

# Renewable Energy Applications in Refrigerated Trucks & Warehouses

## Algida – Unilever

### Abstract

This project aims to design renewable energy applications for Unilever-Algida's supply chain operations to minimize electricity costs while simultaneously reducing the operation's carbon footprint. Technical feasibility and requirements research, system design and cost-benefit analyses are carried out for warehouse roofs, refrigerated delivery trucks and retailer cabinets.



### Objectives

- Designing energy generation systems using solar panels for the Algida supply chain operations
- Analyzing the technical and financial feasibility of integrating solar energy systems

### Project Details

The ice cream supply chain operation consists of 3 main stages, which are warehouses, delivery trucks and retailer cabinets. The most viable method of integrating renewable energy production into this operation is found to be through solar photovoltaic energy, which can be achieved by constructing rooftop solar PV installations in factories and distribution centers, and by installing solar PV systems on delivery trucks. We conducted a literature review and research on the technical feasibility, technical requirements and the financial analysis for each case.



Considering the realistic constraints, we analyzed components, designed solar system alternatives and performed financial analyses. Also, we conducted a site visit to Algida Sarigazi Distribution Center and had the chance to meet with professionals from Unilever, discussed further details of the project and investigated the delivery trucks and the distribution center on site.



### Conclusions

Finally, we suggested rooftop solar PV installations in factories and distribution centers to be the technically and financially most feasible option and completed the preliminary technical design and the financial analysis of a rooftop solar PV installation at a given distribution center. By this project, we contributed to environmental sustainability and Unilever's zero emission commitment.