

Developing an Appliance Standards Compliance Improvement Program

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ABSTRACT

For the past four decades, appliance and equipment efficiency standards have been a proven tool for individual states and the United States (U.S.) government to address energy reduction goals. However, the full potential of the standards are diminished when noncompliance occurs. The California Public Utilities Commission (CPUC) estimates that appliance standard compliance rates are between 80 to 90 percent on average, but in some instances, products have significantly lower rates. In 2014, the California Statewide Utility Codes and Standards Program (C&S Program)¹ added a specific subprogram focused on appliance standards compliance improvement. The Program provides access to tools, training, and resources through EnergyCodeAce.com, a website designed to help market actors “ace” their understanding of energy codes. The website interacts closely with the California Energy Commission to engage and educate key stakeholders—particularly manufacturers and retailers.

This paper provides the subprogram’s findings on key compliance and enforcement issues, a prioritized measure list based on low compliance and high savings potential, and an estimate of the overall savings potential if 100 percent compliance were achieved for each measure. In addition, this paper summarizes completed and planned compliance improvement efforts and provides recommendations on how to expand and enhance compliance improvement impacts in California and beyond.

Introduction

In 1978, California adopted the nation’s first appliance efficiency standards by regulating refrigerator energy consumption.² At the national level, the Energy Policy and Conservation Act (EPCA) of 1975 gave the Department of Energy (DOE) authority to set appliance efficiency regulations and 15 household appliances were first addressed under the National Appliance Energy Conservation Act (NAECA) of 1987. Federal standards established by DOE, the Energy Policy Act (EPAct) of 1992, EPAct 2005, and Energy Independence and Security Act (EISA) of 2007 have grown the federal Appliance and Equipment Standards program to cover more than 60 different products (DOE 2016).

¹ The C&S Program, jointly managed by Pacific Gas and Electric Company, Southern California Edison, Southern California Gas Company, and San Diego Gas and Electric Company, saves energy on behalf of ratepayers by influencing energy efficiency code-setting bodies, working with local governments to develop ordinances that exceed statewide minimum requirements, and improving compliance with existing codes and standards. It is funded by California utility customers under the auspices of the CPUC.

² Since this date, 17 individual states have adopted appliance efficiency standards (ASAP 2014; ASAP 2016).

Efficiency standards are a proven tool to reduce energy consumption; however, potential savings decrease when requirements are not followed and few mechanisms addressing compliance are built into the standards development and implementation process. Regulatory agencies use enforcement action and manufacturer outreach strategies as approaches to compliance improvement; however, many regulatory agencies have limited staff and resources allocated to support the significant workload that these two areas require. The C&S Program works with regulatory agencies to extend their outreach and education activities to additional audiences through the Energy Code Ace subprogram. Following a positive strategy of working with cross-cutting market actors to understand and appropriately address their needs, the subprogram aims to improve understanding of requirements and minimize compliance barriers.

Title 20 in Detail

In response to a legislative mandate to reduce energy consumption, the California Energy Commission established the Appliance Efficiency Regulations (California Code of Regulations, Title 20, Sections 1601 through 1609) in 1976. Commonly referred to as Title 20, these regulations are updated regularly to incorporate amendments and new standards for appliances not regulated by DOE.³ Title 20 covers 23 product categories, as shown in Table 1.

Table 1. Appliance categories covered under Title 20

Title 20 sub-section	Appliance category
(a)	Refrigerator-Freezers
(b)	Non-Central Air Conditioners
(c)	Central Air Conditioners
(d)	Fans
(e)	Gas/Oil Space Heaters
(f)	Water Heaters
(g)	Pool Equipment
(h)	Plumbing Fittings
(i)	Plumbing Fixtures
(j)	Ballasts
(k)	Lamps
(l)	Emergency Lighting & Self-Contained Lighting Controls
(m)	Traffic Signal Modules & Lamps
(n)	Luminaires and Torchieres
(o)	Dishwashers
(p)	Clothes Washers
(q)	Clothes Dryers
(r)	Cooking Products & Food Service Equipment
(s)	Electric Motors
(t)	Distribution Transformers
(u)	Power Supplies

³ In general, if DOE establishes an efficiency standard, states are preempted from establishing a more stringent standard for the same product. However, in some cases, DOE may waive preemption. For example, in 2010 DOE waived preemption for any state regulation concerning the water use or water efficiency of faucets, showerheads, and urinals provided such state regulations are more stringent than any applicable Federal regulation and applicable to all products in that particular type or class (DOE 2010).

