

# ***Proposal for 2008 Title 24 Global Temperature Adjustment (GTA)***

October 24, 2005

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<b>DOCKET</b>
07-BSTD-1
DATE OCT 24 2005
RECD. APR 29 2008

# Proposal for 2008 Title 24



**Applicable to:**

- **Non-Residential (Commercial Buildings)**
- **New Energy Management Control System (EMCS)**
- **Title: Global Temperature Adjustment (GTA)**

# Based on PIER / DRRC Research



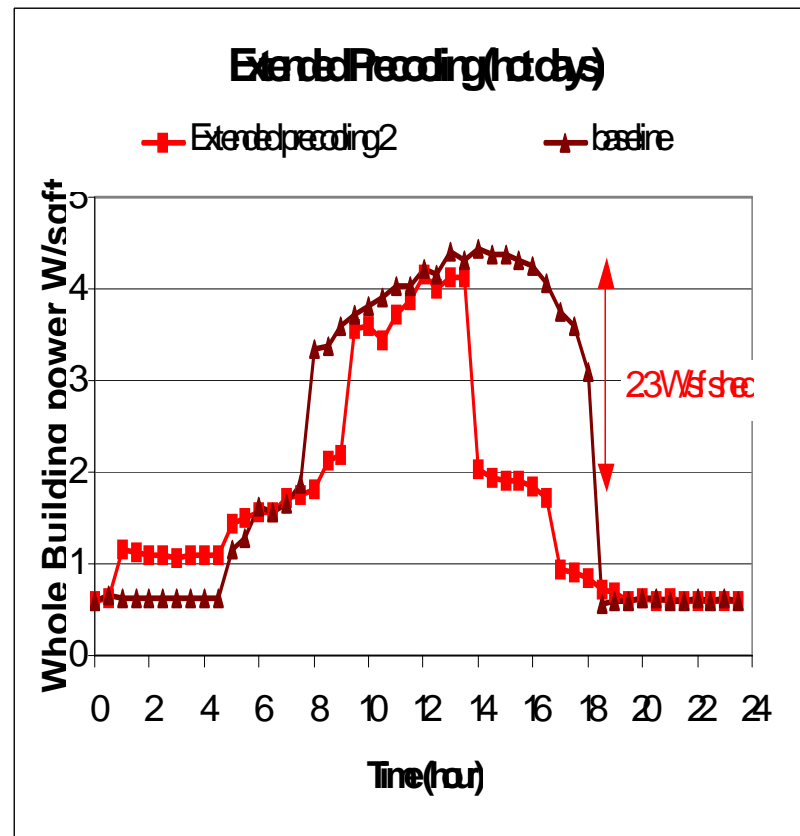
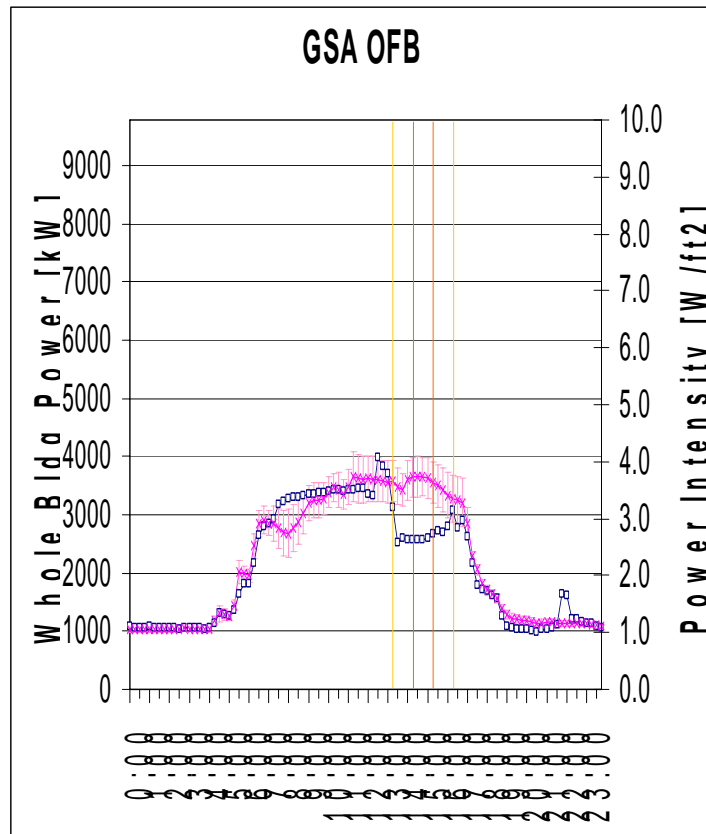
- **Field Studies by Demand Response Research Center in 2003 - 2005**
- **Over 10 Million ft.<sup>2</sup> commercial floor space tested**

