

Background:

Solar energy refers to the energy that is produced from the sun, that can be used for lighting, heating air and water, and generating electricity. Solar energy is clean, low-maintenance, and renewable; however, it is time dependent. To address this limitation, thermochemical energy storage has been identified as a plausible means of energy that can be utilized to meet energy needs at all times.

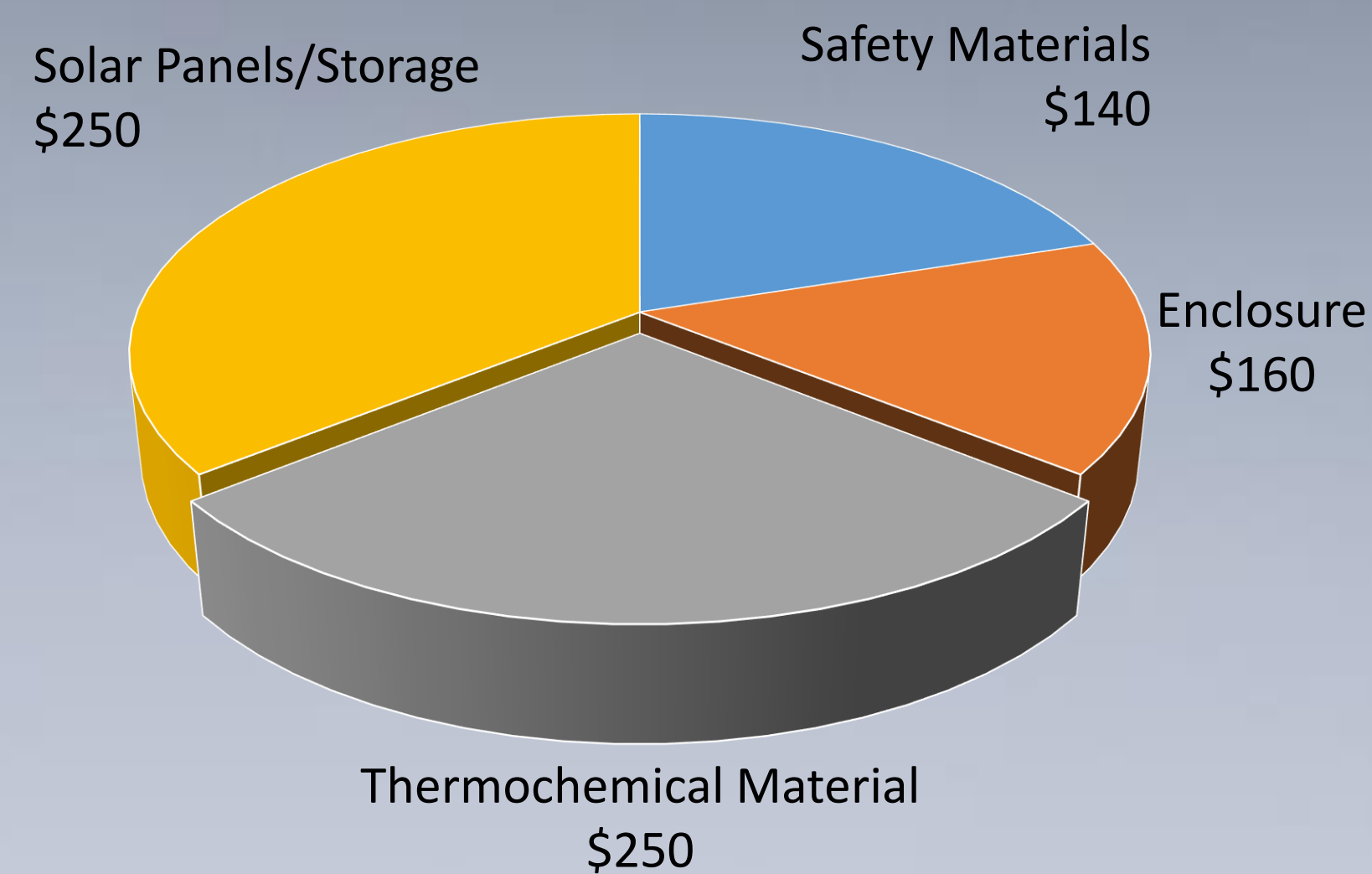
Goal:

A portable, solar-powered space heater to be used as a heat source in a small, enclosed area.