(v)	Consumer Audio and Video Equipment
(w)	Battery Charger Systems

Source: CEC 2015a, 1-3.

Interplay between Title 20 and Title 24: Appliance Efficiency Impacts Building Efficiency

Following the same legislative mandate to reduce energy consumption that resulted in the creation of Title 20, the Energy Commission also established building efficiency standards for residential and nonresidential buildings under the California Code of Regulations, Title 24, Part 6, often referred to simply as Title 24. Title 20 and Title 24 work both independently and in partnership to reduce energy consumption in California.

Since a building’s energy consumption is affected by the efficiency of its systems, equipment, and appliances, as well as the frequency and duration of their use, noncompliance with Title 20 negatively impacts Title 24 compliance. Title 24 Part 6, Section 110.1, *Mandatory Requirements for Appliances*, states that all appliances regulated under Title 20 must be compliant in order to be installed in buildings regulated under Title 24 Part 6 (CEC 2012, 77).

For example, a central air conditioner is not allowed to be installed in California buildings unless it is listed in the Energy Commission’s Appliance Efficiency Database, indicating that it has been certified to the Energy Commission as meeting all applicable Title 20 requirements. Since central air conditioners are not sold for purposes other than installation in buildings, Title 24 requirements for the installation of regulated appliances and equipment are an effective strategy for encouraging Title 20 compliance. Correspondingly, Title 20 requirements ensure the California central air conditioner market provides efficient equipment and the Appliance Efficiency Database allows designers and contractors to compare available products and make informed purchasing decisions to reduce energy consumption in buildings.

Compliance

Title 20 Section 1608(a), *General Requirements for the Sale or Installation of All Appliances*, states that any unit of an appliance regulated under Title 20 may be sold or offered for sale in California only if it meets all Title 20 requirements for energy efficiency and performance, design, marking, testing, and certification (CEC 2015a, 261). The effective date of Title 20 standards generally applies to the date of manufacture rather than the date of sale. This means that these general requirements for the sale or installation of regulated appliances are in effect when the regulated product is manufactured. If a product is in compliance with the requirements in effect at the time of manufacture, it is compliant with Title 20 even if it is sold or offered for sale at a date later than the effective date of a more stringent standard for the same product.

As part of the certification process, the data submittal is accompanied by a declaration testifying that the submission is true, accurate, and in compliance with all applicable requirements established under Title 20. Since certification includes this declaration, a product that is successfully certified to the Energy Commission can be presumed to meet all applicable efficiency and performance, design, marking, and testing requirements established by Title 20. Compliance can therefore be assessed through two distinct paths: 1) determining if the product is technically compliant with the standards (if the product meets the performance and design requirements) and 2) determining if the product is successfully listed in the Appliance Efficiency

Database. Table 2 demonstrates the four typical scenarios that determine whether or not a product regulated under Title 20 is compliant with applicable requirements.

Table 2. Typical Title 20 compliance scenarios^a

Scenario	Compliant with most recent standard efficiency level?	Compliant with Certification and Reporting?	Compliant with Title 20?
1	Yes	Yes	Yes
2	No ^b	Yes	It Depends
3	Yes	No	No
4	No	No	No

a. These scenarios apply to the majority of products regulated by Title 20. There are few exceptions for products that have requirements other than efficiency and performance and for products that do not have certification requirements, as outlined in Title 20, Section 1608(a).

b. Unless the standard is based on the date of sale rather than date of manufacture, products may legally be sold if they are compliant with the standard that was in effect at the manufacture date and the manufacturer has followed certification requirements for the product.

Title 20 Section 1609, *Administrative Civil Penalties*, dictates that “any person, including a retailer, manufacturer, contractor, importer, or distributor” may face administrative civil penalties for noncompliance (CEC 2015a, 267). Therefore, all individuals involved in the sales chain of a regulated product are ultimately responsible for compliance, whether that means manufacturing a compliant product, or importing, distributing, selling, or installing a product in California.

