

The EPA logo, featuring a stylized flower/leaf symbol to the left of the letters "EPA".

EPA

change the world. start here...

ENERGY STAR® for External Power Supplies

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ENERGY STAR Product Development
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Today's Presentation Themes



- Environmental Impact of Electricity Use
- ENERGY STAR's Role in Identifying and Promoting Energy-Efficient Products
- Power Supplies and the Products They Power – A New ENERGY STAR Opportunity

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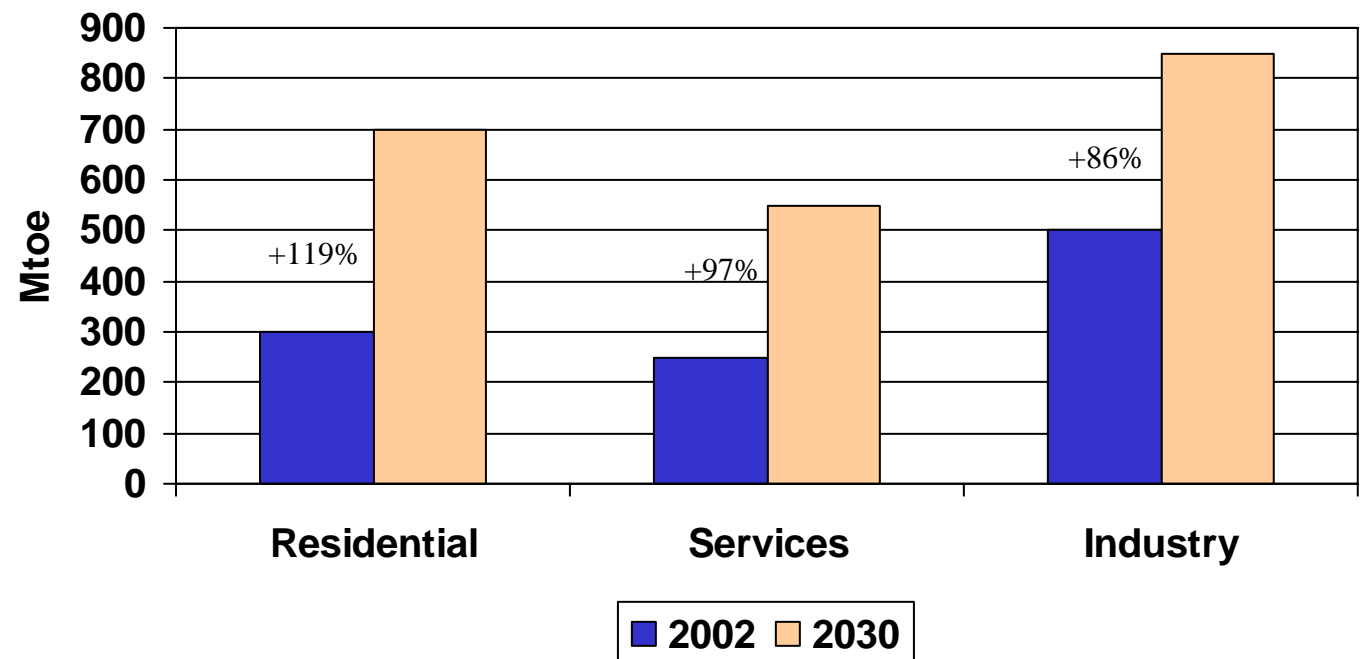
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Sectoral Growth in Electricity Demand



- Residential electricity demand expected to increase 119% in 28 years



Source: *World Energy Outlook 2004*, p. 194.

SOARING OIL IS THERE DANGER OF A SHORTAGE? (P. 38)
BONUS FEATURE LIVING THE EXECUTIVE LIFESTYLE (P. 56)

The McGraw-Hill Companies

BusinessWeek

NOVEMBER 21, 2004

www.businessweek.com

GLOBAL WARMING

Why Business Is Taking It So Seriously

BY JOHN CAREY (P. 60)

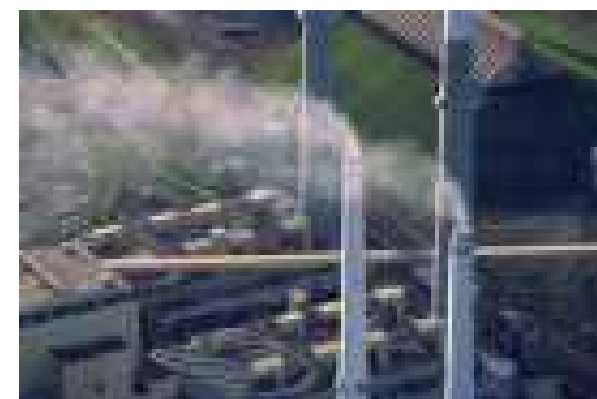


The Environmental Impact of Electricity Use



In the United States, power plants are responsible for:

- 39% of all CO₂ (carbon dioxide) emissions
- 33% of all Hg (mercury) emissions
- 63% of all SO₂ (sulfur dioxide) emissions
- 22% of all NO_x (Nitrogen oxide) emissions



Source: USEPA, USDOE (Energy Information Agency), 2002.

Energy, Climate Policy, Clean Air



ENERGY

- Energy demand expected to climb 40% by 2025
- Natural gas demand expected to grow similarly
- Higher natural gas prices for foreseeable future

CLIMATE POLICY

- Emissions expected to climb as much as 60% by 2025
- Natural gas pricing favors more coal

CLEAN AIR

- About 150 million people in counties where air unhealthy
- EPA expecting more than 100 areas to be designated non-attainment

Benefits of Reducing Electricity Consumption



- Improve air quality
 - less smog, acid rain
- Help mitigate climate change
- Improve reliability of electricity grid; reduce the probability of power outages
- Improve the performance of products – build consumer loyalty



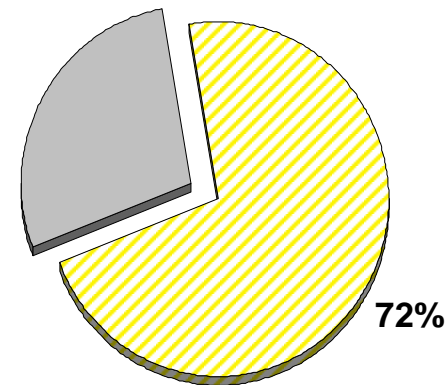
Does Anyone Care?



