COMMENTS OF REASON FOUNDATION ON THE REGULATORY BURDEN REDUCTION RFI, U.S. Department of Energy, Document Number 2017-10866, Docket ID DOE_FRDOC_0001-3375, 82 FR 24582, 5/30/2017.

July 14, 2017

Reason Foundation respectfully submits this comment on the Regulatory Burden Reduction RFI issued by the United States Department of Energy ("DOE").[1]

This comment seeks to address questions raised by the Department of Energy in its Request for Information regarding "existing regulations, paperwork requirements and other regulatory obligations that can be modified or repealed, consistent with law, to achieve meaningful burden reduction while continuing to achieve the Department's statutory obligations." The comment is structured around the first six questions raised by the DOE.

(1) How can DOE best promote meaningful regulatory cost reduction while achieving its regulatory objectives, and how can it best identify those rules that might be modified, streamlined, or repealed?

The Department of Energy's mission is to:[2]

- *Promote dependable, affordable and environmentally sound production and distribution of energy;*
- *Advance energy efficiency and conservation;*
- *Provide responsible stewardship of the Nation's nuclear weapons;*
- *Provide a responsible resolution to the environmental legacy of nuclear weapons production; and*
- *Strengthen U.S. scientific discovery, economic competitiveness, and improve quality of life through innovations in science and technology.*

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[2] https://www.reginfo.gov/public/jsp/eAgenda/StaticContent/201610/Statement_1900.html

While regulation has a significant effect in each of these areas, this comment focuses on the first, second and last. Taking each in turn:

Promote dependable, affordable and environmentally sound production and distribution of energy

The promotion of "dependable, affordable and environmentally sound production and distribution of energy" relies on effective regulation of the production and distribution of energy. In many cases, existing regulations drive up the cost of production and distribution of energy. Considerable improvements in dependability, affordability and the cost-effectiveness of environmental protection objectives could likely be achieved through regulatory reform. Specifically, the DOE might consider the following areas of regulation as it seeks to identify priorities:

(a) Permitting rules, including the application of the National Environmental Policy Act, which currently hampers the development of many energy projects, often without generating any significant environmental benefits.[3]

The development of new energy sources, such as the extraction and distribution of oil and natural gas, combined with the use of oil for transportation and natural gas for electricity generation and industrial processes, has reduced costs for producers and consumers and generated significant economic benefits.[4] In addition, the use of natural gas as an energy source has contributed to significant reductions in emissions of various pollutants.[5]

Unfortunately, the requirement to undertake case-by-case evaluations of individual energy projects on federal lands, ostensibly in order to meet the

[3] Randy Simmons, Ryan Yonk, and Kenneth Sim, *Nature Unbound*, Oakland, CA: Independent Institute, 2016, pp. 73-101.

[4] The Perryman Group, *The Economic Benefits of Oil and Natural Gas Production: An Analysis of Effects on the United States and Major Energy-Producing States*, TPG, 2016, Available at: https://www.perrymangroup.com/wp-content/uploads/Perryman-Oil-Impact-Study.pdf

[5] J. A. de Gouw, D. D. Parrish, G. J. Frost, and M. Trainer, "Reduced emissions of CO_2, NOx, and SO_2 from U.S. power plants owing to switch from coal to natural gas with combined cycle technology," *Earth's Future*, Vol. 2 (2), Feb 21, 2014. Available at: http://onlinelibrary.wiley.com/doi/10.1002/2013EF000196/pdf

requirements of NEPA, often results in lengthy delays, raising the cost of such projects and reducing their net benefit to society.[6]

Simplifying and streamlining the NEPA process for energy projects could have substantial benefits. Some efforts have already been made in this direction by the DOE,[7] but much more can be done.

(b) Regulations that seek to reduce emissions of greenhouse gases. Numerous DOE regulations are premised, in part at least, on the assumption that there is a need to reduce greenhouse gas (GHG) emissions through federal action. In evaluating the merits of such regulations, the DOE has used the "social cost of carbon" (SCC) developed by the Interagency Working Group (IWG). However, following criticisms of the IWG's estimates of the SCC, it was withdrawn.[8] Rigorous analysis suggests that the SCC is likely zero or close to zero.[9] As such, DOE regulations premised in part or in full on a non-zero SCC should be reassessed using a SCC of zero. Regulations that fail a cost-benefit test using a SCC of zero should be rescinded.

Advance energy efficiency and conservation

Most improvements in energy efficiency and conservation have occurred as a result of competition between producers of goods and services. Such competition motivates producers to use resources more efficiently, in order to reduce costs and thereby offer consumers products at a lower price. In addition, competition drives producers to supply products that themselves use resources efficiently in order to meet consumer needs and wants.

