Draft Proposed Televisions Efficiency Regulations

Legislative Hearing
October 21, 2009

Chairman Karen Douglas,

Appliance Efficiency Program
Building and appliances Office
California Energy Commission

Appliance Efficiency Program Background

- California has long been a leader in promoting energy efficiency.
- California's appliance efficiency regulations were first established in 1976 and continue to be updated.
- California set the first standards for refrigerators in the late 1970s. Refrigerator manufacturers were initially resistant to energy efficiency standards that lowered energy consumption.
- The Commission's Appliance Efficiency Program serves as model to other states and the U.S. Many states in the U.S. have followed California's lead and adopted similar appliance standards.
- The Appliance efficiency program is a key component in maintaining the slow growth of electricity consumption per capita (ECP) in California.

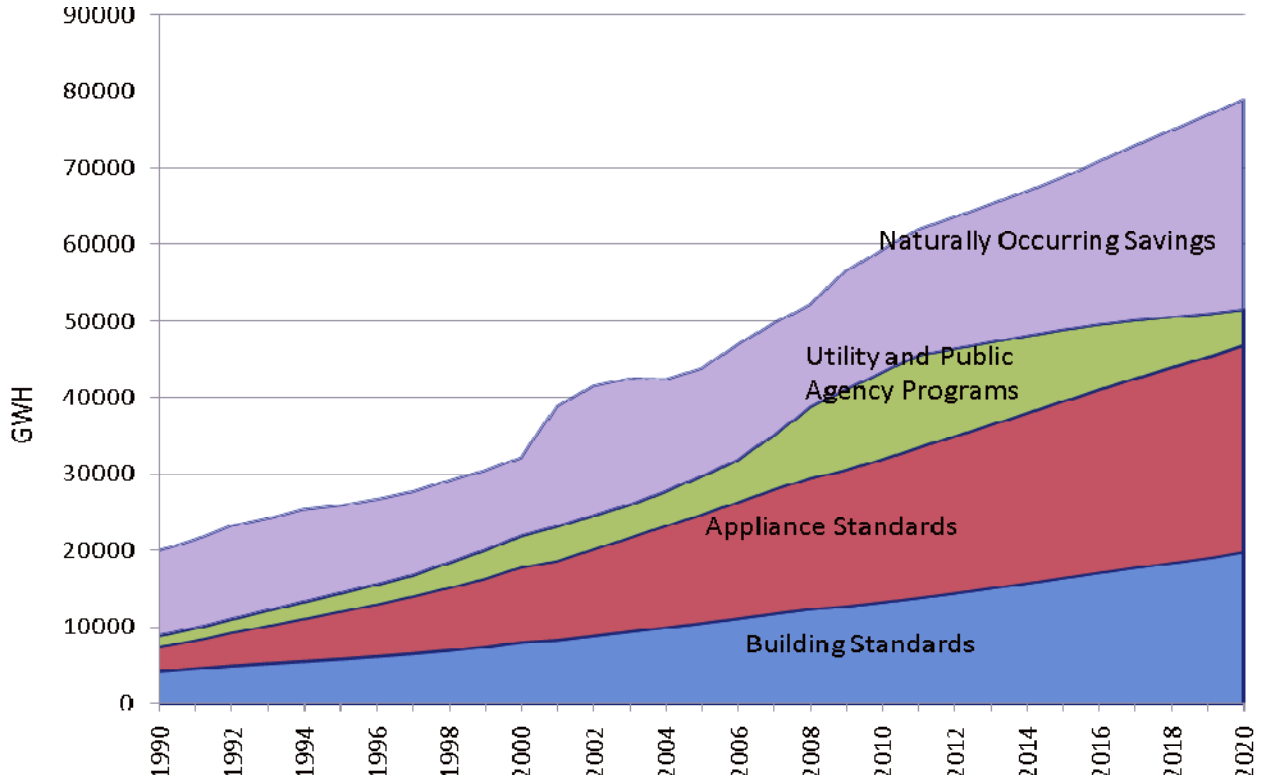
Appliance Efficiency Program Background

The Standards set energy efficiency requirements for a wide range of types of appliances and equipment, including furnaces, water heaters, boilers, air conditioners, heat pumps, plumbing fittings, lighting lamps and ballasts, refrigerators, freezers, dishwashers, clothes washers, clothes dryers, electric motors, exit signs, traffic signals, distribution system transformers, external power supplies, pool pumps, consumer audio/video devices, and televisions.

Impact of Appliance Efficiency Regulation Program

2009 Integrated Energy Policy Report (IEPR)

Distribution of energy efficiency savings by source shows that approximately 31.4 percent energy savings are achieved through the appliance efficiency standards program in 2009. This Appliance Standards Program currently provides the biggest savings in the state at 17,896 GWh. This saves $2.5 billion in electrical bills annually.



Appliance Efficiency Program

Public Resources Code:

Warren-Alquist Act requires that the standards:

- are for appliances that have a significant energy use;
- are feasible and attainable;
- and that they are cost effective, in that they "shall not result in any added total cost to the consumer over the designed life of the appliance"

Appliance Efficiency Program:

- Set specific minimum energy efficiency or maximum energy usage levels;
- Specify testing, marking, and labeling requirements;
- Specify data collection for most products;

Appliance Efficiency Program

FIRST: Electrical energy is essential to the health, safety and welfare of the people of California and to its economy, and it is the responsibility of the Energy Commission, as a state agency, to ensure that a reliable supply of electrical energy is maintained. *(derived from PRC § 25001)*

SECOND: There is a concern that the rapid rate of growth in electrical energy consumption due to wasteful and inefficient appliances if left unabated will result in serious depletion or irreversible commitment of energy, land and water resources, and potentially threatens the state's environmental quality. *(derived from PRC § 25002.)*

To fulfill its obligations under the Warren-Alquist Act the Energy Commissions has determined that appliance efficiency standards, such as the proposed television standards reduce overall electricity demand and, therefore, the overall need for new power plants and helps system operators in several ways.

