Presentation Overview

- *Eligibility Criteria* Document Review – Jim Booth
  - History and Participation
  - Mission of the Group
  - Guiding Principals
  - Example Power Allowance Analysis
  - Technical Tasks not yet complete
- *Testing Procedure* Overview - Chris Saunders
  - Principals and Objectives
  - Recommended Changes
  - Testing Procedure
- Policy Issues - Ken Salaets
  - Germane to *Eligibility Criteria*
  - Addressed in *Partnership Agreement*

Eligibility Criteria - History

- April 5, 2002 - ITI-centered Industry Group launches initiative to harmonize Imaging Products MOU. First draft circulated to Working Group and trade organizations.
- Dec 5, 2002 - EPA Partners meeting in Washington. Discussions encourage Working Group to adopt “Eligibility Criteria” format and offer complete proposal by mid-March 2003.
- Jan 6, 2003 - ImTech Working Group completes and publishes Definitions and Table outlines to general industry for detailed discussions.
- March 4-5, 2003 - Face-to-face meeting to address all open issues
- March 18, 2003 - Eligibility Criteria Document delivered to EPA
- April 16, 2003 – Today’s Presentation

Eligibility Criteria - Mission

- Harmonize Printer/Fax, Copier, MFD and Scanner MOUs into single consistent framework for Imaging Technology Products
  - Consistent with “Device Convergence” market trends
  - Harmonize Power Mode definitions and Terminology
    - Used Sleep and Off terminology as suggested by EPA
  - Characterize products by Function, Size, Speed, and Marking Technology
  - Incorporate FEMP Standby Power Initiatives into new definitions and tables
    - Plug-In Off Mode
  - Recognize Device Diversity
    - Total of 19 power allowance tables
  - Incorporate new products not fully contemplated by existing MOUs
    - Color Copiers and MFDs
    - Color Electro-photographic Printers

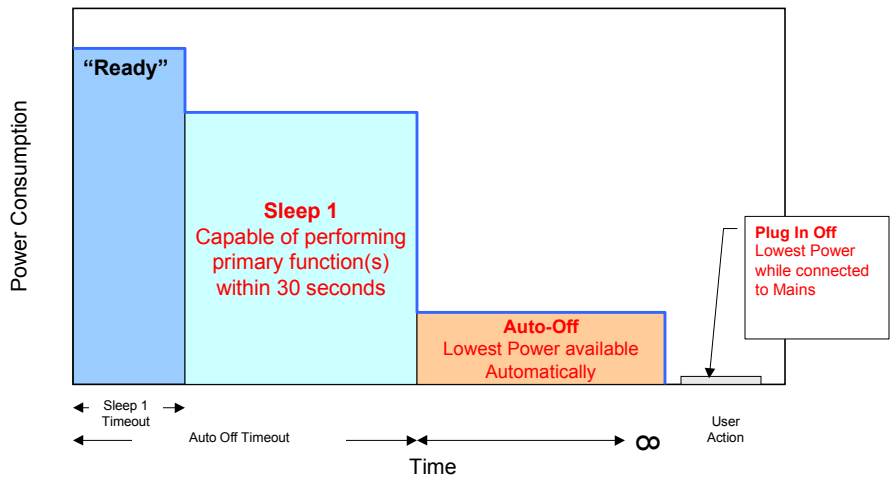
Eligibility Criteria – Mission - Product Characteristic Summary

Product Functions	• Copier • Fax Machine & Combination Printer/Fax • Mailing Machine • Multi-Function Device • Network Scanner • Printer • Scanner
Product Sizes (Maximum smaller dimension)	• Small Format • Letter/A4 • Ledger A3 • Large
Product Speeds	• Maximum Claimed Speed (letter or A4)
Product Marking Technologies	• Color Thermal Transfer • Dot Formed and Fully Formed Impact • Dye Sublimation • Monochrome and Color Ink Jet • Monochrome Electro-photography • Monochrome Thermal Transfer • Parallel Color Electro-photography • Serial Color Electro-photography

