Stephen Pesci, Special Projects

University of New Hampshire–Durham

Campus Planning

New England Board of Higher Education

May 4, 2009

Greening Higher Education

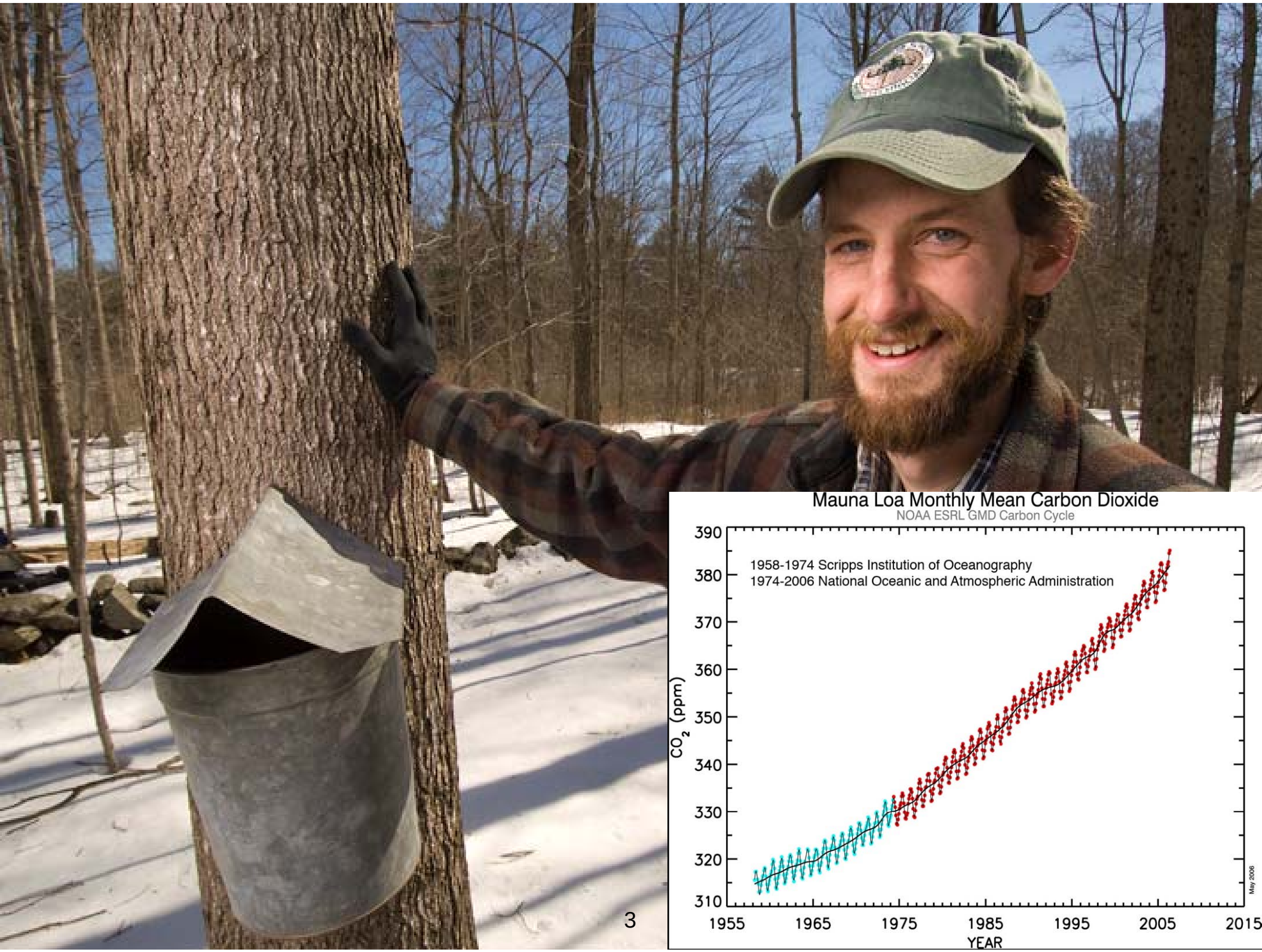
Campus Image

There are three distinct and differentiating images:

New England village

New England college

New England landscape


Mauna Loa Monthly Mean Carbon Dioxide
NOAA ESRL GMD Carbon Cycle
1958-1974 Scripps Institution of Oceanography
1974-2006 National Oceanic and Atmospheric Administration
CO2 (ppm)
390
380
370
360
350
340
330
320
310
1955
1965
1975
1985
1995
2005
2015
YEAR
May 2006


... but we can turn this
challenge into
opportunities.

NATIONAL WILDLIFE FEDERATION

Named One of the TOP 25 Environmentally Responsible Colleges by the Kaplan College Guide

The Princeton Review

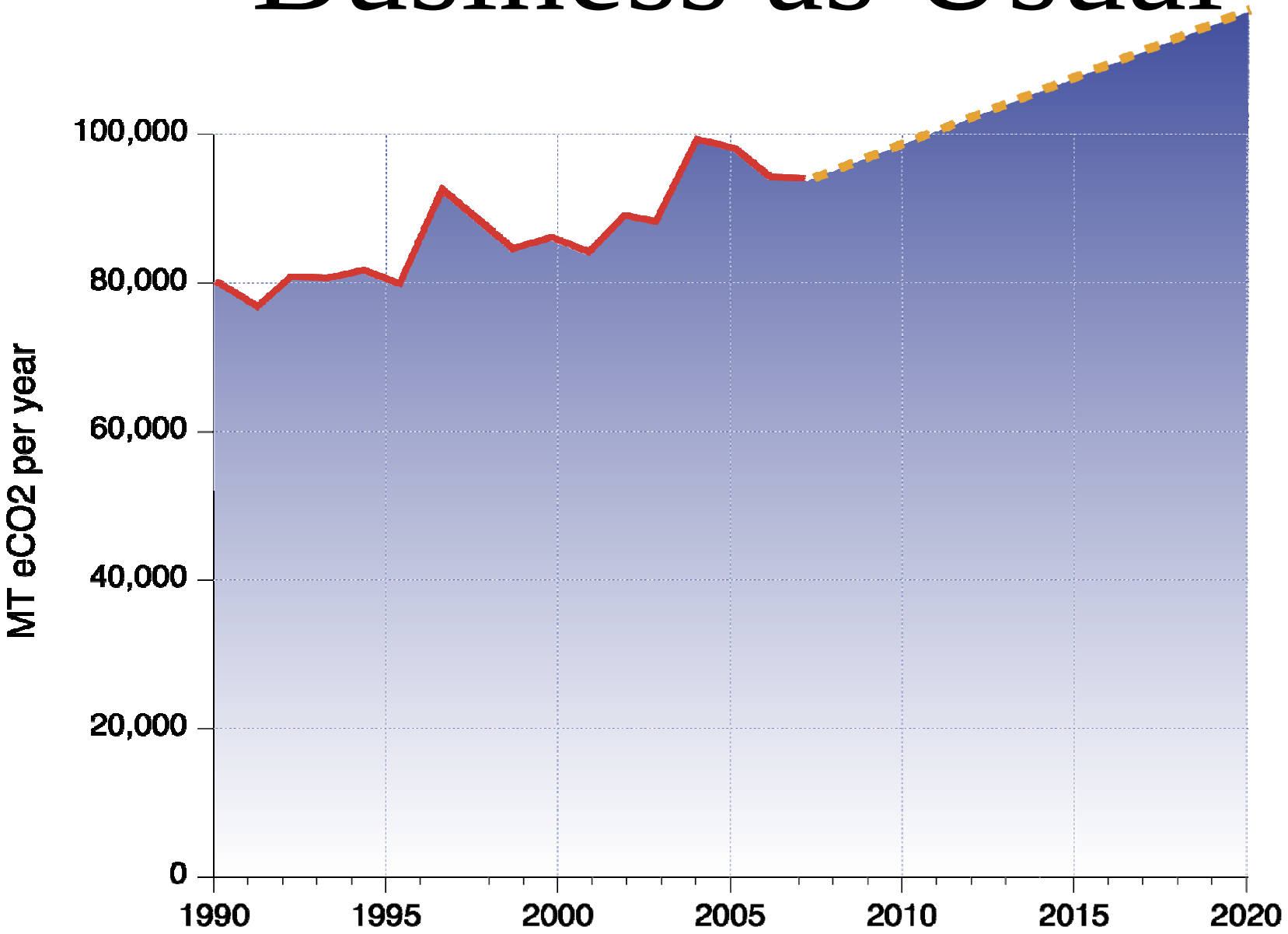
kiwi
Growing families the natural and organic way™

