

July 22, 2004

Mr. Andrew Fanara  
EPA ENERGY STAR Program  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Dear Andrew:

On behalf of Hewlett-Packard Company (HP), I am writing the U.S. Environmental Protection Agency (EPA) ENERGY STAR Office to provide comments on the ENERGY STAR<sup>®</sup> Program requirements for Single Voltage External AC-DC Power Supplies (Draft 2 Eligibility Criteria).

Below, HP provides several suggestions to improve the proposed rules.

**EPA Data**

HP appreciates the EPA recently sharing the raw data used to help guide the development of the proposed criteria.

The EPA has decided to change the ENERGY STAR program to be a more exclusive or top-tier program by designing it so only approximately the top 25% of products in the marketplace should meet newly established rules. HP continues to disagree with this position for reasons we and other product manufacturers have discussed with the EPA. Regardless, we would like to comment on EPA's implementation of the top 25% for this product category.

The draft 2 document indicates the active efficiency rules would only allow 26.4% of external power supplies (EPS) to pass and the no-load rules would only allow 38% of EPS to pass. The combined rules would only allow 17.5% of EPS to pass. We believe the 17.5% is far too aggressive and the EPA should modify the rules to allow approximately 25% to pass.

HP has reviewed the EPA EPS data, and we would like to comment on our observations. Table 1 is a stratification of the EPS data indicating the number of data points available for different nameplate output power ranges. The table clearly indicates there is very limited data for EPS above 70W (~5.2%). We question whether this limited set of data can be used to set appropriate power targets for this EPS range. The EPS in this output power range would typically be used for laptop PCs and other high power product applications.

**Table 1: Number of EPS Meeting ENERGY STAR Based upon Nameplate Output Power**

<b>NAMEPLATE OUTPUT POWER (W)</b>	<b># OF DATA SETS</b>	<b>% OF TOTAL DATA SETS</b>
0<W<=1	38	6.0%
1<W<=2	49	7.8%
2<W<=3	69	10.9%
3<W<=4	48	7.6%
4<W<=5	42	6.6%
5<W<=10	108	17.1%
10<W<=20	93	14.7%
20<W<=30	29	4.6%
30<W<=40	20	3.2%
40<W<=50	39	6.2%
50<W<=60	42	6.6%
60<W<=70	22	3.5%
70<W<=80	17	2.7%
80<W<=90	5	0.8%
90<W<=100	1	0.2%
100<W<=120	5	0.8%
120<W<=140	2	0.3%
140<W<=160	3	0.5%
	<b>632</b>	<b>100.0%</b>

Unfortunately the raw data did not include information on EPS use of power factor correction (PFC), nor for what input voltage (115V vs. 230V) was used to generate the results. HP continues to have concerns that additional power will be needed for PFC, depending upon the no-load power targets proposed by the EPA (at higher no-load levels this would not be a concern). We also understood the early EPS data available to the EPA had very limited 230V results. If true, this limitation might lead the EPA to overlook important test results for 230V EPS and potentially lead to development of overly aggressive EPS criteria.

Due to the data issues discussed above, we think the EPA should provide greater allowance in the EPS rules to allow a minimum of the top 25% EPS to meet the rules and not a more aggressive target. This would meet EPA program goals, and it would recognize the limited data available for this new ENERGY STAR program.

### **Recommended Rule Changes**

HP analyzed several potential changes to the various active efficiency and no-load targets to see how this would impact the percentage of EPS units that would meet the modified rules (e.g., top 25%). Table 2 includes the results of our analysis:

***Table 2: ENERGY STAR Qualified EPS Based upon Nameplate Output Power***

<b>CASE</b>	<b>NO-LOAD FOR ≥75W (W)</b>	<b>LOW WATTAGE RANGE EFFICIENCY COEFFICIENT</b>	<b>HIGH WATTAGE RANGE EFFICIENCY COEFFICIENT</b>	<b>START OF HIGH WATTAGE RANGE (V)</b>	<b>% MEETING ACTIVE EFFICIENCY</b>	<b>% MEETING NO-LOAD</b>	<b>% MEETING BOTH</b>
1	0.75	0.5	0.85	51	25.5%	36.2%	16.1%
2	1	0.5	0.85	51	25.5%	37.7%	16.3%
3	0.75	0.49	0.84	49	33.5%	36.2%	20.1%
4	1	0.49	0.84	49	33.5%	37.7%	20.4%
5	1	0.49	0.835	46	35.3%	37.7%	21.5%
6	1	0.48	0.83	49	41.5%	37.7%	24.1%
7	1	0.47	0.82	49	50.3%	37.7%	27.7%

#### **NOTES**

a. Case 1 is the Draft 2 EPA proposed numbers, and HP-analyzed results.

Case 1 in the Table 2 is the current proposed rules from Draft 2 and includes HP’s calculated results based on those targets. HP’s calculated results are slightly different than the EPA results discussed in Draft 2. We have checked our analysis and believe it is mathematically accurate. We assume the slightly different numbers are based on differences in the data set used by HP at this time, and by the EPA to originally develop Draft 2.

