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**PRESENTATION OF THE  
DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS**

TO THE SENATE COMMITTEE ON  
TRANSPORTATION AND ENERGY

TWENTY-NINTH LEGISLATURE  
Regular Session of 2018

Friday, February 9, 2018  
1:35 p.m.

**TESTIMONY ON SENATE BILL NO. 2935, RELATING TO CONSUMER  
PROTECTION.**

TO THE HONORABLE LORRAINE R. INOUE, CHAIR, AND MEMBERS OF THE  
COMMITTEE:

The Department of Commerce and Consumer Affairs (“DCCA” or “Department”) appreciates the opportunity to testify on S.B. 2935, Relating to Consumer Protection. My name is Catherine Awakuni Colón, and I am the Director of the Department (“Director”). DCCA opposes this bill, which is a companion to H.B. 2248, and provides the following comments.

S.B. 2935 requires the Department to adopt and enforce the appliance efficiency standards in title 20 California Code of Regulations for faucets, showerheads, computers and monitors, high color rendering index fluorescent lamps, air purifiers, commercial fryers, and other appliances and devices the Department deems appropriate. When adopting rules governing the certification of products, the Department may adopt the language of and coordinate with the certification programs of other states and federal agencies with similar standards.

While DCCA concurs with the energy conservation and energy efficiency goals of this bill, it has concerns about the means by which those goals would be achieved, and as such, does not support this bill as drafted. The Department's concerns about the bill are two-fold: (1) the costs to implement this bill would be significant and could not be absorbed in DCCA's existing special fund budget; and (2) DCCA is ill-suited for the type of regulation being proposed.

S.B. 2935 calls for the Department to adopt California's appliance energy efficiency standards. These standards are robust and among the preeminent standards in the country, but they would be expensive to develop, implement, and enforce. In addition, replicating California's oversight functions would require significant resources. As DCCA is a special-funded department, these costs could not be borne by its existing licensee population.

Furthermore, this bill requires oversight by an agency well-versed in energy efficiency standards and in evaluating the energy efficiency of consumer goods. This activity is well outside the Department's jurisdiction, and it would therefore be difficult to use existing staff expertise to facilitate the adoption and enforcement of these provisions.

For these reasons, the Department does not support this bill. Thank you for the opportunity to provide comments. I would be happy to answer any questions the Committee may have.



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## TESTIMONY

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ON BEHALF OF  
THE ASSOCIATION OF HOME APPLIANCE MANUFACTURERS

BEFORE THE HAWAII STATE LEGISLATURE  
SENATE COMMITTEE ON TRANSPORTATION & ENERGY

HEARING  
SB 2935  
RELATING TO APPLIANCE EFFICIENCY STANDARDS

FEBRUARY 9, 2018

Chair Inouye, Vice Chair Espero and Members of the Committee, I appreciate the opportunity to provide testimony on SB 2935, relating to creating new energy efficiency standards. **The Association of Home Appliance Manufacturers (AHAM) is opposed to SB 2935.**

AHAM represents manufacturers of major, portable and floor care home appliances, and suppliers to the industry. AHAM's membership includes over 150 companies throughout the world. In the U.S., AHAM members employ tens of thousands of people and produce more than 95% of the household appliances shipped for sale. The factory shipment value of these products is more than \$30 billion annually. The home appliance industry, through its products and innovation, is essential to improving a person's lifestyle and health, and saving people time. Through its technology, employees, and productivity, the industry contributes significantly to U.S. jobs and economic security. Home appliances also are a success story in terms of energy efficiency and environmental protection. New appliances often represent the most effective choice a consumer can make to reduce home energy use and costs.

AHAM appreciates that Hawaii is striving to improve energy efficiency. However, the minimum standards the bill would create for air cleaners should be deleted. No other state has created these types of standards for air cleaners, and for good reason. The bill states that the Hawaii Department of Commerce and Consumer Affairs must adopt a non-existent California energy efficiency standard for air purifiers. In 2004, California was considering energy standards for air cleaners and concluded that was an unwise effort. Please find attached a report by AHAM on this issue which outlines the reasons why energy standards for air cleaners are not appropriate.

I would like to highlight that for many people, including low income people, air cleaners are purchased for health reasons and as the included reports shows the higher efficiency standards would "destroy the retail price points for units at <\$50 and at \$50-100. This is likely to have a profound effect on consumers who depend on the availability of smaller air cleaners, with lower Clean Air Delivery Rate (CADR) values, for smaller rooms. This may be especially true for those consumers who are at fixed incomes or who are economically disadvantaged."

In addition, AHAM opposes Section 4(7), which provides a blanket authorization to the Department of Commerce and Consumer Affairs to designate "other appliances and devices as the department deems appropriate." The Hawaii Legislature should consider whether it is appropriate to permanently transfer its oversight and expertise on public policy matters in this area to a state agency, much less another state agency in California, in such a broad way. Even if the legislature would decide to provide such broad authority and risk its abuse by future state officials in Hawaii or California, there should be some sort of limits to this authority, such as requiring a certain threshold of energy savings, cost-benefit criteria, and impacts on consumers and manufacturers.

AHAM appreciates the opportunity to comment on SB 2935 and would be glad to further discuss these matters.

**Report to  
California Energy Commission**

**Analysis  
of  
Energy Efficiency of  
Room Air Cleaners**

**Prepared by:**

**The Association of  
Home Appliance  
Manufacturers**

**August 9, 2004  
Wayne Morris**



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## I. Summary

The Association of Home Appliance Manufacturers (AHAM) represents the manufacturers of portable air cleaners sold in the United States. AHAM is the author of the American National Standard for measuring the performance of portable air cleaners with respect to pollutant particle removal. AHAM administers a third party testing program to verify the performance rating of products produced by participating companies and a proprietary market statistics program which tracks factory shipments of portable air cleaners for the U.S. market.

AHAM was *not* asked by the California Energy Commission (CEC) to provide any of its expertise in the development of the staff report or consultant's report, which are the basis of the draft efficiency standards. We provide this analysis so that the Commission will have a more fact based depiction of the industry, the market segmentation, energy usages, technology situation, and consumer impact of the draft regulations.

The study produced for the Commission is in error in most of the key areas of focus relevant to determining whether efficiency standards are appropriate. This is due to the absence of accurate energy, market, manufacturing and consumer impact information.

