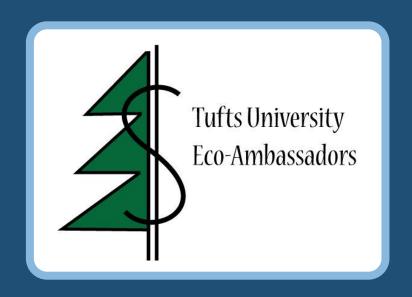
ECO-AMBASSADORS SESSION #2

Medford Campus February 18, 2014



From last session...

How did your office introduction go?

Personal Behavior Change Challenge – Challenges?
 Successes?

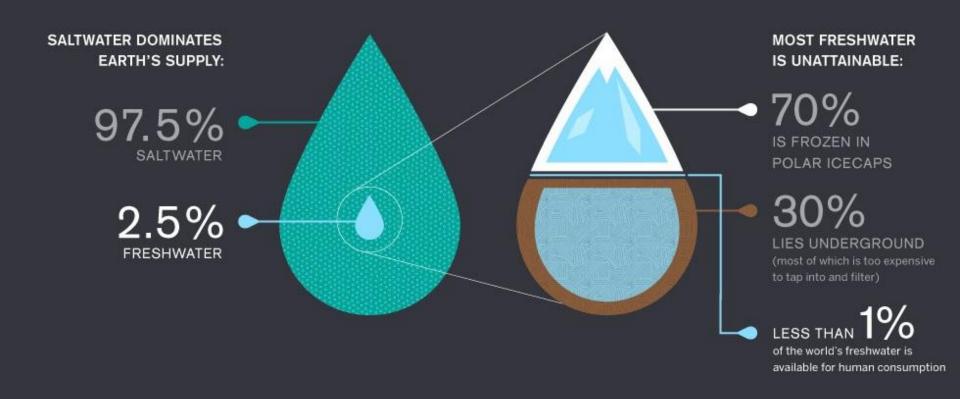
Recycling survey and audit

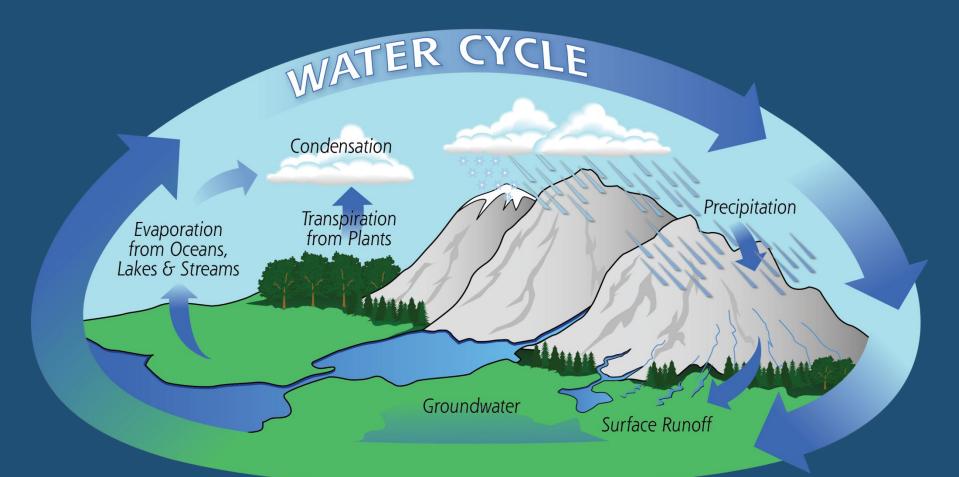
Today's Agenda

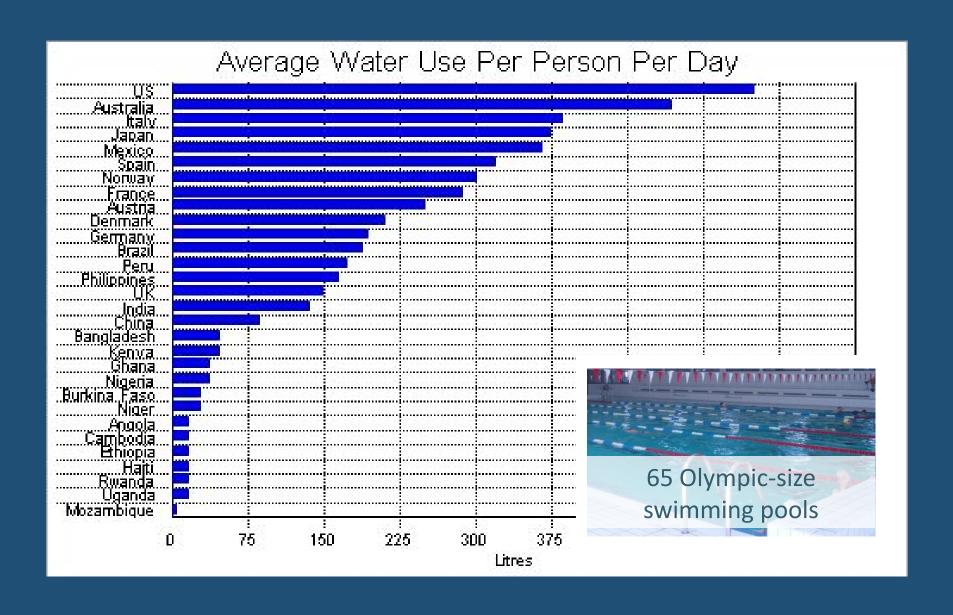
- Water
- Transportation
- Meetings & Events
- Energy
- Purchasing

Water

WHERE IS ALL THE WATER?









How many gallons of water does it take to make...