•Reducing demand increases system reliability because less demand means less strain on the electricity system since less energy has to be generated and delivered.

•Because California's renewable energy goals are based on a percentage of retail sales of electricity, reducing overall electricity demand means less renewable energy that must be generated.

•Fewer renewable plants needing to be built will reduce the operational and reliability issues associated with those less power plants.

Appliance Efficiency Program

Television Standards:

- Originally Incorporated in a larger group of proposed regulations in the scoping order. The Scoping order created two parts: part A and part B of which televisions was in part B along with pool pumps, metal halide luminaires, and battery chargers.
- Televisions were moved into its own rulemaking part C in a decision to gather more information and further investigate industry concerns.

Why it is Necessary to Regulate Television

Consumer electronics is fastest growing and the most innovative industry in the world and televisions are no exception. In the late 1990's digital televisions entered the consumer market and significantly improved the picture quality and availability of programming, however drastically increased the residential energy use.

The residential energy consumption due to televisions rapidly increased from 3-4 percent in 1990's to approximately 10 percent 2008. Television energy consumption is continuously growing and without regulations the residential energy consumption will grow up to 18 percent by 2023. The projected growth does not include the residential energy use by set top boxes, DVD players, internet boxes, Blue Ray, Game Consuls etc.

The growth in energy consumption is due to following reasons:

- The new digital flat screen Plasma and Liquid Crystal Display (LCD) televisions consume more energy than the old Cathode Ray Tube (CRT) televisions;
- Increase in the size of the televisions;
- Increase in viewing time;
- and added new feature etc.

The proposed regulations once become effective will stop the continuous growth in television energy consumption and minimally reduce the residential energy consumption. The television energy consumption is shown in the graph on the next page. Energy consumption with regulations and business as usual without regulations.

Why it is Necessary to Regulate Television

Existing Stock and Energy Consumption

There are approximately are 22.3 million televisions are CRT televisions in California and total number of television in California household are 35.4 million. CRT televisions will be replaced in the next six to ten years with more consumptive flat screen televisions. The estimated annual sales of flat screen televisions are 4 million a year. Without standards the energy efficiency regulations the energy consumption would rapidly increase in the future.

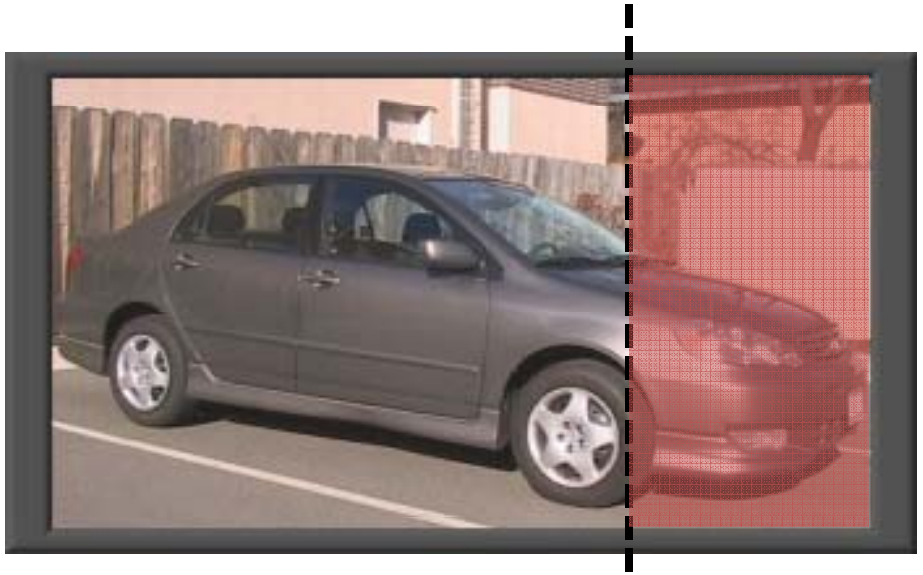
Television Type	Existing Stock (Million Units)
Liquid Crystal Display	10.6
Cathode Ray Tube	22.3
Plasma	1.8
Rear Projection/Digital Light Projection	0.7

Why it is Necessary to Regulate Television

1. Growth in average screen size. Average 25 inch television is being replaced with 36-40 inch television
2. Increase in daily television viewing time
3. Continuous growth in sale of digital flat panel TVs
4. Growth in number of TV units per household
5. Change in aspect ratio 4:3 to wide screen 16:9 format have resulted in larger television size.