SUSTAINABLE ENDOWMENTS INSTITUTE

DEPARTMENT OF ENERGY • UNITED STATES OF AMERICA •

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

Business as Usual



UNH Goals

50% reduction from 1990 levels by 2020

80% reduction from 1990 levels by 2050

We have a comprehensive program called WildCAP

Efficiency

Renewables

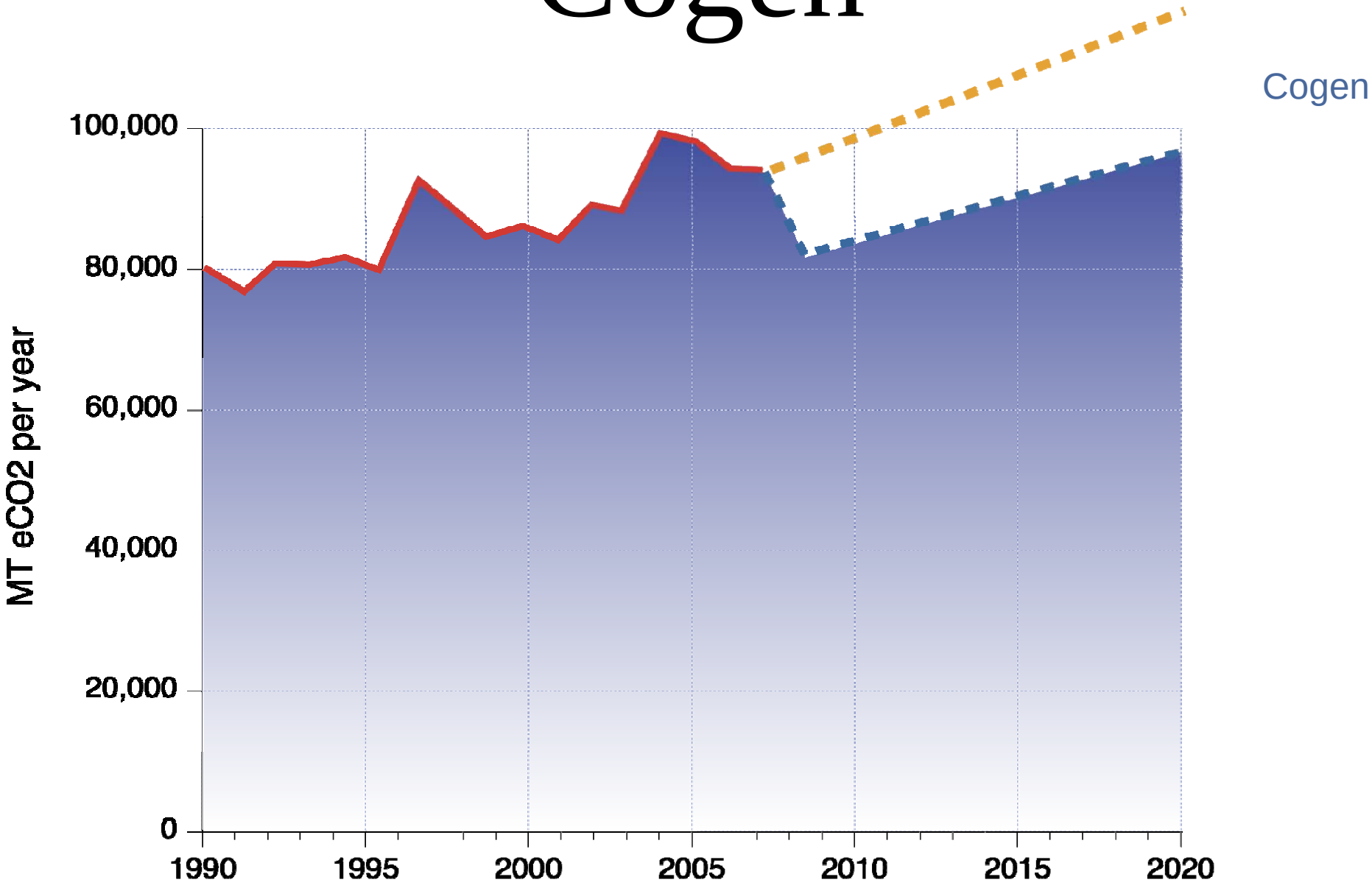
Conservation

Transportation

Hey UNH...
