# Standards & Labeling Program for Computers

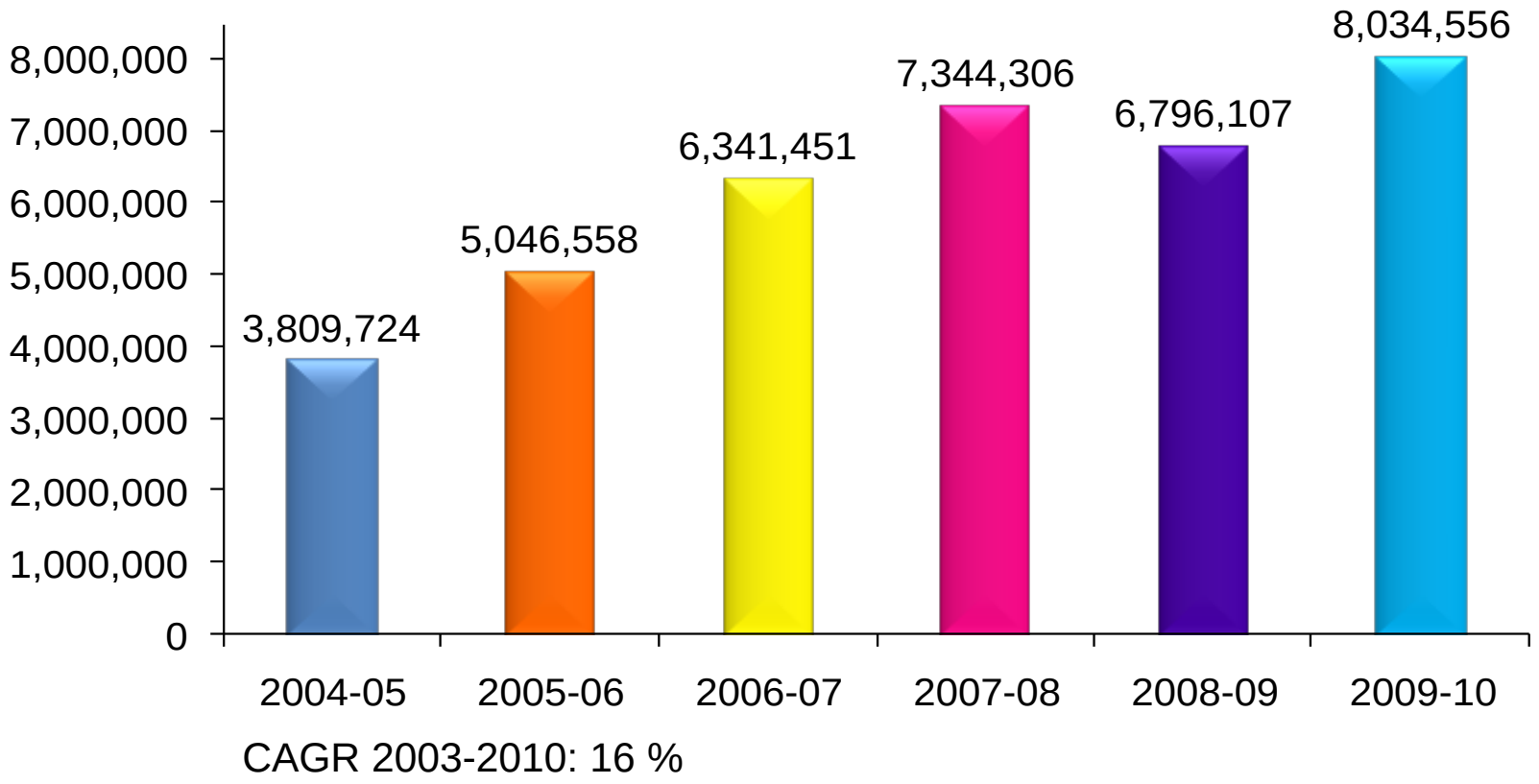
# Outline

- Total PC Sales in India & Market Transformation
- Categorization of PCs as per Energy Star V5.0
- Results of Data Analysis
- Energy Saving Potential
- Draft Schedule