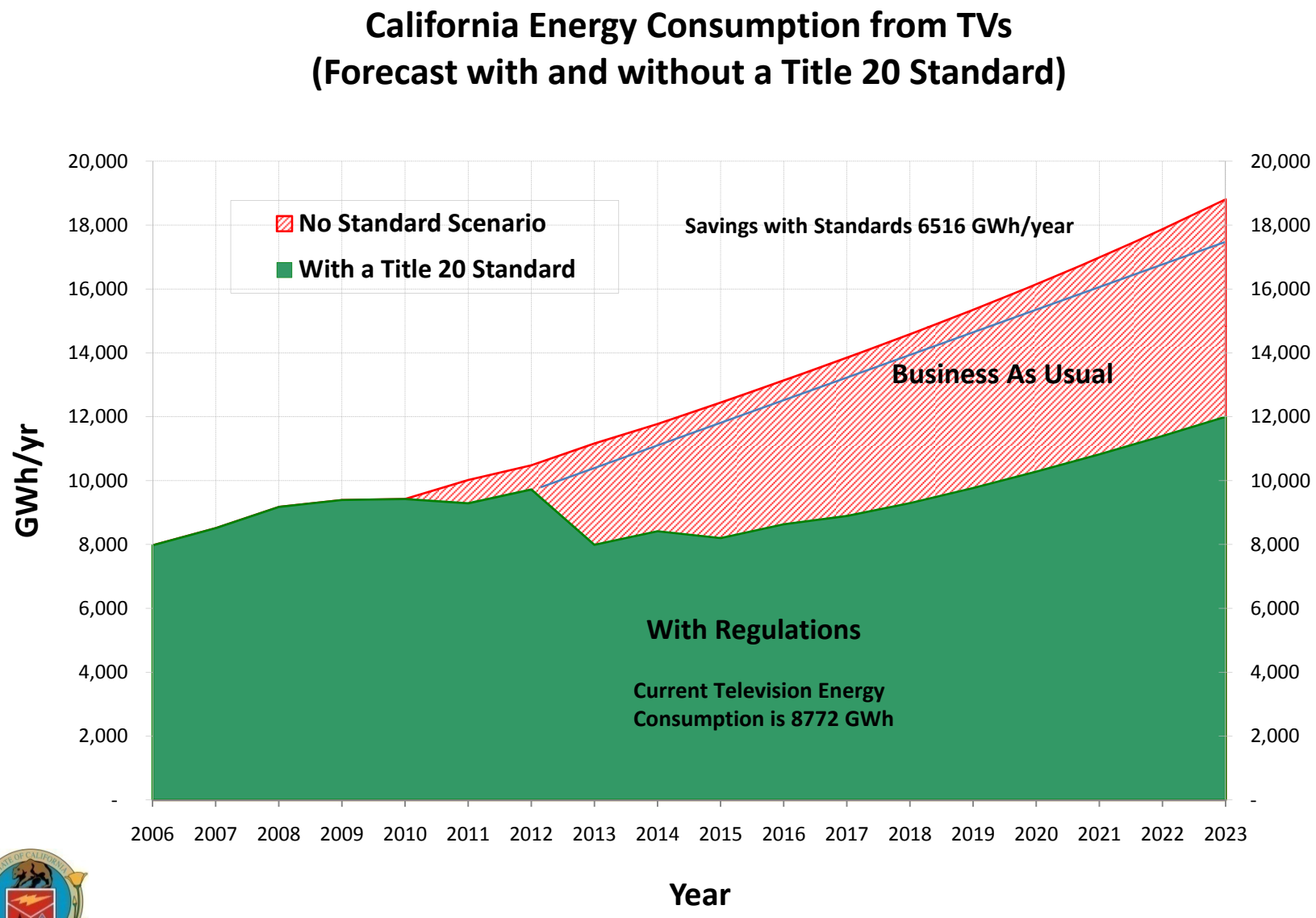
Standards 4:3 format

Wide screen 16:9 format

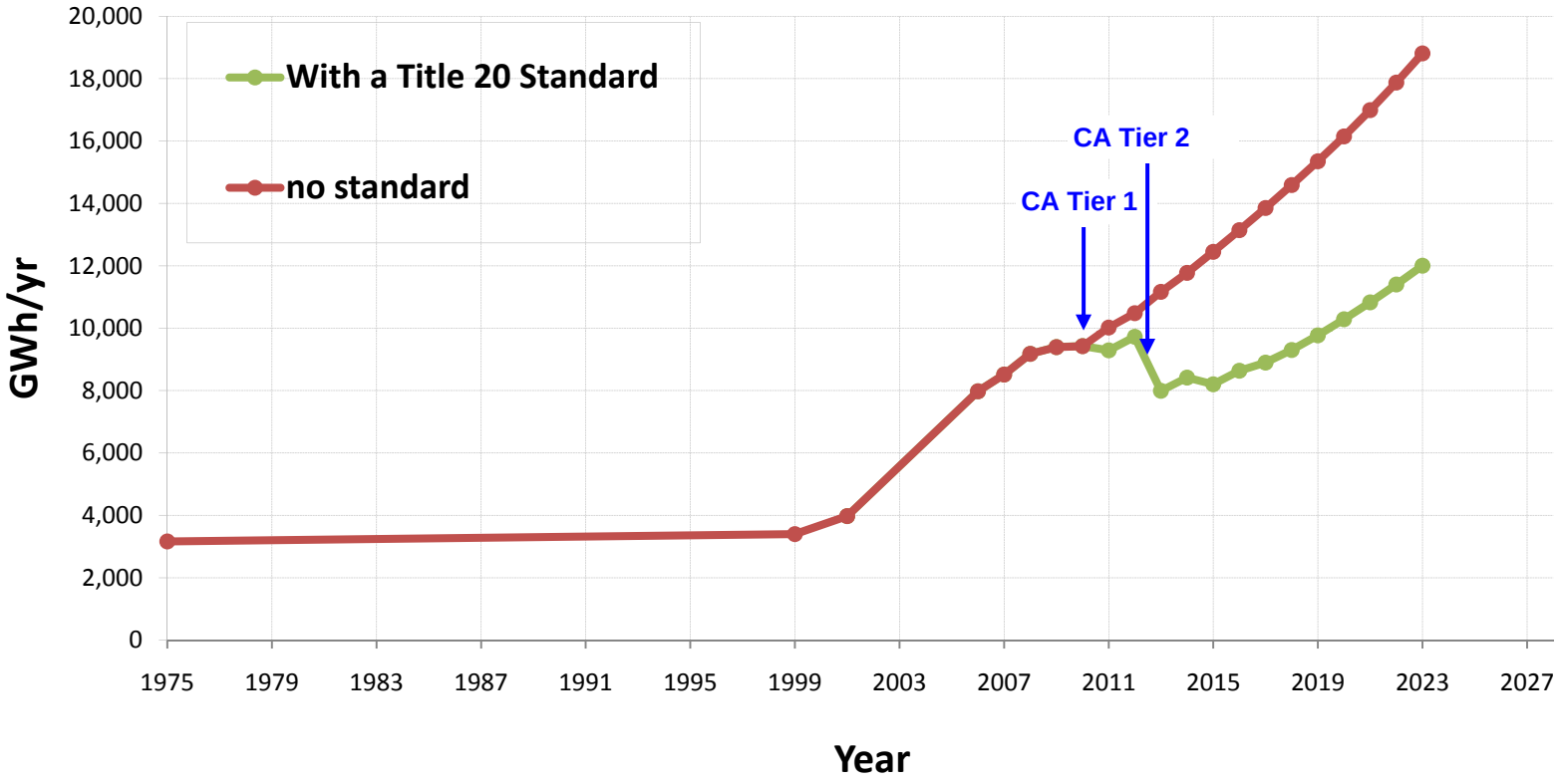


Replacement Television is 33 percent bigger

Energy savings with and without Television standards



California Energy Consumption from TVs
(Forecast with and without a Title 20 Standard)

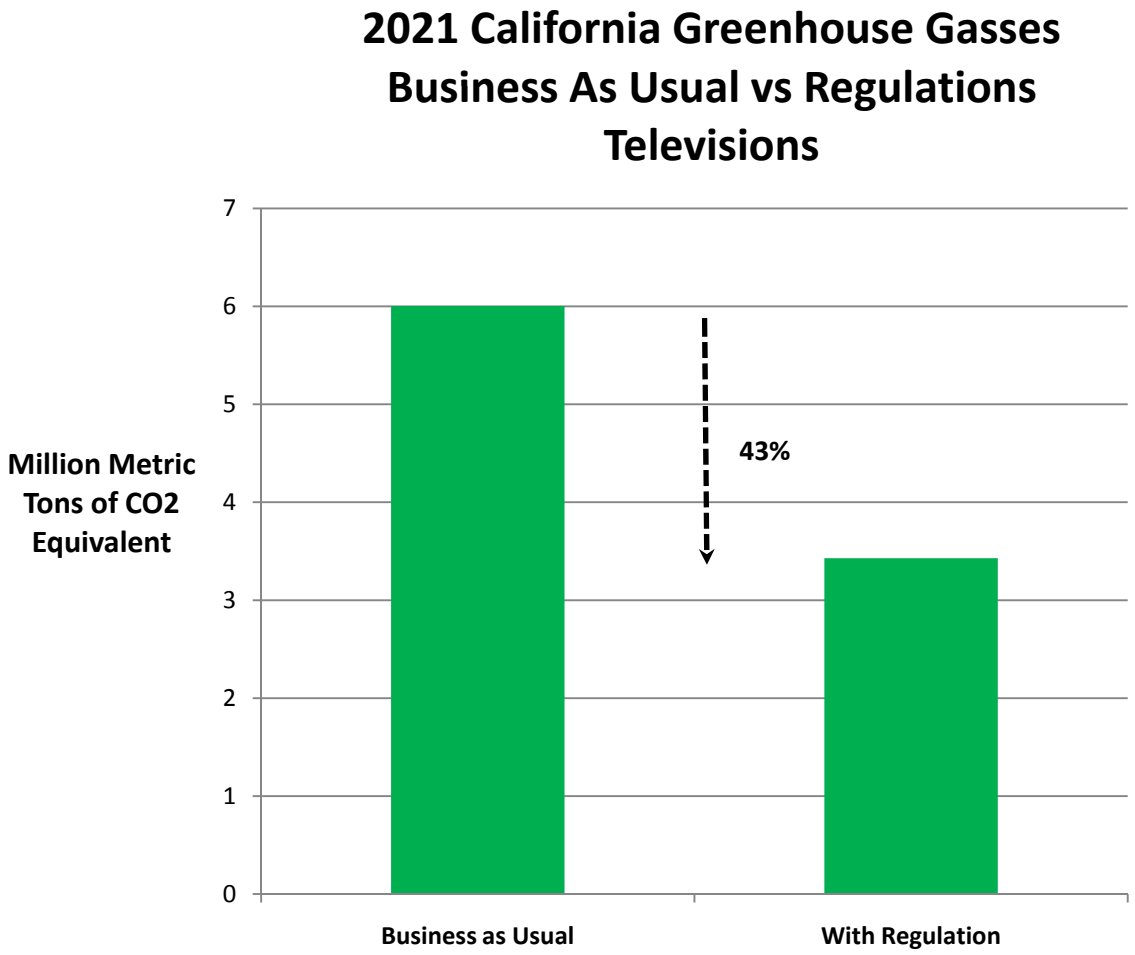


The plotted data shows that television energy consumption from 1975 to 1999 was approximately 3-4 percent and it remained flat. The energy consumption from 1999 to 2008 grew to about 9 percent. The plot shows that without regulations television energy consumption will grow to about 18 percent by 2023. With proposed regulations television energy consumption will grow up to 12 percent by 2023. More needs to be done to keep the energy consumption from growing.

Other Benefit

Impact of Television Standards on Greenhouse Gases

Reduction in televisions energy consumption will result in reduction of Carbon-Di-Oxide gas emission of approximately 3.1 Million Metric Tons CO2 equivalent per year



Appliance Efficiency Program

The Energy Commission's Engineering staff has analyzed all available relevant information and data related to televisions from CNET, ENERGY STAR®, Public Interest Energy Research (PIER), European Information & Communications Technology Industry Association (EICTA), and Market Transformation Program (MTP Europe). Data analysis was conducted within the Public Resources Code (PRC) and APA guidelines to determine and draft proposed energy efficiency standards for televisions.

