sightlines | sustainability solutions

University of Vermont

May 2016

Vanderbilt University
Virginia Commonwealth University
Virginia Department of General Services
Wagner College
Wake Forest University
Washburn University
Washington University in St. Louis
Wellesley College
Wesleyan University
West Chester University
West Liberty University
West Virginia Health Science Center
West Virginia Institute of Technology
West Virginia School of Osteopathic Medicine
West Virginia State University
West Virginia University
Western Connecticut State University
Western Oregon University
Westfield State University
Wheaton College
Widener University

Defining UVM's Carbon Footprint

Scope 1 – Direct GHGs

- On-Campus Stationary Combustion (Natural Gas)
- Vehicle Fleet Fuel
- Agriculture

Scope 2 – Upstream GHGs

- Purchased Electricity

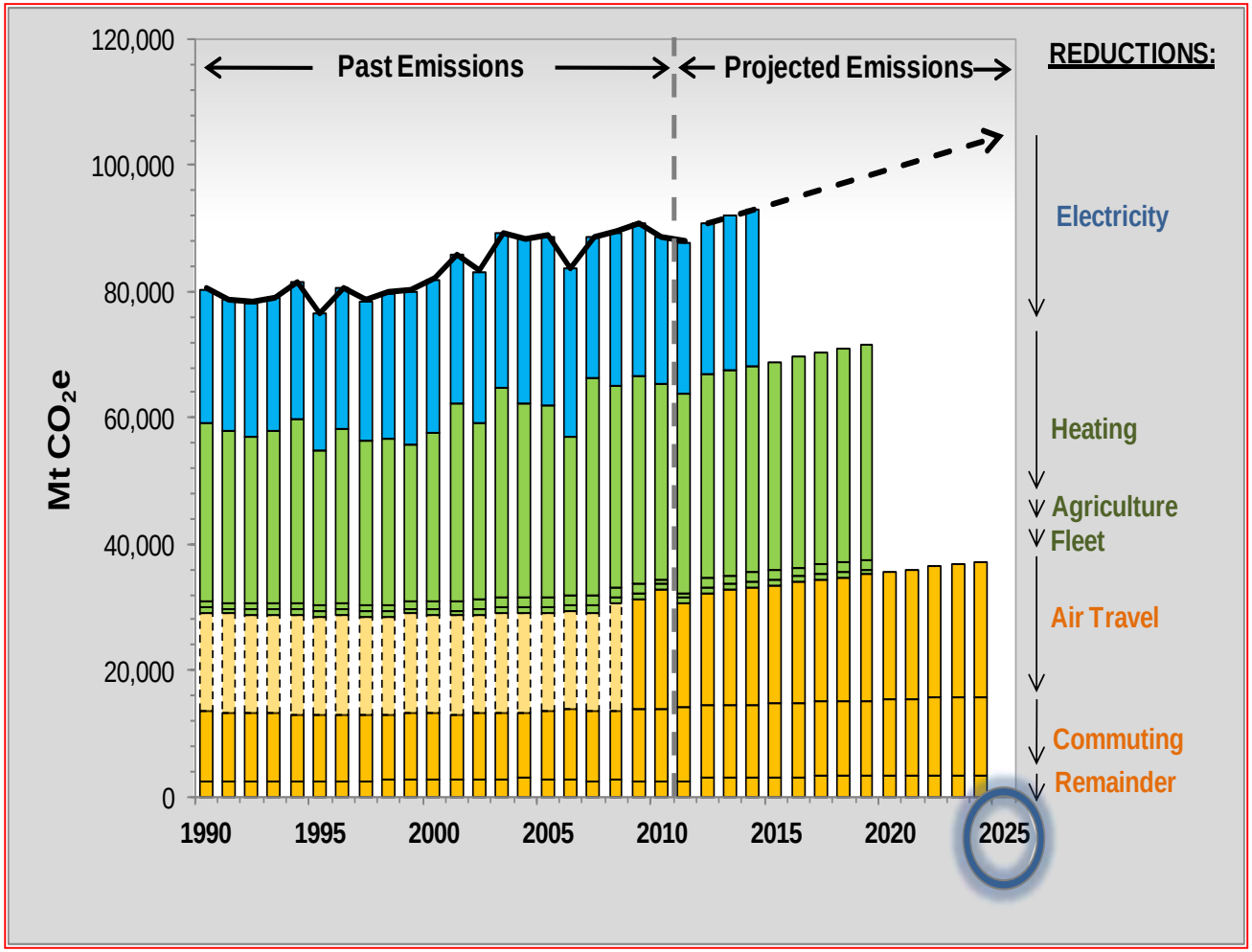
Scope 3 – Indirect GHGs

- Faculty/Staff/ Student Commuting
- Directly Financed Air Travel
- Study Abroad
- Solid Waste
- Wastewater
- Transmission & Distribution Losses

Increasingly Difficult to Control and/or Mitigate

UVM Climate Action Plan Goals

Climate Neutrality by 2025



In 2010 UVM committed to aggressive carbon-neutrality goals:

