June 15, 2021

Ryan Fogle
ENERGY STAR for IT and Data Center Products
Office of Air and Radiation
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Topic: EPA ENERGY STAR® Imaging Equipment Version 3.2 Specification

Dear Mr. Fogle:

This letter comprises the comments of the Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) in response to the United States (U.S.) Environmental Protection Agency (EPA) ENERGY STAR® Draft Specification on Imaging Equipment (IE), Version 3.2.

The signatories of this letter, collectively referred to herein as the California Investor-Owned Utilities (CA IOUs), represent some of the largest utility companies in the Western U.S., serving over 32 million customers. As energy companies, we understand the potential of appliance efficiency standards to cut costs and reduce consumption while maintaining or increasing consumer utility of products. We have a responsibility to our customers to advocate for standards that accurately reflect the climate and conditions of our respective service areas, so as to maximize these positive effects.

We appreciate this opportunity to provide the following comments about this specification. We commend EPA for revisiting this specification after the most recent update in 2020, now that the ENERGY STAR Professional Imaging Equipment (IE) Test Method is both final and has a representative dataset. We fully support EPA transitioning to the new production performance-based efficiency metrics, which we agree will provide more relevant product performance information to end users. We recommend minor adjustments to the production efficiency metric to provide a more challenging standard. We strongly urge EPA to consider the following comments.

1. **We support the incorporation of new professional IE metrics for production efficiency and ready mode power.**

   We evaluated EPA's recommendation that production efficiency and ready mode power have the greatest effect on the overall energy consumption of imaging equipment products,[1] with power consumed by ready mode far below that of production. Through analyzing the dataset provided with this draft specification, we estimate that ready mode consumes approximately *10 to 15 percent* of the production energy of an active mode impression run, when assuming ready mode to occur for five minutes at the dataset average 46.6 Wh per 5-minute period, and 500 color

[1] https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Imaging%20Equipment%20Version%203.2%20Draft%20Datasheet%20.xlsx

impressions at 0.67 Wh per image consuming 335 Wh of production energy.[2] The previous specification (Version 3.0) required adherence to the Typical Energy Consumption (TEC) metric, but we believe production efficiency (E_p) and ready mode power (P_{RM}) are more accurate and easily applied than TEC and therefore are more appropriate for evaluation of professional imaging equipment. For example, a unit[3] with a TEC of 11.5 kWh/week, 575 kWh/year at 50 weeks a year is not representative versus this same unit's production energy at 464 kWh/year, 928 kWh/year, and 1,856 kWh/year at the one-quarter, one-half, and max of the units annual rated print cycles. Unless significantly underloaded, this TEC result fails to represent medium and high usage scenarios for this equipment. We therefore support EPA's assertion that production energy provides better understanding in the field of efficient production printer choices, resulting in a better end-user experience.

We recommend EPA include an estimated number of images/prints per year for several common use cases, so that consumers can better predict annual energy consumption for products that they might be evaluating for their own facilities. Similarly, we recommend that EPA provide an estimate of ready mode hours experienced by this equipment per year in a typical setting for end users to anticipate consumption from this operational mode.

2. We support the anticipated EPA proposed production efficiency requirements with minor adjustments for professional IE.

We recommend minor reductions to the anticipated limits[4] for production efficiency listed in Table 8 of the specification. In evaluating the dataset, we note that multiple products with multiple impressions per minute (ipm) ranges meet the criteria, from multiple manufacturers. These devices are in both the printer and multifunction device (MFD) configuration; we commend EPA on minimizing the potential of unintended consequences from the adoption of the new metric, such as a dependence on print speed.

We agree with EPA's decision to eliminate some of the most energy consumptive units according to the new production efficiency metric during this metric transition, but recommend a revisit of the chosen cut points, which eliminate approximately *28 percent* (i.e., 26 percent color, 30 percent of mono units) of dataset devices. In our analysis of the Draft 2 Version 3.0 Imaging Equipment Dataset,[5] we note that the TEC limit applied to the newly developed (at the time) professional imaging equipment category was on average five times higher than the Version 3 calculation method TEC results for these units. Therefore, this Version 3.2 specification revision is the first-time professional IE products receive a more stringent level as an ENERGY STAR product. On this background, we recommend EPA evaluate 0.64 Wh per color image and 0.39 Wh per mono image, which results in eliminating 40 percent of both mono and color equipment.

