

# WELCOME

## DOE Connected Lighting Systems Workshop

**June 8, 2016**

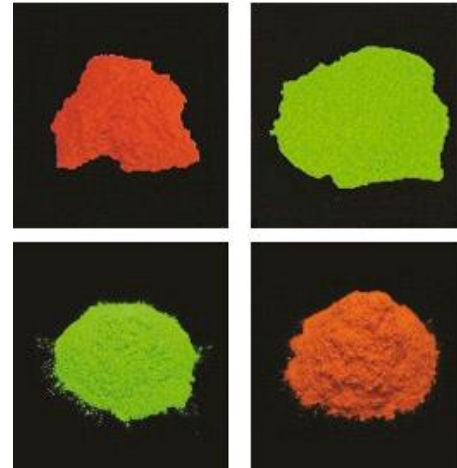
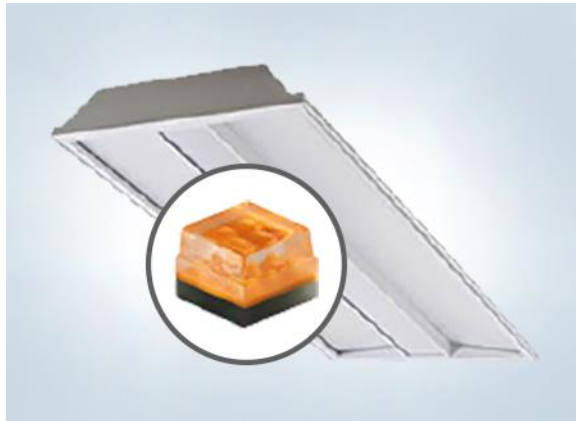
Santa Clara, CA

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U.S. Department of Energy

# Results-Oriented R&D

- Nearly 250 projects with 400+ partners
- More than 260 patents
- Almost 200 on-market products
- 143 tBtu energy savings in 2014; equates to \$1.4B



# The Early Years of LED Lighting (aka the Wild West)

- No real LED equivalents for incandescent or fluorescent
- No standards
- Exaggerated performance claims
- Steep learning curve

## In a Nutshell

- ✓ Big players
- ✓ High stakes, large \$\$
- ✓ Much uncertainty
- ✓ High potential for market dislocation



# Strategic Approach

- Dynamic program constantly evolving in pace with technology advances
- DOE is convener and facilitator; tackles broad national goals
- Program conducts targeted R&D for focused needs
- Partners heavily involved in planning
- Open information and process
  - Workshops
  - Roundtables
  - Working groups



# Tactical – Programs

- Need objective, authoritative voice in this exploding market
- Work closely with lighting industry, researchers, lighting specifiers and users, standards and testing organizations

