

# ENERGY STAR's Efforts to Improve the Efficiency of External Power Supplies



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# CECP and US EPA Collaboration



- CECP is EPA's **key strategic partner** in the development of an external power supply specification
  - Both organizations want to implement policy measures to encourage the design and sale of energy-efficient external power supplies
  - China is home to a significant share of power supply manufacturing capacity and the world's fastest growing market for power supplies
- Since Fall 2003, EPA and CECP have been working closely to:
  - Employ the same test procedure
  - Harmonize specifications and timeline



# ENERGY STAR Program Basics



- Our Vision: Maximize **energy savings** to **reduce greenhouse gases** that contribute to climate change
- **Government-backed label** making it easy for purchasers to identify energy-saving products
- Strict **energy performance criteria** & test procedures set by US EPA & DOE



- **Voluntary** partnership
- Market-based **ingredient brand**
- Used in several other countries—Australia, Canada, European Union, Japan, and Taiwan

# ENERGY STAR Accomplishments



- **76 specifications** in > 40 ENERGY STAR product categories, many with external or internal power supplies
- 1,400 manufacturers; 400 retailers (20,000+ storefronts)
- **1 billion** products purchased by American consumers
- **56%** of US consumers recognize the ENERGY STAR
- In 2003 alone, ENERGY STAR:
  - saved > **\$9 billion** on consumer energy bills
  - reduced GHG emissions equal to removing **18 million cars** from the road for 1 year
  - saved enough electricity to power **20 million homes**

# Guiding Principles for Specification Development



- Significant **energy savings** potential
- Purchasers will **recover their investment** in increased energy efficiency within a reasonable time period
- Product **performance** can be maintained or enhanced
- Efficiency can be achieved with multiple **technology options** that are diffuse in the market
- Product energy consumption & performance can be **measured and verified** with testing
- Labeling would **differentiate** products & be visible to purchasers

# EPA's Goals for External Power Supply Specification



- 1) International Cooperation Between US and China and other countries, notably Australia
- 2) Single, Standardized Test Procedure for External Power Supplies
- 3) Global Dataset with Hundreds of Power Supplies that Reflect the Marketplace
- 4) Energy-Efficiency Specification that Recognizes approximately the Top 25% of Models
- 5) End-Use Product Manufacturers Specify ENERGY STAR External Power Supplies for their New Designs of End-Use Products

# Second Draft ENERGY STAR Specification



- Technical specification consists of two parts
  - Active and No-Load performance thresholds
  - Models must meet both to comply; Emphasis is on Active where the majority of energy savings will be realized
- Testing results
  - 26.4% of models meet or exceed Active thresholds
  - 38% of models meet or exceed No-Load threshold
  - 17.5% of models meet both thresholds
- Highlights of Draft 2
  - Proposed detailed definition of single voltage external ac-dc power supply
  - Made no changes to Active performance thresholds (same as Draft 1)
  - Revised No Load to include two levels ( $< 0.5$  and  $0.75$  W) based on nameplate output power, as opposed to the previous four levels
  - Added Tier 2 placeholder for 2007
  - Included proposed effective date of October 1, 2004