Watch your waste
Energy Challenge

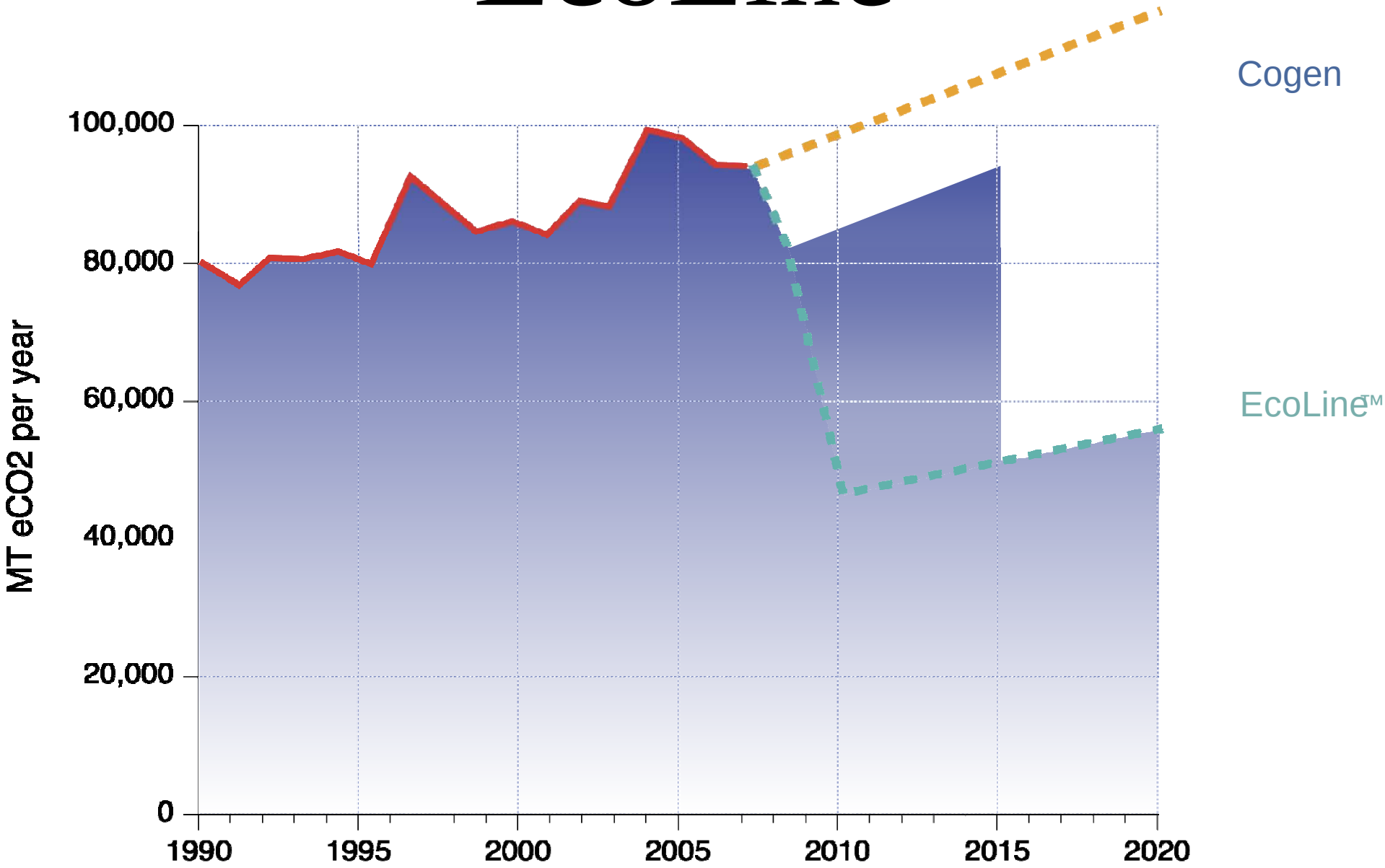

Cogeneration

“Cogen”


Cogen
100,000
80,000
60,000
40,000
20,000
0
MT eCO2 per year
1990
1995
2000
2005
2010
2015
2020


Dover
NEXT 3 EXITS
ECO
CH4
UNH
Line
™
Power Partnership

EcoLine™

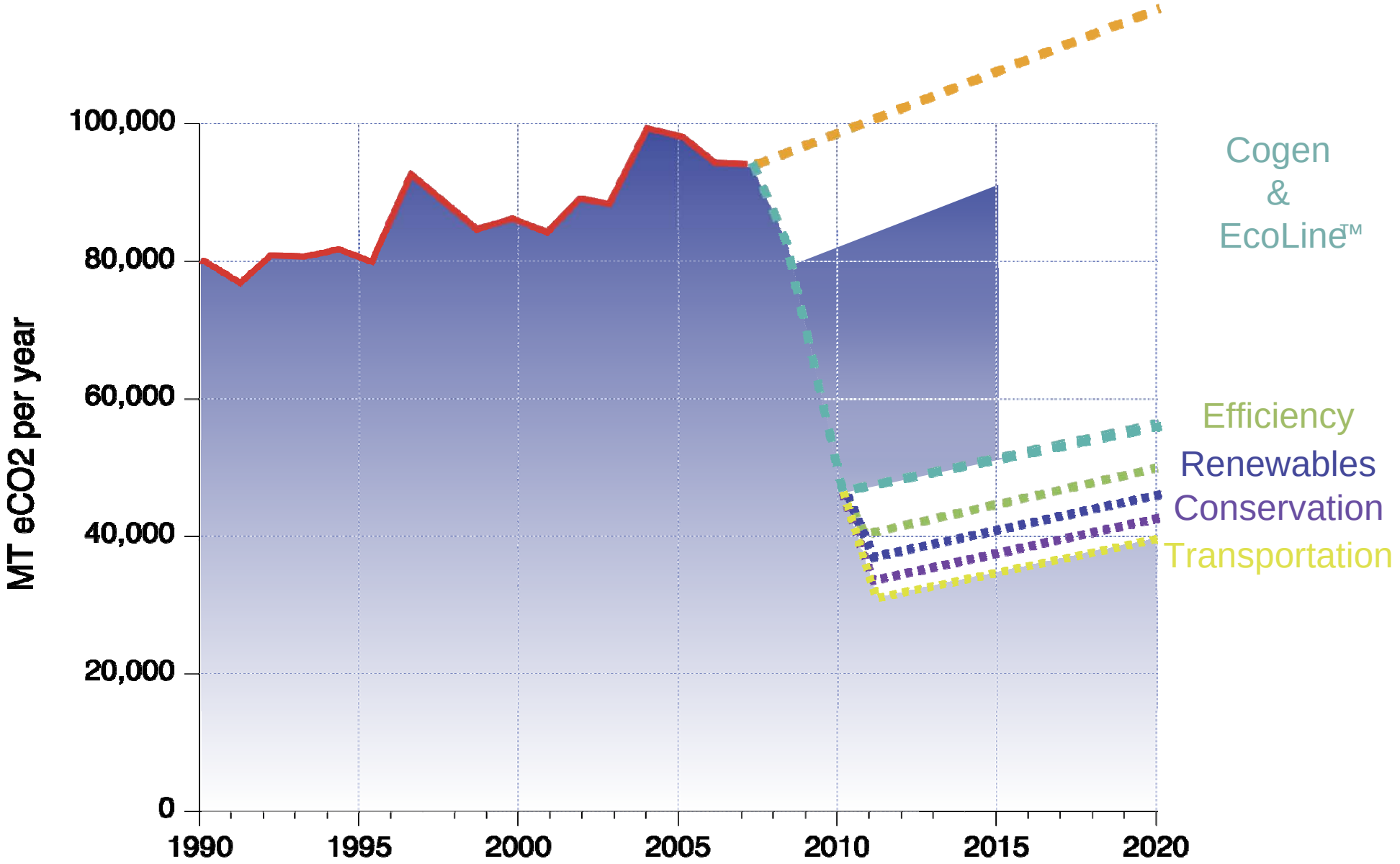

Cogen
EcoLine™
100,000
80,000
60,000
40,000
20,000
0
MT eCO2 per year
1990
1995
2000
2005
2010
2015
2020