Consumers want to protect the environment

- 70% favor conservation over increasing fuel production
- 60% felt protection of the environment was worth paying higher prices for gas and electricity (NYT/CBS news)

72% of Adults "...Make a Special Effort to Look for Products that are Energy Efficient"



Source: The Gallup Organization, © 2000

93% of people believe that saving energy is important for both the environment and their pocketbooks...They just don't know where to start (Lowe's, 2001)

Strong Consumer Demand for Energy Savings, Environmental Protection



- 79% of US adults believe **energy efficiency is important in electronics & appliances**
- 56% of adults report purchasing a product because advertising on label said product was energy efficient
- 73% of US consumers believe that a product that is **better for the environment is a somewhat to very important consideration** when purchasing an appliance or other energy-using product

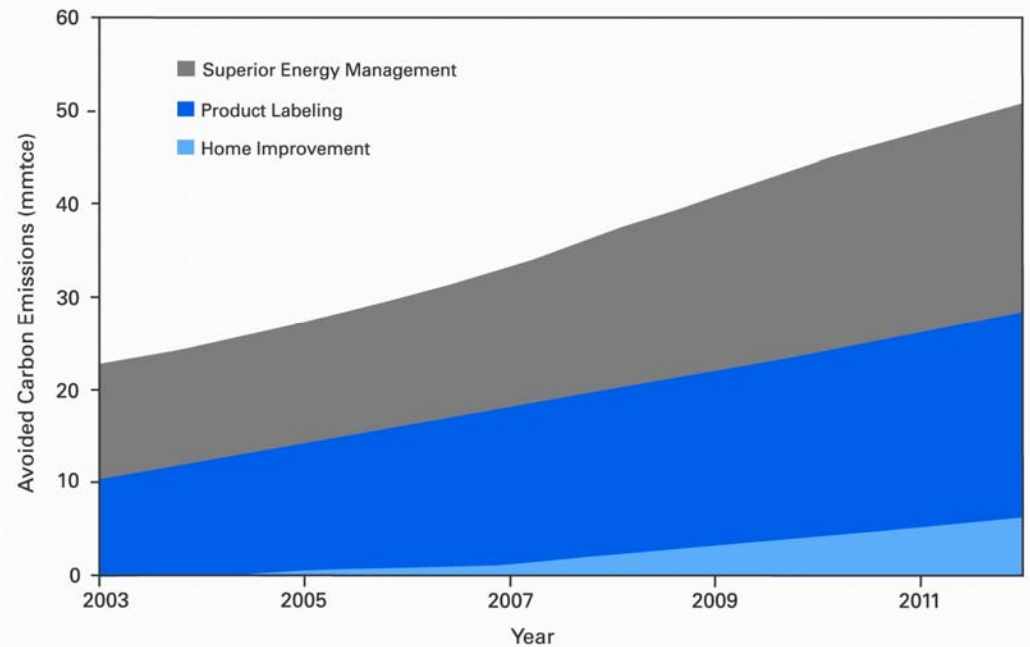
Sources: *Understanding the LOHAS Consumer Report*[™], ©The Natural Marketing Institute, 2004 and *2004 Household Survey*, Consortium for Energy Efficiency

What Is ENERGY STAR?



- **Federal program** to make it easy to identify energy-efficient homes, products, and buildings
- Vision: Maximize **energy savings** to **reduce greenhouse gases** that contribute to climate change
- Products earn the ENERGY STAR mark by meeting strict **energy performance criteria** & test procedures
- **Voluntary** partnership
- Used in several other countries, including **Australia, Canada, EU, Japan, New Zealand, Taiwan**

EXPECTED EMISSIONS REDUCTIONS FROM THE ENERGY STAR PROGRAM: 2003 TO 2012



ENERGY STAR Accomplishments



- **79 specifications** in 7 broad ENERGY STAR product categories
 - many with external or internal power supplies
- 1,400 manufacturers; 550 retailers (21,000+ storefronts)
- **1 billion** products purchased by American consumers
- In 2004 alone, ENERGY STAR:
 - saved **> \$10 billion** on consumer energy bills
 - reduced GHG emissions equal to removing **20 million cars** from the road for 1 year
 - saved enough electricity to power **24 million homes**

Aggressive Brand Marketing



The Boston Globe

THIRD EDITION THURSDAY, AUGUST 26, 2004 HOUSE & HOME: H 1

LIFE AT HOME: Reducing the wasted energy of power packs

ConsumerReports.org - AC power supplies 1/05: DC power supply, switching power supply - Microsoft Internet Explorer provided by

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Address: http://www.consumerreports.org/main/content/display_report.jsp?FOLDER%3C%3Efolder_id=5388476&SORTMENT%3C%3Esort_id=3331330&UID=1109176007565

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Electronics & computers

You are here: Electronics & computers > AC power supplies: 105

In this report

- Overview
- What you can do

January 2005

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AC power supplies

Keep them from zapping your wallet and the environment

You may not think much about power supplies, those power cords with a bricklike appendage that converts AC power into the DC needed by cell phones, laptops, and a host of other devices. But touch that brick while any of those devices is on and it will probably feel warm. That's the energy lost during the conversion process. The power supplies hidden within desktop computers, TVs, cable boxes, and other appliances also waste energy.

With typical use, AC power supplies can waste \$20 to \$50 of what you spend annually on electricity. Nationwide, power supplies waste more than 58 billion kilowatt-hours yearly, equal to the annual output of 110 large power plants. That extra energy output translates into 40 million tons of the greenhouse gas carbon dioxide released into the atmosphere each year, according to Ecos Consulting, an environmental consulting firm.

A major culprit in this waste is the type of adapter known as a linear power supply, or transformer, which typically has an energy-efficiency rating of 30 percent to 60 percent. That means it loses 40 percent to 70 percent of the energy converted to DC when powering an appliance. A transformer can consume 2 to 5 watts just by being plugged in. Manufacturers

POWER PLAY The switching power supply on the right delivers the same energy output as the linear one next to it, but with greater efficiency. It's also much lighter: 6 oz. vs. 1 lb., 9 oz.

Related information

- Desktops and laptops 12/04
- Conventional tube TVs
- Recalls
- Manufacturers

http://www.consumerreports.org/main/home.jsp?FOLDER%3C%3Efolder_id=5388476&SORTMENT%3C%3Esort_id=3331330&UID=1109176007565

name the ubiquitous device that, according to Environmental Agency estimates, wastes the \$11 billion worth it consumes each year? It's something big and it's the refrigerator or you're wrong.

Andrew Fanara of the power pack that er to cordless tools, cellphones, many appli- est electronic products: mpeters and games. n power packs are twice each year and billion are in use in the . With existing power g, more than half of used to power most nics products is con- the products are not n standby, he said.

fanara says, consumer d small appliances sible for more than 40 household electricity compared with about 4

direct the agency's AR program, which development and mar- gey-efficient products. aff think a new design sower packs could help

cut the waste in half, and are working to achieve one, Fanara recently returned from a negotiating session in China, where most of the world's power packs are manufactured. He says that with input from manufacturers worldwide, new energy-efficiency standards could emerge by fall, with some power packs sporting an ENERGY STAR designation as early as the end of the year.

Fanara concedes the more efficient products could be "marginally more expensive" than power packs available today but should save consumers money over the long run. Another possibility, he said, is that the industry may choose to offer higher-grade, more-efficient power packs that can work with more than one kind of consumer product, potentially further reducing energy use and reducing clutter around the home and office.

