

**UMass Lowell**

**Sustainability & Energy  
Conservation Program**

WasteWise Conference  
November 21, 2013



# CLIMATE CHANGE IN HIGHER EDUCATION

## **AMERICAN COLLEGE & UNIVERSITY PRESIDENT'S CLIMATE COMMITMENT**



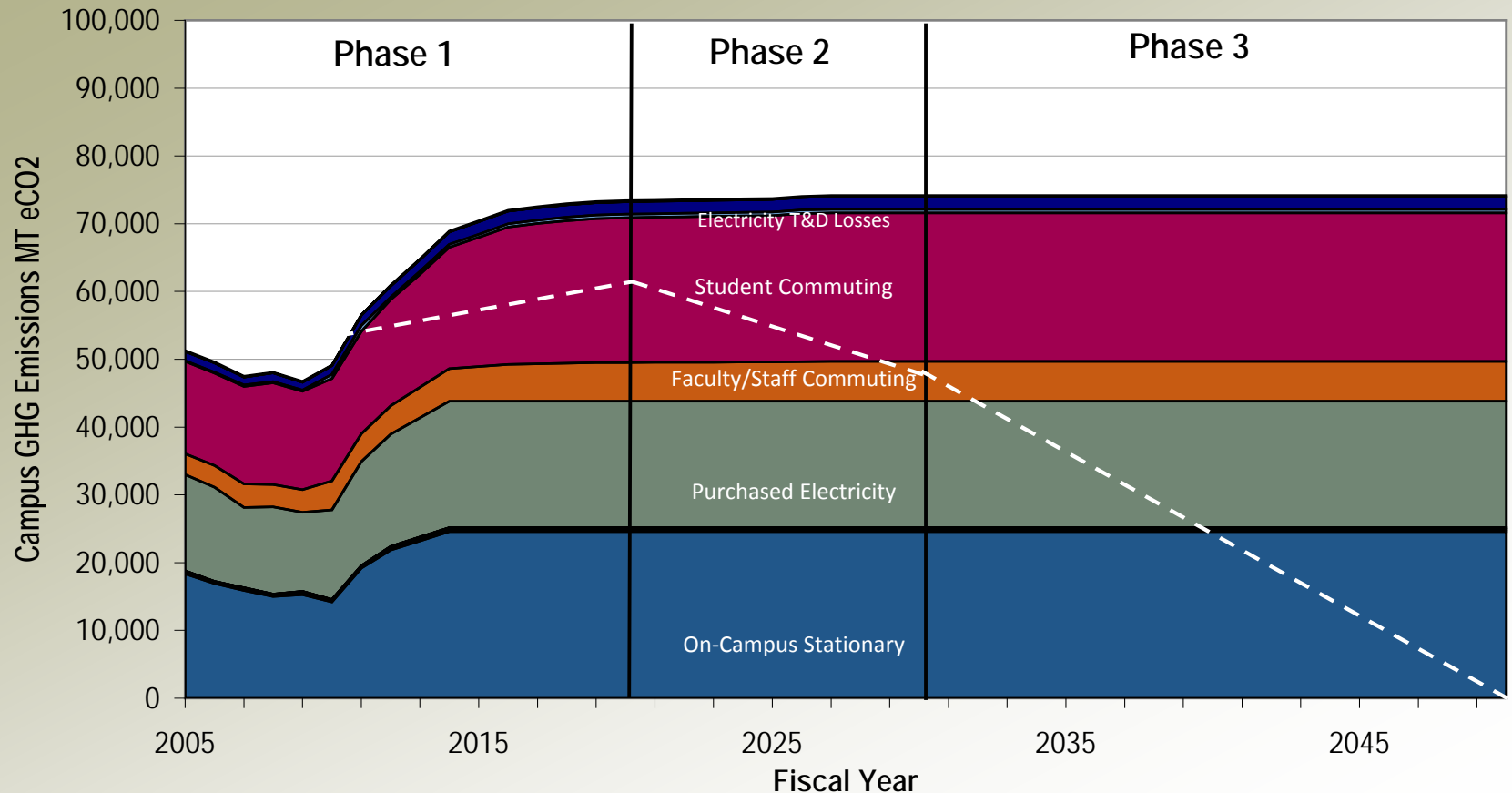
AMERICAN COLLEGE & UNIVERSITY  
PRESIDENTS CLIMATE COMMITMENT

- Signed by UMass President John (Jack) Wilson in 2007
- The University has committed to taking specific steps in an effort to reduce its Greenhouse Gas Emissions in order to Reach Climate Neutrality 2050
