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DEPARTMENT OF ENERGY

10 CFR Part 430

[EERE-2017-BT-STD-0059]

RIN 1904-AE11

Energy Conservation Program: Energy Conservation Standards Program Design

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Request for information (RFI).

SUMMARY: The U.S. Department of Energy (DOE) is evaluating the potential advantages and disadvantages of additional flexibilities in the U.S. Appliance and Equipment Energy Conservation Standards (ECS) program. Flexibilities could include market-based approaches such as those used to set average efficiency standards, feebate programs, or other approaches that may reduce compliance costs and/or increase consumer choice while preserving or enhancing appliance efficiency. This RFI discusses key issues and requests feedback on the possible design of such a program. DOE additionally requests feedback on possible economic efficiency gains, impacts on consumer and manufacturer costs and on energy savings, and suggestions for a pilot product category and/or phase-in of revisions across the ECS program. DOE also requests feedback on any potential challenges associated with designing and implementing any of these flexible program approaches as well as possible solutions.

DATES: Written comments and information are requested on or before **[INSERT DATE 90 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

ADDRESSES: Any comments submitted must identify the RFI for Energy Conservation Standards Program Design, and provide docket number EERE-2017-BT-STD-0059 and/or regulatory information number (RIN) number 1904-AE11. Comments may be submitted using any of the following methods:

- *Federal eRulemaking Portal*: *http://www.regulations.gov*. Follow the instructions for submitting comments.
- *E-mail*: *ProgramDesign2017STD0059@ee.doe.gov*. Include docket number EERE-2017-BT-STD-0059 in the subject line of the message. Submit electronic comments in WordPerfect, Microsoft Word, PDF, or ASCII file format, and avoid the use of special characters or any form of encryption.
- *Mail*: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. If possible, please submit all items on a compact disc (CD), in which case it is not necessary to include printed copies.
- *Hand Delivery/Courier*: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L'Enfant Plaza, SW., 6th Floor, Washington, DC, 20024. Telephone: (202) 287-1445. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

Instructions: All submissions received must include the agency name and docket number and/or RIN. No telefacsimiles (faxes) will be accepted.

Docket: The docket is available for review at *http://www.regulations.gov/docket?D=EERE-2017-BT-STD-0059*, including *Federal Register* notices, comments, and other supporting documents/materials. All documents in the docket are listed in the www.regulations.gov index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

A link to the docket web page can be found at *http://www.regulations.gov/docket?D=EERE-2017-BT-STD-0059*. This web page contains a link to the docket for this notice at *http://www.regulations.gov*. The *http://www.regulations.gov* web page contains simple instructions on how to access all documents, including public comments, in the docket.

For information about how to submit a comment or review other public comments in the docket, send an email to *ApplianceStandardsQuestions@ee.doe.gov*.

FOR FURTHER INFORMATION CONTACT:

Appliance and Equipment Standards Program Staff, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, EE–5B, 1000

Independence Avenue SW., Washington, DC 20585–0121. Telephone: (202) 287-1445. Email: *ProgramDesign2017STD0059@ee.doe.gov*.

For further information on how to submit a comment, review other public comments and the docket, contact the Appliance and Equipment Standards Program staff at (202) 287-1445 or by e-mail: *ApplianceStandardsQuestions@ee.doe.gov*.

SUPPLEMENTARY INFORMATION:

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I. Introduction

A. Background

The purpose of this Request for Information (RFI) is to outline and request feedback on the design, value, and solutions to potential challenges of revising the U.S. Appliance and Equipment Energy Conservation Standards (ECS) program to include additional compliance flexibilities, with the goal of reducing compliance costs, enhancing consumer choice and maintaining or increasing energy savings. Of particular interest are designs that would use market-based policy mechanisms such as averaging, credit trading, or feebates. Market-based policy mechanisms are potentially less burdensome alternatives as they use markets, price, and other economic variables to provide incentives for regulated entities to reduce or eliminate negative environmental externalities in the least cost way. These policy mechanisms recognize

that compliance costs may vary significantly across the regulated sector and allows individual parties to choose the most cost effective compliance option.

