



EMERGING TECHNOLOGIES SHOWCASE WEBINAR: MULTIFAMILY NEW CONSTRUCTION TECHNOLOGY ROUNDUP

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Question and Answer Session

Q: Slide 13 shows what the owner and BPA paid for the equipment cost; how much was the installation cost for the Anhalt 40-unit project?

A: [Meghan] We have no data on this, sorry.

Q: Is the Anhalt on track to meet the 40.1 EUI? When will the EUI performance period end?

A: [Meghan] Actually, the monitoring period has not even started. They just finished leasing up the building in late September. Seattle City Light does a semi-monthly billing for residents, so the last residents to move in are just getting their first bill now. We've been playing with the data a little bit and making sure everything is calibrated and working properly, but the plan is to start doing the analysis in January to see how the building is working. The owner may designate the start of the monitoring period to be sometime January through March. Assuming everything stays on track it will end in early 2017.

Q: Please explain why the backup system at the Denning Apartments uses gas water heaters. Also please explain how solarium exhaust air is controlled at the Denning Apartments.

A: [Jonathan] The high efficiency gas system which is now used as the backup system was originally designed to be the main system for the building. The idea to use the heat pumps was to be able to capture the passive solar effectively as an offset, essentially preheating the water to get as much out of the heat pumps as possible before going into the gas system. Again, the initial concept was to only use the heat pumps when the solarium was above 40 degrees because at that temperature the efficiency of the heat pumps is high enough that the carbon impact of using the electricity is lower than the carbon impact of the high efficiency gas water heater; this is based on Seattle City Lights assumed carbon mix for new regional electricity. As it turned out, the solarium was always above 40 degrees so the heat pumps are running continuously; the coldest it ever gets in there is 50 degrees so they are always a lower carbon option than the backup or base system. The ventilation of the solarium is through the heat pump water heaters, which are themselves ducted to the outside. There is also a back draft damper that allows air to come into the far side of the solarium so when the heat pumps are on they are pulling air

through a supply register on the wall, pulling the heat out of that and exhausting the cold air directly to the outside.

Q: Would operating a hot water dishwasher and/or laundry during times of low-fixture demand rate have much improvement to the COP of the passive solar-assist HPWH? How might that COP vary if the low-fixture demand rate was at night vs. during the day?

A: [Jonathan] I do not think that load shifting of hot water usage will affect COP very much, but it could make the hot water systems smaller and thus less expensive by evening out the load and reducing the peak demands.

[Note: the following is the original answer to the question, which is heard on the video recording.] That's a good question – whether or not you can impact the COP of the system by shifting water demand off of that peak period. It has a lot to do with how the recirculation is handled. Under my proposed guidelines, which separates the recirculation loop from the main hot water system, it may help to shift demand. The main thing that's raising the heat pump water temperature and therefore lowering their efficiency is the recirculation loop. At Denning that's exactly what's happening since the recirc loop is running continuously and coming back to the heat pumps overnight when nobody is using hot water. The heat pump always has water between 110-115 degrees entering so their efficiency is not as high as it could be.

Q: Were all these buildings new construction (aside from the historic building)? If not, what was the baseline water heating system?

A: [Jonathan] The three buildings that I talked about today Sunset Electric, Stream Uptown, and Denning were all new construction.

A: [Meghan] The Anhalt was also considered to be new construction by the code; the historic building needed to be brought up to the current energy code. The 2009 code was the baseline for the Anhalt project.

Q: How do the tenants feel about their landlord looking at their energy use?

A: [Meghan] I believe the strategy the building owner is using at the project is to have residents sign a utilities release. They know going in that they need to be onboard with participating with the energy efficiency measures.