

# REDEFINING CARBON OFFSETS



## Community Climate Fund: Williams College

**FY 2023 Quarterly Report: Apr 1 – Jun 30, 2023**

CET developed and administers the Community Climate Fund as a vehicle for colleges, universities, and businesses to invest in high-impact, local carbon reduction projects.



## CO<sub>2</sub> Emissions Report as of June 30, 2023

FY 2023 CO <sub>2</sub> emissions mitigated with investments (lifetime tons)	1,708
Total CO <sub>2</sub> emissions mitigated through CCF investments: 2019 - present (lifetime tons)	3,747
FY 2023 CO <sub>2</sub> emissions pipeline (lifetime tons)	>150

During FY23, the Community Climate Fund (CCF) supported projects for weatherization roadblock removal, commercial and residential air source heat pump conversions, the Williamstown Composts pilot, induction stoves, and building material recovery eliminating over 1,700 lifetime tons CO<sub>2</sub>.

### WEATHERIZATION ROADBLOCK REMOVAL FOR SMALL BUSINESSES

The CCF supported 12 roadblock remediation projects in FY23 for small businesses, environmental justice communities<sup>11</sup>, not-for-profit, and/or minority-owned organizations (Table 4). These projects combined will save 7,343 therms and 43.5 tons CO<sub>2</sub> annually (870 tons across the measures' lifetime). The 4 remaining projects in the FY23 pipeline will complete by the end of Q2 FY24. The CCF continues to pursue additional roadblock remediation opportunities with the Commercial Energy team.

#### SALVATION ARMY – SPRINGFIELD, MA

The Salvation Army thrift store and donation center in Springfield serve as a valuable resource for the local community, providing affordable household goods and clothing. As a non-profit organization, the store's proceeds support various social welfare programs, including Adult Rehabilitation Centers that assist individuals struggling with addiction. Located in Springfield, MA, an environmental justice community<sup>1</sup>, the store plays a crucial role in serving the needs of the local population.

The store occupies nearly 20,000 square feet of retail and storage space. An energy audit conducted by CET identified the need for insulation measures to improve the store's energy efficiency. The store had already invested in heating equipment upgrades, but the full cost of the insulation measures presented a financial challenge. In the second quarter of FY23, the Center for EcoTechnology (CET) initiated a roadblock remediation project to assist the Salvation Army thrift store and donation center in covering the co-pay required for the installation of energy efficiency measures. The project aimed to overcome financial obstacles and support the store's commitment to energy savings.



Figure 1. Spray foam insulation installed on interior open wall at Salvation Army, Springfield, MA

<sup>1</sup>Mass.gov Environmental Justice Populations in Massachusetts: <https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts#interactive-maps-about-environmental-justice-populations>

The cost of the energy efficiency measures was partially covered by Mass Save, an energy efficiency program. In addition, the roadblock remediation project contributed an extra \$1,794 towards the total cost. These funding sources collectively enabled the successful completion of the project, resulting in savings of 864 therms and 5.05 tons CO<sub>2</sub> annually (101 tons across the measures' lifetime).

## WESTGATE LANES – BROCKTON, MA

Westgate Lanes is a small business: a family-friendly bowling alley, pub, and arcade in Brockton, MA. The business has been operating since 1959. Brockton, MA is an environmental justice community<sup>1</sup>.

Westgate Lane's energy audit recommended pipe wrap as an energy efficiency measure with significant savings. The owner had worked with CET previously on small projects but struggled to come up with the capital investment to pay the copay. In Q3 FY23, CET initiated a roadblock remediation project to help cover the co-pay for the efficiency measures. The project aimed to support the owner in realizing the energy savings potential and promoting sustainability.

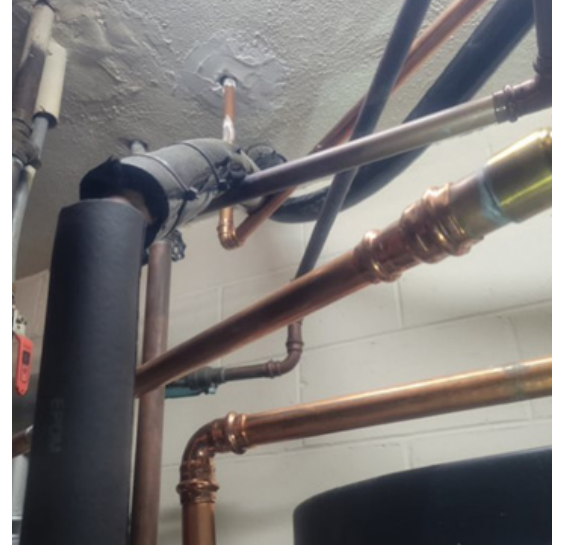


Figure 2. Westgate Lanes Pipe Wrap Opportunity

Mass Save covered a portion of the cost, and the fund contributed an additional \$3,085 toward project expenses. These funding sources collectively enabled the successful completion of the project. The project was completed in Q4 FY23 with annual savings of 1,809 therms and 10.58 tons CO<sub>2</sub> (211.60 tons across the measures' lifetime).

## AIR SOURCE HEAT PUMP CONVERSIONS

Air source heat pumps provide an energy efficient alternative to furnaces and air conditioning systems. Acting like a refrigerator, heat pumps use electricity to transfer heat from cool spaces to warm spaces. During cooler months, air source heat pumps take warm air from the outdoors and move it inside, creating a heating effect on the home. During the warmer summer months, air source heat pumps expel warm air from the home, creating a cooling effect. Depending on climate conditions, homes heated with heat pumps may see a reduction in energy bills of up to 30-40%. As heat pumps do not require combustion, they produce less particulate matter and risk of carbon monoxide leaks in the air, ultimately contributing to improved indoor air quality. In FY23, the CCF contributed \$26,663 over 3 projects: 2 homes in Ipswich, MA and 1 business in Greenfield, MA, resulting in an estimated 920 tons of carbon savings over the measures' lifetime.



