The CASE for CLIMATE ACTION on CAMPUS

Focus the Nation

Global Warming Solutions for America

January 2008

Presented by the **Campus Ecology** program of the National Wildlife Federation.

Overview

1) National Wildlife Federation (NWF) & Campus Ecology
2) Why higher education?
3) What science tells us
4) What can colleges & universities do?
5) Climate Champions program

1. NWF & Global Warming





What will happen to wildlife?

Just 5°C?

NATIONAL WILDLIFE FEDERATION

2. Why Higher Education?

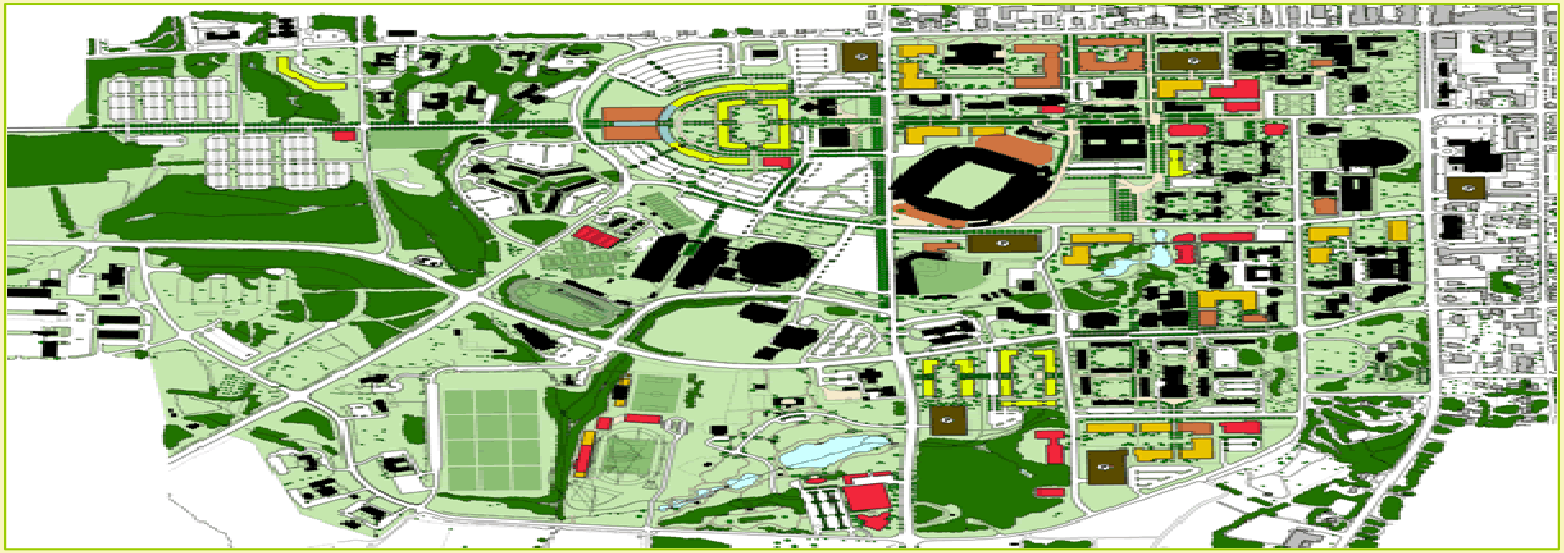
Key reasons why colleges and universities are ideal settings for climate action

1. **Size and Clout**
2. **Built Space**
3. **Rising Energy Costs**
4. **Climate Footprint**
5. **Opportunities**

Reason 1: Size and Clout

- 4,100 colleges and universities.
- Educate and employ 20 million students and staff.
- Spend more than $360 billion a year.

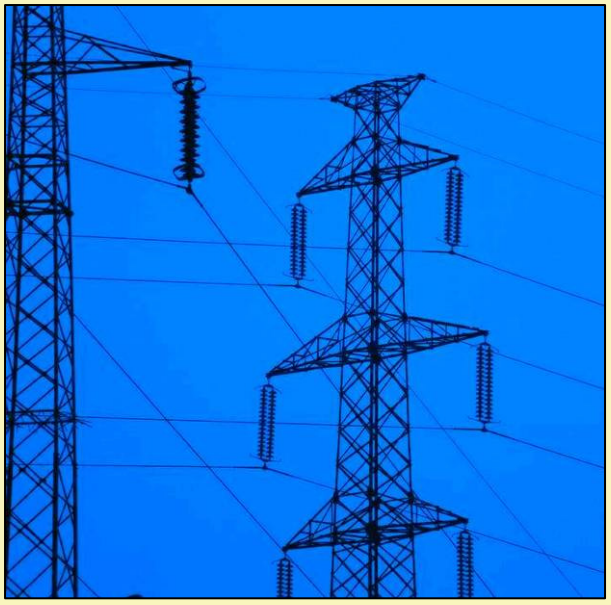
Reason 2: Built Space



- 240,000 buildings.
- 5 billion square feet of built space.
- $15 billion in new construction.

Reason 3: Rising Energy Costs

- $20 billion on operations and energy ($4.8 million per campus).
- $25 million at the University of Colorado.
- Univ. of Wisconsin-Madison energy costs up 77% from 2001-2006.



