

Boulder Energy Challenge Finalists

Evolution7 Labs: Solar-Plus-Storage Demonstration Project (\$60,000)

The project purpose is to reduce carbon emissions by expanding the possibilities for a higher penetration of rooftop solar PV. The project will construct two or more home or small business demonstration sites for premises-based “solar-plus-storage” installations. The sites will include advanced *Transverter*[™] inverter/charger, solar arrays, batteries, an electric car charger, and smart appliances integrated using the on-site *PowerStation*[™] energy management gateway and application platform. The sites will demonstrate and quantify the benefits of solar-plus-storage systems combined with advanced automatic and/or utility demand response or new transactive energy supply/demand balancing and grid support.

Lightning Hybrids: Lightning Hybrids/Via HHV (\$30,000)

Lightning Hybrids (LH) proposes a one-year Pilot Project (the Project) in which we would install one of our innovative hydraulic hybrid systems onto a Ford E450 shuttle bus located in Boulder. The vehicle to be fitted with the LH system is owned and operated by Via Mobility Services (Via), a nonprofit organization committed to providing transportation services to people with limited mobility. The Project would bring the first hydraulic hybrid vehicle (HHV) to Boulder and carry the main objectives of reducing the City’s consumption of fossil fuels, lessening the City’s GHG emissions, and demonstrating to Via and the City of Boulder the significant energy and emissions benefits that LH’s hydraulic hybrid technology delivers to medium- and heavy-duty vehicles.

Boulder Housing Partners: Affordable Housing Energy Empowerment (\$77,832)

Reducing electricity consumption in affordable housing units represents a challenge to both BHP and residents. Part of the challenge is associated with the invisibility of unit-level electricity demand since electricity consumption data are only available at the building level. This challenge makes it very difficult for BHP to identify and manage equipment problems and unusually high levels of household consumption, resulting in higher than average levels of electricity consumption and high energy costs for BHP. This pilot project will help address the challenges presented by the Boulder Housing Partners by implementing a comprehensive energy efficiency solution using a combination of energy feedback software/hardware and a resident empowerment program. The target population has been identified as 88 low-income, primarily family units in a set of 2 similarly built housing projects. Kalmia in North Boulder is the selected test population with 55 units and Madison as the control with 33 units. Our approach aims to reduce electricity consumption by making it more visible and by engaging and empowering residents to reduce energy waste. More specifically, the pilot will provide BHP with real-time, unit-level information about electricity use, provide residents with targeted feedback about their energy consumption, and employ a variety of scientific approaches for motivating, engaging, and empowering residents to take action.

Snugg Home: Bundling Electric Vehicles with Solar PV and Energy Efficiency (\$99,840)

Snugg Home, a Boulder based company, is the developer of cloud based software for the clean energy industry. We have recently performed a study to determine the financial benefits of combining home energy efficiency retrofits (EE), solar photovoltaics (PV), and electric vehicles (EV) under a single financing mechanism. Thanks to the significant financial savings from electric cars, combining all three upgrades results in dramatically fast payback periods seldom discussed in the energy industry and a business model with potentially explosive growth. Snugg Home intends to use this grant award to build a do-it-yourself online calculator directed towards homeowners to create interest in the concept. We will then integrate all of the calculations into our popular energy auditing software, Snugg Pro, which is used for all energy audits in Xcel territory in Colorado. Finally, we plan to build a brand and business model to

market and sell the bundling of these upgrades through partnerships with manufacturers, distributors, local installers, and local financiers. We will pilot the business model and produce a market potential study including the concept's value proposition, process and large-scale market potential. Our final deliverable will be a report on the effectiveness of the various sales approaches, business models, and marketing partnerships that were tested.

Superior Ecotech: Algae Greenhouse at Upslope Brewing for CO2 Capture (\$75,100)

Superior Ecotech converts waste CO2 from fermentation at breweries and ethanol plants into algae-derived oils at half the cost of our competitors. Although algae-derived biofuels could solve the world's energy crisis, algae companies struggle to meet margins due to high production costs. Superior Ecotech is the first and only algae company to develop a patent-pending algae growth technology that modifies the wavelengths of ordinary sunlight into light that is ideal for growing algae. We produce three times more algae for less cost than the leading technology. Our Project: We will use the Boulder Energy Challenge Funds to build a pilot algae greenhouse at our partner brewery, Upslope Brewing, at Flatirons Park in Boulder, CO. Our pilot facility will be the first of its kind to take CO2 from the beer fermentation process and convert it into healthy, valuable omega-3 oils via the growth of algae. Funds will be used for materials and labor to construct a 1,000 square foot greenhouse on the roof of Upslope Brewing. The basics of this technology have been proven over three years at a University research lab.

eGo Carshare: TripSmart Pilot Project (\$19,123)

The City of Boulder has a rich transportation infrastructure, offering residents and in-commuters numerous transportation mode options. Yet, transportation accounts for 28% of Boulder's CO2 emissions and over 35% of trips occur with single occupancy vehicles (SOV). Creating a mechanism to accelerate mode shift is critical to achieving the City's emissions reduction and mode shift goals. Through our exposure to new carshare members who are often at the point of moving from a car dependent lifestyle to a car-lite lifestyle, we find that the barrier is often a lack of knowledge or experience of the individual, not a lack of infrastructure or service. This pilot project will assess the ability to impact the mode choice of residents through targeted transportation advising. eGo CarShare staff and partners will conduct free individual transportation audits in person and online, then recommend customized solutions tailored to the individual's needs. Our goal is to increase participants' awareness of the economic and environmental cost of their SOV trips, as well as the potential pleasures of alternative modes, and then support them in exploring and recommending feasible TripSmart options. Based on the analysis of an individual's transportation needs, we will recommend a suite of options that may include, but are not limited to: rediscovering the often overlooked ped option, bus service to their destinations, the availability of Neighborhood EcoPasses, bike routes, bikeshare membership, carshare membership, carpool and ride matching programs, on-demand taxis, etc.