- The Commitment Includes Provisions to be Completed Within Specific Timeframes from the Signing of the Commitment:
  - Implement two or more specific tangible actions to reduce greenhouse gas emissions;
  - Complete an inventory of all greenhouse gas emissions
  - Develop an action plan for becoming climate neutral and make the action plan publicly available to AASHE



# Energy & Sustainability - (CAP)

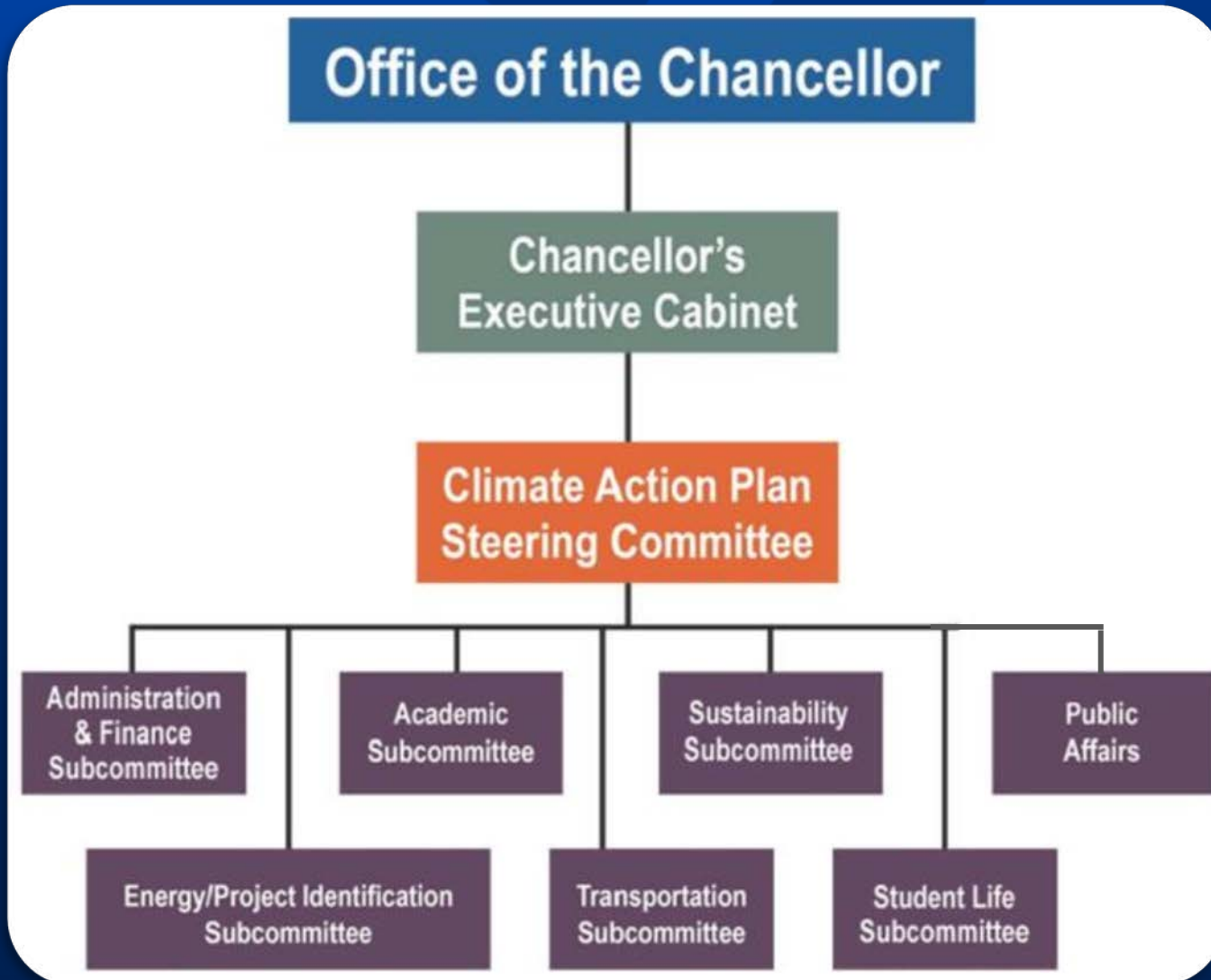
## Projected Business As Usual (BAU) Emissions