Eligibility Criteria – Mission
Function Summary

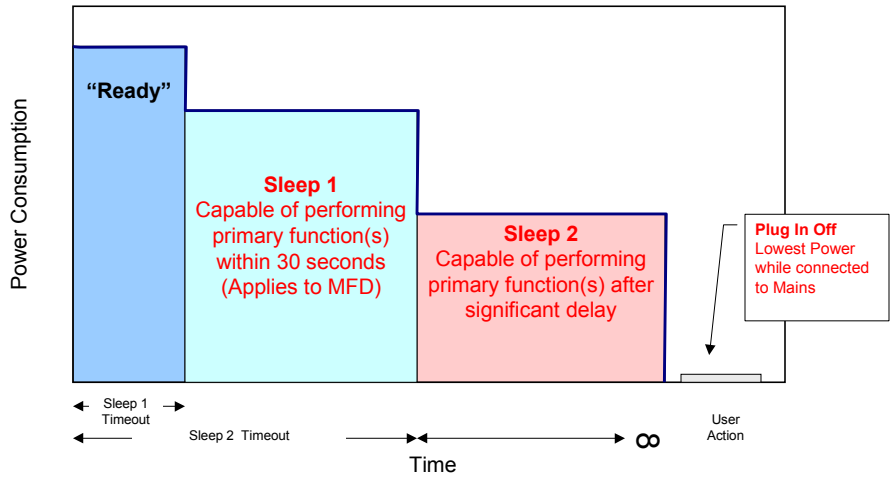
- Single Function Products
  - Copier
  - Mailing Machine
  - Network Scanner
  - Printer
  - Scanner
- Multiple Function Products
  - Multi-Function Device
    - Target for most future multi-function products
  - Fax and Combination Printer/Fax
    - May have added functions
    - De-Facto limited in speed
    - No Plug-in-Off requirement due to 24/7 operation

Eligibility Criteria – Mission
Power Mode Summary - Copiers



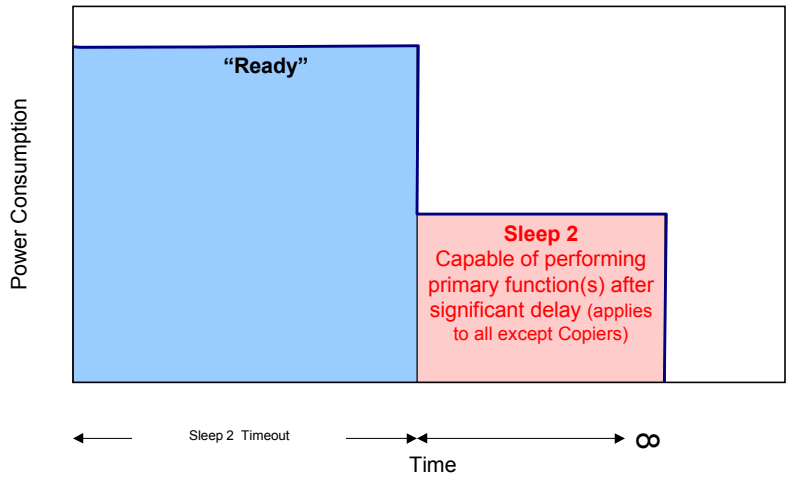
Eligibility Criteria – Mission

Power Mode Summary - Printer & MFD



Eligibility Criteria – Mission

Power Mode Summary - Fax



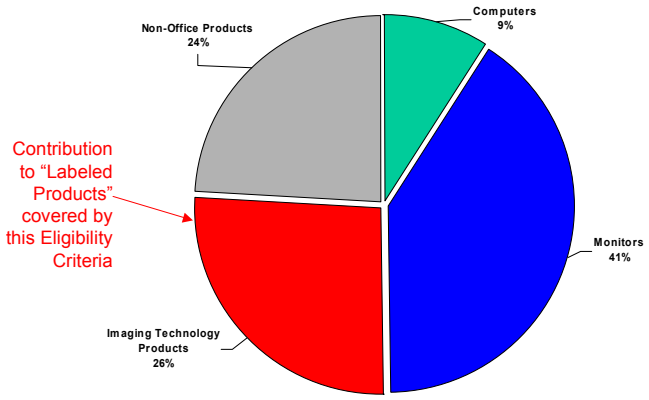
Eligibility Criteria – Guiding Principals

