Ford and several other suppliers (Graham et al, 2014).

On the regulatory front, EPA and DOT undertook a joint rulemaking (2009-2012) aimed at increasing the average fuel efficiency of passenger vehicles from 35.5 miles per gallon to 54.5 miles per gallon by 2025. The EPA-DOT rulemaking as a whole was supported by an elaborate RIA, including benefit-cost analysis. Tucked in the rulemaking were two little-noticed provisions for electric vehicles that were not subject to any cost-benefit analysis.

First, DOT/EPA encouraged vehicle manufacturers to comply with the tighter MPG requirements by producing electric vehicles rather than less costly innovations such as conventional hybrid engine (e.g., as championed by Toyota in the Prius) or the clean diesel engine (as championed by several German manufacturers) (Michalek et al, 2011; Huang et al, 2011). To tilt the compliance incentive in favor of electric vehicles, DOT/EPA allowed vehicle manufacturers to count each electric car as two vehicles instead of one in their MPG compliance calculations for the early years of the 2017-2025 program. In addition, in the carbon-control aspect of the rule, electric cars are not penalized for any of the carbon dioxide emissions that are induced at the electric power plant when a motorist draws electricity from the grid. In effect, electric vehicles are treated as “zero emission vehicles” (ZEVs) by DOT/EPA.

Second, and more importantly, in 2009 EPA granted a waiver to California (and about ten states aligned with California) under the Clean Air Act to proceed with an ambitious ZEV regulatory mandate (EPA, 2009). Vehicle manufacturers that wish to sell new vehicles in California (or the allied states of New York, Oregon, Washington, etc.) must offer an increasing number of ZEVs for sale from 2018 to 2025, reaching a minimum of 15% of new vehicle sales in 2025. Under the most recent version of the ZEV mandate, automakers do not receive any partial credit for selling conventional hybrids or clean diesels, though they can receive credit for an electric vehicle or a qualified fuel-cell electric vehicle. California-based Tesla (producer of the famous high-end electric sports car), which is classified as a “low volume” manufacturer under the rule, is exempt from ZEV burdens but permitted to sell its ZEV “credits” to other manufacturers, thereby boosting its troubled balance sheet.

Given that the federal government was undertaking numerous steps to promote the electric vehicle, EPA could have declined California's request for a waiver under the Clean Air

Act. Without such a waiver, California is not permitted under federal law to impose such a regulatory requirement on the automakers. The waiver decision that EPA made was not supported by a national RIA and was not reviewed by OMB.

I took a look at the technical rationale for the ZEV program that was issued by the California Air Resources Board (CARB). It does include a rudimentary RIA, but much of it is focused on whether the ZEV rule is good for California. In reality, the ZEV rule has national ramifications because more than 25% of new vehicles sold each year are sold in California or the aligned states.

The basic finding of CARB's cost-benefit analysis is that it will take about ten years of use for the energy savings from a ZEV to pay for the \$10,000 cost premium for a ZEV (CARB, 2011). A variety of technical assumptions in CARB's analysis would not likely have passed muster at OMB under the relevant RIA guidance document, Circular A-4 (OMB, 2003). But the key point is that the RIA was performed from California's perspective rather than a national perspective. This is particularly evident on the analysis of employment impacts, where CARB explores the job gains at companies that sell recharging stations (companies that are based in California) but gives less analytic attention to potential jobs losses at auto assembly plants and suppliers that are not typically based in California or the aligned states.