# Second Draft ENERGY STAR Specification (cont.)



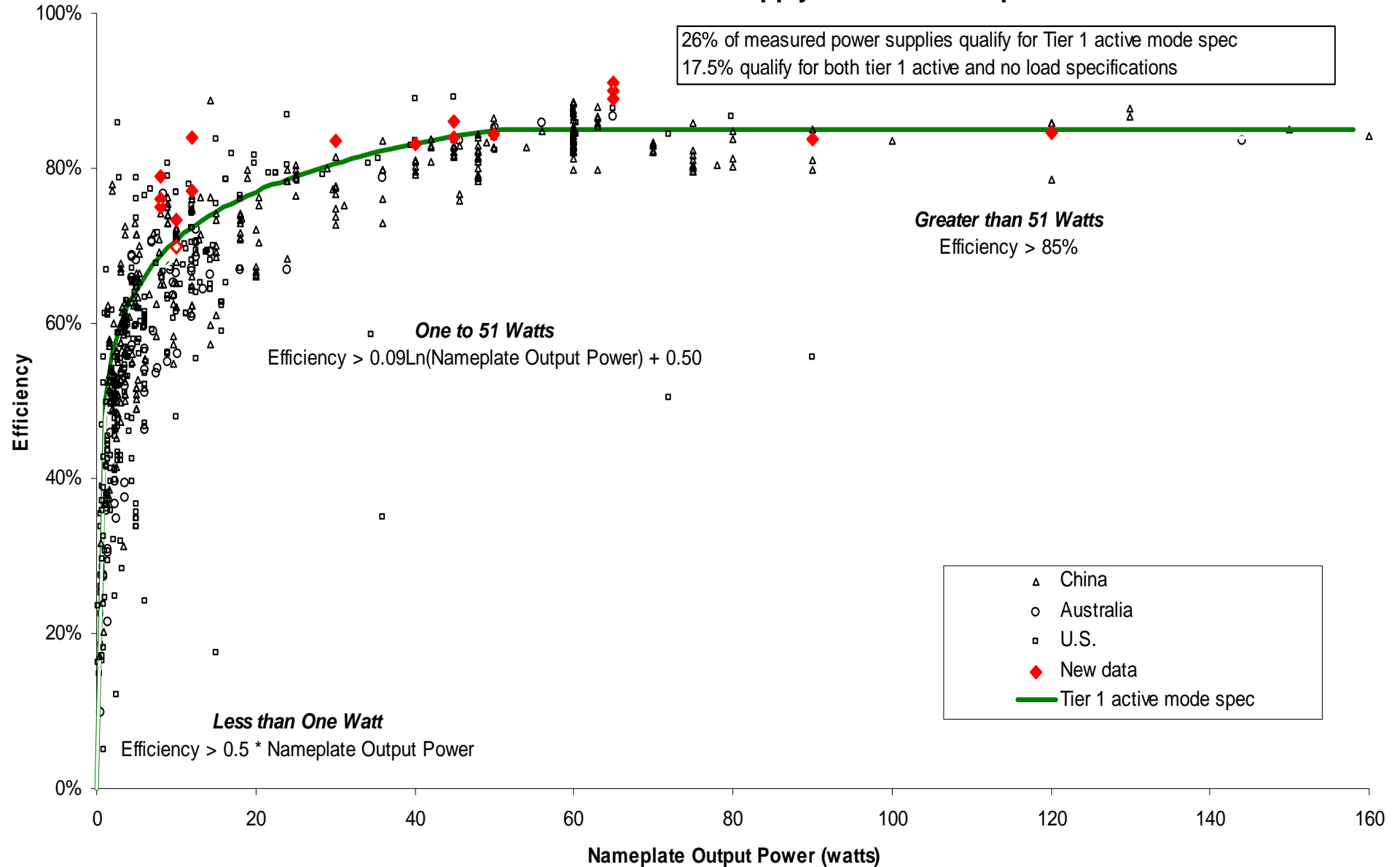
- **Average** Active Mode efficiency value is derived from measuring rated current output at 100%, 75%, 50%, & 25%
- Efficiency curve consists of 3 equations based on wattage range

Nameplate Output Power ( $P_{no}$ )	Average Efficiency in Active Mode (expressed as decimal)
0 to <1 watt	$\geq 0.5 * P_{no}$
1 to 51 watts	$\geq 0.09 * \ln (P_{no}) + 0.5$
> 51 watts	$\geq 0.85$



