Consumer Electronics: Global Harmonization Opportunities for Energy Savings

Chris Calwell
Vice President, Policy & Research

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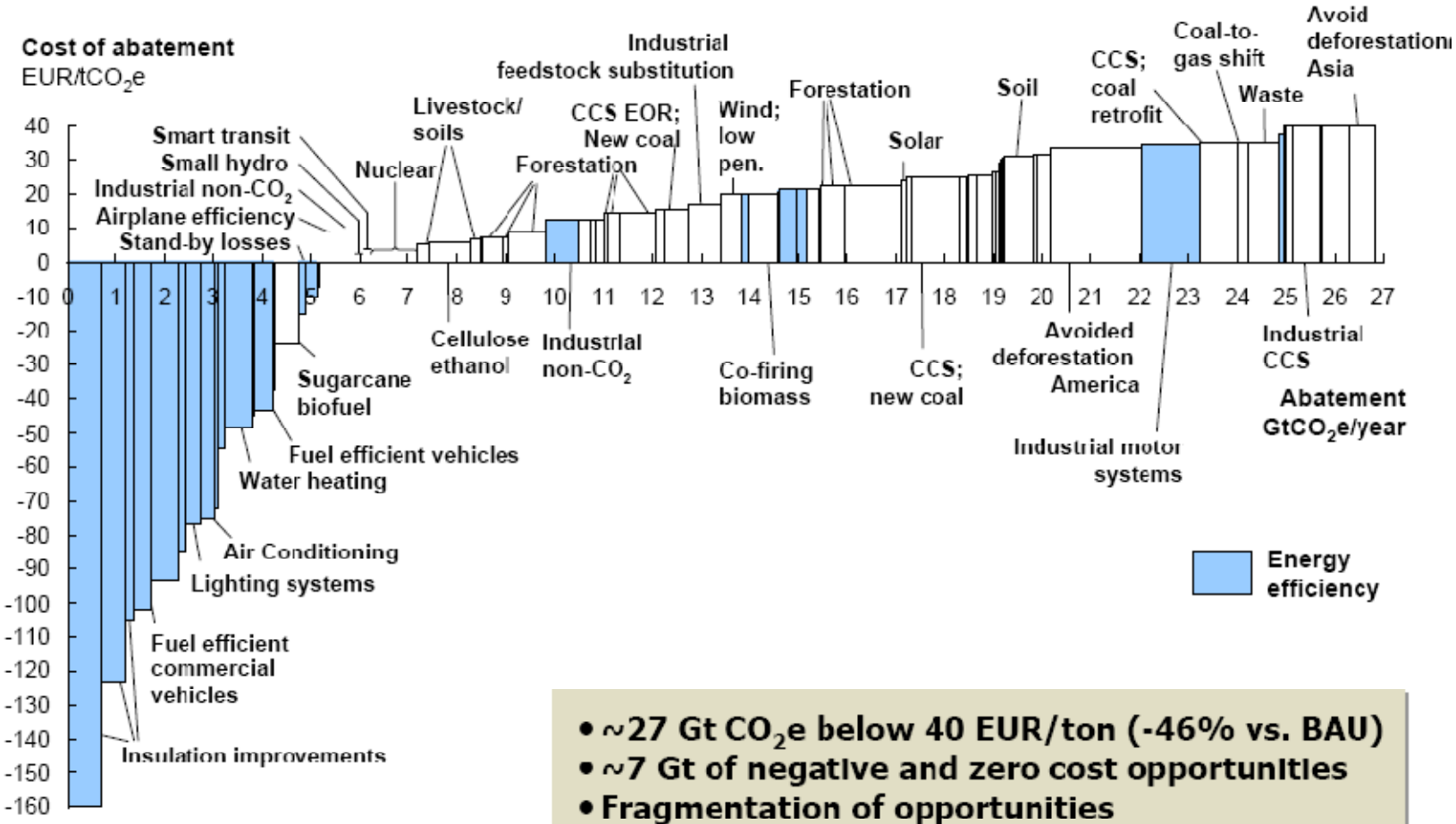
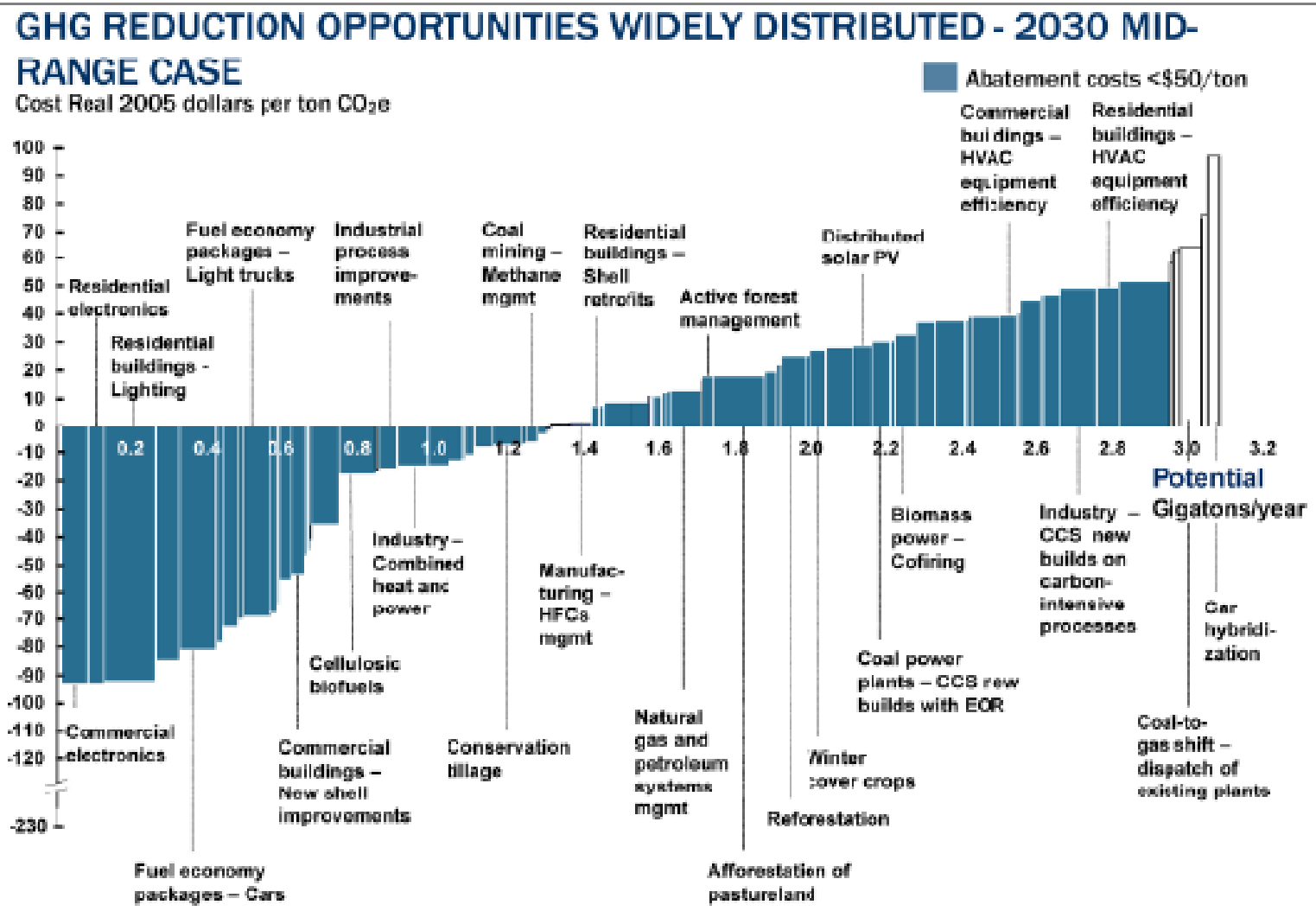
Design to Win Cost Summary