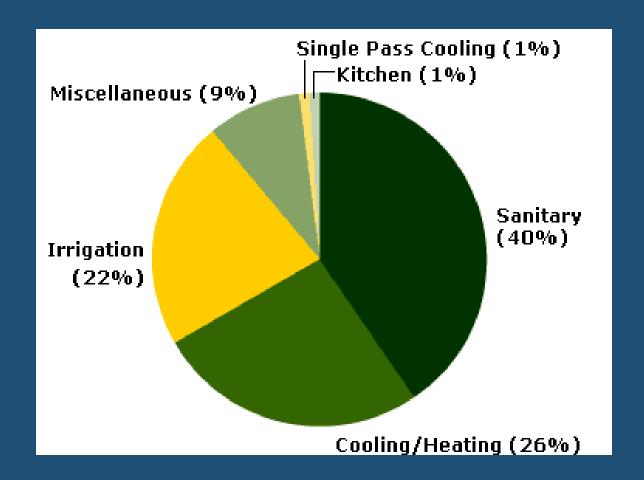






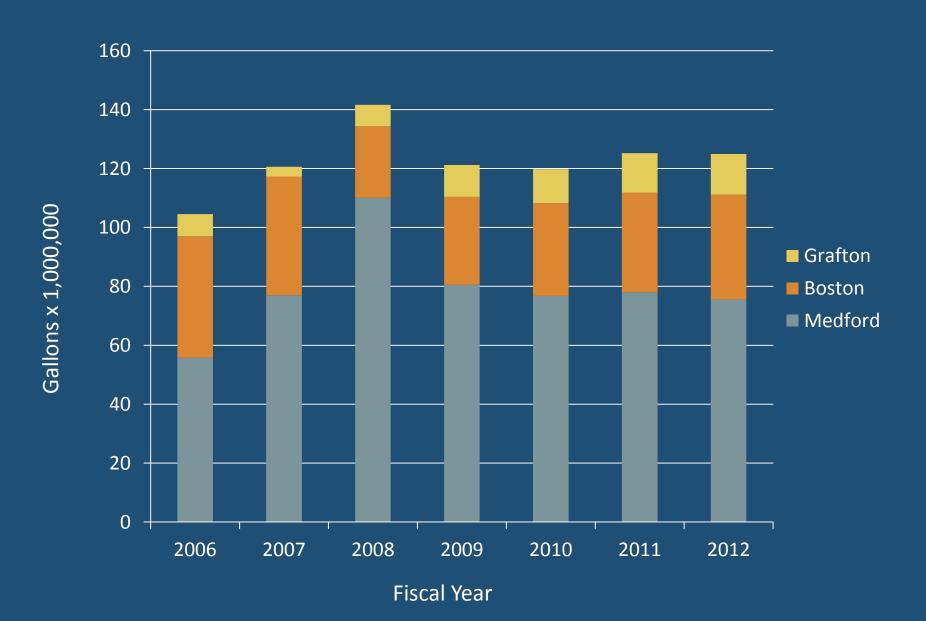


Typical office water use





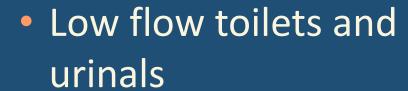
Water Consumption by Campus



Water Reduction Projects at Tufts















Metered faucets

The FACTS about BOTTLED WATER

\$0.0015 / gal \$10.00 / gal

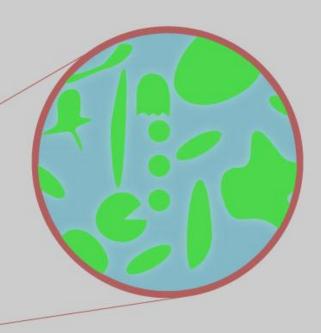
The price of bottled water is up to **10,000 times** the cost of tap water

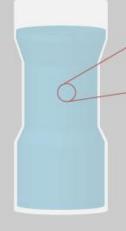
Annually, Americans consume 8.6 billion gallons of bottled water



FACTS about BOTTLED WATER







22% of tested bottled water brands contained chemical contaminants at levels above strict state health limits



FACTS about BOTTLED WATER



are used in the production of water bottles yearly...

...enough to fuel

1 Million cars for a year



Cost of 750 gallons of water*

Individual Bottles	Poland Springs 5 gal bottles	Poland Springs water filter	Brita Filter pitcher	Tap water
\$762	\$565	\$264	\$232	\$13

^{*750} gallons provides 1 liter of water per day to each person in a 12 person office for one year (work days only).

Example (Tisch College):

- Bottled Water = \$720
- Filtration System = \$384
- Savings per year = about \$336, almost 50%

What can you do in your office?

- Use tap or filtered water, not bottles
 - Contact: Scott DeFeo (Nestle Waters N. America)
 (978) 970-5656 x 3031, scott.defeo@waters.nestle.com
- Model sustainable water behaviors
- Report leaks to Facilities
 - Submt an online service request (https://fsrequest.tufts.edu/WebMaint/)
 - Call (617) 627-3496 with emergencies
- Have a water survey for your office
- Hold a water tasting

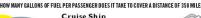


Transportation

Transportation Facts

- Americans spend 4.2 billion hours stuck in traffic each year
- On average, Americans spend nearly 20% of their household budgets on transportation
- Transportation is responsible for 28% of greenhouse gas emissions in the US
- Between 1995 and 2012, public transportation ridership increased by 34%
- In 2012, Americans took 10.5 billion trips on public transportation

GETTING AROUND: FUEL USE OF VARIOUS MODES OF TRANSPORTATION





Cruise Ship

2915 Capacity .009 Miles per gallon

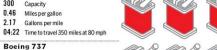
121 Gallons per mile 10:56 Time to travel 350 miles at 32 mph



Amtrak 300 Capacity

0.46 Miles per gallon

04:22 Time to travel 350 miles at 80 mph



Boeing 737

175 Capacity

0.42 Miles per gallon 2.4 Gallons per mile

00:37 Time to travel 350 miles at 566 mph



Motor Coach

50 Capacity

Miles per gallon .2 Gallons per mile

05:50 Time to travel 350 miles at 60 mph





21 Miles per gallon .048 Gallons per mile

05:50 Time to travel 350 miles at 60 mph





27

.037 Gallons per mile

05:50 Time to travel 350 miles at 60 mph



Average Hybrid

Capacity

Miles per gallon

.022 Gallons per mile

05:50 Time to travel 350 miles at 60 mph



Motorcycle

Capacity

Miles per gallon

.017 Gallons per mile 05:50 Time to travel 350 miles at 60 mph







Bicycle

Capacity

912 Miles per gallon (caloric conversion)

.001 Gallons per mile (caloric conversion) 23:20 Time to travel 350 miles at 15 mph







