Trends in US Energy Consumption and US Responses

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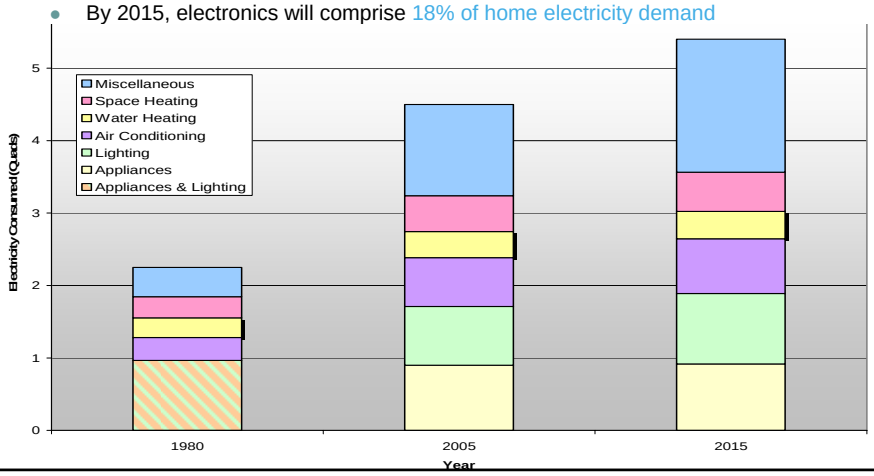
Agenda

- US Energy Consumption Trends
- US Tools to Address:
  - EnergyGuide Label
  - Minimum Efficiency Standards
  - ENERGY STAR Label
- Accomplishments, next steps

Trend: Growing U.S. Energy Consumption

- Electricity consumed by the typical American household has **more than doubled** since 1980
  - Expected to rise another **20%** by 2015
- Miscellaneous consumption quickly increasing
  - 2 categories of miscellaneous
  - Largest component of miscellaneous is electronics products
  - By 2015, electronics will comprise 18% of home electricity demand

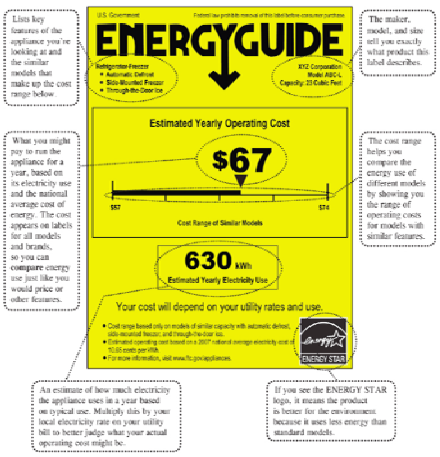


Programs to Reduce Appliance Energy Use in the U.S.

- EnergyGuide Labels "information"
- Minimum Efficiency Standards "regulation"
- ENERGY STAR Label "endorsement"

EnergyGuide Label

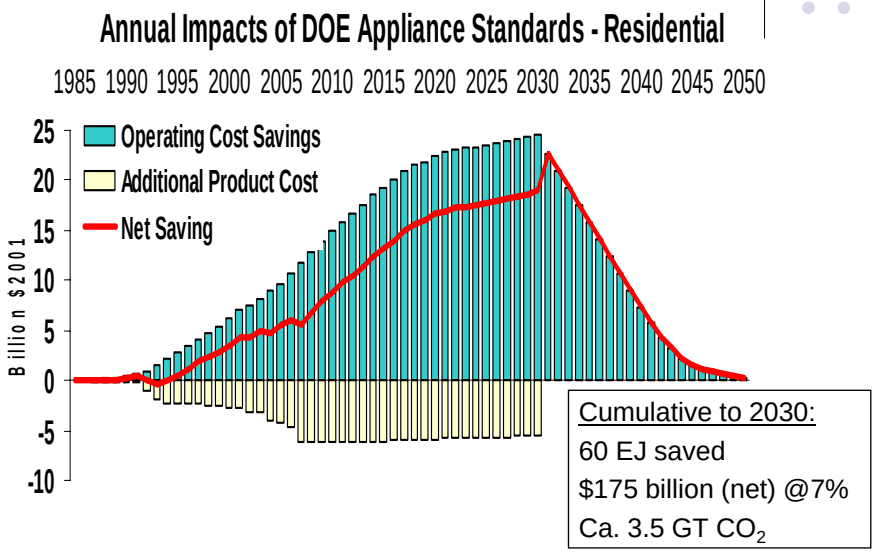
- The EnergyGuide label is the government-backed program that allows consumers to compare the energy use of different appliances
  - Products include: clothes washers, dishwashers, refrigerators, freezers, wate heaters, window air conditioners, central air conditioners, furnaces, boilers, heat pumps, ceiling fans, plumbing products, and pool heaters