Another EPA program is seeking to squeeze greater efficiency from another, similarly invisible energy consumer - television sets. As of July 1, the ENERGY STAR specification for TVs changed to lower the standby power requirements for analog TVs from 3 watts to 1 watt. Non-ENERGY STAR-qualified TVs use about 6 watts. Again, according to EPA estimates, if half of all US households replaced their existing TV with an ENERGY STAR model, the change would be like shutting down a large

electric power plant.

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- Ads Seen in the LA Times
- Tools for Buyers
- Tools for Sellers
- Finance Center

Renters

- Find Rentals
- Tools & Services
- Property Management
- News & Information
- Moving
- Place an Ad

Commercial

- Find Properties
- Find Services
- News & Information

From Orlando Sentinel
ENERGY CHECK
Figuring real cost of power adapters
By Ken Sheinkopf, Special to the Sentinel

Considered individually, efficient light bulbs and small household appliances may save little more than pocket change during the year. But when we add up the savings from all those items, they can make a big difference in our power bill.

Now becoming more common in the typical household are the power packs that come with electronics and appliances, particularly with cell phones, PDAs, digital cameras, MP3 players and camcorders.

Odds are good that you have one or more of these products in your home. In fact, the Environmental Protection Agency estimates

Real Estate News

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Rules change if state takes property
Lawsuits challenge guarantee fees
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more >

Home Buyers' Toolkit

HOME SALE PRICES
Select county
Los Angeles
and Enter zip code

Griffin
NEW HOMES
CLICK HERE

Save THOUSANDS
selling or
buying
a home
Click here
No Commission. Lots of Help

CENTEX HOMES
Los Angeles - Ventura - Ukiah

RE/MAX

http://www.latimes.com/classified/read-topnav-classified

Major Retailers Now Marketing ENERGY STAR



**Save up to \$150 a year
on your energy bill**
with these ENERGY STAR® qualified products.



Protecting our environment
starts at home.

ENERGY STAR® is sponsored by the U.S. Environmental Protection Agency and the U.S. Department of Energy.



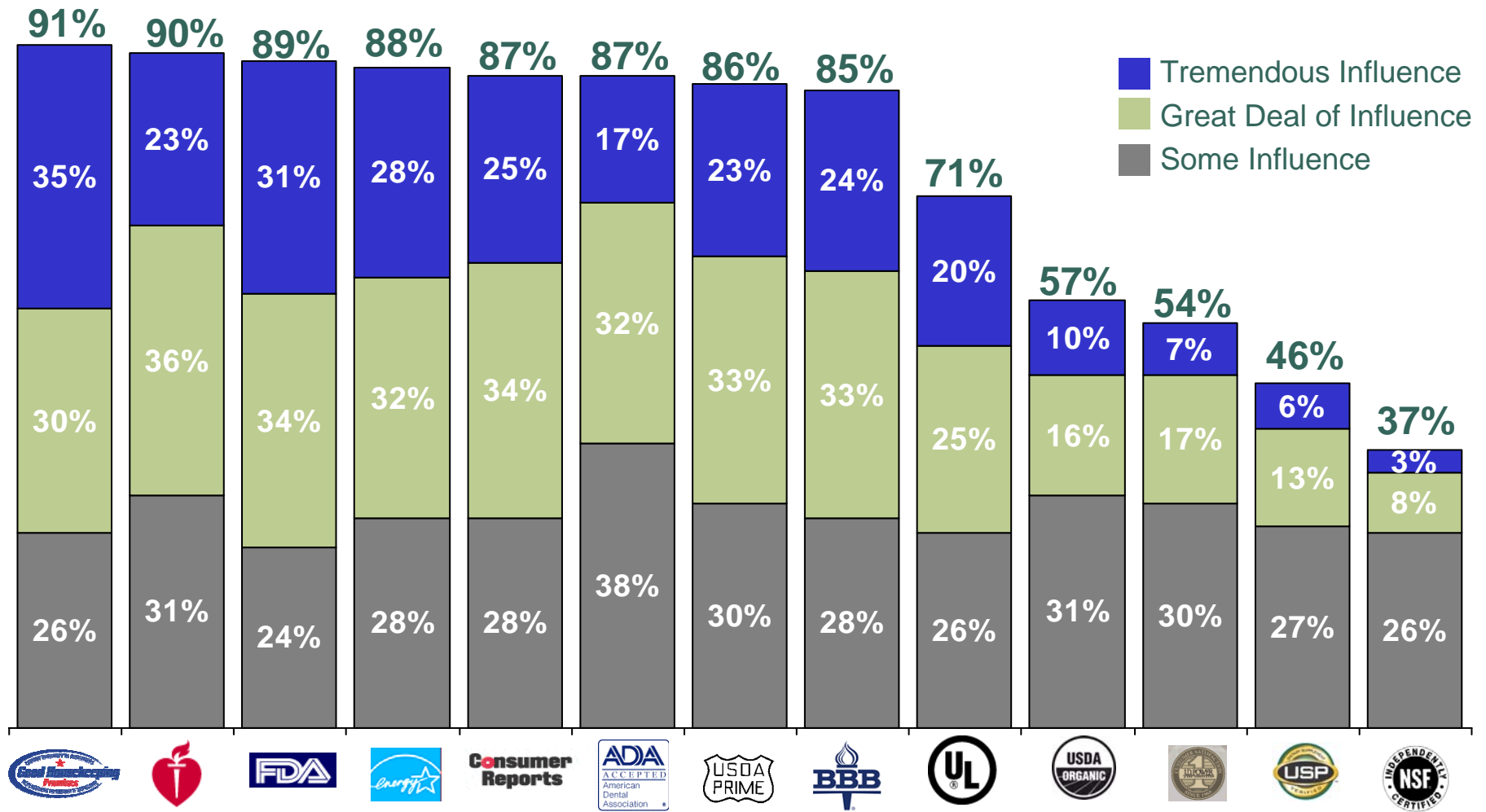
PROTECTING OUR ENVIRONMENT STARTS
AT HOME.
5 STEPS YOU CAN TAKE TO REDUCE AIR POLLUTION.

ENERGY STAR Action Guide



GOOD HOUSEKEEPING SEAL SURVEY

ENERGY STAR label ranks among the highest level of influence on product purchase among all consumer emblems, similar in ranking to the Good Housekeeping Seal and Consumer Reports.