- The contractor incorrectly assumed that saturation of air cleaners in households in California is above the national average. This is not confirmed by actual survey information. In fact, saturation of air cleaners in California is actually less than most areas of the U.S. and usage is less than many other areas of the U.S.
- The consultant suggested the use of a variation to the present test procedure for energy efficiency by suggesting the use of a measurement of wattage at an average of high and Low speeds. AHAM members believe that this is an inappropriate measurement. The U.S. National Standard for measuring performance of air cleaners, ANSI/AHAM AC-1-2003, calls for testing of performance at high speed only. This standard has been subjected to the ANSI peer-review process, known as the Canvas Method for standards development. Testing of unit performance at speeds other than high speed is unnecessary and unduly burdensome. It is estimated that it would cost the industry over \$1 million to measure performance additionally at low speed. The federal test procedure for room air conditioners provides an excellent approach for addressing portable air cleaners. In this program consumers operate the product at speeds other than "high" setting, but all energy efficiency measurements are taken at high speed only.
- The consultant has incorrectly estimated the design life of these appliances. The actual design life is considerably less, which becomes important in calculating the payback to the citizens of California.
- The consultant states in the draft analysis that it could not find a relationship between retail price and energy efficiency. Based on the AHAM review of 73 basic energy models of room air cleaners, we believe the relationship is defined and quite evident.

- The consultant states that the difference between a lower energy efficient air cleaner and a more energy efficient model with the ability to meet the suggested energy standard is the use of a capacitor-start motor. This suggestion is not supported by the facts provided by product manufacturers.
- The data presented by AHAM shows that instituting an energy efficiency standard at or near 2.1 CADR/Watt high could destroy the retail price points for units at <\$50 and at \$50-100. This is likely to have a profound effect on consumers who depend on the availability of smaller air cleaners, with lower CADR values, for smaller rooms. This may be especially true for those consumers who are at fixed incomes or who are economically disadvantaged.
- Most of the models the consultant surveyed were above \$200 retail price point, which were then used to make assumptions about all air cleaners. This extrapolation cannot be relied upon as accurate since the real market for these products indicates the majority of price points and units shipped are below this price point.
- The data clearly shows that with the cost impact of the new standards level, the payback to the consumer in California is well beyond the life-span of the unit, and in many cases well beyond even the 8 years that the consultant chose to measure payback against.
- The impact on energy in California is considerably less than predicted. The first year statewide energy savings is actually 11.4 GWh not the 22 estimated by the consultant. In addition, the first year peak demand savings is 1.3 MW not the 4 estimated by the consultant.
- The Net Present Value is a number that evaluates whether a consumer will benefit from a new energy standard. Specifically, it identifies whether the energy savings of an efficiency regulation are larger than the increased price of the product resulting from the new standard. A negative number signifies that consumers would pay more for the product than they would save in energy over the life of the product. In this case, the Net Present Value for each of the 5 retail price points is a **negative number**. Under a U.S. Department of Energy rulemaking, this fact alone would be enough to disqualify the proposal from being enacted as it would not be considered economically justified.

In all measurements above it is clear that the consumers in California would lose significantly if energy efficiency standards for portable room air cleaners are promulgated as suggested by the CEC.

By choosing to promulgate energy efficiency standards, the CEC is needlessly jumping the gun when a market-based approach could have greater market impact, such as the U.S. EPA Energy Star program.



## II. Introduction

The AHAM represents the manufacturers of portable air cleaners. AHAM was not contacted prior to the release of the “Draft Analysis of Standards Options for Portable Room Air Cleaners” as written by Davis Energy Group for Pacific Gas & Electric and the CEC (“Draft Analysis”). The Draft Analysis contains many serious errors which could have been avoided if the CEC had contacted AHAM.

In June-July 2004, AHAM undertook energy and cost analysis of the portable room air cleaner market. AHAM surveyed 15 major manufacturers of air cleaners, representing over 120 basic model units. These 120 basic model units represent over 200 models at retail. Typically, a cost and energy analysis by one of AHAM’s product councils will take from 4 to 6 months. In order to comply with the request from the CEC, AHAM conducted this analysis in approximately 8 weeks. While this analysis represents most, but not all, portable air cleaners, AHAM has made a good-faith effort to ascertain data on a wide variety of units in the marketplace. We present these findings to the CEC in hopes that with actual facts, the CEC may be able to make a proper decision on the need for energy efficiency standards for portable room air cleaners.

## III. Product Description

AHAM has over 25 years of experience with portable room air cleaners. The product is a device that is designed to be moved from room to room, connected to the main electric source, and to remove substances from the air.

The term “portable air cleaner” represents many different types of air cleaning technology. Some units are fan and filter based air cleaners. These units utilize a motor, fan, and filter assembly to trap particulate materials from the air stream. The filters used in most portable fan and filter air cleaners vary from light non-woven materials to woven materials to paper based materials and finally, high Efficiency Particle Absorption (HEPA) media, which is designed to trap 99.97% of all particles 0.3 microns or greater.

Many filtration type air cleaners will use the addition of an ionizer to enhance performance. This ionizer unit uses additional energy by charging the airstream either before the filter or after to impart an electrical charge to particles which will then be attracted to the opposite charge on a treated and charged filter media.

Other types of air cleaners may use an electrostatic precipitator design to achieve particle reduction. In this type of air cleaner, air is forced between a highly electrically charged series of metal grids. As they pass through the grids, the particles are first charged and then attracted to the set of plates with the opposite charge. While this type of air cleaner does not typically have a filter media, it attracts the particles to the plates within the air cleaner, and these plates can be cleaned periodically.

Ionization air cleaners are ones in which the ionization charge is emitted to the airstream or environment around the air cleaner. They may use a set of plates or rely on the room surfaces with opposite charges to act as the repository for the particles. While ionization air cleaners may not have filtration media, they use other means to attract and hold particles.

Removal of particles from a room environment is not dependent upon one type of air cleaner. The performance of all types of air cleaners can be measured using the American National Standards Institute (ANSI)/AHAM standard AC-1-2003. AC-1 provides a uniform method of test for measuring the performance of room air cleaners in terms of Clean Air Delivery Rate (CADR). This is the U.S. national standard for measurement of portable air cleaner performance and has been used since 1989. AHAM sponsors a certification program for portable room air cleaners that includes testing to ANSI/AHAM AC-1 specifications and verification through follow-up selection and periodic testing of production to assure that the performance remains the same as published in the quarterly directories. This program is open to AHAM members and non-members alike.