The history of development of modern lighting offers a good illustration of the importance of competition. The incandescent bulb was developed in a competitive race between various

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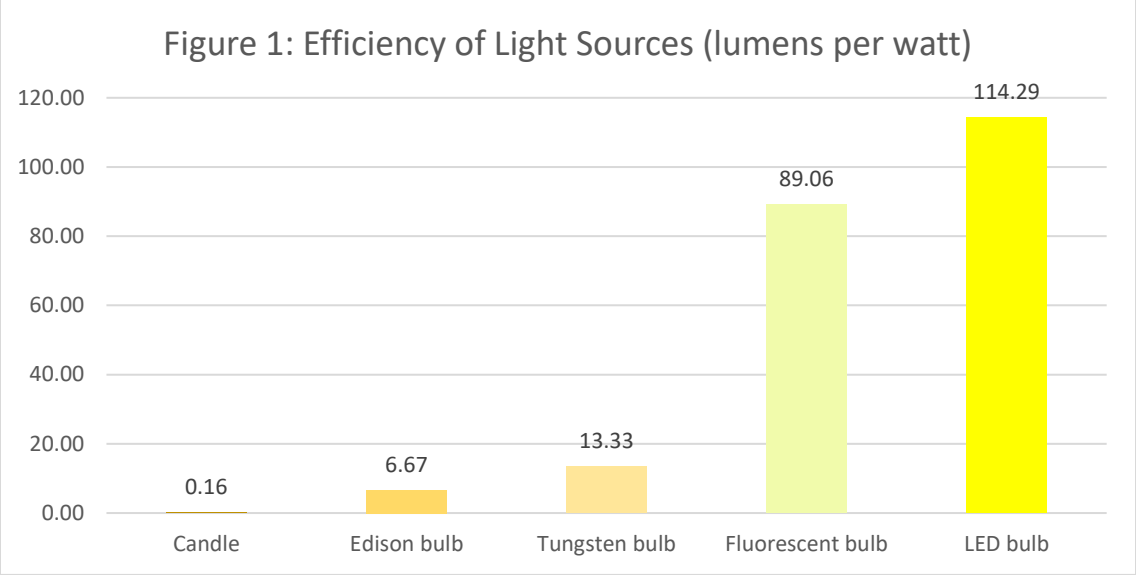
[6] Randy Simmons, Ryan Yonk, and Kenneth Sim, *Nature Unbound*, Oakland, CA: Independent Institute, 2016, pp. 73-101, at p. 100.

[7] DOE Retrospective Review Report as of March 2016, available at: https://energy.gov/sites/prod/files/2016/03/f30/March%202016%20EO%2012866%20Report%202_10_16.pdf

[8] White House: *Presidential Executive Order on Promoting Energy Independence and Economic Growth*, March 28, 2017.

[9] Julian Morris, *Assessing the Social Costs and Benefits of Regulating Carbon Emissions*, Los Angeles: Reason Foundation, 2015. Available at: http://reason.org/files/social_costs_of_regulating_carbon.pdf

entrepreneurs, including Thomas Edison.[10] Subsequently incremental improvements, including the development of the tungsten filament, were also driven by competition between multiple producers. Like the incandescent bulb, the fluorescent bulb was developed over many years by competing entrepreneur-scientists.[11] The same is true for the LED lights, a technology that has been around for decades but only recently became a viable source of ambient lighting—and where competition continues to drive rapid innovation, leading to improvements in effectiveness, efficiency and cost.[12] As a result of these improvements, over the past 150 years the efficiency of light sources has increased nearly 1,000 fold—as can be seen in Figure 1.



Source: Julian Morris, *Climate Change, Catastrophe, Regulation, and the Social Cost of Carbon*, Los Angeles: Reason Foundation (forthcoming).

Computers offer another example of the power of competition. Early computers were vast, heavy, expensive and slow. The ENIAC, for example, occupied about 1800 square feet, weighed 30 tons, consumed 160 kilowatts of energy, cost $600,000 (in 1997 dollars), and was capable of processing only about 300 instructions per second.[13] Today it is possible to purchase a fully functioning computer (the Raspberry Pi Zero W) that processes about 870 million instructions

[10] Ernest Freeberg, *The Age of Edison*, New York: Penguin Press, 2013.
[11] See e.g.: http://www.edisontechcenter.org/fourescentlampdev.html

[12] Jessie Lin, "Key trends in the development of LED lighting technology," Digitimes Research,

[13] See e.g.: https://www.thoughtco.com/history-of-the-eniac-computer-1991601 and https://www.frc.ri.cmu.edu/~hpm/book97/ch3/processor.list.txt

per second,[14] consumes less than 1 watt of power,[15] has built-in wifi, can fit in the palm of one's hand, and costs only $10.