Source: Fairfield Research, May 2003

Consumers Value ENERGY STAR



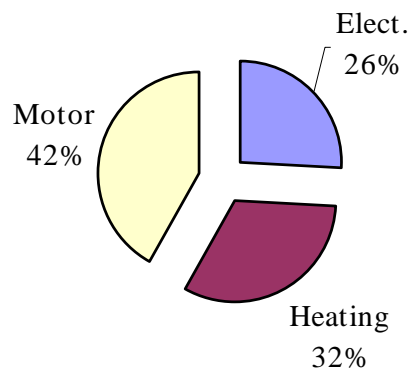
- More than 70% of US households would **recommend labeled products to their friends.**
- 30% of US households knowingly purchased a qualified product in the past year.
- 95% of recent purchasers say they are **likely to buy a product with the ENERGY STAR mark in the future.**

Sources: *Understanding the LOHAS Consumer Report*[™], ©The Natural Marketing Institute, 2004 and *2004 Household Survey*, Consortium for Energy Efficiency

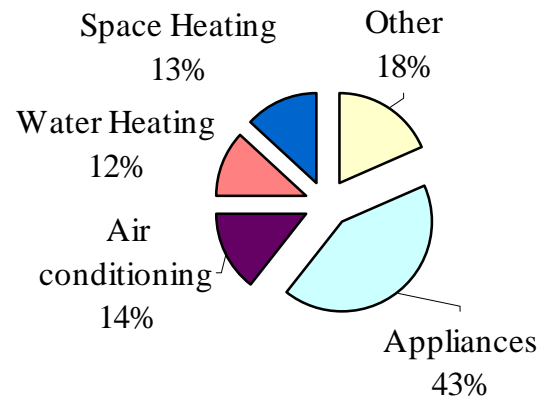
In 1980, "Other" uses of electricity were 18% of home electric consumption and electronics were about 5% of home electric consumption.

As appliance efficiency increased and as consumers added more and more plug loads to their homes, the "Other" piece of the pie dramatically grew.

0.4 Quads "Other" 1980



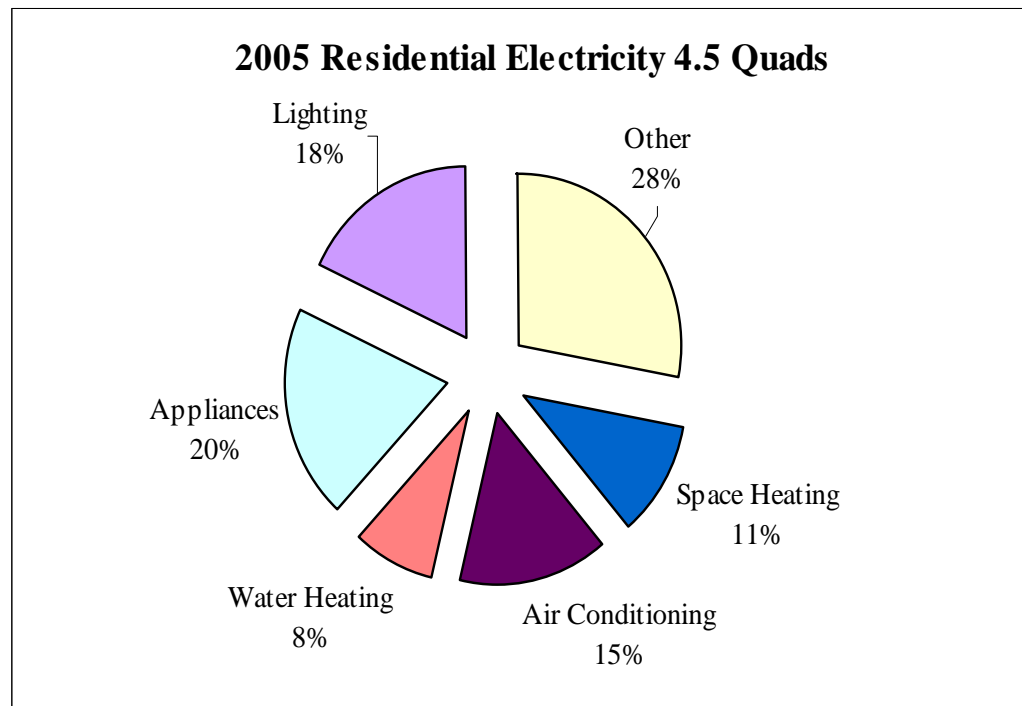
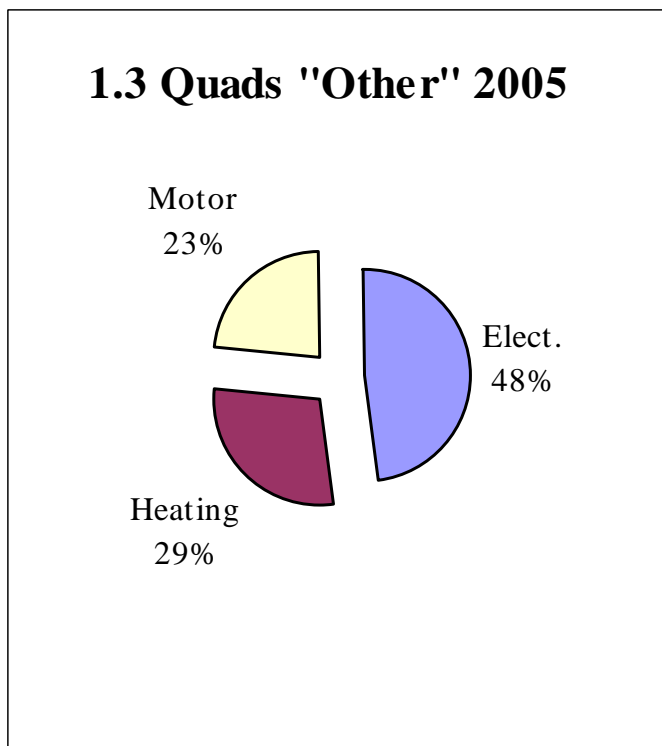
1980 Residential Electricity 2.25 Quads



Source: US DOE, 1995; Sanchez et. al 1998

Today, "Other" uses of electricity account for 28% of home electric consumption and electronics are about 13% of home electric consumption.

Adjusted for inflation, an average home in 1980 paid \$1280/yr on utility bills. Today an average bill is \$1500/yr (2000\$) (US DOE 1995, RECS 01).