ANSI/AHAM AC-1-2003 calls for testing of performance at high speed only. This standard has been subjected to the ANSI peer-review process, known as the Canvas Method for standards development. Testing of unit performance at speeds other than high speed is unnecessary and unduly burdensome. Ratings at high speed are sufficient, as is the case with other multi-speed appliances, such as room air conditioners. Appliances are typically optimized at maximum speed. Different manufacturers use lower speeds or medium speeds based on a number of factors (i.e. sound/noise, size of units to room size, velocity of air, comfort to the person, air flow and direction). As the relationship between high speed and low speed is not the same from model to model, it is not appropriate to measure performance other than at high speed. It is estimated that it would cost the industry over \$1 million to measure performance at low speed too, as proposed by CEC.

One of the most important features of the Air Cleaner Certification Program has been the correlation of CADR to the appropriate room size. By using a table, consumers can use the CADR measurement to choose the air cleaner most appropriate for their situation. This program also enhances energy efficiency programs by giving consumers information on performance and room size, and by discouraging “over purchasing”, or the purchasing of air cleaners too large for the room in which they are used. Conversely, any movement to remove certain price segments from the marketplace could have that very effect and encourage consumers to purchase large, more energy-consuming air cleaners for small or medium size rooms.

#### **IV. Air Cleaner Market**

AHAM conducts factory shipment statistics for the portable air cleaner business on a monthly basis, and has done so for more than 12 years. The AHAM Business Data Program makes this information available to member companies on a monthly basis but this information is not available to the general public. AHAM has offered to release the shipment data for the last 2

years to CEC on a confidential/proprietary basis. This information shows that the assumption Davis Energy Group has made is in error and significantly overestimates the shipments in the U.S. per year.

**A. Ownership**

According to the 2000 Census, there are 11.5 million households in California. According to survey data, ownership of air cleaners is about 14% in the Western census region, which equates to approximately 1.6 million households in California owning at least one air cleaner.

**B. Segmentation**

The air cleaner market extends from a number of small portable air cleaners used in small rooms or areas, to air cleaners which function in large rooms or areas. In addition, according to trade publications, it extends from price segments below \$50 to units above \$200. While there may not be exact segments between the two, for purposes of this energy and cost exercise, AHAM has chosen to develop information on 5 retail price point segments: Under \$50, \$50-100, \$100-150, \$150-200, and over \$200. We will report on the energy usage, efficiency and cost to achieve the CEC proposed efficiency levels at each of these retail price points and at the Shipment Weighted Average (SWA), in some cases, of the 5 segments. AHAM members believe that it is important to consider the impact of such energy efficiency standards on air cleaners at different retail price points independently, as they represent segments of different performance, different market segments of the population, and different reasons for purchase. Any action by CEC to invoke energy efficiency standards will have an impact on air cleaners at different performance and different retail price segments. It will likely also have an effect on the ability of consumers to choose an air cleaner that fits their needs.

We do not know the source of market penetration of high efficiency options on page 3 of the consultant's paper, and no source is cited. We will make available information on the percentage of market at each of the 5 retail price point segments, based on a recent survey of AHAM members.

## **V. Saturation and Usage**

In addition, AHAM and its members have access to saturation data based on recent surveys of consumers across the U.S. The contractor incorrectly assumed that saturation of air cleaners in households in California is above the national average. This is not confirmed by actual survey information. In fact, saturation of air cleaners in California is actually less than most areas of the U.S. and usage is less than many other areas of the U.S. Not only does AHAM have access to accurate survey data on usage and saturation, but this information is broken into 4 U.S. geographic regions. Therefore, AHAM has access to data that is more appropriate to the situation in California than "national" data.

From an NFO Worldwide survey of owners of air cleaner, we know that in the Western U.S., 70.7% of consumers owning air cleaners own 1 air cleaner and 29.3% own more than one. While we do not know how many consumers may own 2 or more than 2 air cleaners, for purposes of this survey, we will consider the more than 1 air cleaner to be 2 units. Thus, the factor per household is 1.293. Knowing that there are approximately 1.61 million households with air cleaners in California, this represents a field of approximately 2.082 million units. A different confidential saturation survey data for the Western U.S suggests a penetration of 11.6% and with 74.7% owning one air cleaner and 25.3% owning more than one. This survey would result in 1.672 million air cleaners in use in California. Because of the diversity of these two numbers, we will report on the impact on California energy using both a "high" field estimate and a "low" field estimate.

AHAM has conducted an in-depth survey of energy data on 73 basic models of air cleaners across all 5 of the retail price segments. AHAM has data on the approximate number of units shipped, amperage, wattage, CADR, and energy efficiency of each of these units. This survey represents a considerably more accurate database than the hand-selected sample the consultant conducted and involves actual energy measurements. In addition, because of multiple derivative models off the basic model platform, this survey represents over 100 actual models of portable room air cleaners in the marketplace.

Current/Wattage. From survey of the 73 basic models, we know that the approximate average high speed represents 104 Watts. We know that the approximate average low speed represents 54.7 Watts. And, we know that the approximate average medium speed represents 79.3 Watts. In addition, for those air cleaners that use an "automatic" setting the approximate energy use is 78 Watts.

Speeds. From the regional breakdown of data, we know that 12.7% of people in the West region use air cleaners on "high" setting; 35.6% of people in the West use air cleaners on low; 42% use air cleaners on medium; and we know that 10% of people in the West use air cleaners on "auto" setting. The weighted average is 0.608 amps x 120 Volts equals 73.01 Watts, or 0.07301 Kilowatts per unit.

Daily usage. The regional data also shows that 29% of people in the West use air cleaners 24 hours a day; 25% use air cleaners 1-4 hours a day; 25% of people use air cleaners 5-8 hours a day; and 20.4% of people use air cleaners from 9-23 hours a day. The daily weighted factor is 0.5183 or about 12.5 hours a day.

Seasonality. The census region data also shows that 71% of families in the West region use air cleaners year around while 29% use them only in allergy season.

- Of families that use them year around, 67% of the families in the West use them every day; 8.7% use them 5-7 days a week; 11.2% use them 3-4 days a week; 4.7% use them 1-2 days a week; 7% use them once or less than once per week. The combined average is 297 days per year multiplied by 71% of population in West that use them year around equals 211 days per year.

- Of the families in the West that use air cleaners seasonally, the average is 5 months. Of these 29% use them every day; 15.9% use them 5-7 days per week; 17% use them 3-4 days per week; 8.3% use them 1-2 days per week; and, 29.8% use them once or less than once per week. The combined average is 83.7 days per year multiplied by 29% of population in the West using them seasonally equals 24 days per year.

Add the two and it gives 235 days per year multiplied by 24 hours per day equals 5640 hours multiplied by the 0.5183 factor for hours per day equals about 2921 hours per year.

This information is considerably different from that of the consultant, but represents far more accurate data.

