



# PROJECT 7 - Advanced LED Downlighting Systems

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# Goals

- Work with industry partner to develop a central power supply.
- Develop an indirect LED optical head.
- Design and verify a thermal management system that maintains LED's at manufacturer's recommended junction temperature
- Establish a simplified installation technique that results in a reduction of labor costs and/or material costs and then verify the technique by observing installations of an LED downlight system in the field and interviewing field installers.
- Provide an LED downlight system that will closely match the lighting quality of incandescent downlighting systems while using a significantly lower amount of energy.

# Current Activities

- Continue concept development through the following efforts
  - Optical optimization through software simulation and prototype evaluation using an integrating sphere and luminance probe
  - Thermal optimization utilizing engineering principles, thermal probes and thermal imagery.
- Power supply development
  - Working with industry partner to design and specify a central power supply (Prototypes from Korea are in route via UPS!!)
  - Characterize prototype performance using power analyzers
- Conceptualize system integration including
  - Installation techniques
  - Resulting total installed costs
  - Potential maintenance hurdles

# Planned Demonstrations

- CLTC will monitor a minimum of 50 LED downlighting systems based on a plan consisting of
  - Baseline characterization
  - An energy-savings metering plan
  - A user/installer survey plan
  - An in-situ photometric test plan
- SMUD has agreed to demonstrations in their territory and will work to find suitable end user partners

# Input

- Help determining which system path is most viable
  - Retrofit
  - New Construction
  - Commercial
  - Residential
- Help determining which system features will be useful
  - Individual / grouped fixture control
  - Occupancy scenarios
  - Wireless communication capabilities