Reason 4: Climate Footprint

- Colleges & universities emit tens of millions of metric tons of CO_2.
- Harvard: 320,000 tons CO_2.
- Penn State University's Mueller Lab: 2,000 tons. (Penn State System's 21 campuses: 620,000 tons.)
- NWF: 1,000 tons from its headquarters building in Reston, VA.

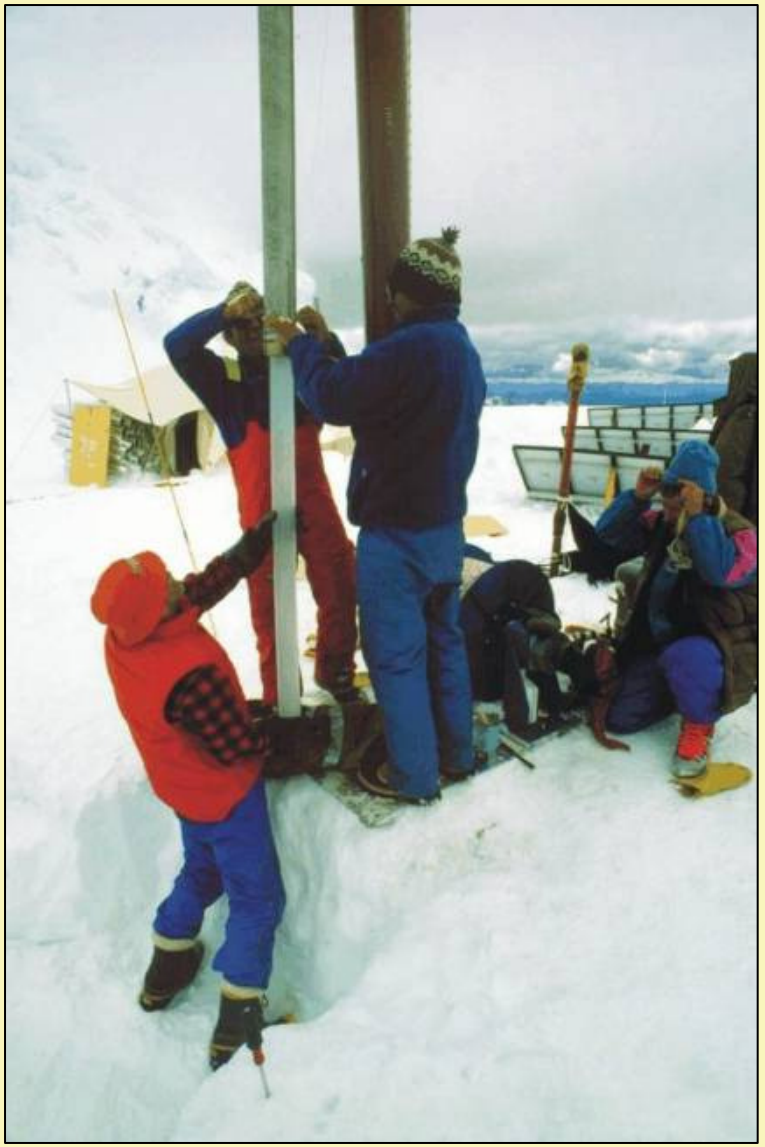
Reason 5: Opportunity

- New jobs.
- Cost savings.
- Enhanced safety and community.