## Testing and field studies

offer unbiased analysis



**Data and analysis** provide broad view of market trends, support standards organizations and industry consortia



**Technology competitions** drive innovation, draw attention to well-designed products

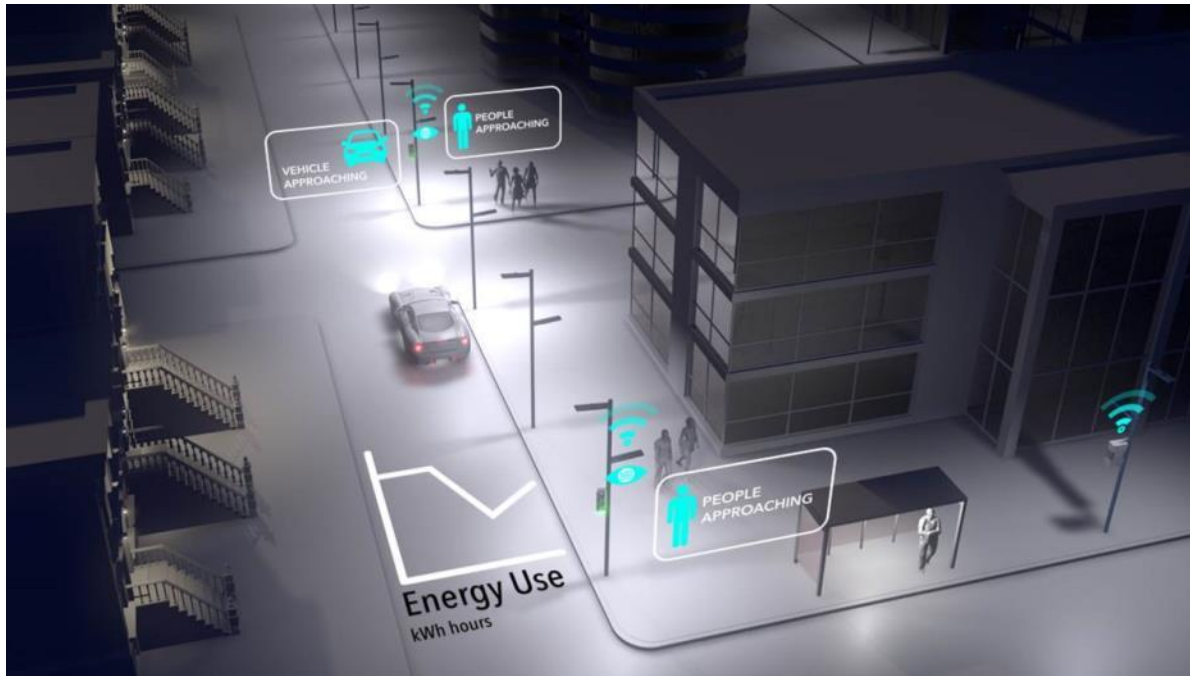


# The New Lighting Landscape

- Huge improvements in SSL performance
- Huge reductions in SSL price
- Industry standards bring order to Wild West; widely used, and more on the way
- SSL is a viable option for most lighting applications



# Change Opportunity: Connected Lighting Systems



Enabling intelligent lighting devices with data provides a platform for greater energy savings in buildings and cities

Collected data enables other features and revenue streams

# DOE's Role in the Change Opportunity

- Facilitate collaboration
- Increase visibility and transparency in the market on what works, and what doesn't
- Create tight information feedback loops to inform technology developers of needed improvements
- Identify and implement efforts to accelerate development and deployment of connected lighting systems

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**Sounds familiar...**



# DOE Connected Lighting Focus Areas



# Why Focus on Energy Reporting?

You can't effectively manage  
what you can't measure

Data driven energy management  
can further reduce energy  
consumption, enable new  
market opportunities



# Why Focus on Interoperability?

System performance is dependent not just on constituent device capabilities, but also on the ability of those devices to work together

In the IoT world, this is to a large degree about sharing usable data



# Why Focus on Configuration Complexity?

Systems that are overly complicated and time-consuming to configure have historically delivered less than ideal performance



# Why Focus on New Features?

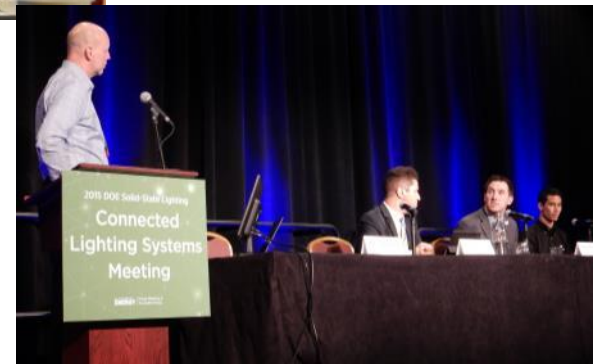
Growing list of other benefits:

- Big data, analytics
- Resource, process optimization
- Productivity
- Health and human factors
- Revenue streams