- Figure projects business as usual (BAU) emissions
- Dashed-white trend line outlines emission reduction targets against our projected BAU emissions



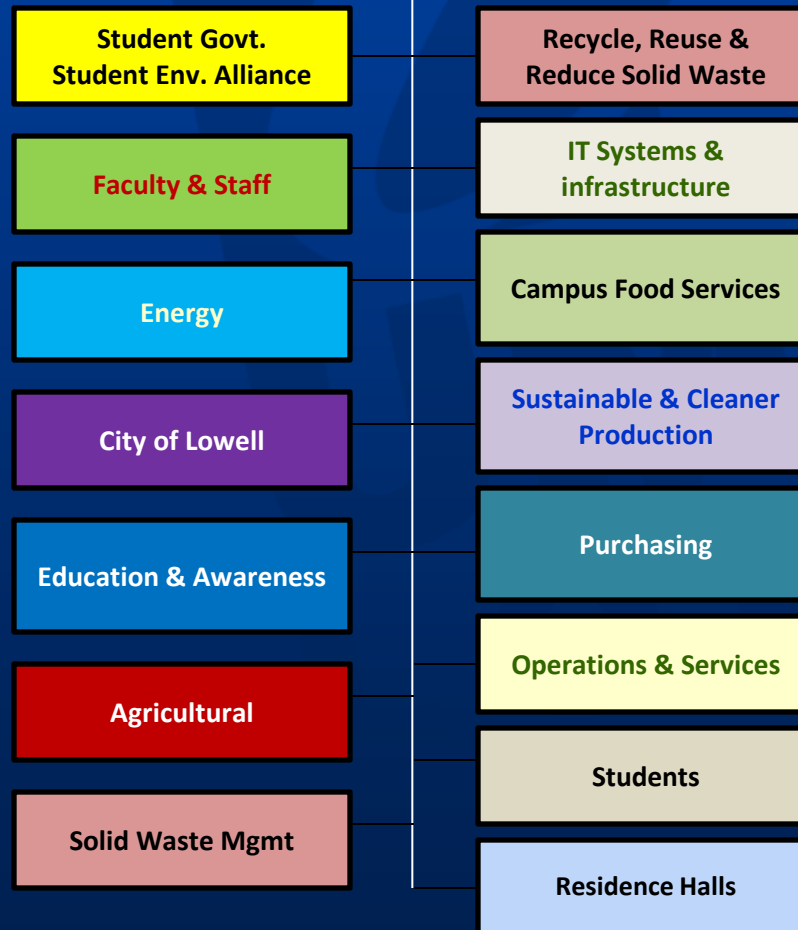
# Foundation of – CAP - Steering Committee





# Sustainability Committee Expertise

## *15 Focused areas of Campus Sustainability*





# Sustainability Initiatives

- Representation from Student Environmental Alliance and Student Government Assoc.; City of Lowell Recycling Dept.
- DEP compliant pilot food waste compost project begins September 2013
- Campus-wide single stream recycling
- Reuse of Residential Furnishings

## Earth Week 2013

-Coordinated with City of Lowell including:

- Residence Hall Electrical Challenge
- Dumpster Sort; Bike to School/Work
- Student produced climate films
- CAP/Sustainability Workshop
- Beat the Heat Road Race
- Waste Recycling Day
- Tree plantings





# Recognition - Sustainability

## Metrics

- Per DOER, from 2004 to 2012 GHGs cut 12%
  - Total GHG cut by 7669 MT CO<sub>2</sub>; while campus area increased 34% (2.5M to 3.4M SF)
- Since 2010, GHG Reduction per student-670 lbs CO<sub>2</sub> per FTE
  - equivalent reduction of 32 gals of gasoline burned or 230 lbs. of landfill trash reduction per student.