Assessing the Potential for Compliance Improvement

Compliance improvement means both reducing the number of products available for sale that do not meet applicable requirements and encouraging new and existing products to meet applicable requirements. Assessing compliance rates to establish a baseline is the first step to determine where to focus compliance improvement activities. The development of the Title 20 compliance improvement subprogram entailed first reviewing recent Energy Commission, CPUC, DOE, and independent compliance surveys and evaluating potential savings resulting from increasing compliance. Such analyses helped guide investigation into drivers of noncompliance and how to address them to increase compliance.

Increase Compliance, Increase Potential Savings

Using findings in the 2010-2012 CPUC *Statewide Codes and Standards Program Impact Evaluation Report*, measures were evaluated to determine where the greatest savings could be achieved with focused compliance improvement activities. The measures were prioritized based on the potential savings if compliance for the measure were to improve to 100 percent, as well as if the compliance were to only increase incrementally. Table 3 displays the evaluated potential savings in Gigawatt hours (GWh) and the evaluated compliance rates for each impact evaluation measure. Gross savings indicate how much of the potential savings have already been realized given the compliance rate. Savings for a one percent increase in compliance rate demonstrates

how potential savings increase as a result of small compliance improvements. Finally, savings if compliance improves to 100 percent represents the remaining evaluated potential savings less the gross savings. The measures are ranked from highest to lowest potential savings if compliance were to improve to 100 percent.

Table 3. 2010-2012 impact evaluation measures evaluated potential savings, evaluated compliance rates, gross savings, incremental savings with increase compliance, and ranked from highest to lowest savings if 100 percent compliance is achieved

2010-12 Impact Evaluation measures	Evaluated potential savings (GWh)	Evaluated compliance rate	Gross savings (GWh)	Savings with 1% compliance increase (GWh)	Savings if compliance improves to 100% (GWh)
General Purpose Lighting - 60 and 40 W	303.5	11%*	33.4	3.0	270.1
General Purpose Lighting - 75 W	134.0	40%	53.6	1.3	80.4
General-Service Incandescent Lamps, Tier 2	224.0	72%	161.3	2.2	62.7
Residential Pool Pumps, 2-Speed Motors, Tier 2	336.6	86%	289.5	3.4	47.1
Incandescent Reflector Lamps (Std 22a and 22b)	25.6	7%*	1.8	0.3	23.8
General Purpose Lighting - 100 W	194.2	88%	170.9	1.9	23.3
General-Service Fluorescent Lamps	328.3	95%	311.9	3.3	16.4
Electric Motors 1-200 HP	146.2	91%	133.0	1.5	13.2
Commercial Refrigeration (Std 1, 2, and 3 in 06-08)	37.8	70%	26.5	0.4	11.3
Refrigerated Beverage Vending Machines (Std 5 in 06-08)	15.2	37%	5.7	0.2	9.6
Televisions, Tier 1	385.5	98%	377.8	3.9	7.7
Walk-In Refrigerators/Freezers	72.1	91%	65.6	0.7	6.5
Portable Lighting Fixtures	86.3	93%	80.3	0.9	6.0
Metal Halide Fixtures	44.2	95%	42.0	0.4	2.2
Residential Incandescent Reflector Lamps	10.2	82%	8.4	0.1	1.8
Commercial Incandescent Reflector Lamps	4.2	82%	3.4	0.04	0.8
TOTAL	2,347.9	-	1,764.9	23.5	583.0

Source: CPUC 2014.

*Compliance rate evaluation for 60 and 40 W general purpose lighting and incandescent lamps occurred soon after the effective date of these standards. These compliance rates are likely lower than the true compliance rates since products manufactured prior to the effective date of the new standard may still be sold and are therefore compliant even if they do not meet the most recent standard performance level.

The CPUC Impact Evaluation does not address the full list of appliances regulated under Title 20; rather, it reviews some of the most recent measures that the C&S Program supported

through technical, cost, and market studies during codes and standards development between 2010 and 2012.

Where Priorities Lie

Target measures and key market actors. The intent of ranking the 2010-2012 CPUC Impact Evaluation measures by potential savings if compliance were to improve to 100 percent is to present a prioritized high savings potential measure list for compliance improvement. Based on the savings potential from increased compliance, the top focus technology areas include lighting, residential pool pumps, electric motors, and refrigerated beverage vending machines. Additional target measures, such as small battery charger systems, are also prioritized in compliance improvement activities due to low compliance rates and a broad scope of products covered under the standards.

