

Renewable Energy for Heating and Emergency Preparedness

Worldwide, the share of heating-related energy consumption in total energy consumption was ~47%, greater than final energy for transport (27%), electricity (17%) and non-energy use (9%). Therefore, renewable heat, i.e., meeting heating demand with renewable options (solar, wind, etc.), is a crucial component in the transition to sustainable energy systems. We are studying different design options (solar electricity driven heat pumps, passive houses, etc.) to provide renewable heat to residential and commercial buildings. Students will collect real-world data from several local buildings featuring renewable heat options. We are investigating whether distributed solar photovoltaics (PV) can extend emergency backup power after extreme weather event and power outage.

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