**Midwest Collaborative for Adaptive Lighting (M-CAL)**

*Advancing the application of adaptive energy efficient lighting in universities across the Midwest*

**Consortium:** Jeff Kaden, University Engineer, Indiana University

Morgan Johnston, Sustainability and Transportation Coordinator, Univ of Illinois at Urbana-Champaign

 Lynda Boomer, Energy and Environmental Engineer, Michigan State University

 Jim Green, Assistant Director of Energy Management, University of Minnesota

 Michael Siminovitch, Professor, University of California, Davis

 John Kamman, Energy Engineer, Indiana University-Purdue University Indianapolis

**Goal:** To achieve a 50% reduction in exterior-lighting energy use, while also improving security and maintenance characteristics, through widespread installation of adaptive lighting systems on participating campuses.

**Strategy:** Establish a collaborative effort that encourages, through shared experience, the wide application of adaptive lighting. Each university will begin with a year-long pilot project, and will share information with the consortium to develop a common knowledge base of technological specifications, as well as expected energy use reduction and other outcomes for each application.

* + - Develop unified specifications for each application
			* Different specifications for each type of application (e.g. parking garage, outdoor parking lot, walk way, etc.) will be developed and shared with the consortium.
			* University of California, Davis will assist with development of specifications.
		- Develop a common testing program
			* Measurement and assessment of pilots will be based on conducting a pre-retrofit study of existing connected power and energy patterns using small light loggers deployed across a site or data from existing sub-metering. Data from these will be used to establish a baseline. Light loggers will then be used post-retrofit to assess lighting use patterns for comparison and energy saving projections.
				+ Establish common baseline assessment

Identify source and systems

Identify connected load

Identify typical use patterns with light loggers

Estimate current energy use or use metered data

* + - * + Measurement & Verification (post-retrofit)

Occupancy measurement protocol using event recorders

Methodology for comparison

Reporting process

* + - Develop group purchases when possible
		- Establish a secured web page for developing draft specifications, shared information, calendar of events, manufacturers, and to link results and reporting projects
		- Establish quarterly progress meetings

**Benefits:**

* Common intelligence will help build a more informed specification
	+ - Potential to minimize costs on commonly purchased materials
		- Greater insight into new technologies, less trial and error
* Reduce energy use and greenhouse gas emissions across universities in the Midwest