Although importers, distributors, and contractors are responsible for compliance and could face enforcement action as a result of noncompliance, the two most important market actors to engage in compliance improvement efforts are manufacturers and retailers. Manufacturers are ultimately the beginning of the sales chain and are responsible for designing, manufacturing, and certifying regulated appliances according to Title 20 requirements. Since they hold these primary responsibilities, it is essential that manufacturers understand all requirements for their regulated products before allowing a product to enter the sales chain in California. Retailers are impacted by a number of appliance efficiency standards depending on the variety of products they carry. Since retailers are only allowed to offer Title 20 compliant products for sale in California, it is imperative that they understand when products they carry are regulated by Title 20 and how to verify if the products are certified in the Appliance Efficiency Database.

Drivers of noncompliance. From stakeholder feedback and interviews and reviewing common questions received by regulatory agencies, the Energy Code Ace team has found that lacking awareness of the regulations or certification requirements, not understanding who is responsible for compliance, and barriers to determining whether or not a product is compliant are some of the biggest drivers of noncompliance. Additional drivers include market actors desiring more simplified certification processes, challenges and potential costs associated with keeping track of all standards and requirements across different jurisdictions as well as certification requirements for regulations under different entities, and a general disdain for efficiency regulations.

Manufacturers and industry associations consistently provide feedback requesting simplification of certification processes. For example, market actors strongly encourage consolidating certification for various databases, such as DOE's Compliance Certification Management System (CCMS) and the Modernized Appliance Efficiency Database System (MAEDBS), so that a product can be certified to multiple databases with a single submission. While this approach may reduce time and resource burdens faced by manufacturers and third-party certifiers, the governmental agencies charged with database and certification administration would face significant resource burdens to complete a major overhaul of applicable database systems and processes. Even if feasible, this would not address compliance improvement in the short term, nor other aspects of noncompliance, such as lack of awareness of Title 20 requirements or associated responsibilities for each market actor.

A comprehensive approach is essential for both short- and long-term appliance standards compliance improvement. Major noncompliance drivers such as lacking understanding of

specific requirements, certification processes, responsibilities of involved parties, and how to verify compliance for a regulated product can be addressed through education and practice. Market actors need access to tools, resources, and training in order to best navigate and understand Title 20 requirements and certification processes.

Energy Code Ace: Helping Market Actors “Ace” Understanding of Efficiency Standards

Following the adoption of standards, the C&S Program supports compliance improvement to complement and enhance advocacy work by maximizing savings that are realized and persist over time. Compliance improvement responds directly to CPUC’s interest in the implementation of existing standards and support for the California Energy Efficiency Strategic Plan (CPUC 2011). Developed and provided by the C&S Program, Energy Code Ace aims to lock in long-term energy savings through improving compliance with California’s building and appliance efficiency regulations. The subprogram generates awareness, improves understanding of regulations, and provides a “one-stop-shop” website offering free training, tools, and resources to equip key market actors with the tools and knowledge necessary for compliance with Title 24 and Title 20. The Title 20 Energy Code Ace subprogram follows the implementation of Energy Code Ace efforts focused on Title 24 compliance improvement by using the Energy Code Ace website as a platform for tools, training, and resources targeted to a range of market actors in the compliance chain.⁴

Working under the direction of the CPUC and in collaboration with the Energy Commission, the Energy Code Ace team is implementing an appliance compliance improvement campaign to improve widespread awareness of Title 20 requirements, how to complete the certification processes, and the benefits and consequences associated with code compliance. To support reaching these primary goals, the campaign aims to develop a culture of compliance through changing market actor beliefs and behaviors. Typically, the team conducts a needs assessment before developing offerings in order to uncover which types of performance intervention are most appropriate, and determine the specific performance objectives and preferred delivery methods for the various target audiences. The Energy Code Ace team takes a positive approach to education and outreach, endeavoring in partnership with regulatory agencies and stakeholders to raise awareness and encourage compliance with Title 20 and Title 24 rather than pursue penalizing noncompliant organizations through enforcement actions.

