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Update on PCTs (Programmable Communicating Thermostat)

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PIER 2/16/06 Workshop

- * Over the past year three PIER workshops on system integration (SI) issues related to AMI (Advanced Metering Infrastructure) & PCT (Programmable Communicating Thermostats) interfaces (I/Fs)**



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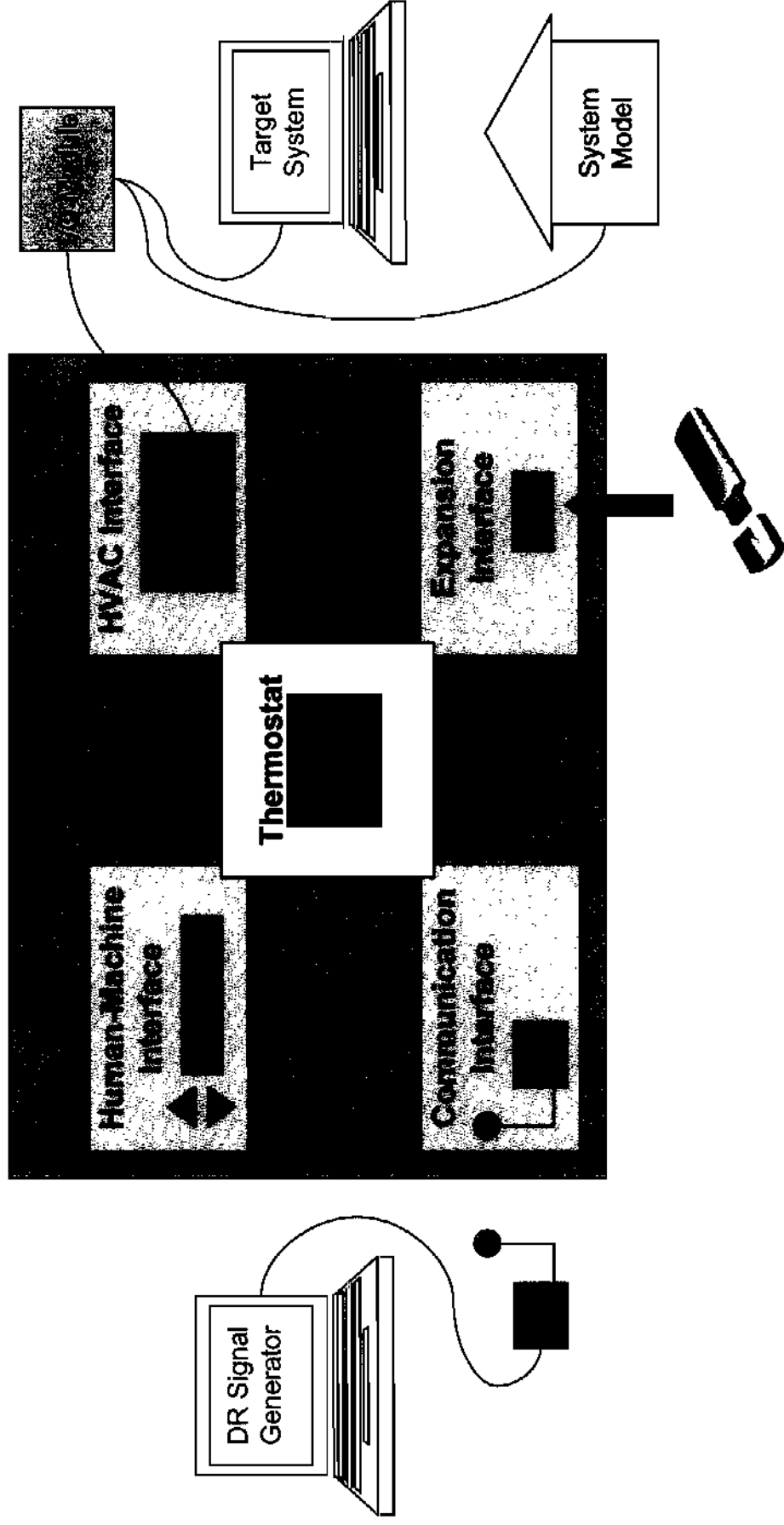
Stakeholder Meetings

* Stakeholders Participating Included

- IOUs
- Munis
- thermostat manufacturers
- Commission staff
- others



Proof-of Concept Prototype





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PCTs Update

Questions?