U.S. Appliance Standards

- HIGH PRIORITY with the Obama administration
- DOE has ~25 rules (test procedures or standards) to complete by January, 2013
  - http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/multiyear_schedule_022310.pdf
- *Pace is about 6X previous administrations*
- Considering cost of carbon
- Increasing testing and enforcement

National Impacts: Energy Bill Savings Outweigh Increased Cost of Standards



Cumulative to 2030:
60 EJ saved
$175 billion (net) @7%
Ca. 3.5 GT CO_2

U.S. Appliance Standards Being Updated or Developed (1 of 2)

- Distribution transformers
- Electric motors (small and medium)
- Central air conditioners and heat pumps
- Room air conditioners
- Water heaters
- Residential furnaces and boilers and furnace fans
- Refrigerators, refrigerator-freezers and freezers
- Direct heating equipment and hearth products
- Swimming pool heaters
- Clothes washers (residential and commercial)
- Clothes dryers

U.S. Appliance Standards In Progress (2 of 2)

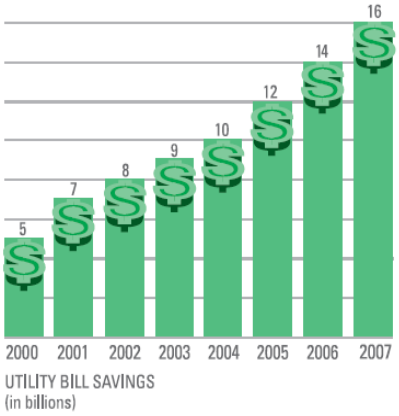
- High-intensity discharge lamps (determination)
- Fluorescent lamp ballasts
- Metal halide lamp fixtures
- ER, BR, and small diameter incandescent reflector lamps
- Dishwashers
- Cooking products, including microwave ovens
- Commercial refrigeration equipment
- Walk-in coolers and freezers
- Battery chargers and external power supplies
- Televisions

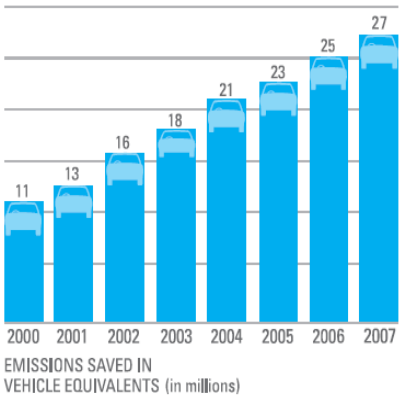
ENERGY STAR

- ENERGY STAR identifies products in more than 60 categories that use less energy without sacrificing quality or performance
  - >2,000 manufacturers labeling
  - >40,000 product models
  - >1,000 retail partners
  - >550 utility partners promoting ENERGY STAR

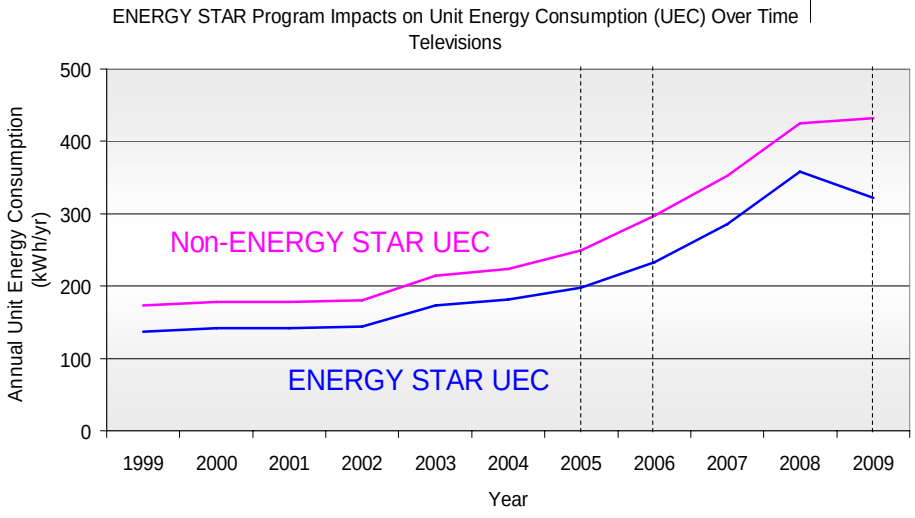
ENERGY STAR Impacts

- Americans with the help of ENERGY STAR prevented 40 million metric tons of GHG emissions - equivalent to 29 million vehicles and saved $19 billion on energy bills



