Energy Management Systems in Hospitality

Presented by:
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Energy Management and Your Valued Guest:

Optimizing Guest Satisfaction, Energy Usage and Green Programs

Energy is typically a hotel's second highest operating cost. Whether the price is rising, staying flat or decreasing, the impact on financial statements is always significant. While managing energy usage is imperative, there is an acute need by hotels to temper cost-cutting efforts with the desire to accommodate and delight its guests. Hospitality solutions must be multifaceted — simultaneously addressing:

- **guests' expectations of comfort, safety, and satisfaction**

- **hotel management's need for efficiency and reliability**

- **hoteliers' need to generate profits**

- **customers' desire to buy from socially responsible businesses and hoteliers' obligation to be environmentally sensitive**

Core Energy Management Strategies

When it comes to controlling the heating / cooling and lighting costs of a guestroom, the US Department of Energy has the following recommendations:

- Install Smart Digital thermostats that monitor room occupancy and automatically adjust the temperature when guests enter or exit

- Save on utility bills and maintenance costs by installing centralized energy management systems

- Save on lighting costs with energy-efficient lighting and occupancy sensors

- Educate cleaning and maintenance staff to turn off lights and adjust thermostats in back of house areas

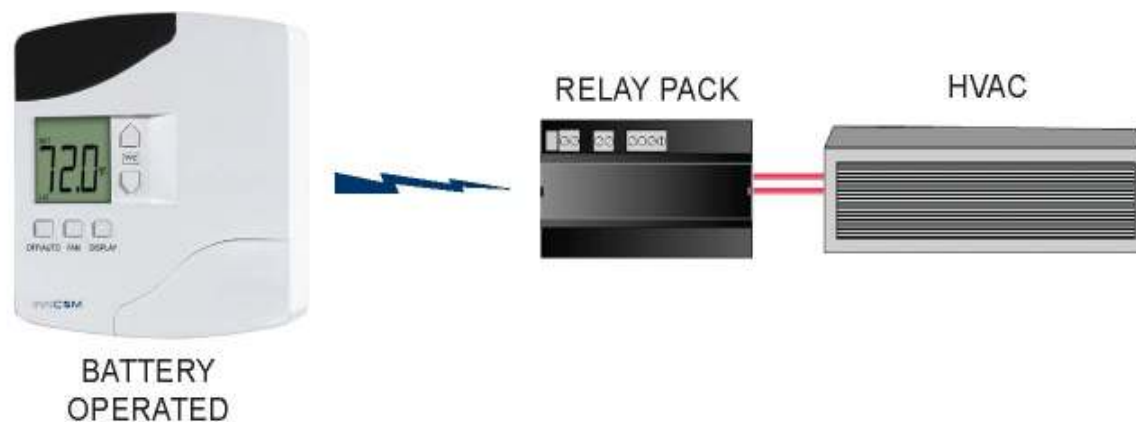- Implement preventive maintenance programs

