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## Certifying Luminaires: Maximizing Testing Investment By Using Product Families

Looking for ways to minimize testing costs for your ENERGY STAR fixtures? The new ENERGY STAR Luminaires specification has a list of allowable variations so you can use test data from one product to certify a number of other similar models. Work with your EPA-recognized certification body (CB) to determine the appropriate groupings for your product families.

### How does ENERGY STAR Classify Product Families?

For the purposes of ENERGY STAR certification, a product family is a group of similarly constructed lighting fixtures that differ primarily in aesthetics, mounting and/or lighting subcomponents.

### How do you know which model to test?

When planning for certifying a product family, choose the product that is least likely to meet the ENERGY STAR requirements to run through the full product testing (also referred to as “worst case” model). This would be your representative model.

The specification states that the representative model shall be the variation expected to have the greatest difficulty meeting the performance criteria outlined in the specification, thus the model chosen for testing should be a worst-case scenario for testing. After running the representative model through testing, additional members of the product family can be certified with reduced testing if they qualify as an allowable variation per the guidelines on page seven (7) of the Luminaires V1.2 specification

### Allowable Variations

On page seven (7) of the Luminaires V1.2 specification, there is a table outlining product family variations from the representative model that are allowed, and under what conditions they are allowed. There are multiple categories of allowable variations that can be utilized, and multiple variation categories on the same representative model are allowed if the performance is not impacted negatively. The information from that table has been copied here for easy reference.

- **Housing/Chassis** – allowed if the variations do not change the thermal performance of the luminaire. This would require thermal measurements of key components in each of the variations.
- **Finish** – allowed variation with no additional testing.
- **Mounting** – allowed variation for a base luminaire that has different mounting options, such as a wall mount that has a mounting variation as a decorative pendant.
- **Reflector / Trim** – allowed if light output is not reduced, and as such utilizing this variation may require light output performance testing. Consideration should be given to selecting the trim that would be the least efficient when selecting the representative model for testing.
- **Shade / Diffuser** – allowed if light output and/or airflow about the source are not reduced. Utilizing this variation may require light output performance testing, and consideration should be given to which of the shades would provide the most restrictive airflow representation.
- **Light Source** – allowed if it does not negatively impact the luminaire’s compliance with any performance criteria. This variation is the easiest to utilize for non-directional luminaires when the light sources are already listed on the Certified Lighting Subcomponent Database (and have performance data readily available) to qualify variants with secondary supplier components.
- **CCT** – allowed if the lamp or LED series, ballast or driver, and thermal management components are the same, and compliance with any performance criteria will not be impacted. This can be used

to offer a range of CCTs with minimal additional testing, but the specification requires testing with the lowest CCT variant.

- **Ballast/Driver** – allowed if the variations will not negatively impact the luminaires compliance with any performance criteria. Thermal measurements may be required for the ballast or driver case temperature, and performance testing may be required if the ballast is not already on the CSD.

## **Tips for Maximizing Return on Testing Investment**

### **Consult with EPA-recognized certification bodies and laboratories**

EPA has recognized nine (9) certification bodies for luminaires and 59 labs for testing luminaires and subcomponents. Shop around to get the best price. Discuss testing and product families with each CB before starting testing to maximize the number of allowable variations and to prevent misunderstandings.

### **Carefully select the representative model(s)**

The desired variations the product family should inform the selection of the representative model. Selecting the right representative model will allow the maximum number of allowable variations for the testing performed and protect the entire family from disqualification due to verification testing. Remember, any model in the family could be selected for verification testing, and if that one fails it could impact the certification of the entire family.

### **Economize your testing**

Having all of the testing on the representative model and the variants performed at once can minimize the time in testing and may reduce overall testing costs compared to testing the representative model and variants separately over time. While new variants can be added after the initial certification, it may not be as cost effective. For example, a 2700K product cannot be added to a family that was certified based on data from a 3000K product.

### **Understand the testing differences between directional and non-directional luminaires**

Non-directional luminaires have plenty of options for variations with minimal additional testing required for the variants, as they use source photometry (luminaire performance is defined by the performance of the light source). Directional luminaires, using luminaire photometry, may require additional photometric testing where light output could be impacted, but can still benefit by sharing data on other performance characteristics (lumen maintenance, CCT, start time, etc.).

### **Utilize the Certified Subcomponent Database (CSD) to reduce testing needs**

Items on the CSD have already been tested by EPA-recognized labs, including lifetime testing, so even if the luminaire is directional and requires luminaire photometry, using CSD listed components will reduce the time in testing.

### **Look for rebates**

Each year EPA compiles a list of utility rebate programs that can be found at [www.enregystar.gov/dime](http://www.enregystar.gov/dime).

If you have any other questions about product certification and product family groupings, or if you need additional clarification, please contact the ENERGY STAR program at any time at [luminaires@energystar.gov](mailto:luminaires@energystar.gov).