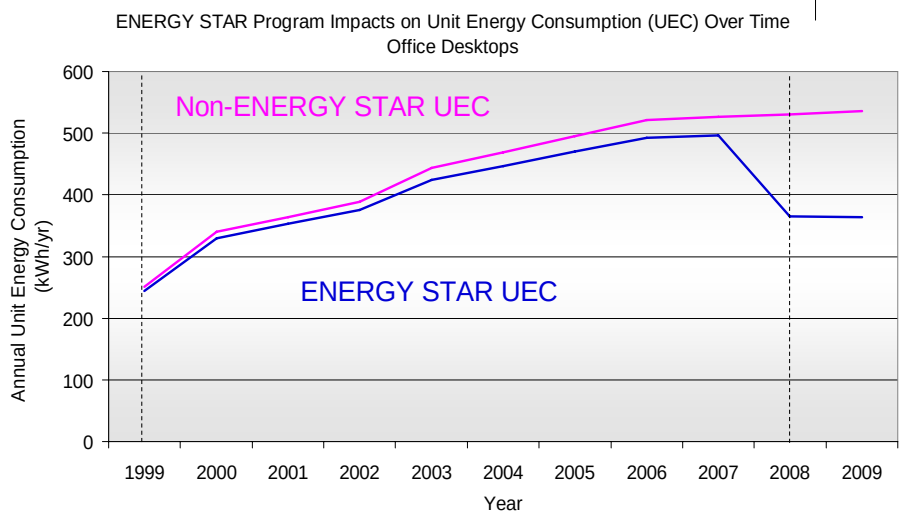


ENERGY STAR Impacts – TVs

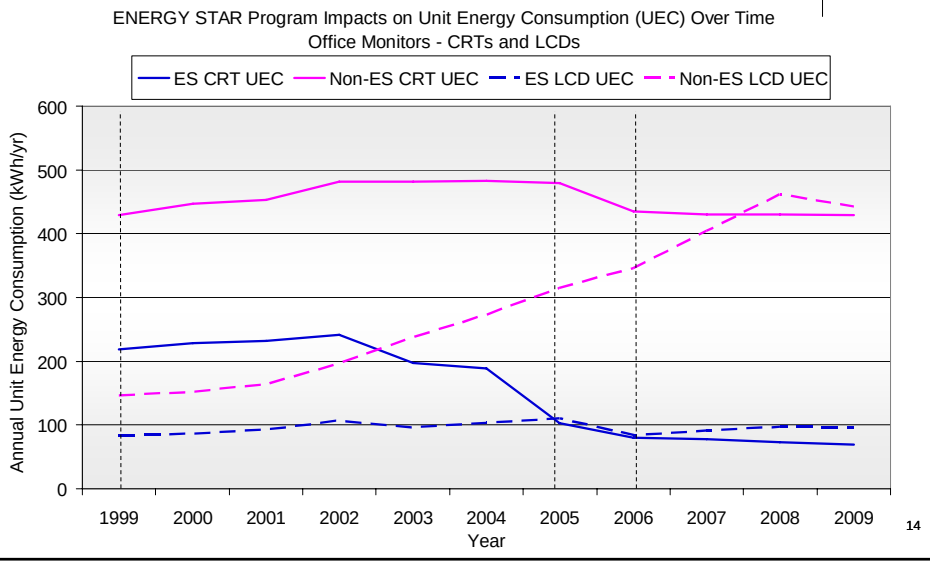


12

ENERGY STAR Impacts – Desktop Computers



ENERGY STAR Impacts - Monitors



14

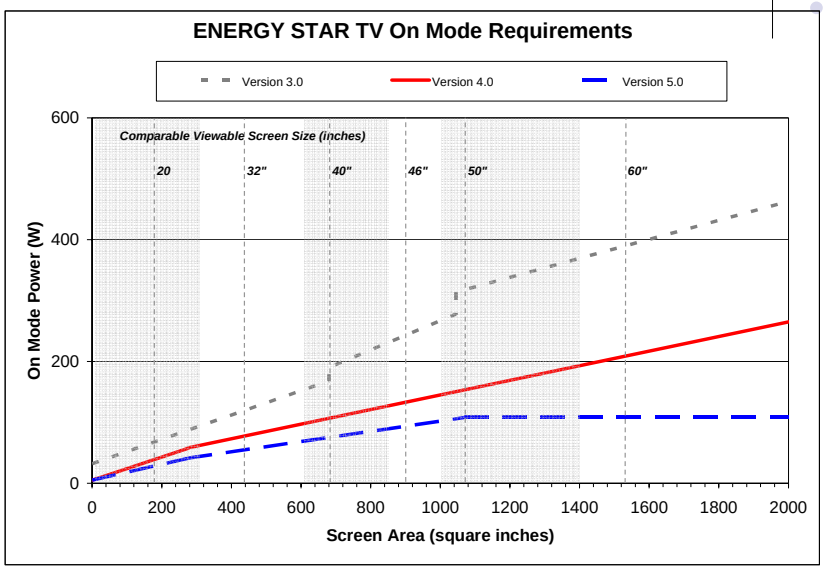
ENERGY STAR Enhancement Plans: Overview

- Increase number of new ENERGY STAR products added each year
- Complete more frequent updates to ENERGY STAR criteria
- Enhance testing procedure review, improvement, and development
- Enhance product verification, testing, and enforcement
- Complete research related to an ENERGY STAR top-tier program.

ENERGY STAR TVs: On Mode Limits

- ENERGY STAR Versions 4.0 and 5.0 TV Specification finalized September 2009
- Version 5.0, effective May 2012, requires On mode power consumption at 108 Watts for *ANY* TV larger than 50 inches
  - As TV size, functionality, and power consumption continue to grow, there are limits on what can be recognized as environmentally preferable
  - Considered limiting eligibility to 50 inch TVs or smaller, but recognized that larger TVs should be able to qualify if they too consume less than 108 Watts in On mode.

ENERGY STAR TVs: On Mode Limits



Looking Beyond the Energy Use Phase to Deliver Greater Benefits