Comments on Title 24 Residential Lighting



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Today's Comments

- Eliminate dimming option in selected rooms
- Fast track work on hotel room – “master shut-off” switch
- Hotel room loophole

Current Title 24 Res. Lighting Code

For many room types:

A. Use efficient luminaire

OR

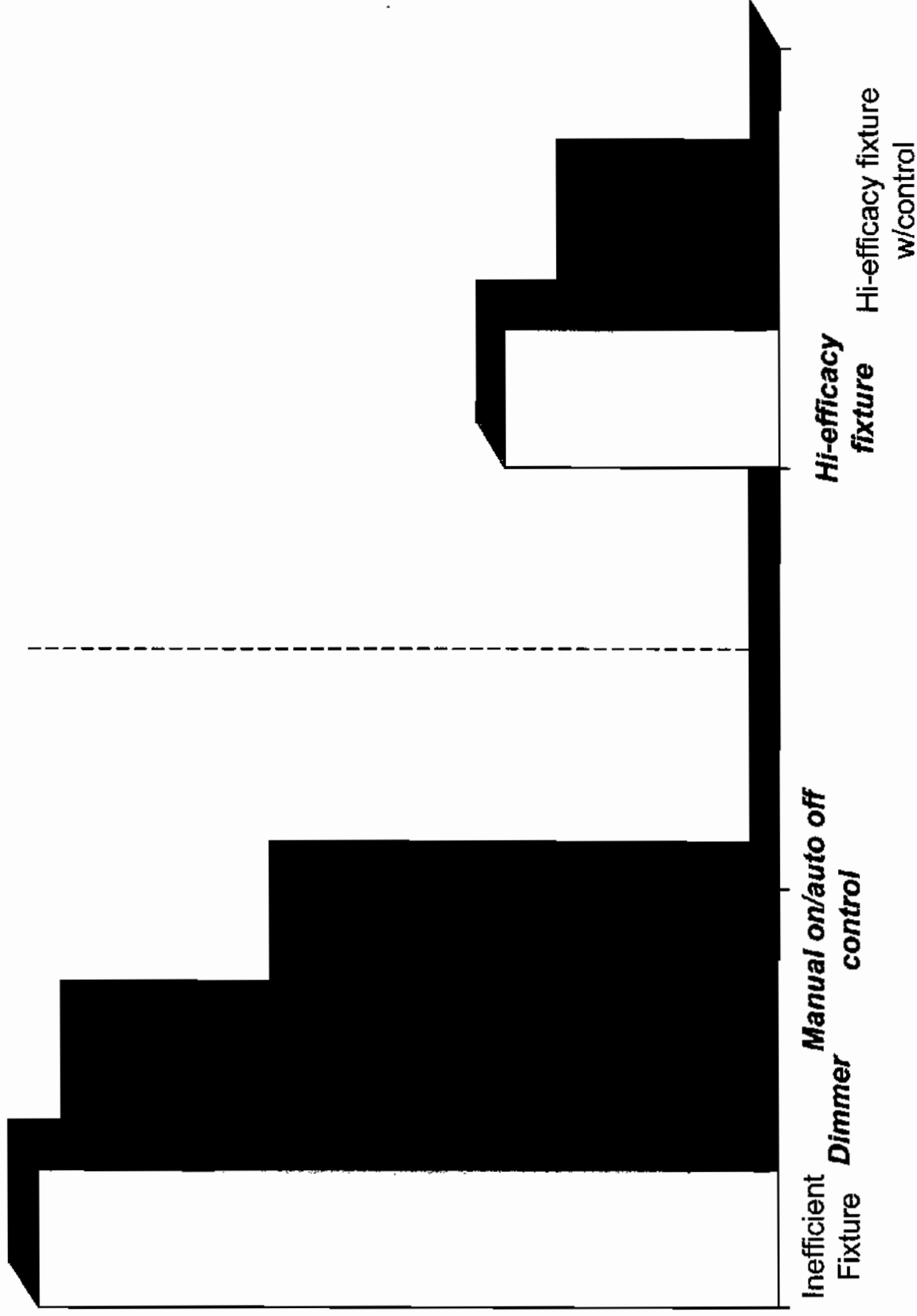
B. Install dimmer or manual on/auto off sensor

