

U.S. DEPARTMENT OF ENERGY SOLID-STATE LIGHTING PROGRAM

COLLABORATIVE R&D TESTING OPPORTUNITY: ORGANIC LIGHT-EMITTING DIODES TESTING APPLICATION GUIDELINES

[U.S. Department of Energy Solid-State Lighting Program](#)

The U.S. Department of Energy (DOE) Solid-State Lighting (SSL) Program has engaged in ongoing discussions with the U.S. organic light-emitting diodes (OLED) lighting community regarding the need for an OLED collaborative research and development (R&D) framework to accelerate developments in OLED lighting technology and manufacturing.

DOE has implemented a new testing opportunity to enable component makers to incorporate various R&D-stage components into a baseline state-of-the art (SOTA) OLED device. The results of the testing will lead to the identification of high performing components with the ability to advance OLED technology performance and efficiency while reducing cost.

Application Guidelines

Acceptable components for testing include but are not limited to: substrates/integrated substrates, extraction layers, metallic grids, single and multilayer barrier structures, light extraction approaches, color emitters, OLED pixel schemes, OLED drivers, and OLED layers (e.g., cathode, emissive layer, anode).

It is the expectation of the SSL Program that the technology developer will have conducted preliminary testing on the component prior to applying to this process. DOE's testing serves to move that knowledge beyond the potentially limited capabilities of the developer by incorporating the technology into a baseline state-of-the-art (SOTA) OLED device.

To be considered, the following information should be provided (5 pages or less) via email to OLED-Testing@netl.doe.gov.

- Describe the technology/component, its anticipated use in the OLED, and any known restrictions, shortcomings, or design considerations that must be taken into account when incorporating it into an OLED stack.
- Detail the anticipated performance enhancement(s) of the technology with an emphasis on efficiency, quality, or cost. Include relevant sub-level metrics (voltage, extraction efficiency, transparency, etc.) where necessary.
- Describe the maturation stage of the technology. Provide supporting graphics and figures to justify its tested performance and suitability. Describe what additional information is expected to be gained through testing on SOTA devices. (Testing will be conducted as proof-of-principal or manufacturing scale depending upon the technology maturation.)

If selected for testing, proper health and safety information (e.g., Material Safety Data Sheets) will be required for shipment and receiving. Testing cannot begin before receipt of the health and safety information. Shipment of the technology (including quantities) is to be worked out with the testing facility and sent directly to that facility. The technology developer must bear the expense of shipment. In return, the technology developer will receive important information/knowledge that is gained from the testing. Leftover materials following testing will be considered property of the testing facility.

All testing facilities have completed confidentiality/non-disclosure agreements with Leonardo Technologies, Inc. (LTI). LTI currently serves as prime site support contractor at DOE's National Energy Technology Laboratory (NETL). LTI's role is to implement the project framework. Testing facilities are subcontractors to LTI. Note that technology developers and testing facilities are welcome to negotiate their own confidentiality and/or non-disclosure agreements.