- Goal: to secure greater GHG reductions and enhance the value of the label
- Questions to answer:
  - Are upstream and downstream GHG emissions an important part of total product GHG emissions? Under what circumstances? What type of products?
  - If GHG's significant, what are options to address them?

18

Conclusions

- The United States has a comprehensive program to promote energy efficient equipment through labels, endorsements, and regulations
- The efficiencies of appliances responsible for >80% of residential energy use are covered by mandatory regulations
- All of the programs are regularly updated to reflect improved technologies and products
- The missing element: behavior…

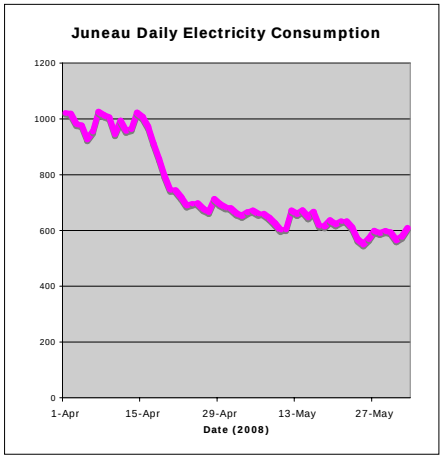
Avalanche Cuts Electricity Transmission Line to Juneau, Alaska (April 2008)

- Generation shifts from hydro to diesel
- Electricity prices rise 500%
- Repairs expected to take 3 months
- Juneau requested LBNL's advice to organize conservation campaign

Juneau Cuts Electricity Use 40% in 6 Weeks

Juneau organized a conservation campaign in 5 days

JUNEAU UNPLUGGED
live more, use less

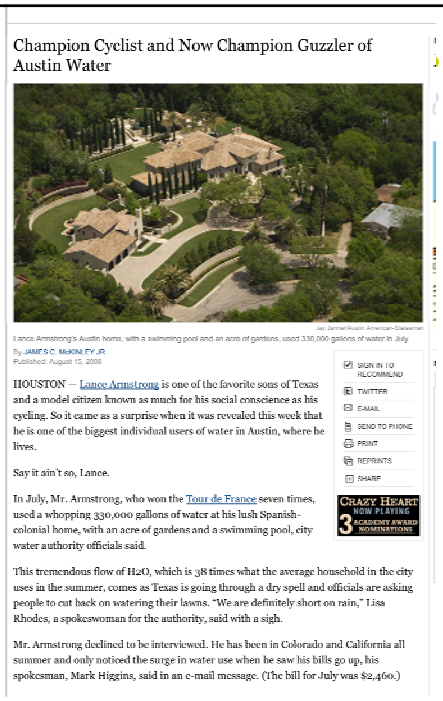


Sample conservation measures:

