2008 Title 24
PG&E Nonresidential CASE Reports Update

Presentation by Steve Blanc, PG&E
PG&E Codes & Standards Program
CEC Workshop November 24, 2005
2008 T-24 CASE Reports

- **Codes And Standards Enhancements**
- Technical and feasibility information on energy savings proposals to support an informed CEC decision
  
  - *Technical information* - how does it work, how much cost, how much energy and cost savings
  
  - *Feasibility* – market share, can market respond, interaction w/ codes & practices
2008 T-24 Nonresidential CASE Reports

- Insulation Levels
- TDV Lighting Controls
- Cool roofs
- Demand Response
- Outdoor Lighting
- Skylighting
- Indoor Lighting
- Sign Lighting

- Overall Envelope
- Indoor Lighting
- Outdoor Signs
- Sidelighting
- Refrigerated Warehouses
- Scavenger Fans
- DDC to Zone
Issues Common to All Measures

- **Cost of electricity and natural gas**
  - Separate time dependent factors for demand response (DR) developed by PIER/SCE PCT

- **Quantities of building sf, outdoor lighting and signs**

- **Emissions factors for electricity and natural gas**
  - From CEC declaration of environmental impact for 2005 standards
### New Construction Activity by CTZ

**sqft X 1,000 (4 year average)**

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**Totals** 5,776, 1,990, 1,277, 2,535, 6,901, 6,527, 27,380, 24,410, 15,334, 21,965, 37,504, 6,227, 157,827
Calculating Emission Reductions from Energy Savings

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Values provided by the CEC System Assessment and Facilities Siting Division. 

http://www.energy.ca.gov/reports/2003-09-12_400-03-018.PDF
Outdoor Lighting

- Revisit parking lot and walkway LPA’s as well as security lighting LPA’s
- Basis of models is IESNA outdoor lighting standards
- LPA’s will be based upon pulse start MH
  or for parking lots… HPS
- Remove or reduce loopholes
- This work is co funded by Sempra
Indoor Lighting

- **Revisit retail lighting as area category method**
  - Study removal of tailored lighting method
  - Consider “use it or lose it” allowances in area category method for display lighting, high RCR spaces
  - Study removing exemptions (refrigerated case lighting)

- **Add multi-scene requirements or PAF**
  - Normal retail, 1 or 2 levels of load curtailment, stocking/cleaning, off (emergency/security)

- **This work is co funded by Sempra**
Sign Lighting

- Create taxonomy for sign families
  - How / Where illuminated
  - Static vs moving displays
  - Cover as many types as possible

- Specific requirements by sign type
  - Power density for all types of signs
  - Alternative to LPD - power regulation efficiency requirements for all sources
  - Controls off during the day or dimmed at night

- Look at ease of compliance issues
- Working with SCE
Skylighting

- Reduce prescriptive skylighting criteria
  - < 15 ft ceiling height not likely cost-effective
  - Minimum area reduced from 25,000 sf to 10,000 sf – likely cost-effective

- Require photocontrols
  - Based upon experience with controls in the standard
  - Add adjustable deadband to photocontrol requirements

- Photocontrol PAF calculation
  - Daylight availability based in ACM software
  - Simpler prescriptive calculation

- Improve daylit area definition for partitions
Sidelighting & Photocontrols

- **Redefine sidelite space for standard**
  - Geometrical basis – larger windows lead to larger daylit depth

- **New model for photocontrol PAF**
  - Effective aperture not based on WWR
  - ACM hourly savings model based on daylight availability – TDV compatible

- **Study prescriptive requirement in large sidelite areas**
Refrigerated Warehouses

- New section for warehouses
  - Exempt process uses
  - Scope is cold storage

- Studying shell U-factor requirements

- Studying refrigeration system requirements
  - sizing, efficiency and controls
    - Condenser
    - Compressor
    - Evaporator
  - maximum U-factors for refrigerant piping and storage
Scavenger Fan

- Maintains negative pressure in common exhaust plenum
- Currently, ACM models this as inducing large infiltration rates
- Investigate the actual impact of fans on building ventilation
- Improve ACM procedures for scavenger fan modeling and energy use estimation
DDC to Zone

- Requirement for EMCS
  - Looking at Benefit to Cost by CTZ
  - Consider size threshold for requirement

- DDC (Direct Digital Controls) to zone
  - Zone temperature, VAV box position known
  - ECMS able to reset setpoints or pressure

- Energy savings - VAV pressure reset

- Demand response - global temp reset
Revise Overall Envelope Method

- Hand calc method to perform trade-offs between envelope components
- Recalculate coefficients based on TDV
  - extra value for demand savings
  - West facing windows more important
  - TDV trade-offs between heating (U-factor) and cooling (SHGC)
- Coefficients developed from layers model of angular solar transmittance
Demand response added to CASE studies

- Refine specification of “automatic load controls” receiving PAF credit
- Consider wider range of demand responsive indoor lighting controls
  - Switching circuits
  - Dimming circuits
  - Addressable ballasts
- Consider demand responsive control of signs lit during the day
Additions to CASE studies

- Add DR implications and code where applicable to all measures

- Propose language for:
  - Standards
  - ACM
  - Nonresidential Compliance Manual including worked examples
  - Compliance forms
Next steps on CASE studies

- review and alter work plans
- approve work on draft reports