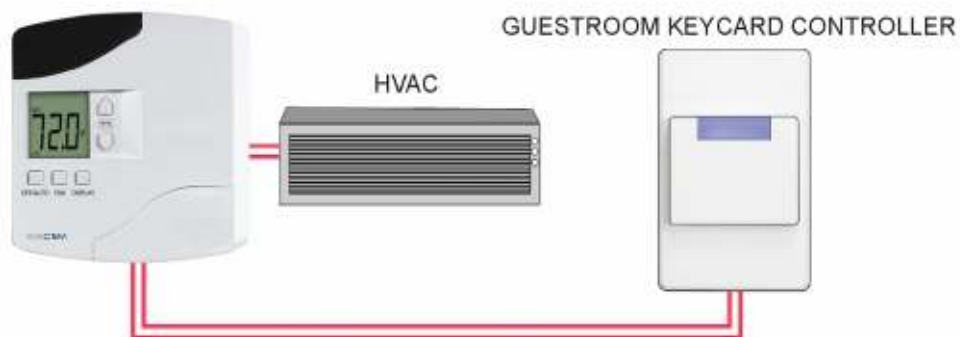# EMS Option 1

STANDARD DIGITAL THERMOSTAT

HVAC

STANDARD WIRELESS DIGITAL THERMOSTAT

RELAY PACK   HVAC

BATTERY
OPERATED
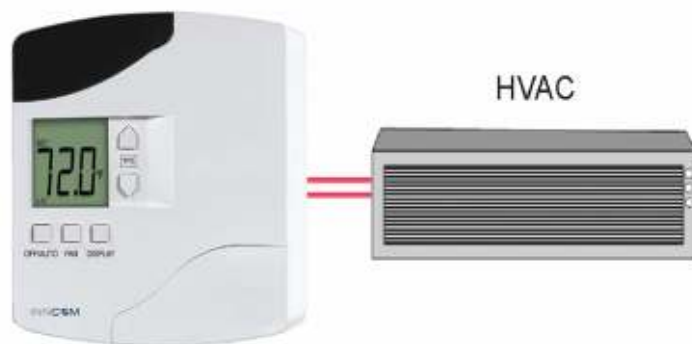
EMS Option 2

STANDARD DIGITAL THERMOSTAT WITH GUESTROOM KEYCARD CONTROLLER

GUESTROOM KEYCARD CONTROLLER

HVAC

72.0

STANDARD WIRELESS DIGITAL THERMOSTAT WITH GUESTROOM KEYCARD CONTROLLER

GUESTROOM KEYCARD CONTROLLER

RELAY PACK

HVAC

72.0

BATTERY OPERATED
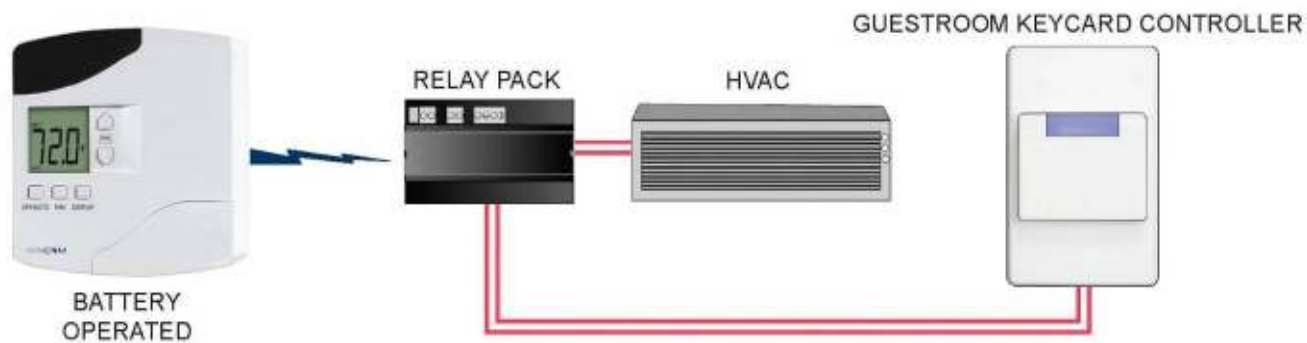
EMS Option 3

STANDARD DIGITAL THERMOSTAT WITH PIR

HVAC

DIGITAL WIRELESS THERMOSTAT WITH PIR

RELAY PACK

HVAC

BATTERY
OPERATED
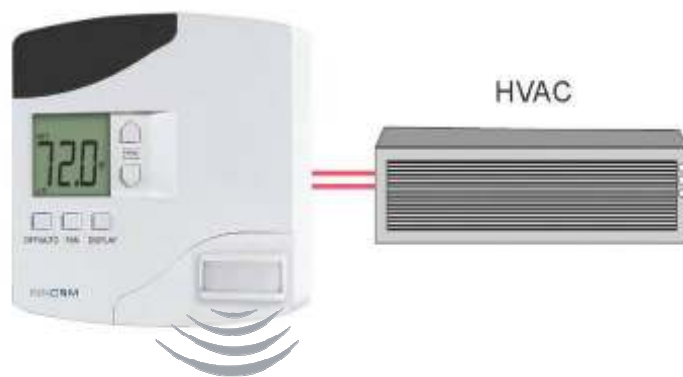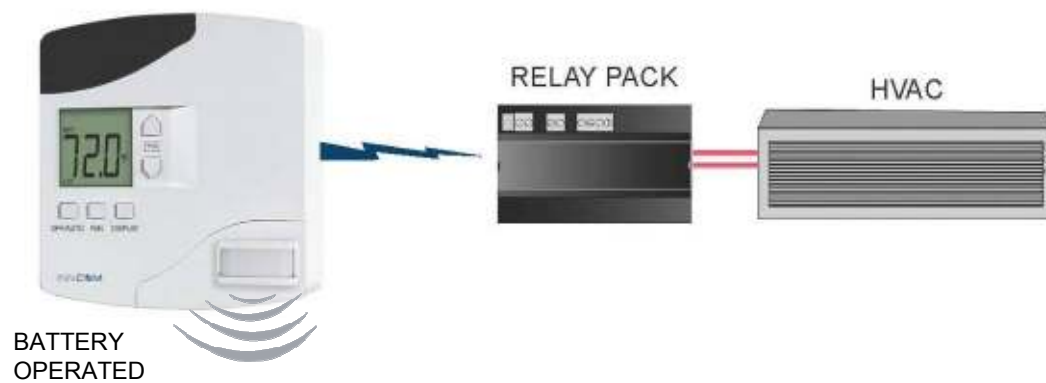
EMS Option 4