Walking

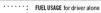
Capacity

211 Miles per gallon (caloric conversion)

.005 Gallons per mile (caloric conversion) 100 Time to travel 350 miles at 3.5 mph







- - - FUEL USAGE for driver plus one passenger FUEL USAGE for driver plus three passengers

WHOPPER with cheese is 770 calories. GOOD neither endorses or denounces the consumption of Whoppers

WE'RE EFFICIENT One gallon of gas equals approximately 31,000 calories. We only need about 2,000 calories a day.

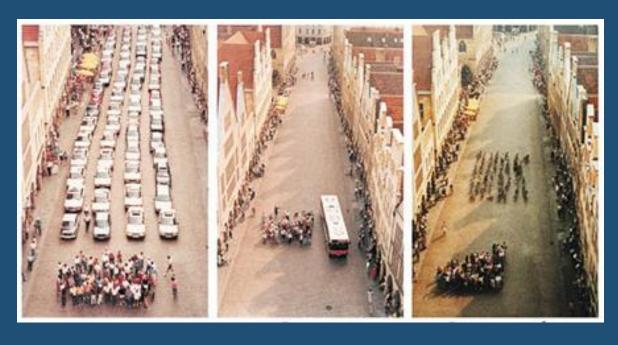
CYCLIST A 175-pound rider, biking 15 miles per hour, and burning .049 calories per pound perminute.

WALKER A175-pound pedestrian, walking at 3.5 miles per hour, and burning .035 calories per pound per minute.

NOTE Capacity, fuel economy, and speed numbers are, in some cases, averages or estimates.

good.is Transparency

Amount of space needed to transport the same number of passengers by...

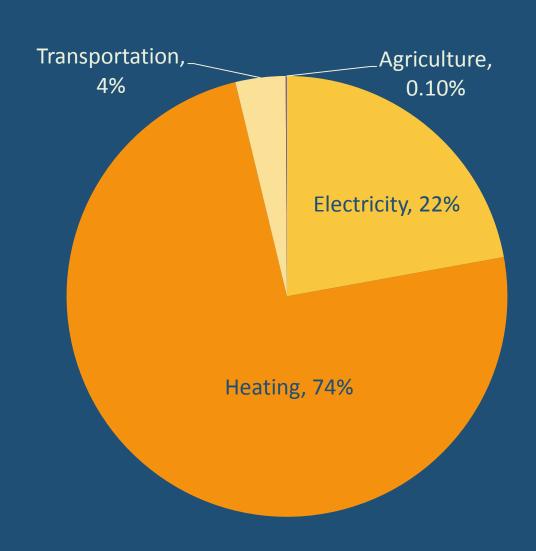


Car Bus Bicycle

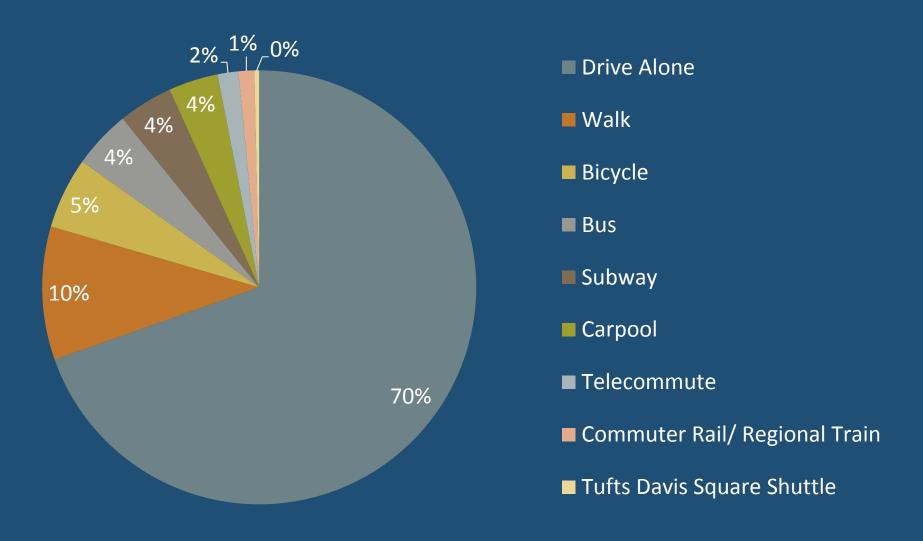


Source: A Climate of Progress: City of Boston Climate Action Plan Update 2011

Tufts' 2010 Emissions (all campuses)

