

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

**COLLABORATIVE R&D TESTING OPPORTUNITY:
ORGANIC LIGHT-EMITTING DIODES TESTING
CALL FOR SOURCES**

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. This “call for sources” serves as an opportunity to advance a collaborative OLED R&D framework that could help accelerate adoption through lower-cost manufacturing and improved customer acceptance of OLED lighting products.

Organic Light-Emitting Diode Background

OLEDs are thin-film multilayer devices based on organic (i.e., carbon-based) materials. As with inorganic light-emitting diodes (LEDs), the objective is to convert energy from electrical current flowing between two electrodes into visible light, resulting in light emission into the external environment. Unlike LEDs, which are small-point light sources, OLEDs are made in sheets that are diffuse-area light sources. Although OLED technology is developing, it is less mature than LED technology and is still some years away from becoming a practical source of general illumination. Nearly all OLED products on the market today are used for small-area displays, such as those in smartphones, vehicular audio systems, digital cameras, and other consumer electronics.

1.0 What are the Testing Opportunity Objectives?

The purpose of this project is to test the performance of various R&D-stage components of OLED panels as part of a larger component or in a complete OLED product.

The objective of this call for sources is to identify qualified testing laboratories that possess the capabilities to incorporate various R&D-stage components into baseline structures to evaluate their compatibility and performance. 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. Interested organizations at various stages of the technology development cycle must be able to independently build “standard” OLED recipes that incorporate emerging technologies into their baseline structure for the purpose of validating and instructing technology development.

2.0 What Work Will be Performed by a Testing Laboratory?

A testing laboratory will conduct pilot line testing of components of OLED technologies that are identified by DOE's National Energy Technology Laboratory (NETL). A testing laboratory will report on the status of the technology relative to the standard baseline structure (see "***What Deliverables are Required from a Testing Laboratory?***" in Section 4.0 below). Care must be given to only change the applicable section(s) of the baseline device to the extent practical. The report will document issues that required deviation from the baseline structure. Employees participating in the testing process are required to sign confidentiality forms.

3.0 What Standard Baseline Structures Will be Tested? *(including, but not limited to the following)*

Sample Component List:

- Substrates - display-grade glass, polymeric, metallic, residential glass
- Conductive layers
- Extraction layers
- Metallic grids
- Panels/panel size
- Multilayer barrier structures and single layer barrier structures
- Light extraction approaches
- Color emitters
- OLED pixel
- OLED driver
- Cathode, emissive layer, anode

4.0 What Deliverables are Required from a Testing Laboratory?

Technology Validation Status Reports are due after the conclusion of testing. The schedule for submitting the report(s) will be established during the award process. Report content will identify the components tested, a description of the testing process, and a description of the test results and observations. It will also include the status of the technology relative to the standard baseline structure and document issues that required deviation from the baseline structure (if applicable). A Technology Validation Status Report template will be provided to the testing laboratory.

5.0 Who Can Apply for this Testing Opportunity?

Testing laboratories that have the capability to incorporate OLED components into baseline components or complete OLEDs are eligible to apply. A testing laboratory does not have to be able to perform testing on all OLED components to qualify for this project. Laboratories capable of testing any of the approved structure components listed in the Sample Component List in Section 3.0 above are eligible to apply. However, it should be noted that qualification under this notice does not guarantee a subcontract award or a specific level of effort. The intention is to identify a pool of qualified testing laboratories that are available when a sample component(s) is approved for testing. Please note that the funds to be awarded may be used to cover the cost of testing and data analysis. Funds awarded shall not be used for purchase of the product(s) to be tested or shipping costs. Only U.S.-based laboratories are eligible to apply for this testing opportunity.

6.0 How Can We Apply for this Testing Opportunity?

Testing laboratories will be subcontractors to Leonardo Technologies, Inc. (LTI). For questions related to subcontracts, interested organizations should contact Paul McCroskey (LTI Contracts Manager) or Greg Washington (Activity Lead). Organizations interested in submitting a component(s) for testing consideration should email OLED-Testing@netl.doe.gov.

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If interested in applying as a testing laboratory, please provide the following to LTI:

- a. Brief summary of qualifications and capabilities to perform subject testing, including technical capabilities of staff and any specialized assets or facilities owned by the laboratory for testing.
- b. List of test capabilities and a price list per test.
- c. Time required to perform test(s).
- d. Laboratory availability from November 1, 2015, through December 31, 2016.

7.0 LTI Subcontract Information and Requirements

Subcontracts will include mandatory DOE contract flow down provision from LTI's prime contract with NETL. Further subcontract details and requirements will be provided by LTI once test components are determined; subcontract requirements will be specific to each test to be performed.

Basic Contracting Requirements

- a. Expect Firm Fixed Price (FFP) subcontract agreements with Line Item Pricing.
- b. Expect FAR & DEAR flow-down clauses from the prime contract to subcontract agreements.
- c. Vendors must complete LTI Vendor Form to be able to conduct business with LTI as a subcontractor.
- d. If a subcontractor has not actively registered and completed their representations and certifications documents via SAM.gov, subcontractors will need to fill out LTI's representations and certifications documents.
- e. Subcontract value will be based on the line item costs submitted, while also taking into consideration the work identified in the SOW (either individual or grouped tests). As stated above, qualification under this notice does not guarantee a subcontract award or a specific level of effort.
- f. Ability to track testing costs per line item test(s) performed.
- g. Invoice by segregated line item cost(s) as negotiated in the subcontract agreements.