An example, discussed further below, of a market-based regulatory program that uses averaging, banking, and trading of credits is the Corporate Average Fuel Economy (CAFE) standards program for light-duty vehicles. The CAFE standards program specifies a fleet-based average fuel efficiency standard that allows manufacturers to trade credits across vehicle classes and manufacturers. This is only one example of how a regulatory program can include some market-based mechanism allowing for more flexibility in compliance. Other examples of market-based mechanisms used in a number of other U.S. energy and environmental programs include standards to which gasoline refineries were subject during the leaded gasoline phase-down,[1] the use of credits, or RINs (Renewable Fuel Identification Numbers) in the U.S. EPA Renewable Fuel Standards program,[2] fuel efficiency standards for heavy duty engines and vehicles, various versions of state-level Renewable Portfolio Standard programs, including those allowing for the use of Tradable Renewable Certificates (TRCs),[3] and several power plant emissions control programs including California's Cap and Trade program.[4]

DOE requests feedback on possible revisions to the ECS to adopt some type of market-based approach and/or other program flexibilities. DOE additionally requests feedback on

[1] Newell, R. G., & Rogers, K. (2003). The US experience with the phasedown of lead in gasoline. Resources for the Future, Washington, DC, 2.
[2] https://www.epa.gov/renewable-fuel-standard-program/overview-renewable-fuel-standard
[3] Wiser, R., Porter, K., & Grace, R. (2005). Evaluating experience with renewables portfolio standards in the United States. *Mitigation and Adaptation Strategies for Global Change*, *10*(2), 237-263.
[4] https://www.arb.ca.gov/cc/capandtrade/capandtrade.htm

possible impacts on consumer and manufacturer costs, estimated benefits of the program such as energy savings, design and implementation of such a program, and suggestions for a pilot product category and/or phase-in of revisions across ECS. DOE encourages the public to provide input on measures DOE could take to lower the cost of its regulations consistent with the requirements of EPCA.

Economic theory suggests that the introduction of credit trading into a mandatory regulatory program such as ECS would likely improve economic efficiency (see Coase (1960)[5], Crocker (1966)[6], Dales (1968a, 1968b)[7], and Montgomery (1972)[8]) and subsequent discussions such as Ellerman (2005)[9]). Credit trading, for example, either within a single manufacturer or between manufacturers, would allow a level of flexibility for compliance, and could thereby reduce compliance costs associated with production, and establish a market mechanism to reveal the "shadow value"[10] of the efficiency standard through the value of credits on the credit trading market. In principle, the same aggregate level of energy savings could be obtained with reduced compliance cost, because manufacturers with a lower marginal cost of providing efficiency

[5] Coase, R. H. (1960). The problem of social cost. The Journal of Law and Economics, 3, 1-44. [republished as Coase, R. H. (2013). The problem of social cost. The journal of Law and Economics, 56(4), 837-877.]
[6] Crocker T.D.W.H. (1966). The structuring of atmospheric pollution control systems. The economics of air pollution: A symposium, New York, W.W. Horton, pg. 61-86.
[7] Dales J.H. (1968a) Land, water, and ownership. Canadian Journal of Economics/Revue Canadienne d'Economique, 1(4), 791-804.
Dales, J.H. (1968b). Pollution, property and prices. Toronto, University of Toronto Press.
[8] Montgomery, W.D. (1972). Markets in licenses and efficient pollution control programs. Journal of Economic Theory. 5(3), 395-418.
[9] Ellerman, A. D. (2005). A note on tradeable permits. Environmental and Resource Economics, 31(2), 123-131.
[10] Shadow price or shadow value is a term in economics. It refers to the marginal value of a constraint, or the value of relaxing a given constraint by one unit. In the case of a standard with trading, theoretically the price of credits in the credit market would reveal the shadow value of the constraint imposed by the standard.

improvements could increase the efficiency of the products they sell even more, and sell credits from their over-compliance to manufacturers with a higher marginal cost of providing efficiency, thereby allowing them to produce products with efficiency levels below the standard. This could reduce the overall manufacturer cost associated with producing the same aggregate level of energy savings. Such a program would allow a degree of flexibility that could accommodate increased consumer choice as well. For example, if there is a small market segment of consumers with a very high willingness to pay for a product that, for whatever reason, cannot be produced to meet a given energy conservation standard level, under a mandatory standard they could not obtain this product. However, under a trading, averaging, or other market-based scheme a manufacturer could choose to produce that product by purchasing credits in the credit market. Furthermore, market-based standards further incentivize even the makers of the most efficient appliances to continue to innovate and improve efficiency, gains once the minimum standard is met.[11] DOE requests comment on which flexible compliance or market-based program scheme might incentivize the most cost-effective improvements in energy efficiency.