## VI. Savings Potential

### A. Baseline Energy Use

AHAM surveyed all of its member companies in the Air Cleaner category and developed a database of 73 units, in each of the 5 retail price segments, and with full information on energy usage, efficiency, CADR performance, usage data, etc. This represents a fact-based description of the energy usage of these products as opposed to the consultant's estimate which was based on an article in a magazine.

The consultant describes wattage ranges on high speed from 68 to 264 watts, and on low speed from 15 to 180 watts. The AHAM survey of units shows this data to be inaccurate. The actual range of wattage on high speed is 30 to 200 Watts, and on low speed from 13-113 Watts, as shown in Table 1 (SWA = shipment weighted average).

Table 1.

Retail Price-Points	SWA Wattage Low	SWA Wattage High	SWA CADR/Watt
<\$50	30.7	52.9	1.105
\$50-100	35.7	63.8	1.344
\$100-150	53.2	102.1	1.457
\$150-200	64.9	138.7	1.781
>\$200	61.2	128.1	2.215

### B. Energy Efficiency Measurement

The U.S. Environmental Protection Agency (EPA) Energy Star Program has recently concluded a year-long study on an Energy Star Program for room air cleaners. The Program was just recently announced and began a few weeks ago. The Program utilizes the CADR measurement of performance according to ANSI/AHAM AC-1-2003 as the basis and wattage on high speed. This is a prudent approach. EPA has just set the Energy Star level for room air cleaners at 2.0 CADR/Watt to represent the top 25% of the industry.

The consultant to the CEC has suggested an aberration of the present test procedure for energy efficiency, by suggesting the use of a measurement of wattage at an average of high and Low speeds. AHAM members believe that this is an inappropriate measurement. As stated before, one of the most important features of a test procedure is to be able to have all units tested the same and be able to compare results. The setting of a "low speed" is dependent upon many items and will not be the same percentage relationship to high speed in all air cleaners.

Currently there are many energy efficiency programs overseen by both the CEC and the U.S. Department of Energy. In many cases, the products are used at different speeds, under different usage patterns, at different times, and with different current draws operating different features. However, none of these programs suggest a measurement of anything other than the current and wattage at high speed.

The federal test procedure for room air conditioners provides an excellent approach for addressing portable air cleaners. In this program too, consumers operate the product at speeds other than "high" setting, but all energy efficiency measurements are taken at high speed only. Measurement and reporting of performance and standards setting at other speeds would result in significant and costly modifications to the current test procedures for determining portable air cleaner performance and would not provide a more effective measure of energy usage.

Because of this disparity and extremely large range in the setting of low to high speed, among many other issues, it is not appropriate to measure energy efficiency at CADR per Watts averaged between low speed and high speed.

Because of the need to preserve integrity in the measurement protocol, AHAM has chosen to convert the proposed CEC standard of 2.7 CADR/Watt average to a similar value when measured at CADR/Watt on high speed only. AHAM first conducted a two-week evaluation of all air cleaners in the AHAM program together with information on the performance (CADR) and wattage measurements at high, Low and Medium speeds. The formulas were then compared. While it is not possible to make an exact conversion, we believe that the value that comes closest is **2.1 CADR/Watt** based on high speed watts and is relatively equivalent to 2.7 CADR/Watt when using the average watts of high and low speeds. For purposes of the cost and energy efficiency evaluations AHAM has chosen 2.1 CADR/Watt (high speed only) as the standard case.

### ***C. Life-Span of Room Air Cleaners***

It is difficult to accurately predict the exact life-span of a portable room air cleaner. There are many factors involved in the design of the product, many components that can affect the life-span, differences in consumer use/abuse, and hours of operation. Nevertheless, using the average hours per year of use shown above (i.e. 2,921), AHAM surveyed its members to determine approximate years of design life.

While we have no information to suggest that usage differs between the five price point categories shown above, we do believe consumers will select and use air cleaners according to the different room sizes in which they are used. This could influence usage. While manufacturers attempt to give consumers the highest value for the retail price of a unit, there are some differences in components between lower retail price point units and higher retail price points. The results of the life-span survey are shown below in Table 2.

Table 2.

	<i>Retail Price Points</i>				
	<\$50	\$50-100	\$100-150	\$150-200	>\$200
<i>Design Life in Years</i>	4.0	4.2	5.0	5.2	5.7

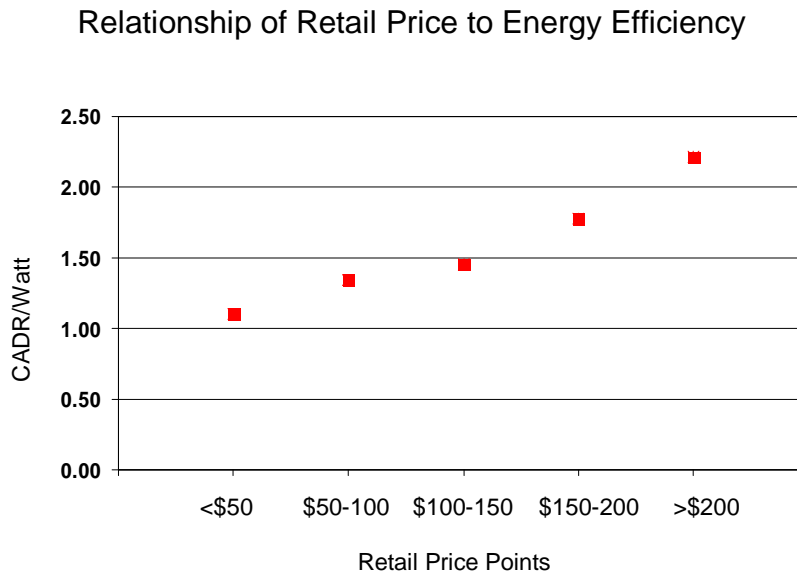
As shown, this deviates significantly from the estimate used by CEC that the average life-span is 8 years.

In addition, data from the NFO survey of Air Cleaner ownership shows that 93% of households in the Western US have owned their air cleaners 6 years or less.

***D. Relationship between Retail Price and Energy Efficiency***

The consultant stated that it could not find a relationship between retail price and energy efficiency. Based on the AHAM review of 73 basic energy models of room air cleaners, we believe the relationship is defined and quite evident. See Figure 1 for shipment weighted average of efficiency of today's air cleaners.

Figure 1.



