Innovative Approaches to Energy Efficiency

pepco Energy Services

4th Annual ESC Market Transformation Conference

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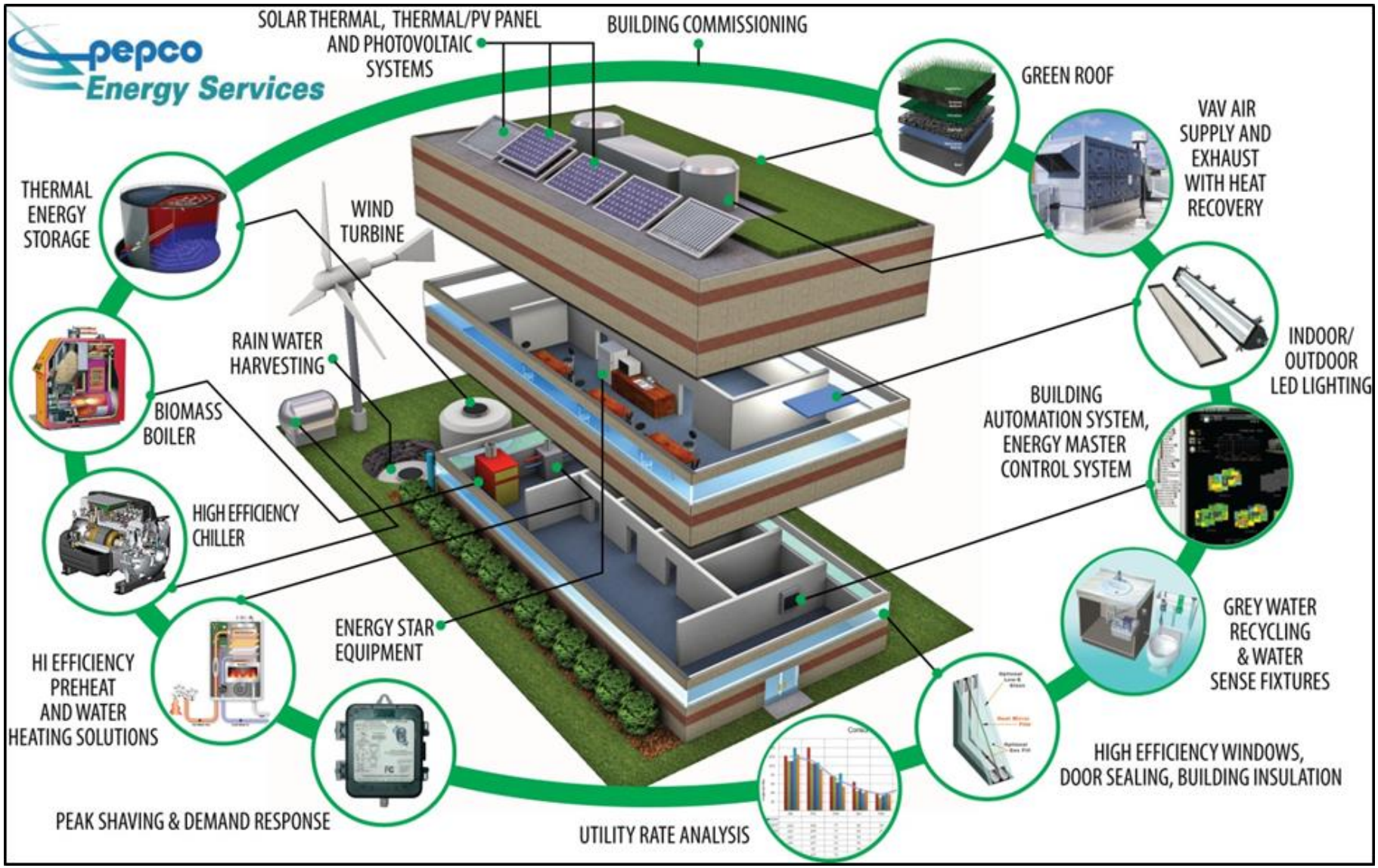
Comprehensive Whole Building Approach

