

# A Study to Reduce Transportation Induced Carbon Emissions at the University of Wisconsin- Eau Claire



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## INTRODUCTION

Transportation induced carbon emissions on the University of Wisconsin-Eau Claire's campus comprise 38% of the total campus carbon emissions. These emissions come from three main transportation sectors: Study Abroad/National Student Exchange (20.5%), Directly Financed Travel (55.8%), and Campus Commuting (20.9%) (see Figure 1). Direct transportation, such as university vehicles, comprises 2.8% of the transportation emissions. The difficulty in confronting emissions within all categories is that transportation emissions result largely from independent choices and behavioral habits. In addition, each sector requires different policies and strategies.

## METHODS

In this study, I review campus carbon emissions data focusing on the transportation sector. In order to identify campus strategies to reduce carbon emissions, I conducted a content analysis of key University documents, such as the Centennial Plan, the Comprehensive Bicycle and Pedestrian Plan, the Campus Climate Action Plan, Campus Carbon Footprints, the State of the University and the Campus Master Plan. These documents were chosen because they are relevant to campus, have university-specific data and all involved a rich set of stakeholder perspectives. Additionally, I drew upon data from the City of Eau Claire Comprehensive Plan, Eau Claire's Climate Action Resolution document and the Eau Claire Capital Improvement Plan. Finally, transportation related case studies from five universities across the United States were drawn upon for inspiration for future action here at UW-Eau Claire.

## EMISSIONS DATA

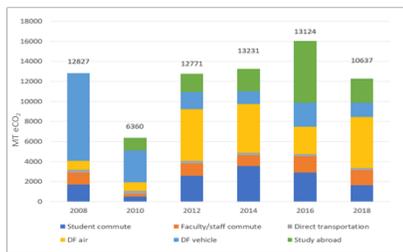


Figure 1: UW-Eau Claire transportation induced carbon emissions by sector, 2008-2018

### DIRECTLY FINANCED AIR AND GROUND TRAVEL: 55.8%

This sector includes ground or air travel done by students or staff that is directly financed by the University of Wisconsin-Eau Claire. Examples include airplane flights to conferences, rented vehicles for field trips or athletic events, travel for domestic intercultural immersion experiences, etc. As is evident, this sector contributes the largest amount of greenhouse gas emissions on campus at 55.8% of the total emissions or 7,776.1 metric tons of eCO<sub>2</sub>. Based on review of the Campus Climate Action Plan, the following strategies for reducing emissions from this sector were identified.

#### RECOMMENDED STEPS

- Purchasing renewable energy credits through Xcel Energy
  - While not reducing the total amount of carbon emitted, this method will effectively offset CO<sub>2</sub> through renewable energy initiatives and methane capture projects
- Improved education and awareness of students and staff
  - Provide information on airline offset programs
  - Make students aware of the environmental benefits of non-stop or direct flights
  - Make students aware of program or resources such as Terrapass
- Hybrid or Electric Vehicle Rental

### CAMPUS COMMUTING: 20.9%

Commuting to and from campus is a sector that accounts for approximately 1,500.2 MT eCO<sub>2</sub> or 20.9% of the transportation emissions. Though not the largest emissions category, this sector has the ability to be reduced greatly through urban design improvements, increased public transportation and enhanced bikeability and walkability features within and around campus. Based on a review of the Comprehensive Bicycle and Pedestrian Plan and the Eau Claire Capital Improvement Plan, the following recommendations emerged.