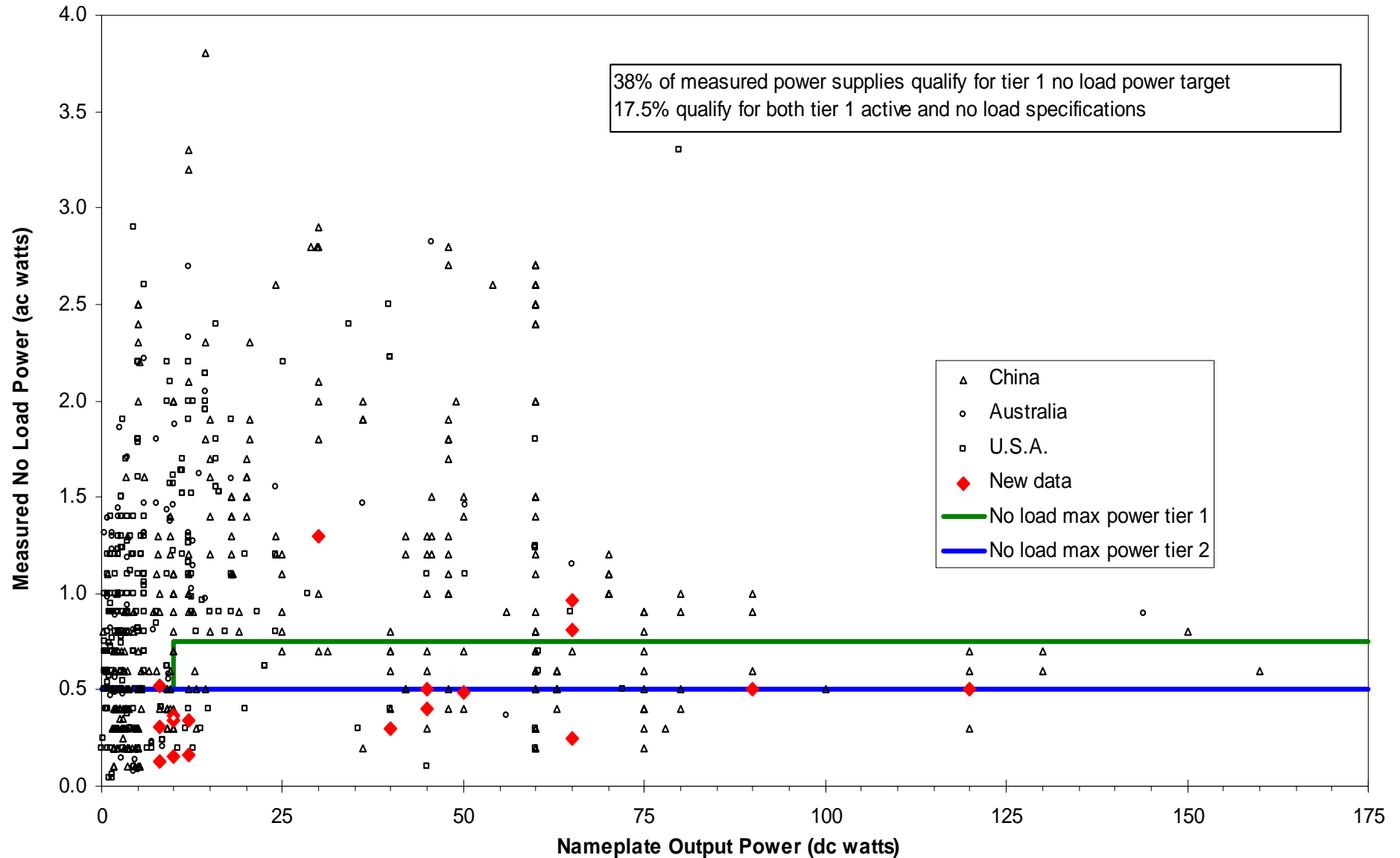
# Top Quartile of Power Supplies in Active Mode

## Draft 2 ENERGY STAR External Power Supply Active Mode Specification



# Top Quartile of Power Supplies in No-Load

## Draft 2 ENERGY STAR External Power Supply No Load Specification



# Specification Time Line



- **Mid June 2004:** Draft #2 released to stakeholders for review and comment
  - Subsequent Drafts & Stakeholder Meetings to follow, as needed
- **June 21, 2004:** Chinese stakeholder meeting in Beijing, China
- **September 2004:** Target for Final Specification
- **September 27-29, 2004:** Tentative launch at Power China 2004
- **October 1, 2004:** Proposed **effective date** when partners may begin to qualify and market external power supply models