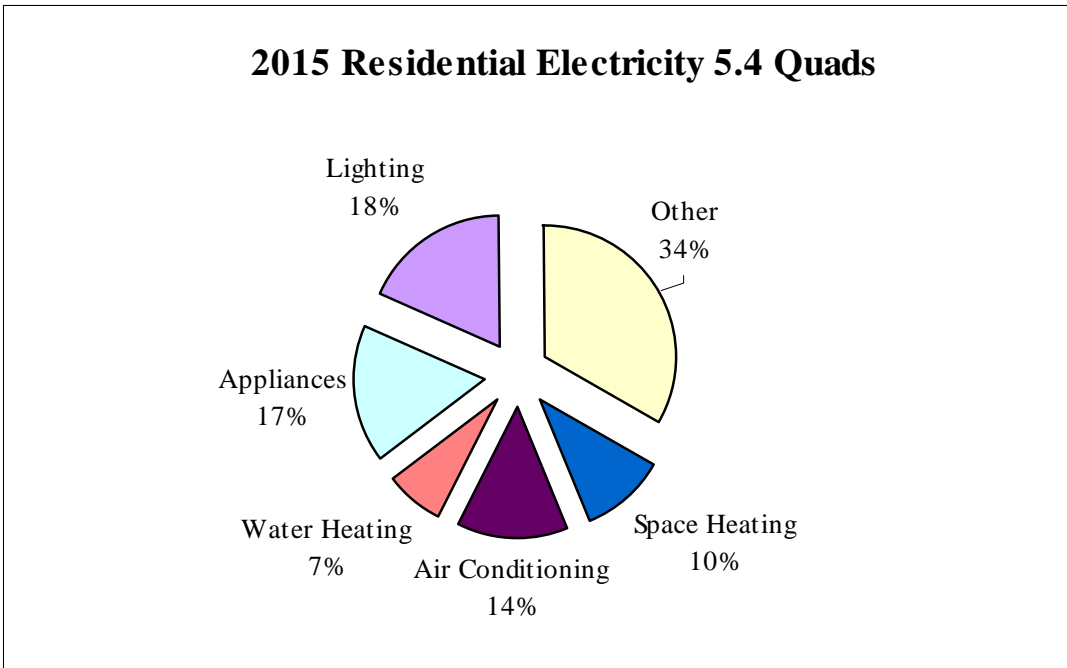
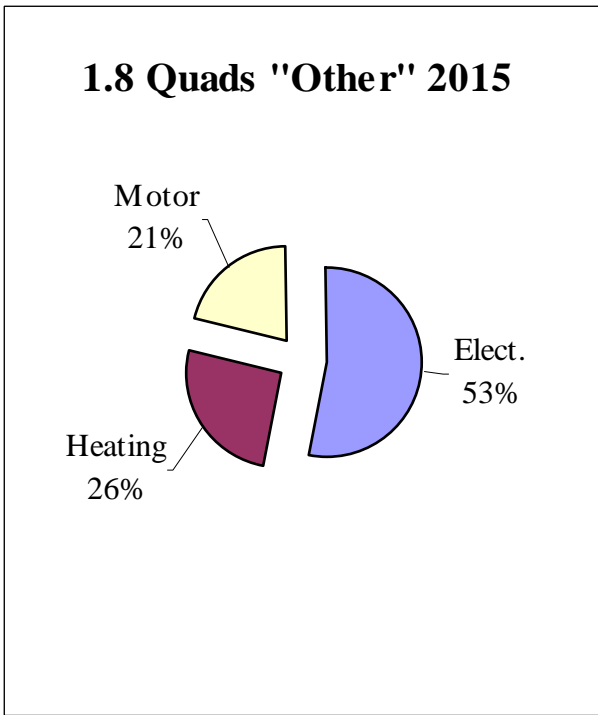


Source: US DOE, 2005



By 2015, “Other” uses of electricity are projected to account for 34% of home electric consumption and electronics about 18% of home electric consumption.

This growth will affect household utility bills. LBL (Nordman et al., 2004) estimates that today, IT equipment in households with a PC consume 275 kWh/yr, \$22/yr, or \$1.3 billion nationally.