Global cost curve of GHG abatement opportunities in 2030



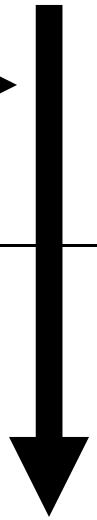
- ~27 Gt CO_2e below 40 EUR/ton (-46% vs. BAU)
- ~7 Gt of negative and zero cost opportunities
- Fragmentation of opportunities

Detailed McKinsey Analysis for US

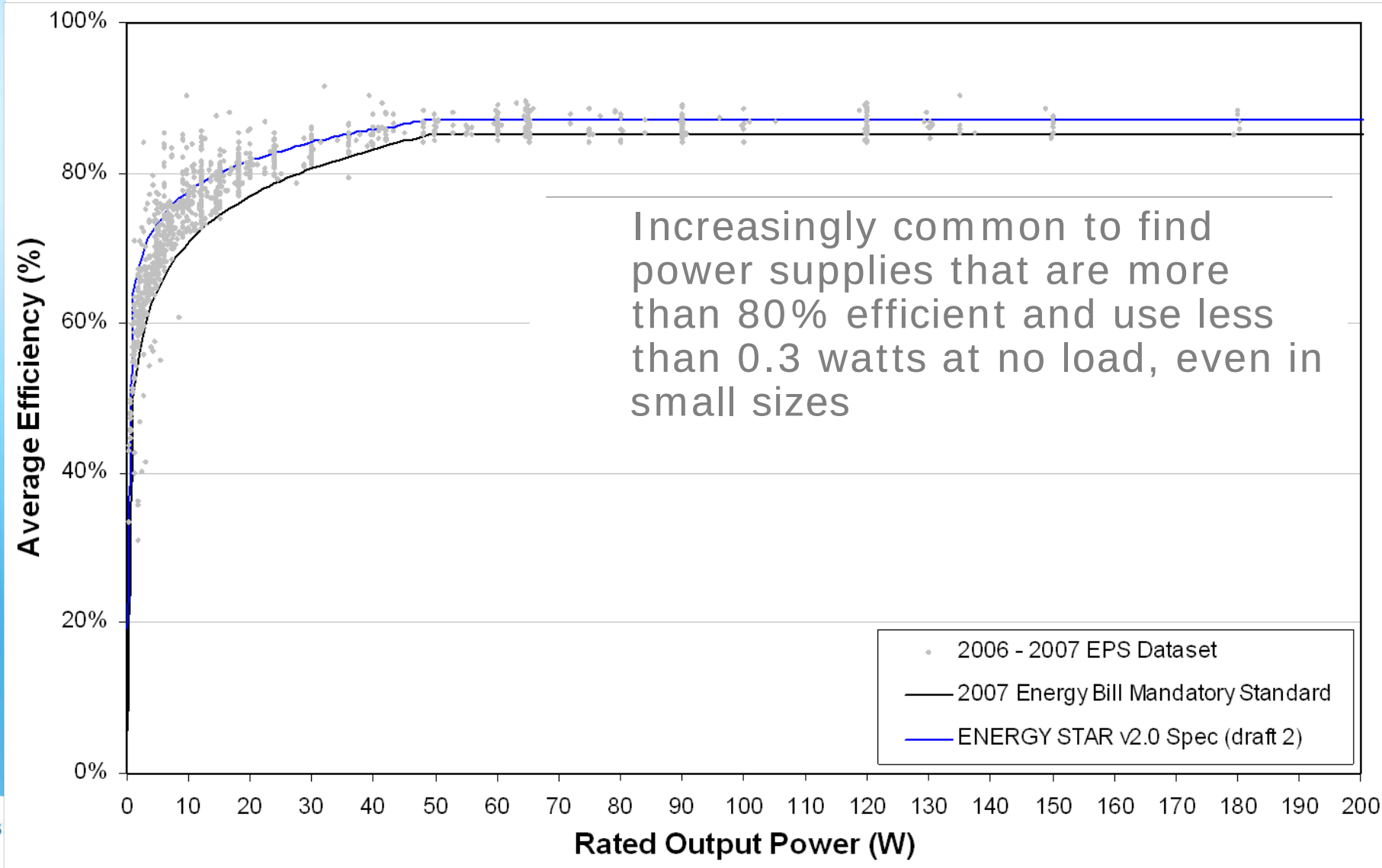


Source. McKinsey and Company 2007

A Sequence to Addressing the Consumer Electronics Efficiency Problem

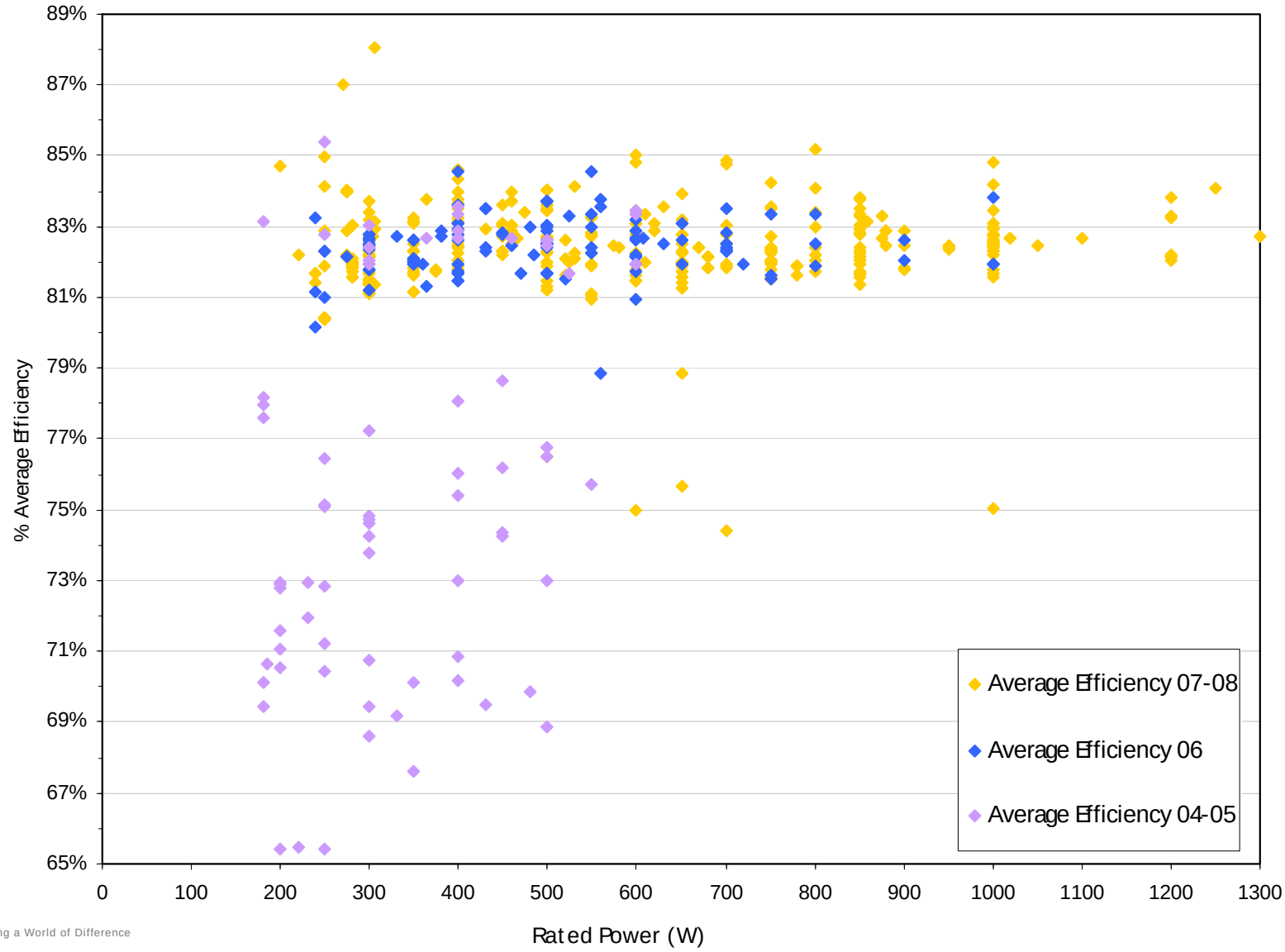
	No Battery Charger	Battery Charger
External Power Supply		
Internal Power Supply		

