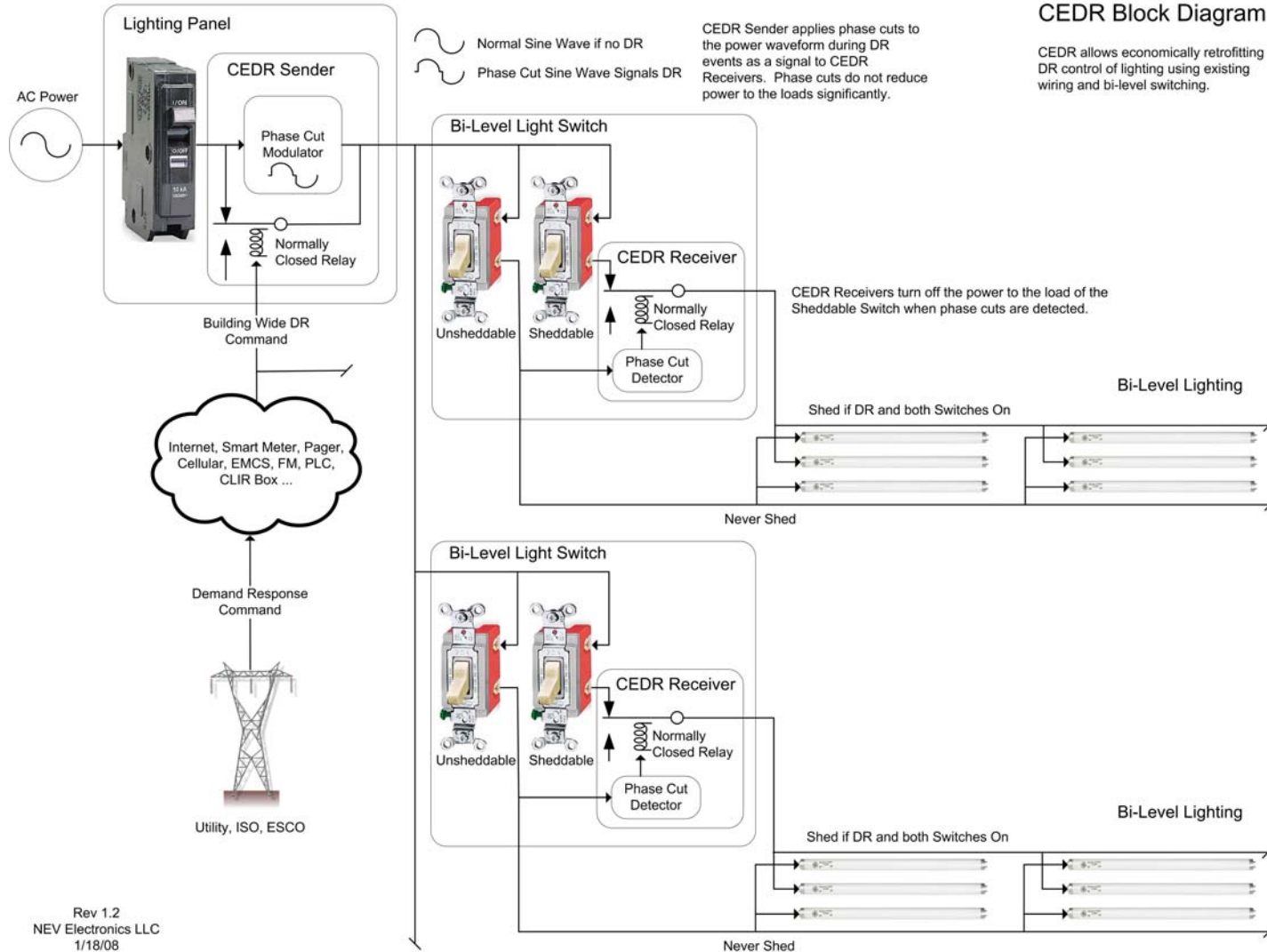


# Cost Effective Demand Response (CEDR)

Joel Snook, NEV Electronics LLC  
Cori Jackson, CLTC

February 21, 2008

# CEDR system



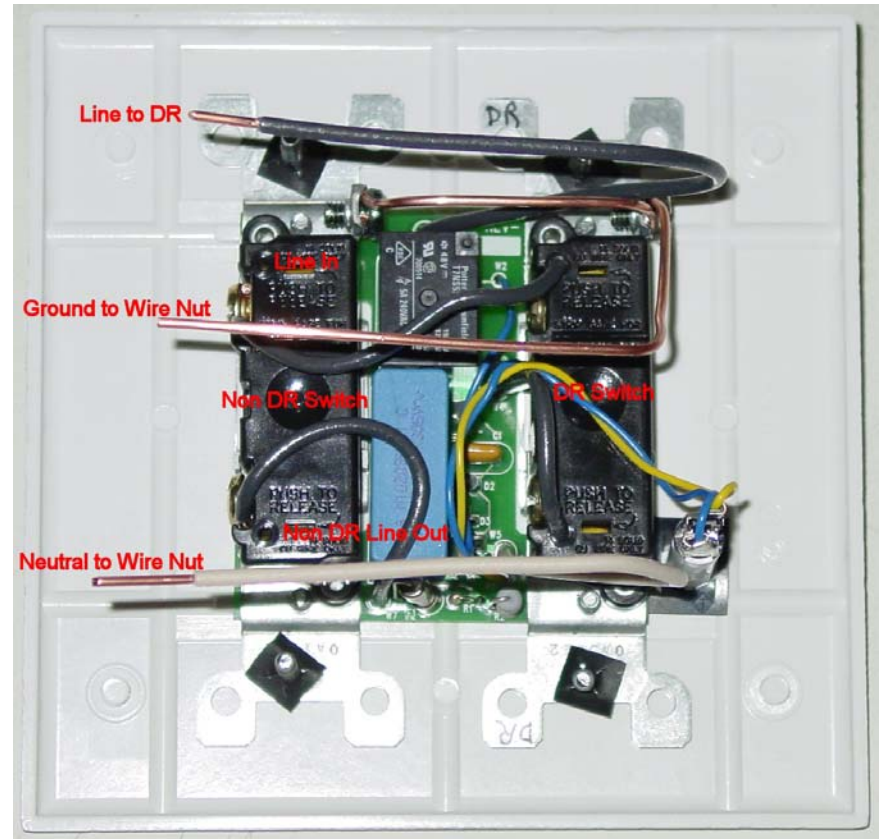
# Project Summary

- CEDR allows cost effective retrofit shedding of lighting loads
- We are developing CEDR because
  - California needs more demand response capacity
  - Existing retrofit lighting control solutions are too expensive for demand response use
- The program goals are
  - Examine the economics of CEDR for DR use
  - Develop the CEDR hardware to the point it can be used in field tests
  - Gather real world data from those tests
  - Start the commercialization of CEDR leading to production and deployment

# Current Activities

- **Completed task 3.1, Market Analysis and Product Specification**
  - **Product Specification**
    - 120 to 277V operation with 20A senders and 10A receivers
    - Targets of \$155 per sender and \$20 per receiver with 15 minute installation time per sender or receiver
  - **Market analysis**
    - Open offices in commercial buildings are the best market
      - 290MW of sheddable load T
      - Typically 0 to 3 year ROI
    - Entered UC Davis business plan competitions to advance commercialization
- **Started task 3.2, CEDR Development and Refinement**
  - Examine UL, NEC, THD and FCC requirements and probably seek UL approval
  - Designing field trial ready Sender to replace proof of concept design
    - Most needed upgrade is small, low cost, 120 to 277V power supply.
  - Verify Receivers are field trial ready