***2015** for electricity*

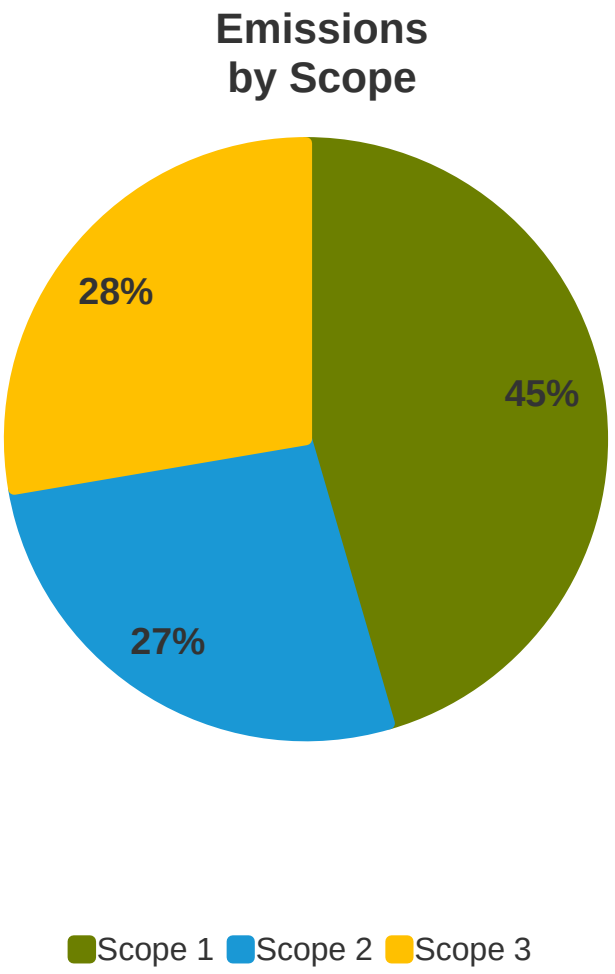
***2020** for thermal energy and*

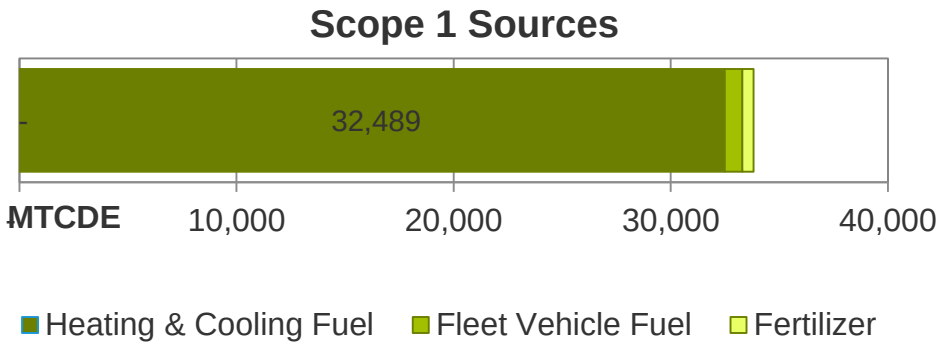
***2025** for other major activities.*

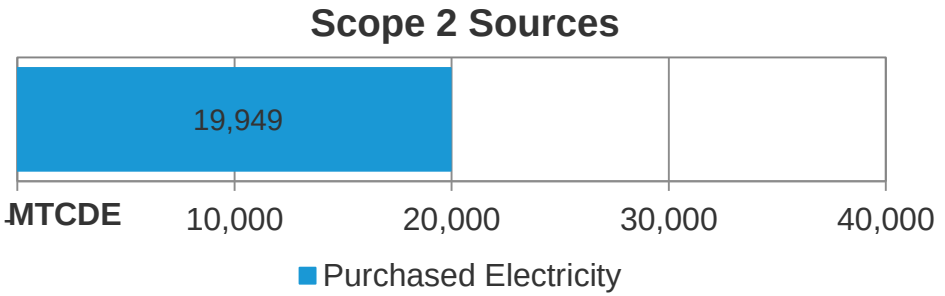
The commitment includes addressing sustainability in the curriculum.

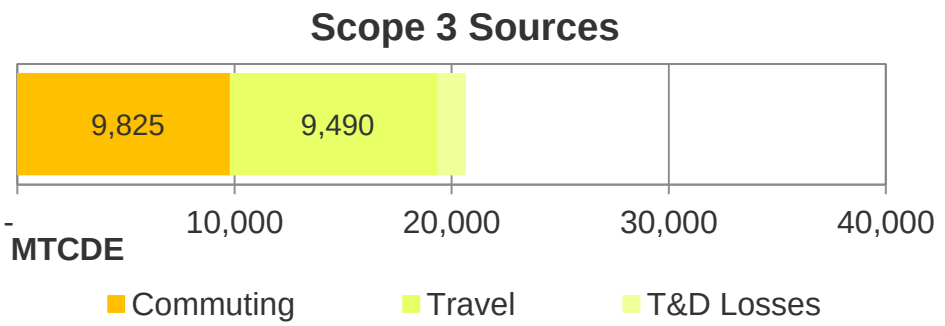
Distribution of emissions by scope

72% of emissions result from heating and powering buildings



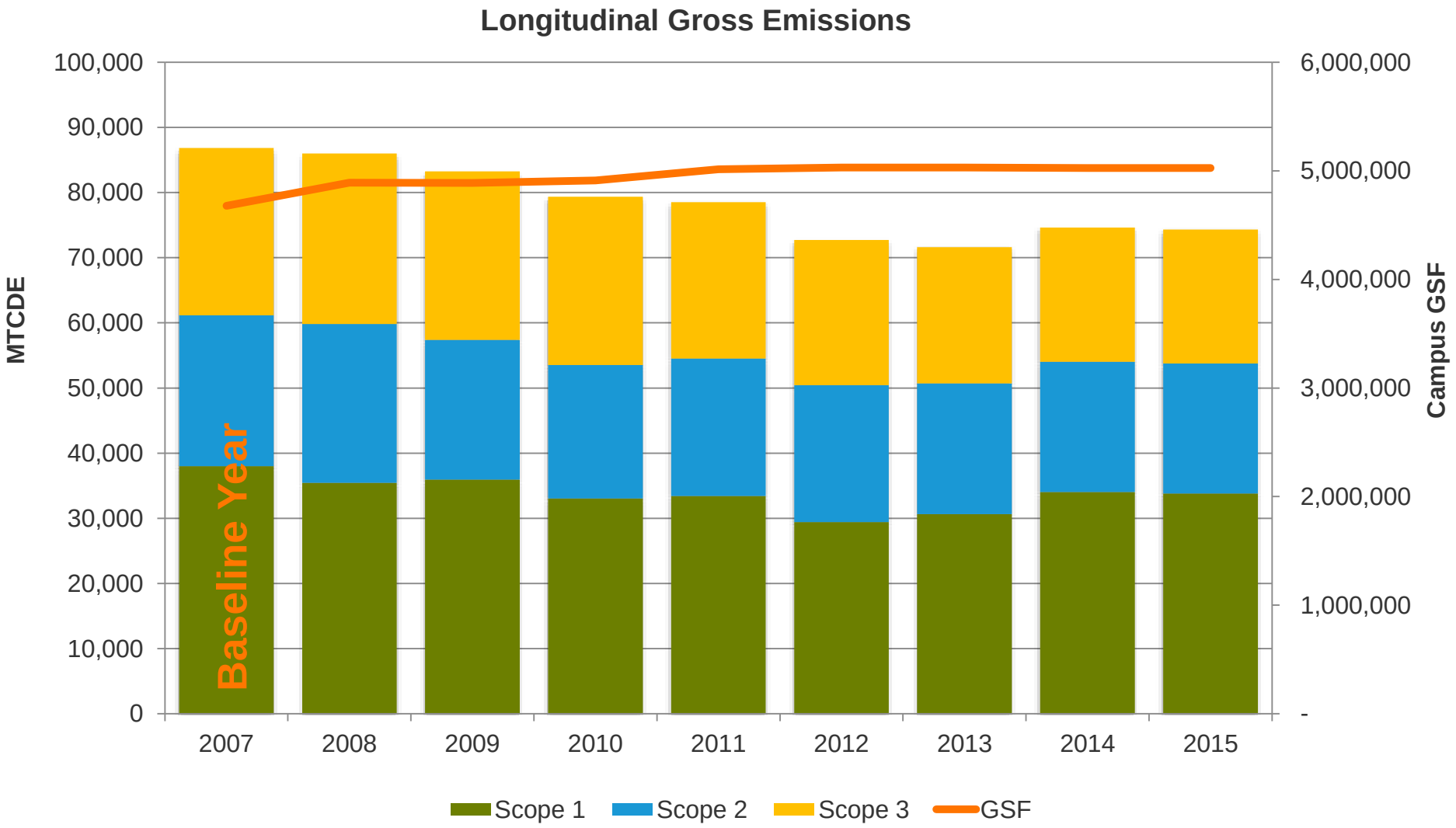






Total gross emissions

Decrease in overall emissions despite increase in students, space



Two Different Ways to Benchmark GHG Emissions

By students or by space

GHG Emissions per Student

Stresses intensity of operations and commuting.