DIGITAL THERMOSTAT WITH PIR

ELECTRONIC LOCK/DOOR SWITCH

HVAC

DIGITAL WIRELESS THERMOSTAT WITH PIR

ELECTRONIC LOCK/DOOR SWITCH

RELAY PACK

HVAC

BATTERY
OPERATED
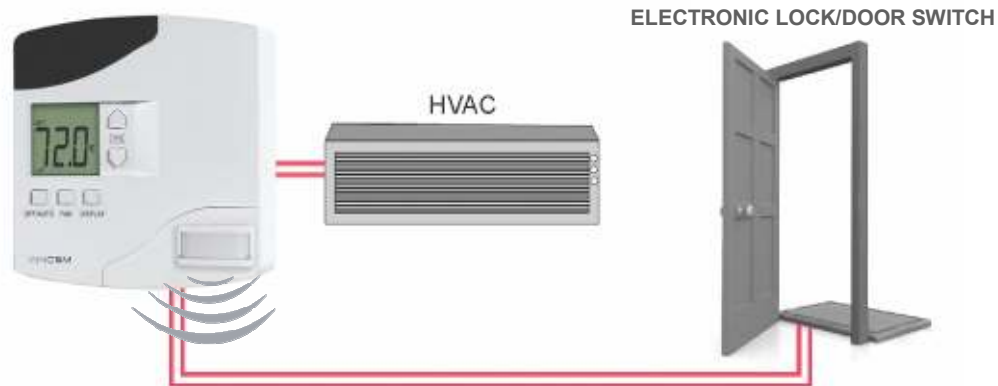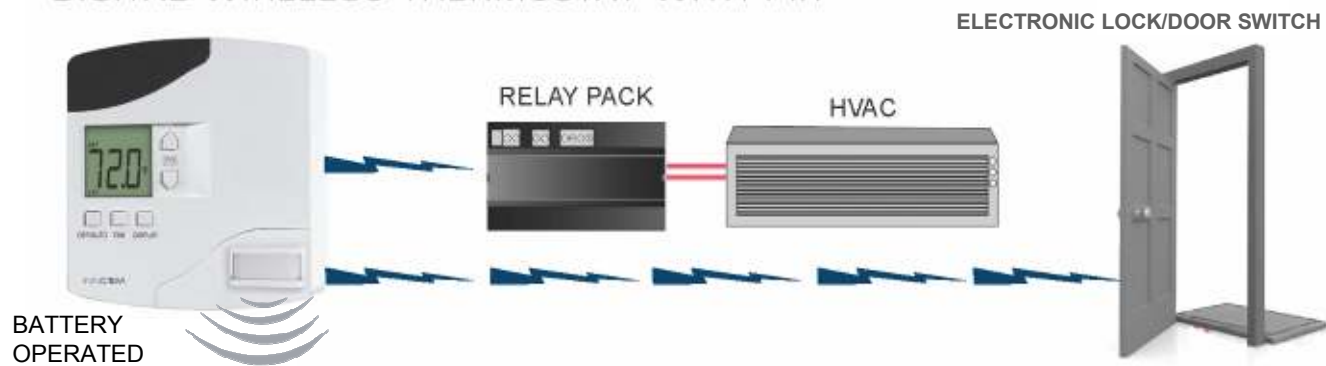
EMS Option 5