These examples highlight the importance of competition as the driving force behind innovations leading to energy efficiency improvements. While mandates may have contributed in some cases to improvements in energy efficiency, in most cases they have not been a major driving force. Moreover, to the extent that mandates have resulted in efficiency improvements, they have likely in most cases come at the cost of a reduction in other innovations, with adverse effects for society. All companies subject to an efficiency mandate are effectively forced to divert resources toward compliance with the mandate and away from other investments that might have resulted in innovations of various kinds (including efficiency improvements). Since innovation is both cumulative and combinatory, mandates that reduce the diversity of innovation almost inevitably result in a reduction in overall levels of beneficial innovation.

Claims that mandatory improvements in the efficiency of products are necessary are often predicated on the assumption that consumers do not appropriately value efficiency when making product purchases. (In the context of energy use, this is often referred to as the "energy paradox.") But this is belied by the evidence, which shows that consumers do rationally factor in the expected savings from more efficient products when making purchasing decisions. For example, a recent study found a one-to-one correspondence between expected net savings resulting from fuel economy differences between otherwise similar automobile models and the price differential between those automobiles.[16]

Unfortunately, mandatory efficiency improvements have the effect of driving up the cost of new products for many consumers. As a result, some consumers who might have purchased a new product had it been less expensive may delay their purchase of a product whose price has been driven up by the efficiency mandate, or, worse, not make a purchase at all.

Take air conditioners, for example. In locations where air conditioning is used for many days of the year, consumers are likely to be willing to pay for more-efficient units. But in places where

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[14] http://www.techrepublic.com/article/raspberry-pi-zero-wireless-hands-on/

[15] http://raspi.tv/2017/how-much-power-does-pi-zero-w-use; http://www.techrepublic.com/article/raspberry-pi-zero-wireless-hands-on/ (0.18 amps at 5.19 volts = 0.93 watts)

[16] James M. Sallee, Sarah West and Wei Fan, "Do Consumers Recognize the Value of Fuel Economy? Evidence From Used Car Prices And Gasoline Price Fluctuations," NBER Working Paper 21441, July 2015.

air conditioners are used only rarely, consumers are less likely to be willing to pay more for more efficient units because the net cost, taking into account the cost of electricity and the amount the unit will be used, does not justify such a purchase. Since air conditioning dramatically reduces mortality on very hot days,[17] it is important that the price of air conditioning units not be driven up unnecessarily. The DOE has partially taken this into consideration by issuing differential energy efficiency requirements for air conditioning units sold in different locations.[18] However, a better approach would be simply to remove such requirements altogether and allow consumers to make decisions concerning the desired efficiency of their air conditioners based on their expected use of the product. In areas where air conditioners are used rarely, consumers could then purchase less expensive, less efficient units, enabling them more cost-effectively to manage heat and humidity when necessary. Such a change would likely save lives.

Efficiency standards can have other perverse effects. Take the mandated reductions in water flow for shower heads. To comply with federal rules,[19] new shower heads typically incorporate regulators to limit the flow of water to 2.5 gallons/minute. Many consumers prefer more powerful showers and remove these regulators.[20] It is likely that some consumers who remove the regulators entirely might, if given the option, choose to regulate water flow at a rate that still enables them to take a satisfying shower—but that option has largely been precluded by the mandated rules. As a result, consumers face a binary choice: leave the mandated regulator in, or remove it (and regulate water flow using a variable valve, if installed).

Energy efficiency mandates have also had perverse effects. The gradual phase-out of incandescent bulbs led initially to greater use of compact fluorescent (CF) bulbs, which have different light and performance characteristics than incandescent bulbs. The light emitted by CF bulbs is typically cooler, which creates a less relaxing atmosphere.[21] In addition, although CF

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[17] Alan Barreca, Karen Clay, Olivier Deschenes, Michael Greenstone and Joseph S. Shapiro, "Adapting to Climate Change: The Remarkable Decline in the U.S. Temperature-Mortality Relationship over the 20th Century," National Bureau of Economic Research: NBER Working Paper, January 2015. Available at: http://www.econ.yale.edu/~js2755/Climate_Adaptation_BCDGS.pdf

[18] 10 CFR 430, Appendix S of Subpart B

[19] 10 CFR 430, Appendix S of Subpart B

[20] http://www.cnsnews.com/commentary/ernest-istook/thanks-epa-even-if-you-your-shower-you-cant-keep-it