Efficiency

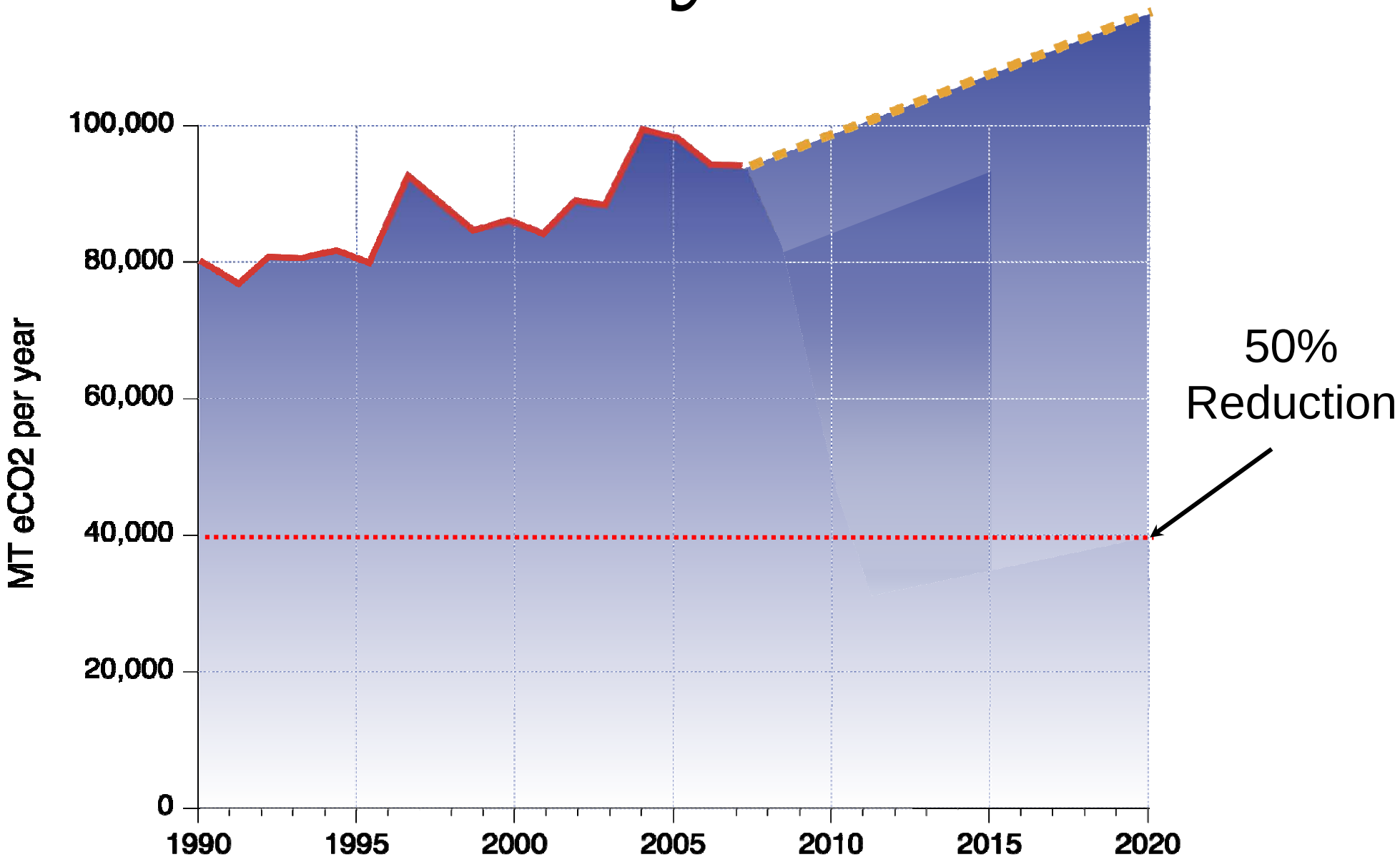
ENERGY STAR


Renewable
Energy

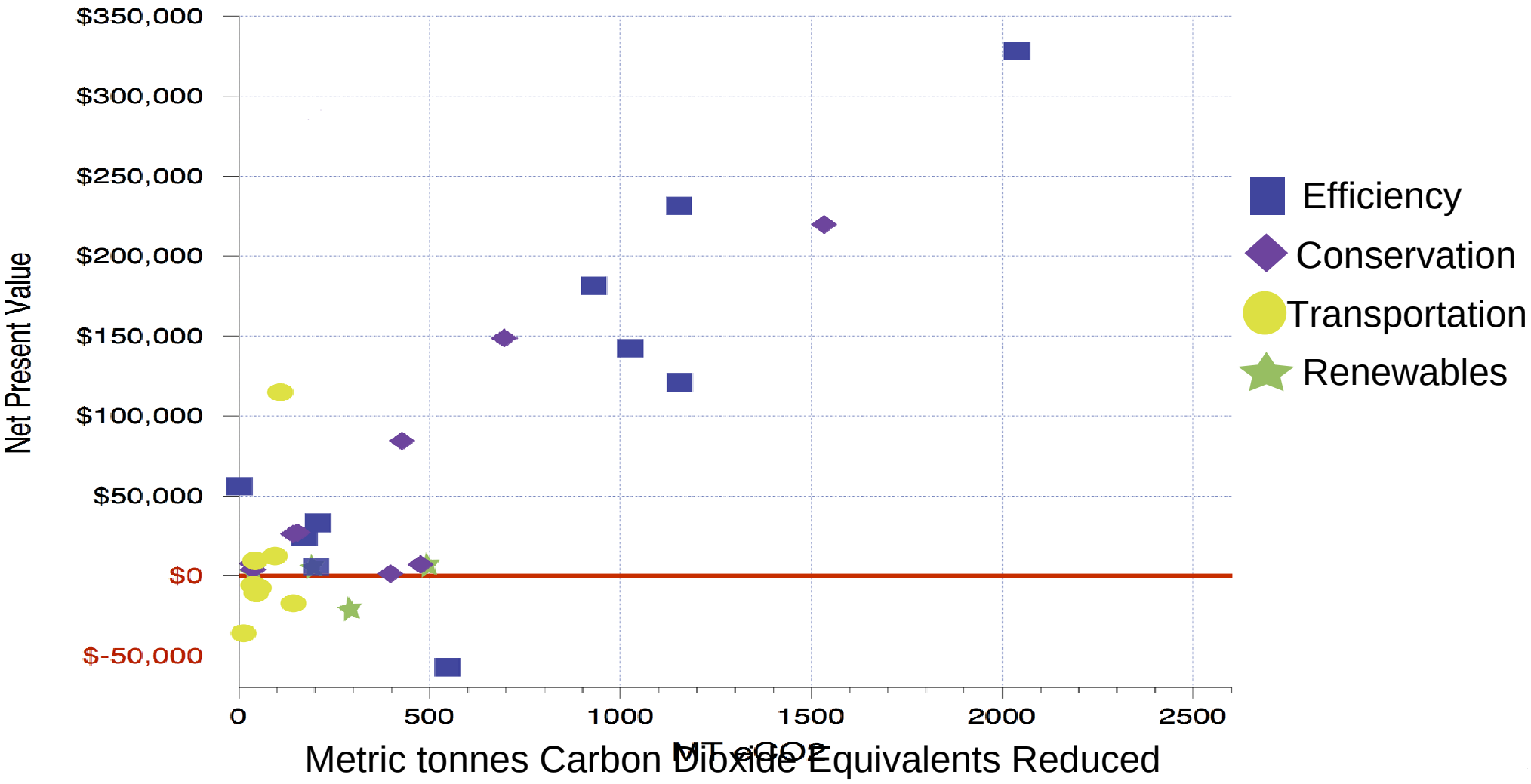
Reduction Profile



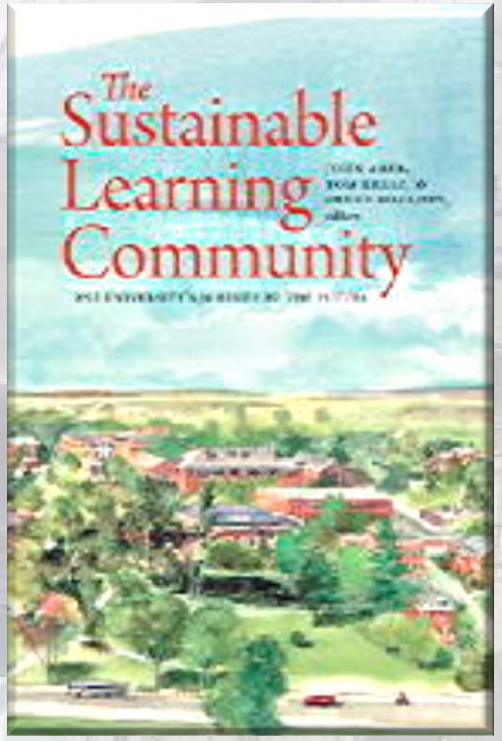
50% by 2020


100,000
80,000
60,000
40,000
20,000
0
MT eCO2 per year
1990
1995
2000
2005
2010
2015
2020
50%
Reduction