Staff used the same criteria and methodology as was utilized for other appliances in the previous rulemakings.

Based on the analysis staff found that televisions across various sizes and technologies meet the proposed regulations. Staff has also determined that the proposed standards are technically feasible, cost effective, and save energy. In addition staff has found that the proposed regulations will not hinder development and implementation of new technologies and innovations.

Television Standards

Currently, California Appliance Efficiency Regulations have standards for televisions in **standby mode**.

The Energy Commission staff is proposing to the Energy Commission to **adopt active mode** standards for televisions for the following reasons:

- The estimated television electric energy use, from 1976 to late 1990's was between 3-4 percent. In the last ten years, the residential television electric energy consumption has grown to about 10 percent and it is continuously growing and projected to reach 18 percent by 2023. **This growth is a clear statement that voluntary programs simply have not been effective at curbing the energy consumption of televisions.**
- The Energy Commissions Engineering **Staff has conducted rigorous and comprehensive analysis of the television energy use data** and relevant information and staff has determined that proposed energy efficiency televisions standards are technically feasible and cost effective. From the analysis staff has found that the cost of manufacturing energy efficient televisions is negative or zero. Staff has also found that various new innovations and technologies that are available to television manufacturers will help in meeting the proposed standards at no cost. This fact is confirmed in October 13, 2009 public hearings by the television and parts manufacturers, television design Engineers, and consultants.
- The Energy Commission Engineers are continuously collecting and analyzing the **latest data, including ENERGY STAR® October 16, 2009** and include the new data to support calculations and assumptions and findings. The finding continue to support the case for proposed standards.
- The proposed standards shall not effect the retail price of the energy efficient televisions, instead the energy efficient television will reduce the consumers spending on electric bill and save money. The **proposed standards are helpful to consumers,** and will not effect the retail and/or manufacturing business.
- The proposed standards, after the effective dates and after the existing television stock replacement, **will save approximately 6515 GWh**. Additionally the proposed standards **will save at least $615 million in construction costs of new 615 MW power plant.**
- Proposed standards will result in **savings of approximately $1 billion/year to the consumers**. The total value of **savings from the proposed regulations is greater that $8.1 billion**. Additional money available to the consumers will ultimately be spent and stimulate the California economy and will increase revenues to State General Fund.

Television Standards

The record shows that there will no sales losses because there will be zero net incremental cost.

Energy efficient televisions can be manufactured and sold at the same price as energy wasting televisions. Furthermore, since the record shows that the standards are feasible then customers will just have more efficient televisions to choose from because the inefficient television will go away and be replaced similar efficient televisions.

The consumers will save approximately one billion dollars a year in lower energy bills, and these savings will stimulate the California economy by increase the disposable income and purchasing power of the 38 million people living in California.

The Regulations state that no televisions can be sold or offered for sale in California unless the televisions has been certified in California to meet the California standards.

CEA PROPOSAL

The Energy Commission staff's proposed standards will provide 6515 GWh savings, **whereas ENERGY STAR program that CEA proposes will provide unknown savings** to California consumers for the following reasons:

- CEA sponsor website California for Smart Energy, in their Myth vs Fact section quoted "ENERGY STAR produced energy savings from all electronics, including TVs, to the tune of 23 billion kilowatt hours of electricity in **2007 alone** – enough to power San Francisco and San Diego counties for one year." The ENERGY STAR® 3 was adopted in February of 2008 and took effect in November 2008.

- CEC energy savings analysis considered increased television size and viewing time as well as energy use per square inch. Whereas, information provided by CEA is incomplete and misleading, **CEA compares energy use per square inch of LCD televisions with old Cathode Ray Tube (CRT) TV and ignore all other factors responsible for TV energy consumption growth**.

- Under ENERGY STAR® 3 almost all televisions today qualify for ENERGY STAR sticker. Whereas, under CEC Tier 1 standards **more than 25 percent of ENERGY STAR qualified televisions fails to meet Tier I** proposed regulation.

- Power consumption is directly related to brightness. **ENERGY STAR® specifications does not include luminance control measure,** and manufacturers can qualify their TV by reducing the brightness to the inappropriately dim levels.

- ENERGY STAR qualified televisions are being sold along with non ENERGY STAR TVs in California market. **CEA has provided no sales data to show the ratio between ENERGY STAR and non ENERGY STAR TVs.**

- Bill Belt from CEA stated that " If you compare ENERGY STAR data from December 2007 to now, October 2009, you will find that there is a 29.3 percent average power savings weighted across all sizes. That translates into a 41.4 percent energy improvement over that time period." **First of all the ENERGY STAR Specification 3 was adopted in February of 2008 and became effective in November of 2008. it is preposterous that Bill Belt is counting the savings from 2007 for ENERGY STAR specifications 3. ENERGY STAR 3 TV specifications did not exist in 2007.**

- Not all energy star qualified televisions meet CEC's Tier I requirements. The Energy Commission staff analysis on **the current trend of television energy use shows that there is no change in energy consumption. CEA's assertion that ENERGY STAR program is working is not backed up by facts**

Examples of ENERGY STAR® 3 Compliant Televisions

CEA is continuously saying for the past year and half that voluntary measures will meet the Commission's legal obligations.

Examples shows that CEA is misleading the facts:

The following table shows the energy use by 52" ENERGY STAR® compliant television models. Sharp's has two Energy Star TVs, one of them will cost $80/year to operate whereas another will cost $28/year to operate. Similarly two 52" ENERGY STAR ® compliant Sony TVs, one will cost $78/year to operate while another one would cost $28/year to operate. In both the cases, one ENERGY STAR compliant models uses almost one third the energy used by another ENERGY STAR compliant model. ENERGY STAR logo means energy efficient television is not true here and consumer is being misinformed. There are numerous examples like this in the data base. Current ENERGY STAR® 3 is totally ineffective, yet CEA claims it is working and claims success.