External Power Supply Efficiency Largely Addressed at this Point via MEPS and ENERGY STAR



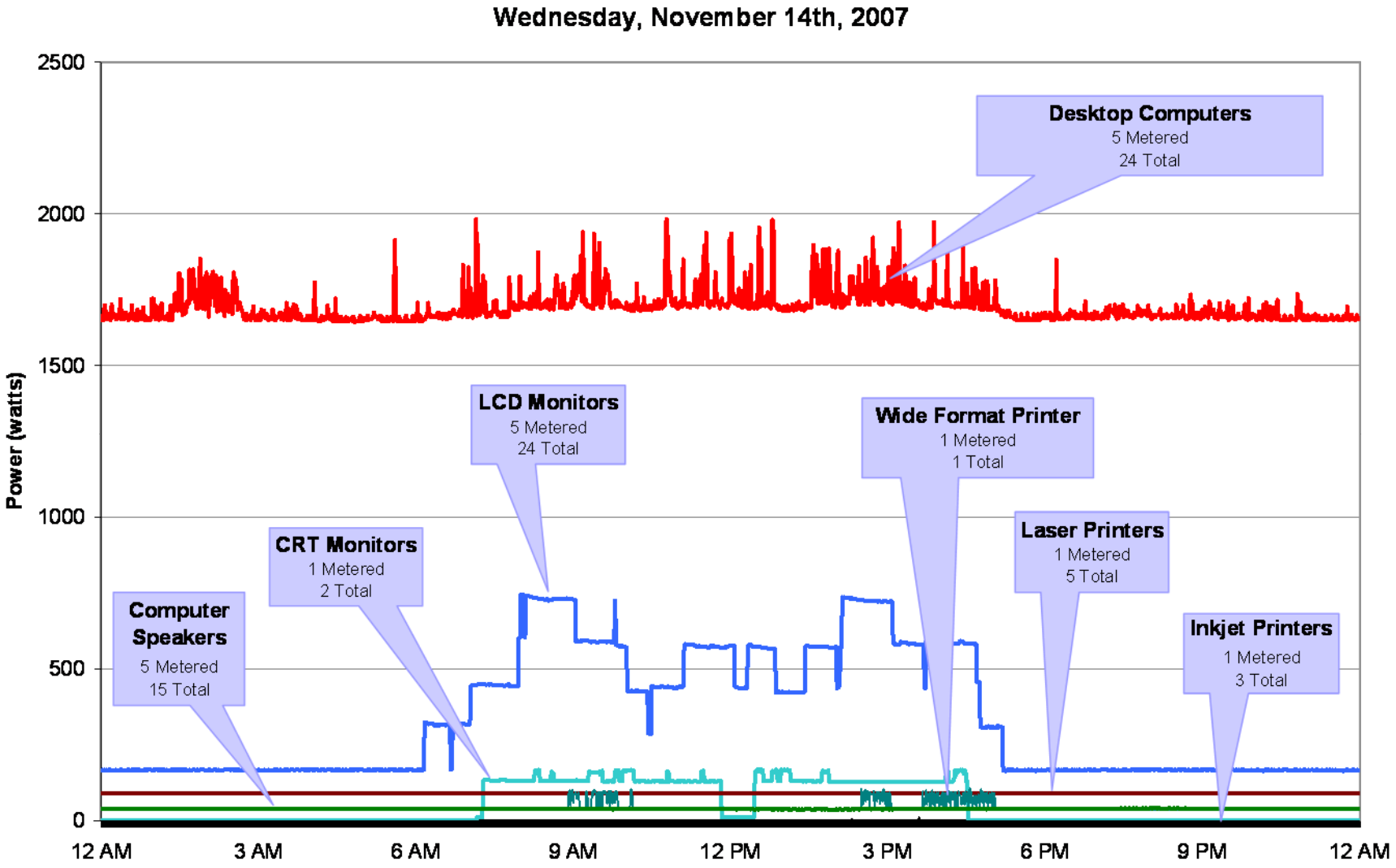
Increasingly common to find power supplies that are more than 80% efficient and use less than 0.3 watts at no load, even in small sizes

Internal PC Power Supplies: Big Efficiency Gains from 80 PLUS, ENERGY STAR, and Climate Savers; Some Takeback with Bigger Power Supply Sizes

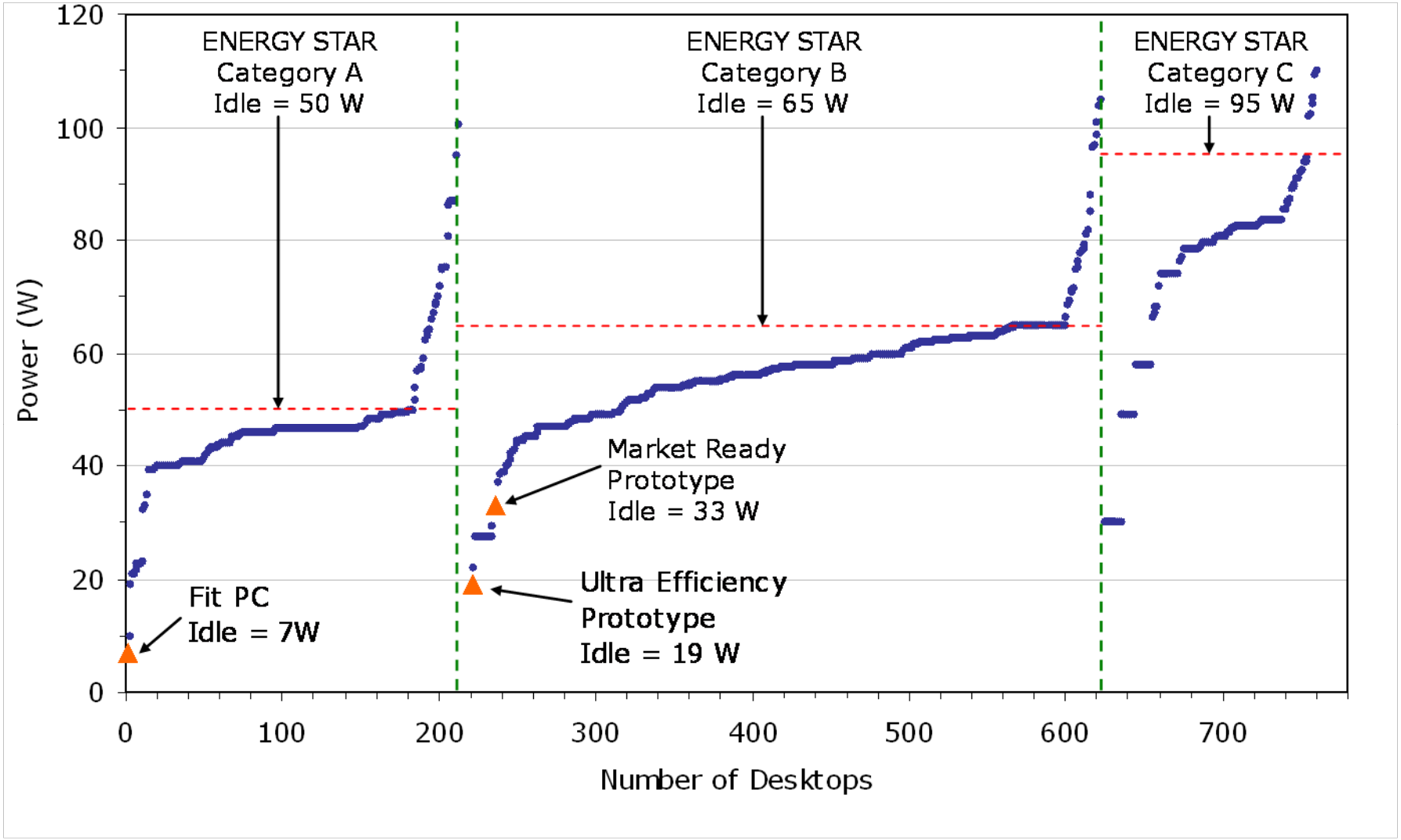


Source: *The ampere strikes back: How consumer electronics are taking over the world*, UK Energy Saving Trust, July 2007.