Project Assessment



Operational Examples at UNH



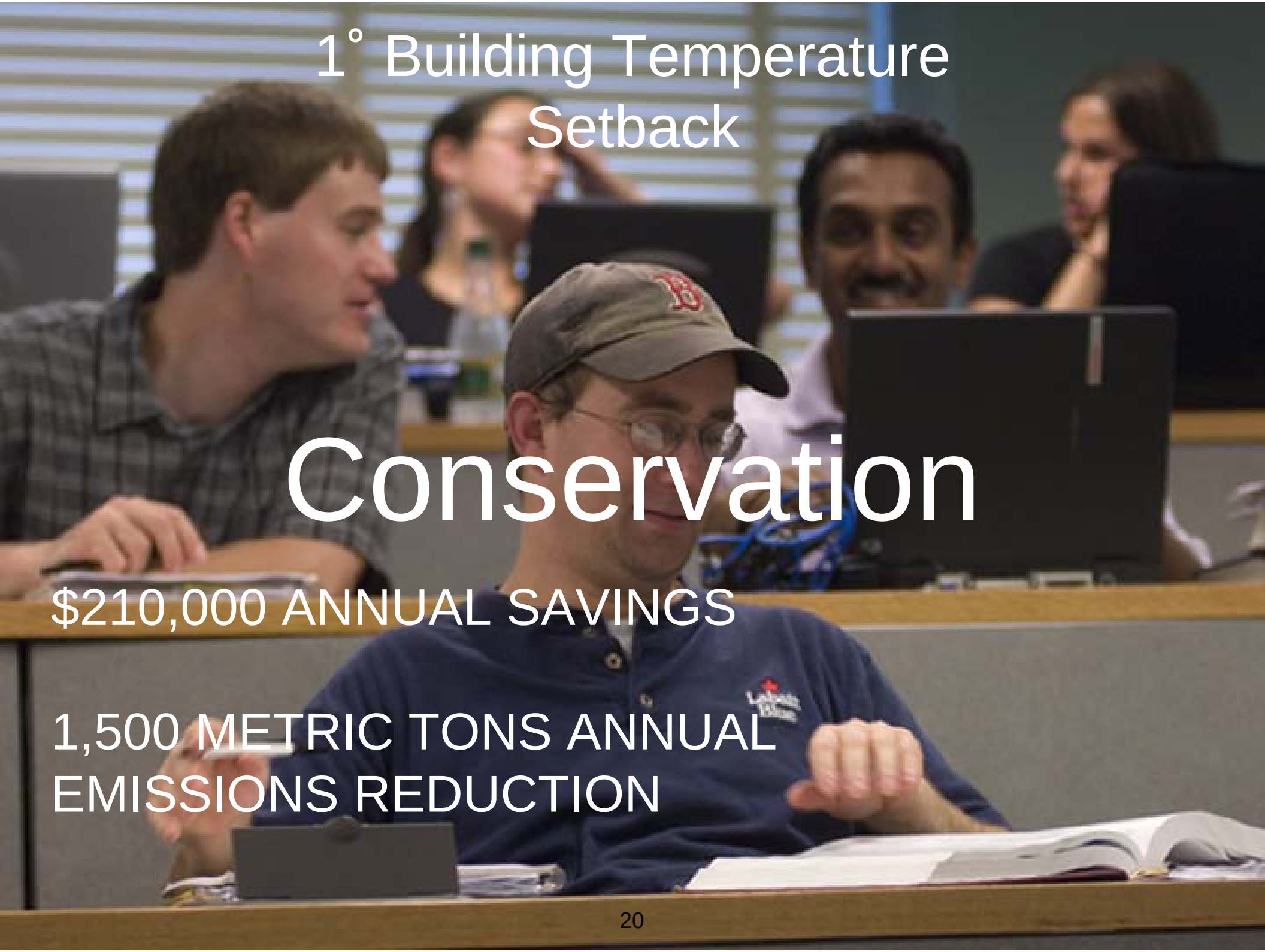
University of New Hampshire Press
University Press of New England

This is not an academic exercise. The Sustainable Learning Community describes the ten-year transformation of a university with ideas and aesthetics: using organic farming techniques to train and feed students; constructing a 12.7 mile pipeline to bring landfill gas to a new co-generation plant; and fostering lively engagement in public policy.