$$\frac{\text{Gross GHG Emissions}}{\text{Total Student FTE}}$$

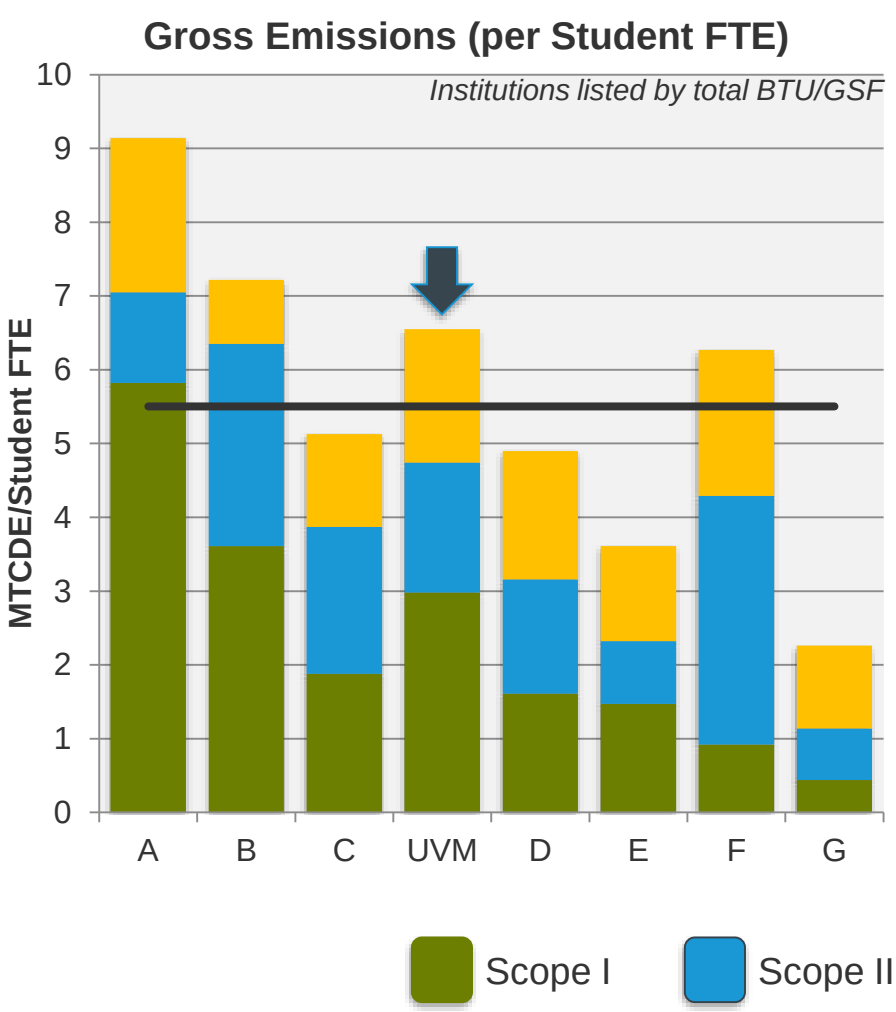
GHG Emissions per 1,000 GSF

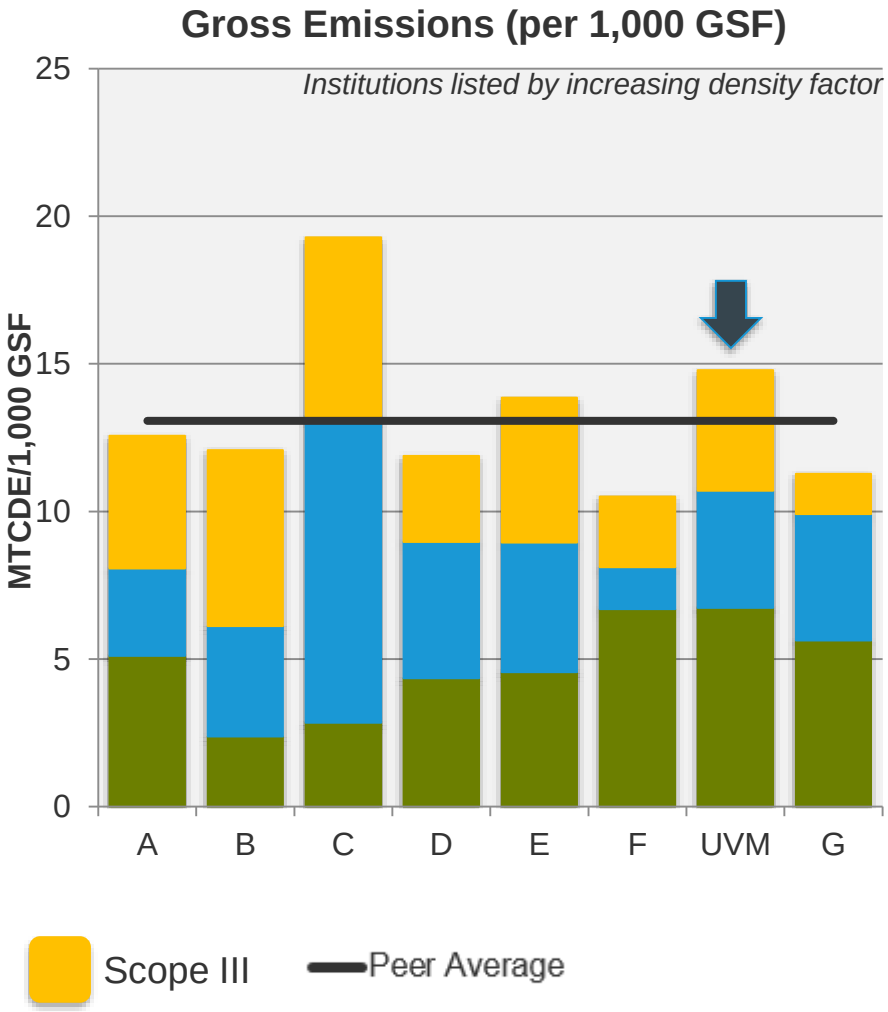
Stresses efficient use of space.

$$\frac{\text{Gross GHG Emissions}}{\text{Total GSF in Footprint}} \times 1{,}000$$