DIGITAL THERMOSTAT WITH PIR AND *eco*MODE®

HVAC

DOOR SWITCH

WIRELESS DIGITAL THERMOSTAT WITH PIR AND *eco*MODE®

RELAY PACK

HVAC

BATTERY OPERATED

DOOR SWITCH
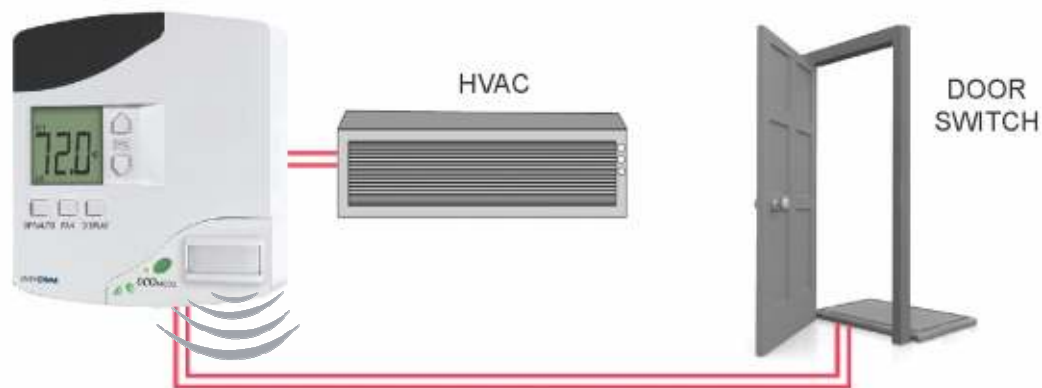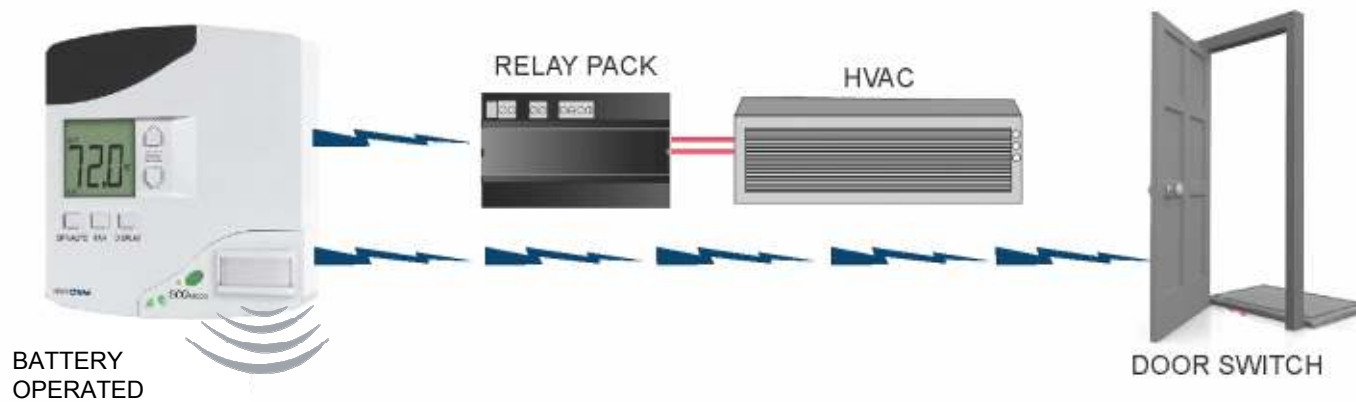
EMS Option 6