Aggressive / Inclusive Power Allowances

- *Aggressive* but *Inclusive* Approach to setting power allowances
  - Population of products collected and studied
  - Analysis of "Best Practices" undertaken
  - Allowances set to levels where a *competent product development team could meet the requirements using readily available technology within a reasonable time*
- This approach is consistent with the principals used by Energy Star with respect to Office Equipment since its inception
  - Broad participation of Office Equipment is key to its leading role in Saving Energy

Eligibility Criteria –

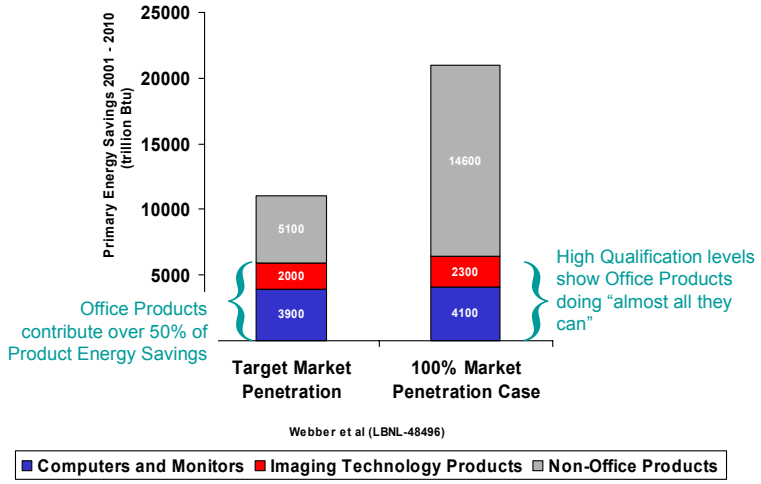
Office Products are major contributor to Energy Savings



Energy Saved (billions KWh) in 2001 from *Energy Star and Other Voluntary Programs 2001 Annual Report*
Percentages shown are for "Labeled Products"