2013

Students and Faculty/Staff working together during Earth Week to green their campus.





# Transportation Initiatives

- DEP Rideshare surveyed employees and students to determine how they get to campus.
  - 5,500 MT CO<sub>2</sub> of GHG reductions to baseline GHG inventory
- SMART TRIPS Commuting Reduction Programs:
  - MassRIDES Commuter program called NuRide –free online carpool service.
  - Freewheelers Bike Share Program- bikes to be used all over campus
  - Discounted MBTA train passes for faculty and staff
  - Zipcar Car Sharing Program
  - Pedestrian & cycling maps
  - Parking Policies
  - Shuttle Bus





# Academic Initiatives

- Climate Change and sustainability are viewed and recognized as common and unifying themes
  - UML offers over 70 climate-related courses incorporating sustainability, environment, health, energy management, renewable energy, climate-related topics and degree programs.
- Climate Change Initiative (CCI)
  - Brings faculty, students, and communities together to address climate change through education and research
  - Composed of academic programs at the undergrad and graduate levels including:
    - research in diverse fields
    - Campus events on climate change.
    - Outreach to the broader community to increase public understanding
- CCI Teach-In: Invites prominent CC speakers to address UML Students, Faculty and Staff as well as regional high schools





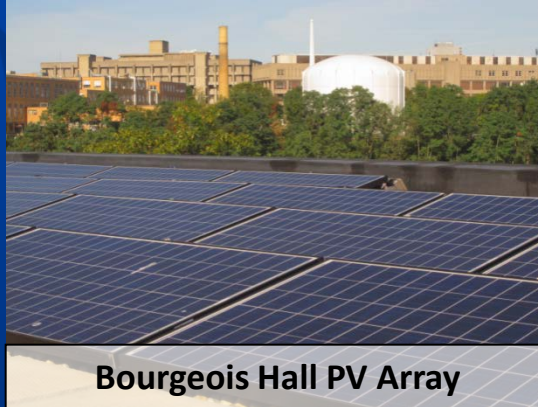
# Energy Cost Avoidance - Initiatives

## Energy Cost Avoidance & Revenue FY10-12

	<u>\$ per Year</u>
Energy Projects	\$715,000
Building & Infrastructure Renovations, D.M. Replacements	\$60,000
Solar Net Metering Credits	\$26,000
Energy Procurement	\$1,182,000
Solar Voltaic Arrays	\$82,000
Utility Incentives	\$191,000
Energy Management/Policy	\$150,000
	<b>\$2,406,000</b>

## Future Revenues and Cost Avoidances

	<u>Total</u>
Building & Infrastructure Renovations, Deferred Maintenance Replacements, LEED Construction	\$390,000
LEED Construction Cost Avoidance	TBD
Solar Net Metering Credits	\$540,000/YR
Accelerated Energy Plan	TBD
Incentives	\$323,000 Lump Sums
Future Energy-specific Projects cost avoidance	\$350,000/YR



**Bourgeois Hall PV Array**

**New North Campus Boiler**



**New South Campus Chiller**



# Energy Initiatives - GHG reductions

- **FY 10-12 Internal Projects:** reduced 3,650 MTCO<sub>2</sub>
- **By FY 16:** AEP goal of 25% energy reduction
- **By 2020 a 20,000 MTCO<sub>2</sub> reduction exceeds CAP goal**
  - Equivalent to 3,550 cars off the road or 2,000,000 gal. Gasoline
- **Investments in Renewable Energy Technology**
  - DOER Grant from AARA Funds
    - for solar arrays and EEMS
- **Example of Energy Projects**
  - NC boiler, chiller retrofits, steam traps, lighting etc.
  - New construction: minimum Cert. LEED Silver
  - Fuel conversions
  - Roof Solar Systems

Emer. Tech. & Innov. Ctr. - LEED



Health & Soc. Sci. Bldg.- LEED



University Suites- LEED



University Crossing





# Fox Hall

**“NEW”** *Food Waste Compost  
Program*

November 21, 2013



# Massachusetts To Ban Food Waste from Disposal

## *From Large Food Service Operations*

DEP News Release Boston, MA – December 18, 2012

Starting in July 2014, MassDEP plans to require food waste diversion from large-scale foodservice operations – including food and beverage manufacturers, grocery stores, wholesale distributors, **universities** and correctional facilities.