- Lower thermostats
- Reduce lighting
- Cut hot water use
- Install compact fluorescent bulbs
- Reduce standby power, unplug electronics, and use power strips
- Shorten business schedules
- Conserve cold water
- Switch off airport runway lights

An alternative approach: "Name and Shame"

Does this violate Armstrong's privacy?



Champion Cyclist and Now Champion Guzzler of Austin Water

Lance Armstrong's Austin home, with a swimming pool and an acre of gardens, used 330,000 gallons of water in July

By JAMES C. McKINLEY JR.
Published: August 15, 2008

HOUSTON — Lance Armstrong is one of the favorite sons of Texas and a model citizen known as much for his social conscience as his cycling. So it came as a surprise when it was revealed this week that he is one of the biggest individual users of water in Austin, where he lives.

Say it ain't so, Lance.

In July, Mr. Armstrong, who won the Tour de France seven times, used a whopping 330,000 gallons of water at his lush Spanish-colonial home, with an acre of gardens and a swimming pool, city water authority officials said.

This tremendous flow of H2O, which is 38 times what the average household in the city uses in the summer, comes as Texas is going through a dry spell and officials are asking people to cut back on watering their lawns. "We are definitely short on rain," Lisa Rhodes, a spokeswoman for the authority, said with a sigh.

Mr. Armstrong declined to be interviewed. He has been in Colorado and California all summer and only noticed the surge in water use when he saw his bills go up, his spokesman, Mark Higgins, said in an e-mail message. (The bill for July was $2,460.)

SIGN IN TO RECOMMEND
TWITTER
E-MAIL
SEND TO PHONE
PRINT
REPRINTS
SHARE

CRAZY HEART
NOW PLAYING
3 ACADEMY AWARD NOMINATIONS

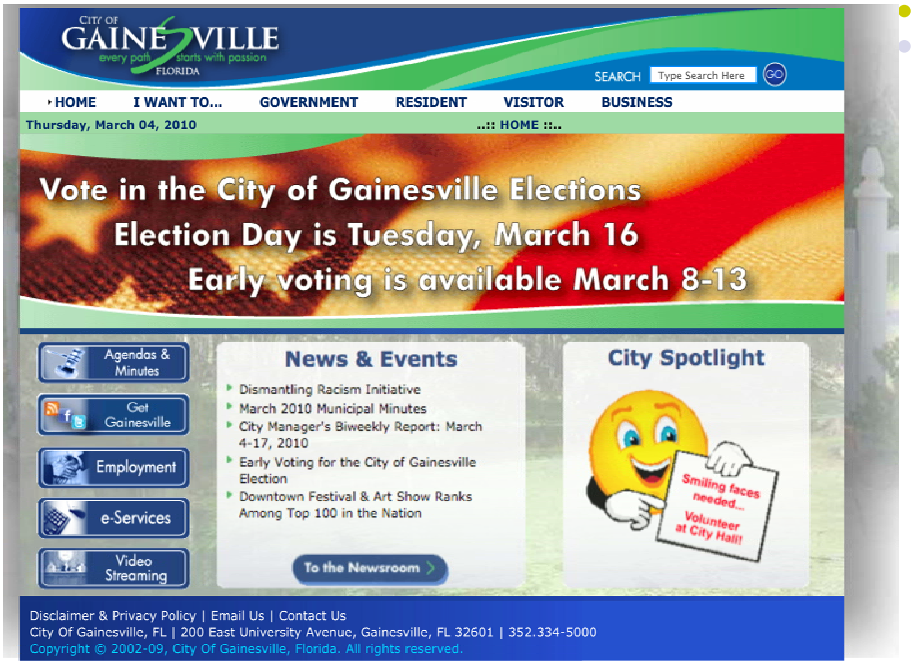
Let's go to Florida!

Gainesville

Population: 130,000

University town

Municipal utility



Let's examine some *real* homes

HTTP://GAINESVILLE-GREEN.COM/