

PNNL receives \$2.54 million toward buildings energy efficiency research

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New project will improve air conditioner that doesn't run on electricity

RICHLAND, Washington – The Department of Energy's Pacific Northwest National Laboratory has received \$2.54 million to improve the efficiency and test new refrigerants in a type of air conditioning unit that runs on waste heat. The funding was [announced earlier today](#) by DOE's Advanced Research Projects Agency–Energy — otherwise known as ARPA-E — and is part of the agency's Building Energy Efficiency Through Innovative Thermodevices, or BEET-IT program.

PNNL will lead the research effort with companies [Power Partners Inc.](#), of Athens, Ga., and [Arkema](#), of Philadelphia over the next three years. Together they will design, assemble and test an adsorption chiller that takes advantage of [PNNL's metal-organic heat carrier technology](#) and new types of refrigerants.

Researchers expect to achieve high efficiency in commercial heating, ventilation, air conditioning and refrigeration systems. The adsorption chiller is a type of air conditioner that is powered by waste heat or by heat from solar collectors, has few moving parts and uses almost no electricity to operate. The units are commercially available but PNNL's advanced materials have the potential to make them smaller, more efficient and affordable enough to be used more frequently in commercial buildings.

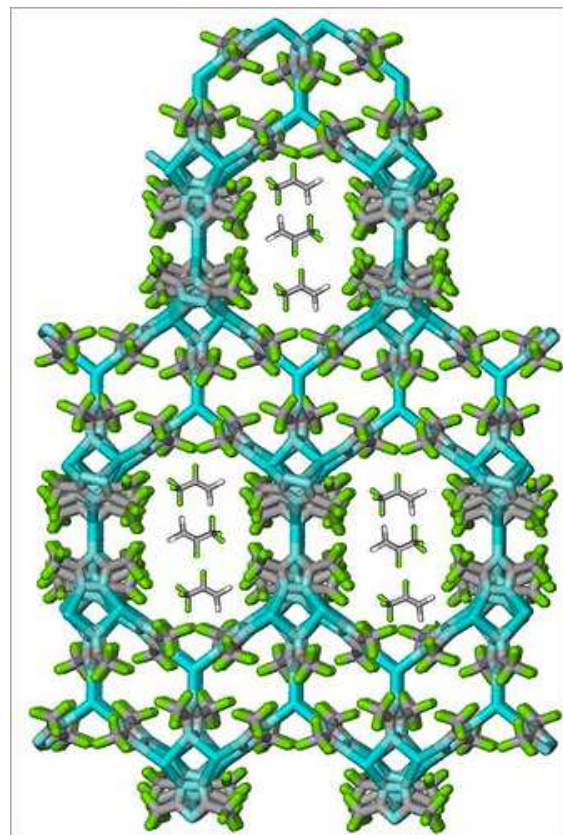
"More efficient methods of cooling represent a great opportunity to reduce energy consumption in buildings and in doing so greenhouse gas emissions as well," said PNNL Laboratory Fellow Pete McGrail, who is leading the research project. "The ARPA-E program represents a unique opportunity to move a recent laboratory discovery to the mainstream HVAC and commercial buildings marketplace in just a few years," he said.

Buildings account for 40% of energy use in the United States and for approximately 40% of the nation's carbon dioxide emissions. Cooling is one of the primary uses of energy in buildings, yet the basic approaches for cooling have not changed in decades.

"Improving building energy efficiency may well be our fastest and lowest-cost method of meeting increasing demand for



Researchers at PNNL will look for ways to improve alternative air conditioning technology, called adsorption chilling, that uses waste heat instead of electricity to cool commercial buildings.



Metal Organic Heat Carriers (MOHC's) with trapped refrigerants could help researchers improve alternative

energy. PNNL is pleased to be a recipient of ARPA-E funding for this work, as well as participating in two additional and related ARPA-E projects," said Mike Davis, PNNL's associate laboratory director for Energy and Environment.

air conditioning technology, called adsorption chilling, that uses low grade solar thermal or waste heat instead of electricity to cool commercial buildings. PNNL was awarded \$2.54 million to lead this research from DOE's Advanced Research Projects Agency or DOE-ARPA-E.

PNNL was also a sub-recipient of two awards announced today. PNNL will work with Hudson, Ohio-based ADMA and the Texas Engineering Experiment Station at Texas A&M University to develop a cooling system that uses an advanced dehumidification process that could enable higher efficiencies and significant cost savings in cooling technology.

PNNL also will work the University of Maryland and GE Global Research of Niskayuna, N.Y., to demonstrate a way to design a more efficient solid state air conditioning system that promises much higher efficiency and zero global warming emissions than does the conventional vapor compression technology used in many homes.

Click [here](#) for a full list of today's ARPA-E funding recipients and dollar amounts.

Tags: [Energy](#), [Environment](#), [Energy Efficiency](#), [Energy Conservation](#), [Emissions](#), [Green Energy](#)

[Pacific Northwest National Laboratory](#) is a Department of Energy Office of Science national laboratory where interdisciplinary teams advance science and technology and deliver solutions to America's most intractable problems in energy, the environment and national security. PNNL employs 4,900 staff, has an annual budget of nearly \$1.1 billion, and has been managed by Ohio-based Battelle since the lab's inception in 1965. Follow PNNL on [Facebook](#), [LinkedIn](#) and [Twitter](#).