Make	Model	Energy Use	Yearly Energy Use	Cost/year
Sanyo	US1H / N6ME	305	581	81.34
Sanyo	US1K/N7KE	217	413	57.87
Sony	KDL-52XBR7	292.6	557	78
Sony	KDL-52VE5	115	219	30.67
Sharp	LC-52XS1U/TU-X1U	300	571.5	80
Sharp	LC-52LE700UN	105	200	28
BestBuy's Insignia	NS-LCD52HD-09	329	627	87.75
Mitsubishi	LT-52153	185	352	49.34

CEA PROPOSAL

The Energy Commission does not agree nor can it rely on CEA's industry optimism that voluntary measures will meet the Commission's legal obligations. The record simply does not support that industry is capable of transforming the ever-increasing energy consumption by television through voluntary programs or even come close to meeting the goals of AB 32

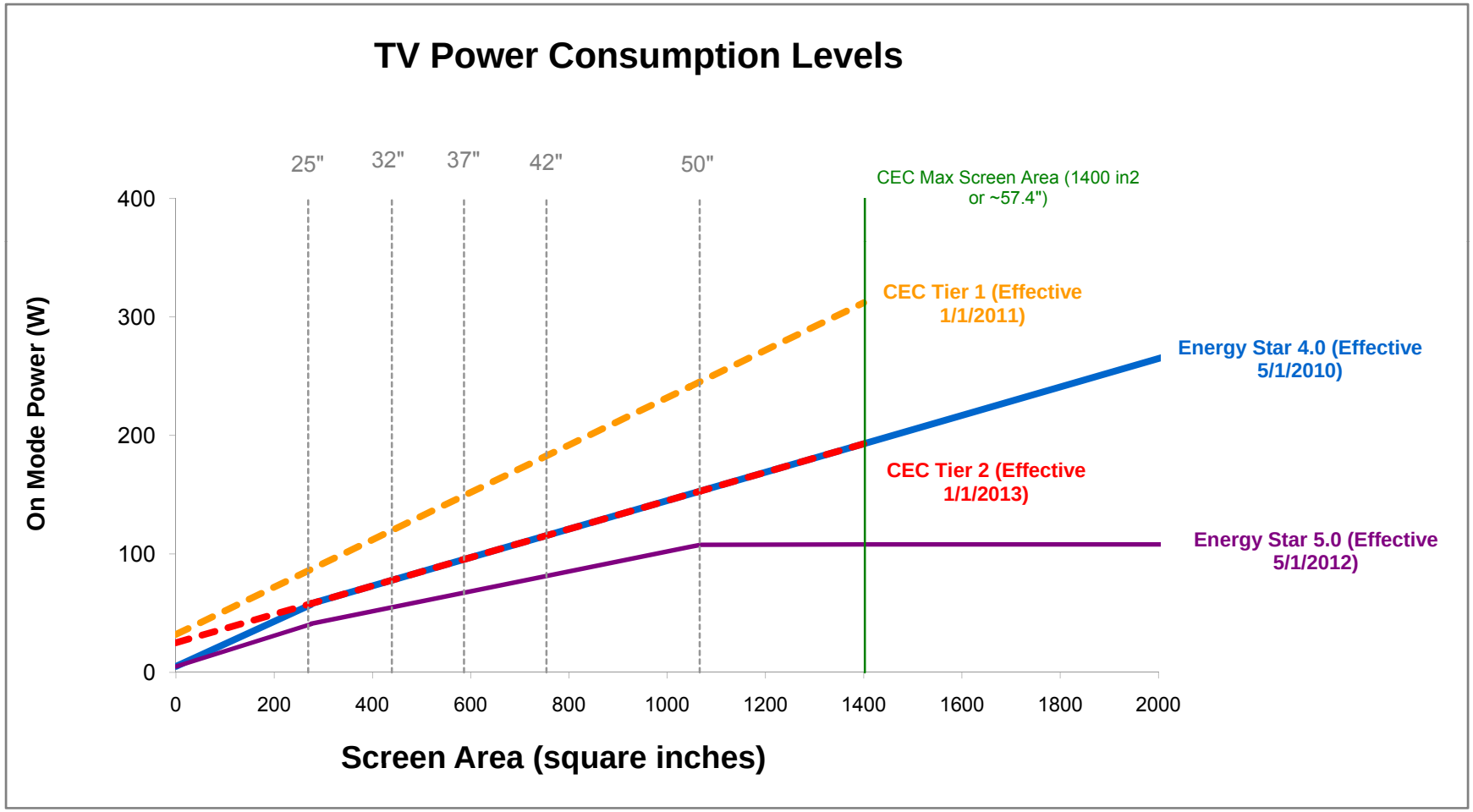
Furthermore, U.S. EPA does not support CEA's position that the voluntary Energy Star Program can reach the energy consumption reductions that will be obtained by the Energy Commission's proposed efficiency standards.

In July 2008, Kathleen Hogan, Director of U.S.EPA Climate Protection Partnerships Division stated that EPA shares the Energy Commission's interest in improving energy efficiency as a means to address global climate change as well as other issues. The U.S. EPA recognizes that televisions and other consumer electronics collectively present a meaningful savings opportunity and believes that voluntary and regulatory approaches can work hand in hand over time to improve the efficiency of products.