NETWORKED HVAC CONTROL SYSTEM WITH PIR

PMS SYSTEM

SYSTEM SOFTWARE
INNcontrol II™

DEDICATED WIRE
OR ETHERNET

HVAC

HVAC CONTROL

ELECTRONIC LOCK/DOOR SWITCH

NETWORKED WIRELESS HVAC CONTROL SYSTEM WITH PIR

PMS SYSTEM

SYSTEM SOFTWARE
INNcontrol II™

DEDICATED WIRE
OR ETHERNET

NETWORK CONTROLLER

HVAC

HVAC CONTROL

ELECTRONIC LOCK/DOOR SWITCH
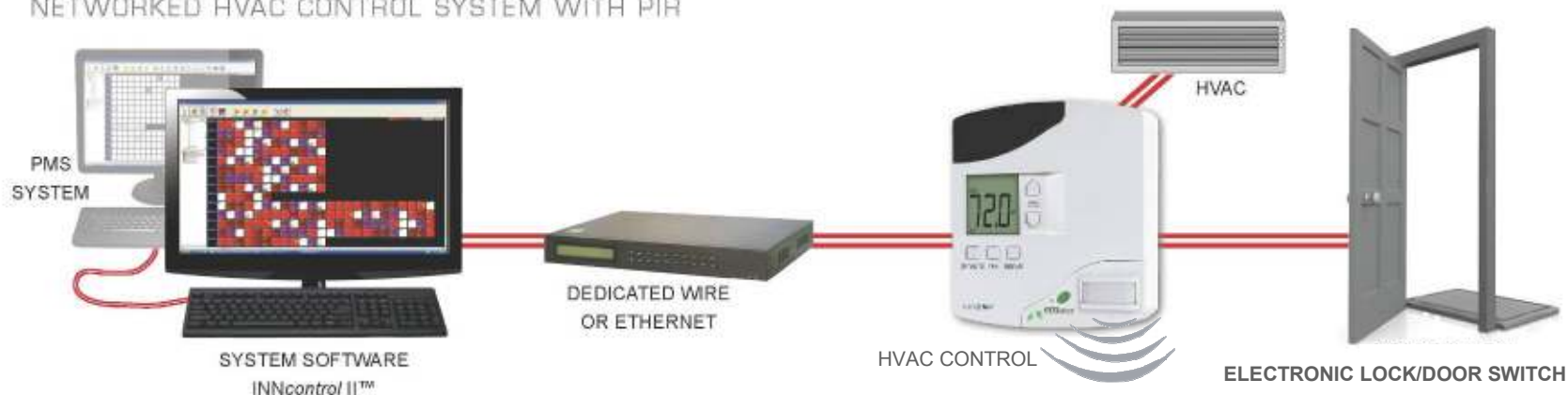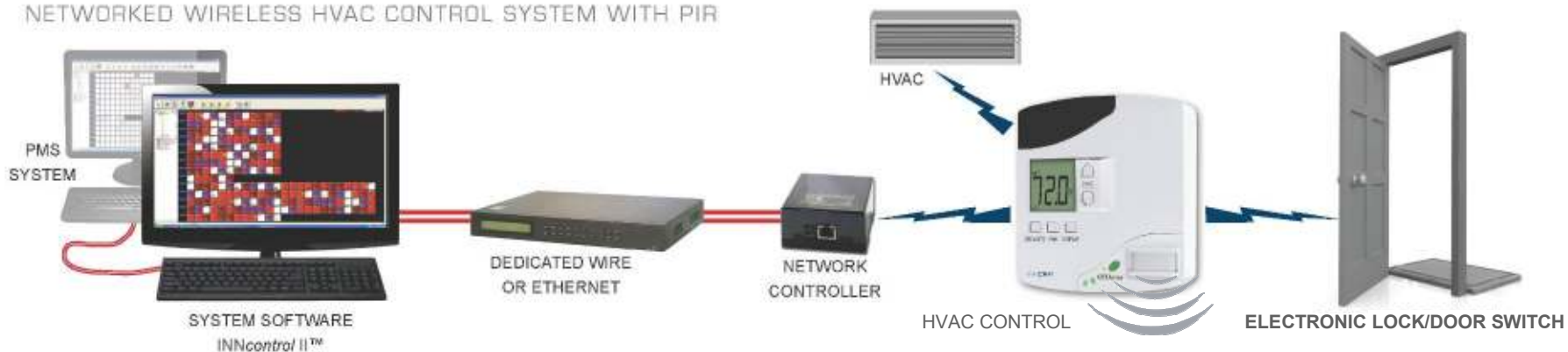
EMS Option 6A