# Proposal is Intuitive:



During DR events:

- Turn cooling setpoint up
- HVAC systems “coast” to provide savings



# GTAs not available in most buildings



- **Not in existing buildings**
- **Not in new buildings**
  - This is what we hope to change through Title 24

# Typical EMCS Temperature Adjustment

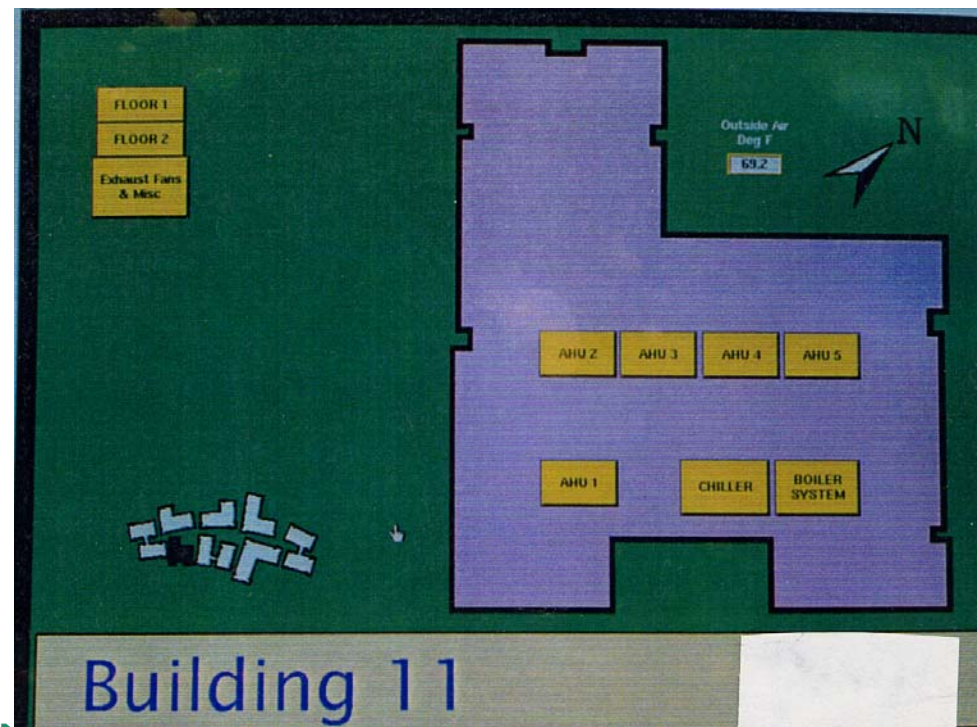


- The setpoint for each “zone” is adjusted individually.
- Up to 1,000s of zones per facility.
- Not practical to adjust whole site manually