During our analysis, HP made an effort to reduce the original Draft 2 requirement so that it would benefit a majority of the EPS included in the data. We looked at both active mode efficiency and no-load target changes. Based on the results, cases 6 and 7 have outcomes the closest to EPA’s goal of 25%.

HP recommends the EPA adopt case 7. Case 7 would increase the no-load power target from 0.75 to 1W. This would have two benefits. First, providing some extra margin for this range of EPS will counteract any limitations in the amount of data for the high wattage EPS for no-load. Second, the extra margin will ameliorate any concerns associated with PFC use for this range of EPS.

Case 7 also changes the active efficiency targets by modifying the low and high wattage range numbers the EPA originally used. This benefits all EPS from the active mode perspective. Case 7’s EPS acceptance level of 27.7% would also provide margin for the potential data limitations associated with 230V test results we discussed above.

The EPA is aware that various worldwide governmental entities are developing power requirements for EPS. The EPA is also aware that manufacturers have a difficult time meeting differing rules and we strive to harmonize these rules as much as possible. One area where the current rules are experiencing this type of problem exists in how the nameplate output power levels are segmented. For example, the EPA active mode rules use the format  $0 < W \leq 1.0$  for one segment and  $1.0 \leq W \leq 51$  for another range. Not only do these differ within the EPA rules, but they also differ from the format used by the Code of Conduct ( $0 \leq W < 10$ ). Another inconsistency is the EPA's no-load nameplate output power segmentation differs from the active mode segmentation format. The active mode formats are shown above, the no-load format includes  $0 < W \leq 10$ . We encourage the EPA to adopt a consistent format for the nameplate power segmentation and to promote this format among the other governmental entities currently developing EPS rules.

Table 3 contains a summary of HP's recommended EPS power levels, including our recommendations for changing the format for segmentation.

**Table 3: HP Recommendations for ENERGY STAR EPS Power Requirements**

<b>NAMEPLATE OUTPUT POWER (W)</b>	<b>MINIMUM AVERAGE EFFICIENCY IN ACTIVE MODE (decimal)</b>
$0 < W \leq 1$	0.47
$1 < W \leq 49$	$[0.09 * \ln(P_{no})] + 0.47$
$49 < W$	0.82

<b>NAMEPLATE OUTPUT POWER (W)</b>	<b>MAXIMUM POWER IN NO-LOAD (W)</b>
$0 < W \leq 10$	0.5
$10 < W \leq 75$	0.75
$75 < W \leq 180$	1

**Testing and Documentation**

HP encourages the EPA to start collecting PFC data in preparation for Tier 2 rules development. To facilitate this, the EPA should require manufacturers to include PFC information in their test data submitted for EPS. We also encourage the EPA to continue to look at potential test result differences between 115V and 230V input applications, and include this information in your raw data.

## **Definitions**

The EPA provided definitions of an EPS in Draft 2. HP requests the EPA elaborate on two of the definitions to be certain EPA's intent is well communicated.

In item 4, the EPA states an EPS "is contained in a separate enclosure from the end-user product". HP has several products where a traditional supply is actually mounted inside the products' covers. In this situation, we assume the supply would be defined as an EPS for ENERGY STAR purposes. We request the EPA elaborate on item 4 to make this situation clearer. We suspect HP is not the only manufacturer to consider the practice of placing a supply inside a product.

In item 5, the EPA states an EPS "is connected to the end-use product via a cable, cord or other wiring even when that wiring is permanent". HP is not clear on the intent of this definition. HP has a few products where the connection between the supply and the product is made through a combination male/female electrical connection. General electrical wiring may exist on the product side, after the connection to the EPS. From the existing EPA rules, we would define the supply as not having a cord and therefore not being part of this ENERGY STAR program. HP requests EPA elaborate on this situation to make this clearer.

## **Tier 2**

EPA commented in Draft 2 that a no-load level of 5W was being considered for Tier 2. HP thinks this level is too aggressive for the higher output rated EPS, especially when PFC is considered. We encourage the EPA to make additional efforts to obtain actual test result data from EPS manufacturers so this situation can be properly evaluated.

## **Timing**

The EPA indicated they would like to set the Tier 1 effective date to October 1, 2004. We would like to see this date changed to at least January 1, 2005. This would give manufacturers a little more time to attempt to work toward the EPS goals.

In general, HP would like to see the EPA provide one product design cycle between the time the rules are completed and the time the rules become effective. This would put manufacturer's on a "level playing field" so all have the opportunity to meet the rules when the rules start to take effect. For our specific situation, we would like to see 1.5 years provided between release and the effective date.

HP suggests the EPA start Tier 2 rules development about 1 year from the time Tier 1 becomes effective. This should give the EPA a good set of EPS data for Tier 2. Once the Tier 2 rules are completed, then allow 1.5 years before they become effective.

We appreciate this opportunity to comment and improve the ENERGY STAR program.

Sincerely,

Marty Marzinelli