# Harmonization with Global Standards

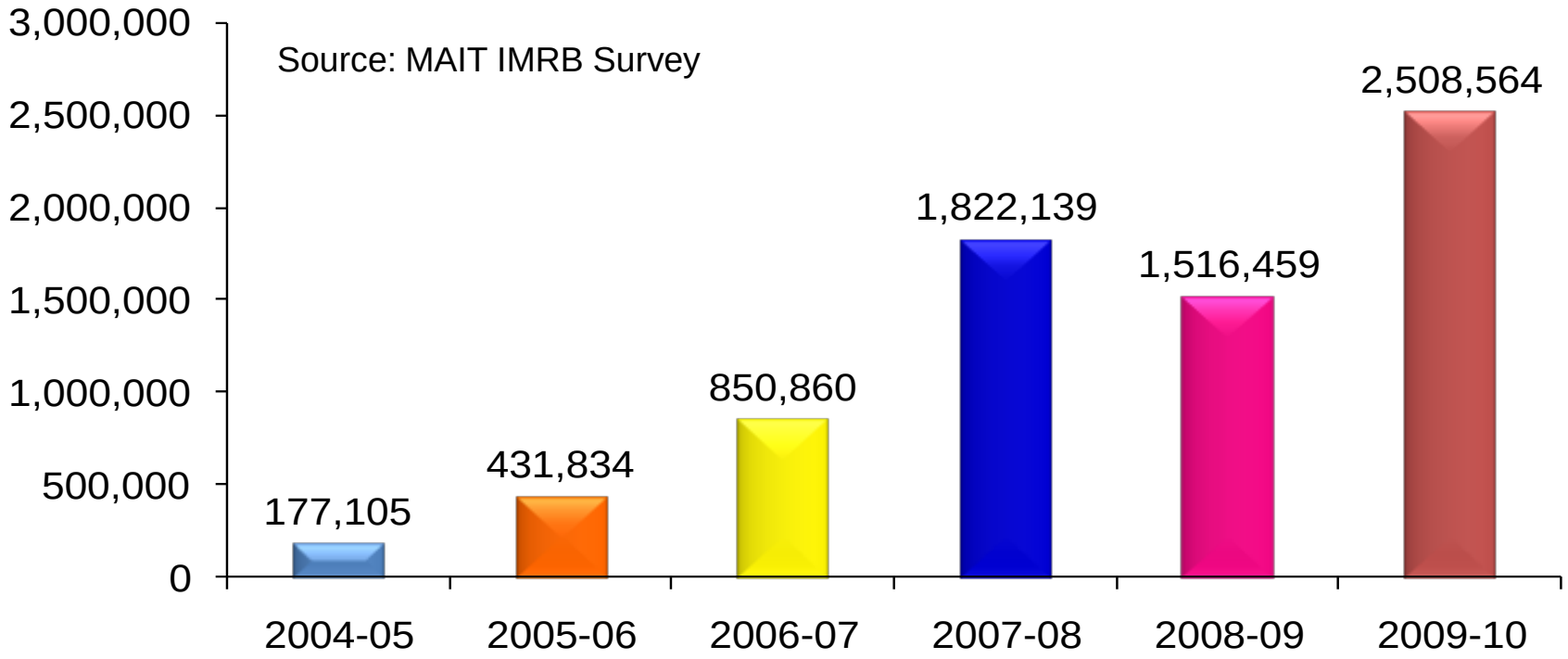
- The program intend to harmonize with the Energy Star program of United States, Australia and European Union
- The program target to tap the energy saving potential in the following operational power modes of computers
  - Idle Mode
  - Sleep Mode
  - Off Mode
- Due to technology growth and high end application requirements of diverse set of users, it is very complex to limit the power consumption in Active mode of computers
- This is in line with the similar programs developed in other parts of the world