GHG Emission Peer Benchmarks

UVM's emissions profile is above peers on a FTE and GSF basis





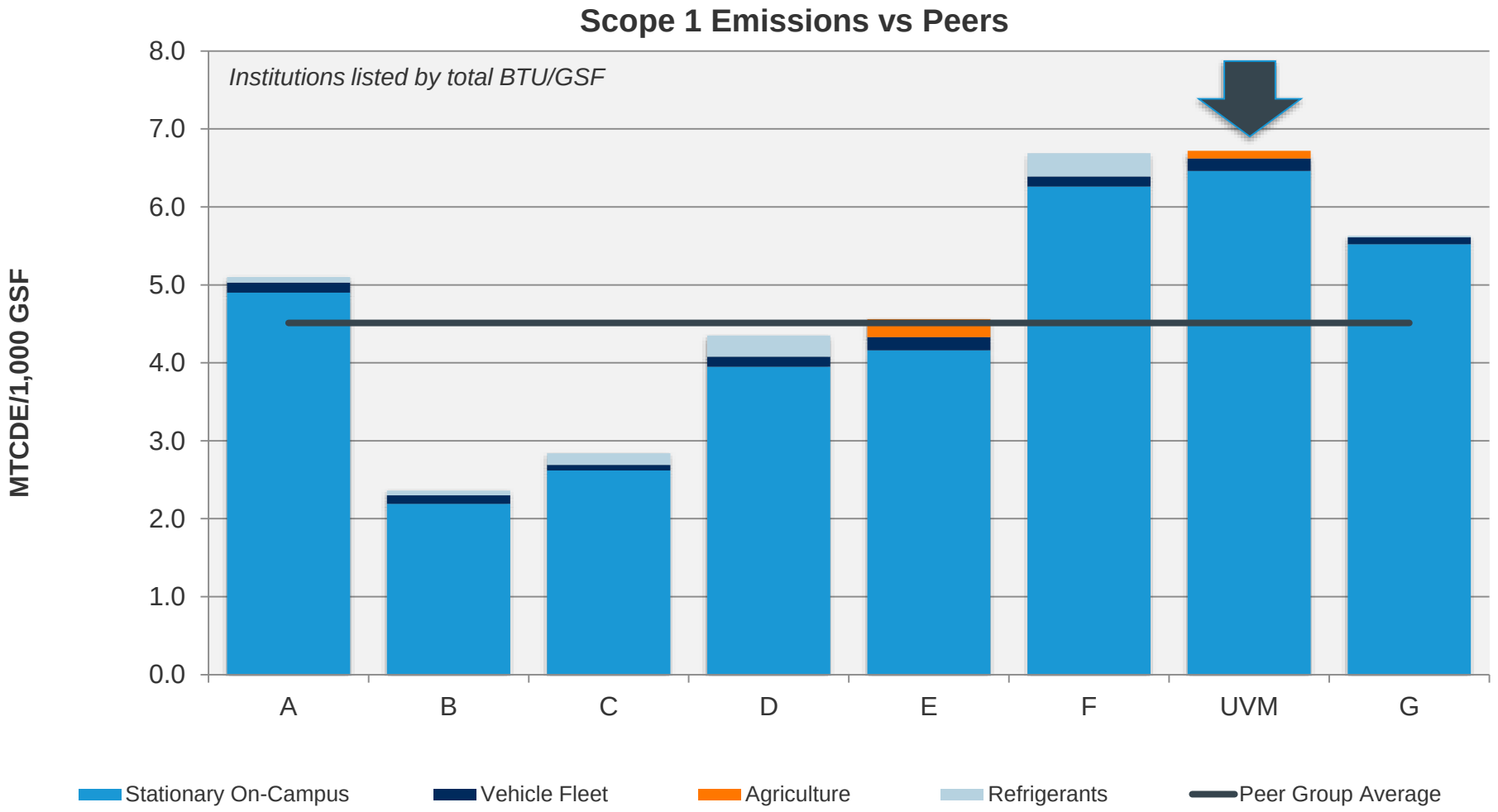
Scope I Scope II Scope III Peer Average

Sustainability Peers: Boston College, Champlain College, Fitchburg State University, Montana State University, Rensselaer Polytechnic Institute, University of Denver, Wesleyan University

Scope 1 and 2

Scope 1 Emissions by Source

UVM is one of the highest Scope I emissions in the peer group



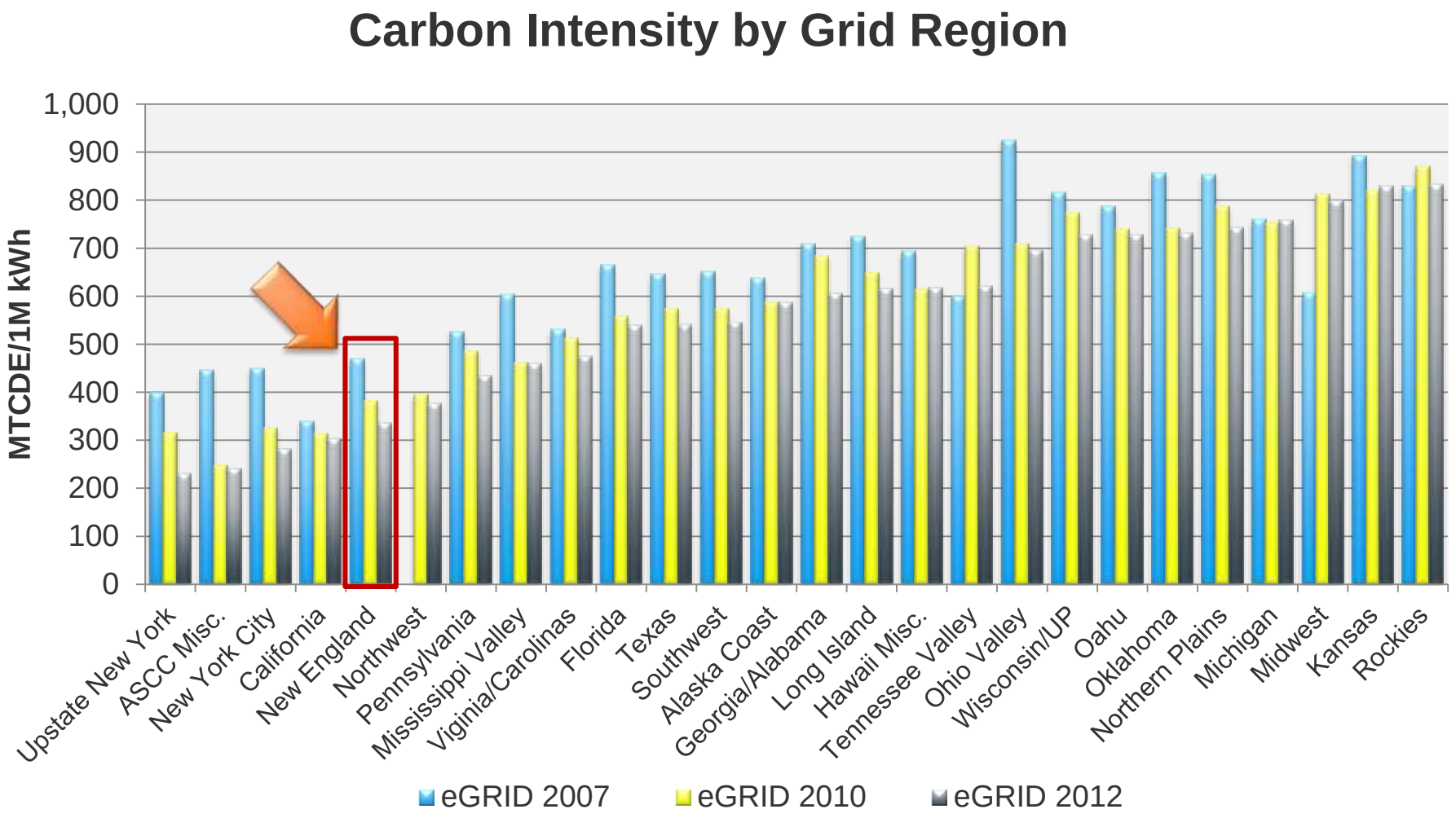
Using Regional Fuel Mix to Calculate GHGs from Power