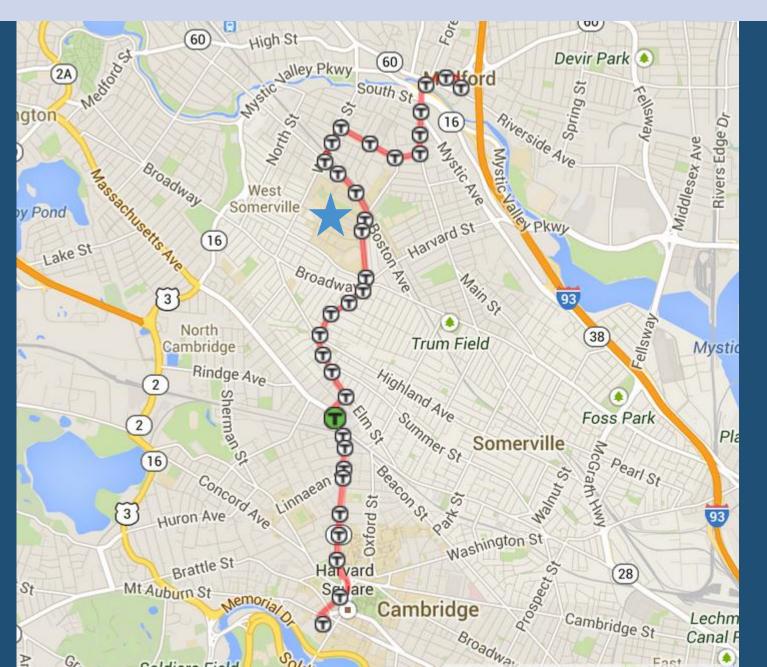


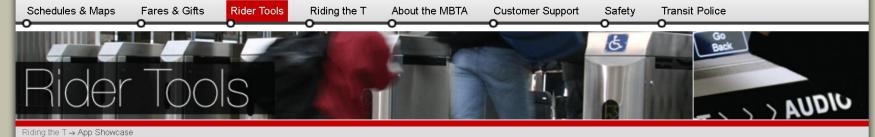
How do Tufts Medford employees get to work?





96 - Medford Sq. - Harvard Station via George St. & Davis Sq. Sta.







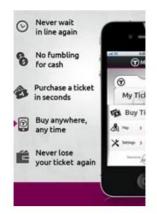
App Showcase

Where's the T? New apps built by independent developers let you know where your bus or train is and when it will arrive. Check them out below!



Real Time Apps





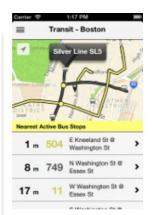
MBTA mTicket

Buy a ticket anywhere, anytime, in seconds. The Official MBTA mTicket App is like a ticket office in your pocket. The MBTA mTicket



See Say App

If you see something say something for smart phones Using this app, riders can send the MBTA Transit Police pictures, text messages, and



Transit - Boston

Find the nearest bus, train, subway or ferry stations with scheduled stops and view upcoming departures with just two quick tans.

App Disclaimer

These apps are not made by MBTA, and MBTA does not sell or license the apps. They are written by third parties unless otherwise noted. MBTA shall not be held responsible for the content of third party websites or any issue arising from the use of third party applications. MBTA neither endorses any third party products listed here nor makes guarantees any representations as to accuracy or reliability. Proceed with care and understand any usage charges that may apply to you. MBTA reserves the right to remove/add applications listings without notice.

Are you a Developer? Check out the MassDOT

Developers page here to gain access to our data.

Want to be included on this page?

Please send a listing to developer@mbta.com with the App Title, Developer Name, Platform, and an image that is 150 X 225 pixels.

MassDOT Developers page



- Tufts membership for \$25/year
- \$9+/hr., including gas and insurance

More information:

www.zipcar.com/tufts (Tufts employees)





- New bike-sharing system that began in 2011
- 1,000+ bikes at 100+ stations
 - Rent by the hour, day, or year

More information: www.thehubway.com



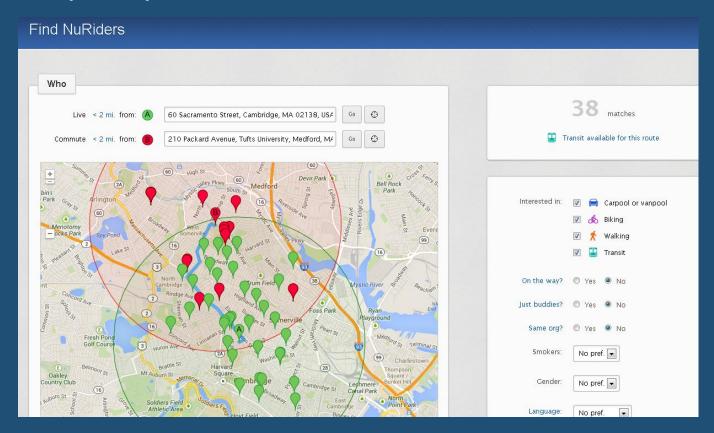
Emergency Ride Home

- Eligibility: Use a sustainable mode of transportation to travel to work 2+ times/week
- Taxi or rental car reimbursement in event of unexpected personal illness/emergency, unexpected family illness/emergency, carpool driver emergency
- 4 trips/year



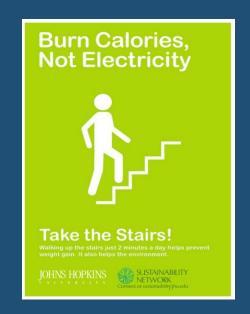


- Earn rewards by taking green trips
- Find carpool partners



Ideas for your office

- Walk, bike, take the T or bus, or carpool
 - Share information with others
- Encourage office videoconferencing
- Take the stairs for exercise
- Start an office challenge
- Car-free Week, Bay State Bike Week





Meetings & Events

How could you "Green" these events?

#1 - You are organizing a staff meeting for your office. You need to provide participants with both an agenda and several documents for discussion. Lunch will be provided.

#2 - You are coordinating a large guest lecture for students, staff and faculty from all three Tufts campuses. You need to know how many people are participating in the event and will also have to decorate the lecture hall.