[21] YunHee Park, "Color temperature's impact on task performance and brainwaves of school-age children," *J Phys Ther Sci.*, Vol. 27(10), 2015, pp. 3147–3149.

bulbs often are rated with a longer life than incandescent bulbs, frequently turning a CF on and off tends to shorten its life considerably.[22] As a result, for applications where a bulb is used frequently but for short durations, CFs can turn out to be a much less cost-effective solution for consumers. Meanwhile, some consumers responded to the adverse effects of cycling by leaving CFs on continuously, thereby likely at least in part mitigating the energy saving benefits. By mandating the phase out of incandescent bulbs, the DOE likely imposed unnecessary costs on consumers.

As the lightbulb example shows, a narrow focus on "energy efficiency" can result in perverse outcomes. In practice, consumers are interested in many different product characteristics and are typically willing to make trade-offs between the energy consumption of a product and its other characteristics. In the case of automobiles, for example, it is often lamented that "fuel economy" did not improve significantly during the course of the 20th Century prior to the introduction of Corporate Average Fuel Economy standards in 1978. But this ignores that engine efficiency did increase dramatically prior to 1978. The reason "fuel economy" (i.e. miles per gallon) did not increase much is that the power, size and weight of vehicles rose, as manufacturers added features that made them faster, more luxurious and safer. The same happened between 1981 and 2003: although CAFE standards for passenger cars rose from 22 mpg to 27.5 mpg over that period, average fuel economy of passenger vehicles and light trucks rose only slightly, from 20.5 to 20.8 mpg, but average power nearly doubled, from 102 to 197 horsepower, average weight rose by nearly 25%, from 3,201 lbs to 3,974 lbs, and average time to accelerate from 0 to 60 mpg fell by nearly 30%.[23]

Rather than mandate efficiency improvements, a better approach would be to focus on the development of ways to communicate the net cost of products for consumers with different usage habits. (This website offers an example of such an approach for air conditioners: https://kobiecomplete.com/cool-tips/seer-savings-calculator/)

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[22] Joseph Calamia, "Are Compact Fluorescent Lightbulbs Really Cheaper Over Time?" *IEEE Spectrum*, March 11, 2011. Available at: http://spectrum.ieee.org/green-tech/conservation/are-compact-fluorescent-lightbulbs-really-cheaper-over-time

[23] Congressional Budget Office: *The Economic Costs of Fuel Economy Standards Versus a Gasoline Tax*, U.S. Congress: Washington, DC, 2003, at p.8. Available at: https://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/49xx/doc4917/12-24-03_cafe.pdf

Strengthen U.S. scientific discovery, economic competitiveness, and improve quality of life through innovations in science and technology

The U.S. has been at the forefront of scientific discovery and economic competiveness for the last century. It has also been at the forefront of innovations in science and technology that have improved quality of life. As the above examples suggest, *the* key driver of innovation—and consequent competitiveness—has been competition itself. Unfortunately, over the course of the past half century, competition has been undermined by increasingly onerous regulatory burdens, including those imposed in part by the Department of Energy. Reducing this regulatory burden should be a priority for the federal government as a whole and the DOE in particular.

(2) What factors should DOE consider in selecting and prioritizing rules and reporting requirements for reform?

The following factors are relevant to the identification of rules that should be candidates for reform:

(a) ***Recency***: The older the rule, the more likely it is that the rule has become redundant as a result of subsequent innovation. This is particularly true with respect to energy efficiency rules, since competition drives continuous improvements in efficiency independent of any mandate. Thus, the greatest benefits are likely to come from addressing more recent rules that require significant increases in efficiency or other product characteristics.

(b) ***Potential market size***: The larger the potential market for products that fail to meet current regulatory standards, the greater the adverse effect on consumers.

(c) ***The importance of affected products for improving living standards***: Some products with relatively small markets may nonetheless offer considerable benefits for the people who use them. Imposing costly regulations on such products imposes considerable harm on users. Low-efficiency air-conditioning units might be an example of such a product: the market demand is likely to exist primarily among poorer consumers in areas where air conditioning is beneficial only for a few days per year. But the use of air conditioners in such locations at times when temperatures are very high can save lives (as noted above).

(3) How can DOE best obtain and consider accurate, objective information and data about the costs, burdens, and benefits of existing regulations? Are there existing sources of data DOE can use to evaluate the post-promulgation effects of regulations over time? We invite interested parties to provide data that may be in their possession that documents the costs, burdens, and benefits of existing requirements.