## VII. Cost Impact of New Standard Level

### A. Comparison of Manufacturer's Cost and Retail Price

AHAM does not have specific data on the relationship between manufacturer's U.S. cost and the retail price of room air cleaners. A paper was written for the U.S. Department of Energy by Arthur D. Little Consulting in 2000 for the Government Regulatory Impact Model (GRIM) analysis for the standards setting rulemaking of clothes washers. This paper gives information on the add-on between manufacturer's cost and retail price to the consumer. While this factor was not developed for this product category and is known to underestimate the relationship between manufacturer costs and total add-on, it is nevertheless the only published factor to our knowledge and does provide a uniform benchmark to compare current and future costs related to the suggested energy standard. Based on this factor, we offer this analysis.

Table 3.

Manufacturer's Cost	Manufacturer's Add-on	Retail Add-on	Tax Add-on	Total Add-on Factor
X	1.35x	1.40x	1.052x	1.99x

Source: Arthur D. Little GRIM Analysis, Chapter 6, "Mark-ups for Price Determination," Federal Register Notice, Volume 65, No. 194, October 5, 2000.

### B. Cost Per Unit

As with any proposed energy standard, there is a cost. The consultant makes a suggestion that the difference between a lower energy efficient air cleaner and a more energy efficient model with the ability to meet the suggested energy standard is the use of a capacitor-start motor. This suggestion is not supported by the facts provided by product manufacturers. As manufacturers told the CEC at the May 2004 hearing, many of the models currently on the market use a capacitor-start motor and still do not meet the proposed standard level.

Based on manufacturers' data, Table 4 shows the added cost, and corresponding retail price, to bring units from the current baseline efficiency shown in Table 1 to the standard of 2.1 CADR/Watt. The full impact of the standard is only partially shown by the calculation of the manufacturer's cost and retail price. This will be discussed in Section IX.



Table 4.

	Percentage of Market	SWA Current Mfrs. Cost (\$)	SWA Current Retail Price @ 1.99 (\$)	SWA New Standard Mfrs. Cost (\$)	SWA New Retail Price @ 1.99 (\$)	Difference In Retail Price (\$)	Percentage Increase Retail Price (%)
<\$50	18.5%	\$15.83	\$31.50	\$37.85	\$75.32	\$43.82	<b><u>139.1%</u></b>
\$50-100	21.66%	\$24.51	\$48.77	\$52.27	\$104.02	\$55.24	<b><u>113.3%</u></b>
\$100-150	32.70%	\$33.90	\$67.46	\$59.76	\$118.92	\$51.46	<b><u>76.3%</u></b>
\$150-200	21.83%	\$51.84	\$103.16	\$87.00	\$173.13	\$69.97	<b><u>67.8%</u></b>
>\$200	5.94%	\$62.64	\$124.65	\$104.43	\$207.82	\$83.16	<b><u>66.7%</u></b>

It is important to mention that even though the shipment weighted average of the current efficiency (CADR/Watt) for the "Over \$200" price point units is above the suggested standard level (see Table 1), the cost increase is significant for those manufacturers currently not meeting the new level of 2.1. Thus, the shipment weighted average of the cost and calculated retail price increase is shown above for this category.

As with any approximation of a factor between manufacturer's cost and retail price, there are situations that do not fit exactly. This is evidenced by the fact that by using this factor, the price points for what exists today would be significantly below the actual price point in which these units are currently sold. This could mean that the 1.99 factor is too low to account for this product and market. However, by using a factor that is higher and likely more appropriate to this product category, the calculated payback would be longer and consumer net present value even a larger negative number. It is even more clear that by instituting an energy efficiency standard at or near 2.1 CADR/Watt high, would likely destroy the retail price points for units at <\$50 and at \$50-100. This is likely to have a profound effect on consumers who depend on the availability of smaller air cleaners, with lower CADR values, for smaller rooms. This may be especially true for those consumers who are at fixed incomes or who are economically disadvantaged. As mentioned above the 1.99 factor developed by A.D. Little, while perhaps underestimating the true markups, nevertheless provides a uniform factor for understanding the impact of the suggested standard on the market.

### ***C. Saving Potential***

AHAM conducted a preliminary evaluation of the cost of energy efficiency standards at the proposed standard level of 2.1 CADR/Watt high (which we have explained is approximately equal to the level CEC has proposed at 2.7 CADR/Watt average at high and low speeds). The consultant to CEC used a simple telephone survey on a few models of air cleaners and made approximations of the energy efficiency levels.

Most of the models the consultant surveyed were above \$200 retail price point, which were then used to make assumptions about all air cleaners. This extrapolation cannot be relied upon as accurate since the real market for these products indicates the majority of price points and units shipped are below the price point used in the consultant's analysis.

As shown below, the baseline energy usage of today's air cleaners is not 305 kWh/year as estimated but rather (based on the retail price points of the units) is between 115 and 273 kWh/unit. The table below shows the current Shipment Weighted Average of current energy use and that of units meeting the proposed 2.1 CADR/Watt energy standard.

Table 5.

	Current SWA Annual Unit Energy Use (kWh/yr)	Current SWA Annual Energy Cost (@\$.115 Per kWh)	New SWA Annual Unit Energy Use (kWh/yr)	New SWA Annual Energy Cost (@\$.115 per kWh)	Difference Energy Use (kWh/yr)	Difference Energy Cost (\$)
<\$50	115	\$13.19	59.81	\$6.88	54.85	\$6.31
\$50-100	136	\$15.66	89.28	\$10.27	46.92	\$5.40
\$100-150	210	\$24.21	143.53	\$16.51	66.95	\$7.70
\$150-200	273	\$31.36	203.85	\$23.44	68.10	\$7.91
>\$200	253	\$29.08	183.64	\$21.12	69.25	\$7.96

As this chart makes clear, there is energy to be saved if the minimum energy efficiency of air cleaners were raised to a 2.1 CADR/Watt level. However, the savings per year is a few dollars even at the average utility cost rates that are available in some parts of California (\$.115/kWh).

Based on a shipment weighted average of all of the 5 retail price point categories, the difference in energy is 61.3 kWh and the difference in energy cost savings is \$7.05. And, the range is from a low of \$5.40 per year to a high of \$7.96.

#### ***D. Payback***

The most important element in this section is the simple payback at each of the retail price points based on the difference in retail price (as shown in Table 4) divided by the difference in annual energy cost (as shown in Table 5). The results are shown in Table 6, compared to the average life span of units in each price range.

Table 6.

	Average Life-Span of Unit (years)	Simple Payback at 2.1 CADR/Watt (years)
<\$50	4.00	7
\$50-100	4.20	10.2
\$100-150	5.00	6.7
\$150-200	5.20	8.8
>\$200	5.70	10.4

It is clear that with the cost impact of the new standards level, the payback to the consumer in California is well beyond the life-span of the unit, and in many cases well beyond even the 8 years chosen by the consultant to measure payback.