Green Event Links and Resources

Tufts Specific

Tufts Green Event Planning Checklists

Policies and planning guides from other places

- Green Event Guideline Hosting Green Events for COP17 in Durban excellent, easy to read
- . Eco-Logo Green Event Standard
- . BlueGreen Meetings has a list of 10 easy tips to creating a green event As they say, "Whether you are a host, planner or supplier, this is where you'll find the tips, tools and resources to make environmentally responsible choices for your meetings."
- The EPA-developed Guide to Planning Environmentally Friendly Events
- EPA press release with link to 14-point checklist to use when assessing event locations.
- The US Environmental Protection Agency's One Stop Information Source for Green Meetings - actually links to BlueGreen Meetings, but also has additional information.
- MeetGreen is a conference management, consulting and training firm that works with associations and corporate organizations. We are dedicated to making your conference a premiere industry event while using our unique environmentally friendly approach to your advantage.
- . Meeting Strategies Useful Links
- . MIT's Zero Waste Event Planning Wiki

Hotels

- . "Green" Hotels Association's® purpose is to bring together hotels interested in environmental issues. From adding "Drinking water served on request only" to the menu to installing new HVAC systems, and with every measure in between, "Green" Hotels Association® encourages, promotes and supports the "greening" of the lodging industry. Includes list of hotels
- . Ceres' Green Hotel Initiative (GHI) is designed to increase and demonstrate market demand for environmentally responsible hotel services. The GHI leverages purchasing power to increase the supply of green hotels available to businesses and individual travelers.
- . GreenSeal's list of certified green hotels. Not very extensive, but a start.
- . TerraChoice list of green hotels: also not extensive
- . Green Resorts: Uno Lodge, Copper Canyon, Mexico Papoose Creek Lodge, Cameron Montana Canopy Tower Soberania National Park, Panama
- . Bucuti has complete list of green practices

Restaurants and Food

- · Green Restaurant Guide
- · Seafood Watch List
- Decoding Food Labels
- · OLSF Guidelines for lunch providers

Waste

- Lifecycle analysis of compostable plates vs. ceramic plates (2008) see page 32 for summary
- . Lifecycle analysis of plastic, paper, glass and ceramic cups (1994)

Boston Specific

 Boston Green Tourism – encourages visitor-industry professionals to green their operations. They promote Greater Boston as a green destination and help meeting planners achieve their environmental objectives.

Green Event Checklist

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bre :

Small In-Office Meetings - Examples include: staff meetings, project meetings, or small office parties

Topic	Individual	Completion
Topic	Responsible	Date
laterials		
Send out invitations and reminders via email.		
E-mail out presentations and meeting agendas instead of printing them.		
Write the agenda on a white (or black) board or flip chart instead of printing out hard copies for each person		
If handouts are unavoidable, enlarge the margins and print them double-sided. Print in black and white to save money		
ood (if provided)		fix
Provide reusable dishware or ask individuals to bring their own cups, mugs, (maybe even plates and silverware!) to the meeting		
If disposables are used, provide compostable [†] or recyclable* plates and utensils		
Use napkins made from recycled content paper		
If you are providing cups, offer hot cups or plastic cups as they are both recyclable (cold paper cups are not). Provide a marker so that individuals can label their cups for reuse.		
Use serving utensils from previous catered events or bring some from home for the day		
If you provide drinks, avoid single-serving beverages by offering drinks in two liter bottles or pitchers		
Avoid excess packaging by providing pitchers or cartons of milk, creamer and sweeteners		
Put out surplus food for students and colleagues and/or remind individuals ahead of time to bring containers to take food home with them		
Provide a compost bin for individuals to compost food waste and designate an individual to bring it to a compost station on campus		
If clean-up is necessary, use green cleaners to clean- up meeting space		
Vaste		
Make sure there are recycling bins in the room		

Green Event Checklists

ce Meetings

ect meetings, or small office





















Communication & Collaboration

Email & Calendaring

Telephones

Conferencing Tools

Web-based Collaboration

Home > Services > Communication & Collaboration > Conferencing Tools

Conferencing Tools

Desktop Video Conferencing (Jabber Video)

Desktop video conferencing allows individuals at multiple locations to interact or share applications via simultaneous video and audio transmissions

Telephone Conferencing

Telephone conferencing (Conferencing Bridge) provides the ability to connect geographically dispersed meeting participants (6-150) on a single phone call.

Video Conferencing Rooms

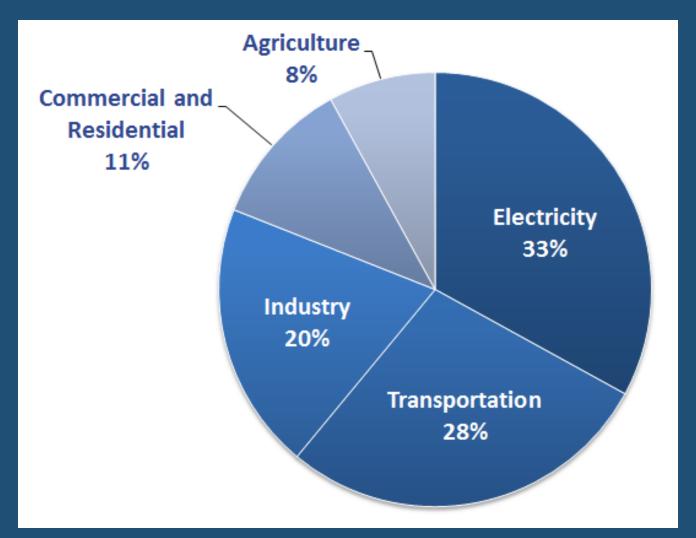
Technology Services maintains conference room format video conferencing capability on all three campuses. Currently these units are available for meetings, distance learning, and education projects.

Web Conferencing (Adobe Connect)

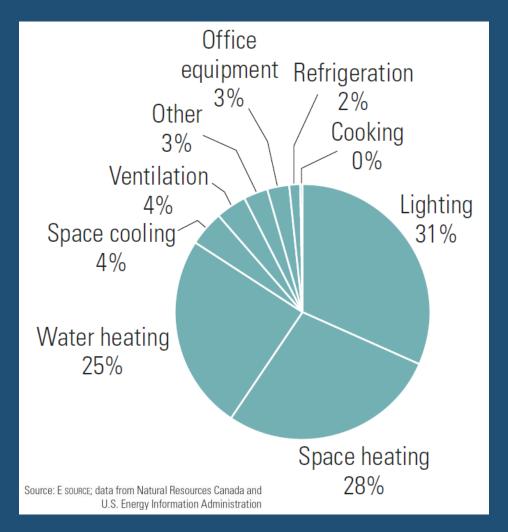
A web video conference uses a combination of video and audio telephony technologies to allow two or more users (or locations) to connect, meet, and collaborate via the Internet.