Increased flexibility, reduced economic costs, and increased incentives for manufacturers to innovate and improve efficiency across a spectrum of products (i.e., both high efficiency products and products that just meet the standard level) are all possible benefits from introducing average standards and/or market-based approaches, or other compliance flexibilities. These market-based program options will differ from the current DOE compliance structure creating

[11] Note that the voluntary ENERGY STAR program currently provides a separate incentive for increasing efficiency beyond the minimum standards, in a different way than mandatory market-based standards. ENERGY STAR criteria are set above minimum standards to provide a separate incentive to produce products above the minimum.

some uncertainty about implementation, interaction with voluntary programs such as ENERGY STAR, certification, and enforcement for both manufacturers and DOE. The scope of a tradable standards program could range from allowing averaging only across each company's appliances within a product category (that is, no trading across product categories or between companies). For example, considering the consumer refrigerator and freezer product category[12], a company could average the energy efficiency of their products across all of the product classes of equipment that they produce or just average across some of the various residential refrigerator products in different product classes that they produce, but different companies would not be able to average their energy efficiencies between companies. Another program design could allow companies to trade credits across product categories and/or between companies. A feebate program could similarly vary in scope but would have different implementation and administrative requirements and costs. As there are many program design possibilities and potential program flexibilities, DOE requests comment on any potential benefits or costs that may arise with the implementation of these types of policy changes and any recommendations for how the program could be successfully implemented.

B. Background on market-based mechanisms in the context of environment regulation

There are many examples of market-based mechanisms incorporated into environmental regulation. Broadly, prominent examples in the United States include emissions trading systems (ETS, or cap and trade); and performance-based standards with a market-based mechanism or

[12] DOE's current energy efficiency standards for the consumer refrigerators, refrigerator-freezers, and freezers product category are subdivided into forty-two different product classes most of which have unique energy efficiency standards. 76 FR 57516 (September 15, 2011).

similar allowance for some element of flexibility in compliance. In the case of an ETS, a particular cap, or limit, is placed on the level of emissions. That cap would generally be structured in the form of emissions credits (e.g. a single ton of emissions) allocated to each entity subject to the policy. Several allocation mechanisms are possible, including grandfathering, lottery, or auctioning. There are numerous other examples of ETS policies at the state and federal levels in the United States and across the world.[13]

A successful example of an ETS is EPA's Acid Rain Program, where fossil fuel-fired electric power plant emissions of sulfur dioxide were capped nationwide and power plant owners could either install emissions control technologies to reduce their sulfur dioxide emissions allowing the owner to earn credits for each ton of emissions reduced or the owner could purchase credits to offset their emissions. The Acid Rain Program also included an emissions averaging component for nitrous oxide (NOx) emissions that allowed owners to use company-wide averaging to meet the emissions standard.

An example of flexible performance standards include the various implementations of vehicle fuel economy standards across the world. Many of these vehicle fuel economy programs incorporate some variation of an average target, allowing flexibility in compliance by enabling manufacturers to sell models that are less efficient than the target as long as they balance it out

[13] E.T.S. China (2016). "Carbon Pricing Watch 2016," World Bank Group. http://www.ecofys.com/en/publications/carbon-pricing-watch-2016/

with sales of models that are more efficient.[14] China is one of the exceptions as they set minimum standards that each vehicle model must achieve. In addition, some programs have also incorporated some degree of flexible compliance or coordination in compliance across manufacturers. A program already implemented in the U.S., is the Department of Transportation's Corporate Average Fuel Economy (CAFE) standards and EPA's greenhouse gas (GHG) standards for passenger vehicles. CAFE standards were first enacted by Congress in 1975. Starting in 1978, each vehicle manufacturer was required to meet a fleet-wide, average fuel economy standard: one for passenger cars and another for light trucks. The Department of Transportation's National Highway Traffic and Safety Administration (NHTSA) administers the CAFE standards, while the Environmental Protection Agency (EPA) administers the greenhouse gas emissions (GHG) standards for passenger cars and light-duty trucks under section 202(a) of the Clean Air Act (42 U.S.C. 7521(a)). The two agencies work together, with the California Air Resources Board, to set CAFE and GHG standards for passenger vehicles in part to harmonize their standards to reduce compliance burdens on manufacturers so manufacturers can produce the same vehicle model across the nation. The current CAFE standards cover light-duty passenger vehicles for model years out to 2021 while EPA's GHG standards go out to 2025 (77 FR 62623).