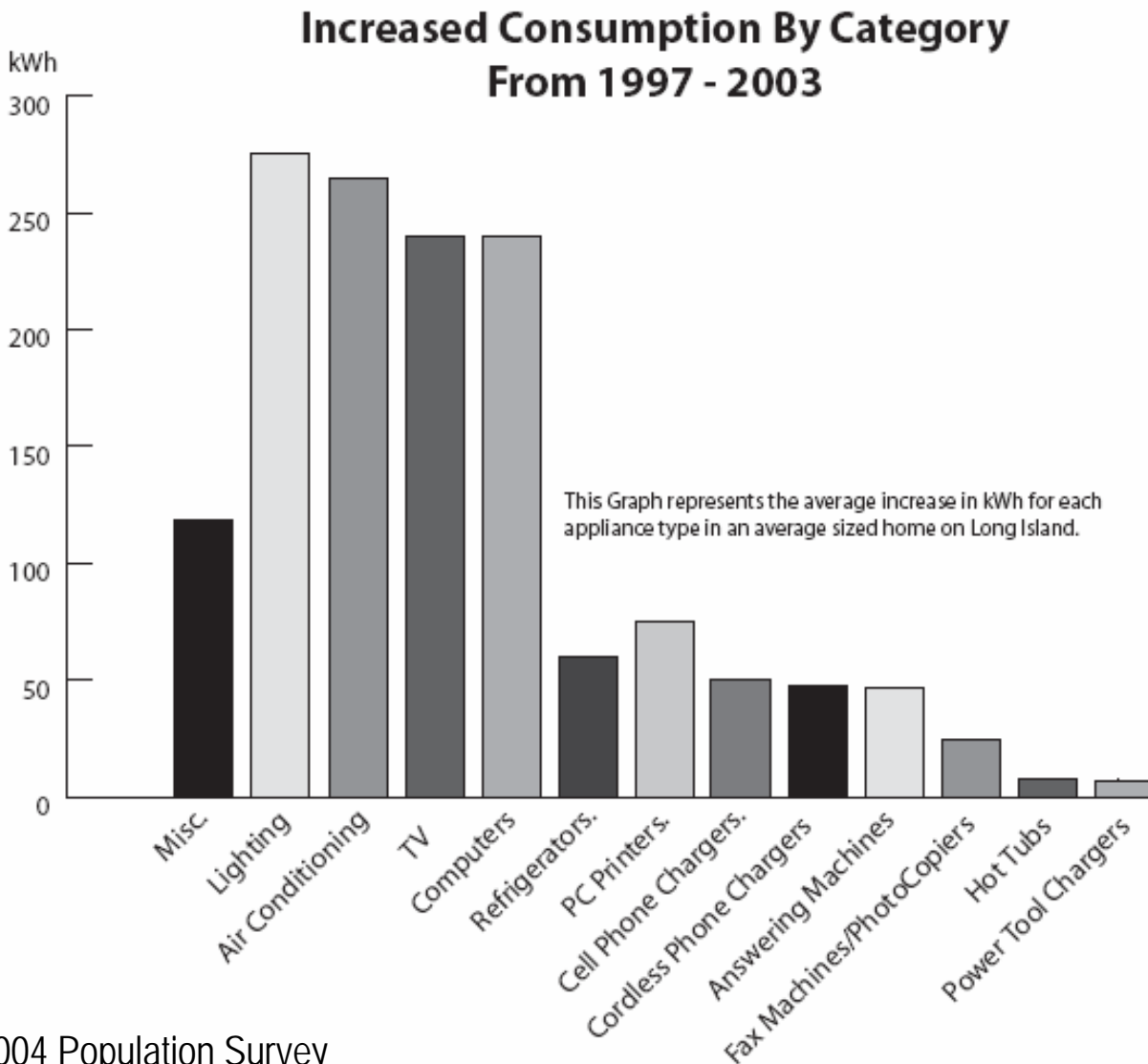


Source: US DOE, 2005

Electronics Cause Significant Growth in Residential Electric Consumption

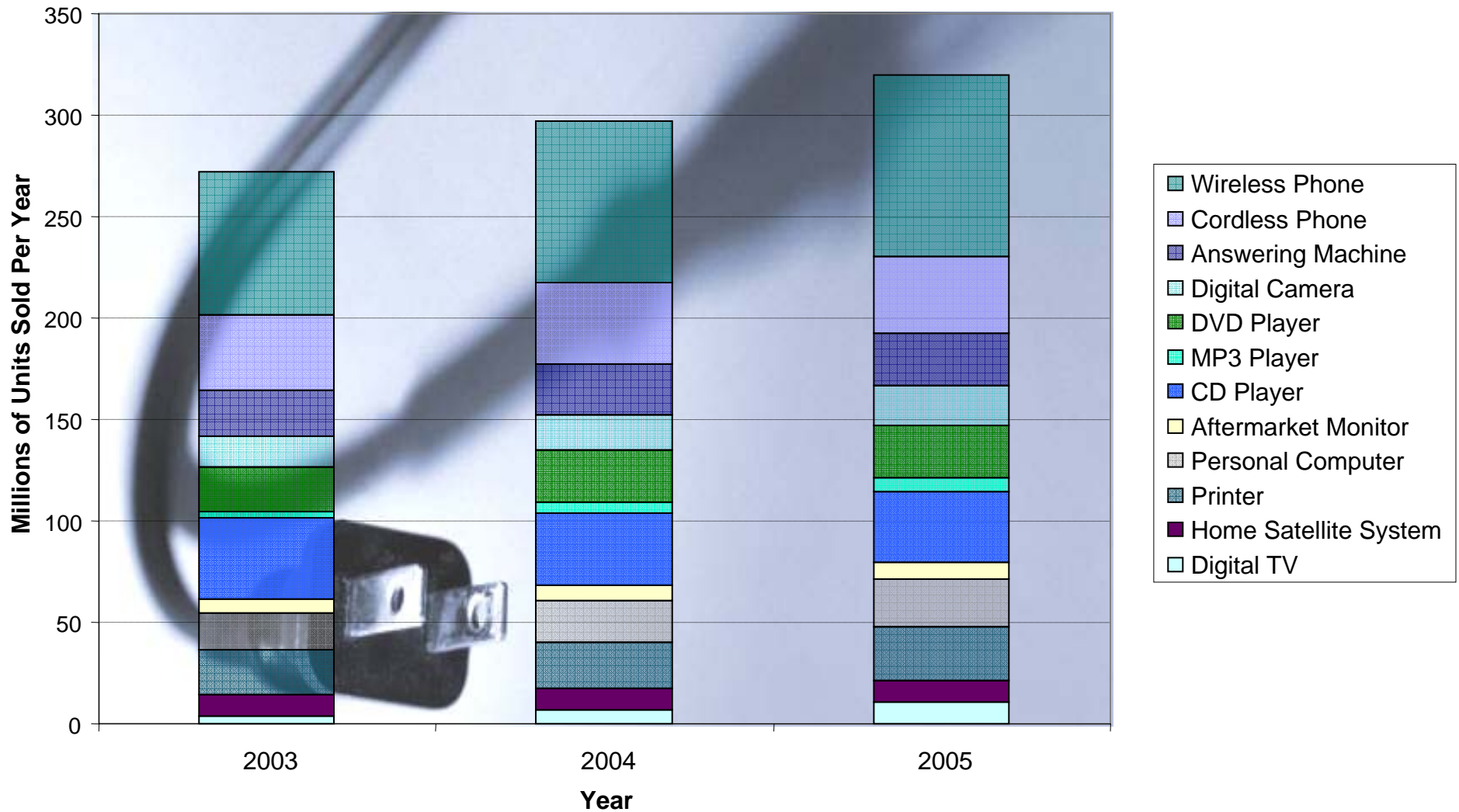


- For average home on Long Island:
 - 20.4% increase in electric use over the past 6 years
 - 258% increase since mid 1950s



Source: Long Island Power Authority's 2004 Population Survey

U.S. Sales of Key Products with Power Supplies Continue to Climb



Source: Consumer Electronics Association

Why ENERGY STAR for External Power Supplies (EPSs)?



- Broad application in finished products
 - More than **1 billion shipped worldwide/year**
 - 5-10 in use in the average US home
- Product features and usage patterns are changing
 - *Active Mode(s)* accounts for **nearly ¾** of all power supply energy use
 - ENERGY STAR's focus to date has been on *Standby* for consumer and office electronics
- Many current designs are **30 to 60% efficient**, but 90% or more is feasible



A Global Opportunity and a Global Approach



- California, Australia, China, EU, Canada, and others share EPA's interest in implementing policy measures to encourage the design and sale of energy-efficient power supplies
- Our Approach:
 - **Coordinate with other countries/agencies**
 - Develop one globally applicable **test procedure for EPSs**
 - Compile a global dataset of power supplies
 - **Harmonize specifications** and timeline

ENERGY STAR EPS Specification



Nameplate Output Power (P_{no})	Average Efficiency in Active Mode (expressed as decimal)
0 to \leq 1 watt	$\geq 0.49 * P_{no}$
> 1 to \leq 49 watts	$\geq 0.09 * \text{Ln} (P_{no}) + 0.49$
> 49 watts	≥ 0.84

Nameplate Output Power (P_{no})	Maximum Power in No-Load
0 to $<$ 10 watts	≤ 0.5 watts
≥ 10 to \leq 250 watts	≤ 0.75 watts

ENERGY STAR Partnership Opportunity for EPS Manufacturers



- Recruiting EPS manufacturers
 - Sign ENERGY STAR Partnership Agreement to become a Partner
 - Test and self-certify energy-efficient EPSs
 - Promote efficient models by using the ENERGY STAR certification mark, recognized as the symbol for energy efficiency around the world

energy star partner

- press releases:
- 2005
 - 2004
 - 2003
 - 2002
 - 2001
 - 2000
 - 1999

For Immediate Release

January 31, 2005

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Patricia Staino, B1B Marketing
919-872-8172
pstaino@b1bmarketing.com



- In this section:
- multiport midspans
 - energy star partner
 - PoE single port injector
 - PSA80W external adapter

Power supply manufacturer leads industry in compliance and environmental commitment...