There are some plausible reasons to predict that the CARB mandate will cause a reduction in overall car sales, without offering much energy-security or environmental benefit. With regard to car sales, car dealers are finding it very difficult to sell electric cars, even with all of the subsidies and incentives now in place (including the attractive HOV lane access provided in California). The more affordable electric vehicles typically have a driving range of less than 100 miles on a full charge and take roughly four hours to recharge. In order to sell a large number of ZEVs to new car buyers, manufacturers and dealers may have to cut prices on ZEVs and compensate somewhat for those losses by raising prices on non-ZEV vehicles (Gruenspecht, 2001). When sales of non-ZEV vehicles decline, welfare losses ensue. The resulting welfare losses will not be confined to California and the aligned states. Those losses will be felt partly in the form of reduced bonuses to auto workers and in layoffs at assembly plants where non-ZEV vehicles are made. Few employment losses will occur in ZEV states because few assembly and supplier plants are located in those states. Adverse labor impacts will be concentrated in geographic locations where vehicles are produced and where suppliers are located (e.g., Mexico, Japan, Germany, Missouri, Ontario, Michigan, Alabama, Tennessee, Kentucky, and Indiana).

On the other hand, the ZEV program may not produce any significant environmental benefits because the market interactions between the ZEV mandate and the federal 54.5 MPG fuel-economy mandate were not analyzed carefully. If a manufacturer is compelled to sell an additional ZEV on the California market, they can count that vehicle twice (!) under federal regulation in their MPG compliance calculation. That means that the manufacturer is free to sell an additional gas guzzler and still comply with the federal MPG mandate. Adding the ZEV mandate to a federal program that encourages ZEVs could, under plausible assumptions, cause more carbon pollution than a federal MPG program by itself (with or without the 2-for-1 compliance sweetener). To put it simply, no one really knows whether the California ZEV program will accomplish any climate-protection benefits because a proper RIA was not

performed. Previous research on other California and EPA vehicle regulations is pessimistic about the extent of incremental climate-protection gains from California rules (Goulder et al, 2009).

The sobering story of the California ZEV program illustrates why a relatively simple waiver decision by EPA can have national economic ramifications. Yet that decision is not required to be subject to a national RIA or OMB review.

Theme #5: Federal agencies sometimes issue regulations without considering their implications for international trade.

During my tenure at OMB (2001-2006), I devoted considerable energy to promoting more regulatory cooperation between regulators in the United States and regulators in the European Union (EU). Most of the trade issues that divide the United States and Europe relate not to tariffs but to conflicting regulatory requirements that impact companies doing business on both sides of the Atlantic Ocean.

In the United States, European regulators may have a reputation for more stringency than American regulators but my experience in this area is that there is plenty of unreasonable regulatory activity in the United States as well as in Europe. Indeed, the most comprehensive study found no evidence that the EU is systematically more precautionary than the United States (Wiener et al, 2011).

Last year I had the fascinating experience of testifying before the trade committee of the European Parliament on the subject of a possible trade agreement between the United States and the European Union. Both agriculture and autos were an important part of the discussion.

It became apparent that many thoughtful Europeans are aware that the genetically-modified seeds that are widely used in U.S. agriculture would not be a significant threat to human health, safety, or environmental protection if used widely in Europe. Nonetheless, those same thoughtful people admit that European regulators do not permit these seeds to be sold to European farmers (excepting some recent authorizations by the Spanish government). Indeed, the World Trade Organization – though it has weak powers to enforce its decisions – has already ruled in favor of the United States on this issue.

I was pretty disturbed about the European position on agriculture until I learned more about how automobiles are regulated differently in the United States than they are in Europe, and about the persistent tendency of auto regulators in the US to dismiss the legitimacy of the European regulatory approach to auto safety and emissions control. The root of the problem began in 1958 when many countries in the world agreed to regulate automobiles in the framework of a United Nations agreement. With respect to safety, the United States has never been willing to become a contracting party to the UN agreement. In effect, from an international perspective, the U.S. National Highway and Traffic Safety Administration (NHTSA) pursues its own regulatory agenda. On emissions control, some cooperative progress has been made on regulations for passenger cars and light trucks but commercial vehicles remain a major area of regulatory conflict between the United States and the EU.