For all U.S. sales in a given model year, the CAFE standards require each manufacturer's U.S. sales meet a production-weighted harmonic mean fuel economy/emissions target based on vehicle footprint (the vehicle wheelbase times its track width, or the area between its tires).

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[14] An, F., & Sauer, A. (2004). Comparison of passenger vehicle fuel economy and greenhouse gas emission standards around the world. Pew Center on Global Climate Change, 25.

Thus, CAFE is a fleet-based standard, which allows each manufacturer to trade off fuel economy between its own models by altering its product mix (i.e., "internal trading"). The standards are applied fleetwide for a company so that domestically produced vehicles[15] and imported vehicles, are treated the same for compliance purposes. .

Beginning with the standards issued in 2009 for model year 2011 vehicles, the CAFE program allows for trading of credits across manufacturers (74 FR 14195). Manufacturers who fail to meet their fleet-level target may buy credits from manufacturers who achieved greater-than-required fleet-level fuel economy; alternatively, manufacturers failing to meet their fleet-level target may pay a fine. Credits may also be used within a manufacturer's own product mix, trading from passenger cars to light trucks, or from domestic to foreign production. Credits earned by exceeding the fuel economy standard may be banked and used up to five years in the future.

The CAFE calculation incorporates many different complexities and allowances for vehicle design features (e.g., flex-fuel capability, air conditioning, off-cycling technologies, solar panels, engine start/stop, active aerodynamics, etc.), which may or may not have logical analogs in products covered by ECS. It is important when designing a credit program that there is sufficient heterogeneity in the affected product category to leverage the advantages of a market-

[15] Vehicles produced with more than 75 percent U.S., Canadian, or post-NAFTA Mexican content.

based approach. For analysis of the impact and effectiveness of credit trading within CAFE, see, e.g., Leard and McConnell (2015)[16] and Greenstone et al. (2017)[17].

Other passenger vehicle fuel economy standards programs around the world also provide some examples for variations on this concept. For example, Japan follows a similar model to the United States, in that their vehicle standards are mandatory and their fuel economy targets are also based on average vehicle fuel economy, where the target is specific to weight classes. Starting in 2001 the regulation was revised to allow manufacturers to transfer credits across weight classes (see An & Sauer 2004).[18]

The European Union (E.U.) program differs significantly from that used in the United States. In the E.U. program the average passenger vehicle fuel economy across the entire industry is to meet a certain target by the compliance date (i.e., there are no manufacturer-specific targets). It is a voluntary standard established through an agreement between manufacturers and the European Commission. Because the target is not specific to each manufacturer, manufacturers can presumably coordinate to enable the entire passenger vehicle fleet to meet the target (An & Sauer 2004).

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[16] Leard, B. and V. McConnell (2015). "New Markets for Pollution and Energy Efficiency: Credit Trading under Automobile Greenhouse Gas and Fuel Economy Standards," Resources for the Future, RFF DP 15-16.
[17] Greenstone, M. et al. (2017). "The Next Generation of Transportation Policy," The Hamilton Project, Policy Proposal 2017-02.
[18] An, F., & Sauer, A. (2004). Comparison of passenger vehicle fuel economy and greenhouse gas emission standards around the world. Pew Center on Global Climate Change, 25.

Another example of a performance standard incorporating a level of flexibility in compliance is a feebate. Examples include the Swedish program to incentivize power plant operators to reduce nitrous oxide emissions, as well as vehicle fuel economy programs in several countries.[19,20] Under a feebate program, an efficiency "pivot-point" is set, below which manufacturers pay a fee and above which manufacturers receive a payment from the regulating body or government entity. The fee or payment is based on the efficiency of products sold relative to the pivot point. So, for example, the highest efficiency products generate higher payments than products also above the pivot point but that are lower efficiency (see for example Gillingham 2013[21]). Feebates may be easier to administer than tradable standards because tracking of permits is not required and credit market liquidity is not a concern, though other implementation challenges may arise.[22]

Regardless of the specific program design, the general concept with existing programs is to establish a target level, and allow manufacturers to have the flexibility to meet that target in the least cost way. That flexibility can include a penalty or payment based on if a manufacturer under- or over-performs relative to the target (i.e., feebate), a credit market (e.g., CAFE), or allowing for other forms of collaboration in compliance (e.g., E.U. vehicle standard program).

