



Breakout Session: Power Supply Requirements

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Goals for the Session



- Evaluate Net Power Loss approach for evaluating power supply losses in operation
- Record feedback on the state of power supply efficiency
 - What levels of efficiency are readily available on the market?
 - What are barriers to further efficiency improvements of PS installed in servers (assuming Tier 1 requirements as baseline)?
- Identify areas not addressed with current approach (efficiency/power factor, single- and multi-output)
 - E.g. Redundancy, multiple power supply systems, etc.

Recap of Tier 1



EPA intends to explore a Net Power Loss approach for Computer Server power supplies under Tier 2 of this specification. This approach would aim to specify a maximum allowed power loss through the power supply at actual operating conditions of the Computer Server (e.g., Idle and full load power).

- Driving factor for NPL approach - current efficiency structure:
 - Current efficiency approach requires power supplies to perform efficiently in power ranges where they may not operate (e.g., 100%), and can give insufficient attention to where they *do* operate
 - Ignores benefits of right-sizing
 - Ignores impact of redundancy choices (two 85% efficient PSU's use more energy than one)
 - Fails to address real-world PSU interactions with server



“Net Power Loss” Approach

- Address actual wattage losses at real operating conditions instead of efficiency at arbitrary load conditions

AC Power_{in} – DC Power_{out} @ Idle and Max

not

DC Power_{out} / AC Power_{in} @ 10%,20%,50% and 100% Rated Load

Pros	Cons
<ul style="list-style-type: none">• Directly correlates to wasted wattage / real-world conditions• Moves away from arbitrary load points• Includes effects of redundancy, PSU sizing, multiple power supplies	<ul style="list-style-type: none">• Industry currently understands and does procurement based on efficiency• More difficult to measure• Would take time to develop



Feedback from Climate Savers Computing Initiative

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Discussion



- What level of effort will be required to comply with the NPL Calculation and Measurement? Are there implementation issues or concerns the EPA should consider with this approach?
- What is the current level of availability for power supplies meeting the proposed efficiency levels?
- What levels of efficiency are readily available on the market?
- What are barriers to further efficiency improvements of PS installed in servers (assuming T1 requirements as baseline)?
- What areas are not effectively addressed with current approach for efficiency/power factor requirements? What methods might help meet this need?