EPA Names Phihong First External Power Supply ENERGY STAR Partner

FREMONT, Calif. (January 31, 2005) — Phihong electronic accessories and power supplies, today manufacturer of external power supplies to be Environmental Protection Agency's ENERGY partner, Phihong's products must meet strict en set by the EPA and the Department of Energy



Product News

Interchangeable Blade Power Supplies Now meet RoHS & Energy Star Standards
GlobTek Inc. GT-41 052 series of Wall-Plug-In North America, Europe, U.K., Australia Class II, Double-Enforced Insulation Mechanical Configurations, Regulated Outputs voltage from: 5V to 24Vdc in 0.1V increment, up to 15W of continuous output power. Style enclosed power supplies are housed in Impact Resistant non-vented Polycarbonate Upper and Lower Case, Thermal Conduction Cooling, Case Dimensions: 74L x 43.5W x 34H (mm). This Family

Products & Services

- Power Supplies:** Medical/ITE external wall plug-in/desktop, open frame, enclosed to 2000W... > more
- Custom:** Full range of linear and switchmode power supplies, RFQ Form... > more
- DC-DC Converters:** PCB mount, external mobile, up to 150W... > more



Designers and Manufacturers of External Power Supplies, Transformers and Battery Chargers.
Power Adapters for: Medical Power * Industrial Power * Instrumentation * Telecommunications

Products

- Medical Power Supplies
- New Product Releases
- Regulatory Standards and Evaluations
- Basic Power Conversion Principles
- Why Jerome ?
- Contact Jerome
- Site Map

ENERGY STAR logo

UL REGISTERED logo

ISO 9001:2000 A5193

Designed Power for YOUR Products.

[RoHS LeadFree Commitment](#)

Jerome Industries Inc.
730 Division St.,
Elizabeth, NJ 07201, USA
Sales@jeromeindustries.com

908-353-5700
FAX: 908-353-1021

Regulatory Approvals

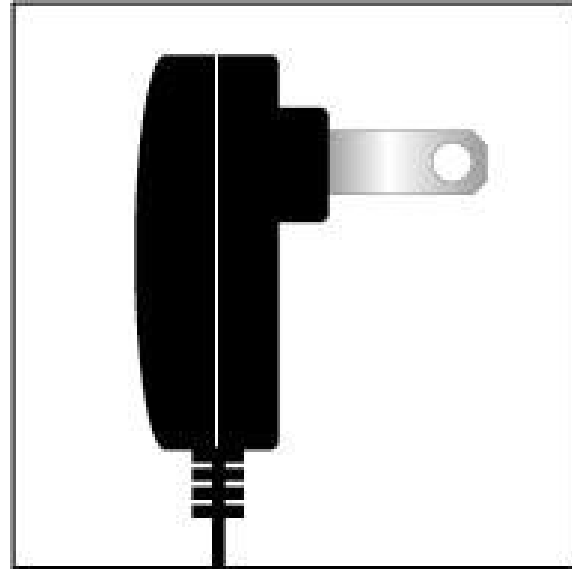
ENERGY STAR Partners



ENERGY STAR Partnership Opportunity for Finished Product Manufacturers



- Recruiting Finished Product Manufacturers
 - Sign ENERGY STAR Partnership Agreement to become a Partner
 - Incorporate ENERGY STAR qualified EPSs into finished product designs
 - Use new ENERGY STAR graphic to promote products using ENERGY STAR qualified EPSs
 - Flexible alternatives to use graphic: Display graphic on your Internet site, product packaging, box insert, or other creative application

