ITI Switchable Graphics Systems Incentives Proposal

ENERGY STAR Version 6 (Computers), Draft 3
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Executive Summary:

1. **Scope:** Keep switchable graphics systems in appropriate NBP3 and NBP4 discrete graphics categories. Industry has discussed this further, and made an assessment that keeping switchable graphics in integrated graphics categories will unfairly penalize switchable graphics systems (details below).
2. **Target setting:** Scrutinize all the records at and below the 25% quartile for possible switchable graphics models in NBP3 and NBP4 and remove them from the database. Re-set the base TEC limits for NBP3 and NBP4, ensuring no switchable graphics models at or below 25 percentile level. (Details below)
3. **Conformity assessment:** Provide systems with switchable graphics an incentive equivalent to 30-40% of on-board dGfx class (G1-G7) adder, used for conformity assessment.

Proposal - Detailed Discussion:

1. **Scope:** With regards to earlier proposal to keep switchable graphics systems within integrated graphics categories, we see two key issues:
    a. These higher performance systems are not adequately differentiated from lower performance notebooks with integrated graphics, which leads to inappropriate TEC levels for these notebooks. In other words systems with switchable graphics systems will be disproportionately penalized and will fail, since the TEC is based on lower TEC integrated graphics systems
    b. The incentive/adder approach for switchable graphics systems as part of integrated graphics categories may be complex. For example it may entail:
        i. Providing some adder based on the "performance difference" (x*Bonus, where ‘x’ is the difference between the performance score of the switchable graphics system and the integrated graphics performance limit)
        ii. Some combination of i and something that references the performance represented by the graphics class G1-G7
    c. Keeping switchable graphics systems within discrete graphics categories is more appropriate:
        i. It encourages the use of high-end graphics and low power technology
        ii. Allows appropriate incentives for switchable graphics, as a certain % of G1-G7 adders

2. **Target setting:** The switchable graphics systems by design should have lower measured TEC than discrete graphics based systems. Current challenge is that switchable graphics cannot be easily identified. However, for base TEC target setting some of the switchable systems are likely to be found in the 25% quartile dataset, leading to lower base TEC

category targets (after subtracting the full G1-G7 adders). These switchable systems should have a different treatment than the discrete graphics systems. In that, these systems should not have the full G1-G7 adders subtracted from them for setting the base TEC, otherwise this artificially lowers the base TEC floor for discrete graphics categories. The proposed approach as follows:

   a. Per earlier discussion between EPA/ITI the proposal was to remove records from the database which are switchable graphics. Since the database is huge, it may take too long to scrutinize and remove all switchable systems from the database. Current proposal is to only scrutinize the records at and below the 25% quartile for possible switchable graphics models.
   b. This is more important as only the systems at or below the 25th quartile record really matter in setting the limit; the switchable graphics systems that are above the limit are less important as these really have no impact on the limit.
   c. Less time intensive, as there are a lot less number systems to look at (We are only concerned about two categories (NBP3 and NBP4) and this is really just looking at 25% of those notebook systems in each of those categories (a lot fewer systems to scrutinize)
   d. In summary Industry should scrutinize only the records at and below the 25% quartile for possible switchable graphics models in NBP3 and NBP4 and remove them. Re-set the base TEC limits for NBP3 and NBP4, ensuring no switchable graphics models at or below 25 percentile level.

3. **Conformity assessment:** In the above discussion, discrete graphics base TEC targets are based on successfully removing the switchable graphics systems from first quartile (25%) dataset used for target setting. For conformity assessment:
   a. The criteria for discrete graphics based systems entails adding the agreed G1-G7 and other allowances back to the base TEC target and then comparing the calculated TEC with measured system TEC for pass/fail test.
   b. The criteria for switchable graphics based systems currently do not provide any incentives for such systems. Switchable graphics systems which generally have higher performance and higher TEC than integrated graphics systems and lower measured TEC than discrete graphics based systems, would require some system level incentive The unintended consequence is for a disproportionate number switchable graphics systems failing to comply.
   c. Current category system does not address system level incentives for switchable systems. Based on the lab data the systems with switchable graphics demonstrated a need for an incentive, equivalent to 30-40% of on-board dGfx class (G1-G7) adder, used for conformity assessment. Since there is no system level incentive for switchable graphics system, using an approach where a fraction of discrete graphics adders is used as a proxy for switchable system performance is reasonable. Industry's current proposal is to use 30-40% of on-board DGfx (G1-G7) adder.