



The Downey Mansion, built in 1893, is a classic example of a Victorian “seaside” home located on South Temple in Salt Lake City, Utah.

Jon Lear: “The design theory behind the project was to reopen the space up and let as much light into the area as possible.”

In 2005, Jon and Phillip Lear purchased the mansion and are remodeling it for use as their law office. The Lears’ other objective in renovating the mansion is to restore it to as close as original layout as possible ... while putting a modern spin on the heating and cooling functions.

At a recent media event, project contributors, including the INL’s Kerry Klingler, were recognized.

Jon Lear: “I think the INL is one of the most underutilized assets in the western United States. It was a conversation that I had with Kerry (Klingler) on a trip that we had that stimulated our interest in heat pumps. Kerry, if you could make a few comments about the lab and your involvement.”

Kerry Klingler: “It’s a pleasure for me to represent the Idaho National Laboratory here at today’s event. We’re proud to have worked with Phil and Jon Lear, Mayor Anderson and the city of Salt Lake, in this innovative new technology.”

In addition to enhancing elements of the building’s structure, the restoration’s major efficiency enhancement is the introduction of a first-of-its-kind renewable energy heat pump system that utilizes energy derived from a heat exchange coil wrapped around the city’s sewer line. The projected 40 percent energy savings will result in a 10- to 14-ton annual CO2 reduction.

Jon Lear: “The goal of the project is to make the Downey house fossil-fuel free. And we’ve done that by putting in a heating and air conditioning system that runs off both the sewer, the heat of the ground, and an additional special system that we’ve put in just to make sure everything works properly, which is actually a pool of water in the basement. Heat pump technology is not new. Your refrigerator is a heat pump, your window air conditioner is a heat pump. What is unusual about this is the source of energy that we’re using to power those heat pump systems.”

Mayor Rocky Anderson: “This is the first system of its kind in the United States that captures the naturally occurring heat from a city’s municipal sewer line and uses it to heat and cool a building.”



Even though the INL's role in this project was more conceptual than hands-on, it's an example of how the lab can be a strong regional resource.

Mayor Rocky Anderson: "Well, the Idaho National Laboratory, actually, was crucial to this project. It was the ideas, the information that Jon Lear received from a representative of the Idaho National Laboratory that made this happen ... and I just think that with the technical expertise, the experience at the Idaho National Laboratory ... it's that kind of collaboration that has such wonderful possibilities."

Construction will be completed later this year and data will be gathered to evaluate the potential this technology has for broader use in the region.