



U.S. Department of Energy
Energy Efficiency and Renewable Energy

Getting Involved with SSL: DOE's GATEWAY Demonstration Program and Registry

My Ton
Pacific Northwest National Laboratory
Voices for SSL Efficiency 2008
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Agenda: DOE SSL GATEWAY Demonstration Program and Registry

- Demonstration program overview & scope
- Getting involved: program process & methodology
- The GATEWAY Registry
 - Overview
 - Purpose
 - DiY SSL Demonstrations: The essentials
 - The DOE GATEWAY report template
- Where to go for more info.



Overview of DOE GATEWAY Demonstrations

- Assist in identifying and early adoption of products that offer users real value through significant improvements over the current best competing products.
 - Introduce new lighting technologies into appropriate applications.
 - Provide users an opportunity to evaluate product performance and gain experience with their daily operations.
 - Increase the public's awareness of advanced lighting technologies.
- *To capture and share this information with a wide audience through DOE's SSL website.*





GATEWAY Program Scope

The DOE SSL Technology Demonstration GATEWAY Program is open to the following eligible participants:

- Manufacturers or product teams nearing commercialization with their SSL products;
- Demonstration host sites;
- Utilities; and
- Energy Efficiency organizations.



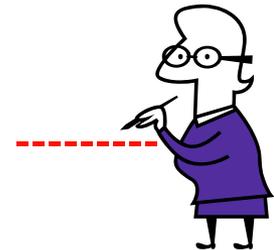
➤ Visit: <http://www.netl.doe.gov/ssl/techdemos.htm>



Getting Involved in DOE's GATEWAY Program

- Download the appropriate "Intent to Participate" form for your organization.
- Answer all questions & save a copy for your records.
- Send completed application and any questions to: techdemos@pnl.gov
- Pacific Northwest National Laboratory (PNNL) will review submissions as they are received.

➤ *Open for remainder of 2008*





DOE GATEWAY Demonstrations: Process

GATEWAY demonstrations typically consist of the following phases, some of which may run concurrently:

- ✓ Product Selection and Matching to Host Site Application
- ✓ Team Formation
- ✓ Product Laboratory Testing
- ✓ Product Installation
- ✓ Field Measurements
- ✓ Evaluation of Results
- ✓ Results Reporting.



➤ *Completed DOE GATEWAY Demonstrations are widely publicized*



DOE GATEWAY Demonstrations: Methodology

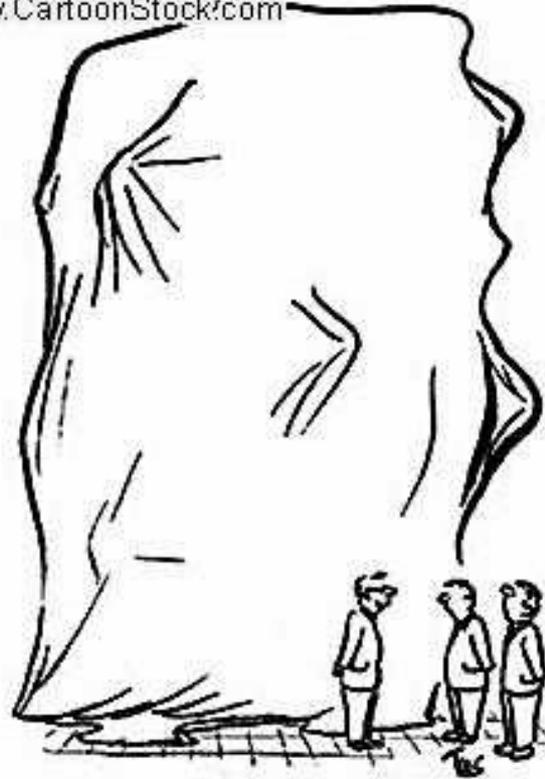
Emphasis on the following areas:

- Product Selection: ENERGY STAR for SSL and DOE's checklist (available)
- Team formation: PNNL serves as independent evaluator
- Product testing: independent laboratory testing of products (LM-79)
- Field measurements: pre and post lighting levels and other conditions, adjustments for ambient conditions
- Evaluation of results: clear and transparent methodology and assumptions, repeatable results
- Results & reports: widely publicized.



DOE GATEWAY Registry: Overview

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"Our new idea is really big."



DOE GATEWAY Registry: Overview

The Registry is intended to provide interested parties with information on SSL Technology Demonstrations.

