Energy at Tufts
Health Sciences Campus, Boston
January 15, 2014
Utilities: Boston Campus

Purchased steam from Veolia’s Kneeland Street facility and cogenerated steam from Kendall Station in Cambridge

Nstar is local electric distribution company

TransCanada is electricity supplier

National Grid is local natural gas distribution company

Hess is natural gas supplier

Boston Water and Sewer from MWRA
Energy Systems
Boston Campus

- Heating and Process Steam
  - District steam plant owned by Veolia
    “ingredients” for steam: cogenerated stream, natural gas, #6 fuel
  - Stand alone gas fired boiler plant
    HNRCA and Posner

- Cooling
  - Electric chiller systems
  - Steam absorption chiller systems
  - Window units (Posner only)
Tufts University
Maintained Square Footage

Projected Growth

Grafton
Boston
Medford
Energy Consumption
Includes Transportation Fuels

Fossil BTUs in millions

Fiscal Year


Grafton
Boston
Medford

Tufts gets green
Facilities Services
Energy Consumption
Excludes Transportation

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<th>Fiscal Year</th>
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**Events:**
- Sackler Renovation
- Dental Vertical Expansion
- M&V Retrofit
- CY12 warmest on record

**Locations:**
- Sophia Gordon Hall
- Granoff Music Center
- Jaharis
- RBL
- Boston
- Grafton
- Medford
- Total

**Facilities Services:**
- Tufts gets green
Emissions vs. Energy “All University”

Emissions vs. Fossil BTUs

Reduce to 1990 levels by 2010

At least 10% below 1990 levels by 2020

75-85% below 2001 levels by 2050

BTUs (in millions)

Short Tons of CO2

Tufts gets green
2012 Emissions “All University”

Categories of Emissions Released by Fuel Used 2012 (short tons of CO2)

- Gas
- #6 Oil
- #2 Oil
- Propane
- Gasoline on campus
- Diesel
- Purchased Steam
- Electricity

Tufts Facilities Services gets green
2010 Emissions “All University”

Categories of Emissions Released by Fuel Used 2010 (short tons of CO2)

- Electricity: 37%
- Gas: 17%
- Purchased Steam: 19%
- #6 Oil: 20%
- #2 Oil: 1%
- Gasoline on campus: 1%
- Gasoline commuters: 5%
- Diesel: 0%

Additional efforts include:
- Tufts Facilities Services
- Tufts gets green
Consumption and Costs “All University”

Energy Consumption by Campus with Cost
Excludes Transportation

Grafton
Boston
Medford
Total Cost

Fiscal Year

2008 2009 2010 2011 2012 2013

BTUs (in millions)
Dollars (in millions)

0 100,000 200,000 300,000 400,000 500,000 600,000 700,000 800,000

$0 $5 $10 $15 $20 $25

Tufts gets green
Heating and Cooling Controls

- Manual control valves
  (heating only)

- Thermostats

- Energy Management System
Occupancy sensors are common (except BRPH)
- Classrooms, conf. rooms, offices, washrooms, library stacks, some corridors, some labs

Energy Management System
- Site lighting
- HVAC controls tied to occupancy sensor
- Lab ventilation controls

Daylight sensing/dimming, lighting & controls

Ongoing technology updates include LED lighting
- 1,500 LED lamps provided at no cost by MA utility programs for all three campuses
- A19 LEDs provided to all Incoming students

**Green Sustainability in Action**

High Efficiency Lighting

Light-emitting diodes (LEDs) installed in the garage reduce energy use and greenhouse gas emissions by 50% over standard lights.

This installation, the first in Massachusetts, is part of Tufts' ongoing commitment to environmental stewardship.

**Tufts gets green**
Lighting Controls

- Light switch

- Occupancy sensors

- Energy Management System
Green Buildings

LEED Certification

– Sophia Gordon Hall, Gold
– School of Dental Medicine, Vertical Expansion, Silver
– School of Dental Medicine, Level 2 Renovation, Gold
– School of Medicine, Sackler Building Renovation, Certified
– Biology Labs at 200 Boston Avenue, Gold
On-going Building Envelope Improvements

**New windows:**
Biomedical Research and Public Health building (formerly M&V Complex)
Dental Building
On-going Projects

• BRPH utility master plan is studying:
  – Rooftop equipment consolidation
  – High efficiency replacement equipment
  – Redundancy for critical laboratory services
  – Heat recovery

• Recent lab renovations are optimizing the use of conditioned air in labs
  – Aircuity in Arnold
A day in the life…
Expectations

- Turn off computer at night
- Enable power management
- Buy a flat screen or laptop
- Turn off your lights
- Shut your fume hood sash
- Turn up/down thermostat (if available)
- Space heaters only if provided by Facilities because building heat is not available
Frequently Asked Questions

• Can I use a space heater?
• Why is it so hot on those nice spring/fall days?
• Why is it too hot/too cold?
• What should I do about that?
• Who do we call to report a problem?
• Should I open the window?
Common Misconceptions

• Heating/cooling systems go on with the “flip of a switch”.
• Chilly in the summertime means the most wasted energy.
• The campus energy management system controls everything – my thermostat does nothing.
• It doesn’t matter if I open the window.
• It doesn’t matter if I use a space heater.
• It is better to call someone in Facilities and skip the Work Control system
How to Help

Report to Facilities Work Control:
- Leaks, stuck windows etc.
- Occupancy sensors that need adjustment
- Extreme indoor temperatures
- Be patient, but persistent

Reporting is particularly important in areas where there is no “owner”
Boston’s Facilities Services is located at:
Posner Hall, 200 Harrison Avenue
Call if it is an emergency!
Questions?

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