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[19] Johnson, K. C. (2006). Feebates: An effective regulatory instrument for cost-constrained environmental policy. Energy policy, 34(18), 3965-3976.
[20] German, J. and Dan Meszler (2010). Best practices for feebate program design and implementation. International Council on Clean Transportation. http://www.theicct.org/sites/default/files/publications/ICCT_feebates_may2010.pdf
[21] Gillingham, K. (2013). The Economics of Fuel Economy Standards versus Feebates. National Energy Policy Institute (NEPI) Working Paper. http://www.ourenergypolicy.org/wp-content/uploads/2013/07/Gillingham-CAFE-Standards-vs-Feebates-Apr-20131.pdf
[22] For example feebate programs may require tax and subsidy authority and are not guaranteed to be revenue neutral.

DOE seeks feedback on what type of approach would best serve the ECS program. In the remainder of this document CAFE is used as an example to discuss some of the specific points on which DOE seeks feedback, although DOE is interested in feedback regarding any other potential policy approaches.

II. Key Issues

A. Translation to energy conservation standards

The markets for consumer products and commercial equipment covered by the ECS program will inform the way a market mechanism or allowance for compliance flexibility could possibly be established for ECS's consumer products and commercial equipment.

First, the scope of the ECS program covers a broad range of consumer products and commercial equipment. The ECS program currently covers more than 60 types of products, each of which have a number of product classes. For this full scope of products, there are a large number of manufacturers controlling hundreds of brands across a wide range of sectors and industries that may facilitate averaging or trading amongst manufacturers. The EPCA definition of manufacturer applies not only to original equipment manufacturers, but also retailers, distributors, installers, or importers, some of which rebrand products manufactured by other distributors. All of these regulated entities would have to submit sales data on covered models in order to track compliance with such a program. The current program of mandatory energy conservation standards for each model currently requires that manufacturers certify and

report to DOE the efficiency level of all covered models. Production or sales data are not collected.

Careful consideration should be given to the scope of additional program flexibilities, for example the range of product categories across which trading under a tradable standard could occur. One potential approach could be to maintain a single standard level as is currently the case for covered appliances and commercial equipment. The standard level would still be set separately for each product category and each class within that product category. Trading could be allowed within a single product class or across all product classes within a particular product category both for a given manufacturer (they could sell some models exceeding the standard as long as they also have sufficient sales below the standard to offset that difference) and across manufacturers so that those with excess credits could bank them or sell them to those with a deficit for a given year. As is the case for CAFE standards, such a system incentivizes manufacturers already producing efficient models to continue improving efficiency[23] Another potential approach could be requiring both a minimum efficiency level and an average standard above the minimum efficiency level that can be met through a more flexible approach, although that approach may reduce the potential cost savings.[24]

[23] It should be noted that programs such as ENERGY STAR and product rebates by utilities and other program administrators incentivize efficiency in consumer products and industrial equipment outside of the ECS program. The interaction of additional program flexibilities with other programs such as ENERGY STAR is an important consideration.

[24] Retaining a minimum standard could be one way to comply with the anti-backsliding provision in current law.

While maintaining the same sets of product classes would likely be desirable in most cases, the introduction of trading could allow a degree of freedom and flexibility that could potentially allow for simplification in other dimensions of the program. For example, some product classes could be consolidated, or volume-based standards, such as are established for refrigerators currently, might be simplified to no longer depend on volume. Product classes were defined in order to ensure preservation of consumer choice and product utility/functionality, effectively mandating a degree of flexibility to the program. If the trading introduced a market-driven allowance for flexibility, some of the mandated features may be redundant, and further simplification might be beneficial. This would have to be carefully assessed.

