

FOA #0823 - ET Innovations

Project Title	FOA	Prime Recipient	Partners	HQ Location	DOE Funding Amount	Cost-share	Description
Rotating Heat Exchanger Technology for Residential HVAC	Innovations	Sandia National Laboratory	United Technologies Research Center	Albuquerque, NM	\$749,993	\$91,873	This project will demonstrate a rotating heat exchanger technology in residential HVAC. Already demonstrated in commercial buildings, this heat pump could improve the cycle efficiency of HVAC systems and enable increased use of heat pumps in cold climates. This product is designed for the more than 115 million homes in the United States, and assuming 50% market penetration this technology starting in 2018 could reduce annual energy expenditures by \$500 million dollars, rising to \$7.3 billion dollars by 2030.
Fluorescent Pigments for High-Performance Cool Roofing and Façades	Innovations	PPG	Berkeley Lab	Allison Park, PA	\$474,000	\$56,033	This project will develop a highly efficient coating technology for use in metal roofing and dark colored coatings in the building envelope. The technology will enhance U.S manufacturing capability by providing coating technologies that meet consumer needs and provide significant energy savings.
A new generation of building insulation by foaming polymer blend materials with CO2	Innovations	Industrial Science & Technology Network	N/A	Lancaster, PA	\$400,000	\$172,294	This project will commercialize new insulation foam for the building envelope. The research team estimates this technology could save 0.360 quads within 5 years, accounting for \$8 billion in annual energy savings and a 7% reduction in energy consumption in the building envelope.
Vacuum Insulation for Windows	Innovations	Alliance for Sustainable Energy	National Renewable Energy Laboratory	Lakewood, CO	\$750,000	\$0	This project will produce vacuum insulation plastic film for windows. The application addresses the large installed windows retrofit market to improve fenestration and building envelope energy efficiency. The film fits on top of the window glass and is transparent, cheap, and easy to apply. Taking advantage of a robust and existing supply chain, the material, glass microspheres/censpheres have long been used by the construction industry in fillers for plastics, cement, and paint. Without tapping into new or exotic materials, this product has potential for rapid adoption. NREL will work closely with potential manufacturing companies from the outset to commercialize the technology.
Acoustic Building Infiltration Measurement System	Innovations	Argonne National Laboratory	Illinois Institute of Technology	Lemont, IL	\$650,000	\$40,599	This project will create the Acoustic Building Infiltration Measurement System (ABIMS), a break-through technology that will be able to perform incremental measurements of building envelope efficiency in large buildings. The system can be used on sections of larger envelopes making infiltration measurements of very large buildings practical for the first time. ABIMS will be the first measurement system that can quantify infiltration information about a section of a building envelope during construction and before the entire envelope is complete.
Natural Refrigerant, High Performance Heat Pump for commercial applications	Innovations	S-RAM Dynamics	Oak Ridge National Laboratory, Purdue University, and ReGen Power Systems	Franklin, TN	\$400,000	\$103,000	This project will develop an oil-free heat pump to eliminate the use of hydro fluorocarbons (HFCs) in refrigerant systems for our homes and buildings. HFCs are super greenhouse gases and 3,830 times more potent than CO2 with a lifetime of 14 years. Natural refrigerant air-sourced heat pumps thrive in very cold (-30 degrees F) and very hot (210 degrees F) temperature climates and will initially be manufactured as 20-ton cooling units for installation in low-rise commercial buildings or commercial rooftops. The heat pump could support 50% energy savings for commercial building heating and cooling.
Dynamically Responsive IR Window Coatings	Innovations	Pacific Northwest National Laboratory	N/A	Richland, WA	\$750,000	\$77,998	This project will develop a low-cost window technology to reflect light and balance the absorption of light for solar energy production. The windows can be installed in the commercial and residential sectors, with potential to retrofit.

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ThermoLift – The Natural Gas Air Conditioner and Heat Pump	Innovations	Thermolift	Oak Ridge National Laboratory, Stony Brook University, National Grid	Oak Ridge, TN	\$750,000	\$353,810	This project will commercialize a natural gas heat pump for providing heating, cooling, and hot water for residential and commercial buildings. The all-in-one unit will reduce GHG emissions and the omitting of hazardous materials such as hydro fluorocarbons (HFCs). The potential is huge, with up to 200% efficiency improvements for space heating, and 150% efficiency improvements for water heating and space cooling.
Low-cost, highly transparent flexible low-e coating film to enable electro chromic windows with increased energy savings	Innovations	ITN Energy System	Electric Power Research Institute, Stanford Linear Accelerator, Colorado School of Mines	Littleton, CO	\$749,689	\$220,986	This project will develop a low-cost and transparent low-e film for retrofits using a novel thin fill roll-roll processing technology. This product will be tested in real-life conditions and environments to validate the actual energy savings potential.