- “Our goal is to increase food waste diversion by 350,000 tons per year by 2020,” says John Fischer, the Branch Chief of Waste Planning and Commercial Waste Reduction for MassDEP.
- **Food Waste Ban Details:**
  - - **In effect:** July 1, 2014
  - - **Companies affected:** Foodservice operations in Massachusetts that dispose of one ton of food waste per week or more
  - - **First fine violation:** \$860-\$1,725





## Fox Hall Food Waste Compost Program



# Working together for a Common Good

## Fox Hall Compost Program

- ▶ Meet our Student Compost Program Ambassadors.
  - Tiffany Blake, Environmental Health program
  - Kelly Rusch, Environmental Health program



# University Dining

## *Sustainability On Campus*

November 21, 2013



# University Dining: Who We Are

**Mission** | *Delivering exceptional experiences, everyday.*

- ▶ **Residential Dining:** Three All-You-Care-to-Eat Restaurants serving over 30,000 meals per week.
- ▶ **Retail Dining:** Food Courts, Late Night Dining, Grab & Go Locations, & National Brands - Starbucks, Subway, Taco Bell, Einstein's, Red Mango & More!
- ▶ **Conferences & Catering:** From Tradeshows and Business Meetings to Weddings, Special Events and Intimate Gatherings.
- ▶ **Sports & Entertainment:** Concessions & Private Suite Catering for Sporting Events, Major Concerts & More!



# University Dining: Sustainable Dining

**Our Goal** | *Help make a difference in preserving the Earth, the local economy and the lives of others*

- ▶ **Water Use Reductions**
- ▶ **Energy Use Reduction**
- ▶ **Recycling & Green Materials**
- ▶ **Going Local**
- ▶ **Nutrition**





# University Dining: Sustainable Dining





# University FOX Hall Dining: October 2013 Results

- ▶ Survey
  - 4 tons
  - 8 tons
- ▶ Pre-Consumer Waste
  - 1,600lbs
- ▶ Average Daily Food Waste
  - 100-150lbs
- ▶ Average Customers
  - 3,200 a day



# University Dining: Composting





# University Dining: Pulper





# University Dining: Daily Waste Tracking





# University Dining: Casella Partnership





# University Dining: Challenges

- ▶ Easy Transition
  - Food Waste Program
- ▶ Training
  - Safety
- ▶ Broken Machine
- ▶ Trial & Error
  - Big vs. Small Barrel



# Casella Resource Solutions

*Sustainability On Campus*

November 21, 2013





# Closed Loop Organic Recycling at UMass-Lowell

by Casella Resource Solutions

November 21, 2013



# Pulping Operation

- Food scrap is processed, chopped and dewatered
- Collected in lined, wheeled carts
- 35-gallon carts found to be optimal size for safety and ease of use





# Chopped, Dewatered Material





# Safe Handling and Ease of Use

- Ground floor operation, ramps and wheeled carts make for easy transport to outdoor storage
- Less labor required
- Storage site is clean and orderly





# Transport to Compost Farm

- Casella driver picks up carts 3X/week using box truck with lift gate
- Filled carts replaced with clean, lined carts
- Odor kept to a minimum