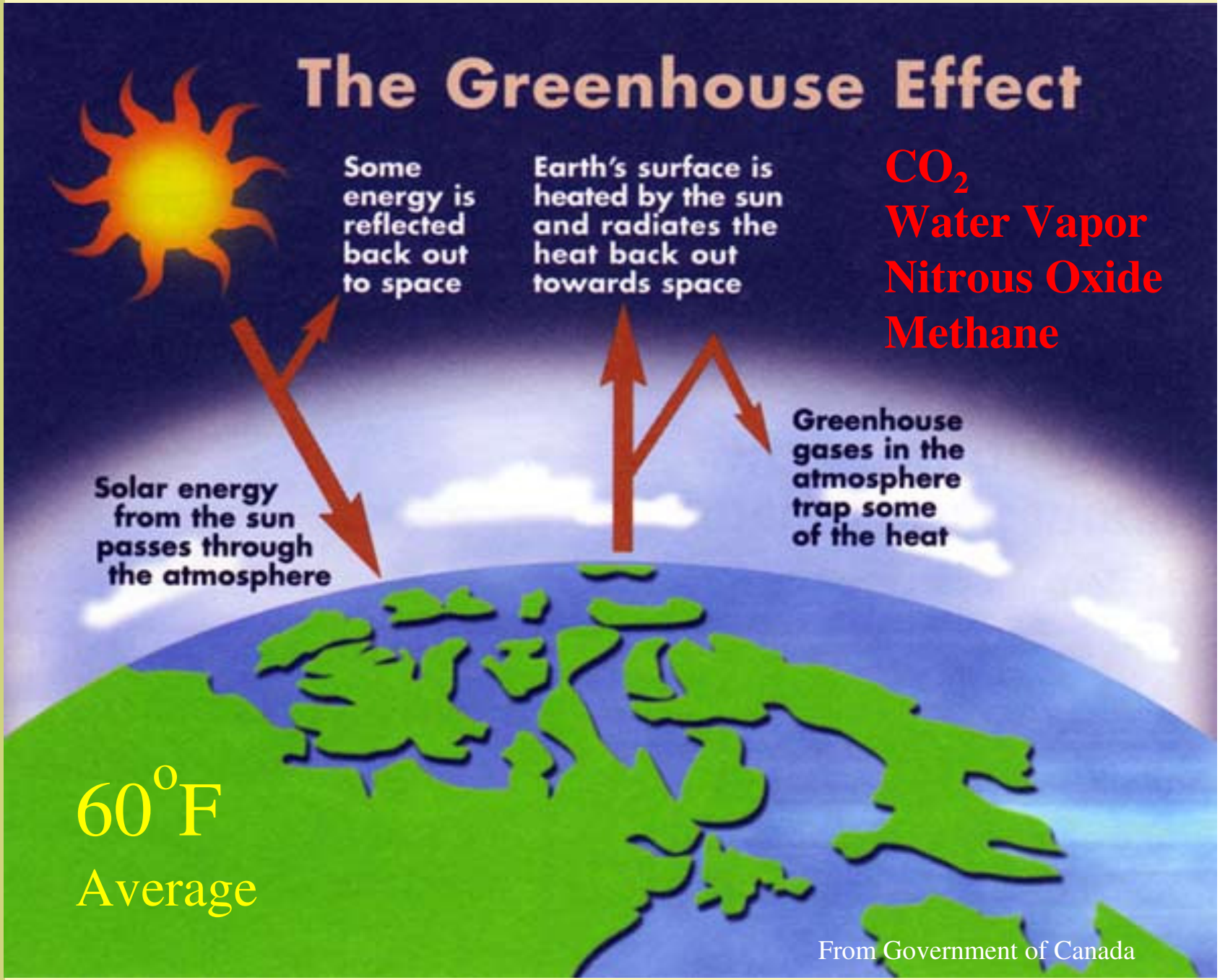
3. What Science Tells Us

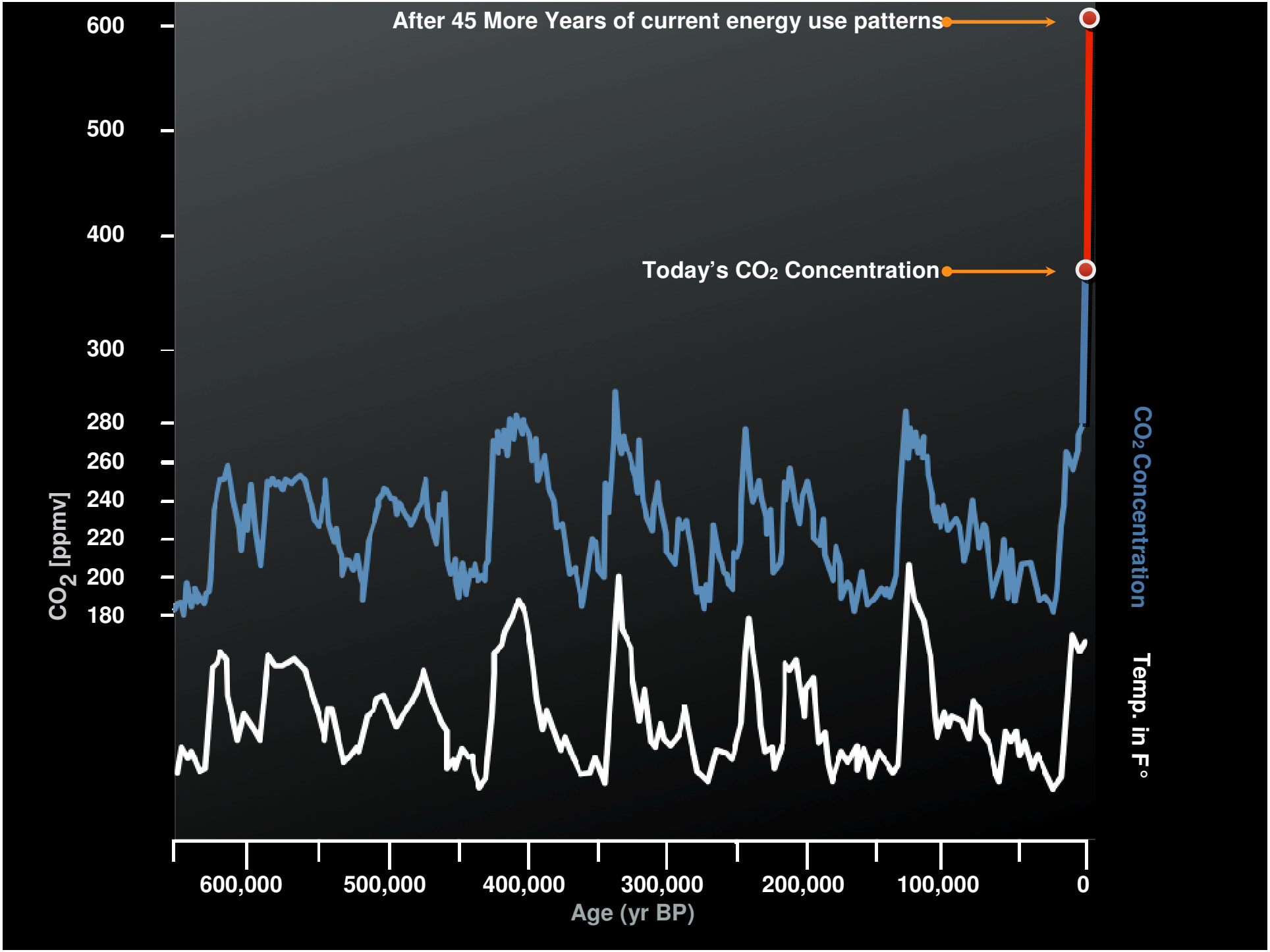
"Warming of the earth's climate system is unequivocal"