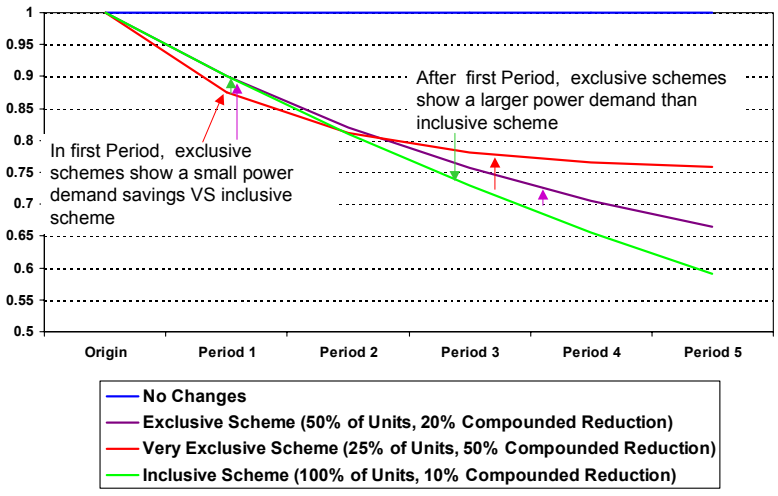
Eligibility Criteria –

Aggressive/Inclusive works well to save Energy



Eligibility Criteria –

Aggressive/Inclusive approach Saves More Energy



Eligibility Criteria – Guiding Principals
Situational Management

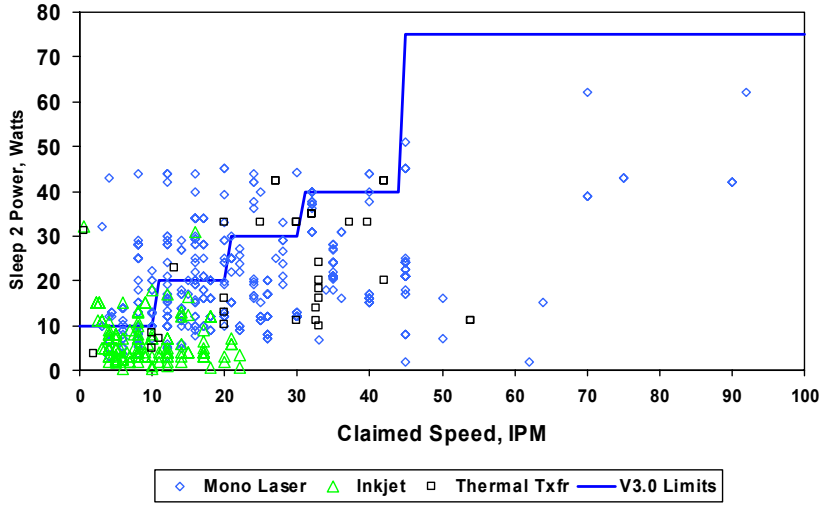
- Set Power Allowances based upon "situation on the ground" , always encouraging power savings
  - Target power allowances with precision based on Function, Size, Marking Technology and Speed
  - Recognize Developing, Mature and Sustaining Function Groups and Marking Technologies
    - Impact Technology – Sustaining
    - Monochrome Electro-photography – Mature
    - Fax Machines - Mature
    - Color Electro-photography - Developing
  - Encourage Device "Consolidation"
    - Parallel Color MFD replaces Monochrome Copier, Fax Mac Monochrome Printer, several Color Ink Jets and brings affordable Color Copy capability to general office

Eligibility Criteria – Guiding Principals
Increase Allowance Granularity

- In General … attempt to move from a "Tier" specification of power allowances to a "linear Equation" based one
  - Similar to Copier and MFD Sleep 1 Power allowance
  - Less sensitive to "Speed Bracket Creep"
  - Contemplates Power "Floor" and "Ceiling"
    - Minimum (A, B) means the lesser of A and B
- Some specifications still "tiered" due to difficulties obtaining industry consensus in short time