Commercial Field Monitoring Results – Sample Site



Huge Savings Possible in Desktop Computers



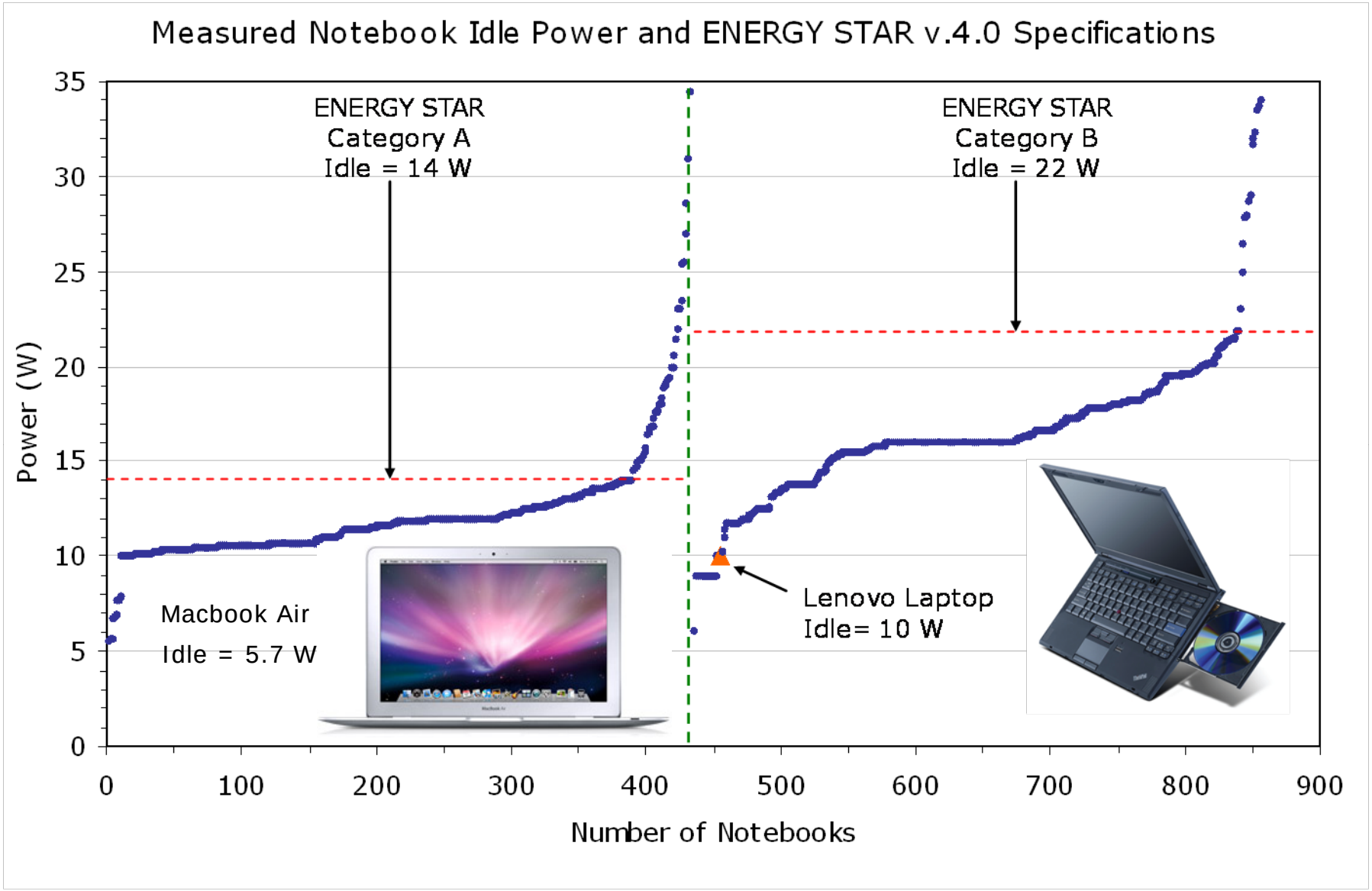
Micro-Sized Desktops with Basic Functionality and Ultra-Low Power Use

Fit PC: 4 to 6 watts

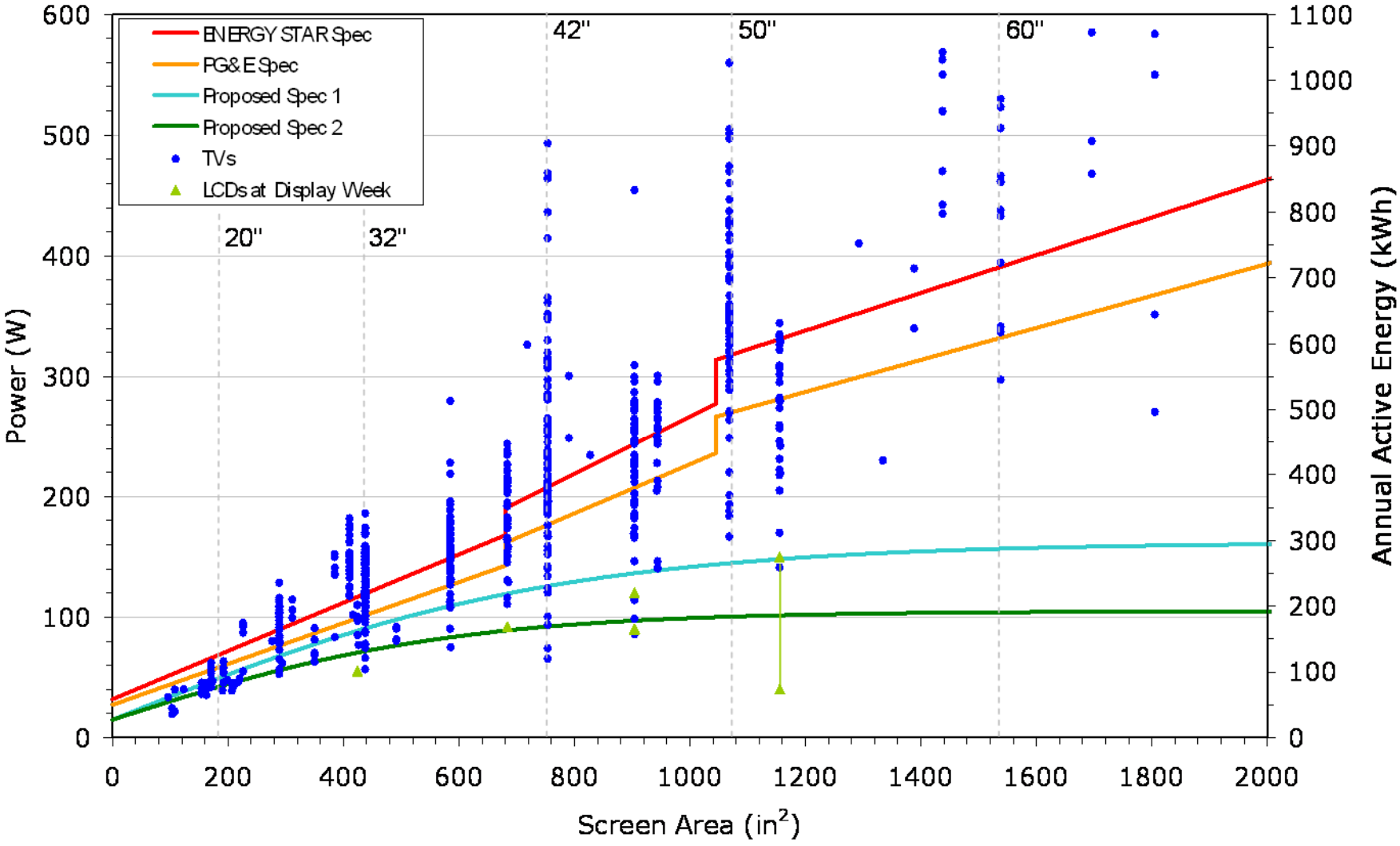
Aleutia E2: 8 to 11 watts (operating)