B. Scope of standards

As discussed above, defining the products across which credit trading would be allowed or a single feebate set must be carefully considered. In the case of a tradable standard, trading could be allowed across product categories using the same type of fuel. For example, a manufacturer could trade credits for room air conditioners with electric clothes dryers, with the common metric being kilowatt hours saved over a product's expected lifetime. Alternatively, trading could be allowed only across product classes for a particular product category (e.g., across all room air conditioner product classes), product classes could be consolidated or eliminated for a single product (e.g., a single standard for all room air conditioners), or trading could be allowed across product categories using similar technologies (room air conditioners and commercial air conditioners, and perhaps consumer refrigerators as well). One of the key program design elements would be ensuring a standardized definition of credits across product

classes to the extent trading was allowed across products with differing fuel sources, requiring a normalization of energy savings, though most covered products use electricity. Program administration and compliance costs, potential efficiency gains, credit market liquidity, and potential impacts on competition in product markets are important considerations in setting the scope of the program.

As a final note, for one product currently covered under the ECS program (central air conditioners), the standard level for this product varies regionally. If this feature were present for a product category included in the scope of trading, trading would have to reflect region-specific product sales as well.

C. Normalizing across energy sources

Credit trading across appliances with different fuel sources (e.g., electric versus natural gas dryers) would require normalizing energy metrics across fuel types. CAFE currently does this for alternative fuel vehicles (including those that run on electricity, natural gas, hydrogen and other fuels) by generating energy-equivalent fuel economy values. So for instance a natural gas vehicle that travels 30 miles on 100 cubic feet of natural gas is given a gasoline-fuel-equivalent miles per gallon value by multiplying the natural gas fuel economy by an energy content conversion factor representing the relative energy content of 100 cubic feet of gas and one gallon of gasoline. Appliance fuels could similarly be converted into energy-equivalent values, or trading could be restricted to appliances of the same fuel type. DOE seeks feedback on this point.

D. Distributional impacts across consumers and manufacturers

Incorporating elements of a market-based or flexibly approach to the ECS program in order to enable more flexible compliance could have significant benefits for consumer's manufacturers, such as providing manufacturers flexibility to comply with the efficiency target in the least cost way. However, even if overall costs decline, the distribution of costs among regulated firms could change, and some firms might face higher costs than under the current program. Administrative costs for firms may increase while overall compliance costs may be reduced, for instance as a result of reductions in production costs or larger profits from better targeting of consumer preferences. DOE seeks feedback on the potential for distributional asymmetries in costs and benefits that could be relevant. For example, would a credit trading mechanism significantly change administrative costs associated with complying with the ECS? Would these cost changes disproportionately impact some types and sizes of firms relative to others (e.g., would some firms potentially have a compliance advantage, in that they may be better equipped to establish designated personnel to manage participation in the credit market)? How would different approaches to program flexibility impact those costs (e.g., credit trading versus feebates?). What are the likely net gains to consumers and manufacturers of a more flexible approach?

E. Enforcement

The establishment of credit trading would require additional data collection and monitoring to set standards and ensure compliance.[25] As under the current CAFE program, calculating credit holdings would depend on accurate sales data for every covered model. In cases where standards vary regionally, these data would also need to be broken out by region. These data would be necessary to support accurate and consistent calculations for the determination of appropriate energy conservation standard levels as part of the rulemaking, and would be essential for enabling and monitoring the credit market and ensuring compliance.

F. Potential challenges

For several product markets, particularly for large appliances, the set of manufacturers is relatively small. This level of concentration in the product market, if replicated in the credit market, implies manufacturers may be able to exercise market power (i.e., the market would not be perfectly competitive).[26] Competitive credit markets are an important factor in design of programs that include trading. The extent to which market power could be exercised in credits markets, and the potential impact on appliance program outcomes and on consumers, would need to be carefully considered in design of a program. In general, liquid and competitive credit

[25] For the current ECS program, DOE has published certification, compliance, and enforcement regulations for covered products and equipment in the Code of Federal Regulations (CFR) at 10 CFR part 429. These regulations describe how manufacturers must establish certified ratings based on conducting DOE test procedures on a sample of units of a given basic model and subsequently apply DOE's statistical sampling plans. The regulations also describe how manufacturers must submit certification reports to DOE, and how manufacturers must maintain records underlying the certification. Finally, the regulations describe processes for DOE-initiated testing and enforcing compliance with the certification provisions and the energy and water conservation standards.