IPCC



Drilling an ice core in Huascarán, Peru


The Greenhouse Effect
Some energy is reflected back out to space
Earth's surface is heated by the sun and radiates the heat back out towards space
CO_2
Water Vapor
Nitrous Oxide
Methane
Greenhouse gases in the atmosphere trap some of the heat
Solar energy from the sun passes through the atmosphere
60°F
Average
From Government of Canada


After 45 More Years of current energy use patterns
Today's CO_2 Concentration
600
500
400
300
280
260
240
220
200
180
CO_2 [ppmv]
CO_2 Concentration
Temp. in F°
600,000
500,000
400,000
300,000
200,000
100,000
0
Age (yr BP)

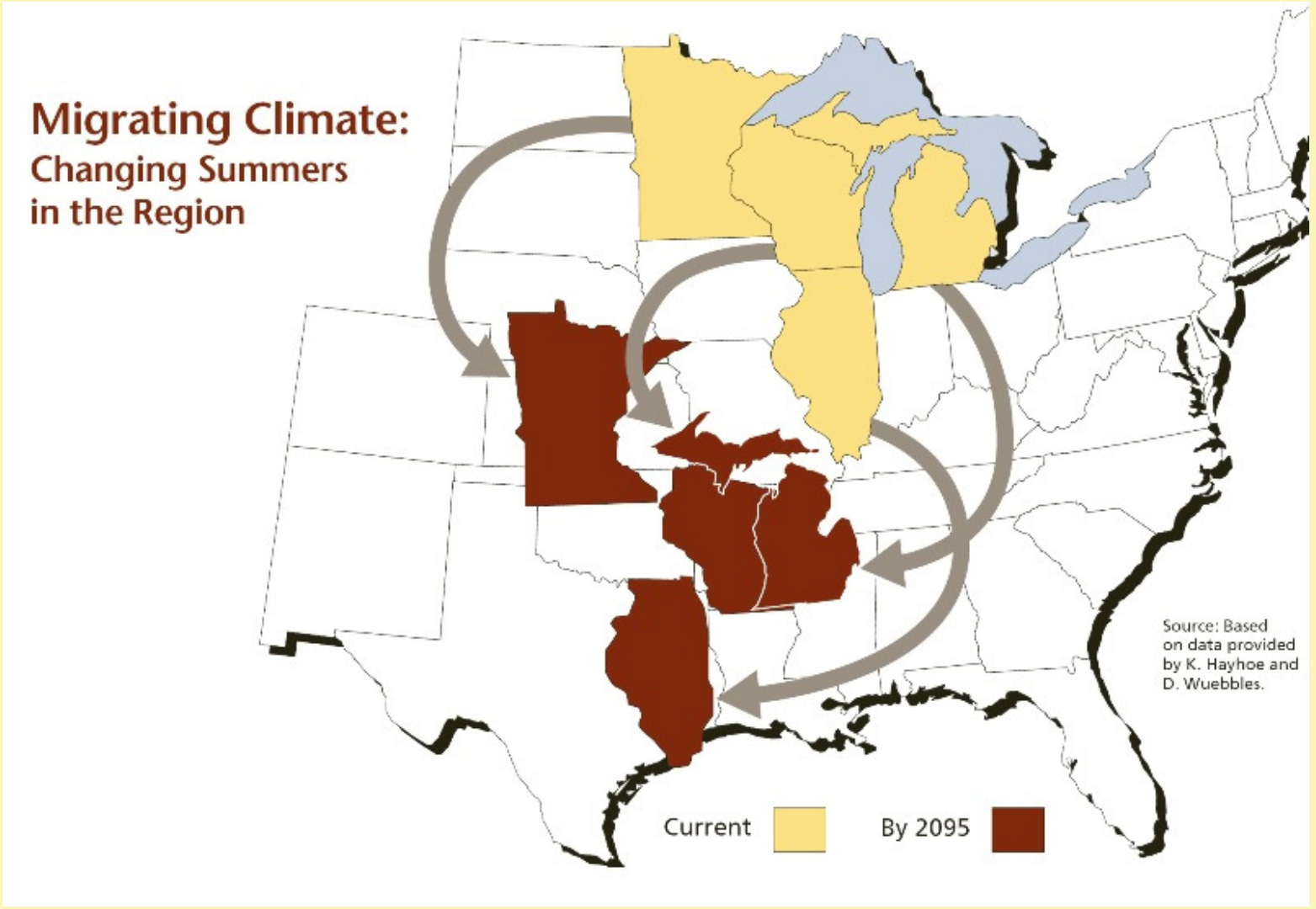
A New Kind of Silent Spring?

