Expansion of UGA Electric Bus Recharging Facility Design
Team Members: Heather Dobisch, Tala Sidawi, Kimberly Arriaga, Blake Ginn
Faculty Advisor: Dr. Stephan Durham, P.E.

Project Background
The University of Georgia plans to transition from diesel buses to electric buses to reduce fuel costs, maintenance costs, emissions related to transportation, and to promote sustainability with the largest electric bus fleet at any U.S. university. These electric buses will require a new infrastructure to maintain proper operations. The On-Site Consulting team collaborated with UGA Transportation Services to develop a final site design that addresses the needs for the expanding electric bus fleet. With this proposed construction, the design considered site traffic flow and safety, demands for bus maintenance, needs for a new office, charging and parking requirements for 80 electric buses, and the addition of solar panel bus charging using solar canopies.

Final Design
The proposed site design will include:
- 196 employee parking spaces
- 100 bus parking spaces with charging dispensers
- Isolated employee parking lot with new entrance
- New bus entrance located on FMD road
- Pedestrian sidewalks across the site
- 250 kW solar panel canopy
- 6 new maintenance bays
- Relocated office space to the second floor of the maintenance building

Solar Panel Design & Analysis
The proposed solar panel canopy will include:
- 18,250 R² of canopy coverage
- 14,771 R² panel area coverage
- 242 kW PV system
- 792 Lumos LSX305 panels modules (44X18’)
- 62’ LXS SD Railing System (88 total)
- W 14X90 Steel I Beams
- 62’ X 24” I Beams
- 3.5” steel support columns (39 total)
- 28 pull-thru EV bus parking spaces

The daily total solar energy generated (shown in green) by the integration of the solar panel canopy ranges from a minimum of 600 kWhrs to 1900 kWhrs based on our analysis. The average mileage per day (shown in blue) as a result of this PV generation peaks at 740 miles/day in the summer. This renewable power generation has the potential to offset annual facility costs an estimated $35,000 and reduce CO2 emissions by 93% compared to standard diesel emissions.

Costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
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<tbody>
<tr>
<td>DEMOLITION</td>
<td>$307,263</td>
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<tr>
<td>GRADING AND REPAVING</td>
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<td>BUILDING COSTS</td>
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<td>SOLAR PV PANEL</td>
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<td>SOLAR STRUCTURE MATERIALS</td>
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<td>SOLAR INSTALLATION</td>
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<td><strong>TOTAL CONSTRUCTION COST</strong></td>
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