Aleutia Atom: 25 watts (operating)

The Most Efficient Laptops Operate >60% Below ENERGY STAR Levels



Television Efficiency Specifications



The Most Efficient TVs Use 50 to 70% Less Power than the Pending ENERGY STAR Specification Allows

Samsung LN-46950A LED-backlit LCD: 100-120 watts

Luxeon LED

Samsung P400 LED projector: <48 watts

Sony KDL-32JE1 LCD TV: 50-89 watts

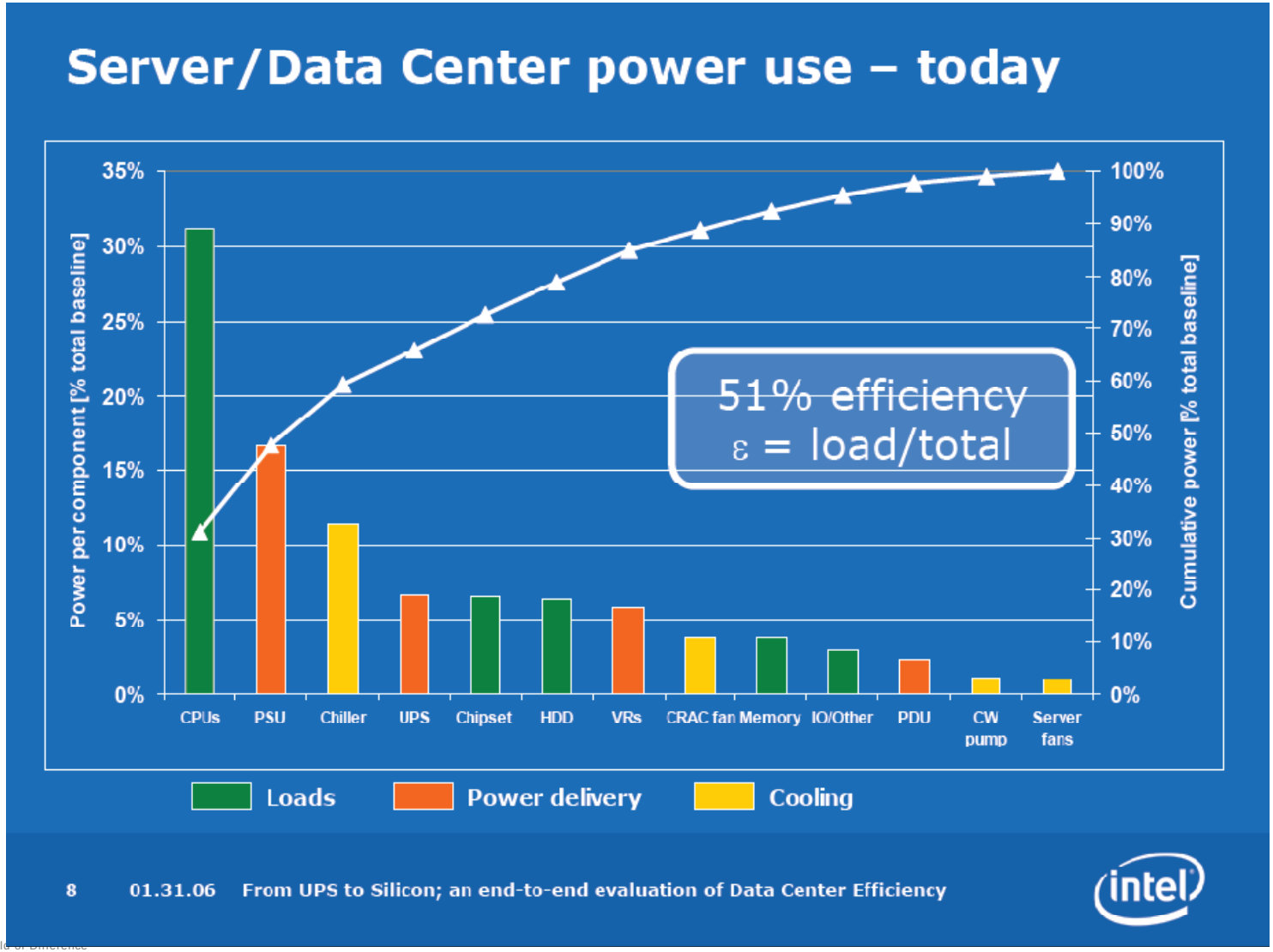
Sony XEL-1 OLED: ~25 watts

Sony's Curved OLED Display Prototype: HD, 27 Inches, 0.3 mm(!) Thick

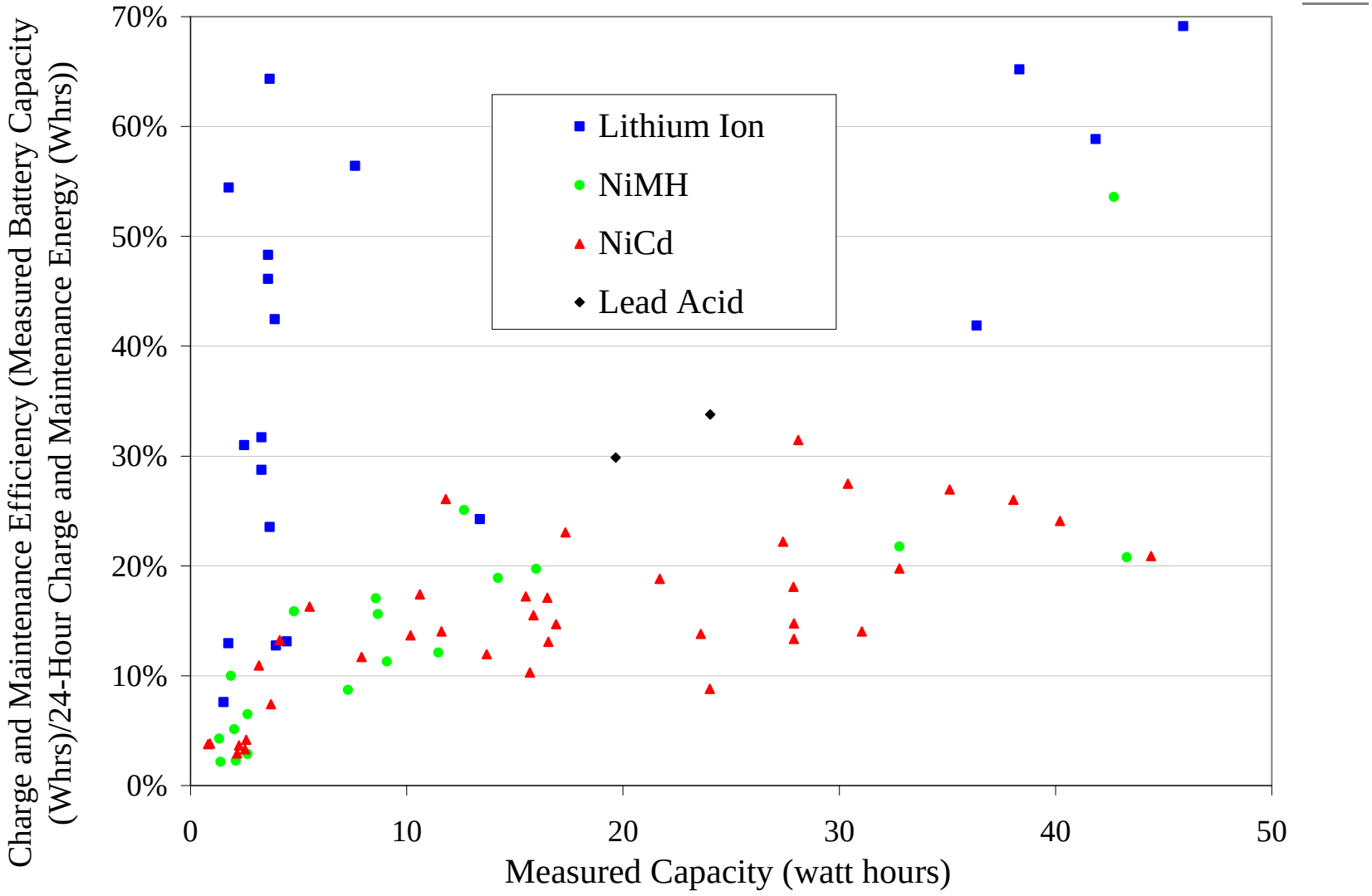
What's Needed Globally? A Consistent Philosophy of Efficiency