- The primary purpose of the GATEWAY Registry is to disseminate results for SSL demonstrations.
 - Open to all parties wishing to access information and updates regarding on-going and completed demonstrations.
 - The Pacific Northwest National Laboratory (PNNL) maintains the GATEWAY Registry on behalf of DOE.
- *The GATEWAY Registry is not intended to provide insufficiently-documented results or for the promotion of any particular SSL product or manufacturer.*



DOE GATEWAY Registry for DiY SSL Demonstrations

Parties wishing to conduct their own SSL demonstration can use the Registry to:

- Access information on DOE's demonstration methodology
 - Download DOE's GATEWAY Demonstration report template
 - Submit demonstration results that can be widely shared.
 - Obtain information on possible demonstration products, partners, or sites
- *DOE welcomes submissions from parties wishing to share their results. Results will be reviewed by DOE prior to posting.*



DOE GATEWAY Registry: Criteria for Inclusion

Projects selected for inclusion in the Registry:

- Complement DOE's supported projects
- Utilize DOE's methodology/reporting template, or present clear, transparent and repeatable results
- Are designed to accomplish one or more of the following objectives with SSL:
 - Save energy
 - Cost effective
 - Meet minimum IES standards for illumination



DOE GATEWAY Registry: Criteria for Inclusion

Projects selected for inclusion in the Registry:

- Highlight the advantages of SSL in other areas of lighting applications, such as:
 - Application suitability (light output, photometrics or modeled illumination levels, mechanical fit, etc.)
 - Maintenance
 - Safety
- Utilize commercially or near commercially (within 6 months) available products.

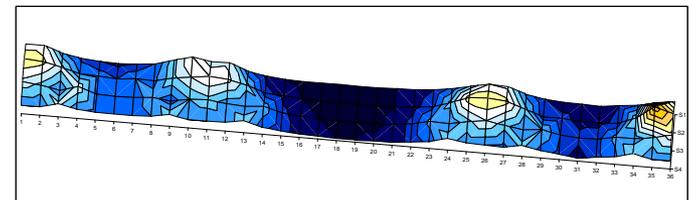
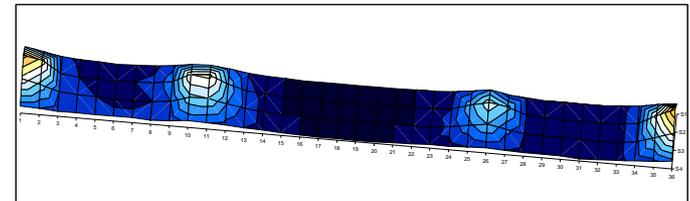


DOE GATEWAY Registry: Essentials for Submitting Your Results

DOE consider the following elements essential in any third-party SSL demonstration reporting:

- Project evaluation
- Lighting measurements
- Control for external factors
- Evaluation of photometric data
- Qualitative lighting analysis
- Economic analysis

	HPS Luminaires	LED Luminaires
Sample 1	1851	6284
Sample 2	1965	6212
Sample 3	2156	6269
Average	1991	6255





DOE GATEWAY Registry: Essentials for Submitting Your Results

Project Evaluation:

- Ideally, project evaluations should be done by an independent evaluator with no financial ties
- Presents a fair and unbiased evaluation of the project
- Not used for the promotion of any particular product or manufacturer



DOE GATEWAY Registry: Essentials for Submitting Your Results

Lighting measurements:

- Comparison of pre and post lighting measurements
- Include simulations of lighting distribution where applicable.

Control for external factors:

- Identify and discuss measures to control for external factors



DOE GATEWAY Registry: Essentials for Submitting Your Results

Photometric data:

- Data for SSL and data/baseline for incumbent technology should be presented and compared.

Qualitative lighting analysis:

