

Solar power heats up in Kotzebue

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By VICTORIA BARBER

Kotzebue Electric Association is busy installing solar thermal panels on six Kotzebue homes this month. It's a bit of an experiment.

"No one has ever done solar thermal above the Arctic Circle, at least that we've heard of," said Jesse Logan, who works on special projects for KEA.

The project is a joint effort between KEA and the Kotzebue Community Energy Task Force and is funded by a grant from the Denali Commission Emerging Technologies fund.

The panels look like the standard solar panels found on rooftops worldwide (including at the Alaska Technical Center in town). The difference is that where standard panels are photovoltaic - they use solar energy to create electricity - the thermal panels use solar energy for heat.

The panels are connected to the interior of the house by a long, black, super-insulated tube. The heat collected by the panels is used to pre-heat water in the house before the boiler does, so that a family burns less fuel to get hot water.

Because the panels collect solar radiation -- basically heat -- and use it as heat, Logan said the solar thermal panels are even more energy efficient than their photovoltaic brethren.

"Every time you change energy into a different currency you lose something in the exchange. So it's less efficient to use heat to turn into electricity to turn back into heat than it is to just keep heat to heat to heat," Logan said.

While he was hesitant to name hard numbers until the panels starting turning in results, Logan said the panels may offset 30 percent of the fuel a household uses for hot water.

Along with the rooftop panels, Logan's crew is changing out water heaters and replacing them with 80 gallon, foam insulated, dual coil heat exchanging tanks. They're also installing data collection technology to monitor the performance of the system. That information will be sent to the Alaska Center for Energy and Power at University of Alaska Fairbanks for analysis each month.

Logan said it will probably be awhile before residents feel the impact of the panels.

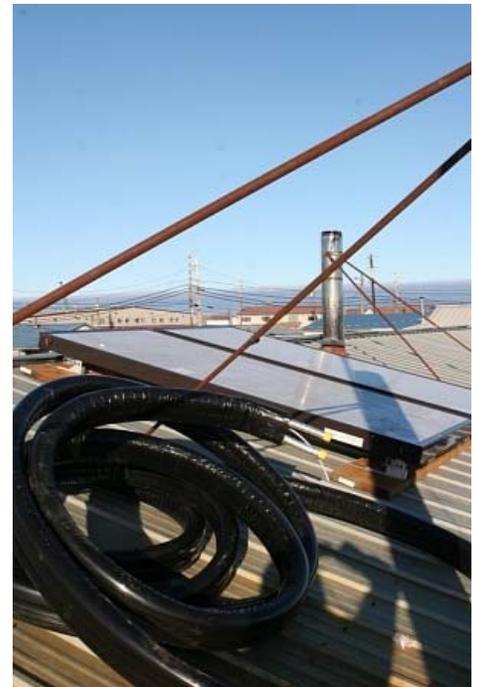
"We're not expecting a whole lot of solar gain over the winter," he observed.

Solar thermal panels are not the only energy efficiency project on the boil. Logan said there is also a heat waste recovery project, which aims to capture some of the waste heat that normally goes up through stacks. That heat would be run that through an ammonia cycle power plant to get extra energy to turn into electricity. KEA is working on doubling the size of its wind farm, with most of the site work completed over the winter and turbines set to arrive this summer. KEA is also working on purchasing a 3.7 megawatt hour flow battery to help utilize as much of the wind as possible and stabilize its frequency.

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Workers climb on top of one of the six homes to get the panels through a Denali Commission Emerging Technology Funds grant. (Victoria Barber, Alaska Newspapers)



These solar thermal panels are designed to use heat from the sun to pre-heat water in residential housing. (Victoria Barber, Alaska Newspapers)

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