Building Automation Systems

$320,000 annual savings
2,000 metric tons annual emissions reduction

Efficiency



1˚ Building Temperature Setback

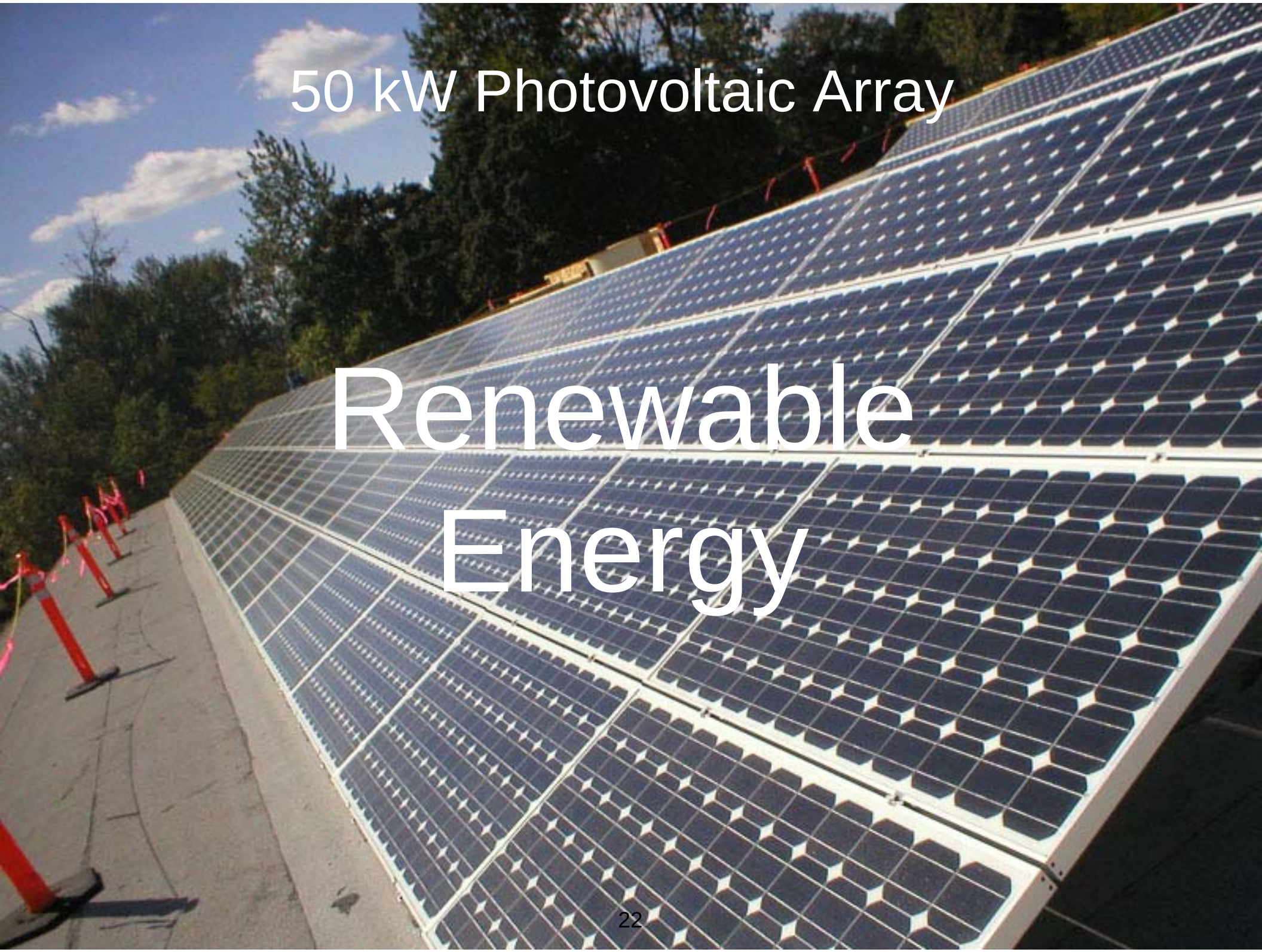
Conservation

$210,000 ANNUAL SAVINGS

1,500 METRIC TONS ANNUAL EMISSIONS REDUCTION

Transportation – TDM

- Lower commute costs
- Avoided institutional/land costs
- Less traffic
- Cleaner air
- 200 Metric tons annual emissions reduction


50 kW Photovoltaic Array
Renewable Energy

SIGNATORY OF
AMERICAN COLLEGE & UNIVERSITY PRESIDENTS CLIMATE COMMITMENT

First 2 Months:
Nov 15, 2007

Within 1 Year:
Sep 15, 2008

Within 2 Years:
Sep 15, 2009

✓ Create Institutional Structures

✓ Complete Emissions Inventory

a) Develop Climate Action Plan

✓ b) Initiate 2 of the 7 "tangible actions"

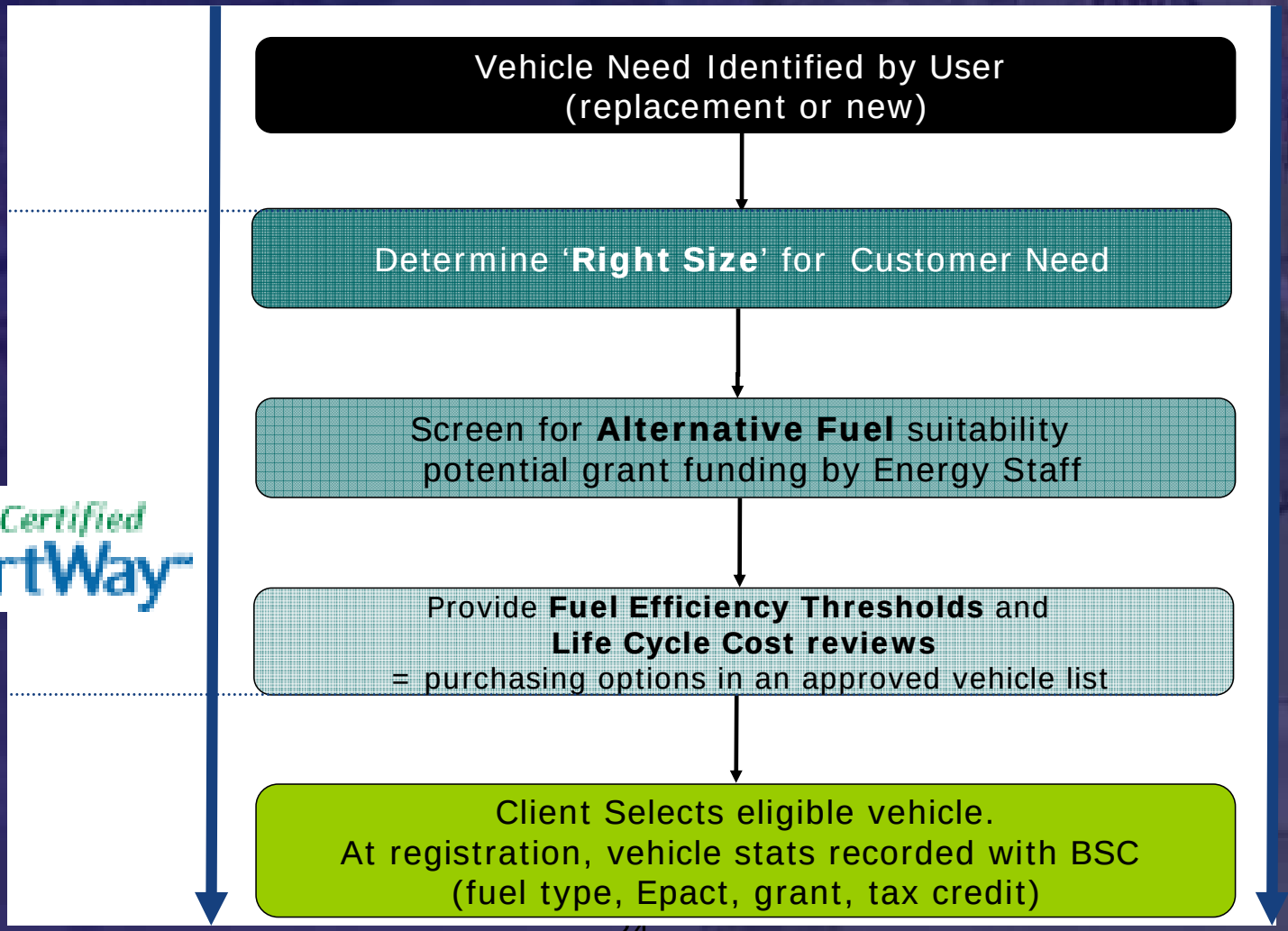
UNH Energy Task Force

UNH GHG Inventory

1. LEED Silver equivalent standard for new buildings
2. Energy efficient appliance purchasing
3. Encourage public transit
4. 15% renewable electricity
5. Participate in Recyclemania