- A qualitative analysis should be conducted where applicable

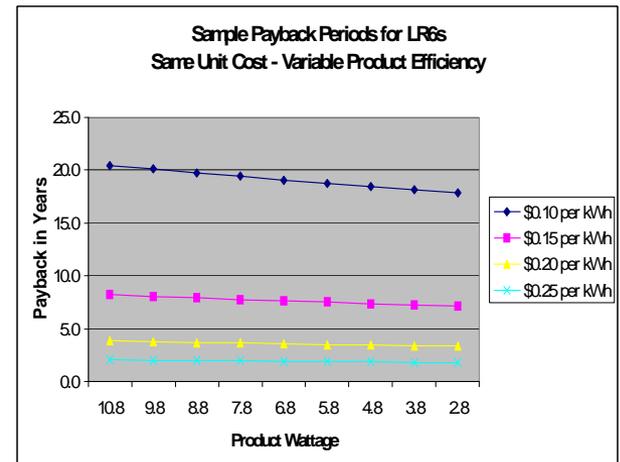
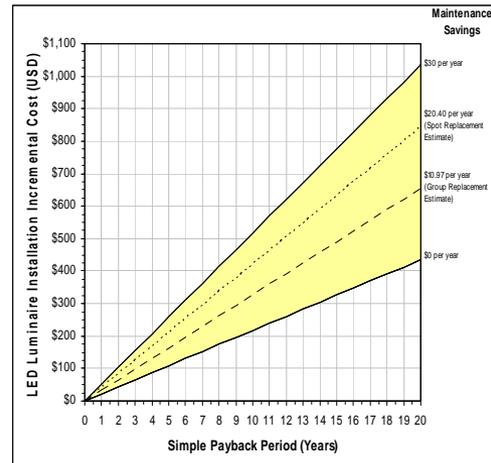
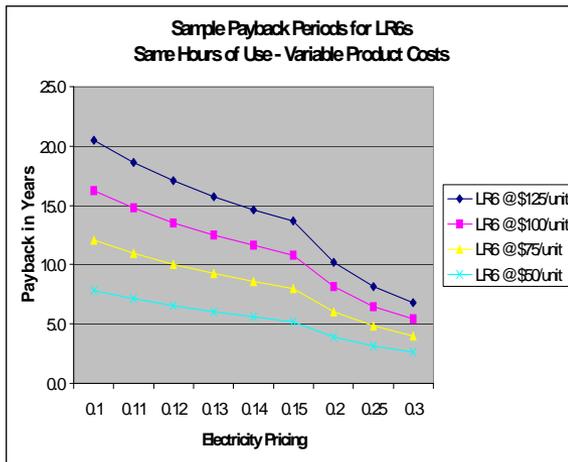
Rating Category	Average Rating (1 to 5)
Overall night-time visibility in the area where the lights are installed.	4.36
Ability to navigate the stairs at night.	4.23
Ability to recognize faces at night.	4.24
The presence of unwanted glare.	3.84
Adequacy of the amount of light.	4.41
Depth and appearance of shadows.	4.08
Overall appearance of the building and site at night.	4.35
Overall perception of safety in the area surrounding the lights.	4.29
My overall opinion of the lighting in this area is that it has been improved	4.48



DOE GATEWAY Registry: Essentials for Submitting Your Results

Economic analysis

- Present a clear and transparent economic analysis
- Document any assumptions used.





The GATEWAY “Report Template”

DOE’s Demonstration Reporting Template:

- Comprehensive outline for demonstration reporting
- “Plug and Play”
- Can act as a “guide” for parties wishing to conduct their own demonstrations
- Available from:

<http://www.netl.doe.gov/ssl/techdemos.htm>



REPORTING TEMPLATE FOR SSL DEMONSTRATION PROJECTS

- 1) Comprehensive description of the project
 - a. Dimensions of space or outdoor area to be illuminated
 - b. New or retrofit
 - c. Tasks to be illuminated
 - d. Occupancy – approximate numbers and any special needs
 - e. Hours of operation
 - f. Floorplan
- 2) Current lighting (for retrofit projects)
 - a. Fixture type(s), brand(s), model number(s), age(s)
 - b. Lamp type(s), brand(s), model number(s), wattage(s)
 - c. Ballast type(s), brand(s), model number(s), age(s)
 - d. Luminaire photometry for existing fixtures, if available
 - e. Photos of space with existing lighting
 - f. Connected load for existing fixtures, watts per square foot
 - g. Relamp existing fixtures, clean fixtures, operate for at least 100 hours
 - h. Baseline illuminance measurements
 - i. Calibrated illuminance meter – state brand and calibration date
 - ii. Provide space plan showing location of illuminance measurements
 - iii. Date, time of day, and conditions during measurements
- 3) Baseline lighting requirements and alternatives (for new construction)
 - a. IES guidelines for horizontal and vertical illuminance
 - b. One alternative scenario for lighting the space, based on high efficiency conventional technology
 - i. Lamps, ballasts, fixtures
 - ii. Modeled connected load, watts per sq ft
 - iii. Modeled illuminance levels, horizontal and vertical
- 4) LED lighting
 - a. Luminaire brand and model
 - b. Luminaire photometric and electrical measurements (LM-79-08)
 - i. Total luminous flux
 - ii. Zonal lumens
 - iii. Luminous intensity distribution
 - iv. Luminance
 - v. CCT
 - vi. CRI
 - vii. SPD
 - viii. Watts
 - ix. Off-state power
 - x. Power factor
 - c. Illuminance measurements
 - i. Same calibrated illuminance meter as used in baseline – state brand and calibration date
 - ii. Provide space plan showing location of illuminance measurements
 - iii. Date, time of day, and conditions during measurements
 - d. Photos of space with LED lighting
 - e. Reflected ceiling plan or outdoor area plan showing locations of LED luminaires
- 5) Economic comparison of existing/conventional and LED
 - a. Luminaire costs
 - b. Installation costs
 - c. Estimated energy costs
 - i. Connected load
 - ii. Hours of operation
 - iii. Demand charges if applicable
 - d. Maintenance costs



THANK YOU!

<http://www.netl.doe.gov/ssl/techdemos.htm>

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