# Total PC (Desktops & Notebooks) Sale: 2003-2010



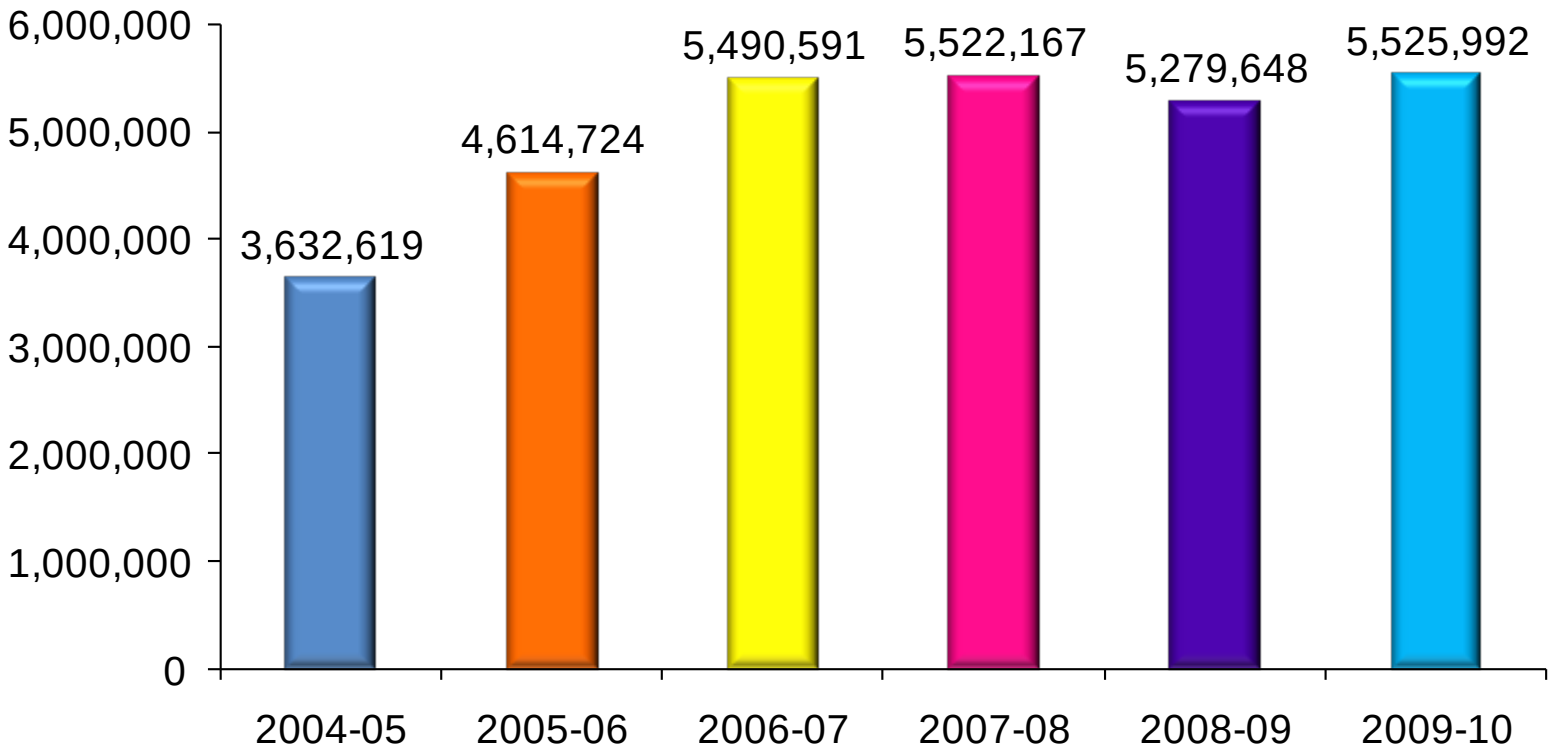

Source: MAIT IMRB Survey

# Notebook (including net books) sales: 2003-2009




- Annual sales increased 65% compared to 2008-09; CAGR: 70%
- Households accounted for 56% of the market growing at 83%, Businesses accounted for 44% of the market growing at 47% on an annual basis

# Desktop sales: 2003-2010




CAGR 2004-10: 9%

Source: MAIT IMRB Survey

# Stakeholders of Standards and Labeling Program for Computers

- Bureau of Energy Efficiency – In Chair
- Manufacturers Association for Information Technology (MAIT) – New Delhi
- NASSCOM - Delhi
- Trade Association for Information Technology (TAIT) – Mumbai
- Progressive Channel Association of IT (PC-AIT) - Delhi
- Computer Manufacturers Association (Compass) – Kolkata
- Acer Limited
- Dell India
- HCL Infosystems Limited

# Stakeholders …..

- Hewlett Packard (HP)
- Intel
- Wipro Limited

- Electronics Regional Test Laboratories (ERTL – N)
- Intertek
- Underwrites Laboratories

- Collaborative Labeling and Appliance Standards Program (CLASP)
- ICF International

# Categorization as per Energy Star

For determining **Typical Energy Consumption** (TEC) levels, desktops and integrated desktops must qualify under Categories A, B, C, or D as defined below

- **Category D:** To qualify under Category D, desktops must have:
  - Greater than or equal to 4 Physical Cores.
  - Greater than or equal to 4 gigabytes (GB) of System Memory; and/or a Discrete GPU with a Frame Buffer Width greater than 128-bit.

- **Category C:** To qualify under Category C, desktops must have:
  - Greater than 2 Physical Cores.
  - Greater than or equal to 2 gigabytes (GB) of System Memory; and/or a discrete GPU

# Categorization as per Energy Star (continued)

- **Category B:** To qualify under Category B, desktops must have:
  - Equal to 2 Physical Cores; and
  - Greater than or equal to 2 gigabytes (GB) of System Memory.

- **Category A:** All desktop computers that do not meet the definition of Category B, Category C, or Category D shall be considered under Category A for ENERGY STAR qualification.