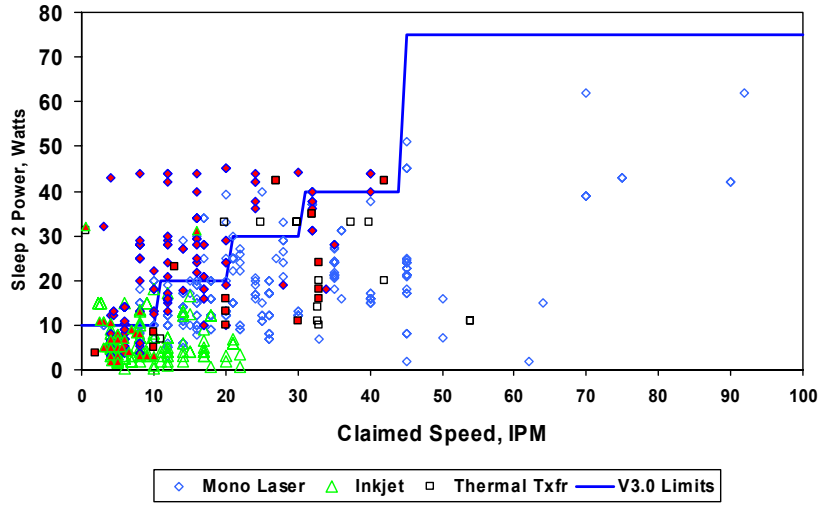
Data Reduction Practices

1. Put Data in Groups



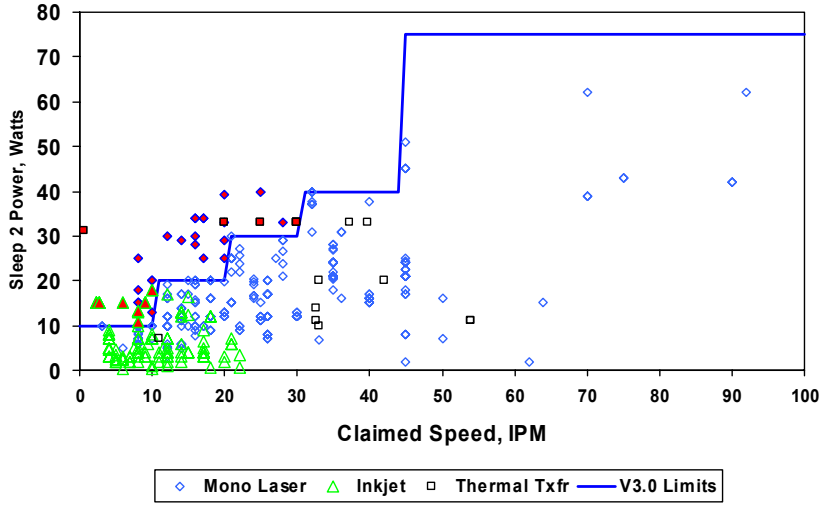
Data Reduction Practices

2. Identify & Remove Outdated Data



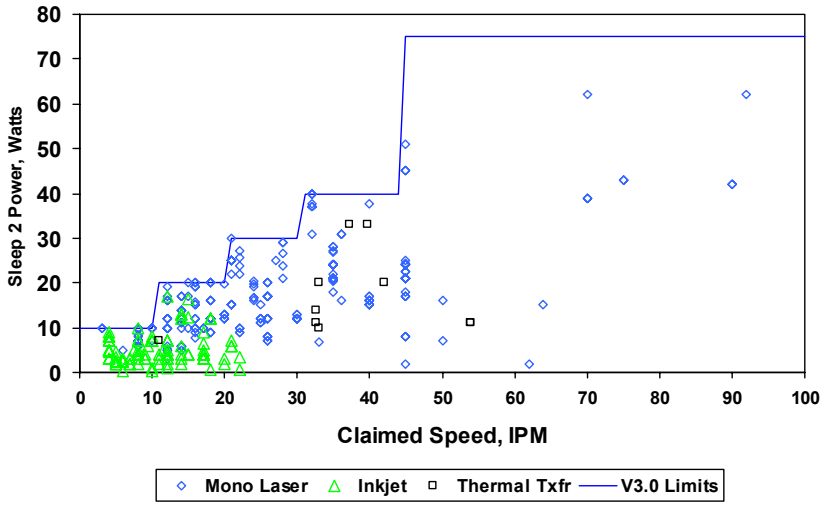
Data Reduction Practices

3. Identify & Remove Data Errors



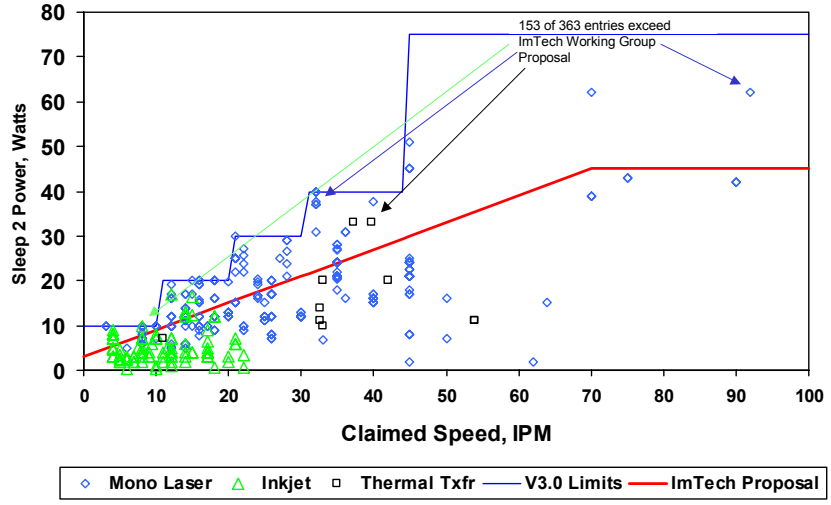
Data Reduction Practices

4. Evaluate Remaining Data by new Criteria



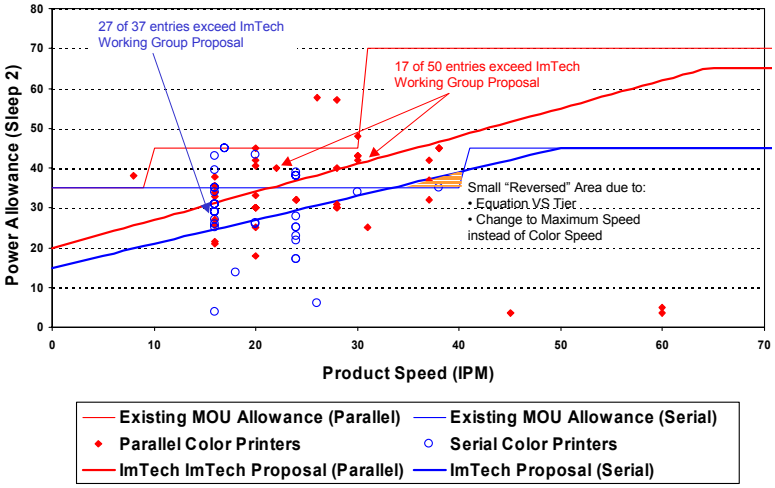
Data Reduction Practices

4. Evaluate Remaining Data by new Criteria



Eligibility Criteria –

Example Sleep 2 Analysis – Parallel and Serial Color EP Printers



Eligibility Criteria –
Technical Tasks not yet Complete

- Scanner and Network Scanner Device Power Allowances
- Move remaining “Tiered” allowances to “Equations” as consensus can be built
- Written Testing Conditions Proposal

Testing Procedure Overview

Product Testing Conditions – Principals

- Mission
  - Combine & Harmonize 4 Testing Procedures
  - Add Plug Off Mode Power Procedure
  - Reduce Testing Burden on Manufacturers/Testing Centers
  - Increase Repeatability and Standardization of testing
- Assumptions
  - Test Conditions Document only covers power saving modes
  - Testing should done in an office environment
  - Most products will operate on the standard single phase line voltage of the country
  - Due to international nature of ENERGY STAR, an AC power source is expected for testing
  - Reported Power is intended to be average, not upper limit.
- Written Testing Condition Proposal Forthcoming

Product Testing Conditions – Recommended Changes

- Test Room
  - Increase Temperature Range to 18°C - 28°C
  - Either increase Humidity Range (10% - 80%) or eliminate
- AC Source
  - Standardize Line Voltages