Completed Efforts

Outreach. Energy Code Ace outreach efforts reflect the understanding that communication and collaboration are critical to improving compliance with Title 20. The outreach team coordinates with the Energy Commission to help ensure key market actors, namely manufacturers and retailers, stay up to date with relevant requirements and know about the tools, training, and resources available to them. Targeted email campaigns are carefully timed so recipients are not inundated and the messages maintain their effectiveness over time. In addition, the Energy Code Ace team participates in industry events, such as the American Lighting Association Annual Conference, the Consumer Electronics Show, and LIGHTFAIR International, to present

⁴ For more information on the complimentary efforts for Title 24 compliance improvement, visit <http://energycodeace.com>.

applicable information, identify industry trends, distribute collateral, and raise awareness of Title 20 compliance requirements and available resources. Outreach activities are targeted at specific market actors and product types based on needs assessment results.

Training. Training provided through Energy Code Ace embraces a range of delivery methods including in-person events, webinars, live online instructor-led training, interactive on-demand video training, and online self-study courses. A needs assessment, including conducting interviews with relevant stakeholders, helps determine when training is an appropriate performance intervention, the specific performance objectives, and delivery modes most appropriate to each target audience.

For example, prior to developing training to support the launch of MAEDBS, the Energy Code Ace team conducted a needs assessment that revealed manufacturers had the most pressing need for learning to use the new database but that test laboratories, third-party certifiers, and resellers were also important audiences. Uncertainty and misperceptions about new Title 20 enforcement capabilities as well as the new database and associated procedures were also apparent. To address general concern and uncertainty, the team conducted phone calls with major manufacturers, distributors, and industry associations to explain major changes to the code and related enforcement issues as well as preview key functions of MAEDBS. Follow-up informational webinars provided additional details to help build understanding for the upcoming changes. To address in-depth training on how to use MAEDBS, the team developed interactive on-demand training because market actors indicated that they valued the ability to complete discrete, performance-based training at their own pace and schedule in addition to having an opportunity to check understanding throughout the training. Meeting these audience-identified design points, the team launched a total of twelve on-demand training modules, with the first nine initial training modules focused on manufacturer needs. This training has been well received, with participant feedback communicating appreciation for incremental learning, performance-based instruction, demonstrations of how to perform common functions, frequent practice opportunities, and links to supporting materials.

Resources. Resources provided by Energy Code Ace help facilitate effective implementation of California's appliance efficiency standards through quick references and task-oriented job aids such as flow diagrams, summary instructions, and checklists targeted to the needs of key market actors. Resources currently available through the program's website include an overview of the certification process and associated frequently asked questions, more detailed certification information for manufacturers, distributors, and retailers, and links to other relevant sites and information sources. Resources developed by the program are available both online and provided during training and outreach when appropriate.

Planned Efforts

Next, the Energy Code Ace team plans to expand and enhance Title 20 offerings to provide additional approachable, easy-to-understand tools, resources, training and outreach that provide market actors with the information, understanding, skills, and support they need to comply with Title 20. Working in collaboration with the Energy Commission to ensure a comprehensive and non-redundant effort, the Title 20 Energy Code Ace team has identified several main activities to pursue, including:

- An online tool designed to help major players in the compliance chain understand the compliance process, their roles, and where they can get additional guidance;
- Detailed resources specific to target measures,⁵ interaction with Title 24, recent California standards for measures previously preempted by federal regulations, and new standards for previously unregulated measures;
- Translation of existing resources to additional languages such as Mandarin and Korean, which represent the largest share of non-English speaking market actors;
- Expansion of outreach activities targeted at retailers while continuing efforts with manufacturers;
- Assessment of training and support requirements for each target measure as well as development of appropriate training and resources to support needs identified through interviews with subject matter experts and needs assessments conducted with industry experts and representatives of relevant compliance chain members; and
- Development of materials and training elements designed to illuminate the connection between Title 20 and Title 24 for market actors involved with product types addressed in both codes.

Recommendations for Expanding Impacts: California and Beyond

Increasing compliance with California’s appliance standards does not just save energy in the state. Impacts are far reaching due to the intersection between state and federal standards and the likelihood of manufacturers maintaining one design for all inventory of the same product model throughout the U.S. By keeping these points in mind and implementing advanced strategies for identifying compliance improvement needs, programs such as Energy Code Ace can further expand compliance improvement impacts.

Title 20 adopts federal appliance efficiency regulations verbatim and 20 of the 23 product categories addressed in Title 20 include federally regulated products. Ensuring that a federally-regulated product meets Title 20 requirements ensures that the product also meets federal standards. In this way, increasing compliance with Title 20 also means increasing compliance with federal standards, resulting in energy savings on a larger scale.