High value benefits PLUS  
substantial energy savings

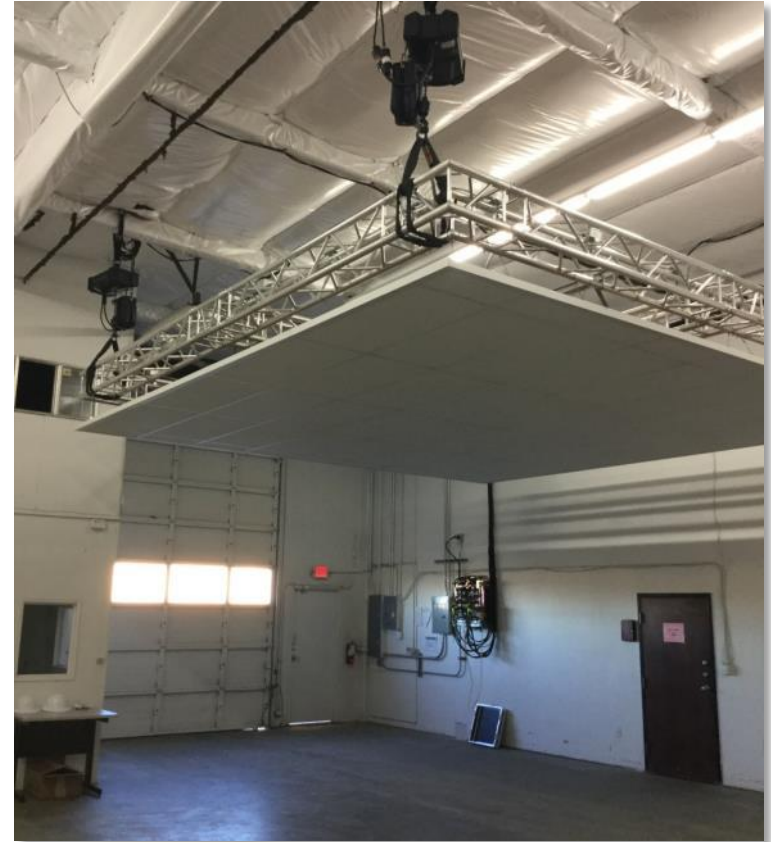


# Collaboration Is Key



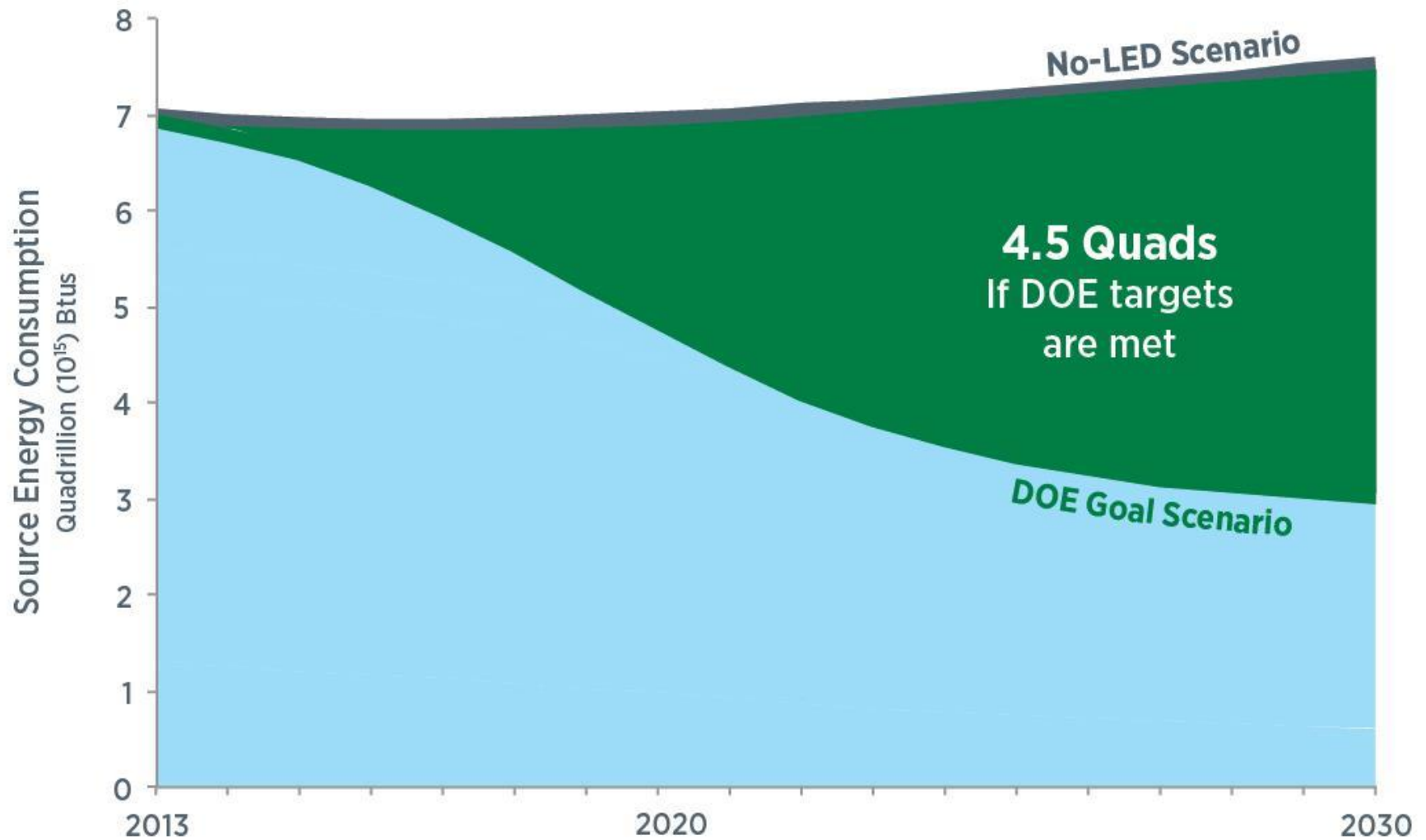
# First Steps

- DOE Lighting Stakeholder Meeting in Golden, CO, Apr. 2015
- DOE Connected Lighting Systems Meeting in Portland, OR, Nov. 2015
- DOE connected lighting test bed in Portland (more on this later)
- Engage, collaborate, and technical support:
  - TALQ Consortium
  - Connected Lighting Alliance
  - AllSeen Alliance
  - oneM2M
  - Open Connectivity Foundation



*Connected lighting test bed in Portland*

# What's at Stake







“See things in  
the present,  
even if they are  
in the future.”

– Larry Ellison, founder  
and executive chairman,  
Oracle