Requirements:

- Manufacturing cost less than \$200
- Weighs 20 – 50 lbs
- Heat up an area up to 100 sq ft
- Safe to operate without human interaction
- Small enough to fit inside a camping tent

Budget: \$700.00



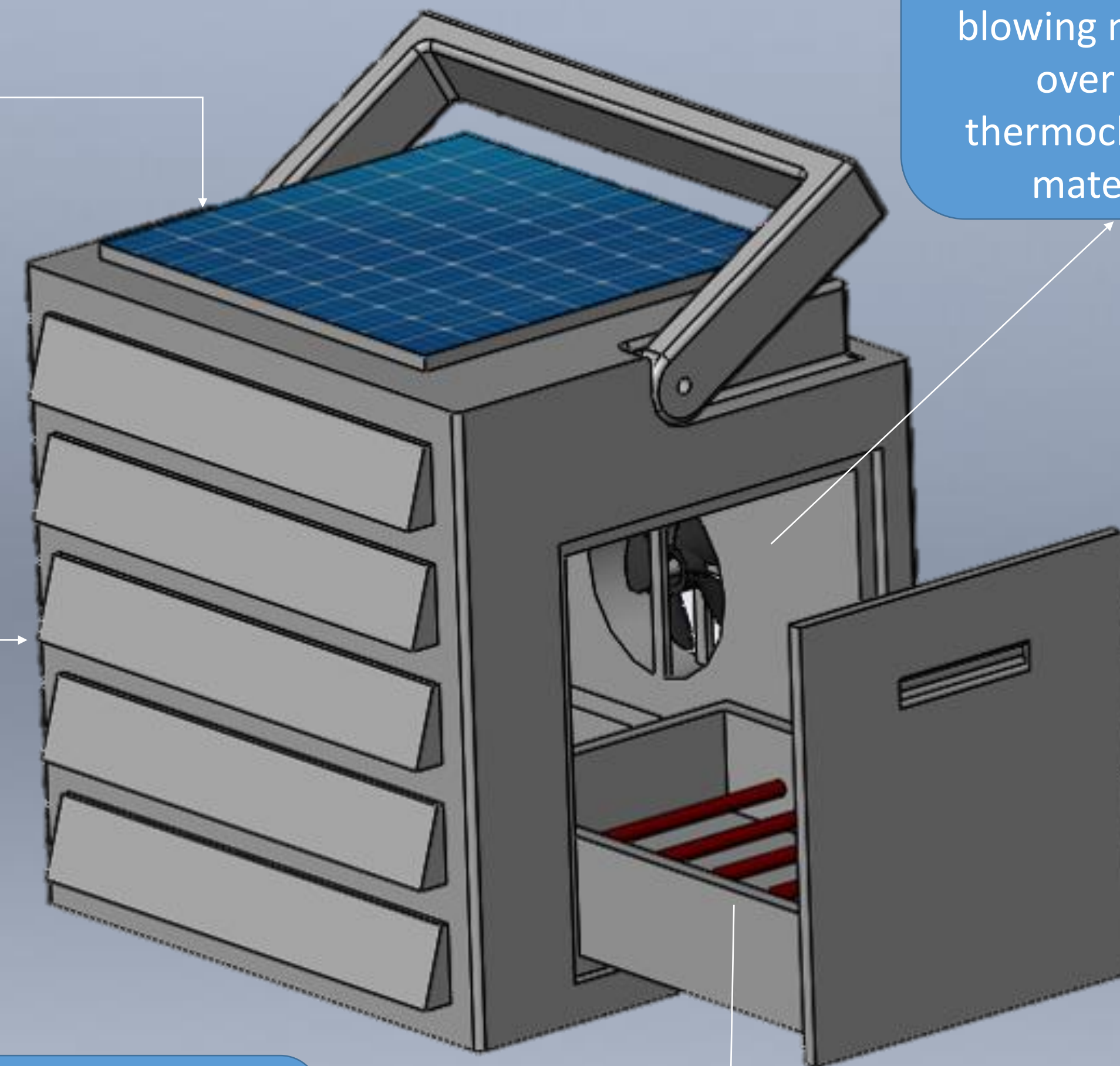
Anteater Solar Heater

Heat up your space without electric power or fossil fuels.
Advisor: Professor Derek Dunn-Rankin

Innovation:

Energy that is collected by a solar panel is stored in a reversible endothermic chemical reaction where the components are stored separately.

A solar powered fan activates the heating process by blowing moist air over the thermochemical material.



Heat is released through these adjustable vents once the components are brought together.

MgCl₂ is the choice material as it has high thermal capacity. It is stored in an insulated, removable tray. The system can be recharged by separating the components.

Timeline



UCI Samueli
School of Engineering

Bigger Picture:



Current Status:

- Identified magnesium chloride as material that best fits design parameters
- Developed a CAD model of our heating device

Next Steps:

We will begin testing samples of magnesium chloride in a lab to determine how much heat can be released for a given amount.

Team Photo



From Left: Justin Cardona, Jeremy Dang, Liz Bou, Alexander Torres, Roland Estropia, Darren Chan, Zachary Greensite

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A.S.H. Webpage

