Making Reductions in Your Operations

Offices and Retail

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Tools Available from PG&E to Reduce GHG Emissions

- Building benchmarking
- Retrocommissioning
- Lighting and HVAC upgrades
- Data center improvements
- Carbon offsets

Energy Benchmarking for Large Commercial Buildings

- Benchmarking of commercial buildings allows building managers to compare the energy usage of their building to that of similar buildings (based on size, location, climate, etc.)
- Measures building energy usage on an objective scale and in relation to other comparable buildings
- Tracks building performance trends over time
- Identifies high performing buildings and targets low performing buildings for energy efficiency retrofits
- Can be especially helpful for managers of large building “fleets” to compare building performance across sites

Retrocommissioning

- Focus on improving the efficiency of what is already in place
- Projects can produce an average savings of 5-15% of total building energy costs and typically pay for themselves in less than 2 years

Lighting and HVAC Upgrades

Lighting

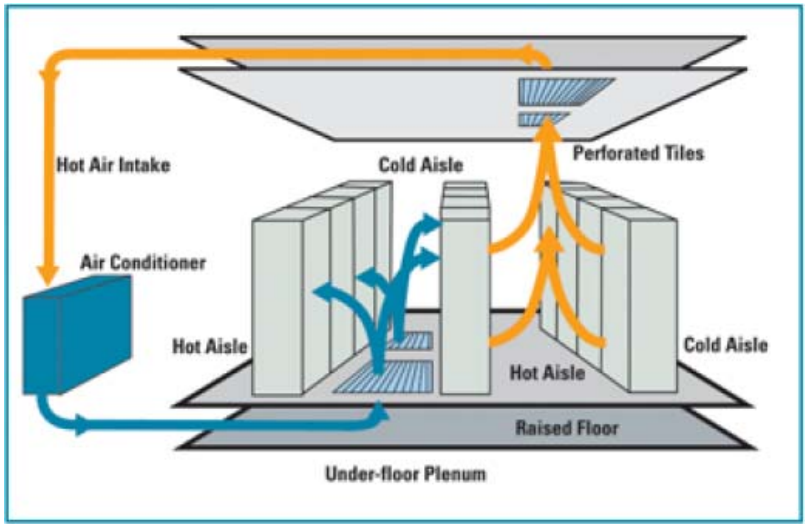
- Recent advances in lighting technology could reduce your lighting costs by 15-35% annually

HVAC

- Incentives are available for:
  - Variable Frequency Drives for HVAC Fans
  - Variable Speed Motor Air Handler System
  - Evaporative Cooling AC

Industry Solutions Case Study: Data Centers

- **Data centers are the backbone of the modern IT infrastructure**
- **California hosts 5-7.5 million ft² of data centers**
- **In Northern California, data centers load is 400-500 MW (2.5% of total)**
- **All companies facing huge growth rates in data storage; 50-100% annual growth not uncommon**



Solution: Airflow Management

- **Demonstration showed better cooling and energy savings were possible by improving air distribution in a typical and a high density environment**
- **Preventing air mixing in the hot and cold aisles of a data center by physically separating the space can reduce energy consumption by 27 GWh/yr and 10 MW/yr**
- **One major software firm reduced their servers by 96%, saving enough energy to power 50 homes for a year**

Case Study: Agriculture and Food Processing
E&J Gallo Winery

- Between 1990 and 2007, winery achieved significant energy savings:
  - 3.2 MW demand reduction
  - 19.2 million KWH energy savings
  - Avoided annual emission of almost 4,500 tons of CO2 (combined electric and natural gas savings)
- Energy efficiency projects included:
  - Refrigeration system retrofit
  - Installation of oversized high capacity condenser
  - Lighting upgrades
  - Air compressor upgrades
  - Installation of variable speed drives on cooling towers
- Received PG&E incentives of more than $1.65 million

Statewide Big and Bold Initiatives

Residential New Construction

- All new residential construction in California will be zero net energy by 2020.

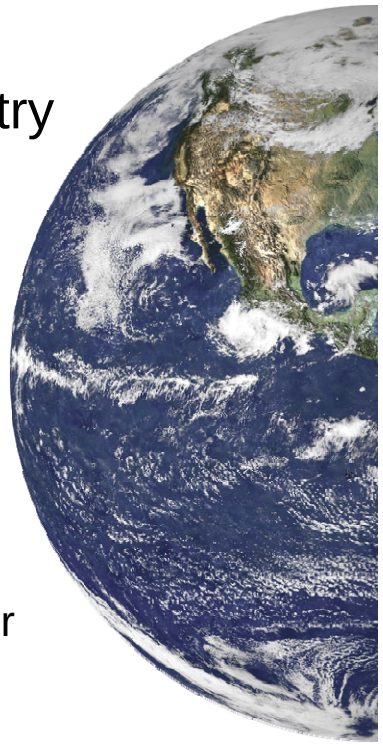
Commercial New Construction

- All new commercial construction in California will be zero net energy by 2030.

Source: Comm. D. Grueneich, CCTO 7/08, http://www.californiaenergyefficency.com

What is ClimateSmart™?

- Voluntary PG&E program to make customers climate neutral
  - Cost is based on usage – $0.00254 per kWh and $0.06528 per therm. Costs fixed through December 2009
- Way to road test the current California Climate Action Registry protocols
  - Livestock methane capture, Forest sequestration, Landfill gas capture
- Funding to develop new CCAR protocols
  - PG&E is funding the development of an additional three protocols
- Option for participants to demonstrate environmental leadership
  - Developed with the help of environmental groups, regulators, and other stakeholders
- Investment in projects that reduce greenhouse gas emissions
  - 100% invested in independent, California-based projects. Credits retired.



Questions?

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