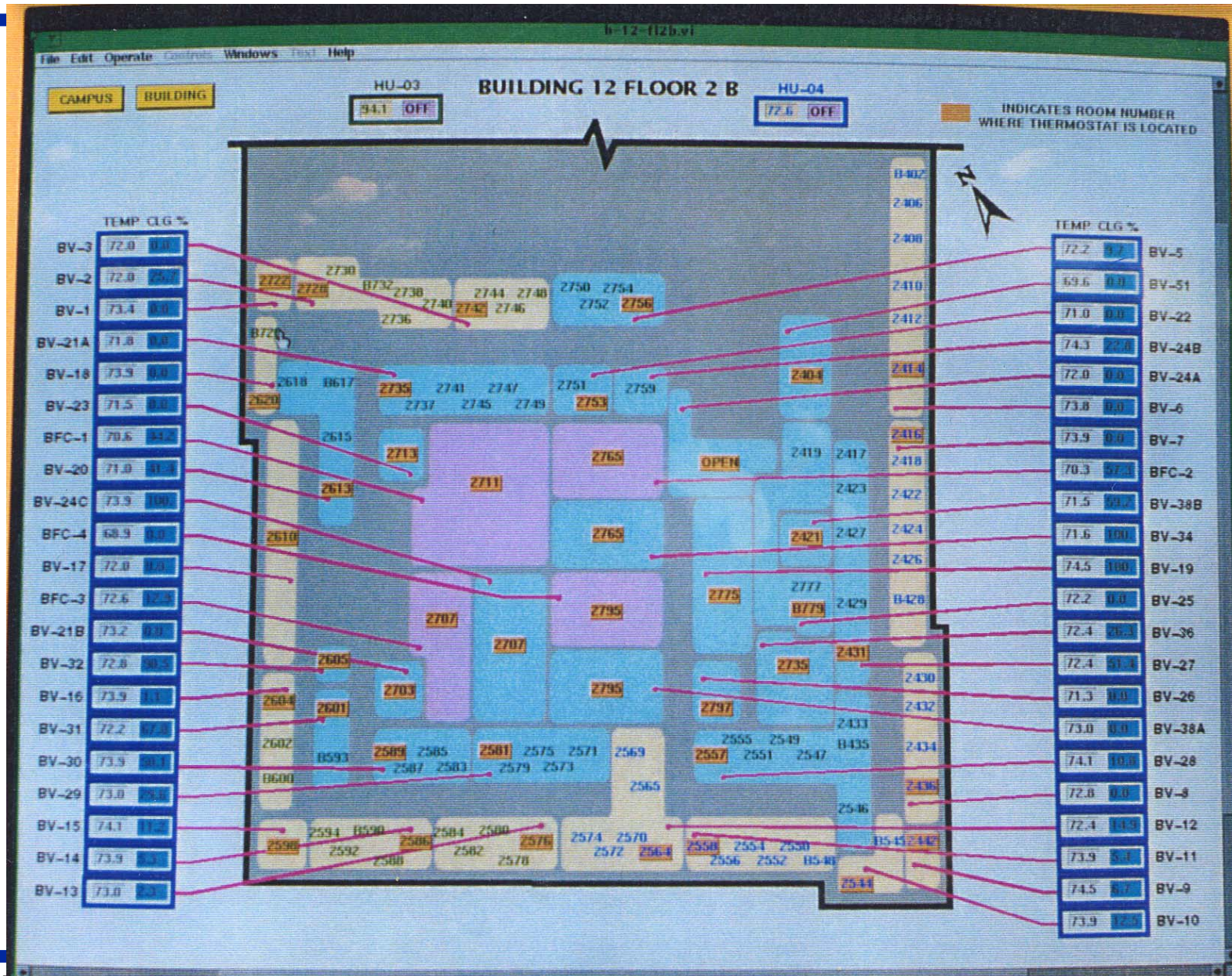


# Typical EMCS Graphical User Interface



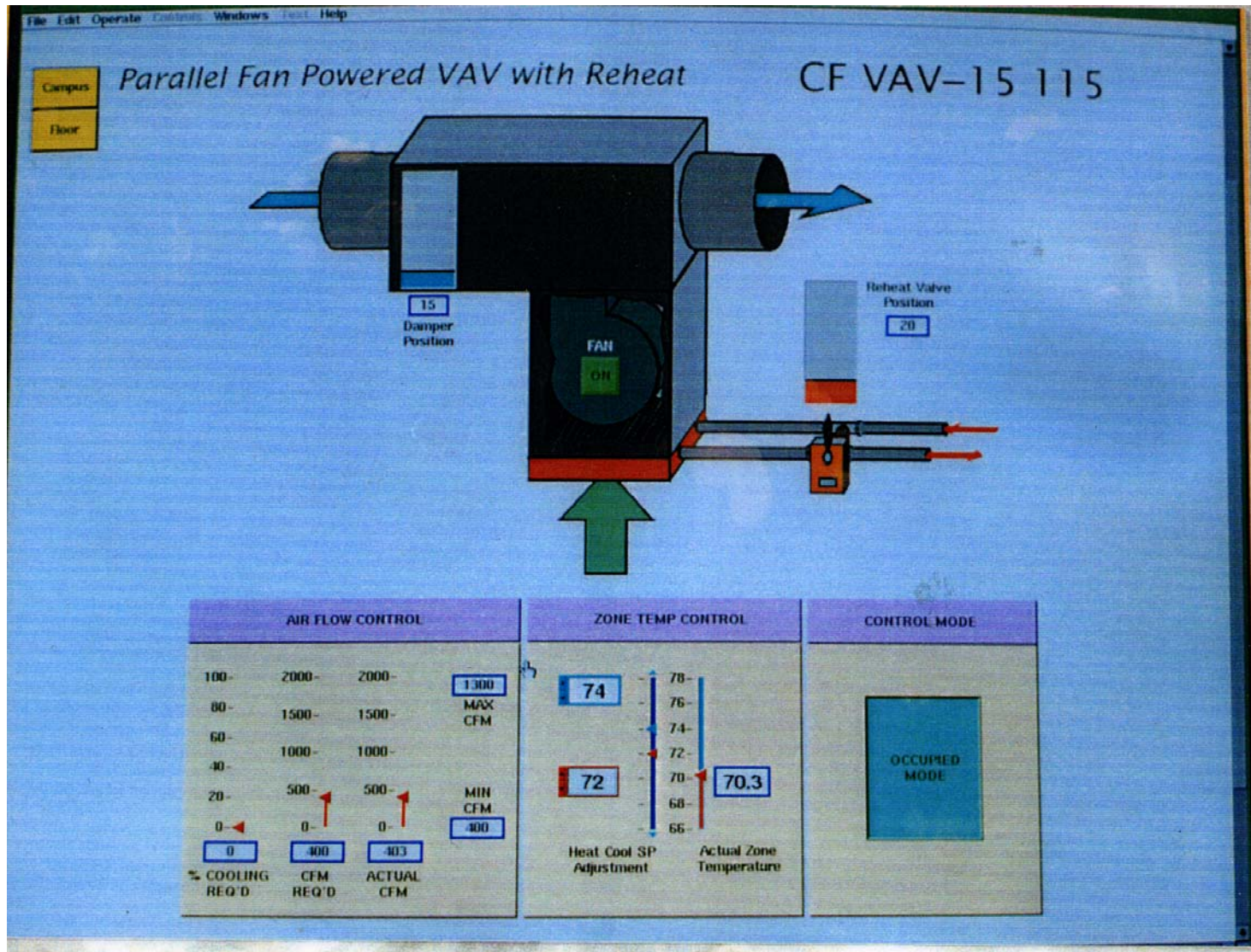


# Typical EMCS – Individual zones

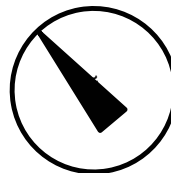
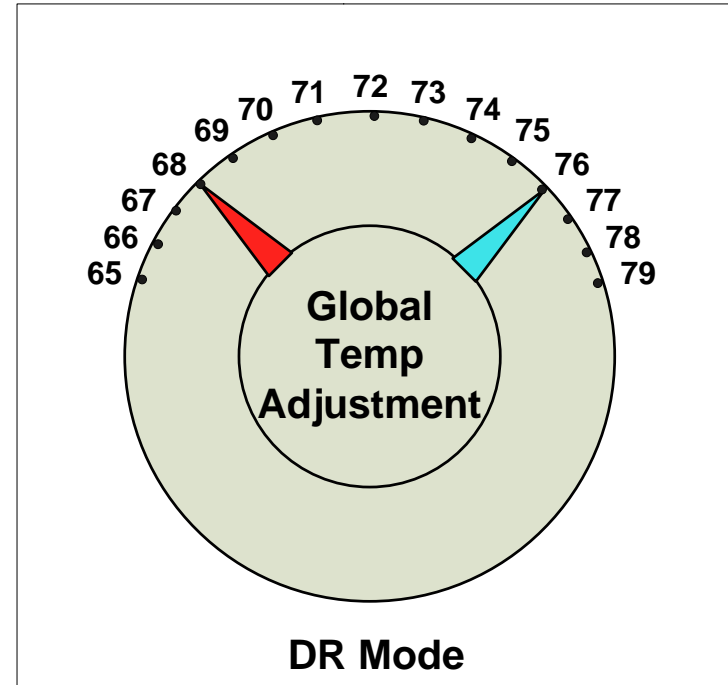
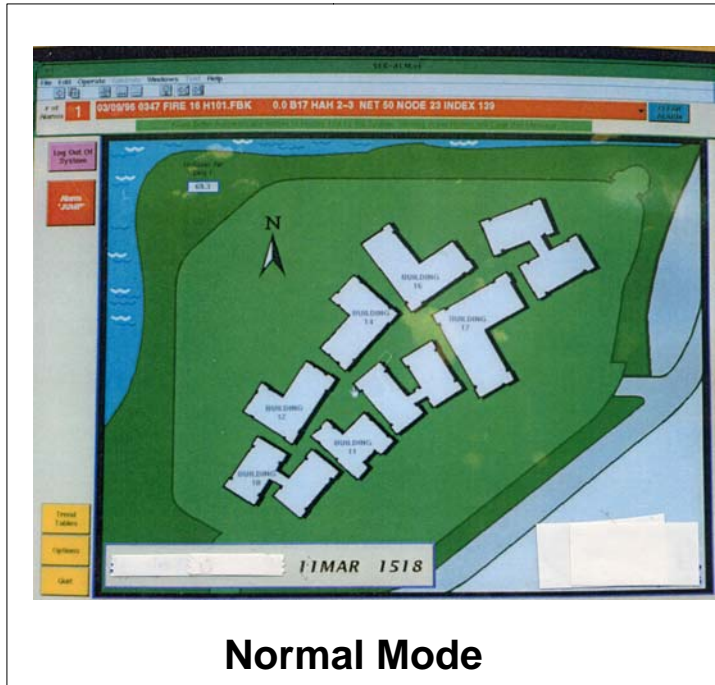




# Typical EMCS – Individual zones Adjustment



# GTA – Conceptual Implementation #1 (Absolute)



# GTA – Conceptual Implementation #2 (Relative)

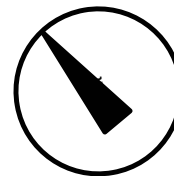


**Normal Mode**

Global Temp Adjustment  
(Relative)

“Relax” each zone  
by 2 deg.F

**DR Mode**





# Cost to Implement GTA



- **Software only – no hardware cost.**