It is practically impossible to evaluate the full effects of any regulation because the counterfactual is unknowable. It is simply not possible to know which innovations have not occurred as a result of resources diverted into regulatory compliance and away from other innovation.[24]

This is a classic example of "what is seen and what is not seen." The ostensive benefits of regulations are highly visible (in the above case, changes in energy use and the effects thereof); some of the direct costs may also be calculated (at least to an order of magnitude)—for example, investments in development of new technologies in order to comply with the regulation—but what cannot be seen at all are the indirect costs that come from the foregone investments.

Having said that, the direct cost of compliance, which can be inferred from changes in the prices of products subject to the regulation in comparison with those not subject to the regulation, offers a meaningful metric by which to evaluate the effective cost of a regulation. One way to make such comparisons is to consider products sold in other markets with less onerous regulatory restrictions.

[24] The DOE acknowledges the relevance of counterfactual analysis in the context it its *Energy Efficiency Program Impact Evaluation Guide*, noting: "A counterfactual analysis occurs when a person modifies a factual antecedent (a thing or event that existed before or logically precedes another) and then assesses the consequences of that modification. A person may imagine how an outcome could have turned out differently if the factual situation, or what led to it, did not occur." (Department of Energy, *Energy Efficiency Program Impact Evaluation Guide*, Washington, DC: Evaluation, Measurement, and Verification Working Group, December 2012, at p. 3-7. Available at: https://www4.eere.energy.gov/seeaction/system/files/documents/emv_ee_program_impact_guide_0.pdf) However, in this particular example DOE ignores the most challenging aspect of such a counterfactual analysis, namely the unknown effects on innovation, asserting: "This may seem daunting, but for energy efficiency impact evaluations, this is simply defining what the energy use (or demand, emissions, number of jobs, etc.) would have been if the program had not been implemented."

(4) Are there regulations that simply make no sense or have become unnecessary, ineffective, or ill-advised and if so what are they? Are there rules that can simply be repealed without impairing DOE's statutory obligations and, if so, what are they?

DOE's energy efficiency regulations generally have the effect of increasing the cost of products and reducing competition and innovation. (One reason for this is that companies frequently patent new, more efficient technologies and then lobby for standards which only their technology can meet. This reduces competition. It also reduces the incentive to make incremental improvements to old technologies. And it makes it difficult for new companies, whose products might initially not comply with the new standards, to enter the market.) As noted above, more recent regulations and those that affect products with a larger market size will likely have more significant effects than older regulations and those that affect products with only a small market.

So, as a first step it would make sense to take an inventory of existing energy efficiency regulations, identify those that have been most recently developed and updated, and either scrap them or revert to earlier, less onerous regulations. This will result in lower costs for consumers and enable greater competition in the market, leading to more incremental innovation. Over time, it is likely that this approach will result in a wider array of products of differing degrees of energy efficiency, including some that are more efficient than those that would otherwise have been introduced onto the market.

(5) Are there rules or reporting requirements that have become outdated and, if so, how can they be modernized to better accomplish their objective?

As noted above, the National Environmental Policy Act, as currently interpreted, inhibits energy developments that would benefit consumers and the environment. That is perverse. Modernization of the interpretation of NEPA could have substantial benefits in terms of permitting beneficial energy developments.

(6) Are there rules that are still necessary, but have not operated as well as expected such that a modified, or slightly different approach at lower cost is justified?

Some voluntary energy performance standards and information services provided by the DOE may be useful—for example, the Superior Energy Performance standard and ISO 50001 standard, for which DOE has developed a toolbox,[25] as well as the Energy Performance Indicator tool.[26] To the extent that these standards and tools are useful for companies, it would likely make sense to privatize them, since private companies generally have stronger incentives to identify the kinds of information and analysis consumers (including companies) want, ensure that the information is reliable, and identify the most effective ways to represent that information. (Existing private actors that currently provide such services include the IEEE and Underwriters Laboratories.)

In addition, there may be information tools aimed at consumers that are potentially valuable. Again, it would make sense to privatize these services. (Currently, many private companies already provide similar services. Most such information providers offer a range of tools enabling consumers to evaluate product performance on more than one metric. A good example is www.rtings.com, which enables consumers to compare multiple products on a range of metrics, often including but by no means limited to energy efficiency.) To the extent that the DOE currently attempts to provide such information, it either duplicates or crowds out private provision.

In most other cases, it would be better for DOE to scrap its rules and allow private market actors to develop standards and information tools in their place.

[25] https://energy.gov/eere/amo/toolbox-and-expertise

[26] https://energy.gov/eere/amo/articles/energy-performance-indicator-tool