***E. Impact on California***

Table 7.

Retail Price Points	Per Unit Annual Savings (kWh)	First Year Statewide Savings (GWh)	First Year Peak Demand Savings (MW)
<\$50	54.85	1.948	0.222
\$50-100	46.92	1.951	0.222
\$100-150	66.95	4.203	0.479
\$150-200	68.10	2.884	0.329
>\$200	69.25	0.79	0.090
Total		11.7	1.3

As is shown by Table 7 above, the first year statewide energy savings is actually 11.7 GWh not the 22 estimated by the consultant. In addition, the first year peak demand savings is 1.3 MW not the 4 estimated by the consultant.

The full replacement statewide annual energy savings and full replacement peak demand savings are both dependent upon the size of the field of units in California. As we discussed above in Section IV, the size of field can be estimated using information available to us from more than one source. Rather than average the data, we present the impact on annual savings and peak demand at full replacement based on both the “high” field estimate and “low” field estimate.

Table 8.

	Full Replacement Statewide Annual Savings at "low" field estimate (GWh)	Full Replacement Statewide Annual Savings at "high" field estimate (GWh)	Full Replacement Peak Demand Savings at "low" field estimate (MW)	Full Replacement Peak Demand Savings at "high" field estimate (MW)
<\$50	16.97	21.13	1.92	2.39
\$50-100	16.99	21.16	1.92	2.39
\$100-150	36.60	45.58	4.13	5.15
\$150-200	25.12	31.27	2.84	3.53
>\$200	6.88	8.56	0.78	0.97
Total	104.23	129.79	11.58	14.42

Contrast this with the consultant's estimates of a full replacement statewide savings of 187 GWh and full replacement statewide peak demand savings of 32 MW. Again, we find the consultant estimates to be overstated.

## VIII. Economic Analysis

### A. Life Cycle Cost

Based on the information provided by the manufacturers and expected life-span, we have calculated the consumer net present value. See Table 9.

Table 9.

Retail Price Points	Design Life (years)	Annual Unit Energy Savings (kWh)	SWA <sup>1</sup> Present Value of Energy Savings (\$)	Difference in Retail Price, Current v. New Std. (\$)	Customer Net Present Value (\$)
<\$50	4.0	54.85	\$21.37	\$43.82	-\$22.45
\$50-100	4.2	46.92	\$19.07	\$55.24	-\$36.18
\$100-150	5.0	66.95	\$31.57	\$51.46	-\$19.89
\$150-200	5.2	68.81	\$33.53	\$69.97	-\$36.44
>\$200	5.7	69.25	\$36.41	\$83.16	-\$46.76

<sup>1</sup>Net present value of annual energy savings is calculated over the expected design life, discounted at 7%.

The Net Present Value is a means of determining if the energy cost savings of a regulation are more than the increased price of the product resulting from the regulation. A negative number signifies that consumers would pay more for the product than they would save in energy over the life of the product. In this case, the Net Present Value for each of the 5 retail price points is a **negative number**. This fact alone would be enough to disqualify the proposal from being considered under a U.S. Department of Energy rulemaking, as it does not pass the requirement of being economically justified.

## **IX. Consumer and Industry Impact**

### ***A. Consumer Impact***

In all measurements above it is clear that the consumers in California would not benefit if energy efficiency standards for portable room air cleaners are promulgated as suggested by the CEC.

The promulgation of such a standard would also have an impact on the marketplace and availability of needed technologies in improving indoor air quality for the citizens of California. At the same time that the California Air Resources Board (ARB) is calling for better measures to mitigate indoor air quality issues the CEC could inadvertently promulgate regulations to remove affordable technologies for many consumers to improve indoor air quality.

In testimony before the CEC, manufacturers have stated that the real impact of a rulemaking may be to deny these products to consumers who need them most. According to data from the US Environmental Protection Agency study on children's health, the manufacturers noted that asthma and chronic allergic reactions are higher among the lower socioeconomic groups. By increasing the cost of smaller units with lower retail price points by \$45 to \$55, this action may take these units out of the buying potential of many families.

### ***B. Energy Star***

By choosing to promulgate energy efficiency standards, the CEC is needlessly jumping the gun and preempting a market based approach which could have greater impact, namely the U.S. EPA Energy Star Program. Indeed, by choosing a minimum energy efficiency standard above that of the EPA Energy Star Program (2.0 CADR/Watt), the CEC seems to be choosing to either ignore or attempting to usurp the Energy Star program.

### *C. Industry Impacts*

The impact on the air cleaner industry will be significant with any state energy efficiency mandatory regulation. Manufacturers are under increasing pressure to increase the value of products to consumers. This has often resulted in the pressure to reduce manufacturing costs. This has resulted in the movement of most manufacturing facilities to locations outside the United States. Any actions by the CEC could result in further pressures to reduce what available U.S. manufacturing there is in the air cleaner market.

Instead of allowing manufacturers to focus on improvements to product design, features, and performance, the suggested energy standards for portable air cleaners would require manufacturers to focus on energy efficiency in segments where there is little payback to consumers and in fact, the net present value to consumers is negative.

## **X. Recommendations**

The recommendations of AHAM to the CEC are as follows:

1. The rulemaking should not proceed until CEC thoroughly reviews these and other data.
2. The CEC should work WITH market based programs such as the AHAM CADR Certification Program and the U.S. EPA Energy Star Program to find a more cost effective method for evaluating the energy consumption of portable air cleaners.



# Hawai'i Energy

YOUR CONSERVATION & EFFICIENCY PROGRAM

1132 Bishop Street, Suite 1800 • Honolulu, Hawai'i 96813 • HawaiiEnergy.com • P: (808) 839-8880 • F: (808) 441-6068

Before the Senate Committee on Transportation and Energy  
Friday, February 9, 2018, 1:35 PM, Conference Room 225  
SB2935: Relating to Consumer Protection

Chair Inouye, Vice-Chair Espero, and members of the committee:

The Hawai'i Energy program would like to testify in strong **support** for SB2935.

Hawai'i Energy works to empower island families and businesses on behalf of the Hawai'i Public Utilities Commission (PUC) to make smart energy choices to reduce energy consumption, save money, and pursue a 100% clean energy future.