Once US-EU regulatory differences are codified, it is laborious to harmonize them. Rather than negotiate and harmonize hundreds of different regulations related to headlights, tires, bumpers and other specific parts, the EU has proposed to the United States a process of mutual recognition: we should accept cars that meet EU's auto regulations; they should accept cars that meet U.S. auto regulations. According to an RIA prepared by the European Commission, even a partial mutual recognition agreement would have the effect of increasing the sales of vehicles and parts on BOTH sides of the Atlantic. The benefits might actually be larger for the United States than for the EU (i.e., export growth from the EU to the United States by 71% and by 207% from the United States to the EU) (EC, 2013; Centre for European Policy Research, 2013). For Europe, where the economy is much more depressed than it now is in the US, a boost in car sales to the US would be extremely valuable.

Unfortunately, what I hear through informal sources is that U.S. regulators are dragging their feet on the subject of mutual recognition in the auto sector. A key issue will be whether the EU can show that the overall safety of European cars is comparable to the overall safety of American cars. Assuming the necessary data are available, I will be surprised if the EU is unable to make this demonstration.

In summary, I want to take this opportunity to applaud each member of the Subcommittee for devoting time and energy to the topic of regulatory reform. It is an issue that can seem opaque and complex but it is, as I have demonstrated, very important to the economic future of the United States and our friends around the world.

Thank you in advance for considering this request. I look forward to comments and questions from the Subcommittee.

REFERENCES

Breyer, S. Regulation and Its Reform. Harvard University Press. Cambridge, MA. 1982.

California Air Resources Board/California Environmental Protection Agency. Staff Report: Initial Statement of Reasons: Advanced Clean Cars: 2012 Proposed Amendments to the California Zero Emission Vehicle Regulations. 2011.

Carriquiry, MA, Du X, Timilsina, GR. Second Generation Biofuels: Economics and Policies. Energy Policy. 39. 2011, 4222-4234.

Coglianesse, C (ed). Regulatory Breakdown: The Crisis of Confidence in US Regulation. University of Pennsylvania Press. Philadelphia, PA, 2012.

Congressional Budget Office. S. 606: Reliable Fuels Act. Cost Estimate. May 23, 2005.

Croley, S. The Possibility of GOOD Regulatory Government. Princeton University Press. 2008.

De Gorter, H, Just DR. The Social Costs and Benefits of Biofuels: The Intersection of Environmental, Energy, and Agricultural Policy. *Applied Economic Perspectives and Policy*. 32(1). 2010, 4-32.

Downing, B. Portage County is No 1 in Ohio for Injecting Drilling Wastes. *Akron Beacon Journal*. July 14, 2013.

Dudley, SE. OMB's Reported Benefits of Regulation: Too Good to Be True? *Regulation*. Summer 2013, 26-30.

Dumortier, J et al. Sensitivity of Carbon Emission Estimates from Indirect Land-Use Change. *Applied Economic Perspectives and Policy*. 33(3). 2011, 428.

Centre for Economic Policy Research. Reducing Transatlantic Barriers to Trade and Investment. 2013, http://trade.ec.europa.eu/doclib/docs/2013/march/tradoc_150737.

Chavez, J. Ohio's Natural Gas Boom Brings Flurry of Pipeline Construction. *The Blade*. December 7. 2014.

Dawson, C. North Dakota's Latest Fracking Problem. *Wall Street Journal*. July 1, 2014, B1.

EnerKnol Research. Senate Amendment to Repeal RFS Corn Ethanol Amendment. January 26, 2015.

European Commission. Impact Assessment Report on the Future of EU-US Trade Relations. Commission Staff Working Document. 2013, http://trade.ec.europa.eu/doclib/docs/2013/march/tradoc_150759.pdf.

Funk, J. Utica Shale Play Smaller than Thought But Production Staggering. *Cleveland.com*. March 7, 2014.

Goulder, L et al. Unintended Consequences from Nested State and Federal Regulations: the Case of Pavley Greenhouse-Gas-Per-Mile Limits. National Bureau of Economic Research. Working Paper #15337. 2009.