# Compost Farm Processing





# Compost Returns to UML as Useful Product

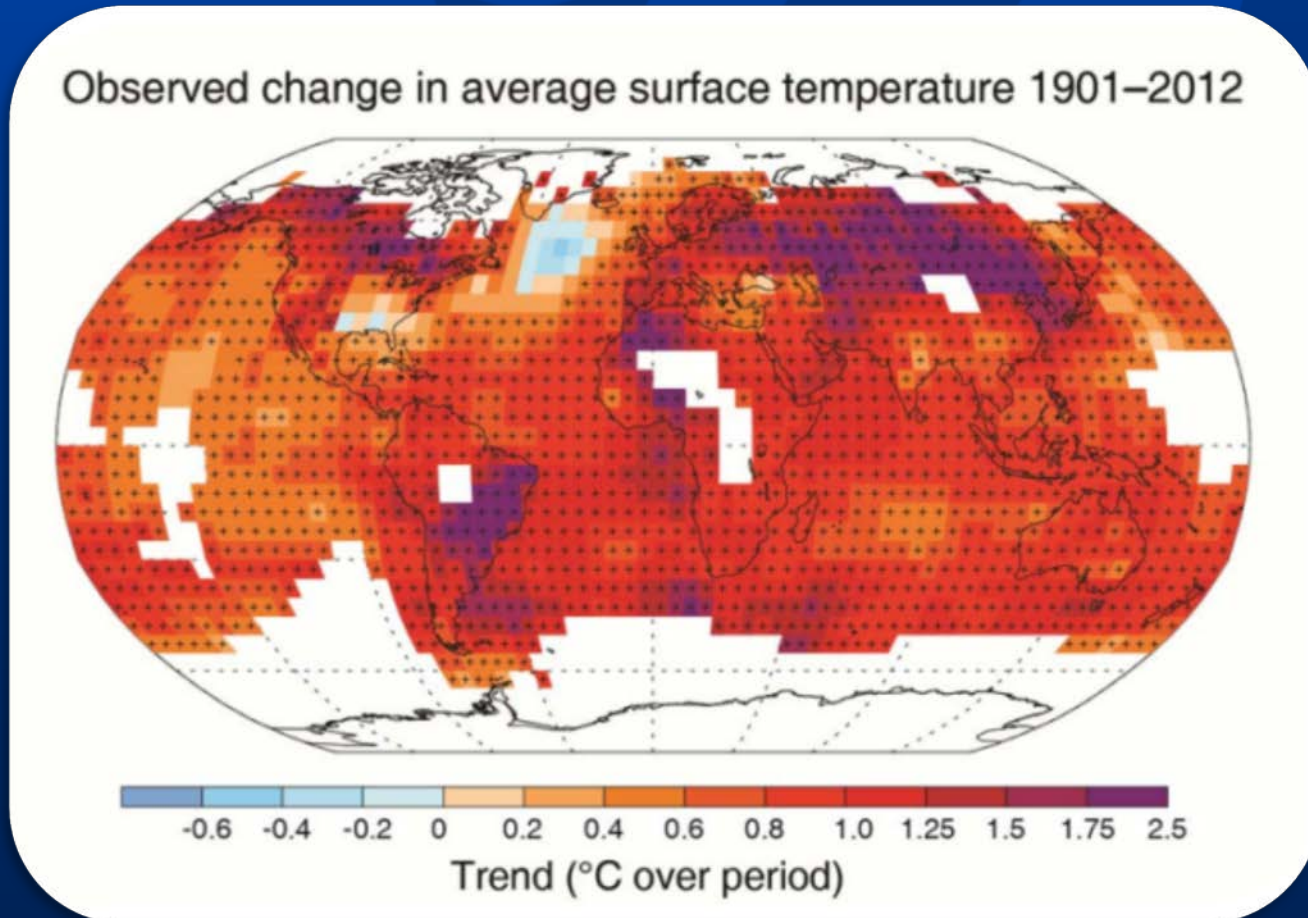
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- Compost is used for plantings and other projects





# Why is Composting Important?



*Source: Intergovernmental Panel on Climate Change (IPCC) 2013 Report*



# Food Waste Compost Program Next Steps

November 21, 2013



# UMass Lowell Composting Next Steps

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- Marketing and awareness to UMass Community of all efforts.
- Continued commitment to food waste compost “Earth to Earth”.
- Continue to build metrics and data for measurement of program
- Expansion of program to all dining facilities.
- Provide written pulper specification to Project Team/Facilities.
- Right sizing of dumpsters due to waste diversion & \$ savings
- Work with Dining Services for local food sharing program

*“By Working Locally... We Effect Globally”*



# Accomplishments to Date

## Awards

- Leading by Example Award - 2012
  - for Energy and Sustainability Programs (2012) setting standard of Governor's Executive Order 484
- Excellence in Commuter Options Award - 2012
  - From MassDOT
- Tree Campus USA Award - 2011-2012-2013
  - Third year in a row.
- Greenguard Certification
  - UML is first New England College to achieve.
  - For enhancing indoor air quality and reducing exposure to cleaning chemicals





# Thank - You

- ▶ END

- ▶ Questions