# Notebook Categories for TEC Criteria

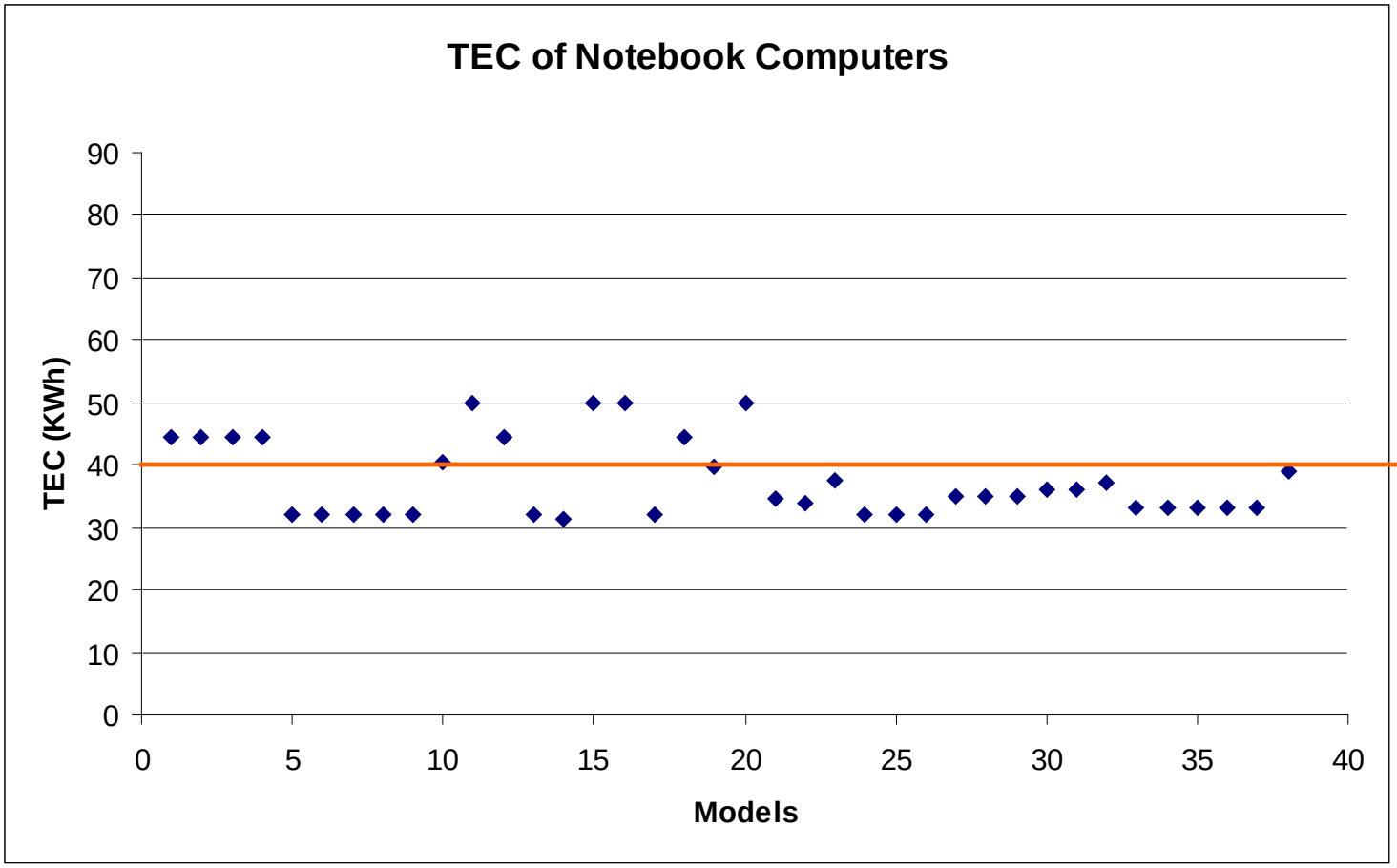
For the purposes of determining TEC levels, notebooks must qualify under Categories A, B, or C as defined below:

- **Category C:** To qualify under Category C, notebooks must have:
  - Greater than or equal to 2 Physical Cores;
  - Greater than or equal to 2 gigabytes (GB) of System Memory; and a Discrete GPU with a Frame Buffer Width greater than 128-bit.
- **Category B:** To qualify under Category B, notebooks must have:
  - A Discrete Graphic Processing Unit (GPU).