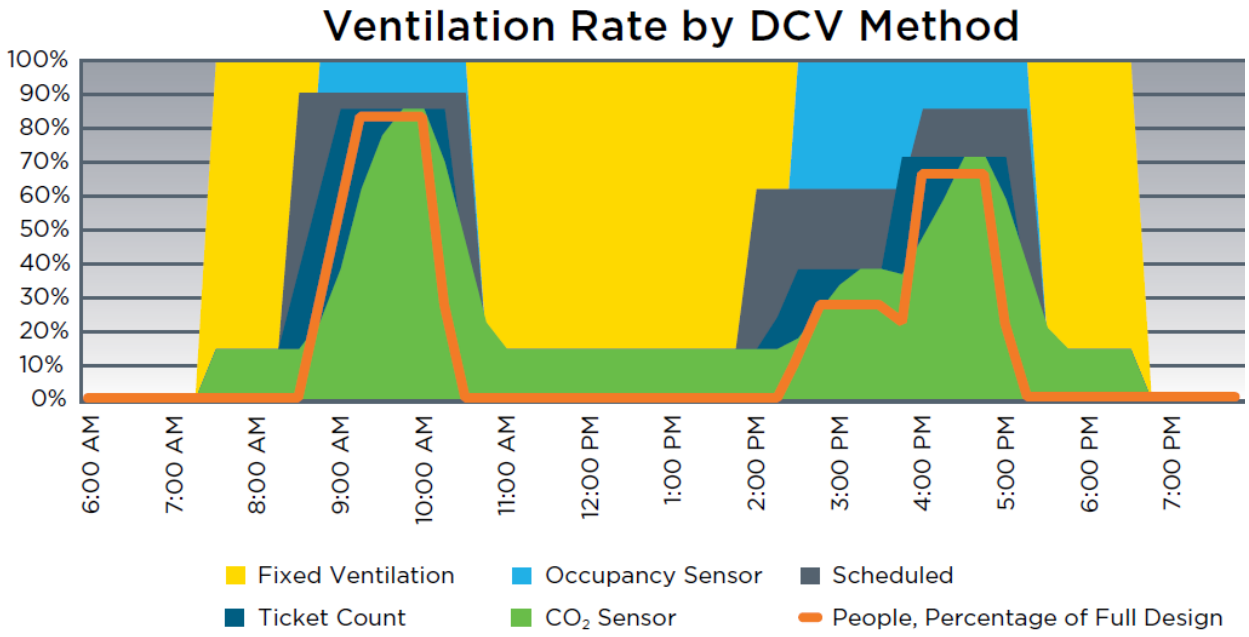


Innovative Energy Conservation Measures

- Appalachian State University
  - Advanced Demand Control Ventilation
- Horry County Government
  - Ozone Laundry System
- Florence County Government
  - Chiller Plant Optimization

Advanced Demand Control Ventilation – ASU

- Adjusts outside air based on occupancy ventilation demands
  - High Energy Savings Potential
- Typical Methods
  - Occupancy sensors
  - Time scheduled
  - Occupant count
  - CO_2 sensors
    - Most accurate
    - Highest savings
    - Higher cost
    - Possible Calibration issues



Advanced Demand Control Ventilation – ASU

- High Savings Opportunity – Laboratories
  - 100% OA; 8 – 10 air changes/hour

- Three Buildings at App State
  - Aircuity® DCV
  - Air samples from each zone routed to a single sensor
  - Improved accuracy
  - Lower LCC

Building	Control Strategy	
CAP Science Center	Lab Safety	
Rankin Science South	Lab Safety	
Rankin Science North	Lab Safety	

- Annual Energy Savings
  - $524,000

Room Sensor

OptiNet® Structured Cable

Single Sensor Suite

AIRCUITY®
Safe, Smart & Efficient Airside Solutions

Ozone Laundry – Horry County

- Proven Technology
  - O_3 bonds to carbon based dirt/soil
- Detention Center Laundry
  - Five washing machines, 260 day/year, 3,300 lbs/day
- Scope of work
  - 2 ozone generators, tubing, circuitry, sensors, controls
  - Reprogram washers & operator training
- Benefits
  - Reduced potable water & sewer use
  - Reduced natural gas cost
  - Reduced laundry detergent
  - Increased sanitation
  - Reduced chemical discharge

Ozone Generator

Ozone Injection Tubing

Chiller Plant Optimization – Florence County

Basic Concept

- Non-proprietary system algorithm utilizes optimizing modeling approach
  - Constant repetitive mathematics determine the most efficient equipment sequence and settings
  - Compressor mapping, pump curves and tower profile are key elements to the optimized algorithm
- System fully directs the plant control system (PCS)
  - Commands chillers, condenser water pumps, secondary pumps and cooling towers fans to run at the *lowest possible system kw/ton*
- Offline equipment is excluded from the calculation
  - Optimizes regardless of available equipment
- Respects customer requirements and equipment limitations
  - Customer sacrifices are not made at the expense of forcing efficiency

Chiller Plant Optimization – Florence County

- Current Situation
  - Two Smardt Chillers
    - Staged dependent on OAT
  - Conventional Prim/Sec CHW Loop
    - Primary pumps constant flow
    - Secondary pumps – VFD's (disconnected)
  - Carrier Comfort Controller 6400 system
    - Controls the pumps, cooling tower, and valves and provides start/stop command to the chiller. No trending capability

- Pepco Energy Solution
  - Central Plant Energy Control System by Armstrong
  - Four new VFDs
  - Remote pressure differential sensor – controls flow
  - Operate plant to achieve **lowest possible kw/Ton**

Questions & Contact Information

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