- Efficiency community began developing this at ACEEE Summer Study in 2006
- Further refinement over time with input from many U.S. and international stakeholders
- 7 key elements

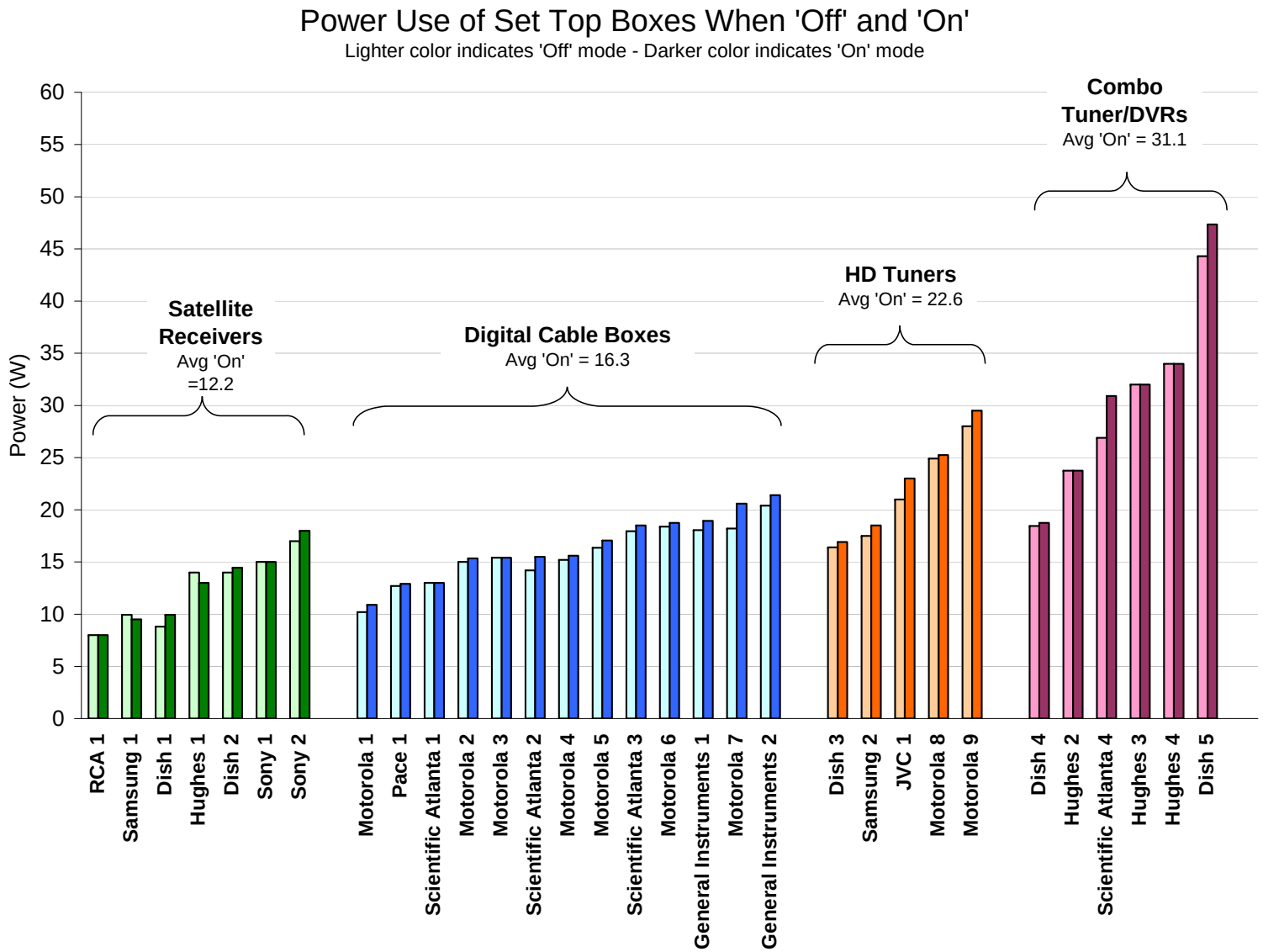
1. Products should convert power efficiently



2. Products should store and retrieve energy efficiently



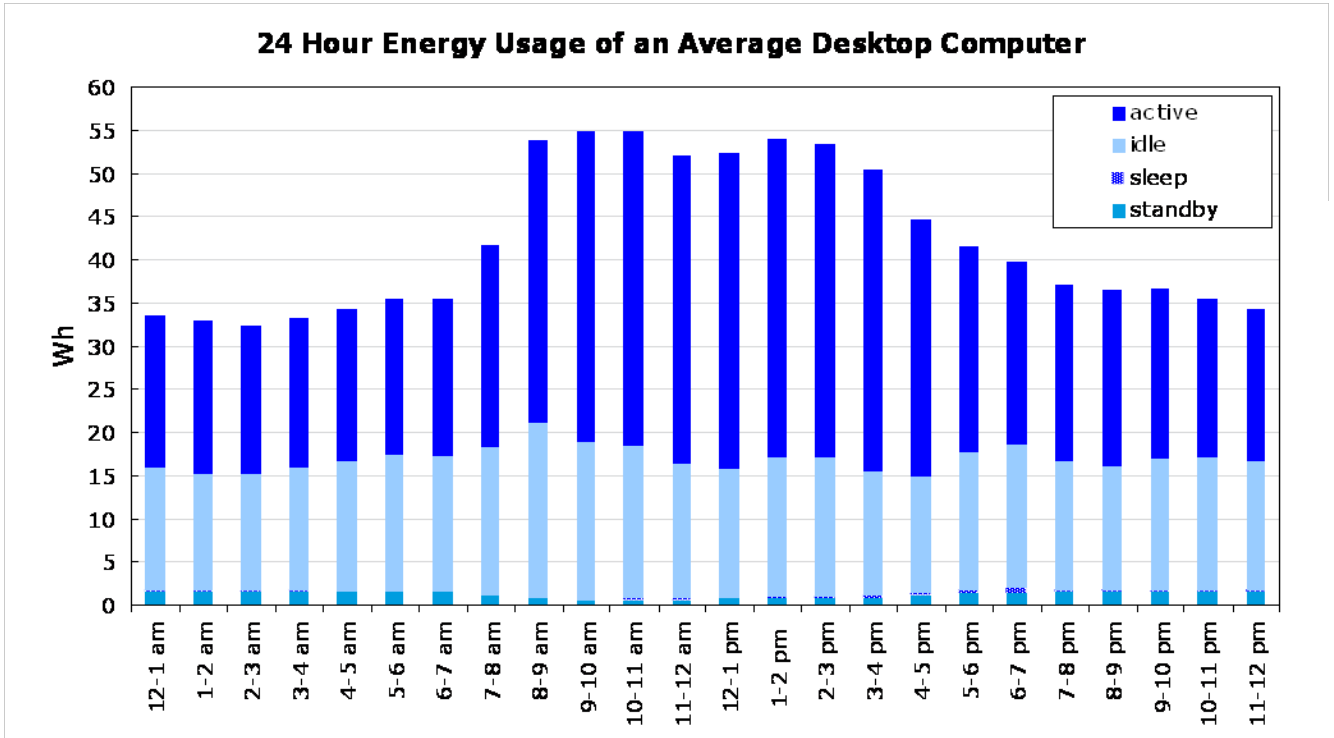
3. Products should closely match their power consumption to the level of service or function being performed