Energy

Total US Greenhouse Gas Emissions by Economic Sector in 2011



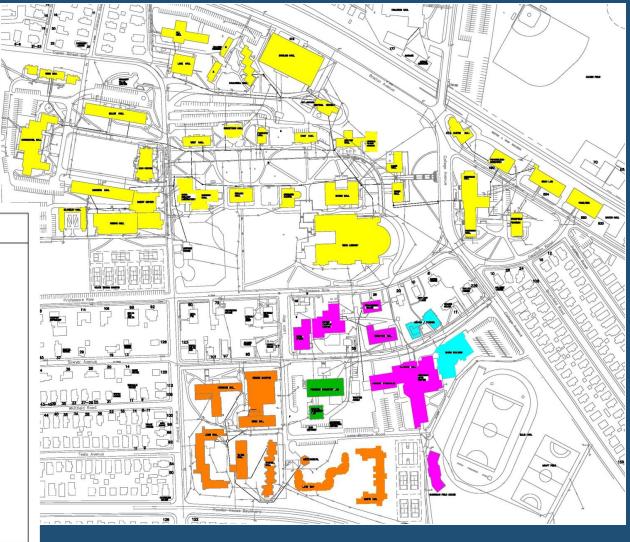
Average Energy Consumption for US University Buildings

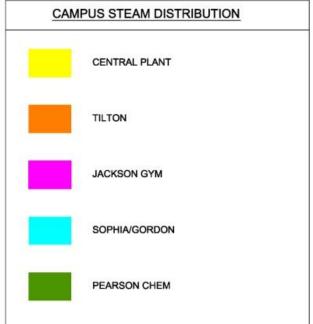


Energy used at tufts

- Electricity
- #6 Oil
- #2 Oil (home heating oil)
- Natural Gas
- Propane (Grafton)
- Purchased Steam (Boston)

Medford/Somerville heating systems



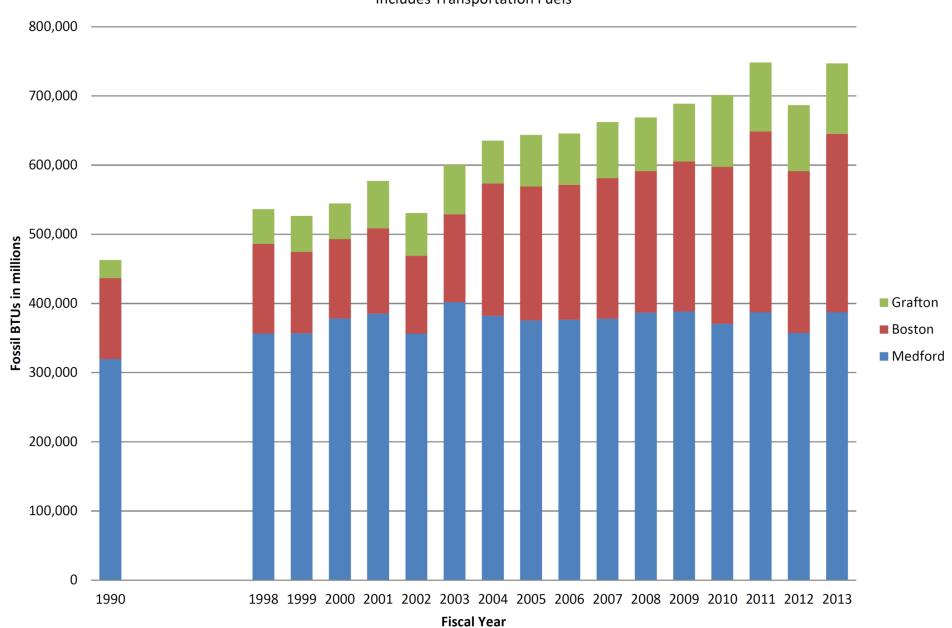


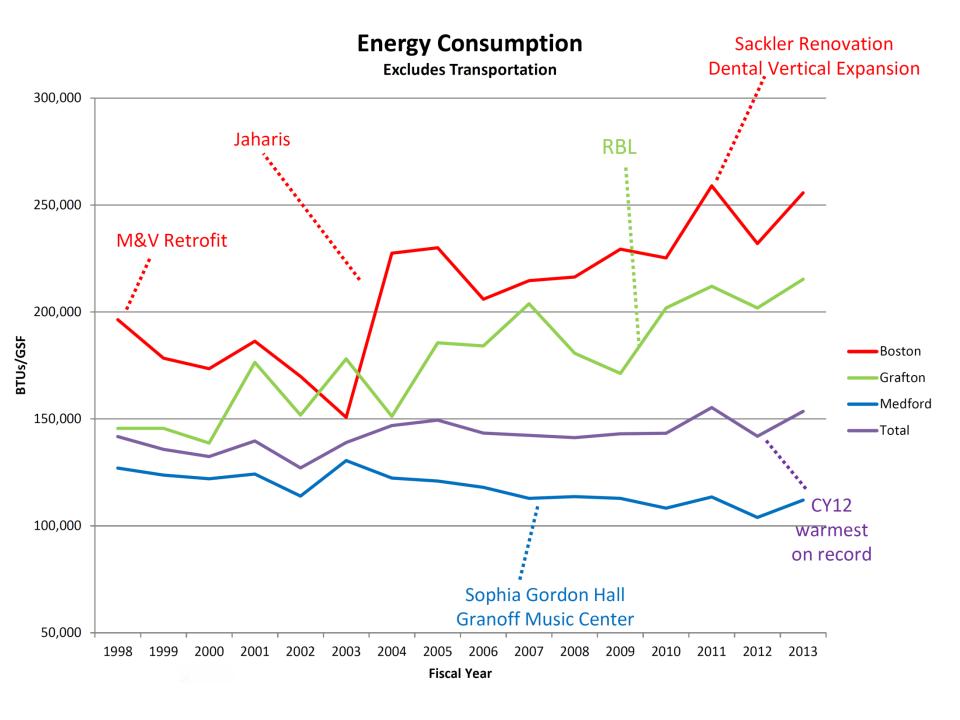
Medford/Somerville campus: energy systems