As dimmer is much lower cost option, it will be used most frequently.

Concerns About Installing An Inefficient Fixture and Dimming It

- Dimming seldom used. Results in very little savings compared to occupancy sensor or hi-efficacy fixture.
- “Regular” screw-based CFLs not compatible with dimmers. Will result in shorter CFL life and bad consumer experience.
- Potential Nightmare – will turn consumer off from screw-based CFLs in other sockets and huge lost savings opportunities.

Qualitative Energy Use Comparison



Potential Fixes

- Proposed Section 10 allows dimmers as compliance path for bedroom, living room, hallway, stairway, den, family room, etc.
 - **Option A - Remove dimming option for bedroom and hallways. Wide range of efficient luminaires available for these applications.**
 - Bedroom savings (assume base case of 2 sockets with 75 W lamps vs. 2 @ 18 W), up to 170 kWh/yr per bedroom

Savings from Moving to Hi-efficacy Bedroom Fixture

	2 hours/day	3 hours/day	4 hours/day
Energy savings (kWh/yr)	85	127	170
1 year electric bill savings	\$111.9	\$17.8	\$23.8
10 year electric bill savings	\$119	\$178	\$238

Option B – Dimmers w/CFLs

- Continue to allow inefficient screw-base fixture with dimmers in all these rooms but require builder to install screw-based dimmable CFL.

This will:

- Ensure savings are achieved until 1st CFL dies and hope they come back for more
- Prevent owner from having bad experience with screw based (single wattage) CFLs
- Provides another option to occupancy sensor or high efficacy luminaire.

Option C – One Inefficient Fixture Per Room

- Limit number of “inefficient” luminaires to one per room
 - This will discourage current trend of multiple inefficient cans in hallways, living rooms, etc.

FastTrack Hotel Master Shut-Off Switch

- Around the world (Europe, China, Australia) hotels have master shut-off switch for lights and selected outlets.
- Why? – Guests/maids frequently fail to turn off lights when they leave the room.
- Could provide dramatic energy savings
- System often use key as switching device (take key out, lights go off after X minute delay).

Remove Hotel Lighting Loophole

- Remove current 130(b) exception from high-rise residential living and hotel/motel room

“Up to 10% of the guest rooms in a hotel/motel need not comply”



Project Status

* Commission and IOUs agree on many points including:

- Responding to emergency signals – offset of 4 degrees F, cannot be overridden by user
- Responding to price signals – offset of 4 degrees F, can be overridden by user
- External port's – capable of receiving external modules which will enable various communication modes and other features
- Common user interface (LCD, LED) – provides information to the user such as the type of DR event and the status of the device
- Standardized equipment connector – for ease of installation and minimizing installation errors



Project Status

*** Issues Requiring Continued Discussion – Two Alternative Modes for Communication:**

- One-way communication on the PCT and enabled – allows Munis and others to use one-way communication for DR events without further effort. May also be used for backup to two-way communication. Two-way communication will be enabled thru the external port which disables the one-way mode.
- No default one or two-way communication on the PCT – the external port will be used to enable either the one-way or the two-way communications, depending on the utilities choice.



Proof of Concept

- * Once the utilities and the Commission agree upon a PCT concept, Ron Hofmann and the Berkeley group (PIER Contractors) will develop prototype hardware and proof of concept, and answer all remaining technical questions



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PCT Concept

