



**Pacific  
Northwest**  
NATIONAL LABORATORY

# GUV / UVGI R&D Program

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U.S. DEPARTMENT OF  
**ENERGY** **BATTELLE**

PNNL is operated by Battelle for the U.S. Department of Energy



# GUV is the new 'Wild West' of Lighting



- No standardized test procedures
- Little understanding of how to evaluate or compare products
- Many poor performing products
- Many products with safety risks
- Little industry accountability
- False claims
- Potential for end-user disappointment, injuries, and slowed adoption

# How We Can Help with GUV

CALiPER

Product Evaluation Reports

GATEWAY DEMONSTRATIONS

Application Evaluation Reports



EDUCATION

Technical Reports, Fact Sheets,  
Stakeholder Engagement, Webinars,  
Presentations, etc.

*Support for*  
**STANDARDS**

IEC 62471, forthcoming ANSI/IES LM-  
91, LM-92, etc.

# Program Deliverables

## CALiPER Product Evaluations



- Round1: Towers, Direct Irradiation
- Round2: Upper Room
- Round3 and beyond: TBD

## Technical Reports



- Current test methods, standards, capabilities
- Energy implications of upper room GUV vs. ventilation systems
- Other report topics TBD

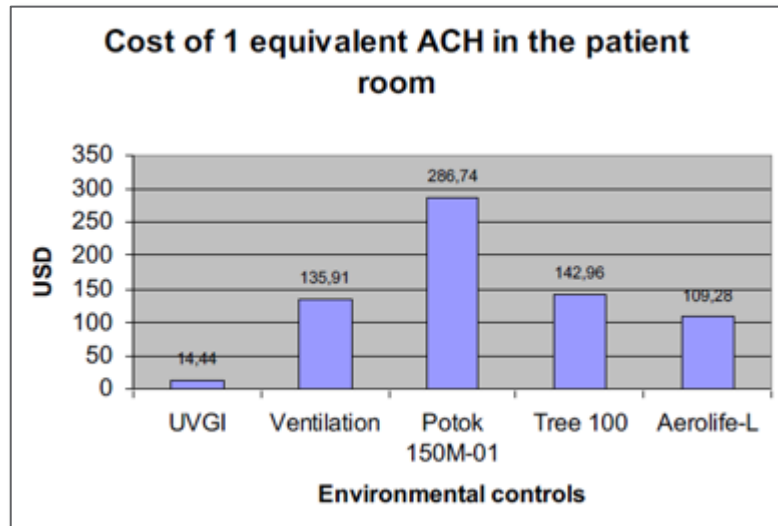
## GATEWAY Field Evaluations Sites + Applications + Products TBD



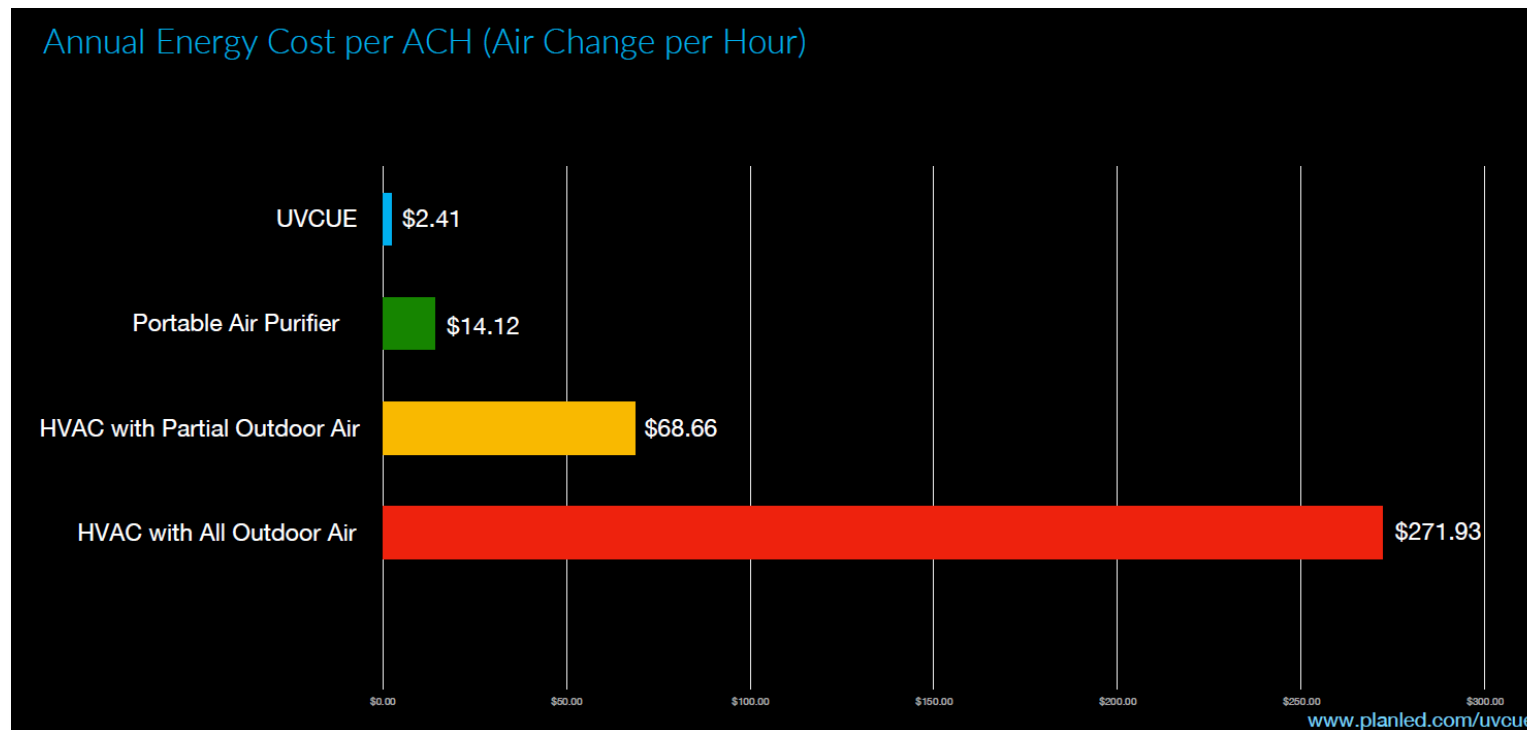
## Fact Sheets Topics TBD



# Is GUV an Energy Efficiency Opportunity?



Early study from Grigory Volchenkov, Vladimir, Russia in Collaboration with Paul Jensen, CDC finds 89% lower operating cost of GUV vs. equivalent ventilation



Manufacturer analysis finds 96% lower energy use of GUV vs. equivalent ventilation

# Energy-related Research Questions We May Aim to Answer Over Time

- How much energy is used by upper and whole-room GUV systems, and how does this compare with energy use by lighting systems?
- How does upper room GUV energy use compare to other disinfection strategies/methods such as increased HVAC ventilation?
- What GUV technologies are most efficient now and in the future? (LED, LPM, Excimer, Xenon, etc.)
- What GUV methods are most efficient? (Different variations of upper room systems, different configurations, etc.)
- What opportunities are there to improve the application efficacy of upper and whole room GUV systems?



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# Thank you

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