- Heating
 - District steam plants
 - Central, Tilton, Jackson, Cousens
 - Stand alone boiler plants
 Michael Pearson, 4 Colby Street, 80 George Street, other smaller facilities
- Cooling
 - Chiller systemsTisch, 4 Colby Street, Granoff
 - Package units and split systems
 - Window units
- Purchased electricity

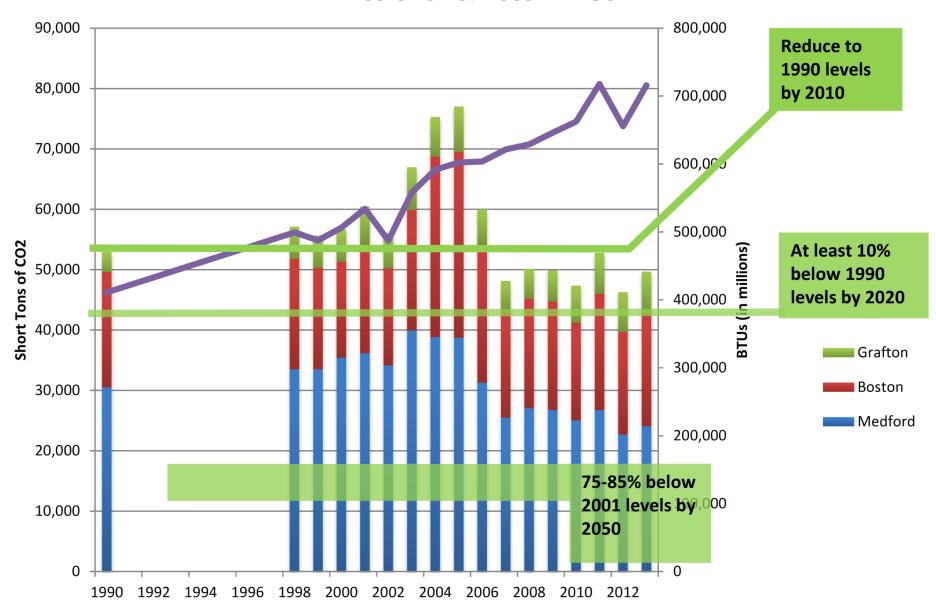
Energy Consumption

Includes Transportation Fuels

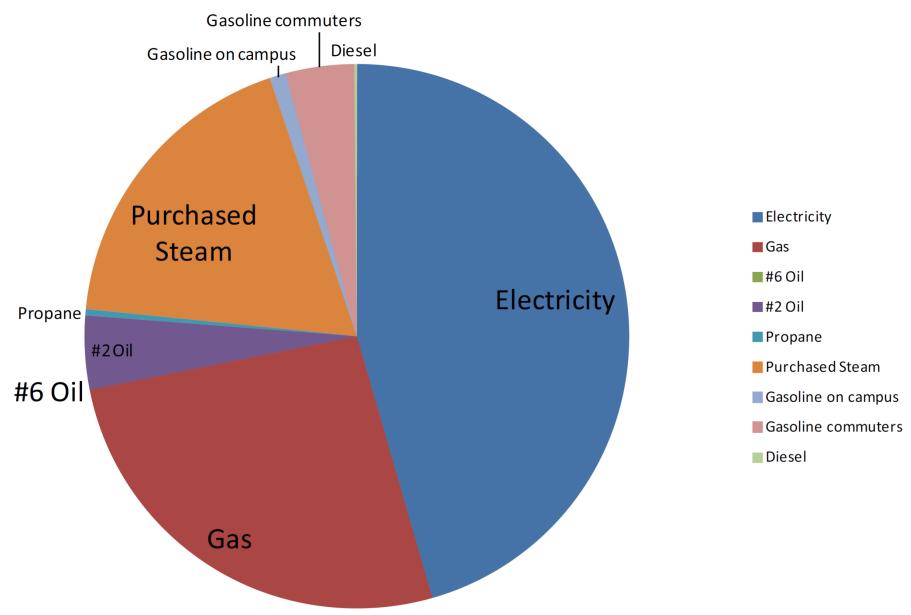




Emissions vs. Fossil BTUs



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



Green Buildings



Sophia Gordon Hall



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





Heating & Cooling Controls

Manual control valves
 (heating only)



Thermostats







Energy Management System



Lighting Controls

Light switch



Occupancy sensors





Ceiling mounted

The second secon

Energy Management System

Electricity Reduction

Occupancy sensors are common

 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



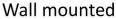
Light-emitting diodes (LEDs) installed in this garage reduce energy use and greenhouse gas emissions by 50% over standard lights.

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



Corner mounted







Ceiling mounted







Projects

- High efficiency condensing boilers: 4 Colby Street, Sophia Gordon Hall, 80 George Street, 58 Winthrop Street, 51Winthrop Street
- Specific Building Projects
 - Science and Technology Center retro-commissioning
 - Pearson Chemistry heat recovery
 - The Fletcher School chiller replacement
- Fuel switching
 - Central Heating Plant -- #6 oil to gas
 - Tilton Plant -- #6 oil to gas
- Boiler Control Upgrades
 - Central Heating Plant
- Comprehensive lighting retrofits and controls
 - High bay lighting in gymnasiums and machine shops
 - LED lights in Art Gallery
 - LED lights in general use: Brown & Brew, Carmichael, 520 Boston Ave, Tisch Athletics
 - LED lamps to each residential student
- Steam trap replacement program
- Vending Misers
- Front load washing machines
- Dowling Hall electric vehicle charger
- Dowling Hall Solar: 99 kW of photovoltaics to be built if it ever stops snowing!



A solar array is coming to Dowling!