Graham, JD. Saving Lives through Administrative Law and Economics. *University of Pennsylvania Law Review*. 157(2). December 2008, 395-540.

Graham, JD. *Bush on the Home Front: Domestic Policy Triumphs and Setbacks*. Indiana University Press. Bloomington, Indiana. 2010.

Graham, JD, Cisney, J, Carley, S, Rupp, J. No Time for Pessimism about Electric Cars. *Issues in Science and Technology*. 31(1). Fall 2014, 22-40.

Graham, JD, Liu, CR. Regulatory and Quasi-Regulatory Activity Without OMB and Cost-Benefit Review. *Harvard Journal of Law and Public Policy*. 37(2). Spring 2014, 425-445.

Graham, JD, Chang, J. Reducing the Risk of Injury from Table Saw Use: The Potential Benefits and Costs of Automatic Protection. *Risk Analysis*, 2014, doi:10.1111/risa.12258.

Gruenspecht, H. Zero-Emission Vehicles: A Dirty Little Secret. *Resources*. Issue 142. Winter 2001, 7-10.

Harder, A. Emboldened by Keystone, Critics Delay New Pipelines. *Wall Street Journal*. December 10, 2014, A1.

Holland and Hart, Expedited Federal Authorization of Interstate Natural Gas Pipelines: Are Agencies Complying with the EPA Act 2005? The INGAA Foundation Inc. December 21, 2012.

Huang, S et al. The Effects of Electricity Pricing on PHEV Competitiveness. *Energy Policy*. 39. 2011. 1552-1561.

Johnson, J. Methane's Role in Climate Change. *Chemical and Engineering News*. 92(27). July 7, 2014, 10-15.

Kowalski, KM. Wet Gas Means More Profits for Ohio, Says State. *Midwest Energy News*. July 15, 2014.

Michalek, JJ et al. Valuation of Plug-In Vehicle Lifecycle Air Emissions and Oil-Displacement Benefits. *Proceedings of the National Academy of Sciences*. 108(40). October 4, 2011, 16554-16558.

Moore, S. Using "Sue to Settle" to Thwart Oil and Gas Drillers. *Wall Street Journal*. October 5-6, 2013, A11.

National Research Council. *Science and Decisions*. National Academy Press. 2009.

Noe, PR, Graham, JD. Due Process and Management for Guidance Documents: Good Governance Long Overdue. *Yale Journal on Regulation*. 25. Winter 2008, 103.

Pear, R. After Three Decades, Tax Credit for Ethanol Expires. *New York Times*. January 1, 2012.

Sandalow, DB (ed). *Plug-In Electric Vehicles*. Brookings Institution Press. Washington, DC. 2009.

Schneider, K. Ohio's Resurgent Natural Gas Industry Spends Millions to Set Up Shop. *New York Times*. March 13, 2013, B4.

Sider, A. Energy Companies Try New Methods to Address Fracking Complaints. *Wall Street Journal*. May 19, 2014, R2.

Sider, A. Demand for Sand Takes Off Thanks to Fracking. Wall Street Journal. August 5, 2014, B1.

Sunstein, CR The Cost-Benefit State: The Future of Regulatory Protection. American Bar Association.

Sunstein, CR. The Office of Information and Regulatory Affairs: Myths and Realities. Public Law and Legal Theory Working Paper Series, Paper No 13-07, Harvard Law School 2012.

US Environmental Protection Agency. California State Motor Vehicle Pollution Control Standards: Notice Granting a Waiver of Clean Air Act Preemption of California's 2009 and Subsequent Model Year Greenhouse Gas Emission Standards for New Motor Vehicles. 74 Federal Register. July 8, 2009, 32,744.

US Office of Management and Budget. OMB Circular A-4. Regulatory Analysis. 2003.

Wiener, J, Rogers MD, Hammit JK, Sand, PH (eds). The Reality of Precaution: Comparing Risk Regulation in the United States and Europe. Resources for the Future Press. Washington, DC. 2011.