Local renewables are only a part of the overall mix of power sources

BURLINGTON Electric DEPARTMENT

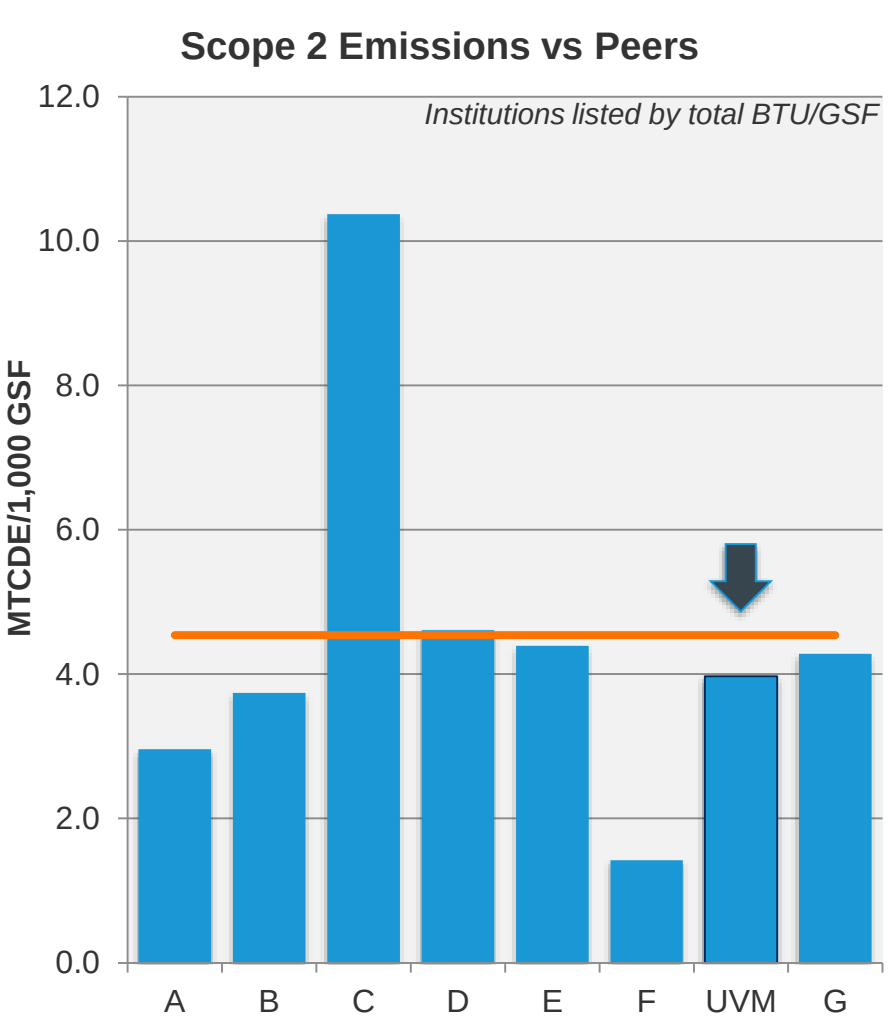
Electrical Grids Across the Country

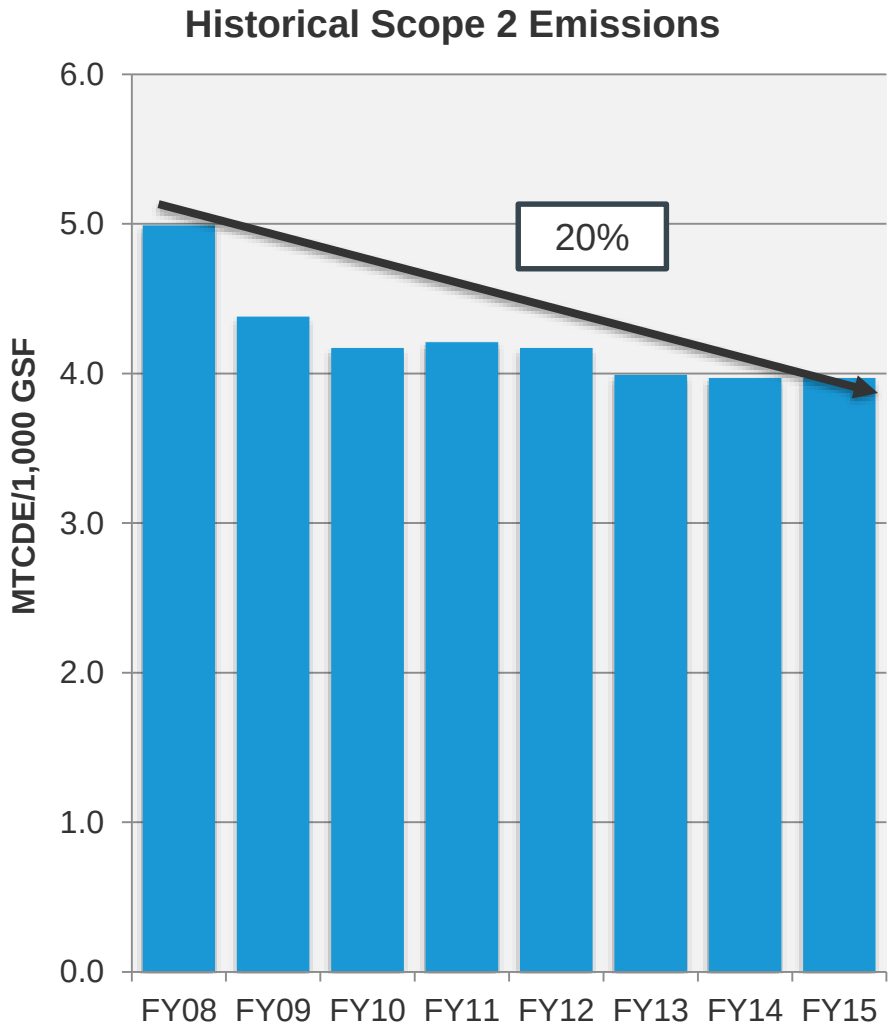
Electrical grids getting "greener" since 2007



