

Energy Conservation in Food Service Facilities

PRESENTED BY FSM 120L GROUP 3B:
GREGORY LUM, SARAH MARVER, YIMENG MA, YUJUNG LIM

Terminology

- LED - Light Emitting Diode
- Thermal energy



Terminology

- Biomass



UC Davis: Domes and Anaerobic Digester

- Geodesic



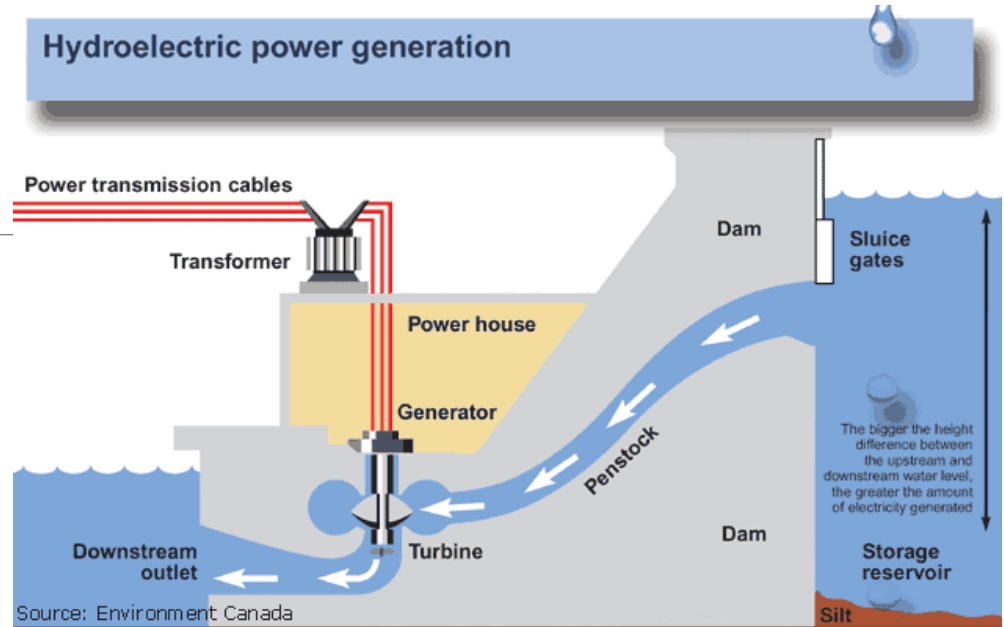
Terminology

- Hydroelectric generation
- Solar Photovoltaic (PV) energy



Where are photovoltaic solar panels at UCD?

- * The Student Community Center
- * Gladys Valley Hall
- * UCD Conference Center and Maurice J. Gallagher Jr. Hall complex
- * Robert Mondavi Institute for Wine and Food Science



Terminology

- US Green Building Council
- LEED – Leadership in Energy and Environmental Design
 - Certification levels



Strategies: Energy Management System (EMS)

- Monitor and control refrigerators, cooking equipment, lighting, and air conditioners
- Equipment maintenance helps avoid costly repairs
- Boosts staff efficiency and productivity
- System sounds an alarm when it finds a problem that affects energy usage
- Managers have to face challenges of learning the system

Strategies: Connectionless Steamers

- Tested in food technology center - use 50% less energy than boiler-based or steam generator version
- Less maintenance required

Strategies: Induction Kitchen

- Quick, efficient
- Does not heat entire kitchen → increased comfort
- Decreased prices
- Difficult to manage

Strategies: Geothermal Heating & Cooling

- Utilizes thermal energy
 - From naturally-occurring heated groundwater to power generators
- Cost effective
- Reliable
- Sustainable
- Awarded Energy Star most efficient in 2014

Strategies: Geothermal Heating & Cooling

- Challenge: must be relatively close in proximity to a significant geothermal resource
 - Geyser plant near Napa Valley
 - No UC campus close enough
 - Technologies are advancing– expanding the range in which resources can be used
 - Potential for home heating as well
- The French Laundry restaurant

Strategies: Campaigns

- Talking to public & campus about how to do more and the effects of wasting energy
- UC Berkeley
 - MyPower
 - Talking Louder campaign
 - Energy Incentive Program for departments



Strategies: Quick Fixes

- Light bulbs
 - Compact fluorescent bulbs
 - LED exit signs (instead of incandescent bulbs)
 - Halogen bulbs for spotlighting
 - Dimers (not automatic)
- Insulated dishwasher or infrared gas dishwasher
- Infrared fryer or high-efficiency atmospheric gas fryer

Strategies: Quick Fixes

- Larger investments
 - Geothermal heat pump
 - Evaporative cooling system
 - High-efficiency electric/gas air-conditioning system
 - High-efficiency oil or gas burner & furnace

Example: Chipotle

- LEED certification: Platinum
 - Gurnee, IL – first restaurant
 - Minnetonka, MN
 - Features:
 - Glazing – low-emissivity
 - LED
 - Energy Star appliances



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UC Energy Conservation Plan

- Goal: by 2020, reduce greenhouse gas emissions to 1990 levels (reduce by ½)
- Campuses that are certified green business
- Dining halls at Berkeley, SC and Davis



UC Energy Conservation Plan

- Energy audits- UCLA, SB, SF, SD, & Davis campuses
 - Lighting retrofits
 - High-efficiency dishwashing machines, refrigerators, ovens, and steamers
 - Savings: \$25,000-\$65,000 annually for each campus

Questions?

Discussion

Have you noticed any restaurants in the area that advertise that they are energy efficient? How do they claim to do this?

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What other energy conservation methods could be used in the future? What could be specifically contributed to energy savings in food service facilities?

References

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