Birds of many species will be affected.

- Migratory disruptions.
- Nest failures.
- Population declines.

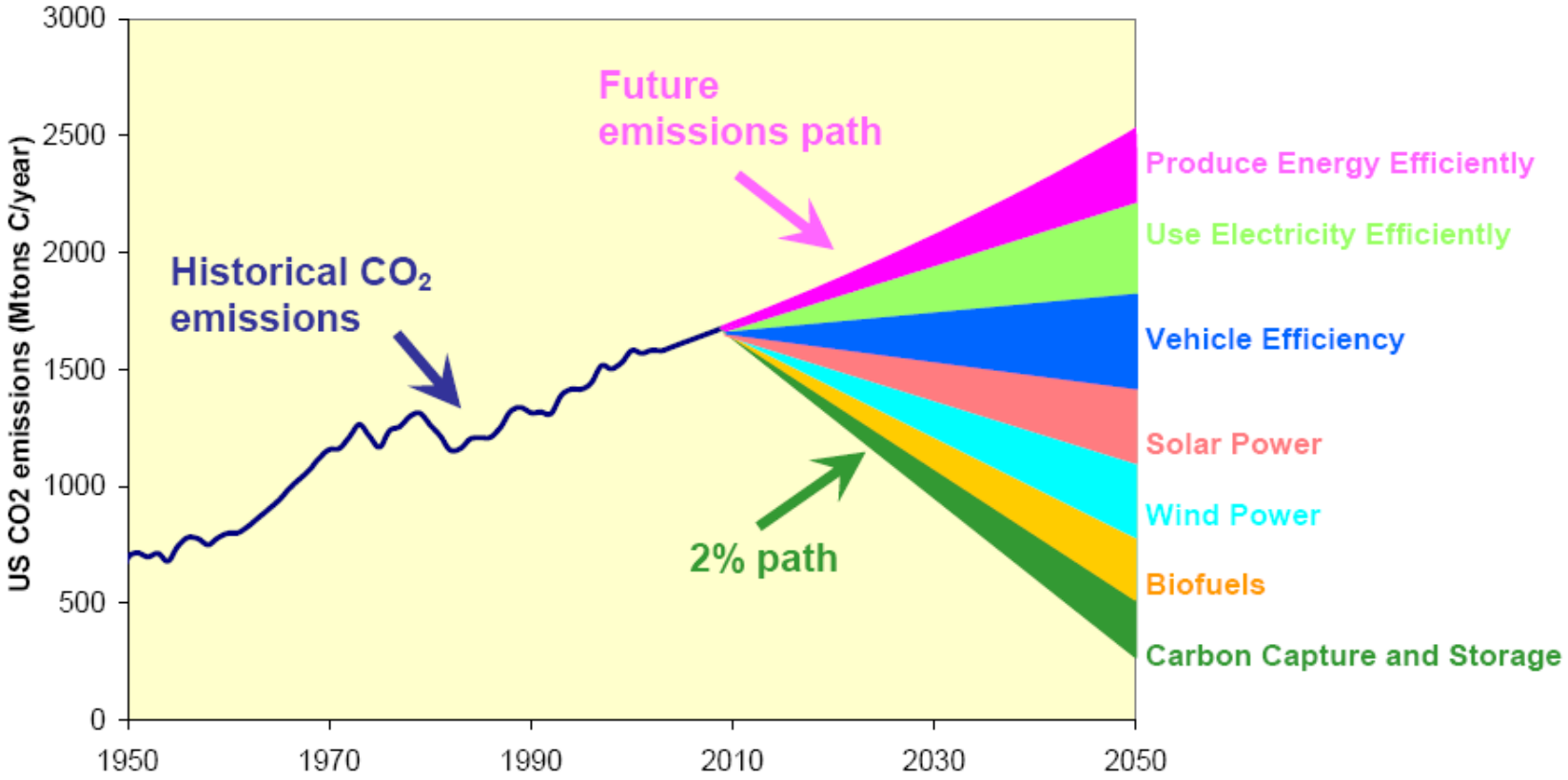
Predictions of Seasonal Climate Shifts

What will happen to wildlife in a warmer, drier climate?