#### RECOMMENDED STEPS

URBAN DESIGN	PUBLIC TRANSPORTATION
<p><b>Woonerf:</b> A road that is designed with special features to reduce the amount of traffic using it, or to make the traffic go slower.</p> <p><b>Main Principles:</b></p> <ol style="list-style-type: none"> <li>Visible Entrances</li> <li>Physical Barriers</li> <li>Shared and Paved Space</li> <li>Landscaping and Street Furniture</li> </ol>  <p>Figure 2: Thorp Avenue, Third Ward, Eau Claire, WI</p>	<p>The amount of travel done via public transportation depends on the <b>infrastructure, prevalence, and accessibility.</b></p> <p>Student ridership has risen from 291 students in 2016 to 438 in 2018.</p> <p>Four key improvements are listed in the Eau Claire Capital Improvement Plan:</p> <ol style="list-style-type: none"> <li>Replacement of five Gillig 40-foot buses</li> <li>Remodel transfer center from 1984 to include public restrooms, ticket office, break room, etc.</li> <li>Creation of 22 bus shelters at major stops in Eau Claire</li> <li>Creation of tablet based fare and data collection system</li> </ol>

### BIKEABILITY

According to the 2014 Comprehensive Bicycle and Pedestrian Plan, walkability and bikeability on campus can be improved through five key sectors:

- Engineering:** The goal of this sector is to create and improve existing bicycling infrastructure. Some examples include: shared bicycle lanes, bicycle networks, bicycle parking, service stations, and the creation of a bike-share program.
- Education:** This sector emphasizes the importance of the continuation and expansion of proper education regarding bicycle safety, usability, maintenance, and conducts of the road.
- Enforcement:** This sector focuses on the need for a system of enforcement in place with the Eau Claire city police in order to enforce bicycle related traffic laws, bicycle parking, bicycle theft and policies on campus regarding bicycling.
- Encouragement:** This sector encourages the UW-Eau Claire campus and community to engage in incentive programs and activities. Some of these include the ZAP encouragement program used at the University of Minnesota or parking pass incentives for bicycle commuters.
- Evaluation and Planning:** The goal of this sector is to create a steady foundation for UW-Eau Claire to become and remain a bicycle friendly university through the creation of a bicycle pedestrian committee that evaluates and plans for the future.

### STUDY ABROAD/NATIONAL STUDENT EXCHANGE: 20.5%

UW-Eau Claire ranks 28<sup>th</sup> nationally for numbers of students studying abroad, with 473 students reported from the 2017 Open Doors Report. Carbon emissions from this sector have almost tripled since the first recording done in 2010 due to a substantial increase in the popularity of study abroad. Given the dependence on air travel and the educational and cultural importance of study abroad to the university mission, carbon offsets remain the only viable option. After a review of the Campus Climate Action Plan, the following recommendations were identified.

#### RECOMMENDED STEPS

- Purchasing carbon offsets through Xcel Energy
- Providing incentives for students to offset their own carbon through programs such as Terrapass and UCapture
- Continually providing students with education, opportunities and resources, especially through organizations such as the Study Abroad Office, the National Student Exchange Program and Aiesec



Figure 3: Valparaiso, Chile; Study Abroad Destination



Figure 4: Two Prominent Carbon Offsetting Companies

## CONCLUSIONS AND IMPLICATIONS

As stated before, transportation induced carbon emissions at the University of Wisconsin-Eau Claire constitutes 38% of the total carbon emissions on campus. As the largest contributor to greenhouse gases, it is essential that these issues be addressed and creative solutions be researched and recommended. After a detailed content analysis of nine Eau Claire campus and city documents, it is clear that unless alternative fuel sources replace fossil fuels, we are still heavily dependent on carbon offsets to reduce greenhouse gas emissions from the transportation sector. Though this method is beneficial in its movement towards carbon neutrality, it should be stated that it does not reduce the total amount of carbon being released into the atmosphere, merely counterbalances it. Additional solutions beyond carbon offsets include enhanced infrastructure and urban design that support pedestrians rather than automobiles, improved accessibility and expansion of public transportation and investments in biofuel and electric vehicles. Finally, the importance of educational outreach with the intent to change behavioral habits cannot be understated. Creating a culture of sustainability on campus depends on the actions and daily choices of UW-Eau Claire students, staff and faculty.



Figure 5: Mixed use Garfield Avenue Redevelopment Project built to reduce traffic flow and encourage pedestrian use.



Figure 6: One of three city of Eau Claire hybrid buses

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