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## **2017\_12\_21 Heating, Ventilation and Air Conditioning R & D Workshop**

Thanks to the CEC staff and the panel participants for today's meeting. I listened to part of panel one and all of panel two. I have been exploring noise issues in regards to heat pumps in my densely packed townhouse owner community.

Recently, I learned that the Sacramento County Health department has a noise ordinance that indicates heating and air conditioning machines ought not to exceed 55 decibels, one foot from the property line. The master bedroom in my townhouse is close one of my neighbor's machines. A newer neighbor at this property started using her machine differently than prior owners. Her machine goes on at all different hours and has often gone off when the weather seems to be temperate. This may be because she has a "smart" thermostat and/or a programmable thermostat. I started waking more in the early am part of the night. I realized that our neighborhood's white noise issues have seemingly increased. It can sound like a tarmac at night. I bought a decibel meter and then suddenly realized my own machine is about 70 decibels (db). My neighbor's machine does not exceed 55 db the times I measured it, but it does not necessarily run at one speed. It also has a starting sound that seems loud at one time. But, my machine's noise issue is worse. My 2005 XR TRANE electric heat pump may have been installed with a decibel level of around 70 db. My unit fortunately is next to my other neighbor's unit. The two units go off often at the same time. Fortunately, she does not seem to use her machines at night as much as the other neighbor. According to contractors, my machine has about 3 years more per an electric heat pump's average life expectancy.

I also learned that the Sacramento County Building department does not inspect heating and cooling machines for noise (db) at the time of installation. I contacted my local county supervisor, Mr. Don Notolli, on this issue. Mr. Notolli fortunately, proactively, sent my emailed letter on heating and cooling machine installation noise inspection issue. He added his own note to Sacramento County Building department officials. I have no idea how realistic it is to think that they might start inspecting for noise or if this action meant anything to the building department yet. I hope the health and building departments can work together more. What I realized is that, I am very likely not the only person who was unaware that heating and cooling machines have a noise ordinance that might have been difficult to meet, even with new heat pump machines. Many densely packed owner communities likely have this same issue.

Unfortunately, this issue hurts the lower income people more than others. Lower income residents more often live in more densely packed communities. I would guess there could be a huge number of noise violations cited if any one wanted to become challenging and cause many more issues to many more people who are already hurting in terms of income for solving problems they did not expect to have.

So, my comment here is to keep noise ideas in the loop for people who are interested in electric heat pumps.

I started to try to build noise abatement around my machine. I understand one does not want to suffocate the machine. My internet search had a few suggestions, but nothing easy unless bought from an unknown vendor. I experimented with different materials and stopped the project, not wanting to make anything indecent looking or non-effective. The materials so far at most brought noise down 5-10 db. I interviewed 3 contractors with the first intent of adding insulation to my walls in efforts to abate noise. They also suggested a new heat pump installation to remove the noise problem. We discussed a mini-split heat pump system.

This is not the best timing for such an idea however. I am unemployed. My current income is below 16K per year. I have a retirement IRA, but get fee'd heavily for withdrawing from it before retirement age. I had an injury situation. I

hope to return to work and/or find some kind of income stability another way.

In addition, insulation cannot be added to my walls, as in this community, the association manages exterior walls, their insulation and siding. The insulation is from 1984. It does need to be replaced. But only part of it can be as vaulted ceilings are not easily insulation retrofitted. Yesterday, I signed a contract to have part of my attic insulation removed, sealed and replaced. The ducting will also be replaced and worked on. Another intake vent is going to be added per the existing plan. {I also hope to address a possible radio frequency problem that seems to be happening sometimes in my attic, hopefully not the insulation. I have a cell tower near by}.

I understand the new ducting will be covered by the new insulation. In this way if an electric mini-split heat pump system, of low db, is added later the attic might be a little less organized and perfect. I sort of fear adding more machines as a mini-split does. I fear more maintenance. I fear more complications. Since over-investing maybe a problem for payback where I live, I might, if pushed or when the proper time comes, install another more basic electric heat pump.

I heard at today's meeting questions as to why there are not more all electric communities with electric heat pumps. I think noise may have been an issue partially. Less noisy heat pumps are more expensive. Plus, some in my community have removed their electric heat pumps. The heat pumps are said to wear out faster than air conditioning units with I gather gas heat, because not only do they run ac but they also run heat. So a heat pump does twice the work, but last less years depending on heat usage. Gas heat is likely quieter too.

Also, I heard at today's meeting that changing to all electric has not happened partially because of preference for gas cooking. I agree this may be true. I have heard my favorite chefs prefer gas ranges often. I have used an electric range most of my adult life. It takes getting use to. Electric range cooking is not as predictable as gas. But it is not something people cannot do. It is an education issue, and also an experience issue.

The last thing that seemed worth mentioning, is the issue of complicating homeowners. There is so much that people, especially of lower income, seem to need to attend to. Not many of our community members are engineers or all that technology savvy. I love turning my machine off now and with the plans I have heard about that feature may not be possible in the future with "smart thermostats". I hope we can change that in case, for example, an electric heat pump makes noise that can not be tolerated at night.

Most of all I thought that today's meeting worked well for communicating issues. I hope that no one discourages commenting. I would hardly understand "the other side"'s perspective, if it were not from listening, discussion, reading, commenting and getting feedback further. I hope not to disturb by this, but instead help to motivate more understanding.

Thanks,

Sincerely,  
Claire Warshaw

My hope