NETWORKED WIRELESS RF HVAC CONTROL SYSTEM

PMS SYSTEM

PC501
PROTOCOL
CONVERTOR

SYSTEM SOFTWARE
INNcontrol II™
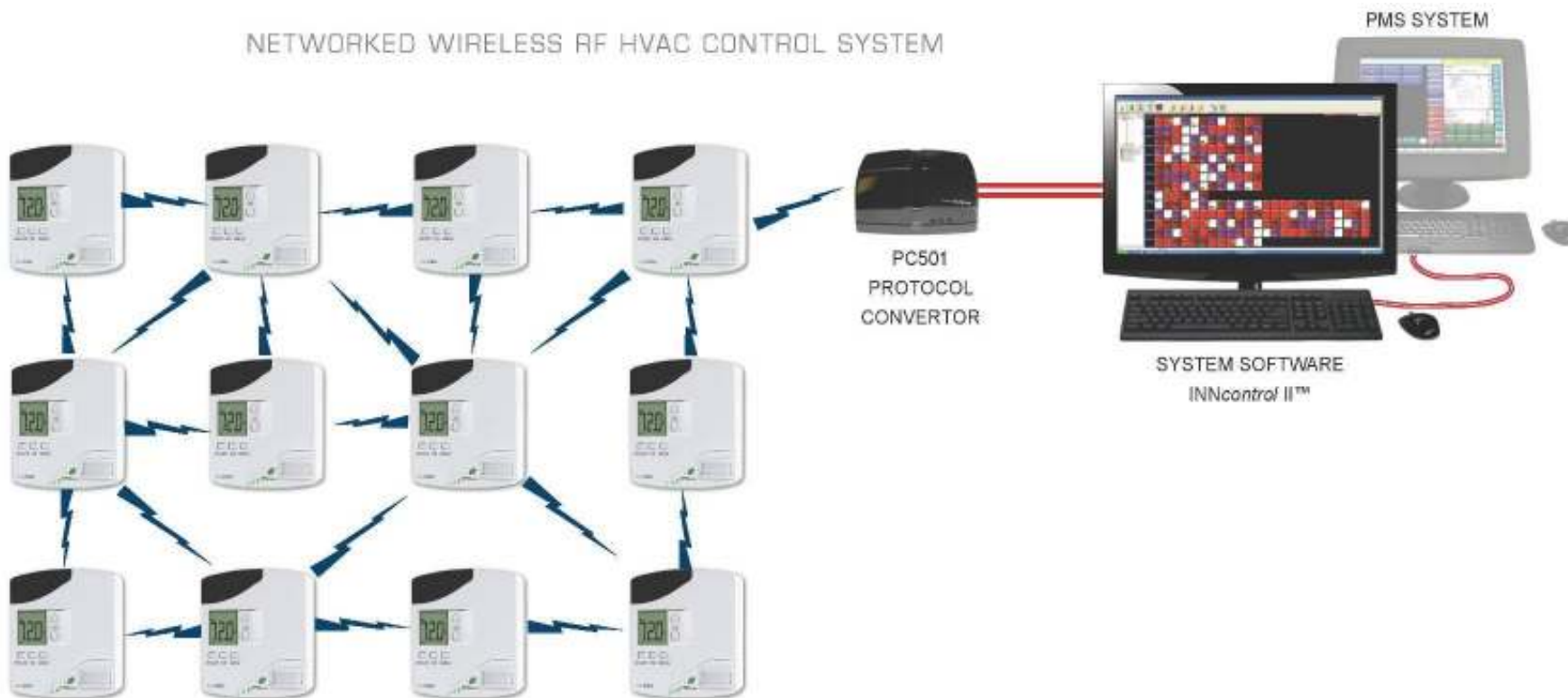
12v – 277v wired or battery operated thermostats

EMS Option 7

NETWORKED HVAC CONTROL SYSTEM WITH PIR LIGHTING & DRAPES

PMS SYSTEM

SYSTEM SOFTWARE
INNcontrol II™

DEDICATED WIRE OR ETHERNET

HVAC

HVAC CONTROL

ELECTRONIC LOCK/DOOR SWITCH

NETWORKED WIRELESS HVAC CONTROL SYSTEM WITH PIR LIGHTING & DRAPES

PMS SYSTEM

SYSTEM SOFTWARE
INNcontrol II™

DEDICATED WIRE OR ETHERNET

NETWORK CONTROLLER

HVAC

HVAC CONTROL

ELECTRONIC LOCK/DOOR SWITCH

NETWORKED HVAC CONTROL SYSTEM WITH PIR LIGHTING, DRAPES, MINIBAR & SAFE

PMS SYSTEM

SYSTEM SOFTWARE
INNcontrol II™

DEDICATED WIRE OR ETHERNET

HVAC CONTROL

HVAC

ELECTRONIC LOCK/DOOR SWITCH

NETWORKED WIRELESS HVAC CONTROL SYSTEM WITH PIR LIGHTING, DRAPES, MINIBAR & SAFE

PMS SYSTEM

SYSTEM SOFTWARE
INNcontrol II™

DEDICATED WIRE OR ETHERNET

NETWORK CONTROLLER

HVAC CONTROL

HVAC

ELECTRONIC LOCK/DOOR SWITCH

Additional Network Solutions

- Drapes and blinds may be closed when a room is unoccupied during peak direct sunlight hours

- The staff will be notified when a room is vacant and windows, doors or sliders remain open

- Hotel-wide peak demand load-shedding

- Multi-property views enables you to easily switch from property to property and save information from multiple properties on a central server

Centralized Energy Management Systems

EMS or BMS systems typically focus on controlling devices. INN*control* II™ and other lodging focused software is different because it is designed to serve the needs of the hotel and the guest.