According to U.S. EPA, **Energy Star performance levels are established so that a relatively small percentage of product models (typically about 25%) can meet them** when the specification goes into effect. U.S. EPA stated that Energy Star is distinctly different from efficiency standards because the **role of standards is to eliminate the least efficient products, and they are mandatory as opposed to voluntary.**

The Energy Commission staff has analyzed the CEA's proposal and find it is a baseless economic analysis which criticizes the proposed regulations and process without providing constructive solution.

ENERGY STAR ® and Standards “work hand in hand”



ENERGY STAR®

Kathleen Hogan, Director of Climate Protection Partnerships Division of the U.S. EPA in a comment letter regarding the proposed California television standards said:

"televisions and consumer electronics collectively present a meaningful savings opportunity"

"Voluntary and regulatory approaches can work hand in hand over time to improve the efficiency of products"

"The role of standards is to eliminate the least efficient products, and they are mandatory as opposed to voluntary"

Manufacturer and CEA response to new ENERGY STAR®

CEA has said in its letter to U.S. EPA regarding ENERGY STAR® on August 10, 2009 “We have seen a highly respected program whose brand was once based on fact and objective scientific testing, transform into a program that is based on the highly subjective criteria ”
-CEA believes voluntary ENERGY STAR® program specifications to be arbitrary

Jim Palumbo wrote on May 13, 2009 on behalf of the Plasma Display Coalition to the U.S. EPA regarding ENERGY STAR® and stated “Such requirements could significantly curtail innovation and individual manufacturer’s ability to effectively compete in the TV market.“
-PDC believes voluntary ENERGY STAR® program stifles innovation

Test Method- Technology Innovation

Reduction in television energy consumption can only be accomplished through innovation. The Energy Commission staff has carefully drafted the proposed regulations, so that innovations and new technologies can continue to evolve and the manufacturers will have the opportunity to bring energy efficient televisions to the market in the future.

Test Method:

The Energy Commission is proposing to adopt active mode television energy measurement test method developed by International Electrotechnical Commission (IEC) 62087 Ed.2. Manufacturers and CEA were actively involved in the development of this test method, coincidently one of their active members, an Engineer from the Sharp Labs was the lead authored of the test procedure. Staff has reviewed the proposed test method IEC 62087 Ed.2 and has discussed various issue on numerous occasions with the lead author of the test method.

The proposed test method requires the measurement of video and audio signal and the test method requires that all built in additional functions such as: DVD players, Blue Ray DVD Player, IPTV, IPOD docking stations, etc., be turned off during the test.

Staff has determined that proposed standards will not hinder the ability of manufacturers in the implementation of newly developed technology and innovations. The television manufacturers have plenty of time to tweak their new designs, in case current television models consume more power with build in accessory, such as JVC's one model with built in IPod television. Manufacturers can incorporate innovative technologies and features in their new products without worrying about the regulations.

Efficiency Technology Innovations

Zero Incremental Cost to Consumers:

Liquid Crystal Display (LCD):

- More efficient backlight reflective films
- Decrease the number of required lamps
- Lesser lamps allows the use of smaller power supplies
- Use less material and simpler manufacturing processes
- Competition will mitigate incremental cost

Plasmas:

- Improved phosphors and gasses for plasma TVs will lead to a reduction in overall material costs.
- Double efficiency improvement cut manufacturing cost by 9-11 percent, whereas triple efficiency plasma TV cut cost by 37-38 percent, reduced hardware cost and labor cost

Innovations:

- LED Technology
- Color Field Sequential Technology: improve the energy efficiency of the LCD CCFL televisions, directly produce RGB and without requiring color filters.
- Optical compensated Bend: lowers the power consumption in LCD televisions while provides wide viewing angle and ultra high resolution picture and so on.
- Hot Cathode Fluorescent Lamp Technology improves energy efficiency by 40 percent
- ambient light sensor and occupancy sensor technologies improves energy efficiency at very low cost
- After conducting research and analysis staff has determined that proposed regulations will not hinder the development of 3D television technology, moreover as specified in the IEC test method 3D televisions will not consume more power than a 2D television.

Proposed Efficiency Standards for Televisions

Definition

Television (TV) means:

an analog or digital device designed primarily for the display and reception of a terrestrial, satellite, cable, internet protocol TV (IPTV), or other broadcast or recorded transmission of analog or digital video and audio signals.

TVs Definition include:

Combination TVs

Television monitors

Component TVs, and

Any unit that is marketed to the consumer as a TV

Television does not include computer monitors

Proposed Efficiency Standards for Televisions

Television Energy Use Measurement

Test Methods

Standby Test Method

IEC 62301:2005 Edition 1.0“Household Electrical Appliances – Measurement of Standby Power”

On Mode Test Method

IEC 62087:2008(E) Edition 2.0“Methods of Measurement for the Power Consumption of Audio, Video, and Related Equipment.”