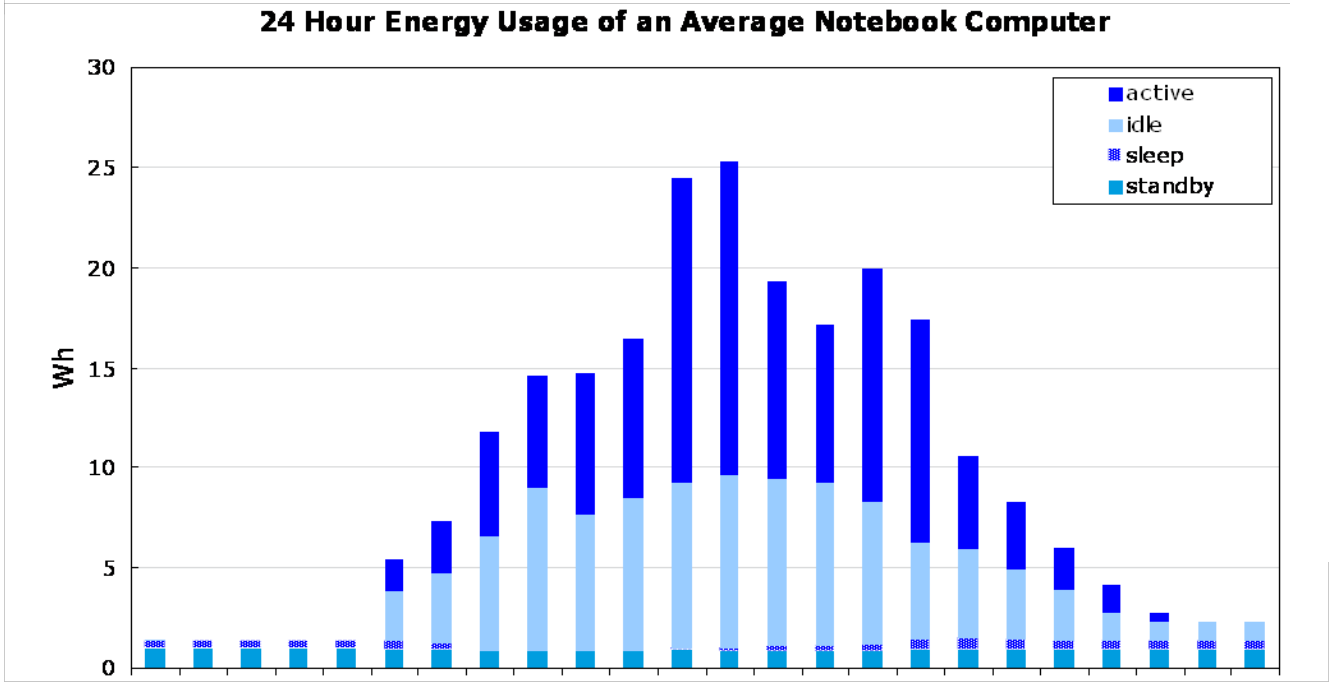
Two More Elements of Philosophy:

4. Devices should clearly and consistently communicate their operating state to users and other devices to which they are networked

5. Products should be shipped with power-saving features enabled as the default

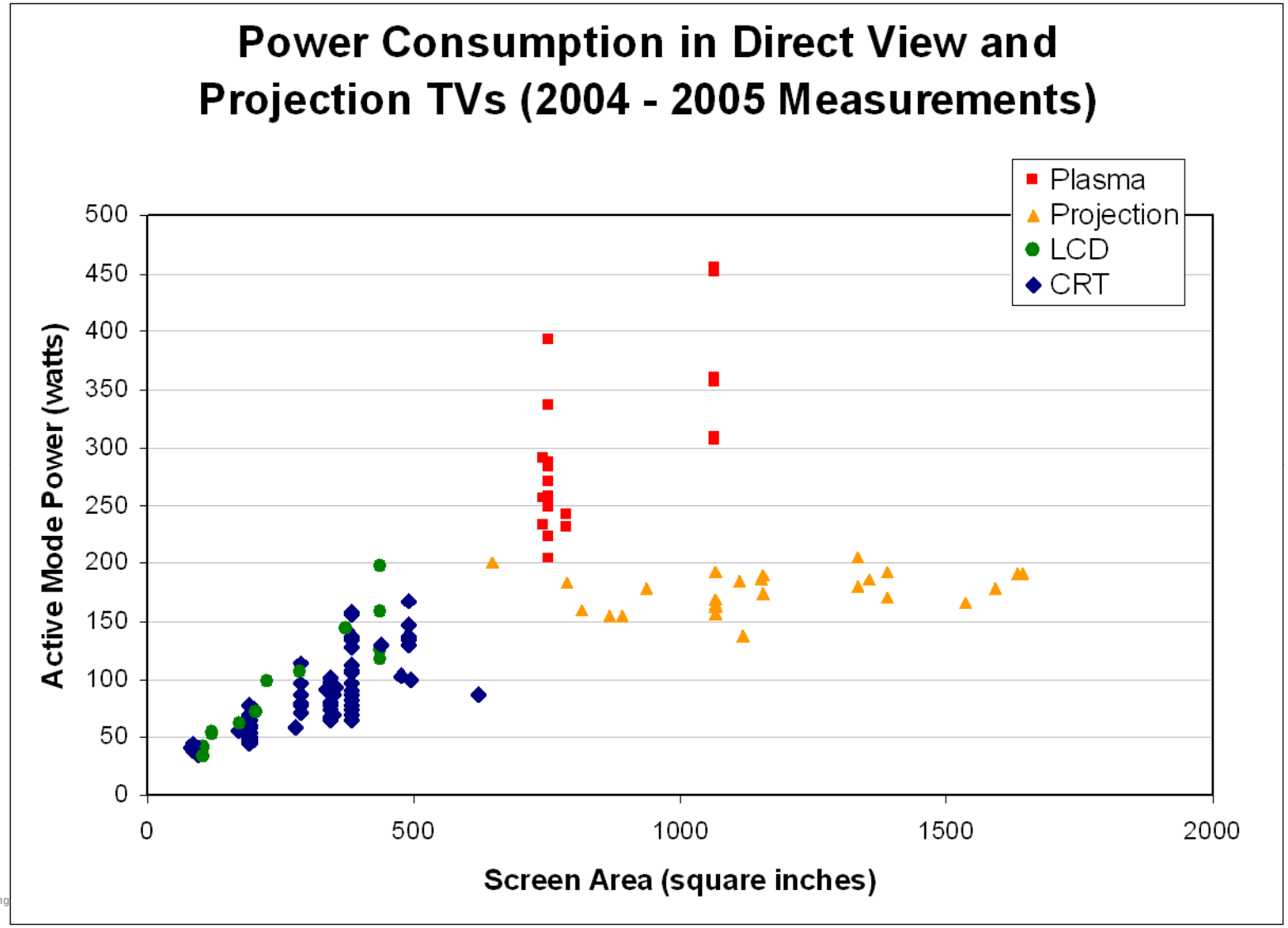


Very little use of sleep or standby seen in desktops; peak to off-peak power difference only 40%



Power management or removal more common with laptops at night; peak to off-peak power difference of >90%

6. Manufacturers should test the power use of their products in their dominant modes of operation according to standard test procedures and disclose that information publicly