A capable system should have as a baseline the following features:

Energy Management Tracking

- Energy Savings showing rolling 12 months of energy conservation. Yellow depicts the energy that has been consumed, while gray represents how much _more_ energy you would have consumed if energy management were not enabled. Baseline of 1-2% of the entire building as reference rooms.

- Software should provided the property a very accurate history of run time of all the HVAC equipment in the rooms.
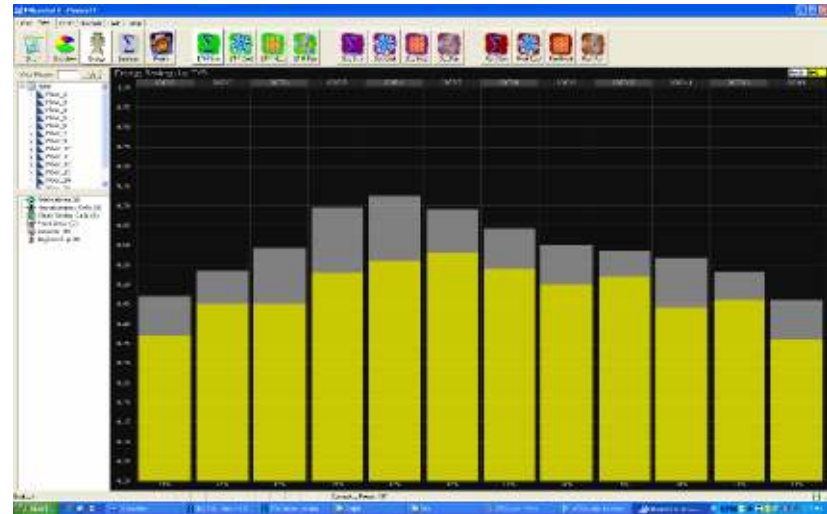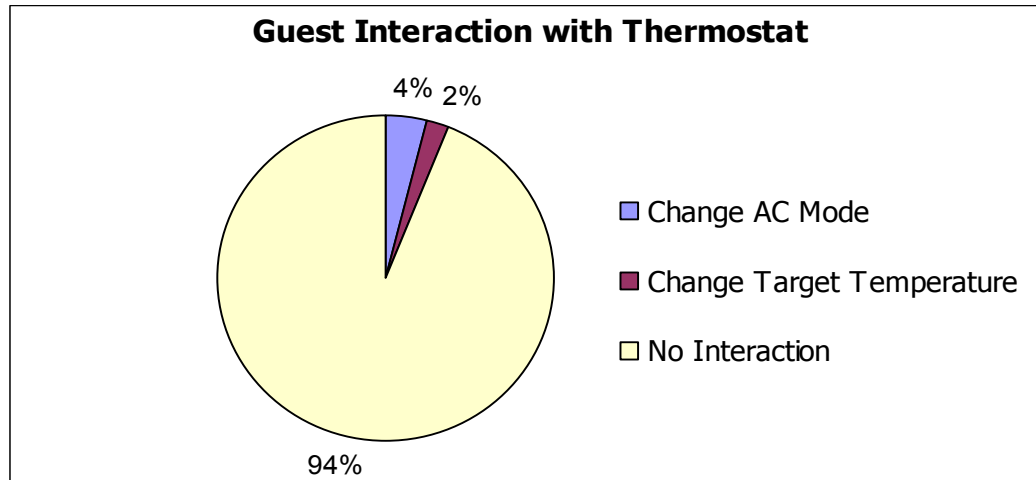
ecoMODE®

- INNCOM's patented, ecoMODE® facilitates guest opt-in in the hotel's sustainability programs

- Increases guestroom energy savings by 1 (one) additional degree setback during unoccupied periods

- In networked systems will alert hotel staff of guest's participation in sustainability programs

- Can be easily added to almost all switches and INNCOM guest interface devices

- Adds a distinctive and very visible differentiator for green hotels

EMS Effect on Guest Satisfaction

Guest Interaction with Thermostat

- Change AC Mode
- Change Target Temperature
- No Interaction

4% 2%

94%

- Of guests that did, 4% control fan for noise.

- INNCOM controls provides a comfortable environment – i.e. guests do not need to interact.

- Data taken from a luxury U.S. property over a 5 week observation period in February and March 2005.

- Study showed 94% of guests did not use thermostat when room was automatically maintained.

- Supports premise that EMS does not create discomfort, but actually offers a more comfortable environment while offering the hotel energy savings and operational efficiencies.