Medford/Somerville utility master plan is studying:

Cogeneration at Central Heating Plant

Waste heat from on-site electrical generation used to for campus heating needs Substantial cost savings and greenhouse gas reductions are possible Moving from feasibility study to concept design

Campus chilled water plant/system

To support new High Performance Science and Engineering Center (in design)
Would replace aging chiller plants and less efficient air conditioning over the next twenty years
and beyond

Moving from feasibility study to concept design

Campus wide metering system

RFP almost complete

TEAM working group on Energy and Campus Sustainability reviewing software systems

Continued building efficiency efforts

Expectations – what you can do in your office

- 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



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

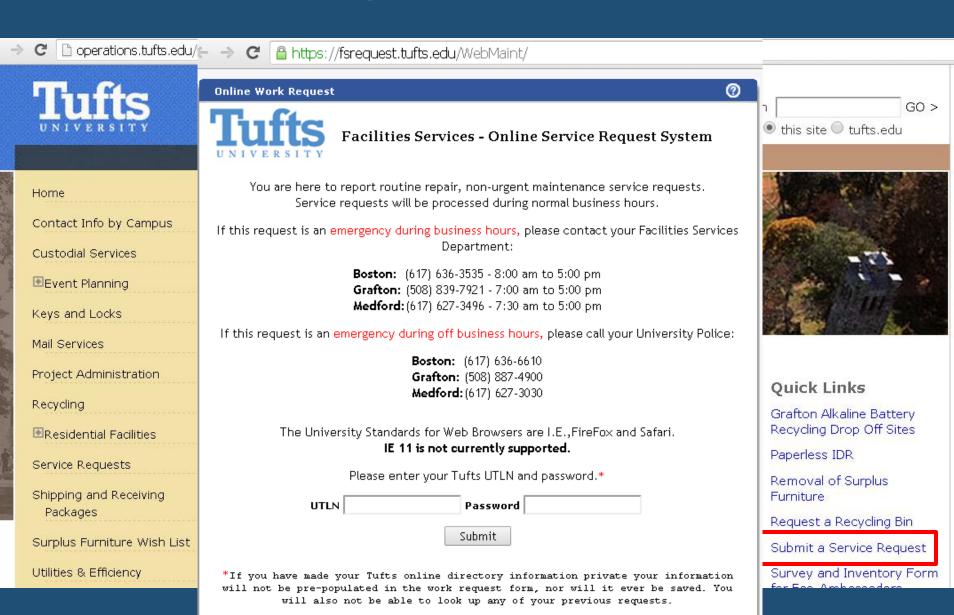
How to Help

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"

Submitting a Service Request



Questions?

Betsy Isenstein

<u>elizabeth.isenstein@tufts.edu</u>

617.627.3704

Purchasing

Green Claims – "Green" or Greenwashing?

Between 2009 and 2010, the number of "green" products increased 73%.

Greenwashing (Unreliable)







































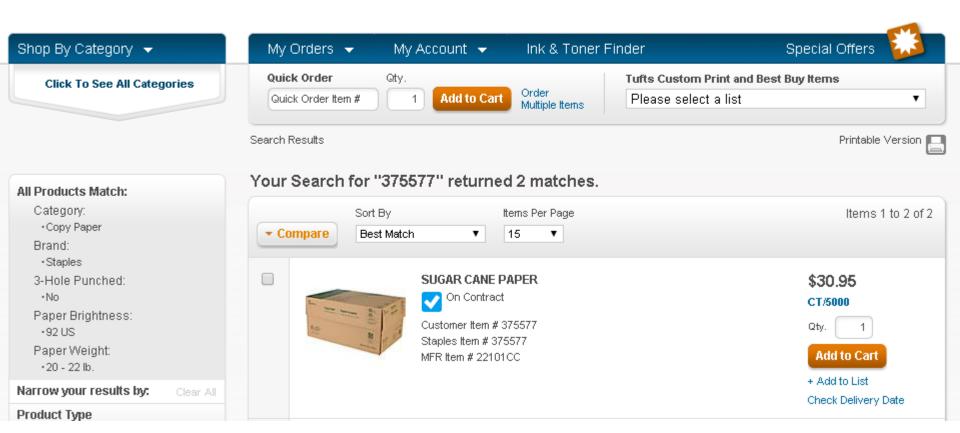




Customer ID: 1014198BOS

375577 Search

Home | Customer Service | Messages(1)



What can you do in your office?

- Reduce and reuse first
- When you buy, buy sustainable
 - "Buy green, buy fair, buy local, buy used, and most importantly, buy less." – Story of Stuff
- Talk with co-workers, purchasing staff, and suppliers



Helpful Resources

Tufts Purchasing Department:

http://finance.tufts.edu/purchasing/

Purchasing Guides:

http://www.responsiblepurchasing.org/purchasing_guides/all/

http://www.epa.gov/epp/

http://www.greenpages.org/

Eco-Labeling:

http://www.greenerchoices.org/eco-labels/

http://epa.gov/greenerproducts/consumer/index.html

http://www.nrdc.org/living/labels/cleaning.asp

Food Labeling:

http://archive.audubonmagazine.org/audubonliving/audubonliving1103.html http://www.ewg.org/meateatersguide/decoding-meat-dairy-product-labels/

Green Printing at Tufts:

http://sustainability.tufts.edu/?pid=109&c=48

Some final thoughts

- Share the results of the Green Office Survey with a supervisor
- Provide resources to your colleagues
- Start an office (or building, or floor) green team
- Get to know your fellow Eco-Ambassadors
- Don't forget OOS!

What does an Eco-Ambassador do?

1. Act as a point of contact and resource

2. Model sustainable behaviors

3. Implement office sustainability initiatives and foster behavior change

Social Marketing Plan

Step 1: Select Behaviors

Step 2: Identify Barriers and Benefits

Step 3: Develop Strategies

Step 4: Pilot

Step 5: Broad scale implementation & Evaluation

Looking ahead

Assignments:

- Create draft social marketing plan
 - Due March 21

Meet with supervisor or existing Eco-Ambassador team

Thanks for participating!



http://sustainability.tufts.edu