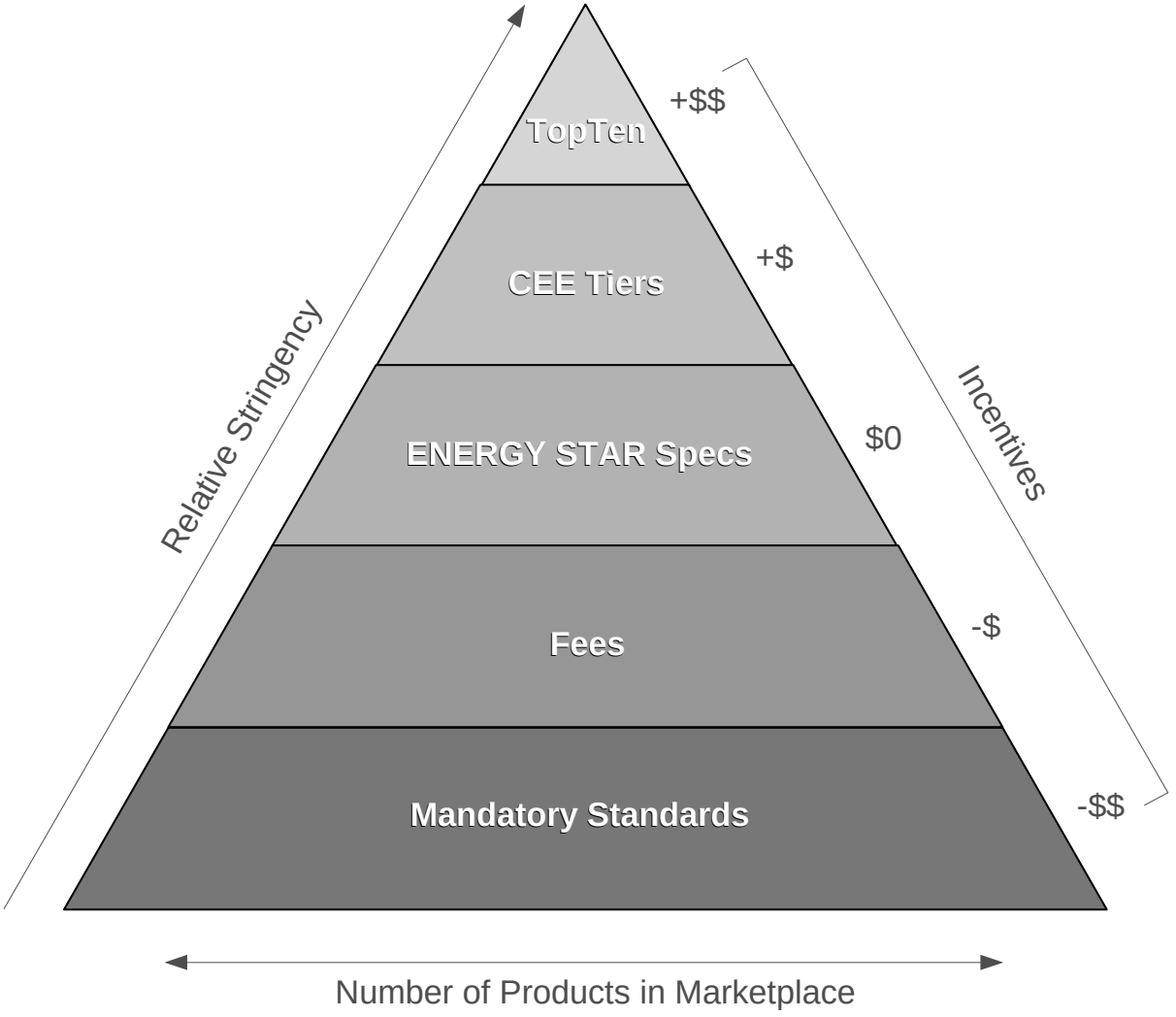


7. Product capability or performance should never be marketed or promoted by the manufacturer or retailer in terms of power consumed

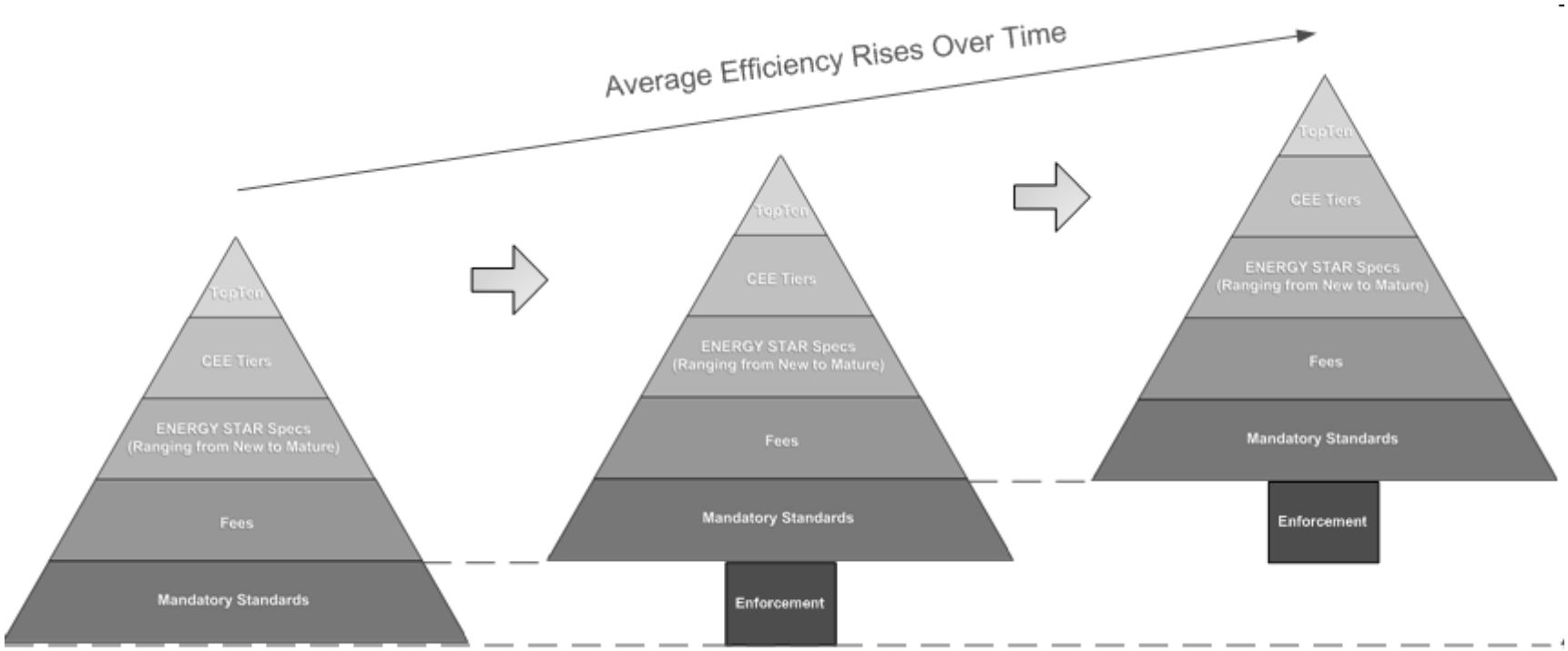
CO_2 Emissions from China's Exports = Total Germany, France & UK Emissions Combined

- **33%** of China's CO_2 and 6% of *global* CO_2 emissions now come from manufacturing the goods China exports (mostly to us).
- Electronics are 22% of that.
- We can't rebate our way to a stable climate if it means selling ever-taller mountains of imported, disposable (albeit efficient) merchandise.
- New plug loads need to be *efficient*, *durable,* and *upgradeable,* and must *replace* (not add to) current products

How Might Rebates *and* Fees Work Together to Drive Efficiency Levels Higher? Fees Price Carbon Into Products, Not Just Power



Use Fees and Rebates to Ratchet Up Efficiency Over Time



Vision for the Future

- All external and internal power supplies are highly efficient and properly sized
- All electronic devices scale power use closely with work load
- Improved smart plug strips control legacy loads and new products imbed that capability
- One highly efficient computer remains on continuously (low idle power) to download and display content, monitor status of other devices, and control them
- Separate set top boxes, DVRs, DVD recorders, game consoles, and video players mostly displaced by simpler, highly capable computers