According to the "States Go First" report by the Appliance Standards Awareness Project, faucets, showerheads and computer and monitor standards alone could potentially save Hawai'i \$35 million in annual utility bill savings and 118 GWh annually in electricity by 2035, assuming full compliance by 2020. This would benefit not only state residents but also contribute significantly to helping the state achieve its Energy Efficiency Portfolio Standard of 4300 GWh reduction in electricity use by 2030.

Appliance standards have been adopted by a number of states, many of whom have looked to California state standards, federal standards as well as certifications such as ENERGY STAR and WaterSense for guidance. Thus, there is a low-cost implementation since these states are using identical standards. Since California drives the appliance market on the west coast, ensuring our standards are the same increases the likelihood of compliance while decreasing the need for enforcement.

In passing SB2935, Hawai'i will join the ranks of other states that have adopted appliance standards to achieve cost and energy savings for their residents. Hawai'i should strive to keep abreast as additional states such as Washington, Vermont, Massachusetts, Rhode Island and New York are pushing similar bills through this year's 2018 legislative session. To note, Washington and Vermont have passed similar appliance standard bills through their House committee as of the time of this writing.

Appliance standards are especially important to protecting consumers here in Hawai'i where manufacturers and distributors can unload less efficient appliances that cannot be sold in states with higher efficiency standards. Appliances once shipped over to Hawai'i are all eventually consumed by state residents due to the prohibitive shipping costs back to the mainland. In order for Hawai'i to avoid becoming a "dumping ground" of older equipment, state appliance standards will help to prevent such equipment from being sold.

As appliance standards are adopted in numerous states across the country, enforcement often comes up as a barrier. Some states have simply adopted the standard without any plan for enforcement knowing just adoption of standards based on California will drive better products to the market. Some states conduct spot checks at retailers to determine compliance. The level of compliance can be adjusted based on resources availability.

## Suggested Amendments

1. Hawai'i Energy recommends that portable air cleaners be removed from this bill. Since a standard isn't already in place in California, or any other state to our knowledge, it wouldn't be prudent to establish a standard only for Hawai'i. This also makes establishment and enforcement of standards simple by relying on the work already established in California.
2. The Department of Commerce and Consumer Affairs is being required to adopt state appliance standards that are modeled after the standards established by California. By limiting this to equipment already covered by California, adoption of the standards for Hawai'i should be fairly simple process of using what is already developed. Given these are energy efficiency standards, this responsibility might be better suited for the State Energy Office under the Department of Business, Economic Development, and Tourism. **Whichever is the agency responsible for adopting the standards, Hawai'i Energy is willing to provide resources to assist in transferring California's standards to Hawai'i.**
3. Developing reasonable enforcement requirements commensurate with available resources is critical. Hawai'i Energy recommends adding "Enforcement of the standards shall be achieved through the notification of manufacturers and manufacturing associations, pointing to the July 1, 2019 adoption date, suggesting that only compliant items should be shipped from hence. A return letter stating intent to comply would be required; Enforcement party's responsibility would be to file the letters of intent to comply and respond to any complaints re non-compliance after July 1, 2019."

We respectfully request that the Committee move forward with SB2935. If helpful, Hawai'i Energy is available to work with the Committee around the suggested amendments.

Brian Kealoha  
Executive Director





February 8, 2018

Dear Committee Members,

On behalf of the Natural Resources Defense Council, a leading environmental advocacy organization, and its more than 2 million members and activists, including nearly 2,700 Hawaii residents, we offer our strong support for Senate Bill 2935, concerning appliance efficiency standards.

Strong standards for appliances and equipment are particularly important for Hawaii, which has the most expensive energy rates in the country. Hawaii residents pay double or triple what residents of other states pay for their energy, and potential savings from standards are substantial. Hawaii has the potential to save more than any other state through appliance standards: a recent report from the Appliance Standards Awareness Project found that Hawaii's consumers and businesses could save up to \$215 each year on their utility bills by adopting a package of state standards.

This bill proposes the adoption of standards already in place in California for faucets, showerheads, computers and monitors, high color rendering index fluorescent lamps, and commercial fryers. It also allows for adoption of standards for other appliances and devices as the department deems appropriate. NRDC supports the amendment that removes air purifiers from consideration.

The appliance standards proposed in this bill will collectively save Hawaii consumers and businesses more than \$48 million each year on their utility bills by 2025. The annual savings grow to nearly \$75 million in 2035, while reducing carbon pollution by 70,000 metric tons each year, equivalent to eliminating the annual emissions from around 15,000 cars. To be clear: those are the benefits Hawaii households and businesses will receive *each year* thanks to the proposed state standards—real savings that can be spent and invested in other parts of the economy.

**NATURAL RESOURCES DEFENSE COUNCIL**

1152 15TH STREET NW | WASHINGTON, DC | 20005 | T 202.289.6868 | F 202.289.1060 | NRDC.ORG

Products that meet these standards are already available in the marketplace, thanks to state-level standards already in place in California and elsewhere, or voluntary specifications put in place through the ENERGY STAR or WaterSense programs. The standards proposed in this bill are already well developed by California, so Hawaii would not be starting from scratch. Adopting the standards simply means that all consumers in Hawaii would reap the energy benefits.

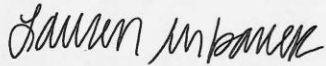
Furthermore, many of these standards will have no incremental cost for consumers: products that meet the standards are often not more expensive to purchase than less efficient products. In the case of products that do cost more upfront, any higher purchasing costs will be offset through energy savings in a year or less in nearly every case. A full analysis from the Appliance Standards Awareness Project of the potential annual utility bill savings and payback periods of the products in this bill and other potential products is found in the table below.

The water-related savings are particularly striking. State standards for just two of the proposed standards – faucets and showerheads - will provide more than 60 percent of the projected utility bill savings to consumers in 2035. These two standards alone will almost 1.5 billion gallons of water each year.

Hawaii should also consider standards for lawn spray sprinklers and toilets. Taken together, these two additional standards will save consumers more than \$30 million on their utility bills in 2035 by saving an additional 2.4 billion gallons of water annually – at little or no upfront cost. As more water-efficient products win acceptance in the marketplace, new state standards can lock in these savings to help consumers and communities save money, protect natural resources, and guard against the effects of a changing climate.

We encourage you to support this bill.