We note that these proposed limits are feasible for products, allow clear differentiation between devices that have higher production efficiency, and support the development of a future tier of ultra-high efficiency production imaging equipment in a later revision.

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[2] Note 46.64 Wh is the average ready mode power of products in the dataset, when all 0-minute entries are corrected to five-minute entries. See Comment 3 for more details on this correction.
[3] See footnote 9 for model.
[4] 0.67 Watt-hours (Wh) per color image, and 0.42 Wh per monochromatic image.
[5] https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Draft%202%20Version%203.0%20Imaging%20Equipment%20Data%20%26%20Analysis%20Package_REVISED.xlsx

3. **We recommend providing further guidance for potential data gaps and revisions to the dataset.**

   Several products in the provided dataset have a 0-minute ready mode time listed for Step 4 of the Professional IE Test Procedure. For this draft specification, EPA communicated that they assumed a 5-minute ready mode time for those cases, to match the rest of the data. We recommend that EPA issue formal guidance on how to handle data with this type of error if this is able to be submitted to the Qualified Products List database, and otherwise support the EPA analysis of this dataset.

4. **We support EPA's framework which does not include provisions for standby mode for professional imaging equipment.**

   After analyzing yearly consumption in standby mode per printer, we estimate that annual power consumption in the standby mode for these units is significantly overshadowed by the power consumption of ready mode and production efficiency applied to typical annual print quantities. In this framework, a metric that also addresses standby power becomes over-fitted and would not improve the ability of the metric to correlate with potential energy consumption or savings for a typical unit.

   To illustrate this point, we developed a sample calculation using assumptions of 84 hours per week in standby mode from the EPA office equipment calculator,[6] and 50 weeks per year of imaging equipment operations. At these duty cycles, the standby mode yearly energy consumption is approximately 5 kWh/yr per watt of standby power. For a color production printer with an approximated standby consumption of 10 W,[7] this is approximately 44 kWh/year of standby power.

   We then selected a color professional imaging model[8] from the QPL to contrast this standby power approximation with the annual (i.e., 50 weeks per year) production energy at one-quarter, one-half, and maximum rated impressions for the unit. This unit is rated for 240,000 impressions per month,[9] therefore 2.77 million impressions per year at 50 out of 52 weeks operation. At the EPA proposed requirement for color production printing, this consumes approximately: 464 kWh/year, 928 kWh/year, and 1,856 kWh/year respectively at each impression per year duty cycle. The standby portion of the unit energy in this example is at most eight percent and as low as two percent of the energy consumption of the unit, prior to accounting for consumed ready mode energy. On this basis, we support EPA's recommendations that standby power would not meet the cost benefit requirement to incorporate a third metric into the professional IE requirements, since optimizing for this parameter could in turn negatively impact product performance to other more impactful metrics.

[6] https://energy.mo.gov/sites/energy/files/office-equipment-calculator.xlsx , tab MFD Calcs.
[7] 10 W is two times the highest non production printer standby capable of 80+ impressions per minute (ipm) in the ENERGY STAR Imaging Equipment QPL, accessed 06/07/2021. Data quality issues prevent the development of a representative standby estimate for the Professional Imaging dataset; note the mean standby estimated in this dataset was 6.5 W when errors and outliers omitted. TEC printer and MFD products including professional imaging products do not report standby wattage to the QPL, thus a large format operational mode (OM) product was used as a baseline.
[8] Energy Star ID: 2346628
[9] Sample Production Printer #1 .

In conclusion, we would like to reiterate our support to EPA's draft specification on imaging equipment. We thank EPA for the opportunity to be involved in this process.

Sincerely,

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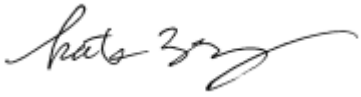

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