## WILLIAMSTOWN COMPOST PILOT



Williamstown  
Composts!

In its second year, Williamstown Composts! expanded its reach by adding options for local businesses to compost their food waste. The team partnered with RecyclingWorks MA, funded by MassDEP and administered by CET, to offer technical assistance to businesses to expand their efforts in prevention, donation, and recycling of food waste. RecyclingWorks MA staff performed 7 site visits at various food businesses. Businesses were all encouraged to apply for the CCF grant to cover the cost of compost pick-up for 6 months. Four businesses, Mezza Bistro & Bar, Blue Mango, Images Cinema, and Pera Bistro have been approved to date. Each will have one 64-gal tote picked up weekly, resulting in a diversion of approximately 6.3 tons food scraps and savings of 4.0 tons CO<sub>2</sub> over the 6-month period. The remaining two (2) grants FY23 pipeline will be disbursed by the end of Q1 FY24.

## INDUCTION STOVES



CET was awarded a Healthy Communities Grant from the Environmental Protection Agency (EPA) to catalyze the induction stove market in Massachusetts. The project raises public awareness about induction stoves as a healthier and more energy efficient alternatives to gas stoves through development and distribution of bi-lingual materials, lending programs established at local libraries, and retailer outreach to characterize the local market. The EPA program establishes 5 lending kits for area libraries, including the Milne Public Library in Williamstown. With support from the CCF and in partnership with Local Energy Advocates and Mothers Out Front, we have been able to double the number of lending kits and increase the total number of library lending programs from 5 to 8. CET worked with Williams College student to produce a short video demonstrating the lending kit for the library. The induction lending kit and the [video](#) were featured in the library's article, [Wanna save energy at home? We can help!](#), leading up to Climate Preparedness Week in September. In FY23, the CCF contributed \$1,921 to this effort.

## BUILDING MATERIAL RECOVERY

Between April and June 2023, CCF invested \$6,698 to fund material collection from 16 sources across New England. The materials represent over \$71,000 in value and will save 4.7 tons CO<sub>2</sub>-eq. in avoided manufacturing and 56.8 tons CO<sub>2</sub>-eq for FY23 (Tables 1-3).

The recovery also prevents these valuable materials from going to landfills and makes building materials affordable to people of all income levels. EBB provides important

employment and affordable building supplies to the Springfield community, which the state has categorized as an [environmental justice](#) area. Serving minority communities is a critical component to both CET's mission and the Community Climate Fund program.



Figure 3. (Left) Pendant Light; (Middle) faucet; Right (Chandelier)

### TABLE 1. DESCRIPTIVE METRICS

METRIC	FY23 Total Value	Unit of analysis	Method
<b>Source of material: resident, contractor, commercial entity, other</b>	Homeowners 125	Per truckload delivered to EBB	Survey/checklist provided to driver to complete upon collection
	Contractors 14		
	Retailers 2		
	Institutions 0		
<b>Inventory of recovered material</b>	Cabinet Sets 49	Per truckload delivered to EBB	Survey/checklist provided to driver to complete upon collection
	Doors 159		
	Windows 34		
	Cabinets 90		
	Building Materials 69		
	Furniture/Decor 211		
	Appliances 46		
	Plumbing 119		
	Chandeliers 28		
	Lighting 129		
	Bathroom Sinks 36		
	Recolor (paint) 0		
	Hardware 59		
	Tools 63		
	Kitchen Sinks 43		
	Flooring 26		
Moulding 11			
Lumber 8			
Electrical 46			
Siding/Decking/Roofing 7			

**TABLE 2. ENVIRONMENTAL IMPACT**

METRIC	FY23 Total Value	Unit of analysis	Method	References
<p> <b>Avoided carbon dioxide equivalents (i.e., embodied carbon in recovered materials offsetting the need for new materials)</b> </p>	<p><b>64.3t CO<sub>2</sub>-eq</b></p>	<p>Per truckload delivered to EBB and sold to new users</p>	<ul style="list-style-type: none"> <li>Based on survey, estimate weight contribution of each recovered material type (i.e., appliances, lumber, plumbing materials)</li> <li>Use CET's model of embodied carbon per building material type to quantify total embodied carbon in truckload</li> <li>Assume 75% of collected materials are re-sold</li> </ul>	<p>EPA WARM tool</p> <p>Inventory of Carbon and Energy (ICE) database</p>
<p> <b>Transportation emissions (CO<sub>2</sub>-eq)</b> </p>	<p><b>7.5t CO<sub>2</sub>-eq</b></p>	<p>Per truckload delivered to EBB</p>	<ul style="list-style-type: none"> <li>Transport distance</li> <li>Truck fuel consumption rate</li> <li>Diesel emissions factor</li> </ul>	<p>IPCC emissions factors</p>
<p> <b>Net CO<sub>2</sub> savings</b> </p>	<p><b>56.8t CO<sub>2</sub>-eq</b></p>		<p>Difference between gross offset and transportation emissions</p>	

**TABLE 3. SOCIAL AND ECONOMIC IMPACT**

METRIC	FY23 Total Value	Unit of analysis	Method	References
<p> <b>Transportation emissions (CO<sub>2</sub>-eq)</b> </p>	<p><b>\$344,498</b></p>	<p>Per truckload delivered to EBB</p>	<p>Average retail price of each item in the inventory</p>	<p>EBB Management</p>