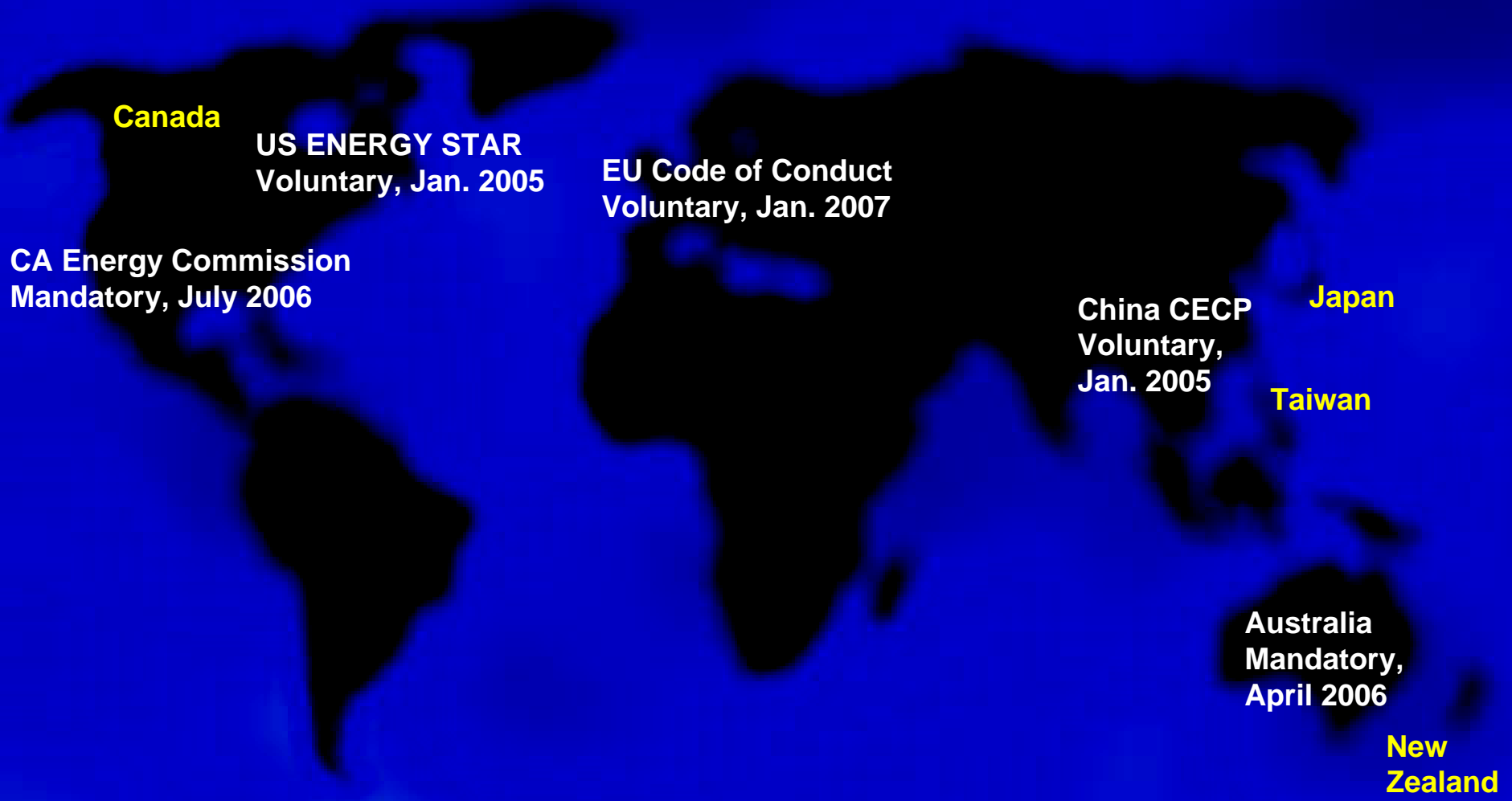


Powered by an
ENERGY STAR[®]
qualified adapter
for a better
environment

SAMPLE APPLICATION



ENERGY STAR EPS Spec Consistent With Global EPS Efficiency Efforts



Canada

US ENERGY STAR
Voluntary, Jan. 2005

CA Energy Commission
Mandatory, July 2006

EU Code of Conduct
Voluntary, Jan. 2007

China CEC
Voluntary,
Jan. 2005

Japan

Taiwan

Australia
Mandatory,
April 2006

**New
Zealand**

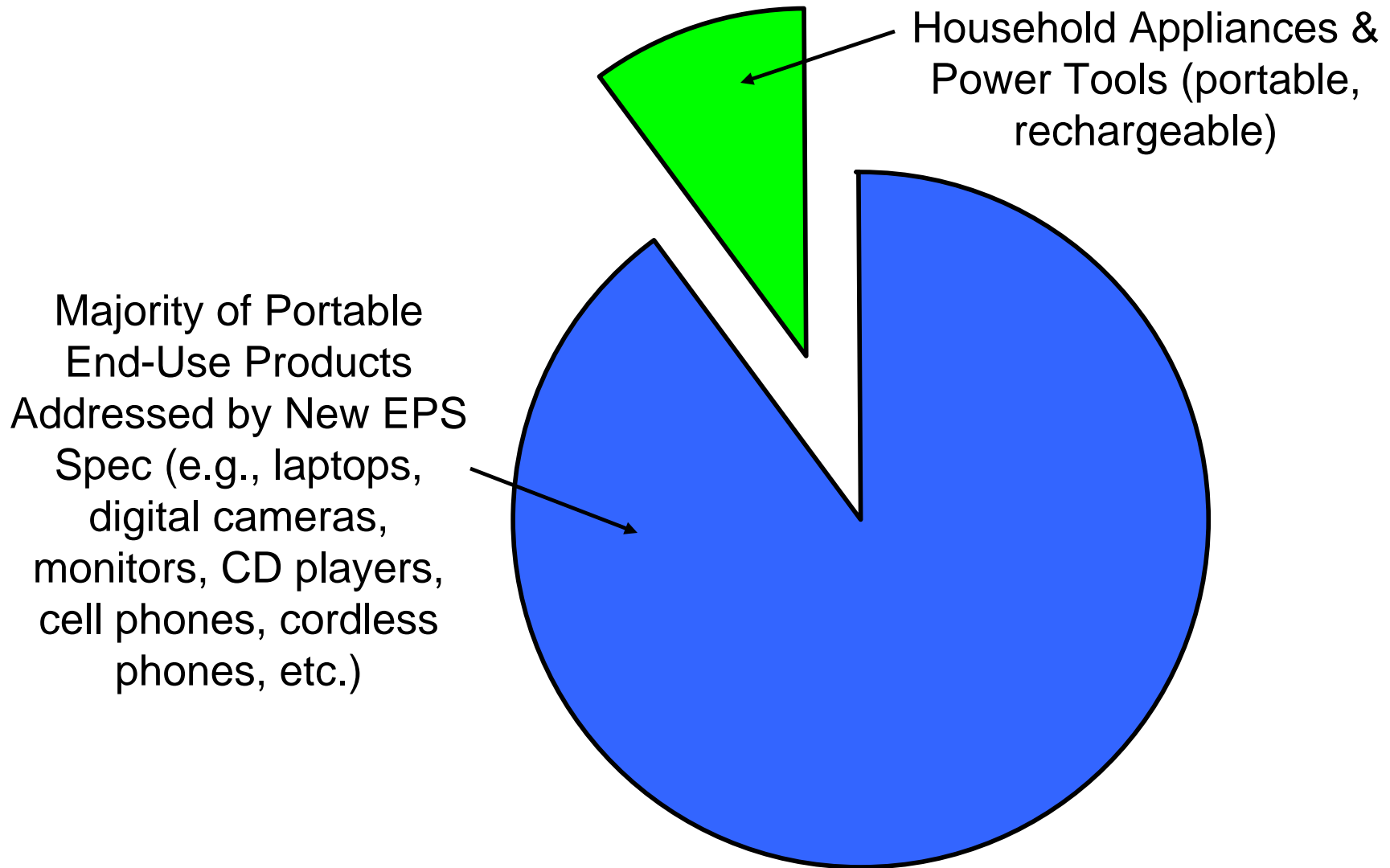
Global EPS Specifications



Table 1: Harmonized External Power Supply Specifications
 (P_{no} = Nameplate Output Power, Ln = the natural log, W = watts, PFC = power factor correction)

Organization	Region	Mandatory or Voluntary	Effective Date	Minimum Active Efficiency	Maximum No-Load Power
ENERGY STAR	US	Voluntary	January 1, 2005	$\geq 0.49 \cdot P_{no}$ for 0-1 W $\geq [0.09 \cdot \ln(P_{no})] + 0.49$ for >1-49 W ≥ 0.84 for >49-250W	≤ 0.50 W for 0-<10 W ≤ 0.75 W for 10-250 W
CECP	China	Voluntary	January 1, 2005		
AGO	Australia	Mandatory MEPS	April 1, 2006		
California Energy Commission	California	Mandatory	July 1, 2006		
EU Code of Conduct	Europe	Voluntary	January 1, 2007		

Battery Charging Systems



More Opportunities – Battery Chargers in Household Appliances & Power Tools



- Battery charging systems typically found in household appliances and power tools
 - Temporarily excluded under ENERGY STAR EPS specification (until January 1, 2006)
 - Working with AHAM and other stakeholders to develop a test procedure and energy-efficiency specification



Overall Approach – Battery Chargers in Household Appliances & Power Tools



- Keep specification simple
- Focus on how battery chargers are actually used
 - Time disconnected from product battery (standby)
 - Time actively charging product
 - Time maintaining battery
- Examine energy used by various modes and match specification to savings opportunities

Areas of Investigation – Battery Chargers in Household Appliances & Power Tools



- Impact of charger design
 - Fast chargers
 - Constant current chargers (e.g., C/6)
- Possible methods for stratifying charger population
 - Battery voltage
 - Battery capacity
- Savings opportunities
 - Battery maintenance
 - Active charging
 - Standby
- www.energystar.gov/powersuppliesdevelopment

For More Information



At PPDC:

- Visit the ENERGY STAR Booth

After PPDC:

- Andrew Fanara, US EPA

Ph: (202) 343-9019

E-mail: fanara.andrew@epa.gov

Web:

www.energystar.gov/powersupplies

