Design of Regulation

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Overview
While public attention is focused primarily on the presidency and Congress, much of the activity of government takes place in federal agencies. This study is an investigation of how regulations are formulated and implemented, and what improvements can be made to make them more effective and more efficient. It was inspired by the leak detection and repair rules (40 CFR 60 Subpart OOOOa) promulgated to reduce the amount of vented and fugitive methane emitted by the upstream oil and gas industry. Certain aspects of these rules are disliked by segments of oil and gas industry because they are inefficient, disliked by some environmental organizations because they are less effective than they could be, and disliked by technology developers because they discourage technological innovation.

Methods
This study is based on interviews with federal, state, Canadian, and European regulators; industry and environmental attorneys and policy analysts; technology developers; academics; and field-level engineers responsible for complying with regulations. It is also informed by a study of presently deployed and potential future leak detection technologies. Further insights are gained by careful readings of 40 CFR 60 Subpart OOOOa – “Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015” promulgated in 2016, and its 2018 reconsideration. Cost-benefit analysis, and its variability from one administration to another, is assessed by comparing the Regulatory Impact Analyses associated with the 2016 rule and its 2018 reconsideration.

Results
All federal regulations are based on congressional mandates. Acts of Congress are the means by which the will of the people is expressed, and is therefore the foundation of democratic legitimacy. However, Congress is poorly equipped to deal with the technical aspects of regulation. Laws are drafted by congressional committee staffs, which are small, transient, and do not possess deep technical knowledge in all aspects of all the issues with which they are confronted. Therefore some of the most effective regulatory regimes have been created by “New Deal” style regulation, more commonly employed when the presidency and Congress are held by the same political party, as during the New Deal era of the 1930s. This approach “places considerable responsibility and expertise in the hands of an independent commission . . . [with] a broad legislative mandate and the independence to pursue the public interest” [Crandall, 1981]. The opposite approach, prevalent when Congress is suspicious of executive intentions, is the so-called “agency-forcing” approach, which mandates, with varying degrees of specificity, methods agencies must use to accomplish their missions.

Litigation plays a central role in the development of regulations, which almost always create winners and losers. Because Acts of Congress can be vague or inscrutable – sometimes deliberately so [off-the-record interview #1] – courts have, in theory, wide latitude to interpret their intent. Reliance on ancillary sources has been colorfully described as “imagining what some inexperienced congressional staffer might or might not have intended when writing legislative history” [Elliott, 2005]. In Chevron U.S.A. vs. Natural Resources Defense Council, Inc. (467 US 837 (1984)), the Supreme Court held that when congressional intent is unclear, courts should defer to the judgment of agencies to which Congress has delegated rule-making power. Among other things, this ruling shifted power from legal interpretations of congressional intent to technical evaluations of public goods, as well as marking an important step toward the “administrative state” [Elliott, 2005]. It can be argued that measures such as the Congressional Review Act (5 USC Sec. 801) are necessary correctives.

The Administrative Procedure Act (5 USC 5) controls essentially all federal rule-making. Nonetheless, there is a striking diversity in how the various agencies manage the regulatory process. Responding to a mandate in the Clean Air Amendments of 1970 (42 USC 85 Sec 7411(a)(1)) to adopt the “best system of emission reduction” for coal-fired electric power plants, the EPA took those words literally and selected a single technology, the wet scrubber, for use in all new or substantially modified power plants, effectively precluding other means which could be more effective in various circumstances [Lockwood, 1982]. A similar process appears to be used in the promulgation of
the 2016 methane leak detection and repair rule (40 CFR 60 Subpart OOOOa), which identified only two technologies that would satisfy leak detection requirements, a tightly specified sniffer probe (Method 21), or optical gas imaging. In various circumstances, these methods can be inefficient and/or ineffective in detecting the most important sources of methane emissions. Due to the arduous nature of changing regulations that have passed through the Administrative Procedure Act process, which typically requires several years and considerable agency resources, such rules are rarely if ever modified or updated.

A very different approach was taken in specifying energy efficiency requirements for federal buildings (42 USC Sec 6834). The controlling law provides “Not later than 1 year after the date of approval of each subsequent revision of the ASHRAE Standard or the International Energy Conservation Code, as appropriate, the Secretary shall determine, based on the cost-effectiveness of the requirements under the amendment, whether the revised standards established under this paragraph should be updated to reflect the amendment” (42 USC Sec 6834 (a)(3)(B)). Updates reflecting changing technologies and evolving best practices are left to professional engineering societies – the American Society of Heating, Refrigerating and Air-Conditioning Engineers and the International Code Council – that can mobilize voluntary committees of technical experts, whose work is then reviewed by the Department of Energy.

Another avenue toward regulatory flexibility is embodied in provisions like the alternative means of emission limitation (AMEL) rule in the 2016 methane leak detection and repair (LDAR) rules cited above. It has been argued that the AMEL rule is too restrictive, but that some relatively minor changes in language can open the LDAR rules to significant technological innovation; supplementing point source sniffs and component-level optical gas imaging with aerial or satellite surveillance, for example [Kleinberg, 2018]. However, it has been observed that agencies themselves are resistant to being granted discretion to change their own rules [off-the-record interview #2].

One of the tools used to evaluate the value of a new or revised regulation is the regulatory impact analysis, which embodies cost-benefit calculations. The results of these calculations can have large uncertainties, depending strongly on the assumptions that go into them [EPA, 2016; EPA, 2018].

Conclusions
This study has found that whereas regulators are generally intelligent, conscientious, and public-spirited, various factors, some obvious and others counter-intuitive, combine to produce regulatory structures that can be inefficient, ineffective, or discourage innovations that could improve efficiency or effectiveness. It is also found that some agencies employ more effective rule-making procedures than others. In the end, Congress has the responsibility for remedying the problems explored here, but for various reasons has been reluctant to do so.

References