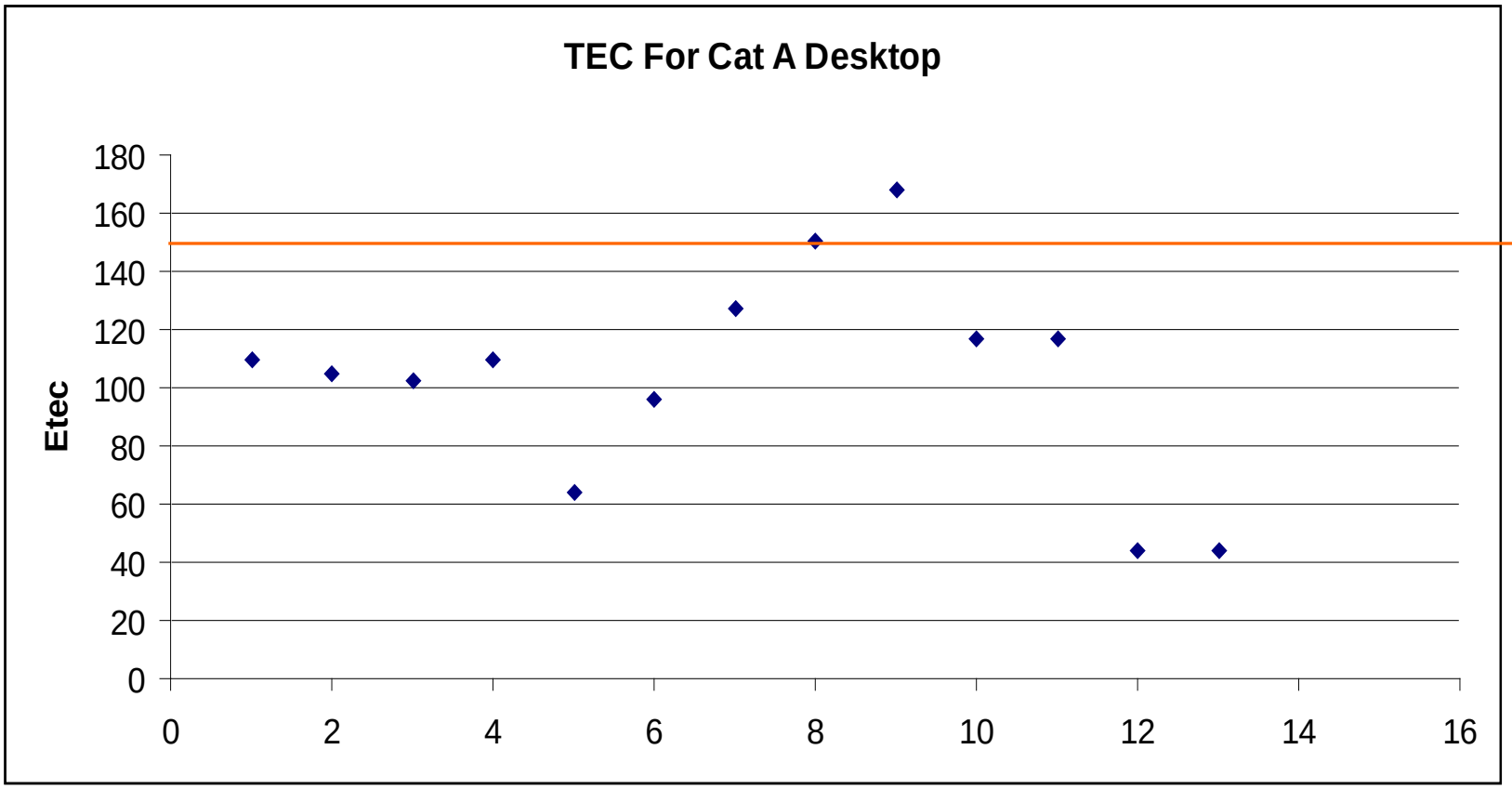
# Notebook Categories for TEC Criteria (continued)

- **Category A:** All notebook computers that do not meet the definition of Category B or Category C shall be considered under Category A for ENERGY STAR qualification.