[26] For a summary of recent work on this topic see: Houde, S. and C. A. Spurlock (2016). "Minimum Energy Efficiency Standards for Appliances: Old and New Economic Rationales," Economics of Energy & Environmental Policy, 5(2).

markets would be more likely if trading was allowed across many product categories[27]. Approaches that do not involve credit markets, such as a feebate, would not generate the same credit trading concerns. More broadly, the interaction of standards and market power in product markets is an important consideration.[28] For a discussion of how market power has the potential to impact a credit market in an emissions trading context see Fowlie, Reguant, and Ryan (2016).[29]

Second, as with the current appliance program, the impact of special provisions on program goals would have to be carefully considered. For example, CAFE standards allow a mpg benefit for flex-fuel vehicles regardless of the actual fuel used by the vehicles[30]. The resulting incentive to produce flex-fuel vehicles that do not for the most part actually use alternative fuels results in smaller reductions in petroleum fuel use. This provision is being phased out as a result.

Third, introduction of efficiency incentives like tradable performance standards or feebates into the ECS program would mean that manufacturers that specialize in more efficient products may experience higher sales, while those that specialize in lower efficiency products

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[27] For discussion in the context of emissions trading markets, see, e.g. Godby, R. (2000). "Market Power and Emissions Trading: Theory and Laboratory Results," Pacific Economic Review, 5(3):349-363.
[28] See for example Carolyn Fischer, "Imperfect Competition, Consumer Behavior, and the Provision of Fuel Efficiency in Light-Duty Vehicles," Resources for the Future Discussion Paper 10-60, December 2010.
[29] Fowlie, M., Reguant, M., & Ryan, S. P. (2016). Market-based emissions regulation and industry dynamics. Journal of Political Economy, 124(1), 249-302.
[30] For discussion of the flex-fuel provision and what its use can reveal about manufacturer costs, see, e.g., Anderson, S. and J. Sallee (2011). "Using Loopholes to Reveal the Marginal Cost of Regulation: The Case of Fuel-Economy Standards," American Economic Review, 101: 1375-1409.

may have added costs and lower sales. As noted above, the impact on small firms must be carefully considered.

G. Potential pilot program and assessment

DOE requests input on potential scope for a market-based pilot. For example, is there a product or equipment type that would be appropriate for such a pilot? Is there a particular industry with a structure more amenable to a market-based pilot than others? Are any potential policy approaches identified in this RFI more suitable to certain industries or products than others? Could this pilot be successfully applied to an industry voluntary program (e.g., set-top boxes)?

DOE also requests feedback on how to assess pilot program results. In particular, how could DOE identify the counterfactual or control group for comparison with the existing mandatory ECS program? How could DOE best conduct a retroactive assessment of costs and benefits to manufacturers under the existing ECS program and the market-based pilot? How could DOE identify distributional impacts across manufacturers? How could DOE determine if a broader or narrower scope of trading, if allowed, would have been more beneficial? DOE also requests input on what data it would need to collect to properly assess pilot program results.

III. Public Participation

DOE invites all interested parties to submit in writing by [**INSERT DATE 90 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER***], comments and information on matters addressed in this RFI and on other matters relevant to DOE's evaluation

of the potential advantages and disadvantages of additional compliance flexibilities in energy conservation standards, such as tradable average standards, feebates or other market-based approaches. DOE requests feedback on program design, possible economic efficiency gains, impacts on consumer and manufacturer costs and on energy savings, and potential challenges associated with designing and implementing such a program, including suggestions for a pilot and/or phase-in of a revised ECS.

DOE considers public participation to be a very important part of the process for developing new and/or amended energy conservation standards. DOE actively encourages the participation and interaction of the public during the comment period. Interactions with and between members of the public provide a balanced discussion of the issues and assist DOE. Anyone who wishes to be added to the DOE mailing list to receive future notices and information about this RFI should contact Appliance and Equipment Standards Program staff at (202) 287-1445 or via e-mail at *ApplianceStandardsQuestions@ee.doe.gov.*

Issued in Washington, DC, on November 21, 2017.

Daniel R Simmons
Principal Deputy Assistant Secretary
Energy Efficiency and Renewable Energy