Energy savings may also extend outside of California due to manufacturers producing a single design for a regulated product across all markets. Market actors generally prefer to follow a single, streamlined standard across the nation rather than keeping track of and trying to design for state-by-state standards that may address different requirements for the same product. According to the U.S. Census Bureau (2016), California comprises 12 percent of the country’s total population. Rather than lose out on a significant portion of the U.S. market, manufacturers that are aware of Title 20 and its requirements are likely to design regulated products to comply with these standards. This is a more cost-effective and sustainable approach to manufacturing than maintaining resources and processes required to meet multiple designs for the same product. If manufacturers are designing to meet California requirements, the realized energy savings are wider reaching and greater than anticipated if they are selling the same products nationally and even internationally. Raising awareness and working with manufacturers to increase their understanding of Title 20 requirements encourages them to design products that comply with California regulations. To achieve even greater impacts, state appliance compliance

⁵ *Target measure* refers to a product category that is prioritized for training, tools, outreach, and resources based on low compliance and high savings potential.

improvement programs can coordinate to help manufacturers understand differences between state and regional requirements that address the same product type to help them plan to generate products that meet all applicable standards in the U.S.

Pursuing new and improved data collection and compliance assessment strategies can also expand compliance improvement impacts. Assessing compliance rates to establish a baseline for improvement is an important task to help prioritize where to focus efforts; however, the most common data collection methods of in-field surveys and manually recording online retailer data have significant limitations. The amount of time and resources required to collect sufficient data using these approaches limit the viability of extensive or repeated surveys, increasing the potential for holes in available data, and decreasing the ability to regularly monitor compliance improvement. More robust data collection strategies, such as web harvesters,⁶ are cost-effective alternatives that powerfully collect large quantities of data over short time periods and assist with large-scale market surveys, thus helping fill gaps of what is available in recent compliance assessments. Such a tool also allows for a breakdown of compliance rates by product category, retailer, and manufacturer to provide an enhanced strategy for identifying where to focus compliance improvement efforts as well as measuring progress. Collecting data across various product categories offered by a single retailer, for example, could allow compliance improvement teams to help the retailer identify noncompliant products, investigate patterns, and provide education on how to improve compliance. Big data collected through methods such as web harvesting is a growing market that regulatory agencies may leverage for enforcement activity; however, it also offers a beneficial opportunity for compliance improvement programs focused on encouragement and collaboration, such as Energy Code Ace, to enhance educational efforts and knowledge transfer.

Conclusions

Using potential savings and compliance rates as a guide to prioritizing target measures, the appliance standards compliance improvement subprogram has been able to identify appropriate approaches for improving compliance targeted at specific measures and market actors. Through developing both broad and targeted training, tools, and resources to get the information to key market actors who need to know to comply with Title 20, Energy Code Ace takes a comprehensive approach to appliance standards awareness and education.

While it is the nature of state appliance efficiency standards to positively impact energy savings on a national and even worldwide scale, additional energy savings can be achieved through proactive and comprehensive compliance improvement activities. These activities may include identifying target measures and market actors, researching the performance gaps and needs of each targeted sector, and tailoring interactive solutions to meet each market actor's educational needs. The C&S Program has developed an appliance compliance improvement subprogram on these principles, dedicated to educating market actors and providing them with the necessary training, tools, and resources to comply with Title 20. Other states can follow suit, looking to Energy Code Ace as an example of how to achieve greater energy savings from increased compliance with appliance efficiency regulations, including working alongside market

⁶ Web harvesters are specialized software tools programmable to implement data collection from web-based interfaces such as public websites. These tools can be used as part of a strategy to collect and compare appliance data to the Appliance Efficiency Database in order to assess compliance and determine where to focus tools, training, resources, and outreach for compliance improvement.

actors to determine compliance barriers specific to the state’s regulations and developing targeted solutions to address such barriers.

Advocacy and compliance improvement teams can increase effectiveness of efficiency standards by coordinating before, during, and following standards development processes. Placing more emphasis on compliance and enforcement while participating in rulemaking workshops, carefully reviewing draft code language for simplicity and intelligibility, and encouraging market actors to get ahead of their competitors and comply with standards before their effective dates are all practical and actionable approaches to addressing compliance at the foundation. Pursuing a proactive rather than reactive approach to compliance improvement will better prepare the market for higher compliance rates, and ultimately garner significantly more energy savings.

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