Sincerely,



Lauren Urbanek  
 Senior Energy Policy Advocate  
 Climate and Clean Energy Program

	Potential annual utility bill savings (million 2016\$)		Net present value savings (million 2016\$)	Benefit-cost ratio	Payback period (years)
	In 2025	In 2035			
Faucets	15.9	31.0	234.9	no cost	0.0
Showerheads	9.7	19.0	144.0	no cost	0.0
Lawn spray sprinklers	14.1	26.7	174.7	7.9	1.1
Toilets	1.5	4.7	41.0	no cost	0.0
Computers and monitors	9.4	10.6	73.9	5.8	0.9
High CRI fluorescent lamps	9.7	3.5	53.2	4.6	1.1
Air purifiers	2.7	4.4	29.3	6.2	1.3
Pool pump replacement motors	1.2	0.0	6.9	18.6	0.3
Commercial fryers	3.9	10.8	70.0	12.2	0.9
Commercial dishwashers	1.4	4.0	27.0	24.3	0.5
Commercial steam cookers	1.1	2.7	18.4	22.7	0.5
Portable air conditioners	1.5	2.8	18.7	7.7	1.1
Urinals	0.5	1.2	8.4	no cost	0.0
Audio/video equipment	1.6	1.6	13.6	no cost	0.0
Uninterruptible power supplies	1.7	1.9	13.6	7.2	0.8
Telephones	0.6	0.7	5.6	no cost	0.0
Water coolers	0.3	0.6	4.7	no cost	0.0
Ventilation fans	0.4	0.9	6.5	no cost	0.0
Portable electric spas	0.4	0.8	6.3	no cost	0.0
Hot food holding cabinets	0.3	0.7	4.3	9.3	1.0
Compressors	0.2	0.5	3.5	11.1	0.9
<b>Total</b>	<b>78</b>	<b>129</b>	<b>958</b>	<b>13.7</b>	<b>-</b>

Assuming a compliance date of 2020 for almost all of the recommended standards. Products are listed in order of potential national net present value savings. Net present value savings take into account both utility bill savings and estimated impacts on product costs for items sold between 2020 and 2035. Totals may not sum due to rounding. The total benefit-cost ratio is calculated as the present value of the total utility bill savings from products sold through 2035 for the package of 21 recommended standards divided by the present value of the total additional costs.





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Brian Kealoha  
Executive Director

**SB-2935**

Submitted on: 2/7/2018 2:33:28 PM

Testimony for TRE on 2/9/2018 1:35:00 PM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
pat gegen		Support	No

Comments:

**SB-2935**

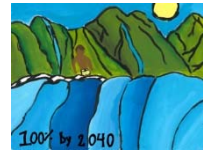
Submitted on: 2/7/2018 12:22:23 PM

Testimony for TRE on 2/9/2018 1:35:00 PM

<b>Submitted By</b>	<b>Organization</b>	<b>Testifier Position</b>	<b>Present at Hearing</b>
Margaret Maupin		Support	No

Comments:





## SENATE COMMITTEE ON TRANSPORTATION AND ENERGY

February 9, 2018, 1:35 P.M.

Room 225

(Testimony is 2 pages long)

### TESTIMONY IN STRONG SUPPORT OF SB 2935 WITH AMENDMENTS

Aloha Chair Inouye, Vice Chair Espero, and Committee members:

Blue Planet Foundation **strongly supports** Senate Bill (SB) 2935, which sets in motion the adoption of state appliance efficiency standards that can lead to substantial savings for Hawaii residents and businesses. Blue Planet **suggests amendments** to the definitions and list of appliances and accompanying standards to be considered.

Appliances are far more efficient in their energy and water use than they were just years ago. Yet energy- and water-wasting devices are still being sold because Hawaii lacks consumer protection standards for energy and water efficiency in appliances. As a result, Hawaii will continue to be a “dumping ground” for manufacturers that cannot sell their noncompliant appliances in other states with more stringent standards.

#### **Substantial Savings for Hawaii Consumers**

Last year a national study by the Appliance Standards Awareness Project and the American Council for an Energy-Efficient Economy (ACEEE)<sup>1</sup> found that implementing a robust suite of appliance efficiency standards in Hawaii would save nearly \$1 billion in electricity costs over 20 years—about \$215 annually per household—with a payback that is 14 times more than the cost.

Senate Bill 2935 would establish minimum appliance efficiency standards for Hawaii, modeled after California’s standards. California leads the way on appliance standards, and a number of other states have already followed suit or are in the process of proposing legislation, including Connecticut, New Hampshire, New York, Oregon, Rhode Island, Vermont, and Washington.

Although SB 2935 proposes a smaller subset of appliance standards than recommended in the ACEEE study, the saving potential is still substantial: over \$600 million in utility bill savings over 20 years for Hawaii, not to mention the corresponding kilowatt-hour savings that can help the state meet its energy efficiency portfolio standards, and carbon emissions reductions that can help us meet our climate goals under the Paris Agreement.

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<sup>1</sup> See Joanna Mauer, Andrew deLaski, and Marianne DiMascio, *States Go First: How States Can Save Consumers Money, Reduce Energy and Water Waste, and Protect the Environment with New Appliance Standards*, available at <https://appliance-standards.org/document/report-overview-states-go-first>.

## Cost-Effective with Low-Cost Implementation

The standards referenced in SB 2935 are:

- **Cost effective:** Most of the products in the bill have no incremental cost, meaning that consumers will start saving right away. For others, utility bill savings pay back the incremental cost of products meeting the standards within a few months to just over a year. After that, savings accrue to the consumers.
- **Applicable to readily available products:** Products and technologies meeting the standards are readily available today from multiple manufacturers.
- **Implementable at low cost:** Each standard is ready to implement because other states are already using or proposing identical standards.

## Suggested Amendments

Based on the findings in the ACEEE study mentioned above, Blue Planet recommends that lawn spray sprinklers be added to the list of appliances in SB 2935 because of the substantial potential for utility bill savings (\$174 million over 20 years) and water savings (24.3 billion gallons potential cumulative savings through 2035). Because California does not regulate spray sprinklers, this amendment would require that SB 2935 incorporate the preferred standard for spray sprinklers (the U.S. Environmental Protection Agency's "WaterSense" Specification for Spray Sprinkler Bodies, Version 1.0) into the text of the bill. Although we recognize the high savings potential of appliance standards for "high color rendering index fluorescent lamps," "air purifiers," and "commercial fryers," for simplicity and to address concerns raised by stakeholders, Blue Planet recommends removing these appliances from the bill as currently drafted, tabling their inclusion for later discussion. Finally, Blue Planet recommends that definitions for the various appliances be incorporated into the bill to provide clarity and guidance to the department in rulemaking.

We respectfully request that the Committee forward SB 2935 with the suggested amendments.

**If helpful to the Committee, Blue Planet is available to work with the Committee on drafting specific language to reflect these suggested amendments.**

Thank you for the opportunity to testify.