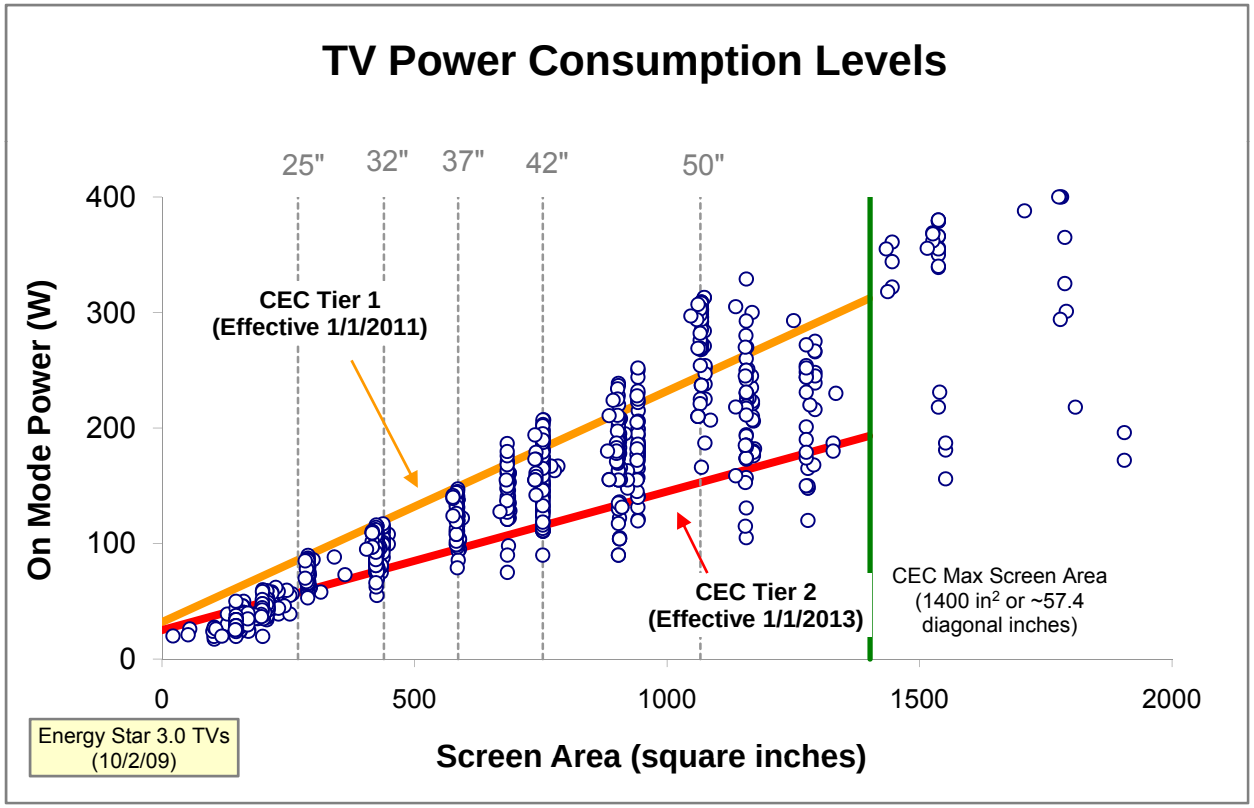
Proposed Efficiency Standards for Televisions

Maximum On Mode Power Consumption (A expressed in inches^2)	
Tier 1:	Tier 2:
Effective January 1, 2011	Effective January 1, 2013
$P_{MAX} = 0.20*A + 32$	$P_{MAX} = 0.12*A + 25$

- Proposed on Active Mode Energy Efficiency Standards are based on the Screen Size of less than or equal to 1400 square inches.
- The proposed regulation requires:
  - The peak luminance of the product in “home” mode, or in the default mode as shipped, shall not be less than 65% of the peak luminance of the “retail” mode, or the brightest selectable preset (aka torch) mode, of the product.
  - Luminance standard will help in preventing the manufacturing of inappropriately dimmer televisions instead of more efficient televisions.
  - power factor for televisions would reduce electrical pollution in electrical lines and would result in cost savings to the consumers.

Television Data Used for Analysis to Determine the Proposed Energy Efficiency Regulations

The following data is comprehensive and was collected from various sources CNET, ENERGY STAR, PIER, European Information & Communications Technology Industry Association (EICTA), Market Transformation Program (MTP Europe). Data was collected for analysis from various years starting from 2007 and it includes the recent Energy Star data October 16, 2009. The new data further proves feasibility and the basis for regulation originally drawn from older 2007 data.



Each point may represent several models of TVs

Label and Data reporting requirements

Labeling:

Labeling requirement is limited to sales materials for consumer information

Requires digital label, not physical

Label should be included in websites, boxes, and retail displays

Data Reporting:

Reported information will be used to determine compliance and will be publically listed.

Myth about job losses:

1. There are no facts in the record that support the assumption that our proposed efficiency standards would be a basis to shift current California retail sales to Nevada or to internet sales.
2. Today, without efficiency standards in place, there are a number of Californians that will travel to Nevada from California or use the internet to purchase a new television.
3. The Energy Commission does not find it reasonable (or finds it silly) to assume that there will be an increase in out-of-state sales due to the efficiency standards:

☺ Why would someone in Sacramento spend $3 a gallon to drive to Reno to buy an inefficient television when they can buy a more efficient television at the same price in Sacramento.

☺ Why would Californians decide to switch to internet sales to buy an inefficient television when they can buy a more efficient television at the same price and without shipping cost in Sacramento.

Why are California job losses a myth?

There is nothing in the record to support that the opinion that there will be fewer television models available in California due to the efficiency standards. Energy wasting televisions now available to customers on store shelves today will simply be replace with more efficient televisions that will have similar extra features. The reasons for these findings are:

1. The energy wasting televisions will be replaced with similar costing efficient televisions. The plan and simple fact is that the record has established that using existing technologies actually reduces the cost of manufacturing efficiency televisions. These measures include:

☺ the use of enhanced gas mixtures in Plasma televisions, and

☺ light ray dispersing plastic film in LCD televisions that actually reduces by 40% the numbers backlight lamps that are currently being manufactured in the energy wasting televisions.

2. There is no support for the opinion that efficient televisions cannot be made with innovative extra features such as:

☺ 3D-TV, Internet TV, IPod-TV, or Blue Ray DVD Players

What is the basis of this finding? The efficiency standards are based on measuring energy consumption of the television viewing screen area using a specific signal input from the IEC test method. This test method only measures energy consumption due to that specific signal input. It does not measure energy consumption from any other signal input such as 3D-TV, Internet TV, IPod-TV, or Blue Ray DVD Players