Scope 2 Emissions by Source

UVM is making strides to lower scope 2 emissions

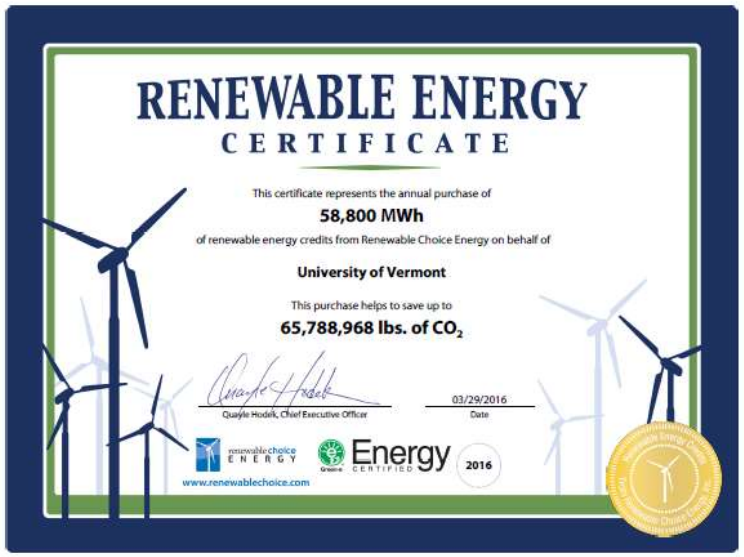




Achieved climate neutral electricity in 2015

Used Green-E Certified Power

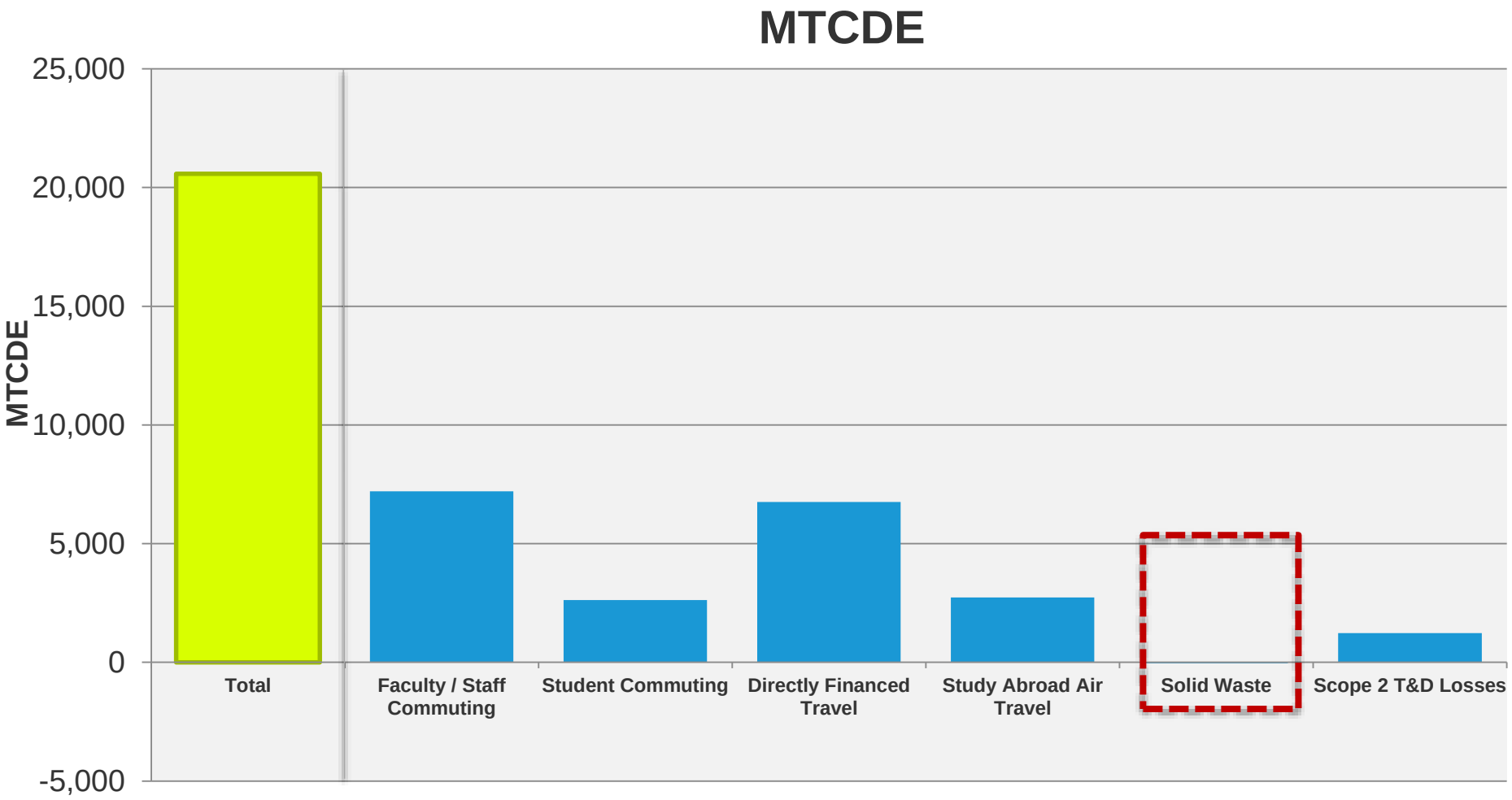
GMP COW POWER



Scope 3

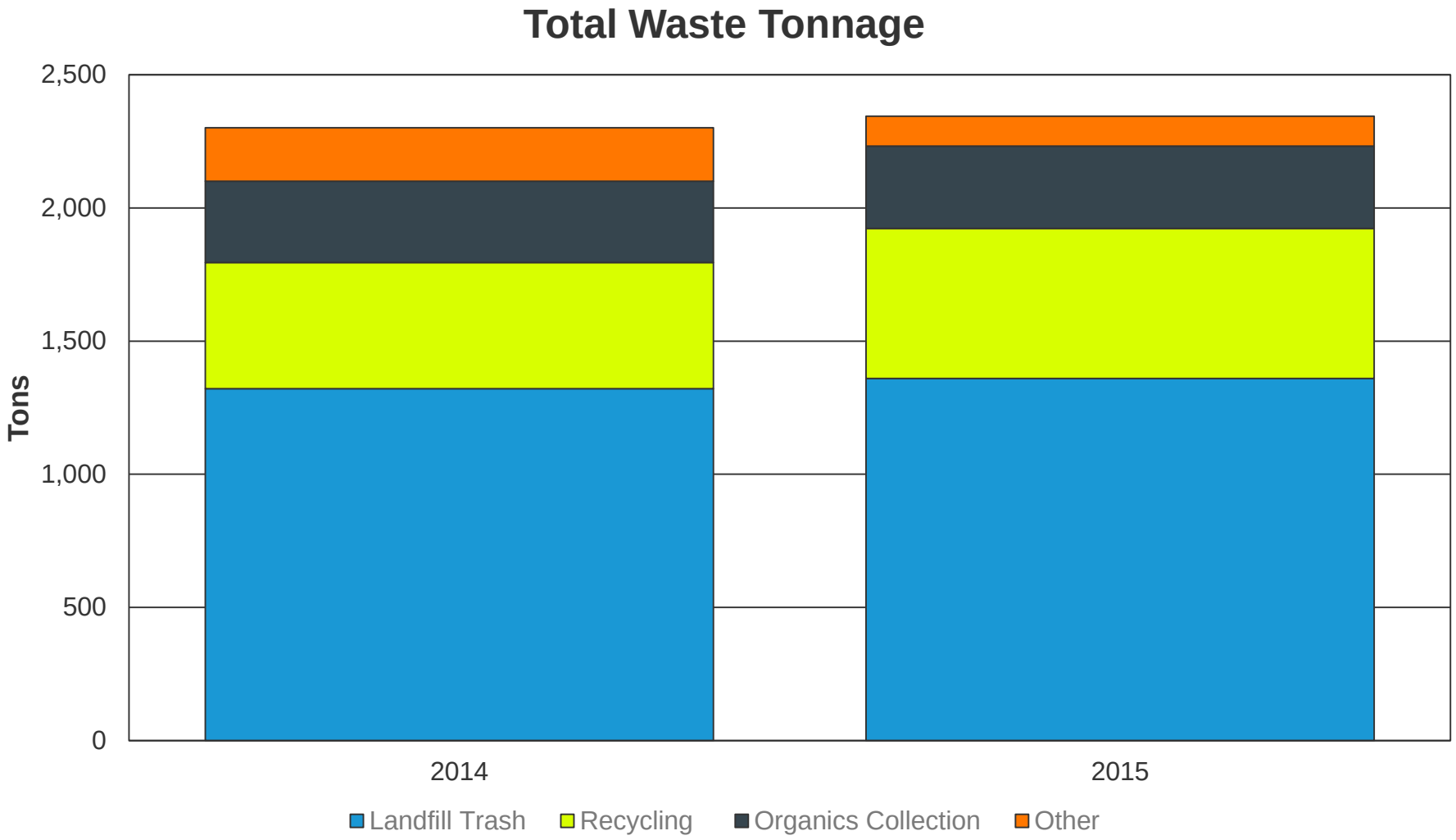
Scope 3 Sources

Highlighting UVM's performance in waste management



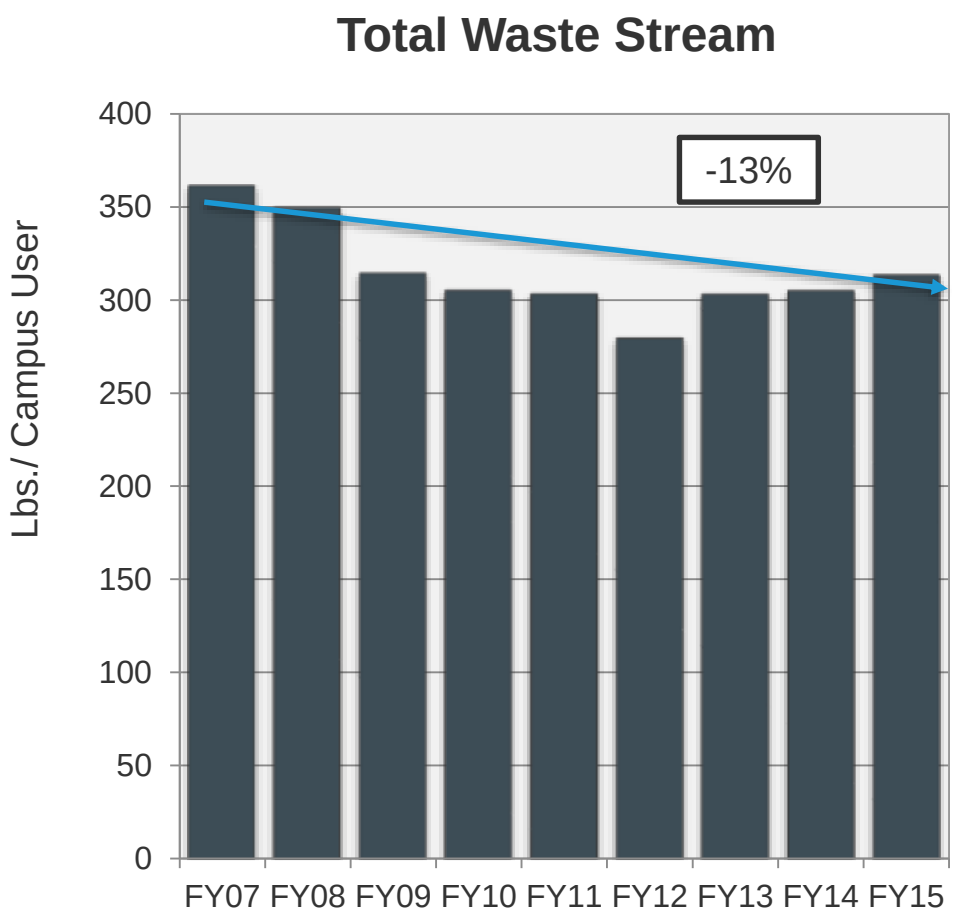
Total Waste Production

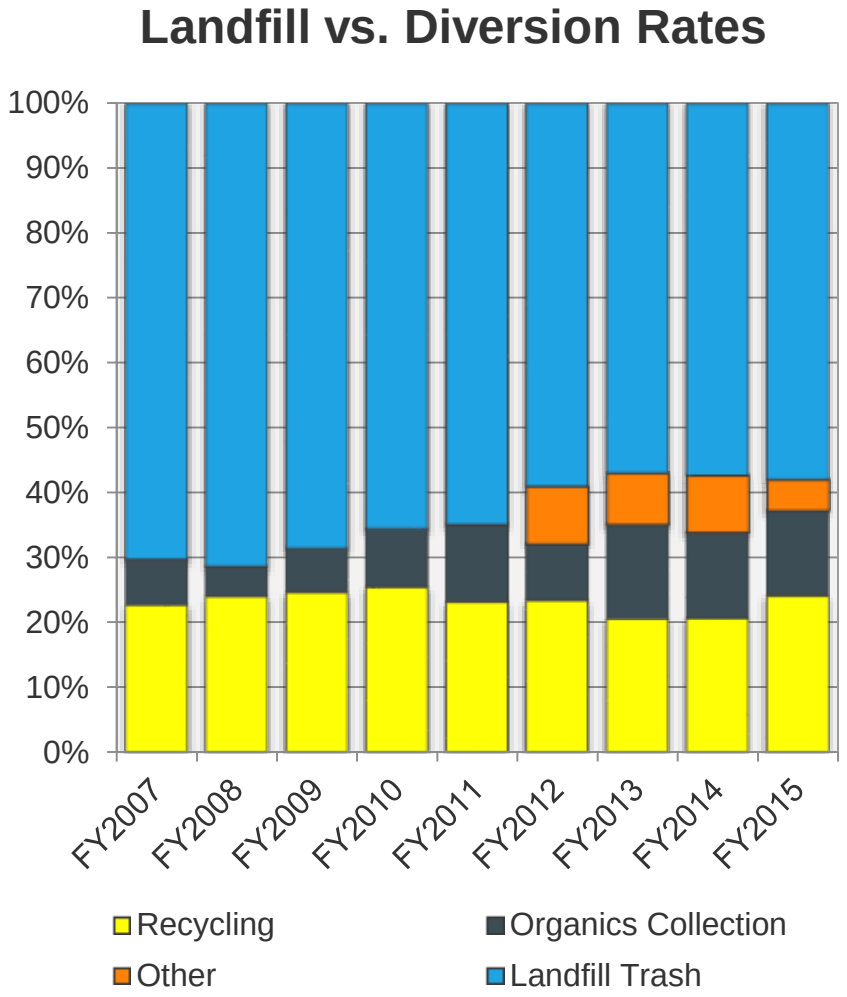
Consistent waste production