Union of Concerned Scientists / Ecological Society of America, 2003

Steps Toward a Clean Energy Future



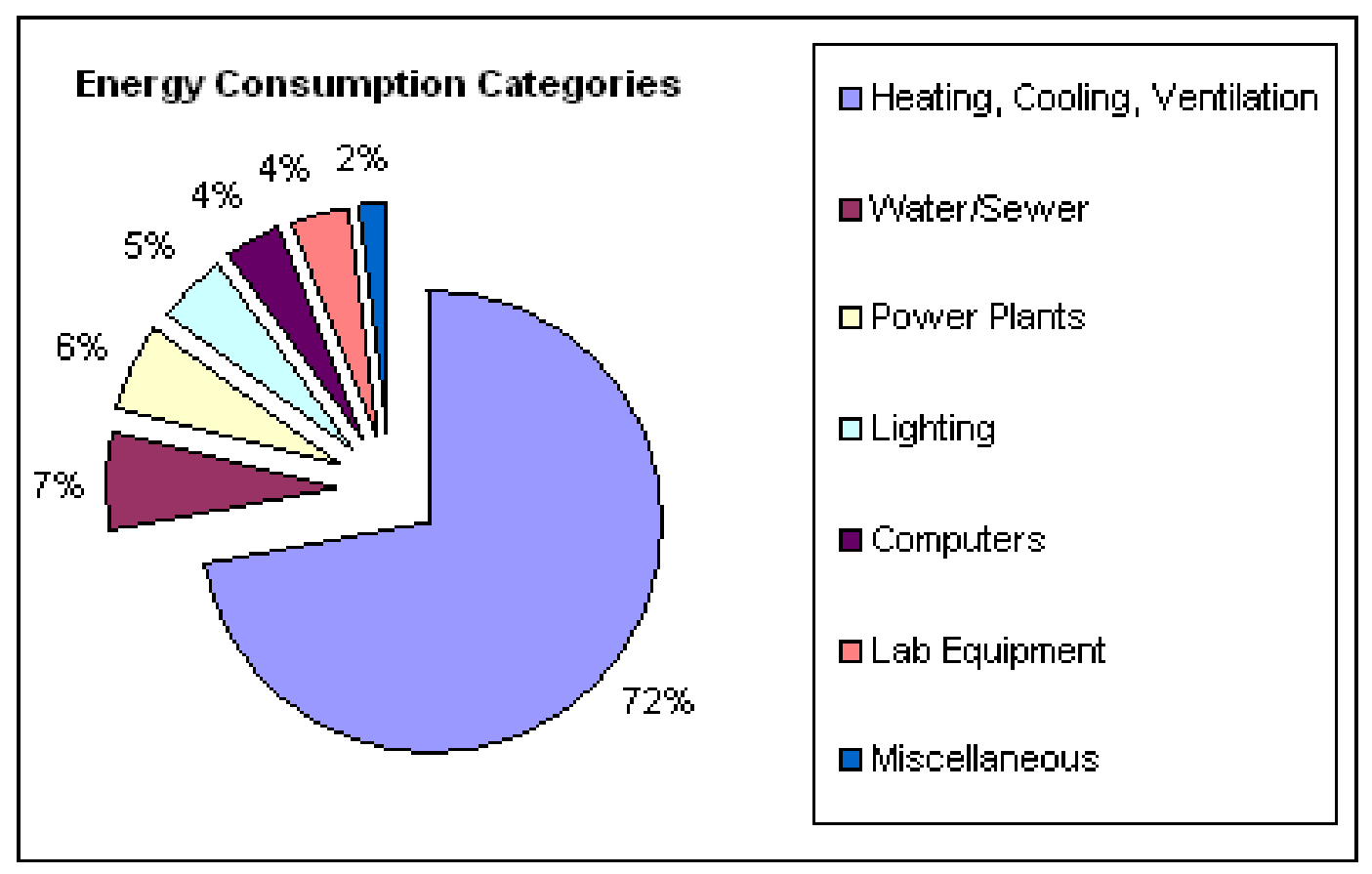
The 2% Path --

NWF Challenge: 30% by 2020. 80% by 2050

4. What Can Colleges and Universities Do?

Know Where the Energy Goes

By conducting an emissions inventory



(Mainly, it's the buildings . . .)

Biggest Bang for the Buck

Improve Efficiency and Performance in Campus Buildings

- HVAC (Heating, Ventilation, Air Conditioning).
- Plug loads (Computers, Appliances).
- Lighting.

Energy Conservation & Efficiency =
Significant Emissions Savings

Energy-Saving Ideas

On hundreds of campuses

- Energy Star Showcase dorm room, Tulane Univ., LA.
- Building retrofits, Penn State Univ.
- Thermostat setbacks, SUNY-Buffalo.
- Vending misers, Tufts Univ., MA.

"It's a no-brainer."

Green Buildings

Getting it right the first time

Bren Laboratory

University of Calif. at Santa Barbara

- Saves $50,000
- 275 tons CO_2.

Embry Engineering Building

Southern Methodist University, Dallas

- 30% less energy required.
- LEED-Gold certified.

Design for Efficiency

Clean Energy

A quick way to cut campus CO2

On-site clean energy generation*

- Solar
- Wind
- Geothermal
- Lake water
- Biomass

**Significant increases in new on-site projects in 2006.*

Solar Is Hot

- **Oberlin College (OH) 145 kW PV system, "Largest in state."**
- **Monmouth Univ. (NJ) 450 kW installation. Saves $150,000 and 5,000 tons CO_2 per year.**
- **Los Angeles Community College System (CA) plans to install 1 MW of PV at each of its 9 campuses.**

How much is that?