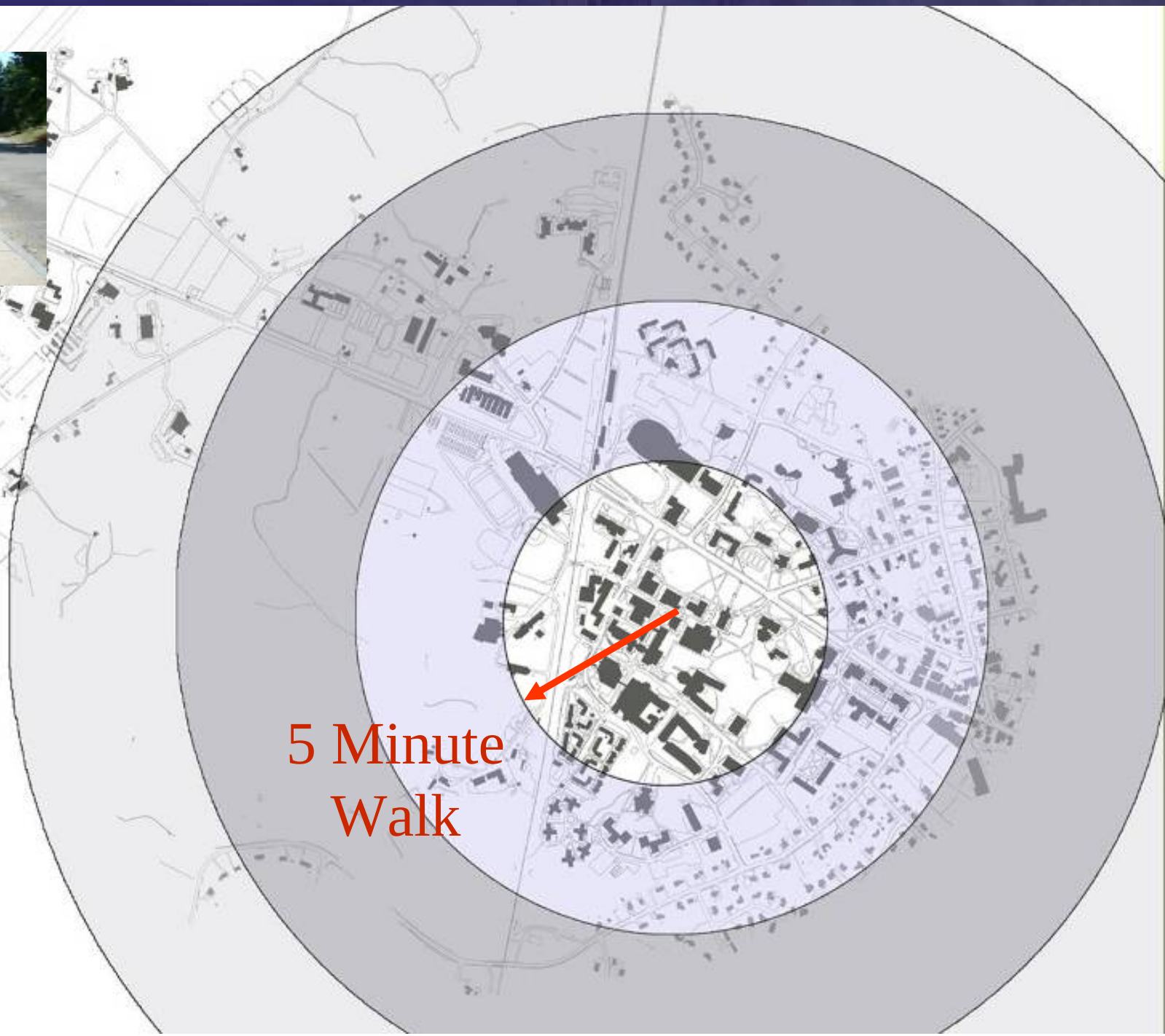
Institutionalizing Choices:

Clean Fleet and EcoCat™ Practices and Policies

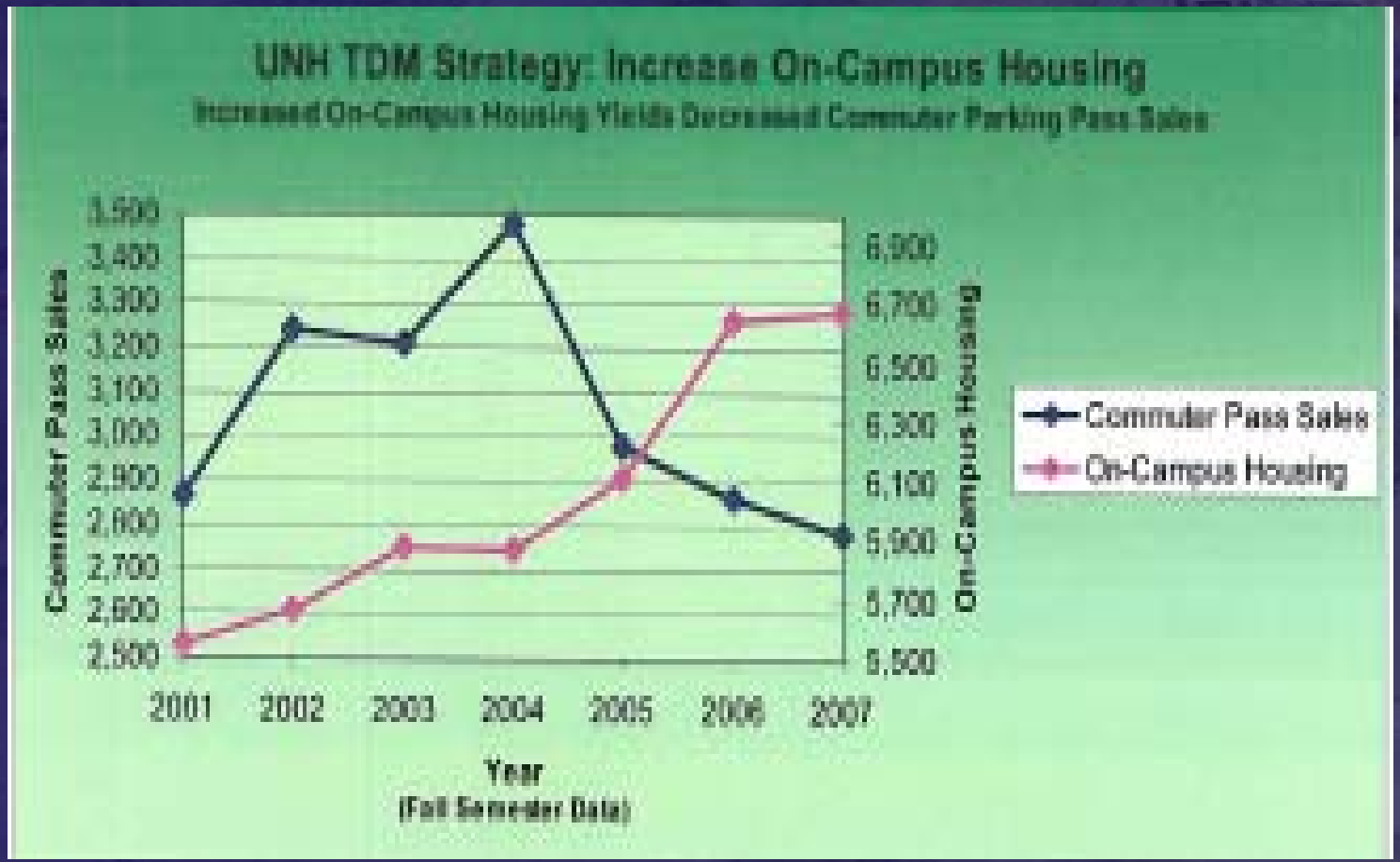


US EPA Certified SmartWay

Pedestrian Walk Times



Housing-Transportation Links



20 Year Master Plan Context

Reducing Commute trips (VMT) and emissions through on-Campus Housing

Population Component	2002 Base	2012 Build Projection	2022 Build Projection
Faculty/Staff (all commute)	3,320	3,400	3,520
Graduate (all commute)	2,150	2,325	2,500
Undergraduate Population:	10,850	11,450	12,000
On-Campus undergraduate housing	*5,610*	*6,400*	*7,200*
On-Campus family/graduate housing	*333*	*420*	*566*
Commute population **Faculty/Staff *plus* students *minus* on-campus housing**	10,377	**10,355**	10,254

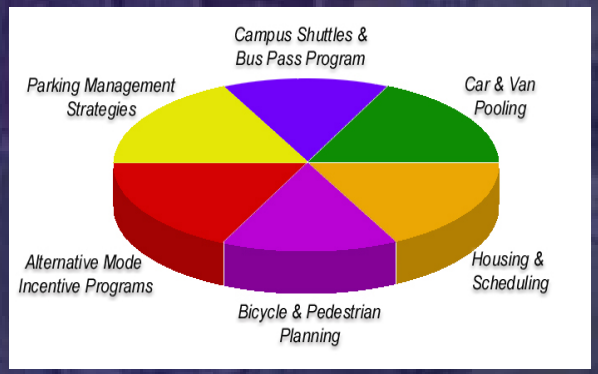
Reduced traffic and emissions due to significant increases in on-campus housing