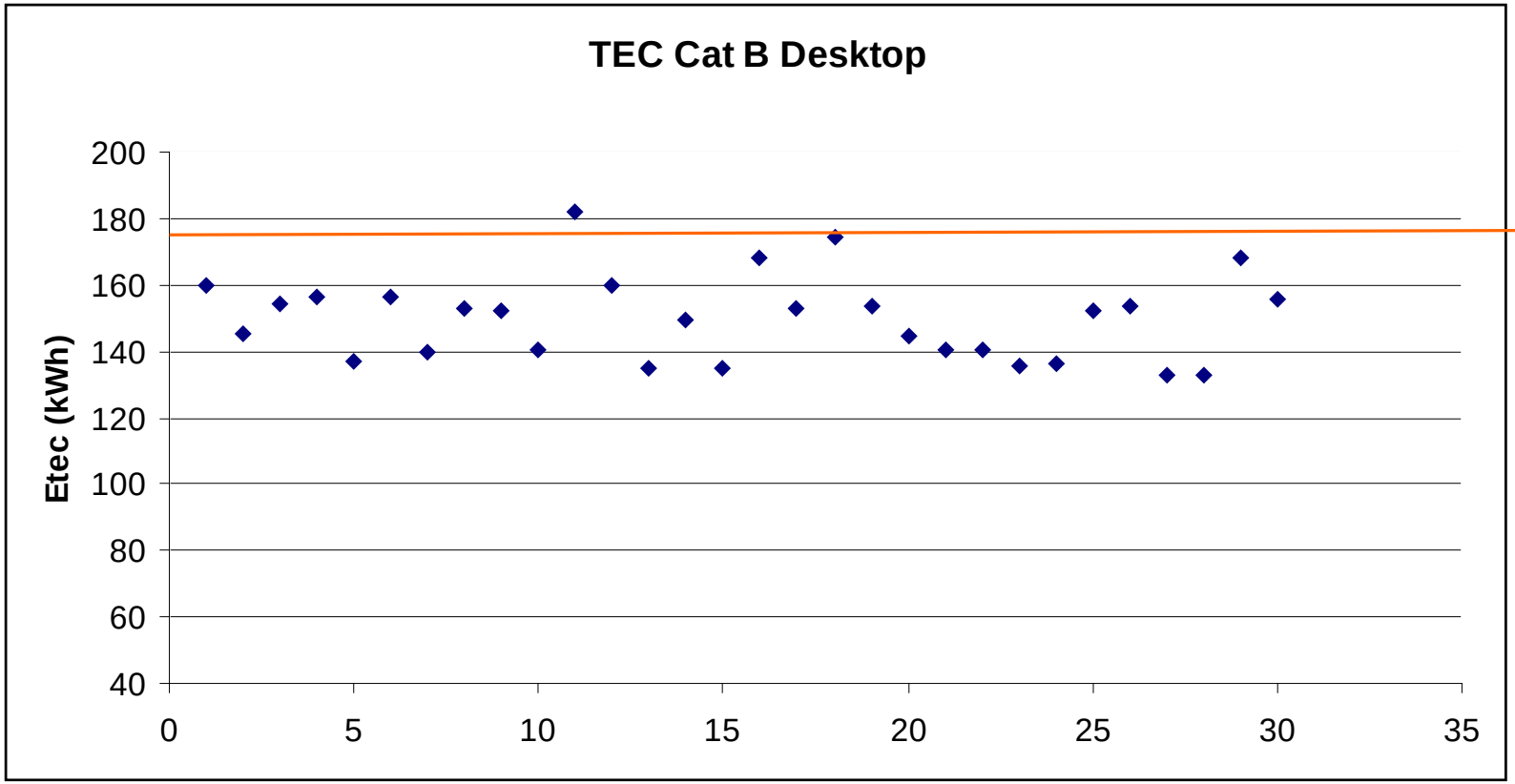
# Data Collection Analysis: Notebook



# Data Analysis: Cat A Desktop

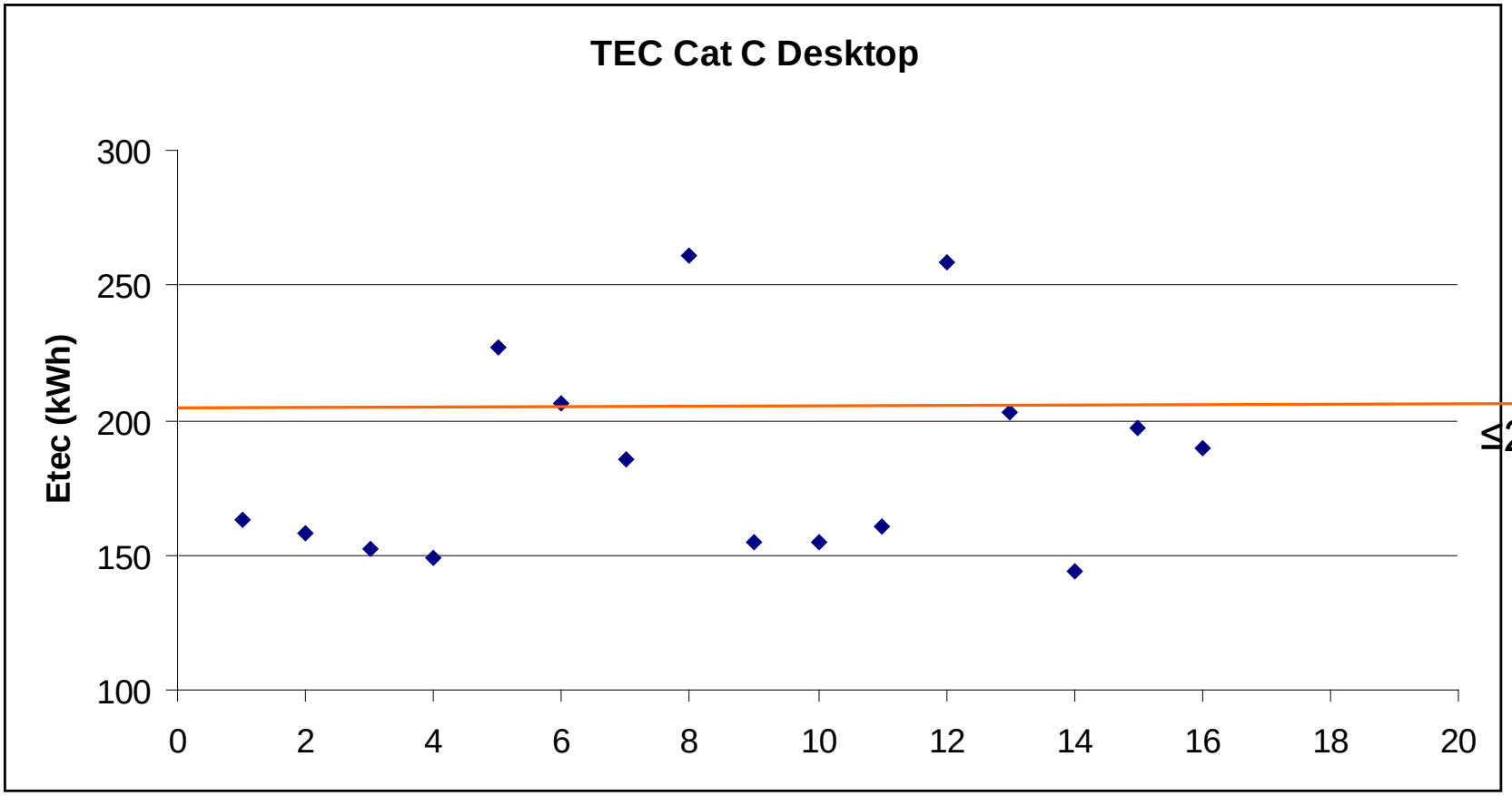


# Data Analysis: Cat B Desktop

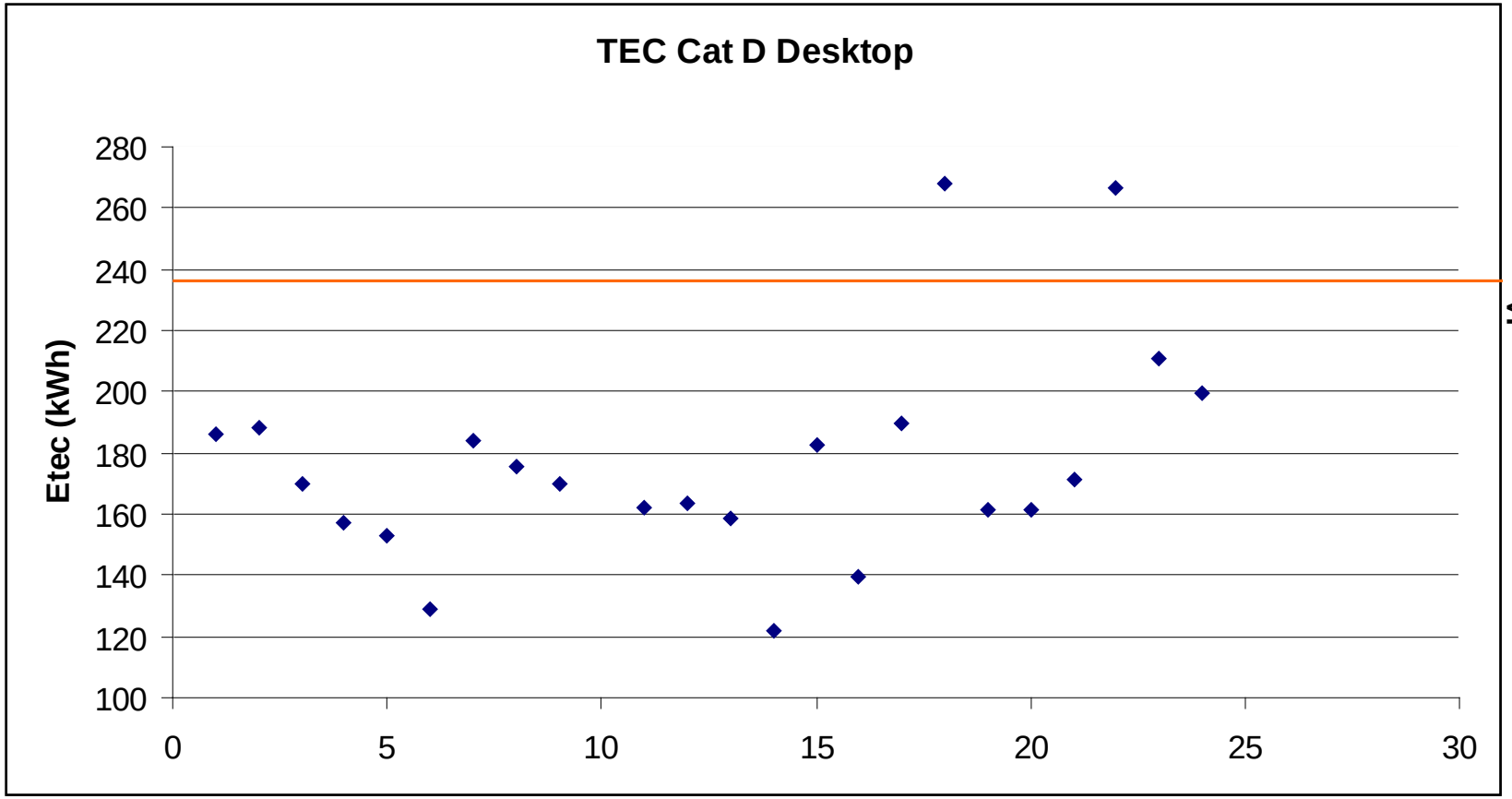



≤175 kWh

# Data Analysis: Cat C Desktop



# Data Analysis: Cat D Desktop



# Measuring Typical Energy Consumption (TEC)

TEC will be determined using the formula below:

$$E_{TEC} = (8760/1000) * (P_{off} * T_{off} + P_{sleep} * T_{sleep} + P_{idle} * T_{idle})$$

$P_x$ are power values in watts

$T_x$ are Time values in % of year

$E_{TEC}$ is in units of kWh and represents Typical annual Energy Consumption

| | Desktops | Notebooks |
|---|---|---|
| Toff | 55% | 60% |
| Tsleep | 5% | 10% |
| Tidle | 40% | 30% |

