



# C&I Program Strategies - Deep Dive

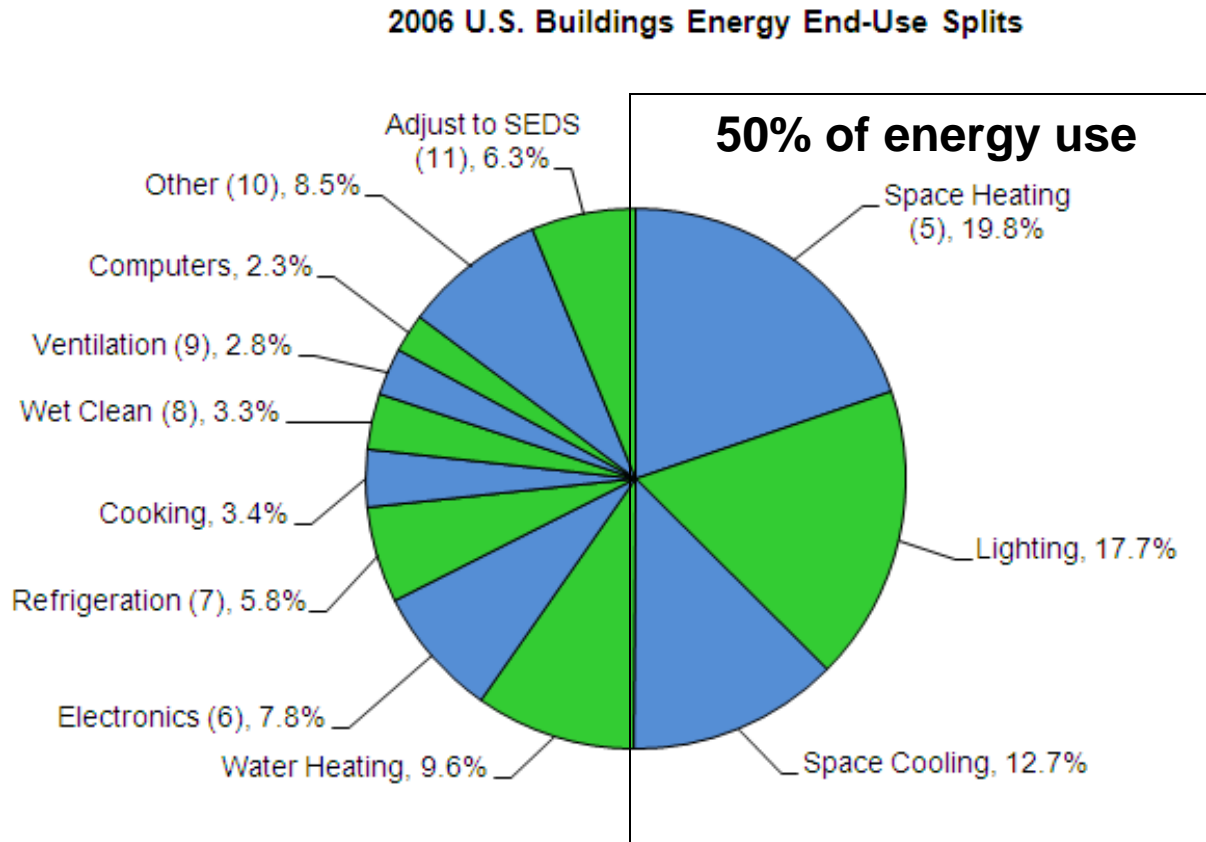
June 14, 2011



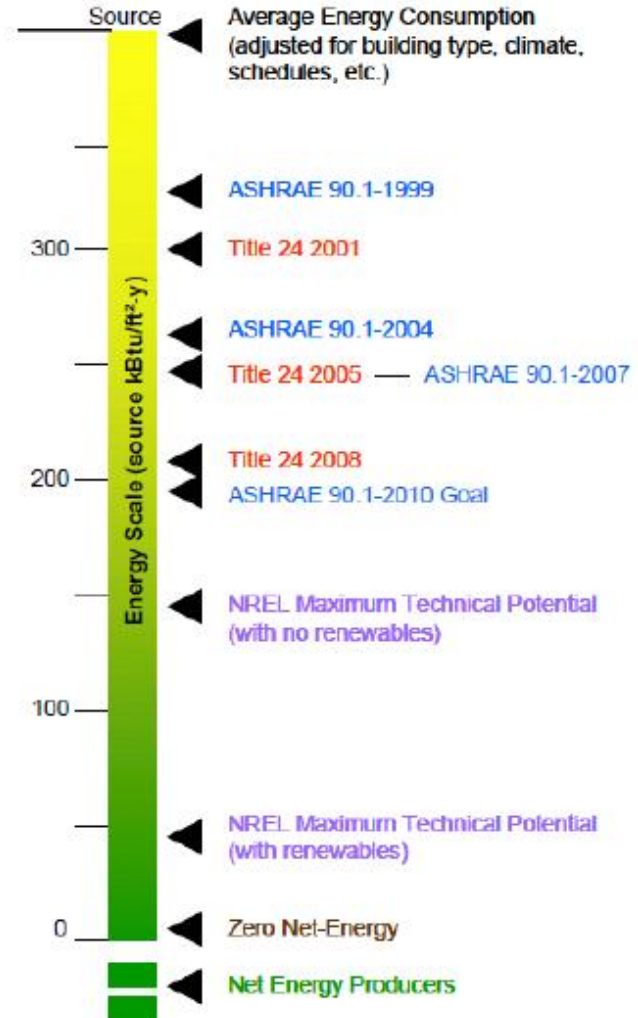
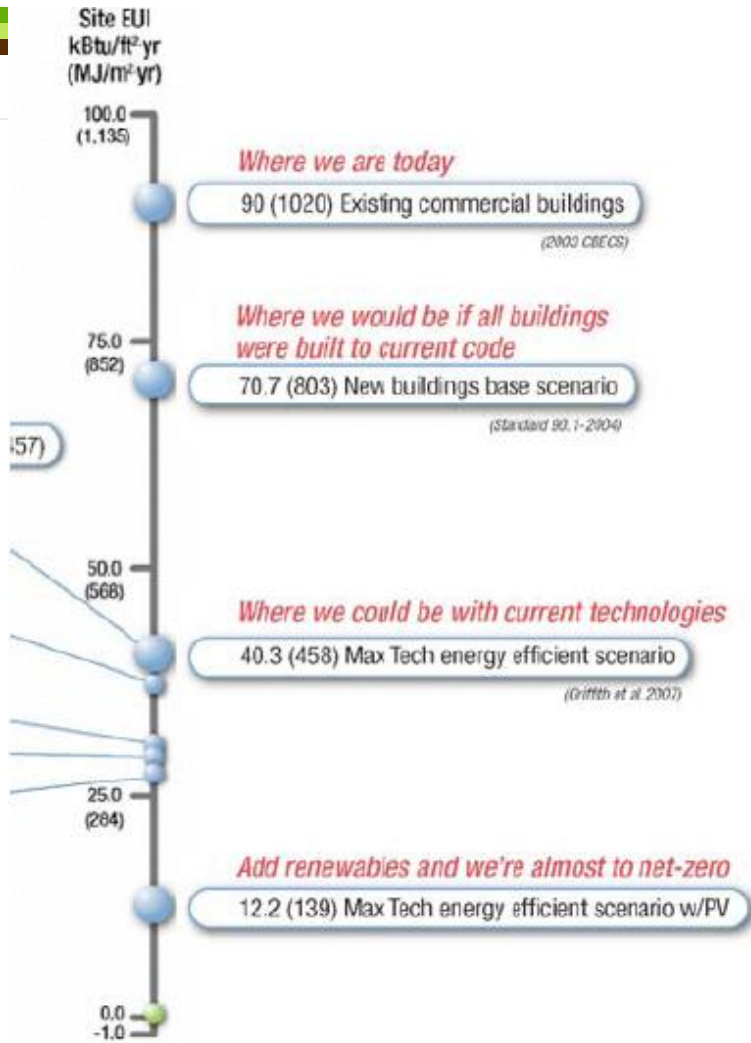
# Agenda

- Three Year Plan Goals
- Guiding Principles: How we are going to get there
  - G&E Integration
  - Consistent State-Wide Programs
  - Going Broader
  - CHP
  - Financing
  - Going Deeper
- Additional Tactics/Strategies
  - Strategic Energy Management Plans
  - Upstream Incentives
  - Codes and Standards

# HVAC and lighting account for 50% of building's energy usage



# What is an energy efficient building?



# Small Business Deep Dive

- Small business customer: warehouse
  - 22,000 kWh per year
  - Lighting project saved 38% of annual energy use
    - T5 fluorescents
    - High performance T8s
    - CFLs
    - Controls