Evolving Transportation Policy

Leadership and Community Dialog

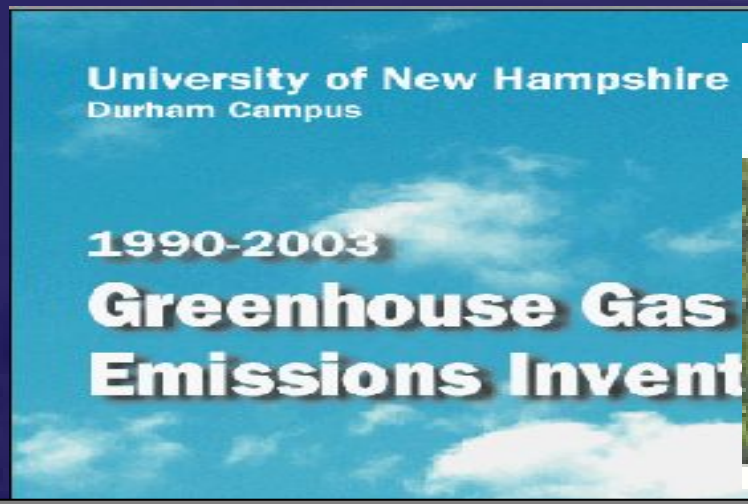
2001 Transportation Demand Management Policy

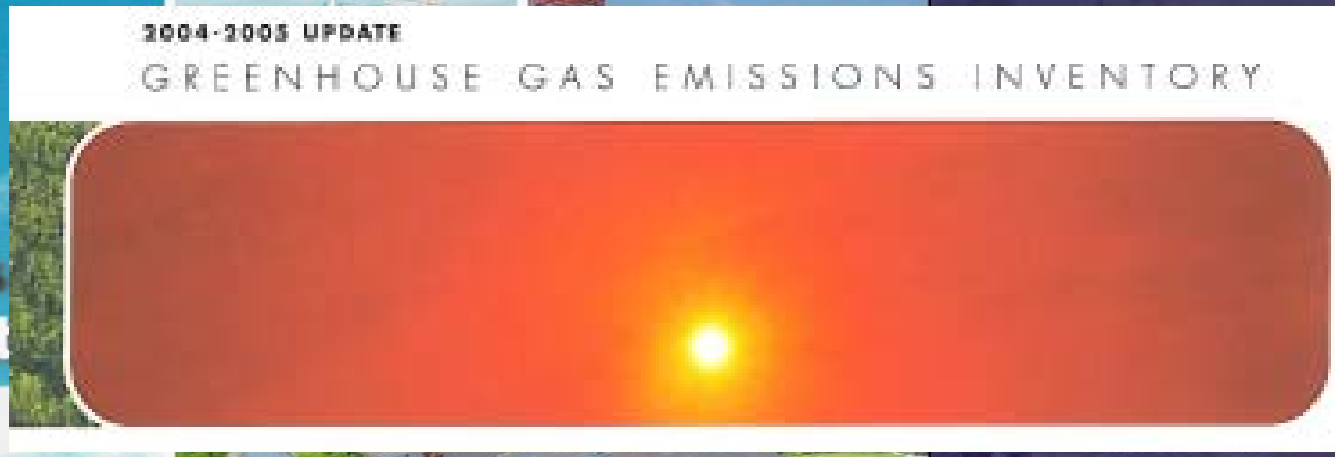
System Improvements Yield Positive Results:



- **Transit ↑ 100% since 2001** - >1.3 million trips
- **Amtrak Downeaster ↑ 600%** - >70,000 this year
- **2004-2007 UNH fleet fuel consumption**:
  - Gas and petroleum diesel **↓ 10%**
  - CNG **↑10x** displacing >12,000 gallons gas/diesel
  - Biodiesel (B20) introduced 2006 - **saved 12,000** gallons petroleum diesel
  - Increasing hybrid and electric vehicles in our fleet (demonstration of EVs)
- **Parking Permits** - flat or down in last years

Fleet Fuel Consumption and Emissions





UNH - Durham Fleet Fuel Consumption FY 2004-2006

	Transit Gallons Diesel/Gas	Transit CNG therms	Plant & Animal Sciences Gallons Diesel/Gas	Non-Transit Gallons Diesel/Gas	Non-Transit CNG therms	UNH Total Gallons Diesel/B20/ Gas	UNH Total CNG Therms	TOTAL
2004	91,961	387	15,687	118,463	787	210,424	1,174	**211,598**
2005	81,981	15,548	14,292	106,336	3,887	188,317	19,435	**207,752**
2006[1]	83,600	15,145	16,700	120,000	3,786	220,300	18,931	**222,000**
Change 04-06	***-9%***	***+40X***	***+6%***	***+1%***	***+5X***	***+5%***	***+10x***	**+5%**

2007 data will show B20 transition

And for Parking/Transit?

Next Steps

After the EcoLine™ project and combined with ongoing building and fleet efficiency improvements that commuting provides the next significant energy and emissions reduction opportunity for the university.

An overall attempt to affect our land-use, traffic impact and community mobility

Transportation options as a benefit saving faculty, staff and employees money

The 5% goal

Move 5% of current SOV commuters into transit or non SOV commute:

- Cost deferral of $1 million in new parking infrastructure/ $80,000 yr operational costs
- Up to 200 commutes/day – 200 parking spaces freed / 6-8,000 VMT reduced/day
- 75,000 gallons of fuel reduction/yr and 860 tons/yr of CO2e

Ending parking as a growth industry??!

Transportation Improvements Underway

New Transit Fleet – Ongoing

$2.5 million of new clean fuel vehicles since 2005

$1.7 million in ARRA

Main Street-East (2007)

$1.9 million street redesign improved bike/transit

Rail Station (2007-2008)

$913,000 renovation and transit improvements

CNG Station/Garage Upgrade (2008-09)

$1.2 M renovation and transit improvements

Main Street-West (09-10)

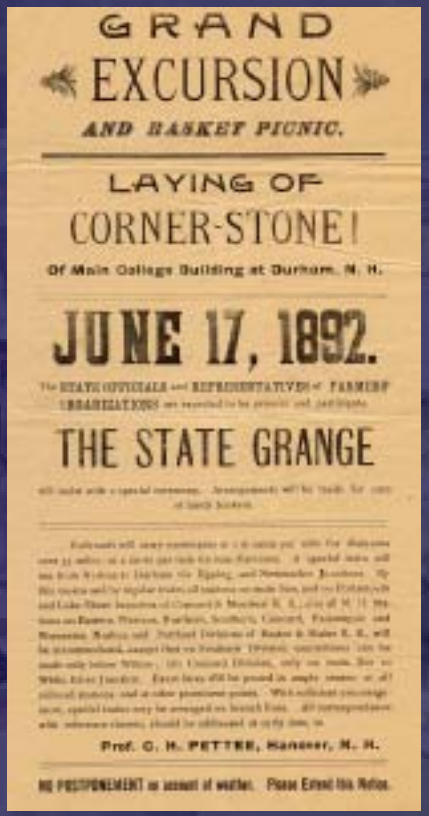
$700,000 multi-use trail/sidewalk to west edge

Next Steps?

South Drive Extension to Main Street

$2 million estimated cost

Our Newest Project



It’s not just about UNH today....

It’s about all of our futures tomorrow...

The UNH Story:

Climate Action
Biodieversity
Food
Culture

www.sustainableunh.unh.edu/

It’s Your University. Be Part of the Solution.