- **Several (smaller) vendors already offer this feature at no extra cost.**
  - Sold nationwide
- **Remaining vendors can add GTA to standard product line at a low one-time cost.**
- **Similar global features are common this industry (e.g., night setback).**

# Next Steps



- **Approval process**
- **Define exact code language**
- **Further documentation**
  - Effectiveness
  - Payback period
  - Public feedback
  - Vendor feedback
  - Other?

# Questions & Comments?

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# Results using GTA (2003-2005)



Site name	Area (ft <sup>2</sup> )	Cooling Capacity (Tons)	Strategy Used	# Days of Testing	Climate Zone	Outside temperature at time of peak	Average shed (W/ft <sup>2</sup> )*	Peak shed (W/ft <sup>2</sup> )
GSA Oakland Federal Building	978,000	3,840	Global Temp Adjustment	4	3	88	0.30	1.10
Contra Costa County 2350 Arnold	131,000	240	Global Temp Adjustment	2	12	90	0.30	0.67
Contra Costa County 50 Douglas	90,000	240	Global Temp Adjustment	2	12	90	0.58	1.34
GSA Santa Rosa Federal Building	80,000	200	Global Temp Adjustment*	20	2	95	1.50	2.40
Sacramento County Building	80,000	180	Global Temp Adjustment*	3	12	70	0.75	1.00
Cisco	4,354,000	24,600	Global Temp Adjustment & other strategies	1	4	90	0.16	0.20
Echelon	75,000	4,800	Global Temp Adjustment & other strategies	2	4	90	0.89	1.22