DOE Solid-State Lighting Research and Development

Dr. Brian Walker
Technology Manager
Brian.Walker@ee.doe.gov
Strategic Approach

Key DOE Roles

CONVENE
DOE roundtables and workshops bring innovators together to identify priority challenges

PLAN
Based on those priorities DOE sets technology milestones and creates an annual SSL R&D Plan

CO-FUND
DOE funds competitively awarded and cost-shared projects aligned with the plan

SHARE
DOE ensures open information flow and provides analyses that spur technology advances and inform future R&D priorities
SSL community input from roundtables and workshops shape R&D priorities and DOE solicitations

DOE targets push industry to levels of efficacy and performance that might not otherwise be achieved.

Analysis of emerging products prompts improvements, informs R&D priorities.

https://energy.gov/eere/ssl/research-development
2018 LED Program Targets

Best performing LEDs are only halfway to ultimate DOE goals

Significant technology development headroom remains

R&D Challenges for lighting

• Emitter materials and architectures
• Down converters
• Encapsulation
• Package/module integration into luminaires
• Novel luminaire systems
• Emerging applications: agriculture, health, information technology
• Lighting services: performance metrics, integration with other technologies

Los Alamos National Laboratory is advancing the use of quantum dots as LED narrow-band downconverters.
## Invited SSL Projects

<table>
<thead>
<tr>
<th>Time</th>
<th>Project Title</th>
<th>Organization</th>
<th>PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:40 a.m.</td>
<td>Emerging Lighting Science</td>
<td>Pacific Northwest National Laboratory</td>
<td>Bob Davis</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>Connected Lighting</td>
<td>Pacific Northwest National Laboratory</td>
<td>Michael Poplawski</td>
</tr>
<tr>
<td>2:00 p.m.</td>
<td>Lighting Systems Challenge</td>
<td>Pacific Northwest National Laboratory</td>
<td>Ruth Taylor</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>AllInP-based LEDs for Efficient Red and Amber Emission</td>
<td>National Renewable Energy Laboratory</td>
<td>Kirstin Alberi</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Tunneling-Enabled High-Efficiency High-Power Multi Junction LEDs</td>
<td>Sandia National Laboratories</td>
<td>Andy Armstrong</td>
</tr>
<tr>
<td>5:00 p.m.</td>
<td>Lighting and Grid Integration</td>
<td>Pacific Northwest National Laboratory</td>
<td>Michael Poplawski</td>
</tr>
<tr>
<td>5:30 p.m.</td>
<td>Application Specific Lighting</td>
<td>Pacific Northwest National Laboratory</td>
<td>Bruce Kinzey/Kelly Gordon</td>
</tr>
</tbody>
</table>

*Join us at 4:00 p.m. for a special discussion on the Lighting GEB Technical Report*