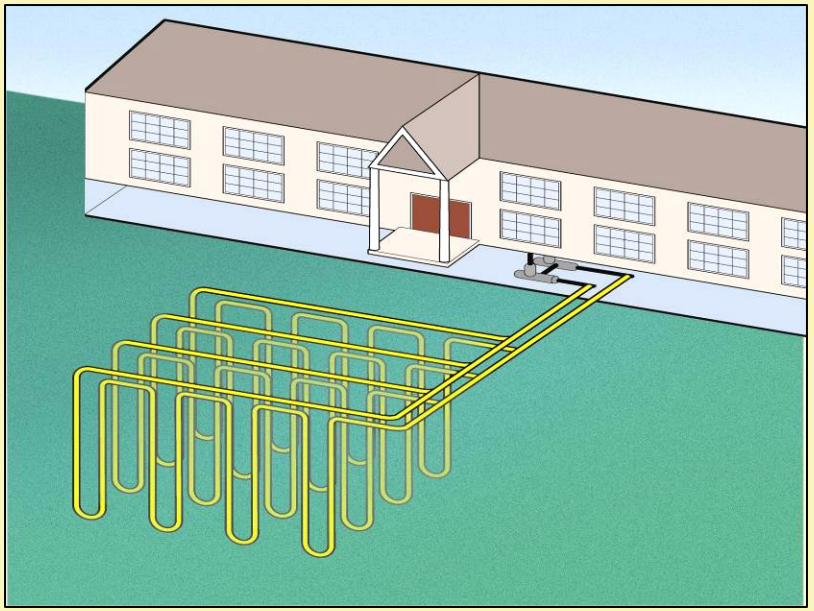
9.6 kW will power an average home.

Wind Power

St. Olaf College, MN

- 1.6 megawatt turbine, installed on campus 2006.
- Provides1/3 of campus electricity.
- Saves $300,000 a year.

Geothermal



West Chester University (PA)

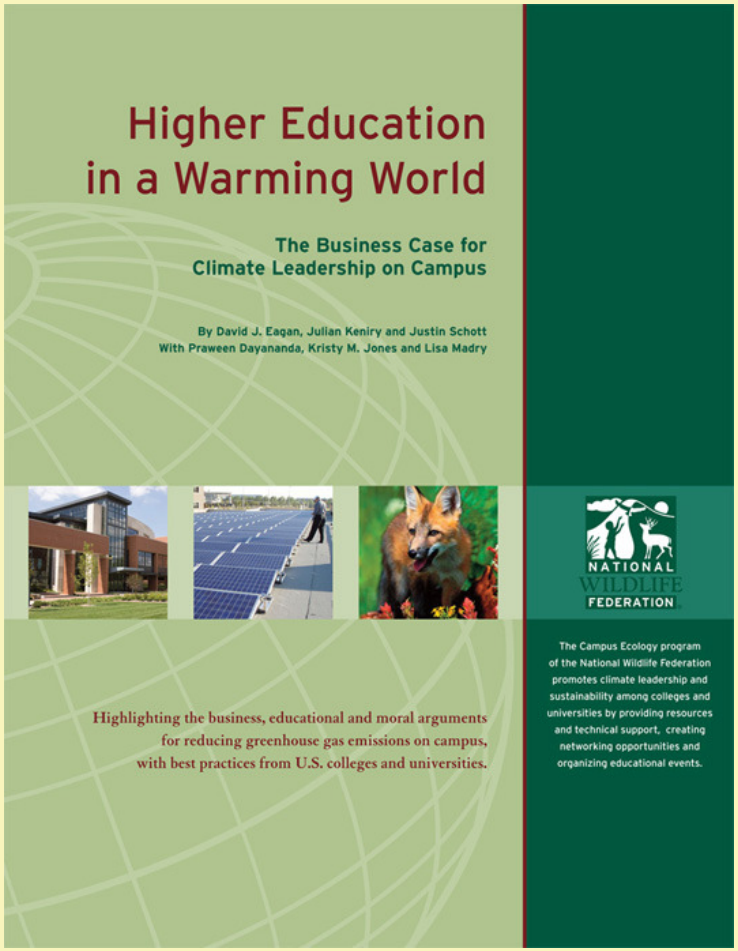
Swope Music Building

- Retrofit cost $248,500, covered by a grant.
- Over 20-year life will save $650,000.
- Eliminates 350 tons CO_2.

Strategies That Work

- Climate Action Plans.
- Formal targets and timetables.
- Financial and other incentives.
- Fostering learning and engagement.