# ETEC Requirement – Desktops and Notebooks

| | Desktops and Integrated Computers (kWh) | Notebook Computers (kWh) |
|---|---|---|
| TEC (kWh) | Category A: ≤ 148.0 | Category A: ≤ 40.0 |
| | Category B: ≤ 175.0 | Category B: ≤ 53.0 |
| | Category C: ≤ 209.0 | Category C: ≤ 88.5 |
| | Category D: ≤ 234.0 | |
| | **Capability Adjustments** | |
| Memory | 1 kWh (per GB over base)<br>Base Memory:<br>Categories A, B and C: 2 GB<br>Category D: 4 GB | 0.4 kWh (per GB over 4) |
| Premium Graphics (*for Discrete GPUs with specified Frame Buffer Widths* ) | Cat. A, B: 35 kWh (FB Width ≤ 128-bit)<br>50 kWh (FB Width > 128-bit)<br>Cat. C, D: 50 kWh (FB Width > 128-bit) | Cat. B: 3 kWh (FB Width > 64-bit) |
| Additional Internal Storage | 25 kWh | 3 kWh |

# Estimate of Savings

- Estimated energy savings based on the forecast of future sales of desktop and notebook computers

| Type | Market Size in 2009-10 (million) | CAGR | Estimated Savings till 2020 |
|---|---|---|---|
| Notebook Computer | 2.1 | 24% | 180 MW |
| Desktop Computer | 7.15 | 12% | 750 MW |

# Draft Schedule

The draft schedule has been prepared, discussed and approved by the stakeholders' technical committee.

Components of Schedule:

- Power Supply Requirement
- TEC Thresholds
- Test Procedure
- Label Design
- Labeling Fee

# Road Ahead

- Currently voluntary labeling program has been considered for
  - Desktop Computers
  - Notebook Computers
- The labeling program for Notebook (Laptop) Computers is ready for launch
- The labeling program for Desktop Computers is under final stages of design process

# Thank You