    - Single Phase (100 V / 50,60 Hz, 115 V / 60 Hz, 230 V / 50 Hz)
    - 2 Phase (200V / 50,60 Hz, 208 / 60 Hz)
    - Reduce Error in source RMS voltage and frequencies to < 1%
  - Reduce THD < 3%
- Watt-Hour Meter
  - Addition of Plug In Off Mode will increase requirements
- Equipment Under Test
  - Number of units tested left to Manufacturer
  - Eliminate Preconditioning as this does not affect Power Saving Modes

Product Testing Conditions – Testing Procedure

- Power Saving Modes (Sleep 1,2 Tested)
  - Set Machine to Eligibility Criteria Timeout Defaults
  - Test duration for Sleep 1 is difference between Sleep 1 and Sleep 2 Time out
  - Sleep 2 Duration - 1 hour recommended, minimum of 30 minutes allowed if no power cycles, accurate Watt-Hour Meter
- Power Saving Modes (Only Sleep 2 Tested)
  - Recommend Set Machine to Eligibility Criteria Defaults (A shortened time can be used
  - Sleep 2 Duration - 1 hour recommended, minimum of 30 minutes allowed if no power cycles, accurate Watt-Hour Meter
- Plug in Off Mode
  - Test Duration > 5 minutes or 1 Power Cycle Recommended

Policy Issues

Policy Issues

- Germane to Eligibility Criteria
  - Duplex Printing Capability
    - Addressed to some extent in Copier MOU
    - Working Group decided to not address duplex capability in Eligibility Criteria since it is not a “Product Power Consumption” issue per-se
      - Other Eco Programs address Duplex Printing Capability requirements
  - Grandfathering
    - Grandfathering part of Energy Star program from its inception
    - For “Sustaining” technologies, lack of Grandfathering would simply eliminate products altogether
      - Impact Technology
- Addressed in Partnership Agreement
  - Product Labeling
  - Product Unit Volume Reporting