

# Ultimate Tailgate Station

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UCF Senior Design Fall 2012

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## 1. Project Motivation, Goals and Objectives

The age old tradition of college tailgating is perceived by most as an exciting and spirited way to prepare for a university sporting event. However many who have yet to explore the practices of college extracurriculars are not aware of the taxing efforts to transport such tailgating imperatives like a cooler full of beer and ice. Not to mention the fact that these essential commodities must be delivered over great distances from parking spots spread remotely across campus. Another tailgating dilemma is that the charging and powering of technological necessities such as cell phones and speakers suffer from the apparent lack of outlets at most tailgating grounds. Moreover, the use of such outlets is only burning more unnecessary coal and adding to our proverbial carbon footprint. Thus, motivated by the need to make transporting goods easier and provide renewable energy to external devices while also sustaining the system with this provided energy, we propose the Ultimate Tailgating Station.

The Ultimate Tailgate Station is, in essence, an autonomous cooler on wheels that addresses the issues faced by the common tailgater. It features a GPS tracking system to track the user's smart phone and directs its path according to the user's position. It uses motion sensors to handle object interferences by rerouting the station's path. Its sustainable energy framework uses a solar panel that not only recharges the station, but offers clean renewable energy to charge external devices.

## 2. Statement on Project Impact on Energy Sustainability and/or Renewable Energy

Due to the growing shift towards energy sustainability, we have chosen to harness the energy of the sun to power our project. The use of this clean renewable energy source allows our system to be self-sustained, while also providing this energy to external devices. Since the applications of this project are not only limited to tailgating (ie. camping, golfing, picnics), extending its use will further help to reduce our environmental impact.

## 3. Project Specifications

- Station can last up to 2 hours without charging.
- Station follows a single user with 15 feet.
- Station must support 100 lbs.
- Station should detect interfering objects within 5 feet.
- Station should reroute around obstruction of path within 5 seconds of object detection.
- Station should be able to fit in a truck bed.
- Check weather status every half hour.

## 5. Project Development Milestones

Thursday October 11th, 2012 - Have fundamental design complete

Thursday October 30th, 2012 - Complete 30% of Report

Tuesday November 30th, 2012 - Complete 90% of Report

Friday Nov. 30th, 2012 - Order System Parts

Monday January 7th, 2012 - Begin assembling hardware. Start Coding.

Friday, March 1, 2012 - Hardware build complete.

Monday April 1, 2012 - Project Complete. Start Testing and Finish Reports.

## 6. Detailed Project Budget

<b>Item Description</b>	<b>Unit Cost</b>
Solar Panel	\$500
Charge Controller	\$200
DC/AC Inverter	\$150
Lithium Ion Battery	\$75
Chassis	\$250
PCB	\$50
Microcontroller	\$50
IR Sensors	\$25
Misc. Hardware	\$200
<b>Total</b>	<b>\$1500</b>