Energy Management - Overview

- Enhances Guest Comfort

- Reduces Energy Operating Costs

- Extends Equipment Life

- Humidity Control Option

- 1° F setback = 3% reduction in KW

Per Diem Savings/Consumption Per Room

4.02 kWh, 75%

1.31 kWh, 25%

Building Automation Systems

- ### *Connect, Converge, Control, Customize*

- ### Energy Usage
  – Run your equipment only when necessary
  – Data collection of equipment run-times provides valuable management information

- ### Scheduling
  – Prevent un-necessary cooling or warming of unused spaces
  – Ensure that meeting spaces are comfortable at scheduled times

- ### Peak Demand Load Shedding
  – Can provide optimal kW pricing in conjunction with your local utility

- ### Alarm Reporting
  – Minimize down time and excessive maintenance costs
  – Alarms can be emailed to appropriate personnel

- ### Equipment Diagnostics
  – Enables you to take preventive actions and extend equipment life
  – System can be interfaced to Maintenance Management Systems for work order generation

- ### Interfaces to Property Management and Guestroom Systems
  – Enables optimization of operating schedules

Next Generation of Energy Conservation

- Reduction of green houses gasses

- ISO 14000 Environmental Management

- ISO 26000 Social Responsibility

- Primary attributes of EM in hospitality:

  ➢ No noticeable effect on guest comfort

  ➢ Manage the rented / unrented room states

  ➢ Smart room allocation

  ➢ 30% to 40% reduction in guest energy

- Independent validation still desirable

Demand Response I

- **Creating infrastructure for Peaks is extremely expensive**

  - On regional level

  - On site level

- **Prohibitively expensive to add generating and transmission infrastructure**

  - Rights of way

  - Policies and associated penalties of Green House Gasses reduction mandates

Demand Response I (continued)

- **Reduce demand spikes on a site level**

  - Reduce demand charges

  - Less stress on local infrastructure

- **Reduce demand on overloaded grid**

  - Protect grid from overload

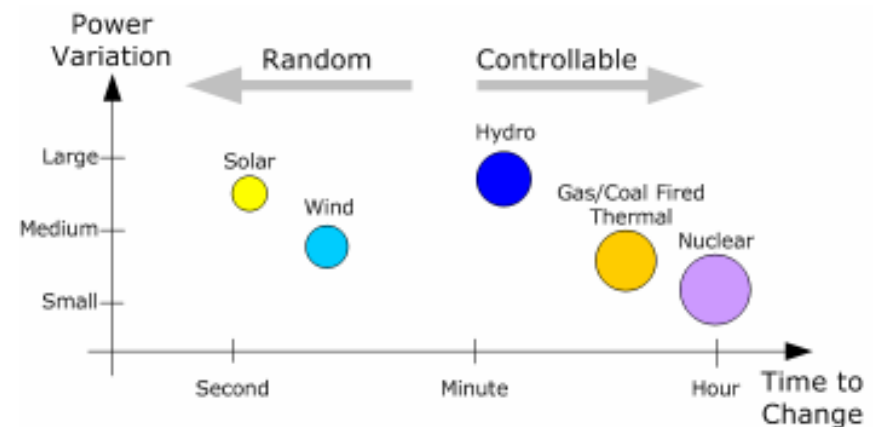 - Avoidance of black-out, regional alternatives

Demand Response II

- **Dynamic aspects of operating a stable grid**

- **Dealing with short-term supply variations**

  ➢ Win – Win customer / utility

  ➢ Demand response capability is the necessary counterpart to a dynamic grid with an increasingly larger share of renewable power sources

Smart Building – Smart Grid

- **The potential of a short-term demand reduction in a hotel**

➢ 200 room hotel with PTACS can offer 60kw for a 20 minute duration without noticeable impact .

➢ On room level

➢ On building level

➢ On a service area level

Maximizing Comfort and Smart Energy

- Small variations don't impact guest comfort – but have large impact on the grid.

- Cost of peak changes (CA 2000)

- Negative cost from Texas wind farms generated power

Summary

- **Variety of applications and products for energy management in hotels**

- **Choices of technology and topology**

- **Open architecture system integration**

- **Extensive management tools and reports**

- **Consider the path from Energy Management to Room Automation**

- **Integration from smart building to smart grid coming fast, be prepared**

1-800-543-1999   www.inncom.com

INNCOM
Global Leader in Integrated Room Automation Systems