# CEDR Receiver in Bi-Level Switch



# CEDR Demonstration Summary

- Task 3.3 - Conduct laboratory testing of CEDR system prior to field demonstrations
- Task 3.5 - Conduct field testing of CEDR system in real-world environments
- Task 3.5 - Evaluate the CEDR system performance under utility-initiated load-shed conditions
  - Verify proper controller and receiver functionality during load-shed events
  - Verify CEDR system does not affect other electrical equipment

# Current Activities

- Developed a preliminary testing and demonstration schedule
  - Device testing scheduled for late March 2008
  - Four month field demonstrations during the peak Summer season: May 2008 – August 2008
  - Load shed simulations will mirror critical events called by the local utility



Example:

[SCE: Time of Use - Base Interruptible Program](#)

# CEDR Demonstration Sites

- Prospective host demonstration sites in PG&E and SCE service territory:
  - City of Fresno – PG&E
  - University of California, Irvine: Mail Handling Facility - SCE



# CEDR Demonstration Sites

## GREEN TEAM

State of California Department of General Services

PG&E and SCE

Elihu M. Harris Building,  
Oakland, CA



28 Civic Center Plaza –  
Santa Ana, CA



Ziggurat Building –  
Sacramento, CA



# Next Steps...

- Finish design of field test ready hardware and produce prototypes
- Determine test parameters required by project partners
- Conduct laboratory testing to verify device functionality and overall system reliability
- CEDR system Demonstration Agreement with selected host sites