Total Waste Stream Decreases

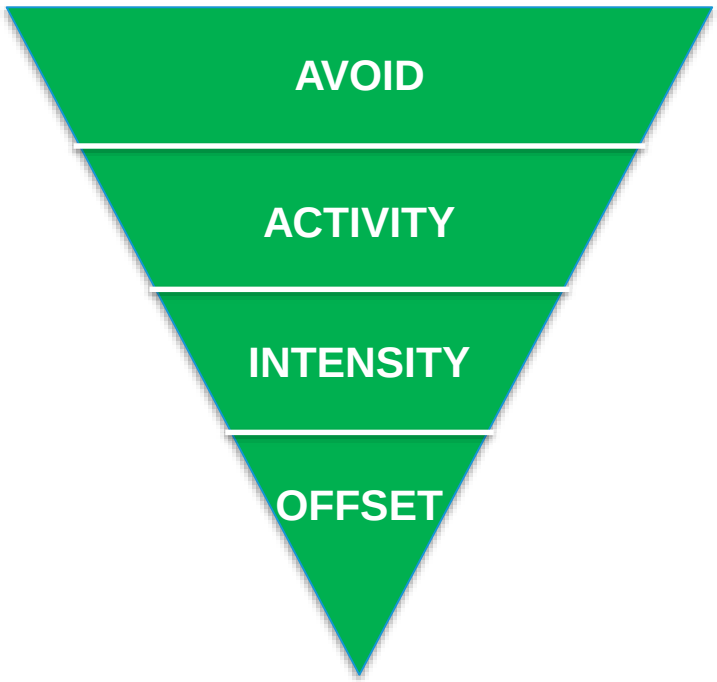
UVM has historically had strong diversion rates





Change in Carbon Footprint

Carbon Mitigation Structure



Carbon Mitigation Portfolios:

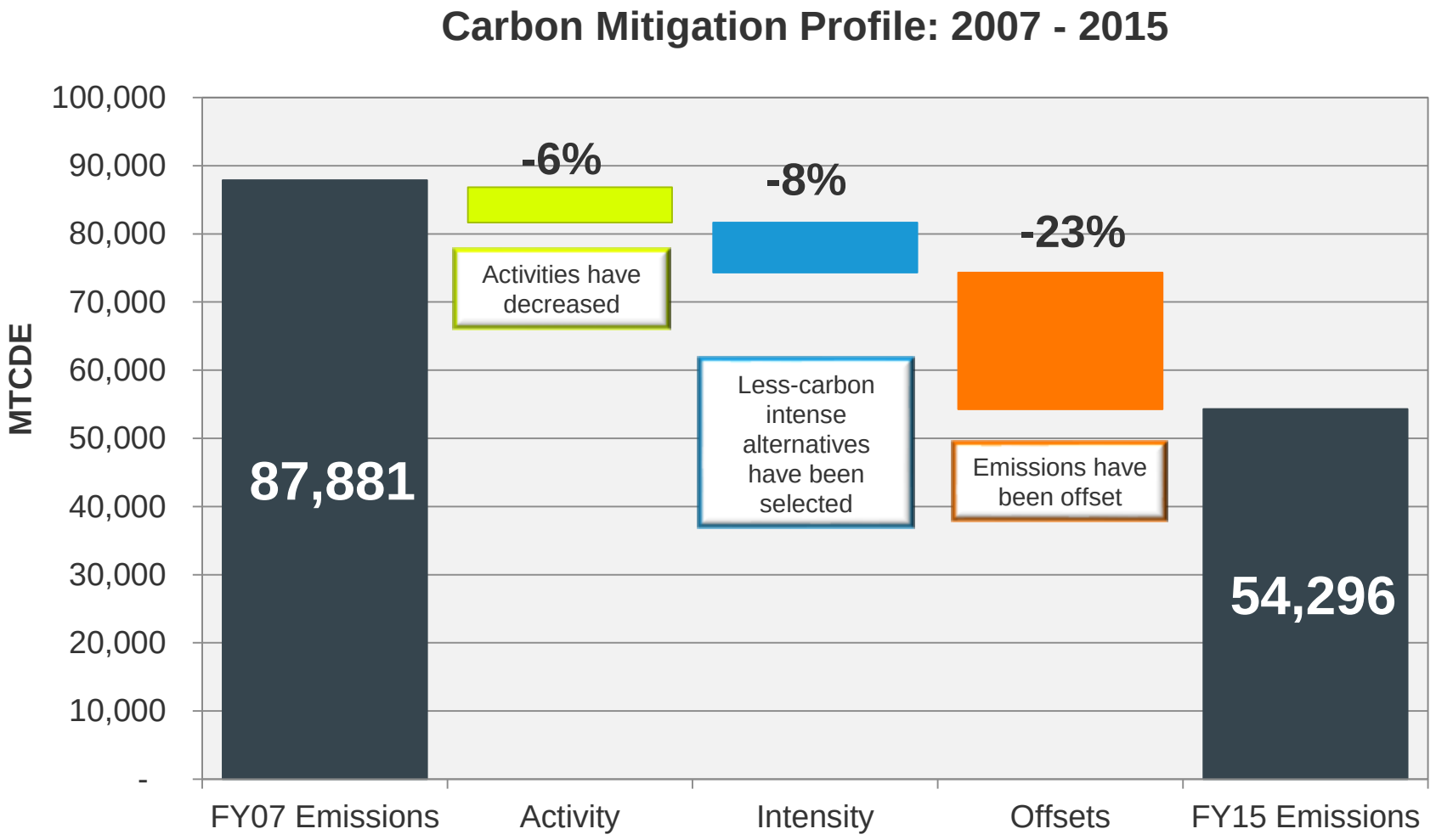
1. AVOIDANCE
   - Preventing additional activities before they start – a key indicator of future performance
   - **Example:** Increasing space utilization instead of building or acquiring new space

2. ACTIVITY
   - Reducing an existing level of activity
   - **Example:** Fewer BTUs consumed; fewer miles traveled

3. INTENSITY
   - Lessening the carbon intensity of activities
   - **Example:** Fuel switching (coal > natural gas; introducing attributed renewables); commuting mode mix (drive alone > carpool)

4. OFFSETS
   - Utilizing carbon offsets to neutralize “unavoidable” GHGs
   - **Example:** RECs; sequestration; retail offsets

Change in carbon footprint: 2007-2015



GHG Emission Peer Benchmarks

Factoring in offsets