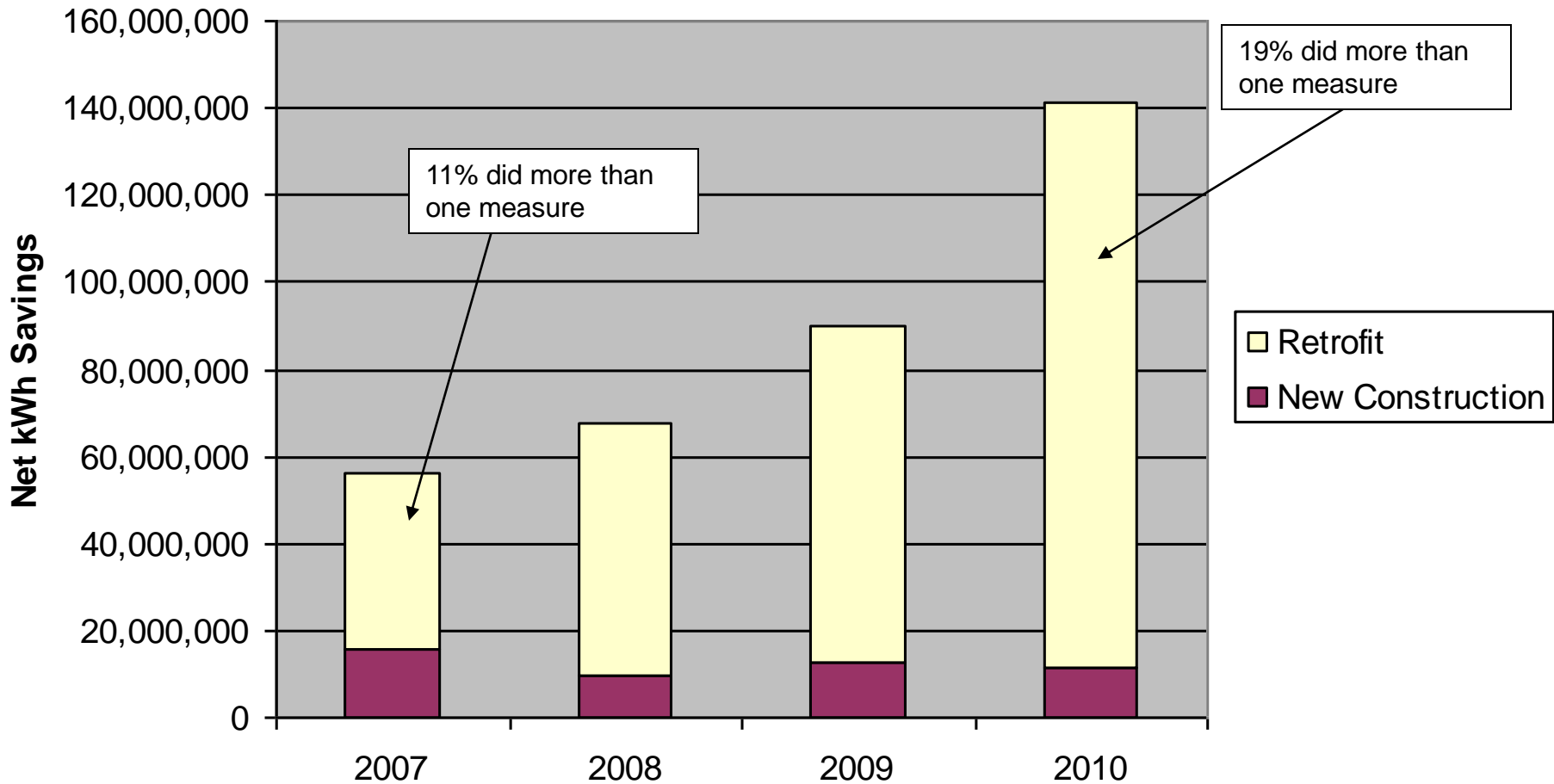
# Deep Dive: Large Business

- Large High School
  - 2+ year planning/budgeting process
  - Six different measures installed
    - Lighting: two phases
    - Lighting Controls
    - Energy Management System
    - Refrigeration Controls
    - VFDs
    - HVAC System: Retro-commissioning
- Manufacturing Facility
  - Multi-year planning/budgeting process
  - Four different measures
    - Lighting controls: three phases
    - VFDs: controlling process and non-process motors
    - HVAC upgrades to AHU
    - Compressed Air Leak Repair



# Retrofit Program Participation

## Large Business Program Savings



- “Deep Dive” report being drafted
- EEAC consultants currently evaluating PA program participation data
- “Deep Dive” Strategies
  - Whole Building Assessment
  - Enhanced incentives for multiple measures
  - Multi-year energy management plans
  - Codes and Standards
  - Advanced analytics to remotely benchmark building energy performance using interval data

## Lighting

- High efficiency lighting and fixtures (new & reconfigured systems)
- Occupancy controls
- Lighting management systems
- Daylighting and dimmable controls/sensors (harvesting & renovations)

## HVAC

- HERTUs & chillers, some w/ VRF
- HE heat pumps (air, water, ground)
- HE gas & gas condensing boilers
- VAV conversions
- VFDs
- Passive ventilation (renovations)
- Heat recovery
- Plate and frame heat exchangers
- Radiant systems (renovations)
- Also: ice storage, evaporative cooling, economizers

## Controls/Energy Management

- Occupancy controls/timers (lighting, equipment)
- Daylighting controls/dimmers
- Building/energy management systems
- CO2 sensors
- Commissioning (RCx, project Cx, continuous Cx)
- Energy monitoring systems

## Envelope

- Insulation upgrades: wall, roof, attic, ect
- HE window replacements/upgrades
- Operable windows (natural ventilation)
- Cool roof treatment
- Reduced infiltration/enveloped tightening
- Window tinting/films
- Solar shading (interior & exterior)