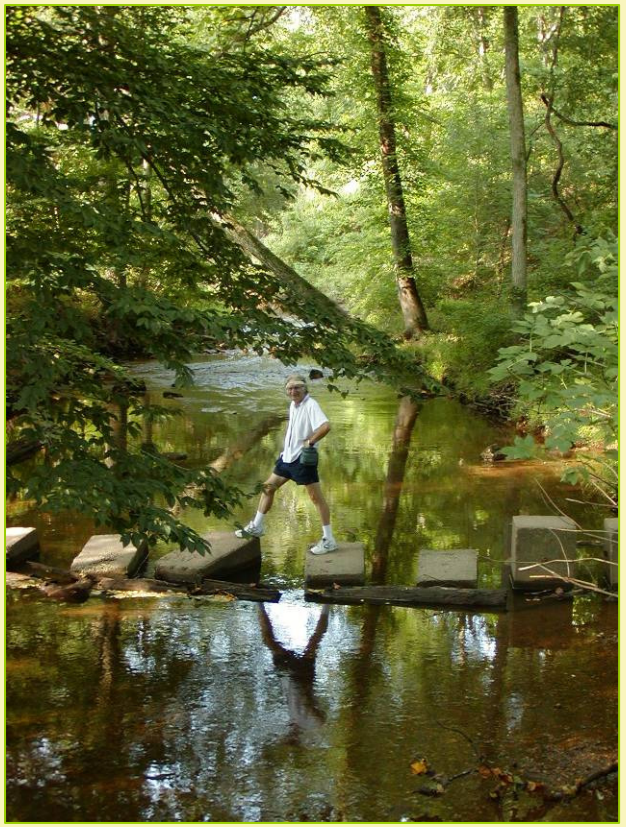
5. Climate Champions



Stepping Up Climate Leadership

as NWF Campus Climate Champions

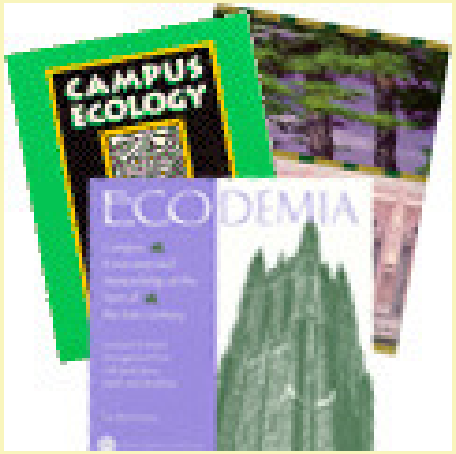
- Lead by example: Reduce net emissions by 2% per year.
- Engage students, faculty and staff.
- Outreach to peer institutions and the community.



Campus Ecology

Since 1989, a respected national leader in campus sustainability.

Offering:

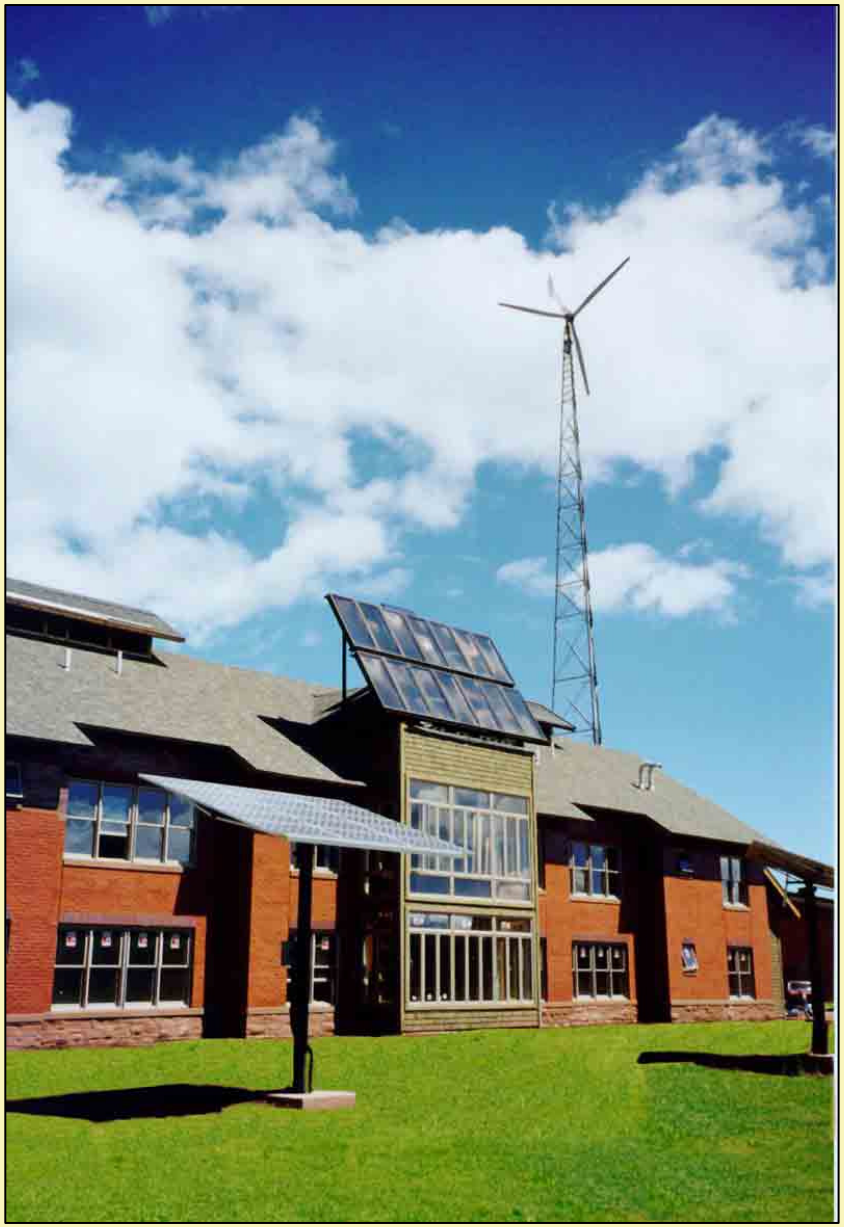


- **Consultation**
- **Workshops**
- **Networking**
- **Fellowships**
- **Case study database & other publications**
- **Awards and recognition**

For information, visit

nwf.org/CampusEcology

What is Your Vision of the Campus of the Future?



McLean Environmental Living-Learning Center, Northland College, Ashland, WI