

Jenna Kay

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Sent: Thursday, November 14, 2024 8:14 PM
To: Jenna Kay
Subject: Climate EJC and CAG and high cost of heating and cooling

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From Don Steinke

To both the Climate EJC and the CAG, c/o Jenna Kay

Re: Concerns over the high cost of heating and cooling.

Hello everyone,

Here are some suggestions for reducing the cost of heating and cooling

In existing buildings:

Context: Maybe 75% of the buildings now standing will be around in 2050. As far as I know, none of the existing multifamily properties could be classified as superefficient. If those buildings were made superefficient, then heating and cooling bills as well as emissions would go way down, regardless of energy source.

In general, an existing building needs to be gutted to be made superefficient.

But maybe an existing building could be upgraded piecemeal choosing the most cost-effective measures first.

Suggestions for existing low-income multifamily developments.

Use funds from the Climate Commitment Act to:

- When appliances need to be replaced, pay the difference between conventional replacements with more efficient all-electric appliances such as heat-pump water-heaters, heat-pump space heating, and induction ranges.
- Add level 2 Ev charging capacity.
- Fill insulation gaps and thermal bridges.

- Reduce air infiltration
- Replace inefficient windows with high performance windows
- Convert existing vents with heat exchanging systems.
- Add bike racks or lockers

For new construction of multifamily developments, use funds from the Climate Commitment Act to cover the extra cost of making new buildings superefficient.

Maybe starting with demonstration projects, then incentives, and then an opt-in stretch code.

In general, it costs less than 4% extra to make new buildings superefficient. The sweet spot for all this is the multifamily dwelling, eg 10 units or more, particularly for low-income housing.

Consider ground source heat pumps systems.

Efforts are underway in Massachusetts and New York to integrate “*passivhaus*” principles into the state building code and create incentives for developers of multifamily housing — especially low-income housing — to adopt *passivhaus* standards. (In German, “*haus*” means building rather than a detached single-family dwelling.)

For a building to certified as meeting Passive House standards, it means the building is super-insulated, with efficient appliances and heat exchangers for ventilation. The focus is on actual building performance.

There are two places you can get certification. There's the German standard *Passive House Institute* and *Phius* <https://www.phius.org/> out of Chicago.

The five core principles of superefficiency.

1. Continuous insulation.
2. No thermal bridges.
3. Airtight construction. Both the Passive House Institute in Germany and *Phius*, have an airtightness requirement that's about five to six times more tight than new construction in Massachusetts was a few years ago.
4. High-performance windows and doors. In New England, in Massachusetts, most of our buildings require triple-glazed windows. And the cost of triple-glazed windows, has come way, way down. Maybe in a temperate climate, you could get away with double-glazed windows. It's when you get in more extreme climates.
5. Filtered fresh-air ventilation with heat exchangers to all rooms.

Consider adopting *Living Building Standards* which are higher than the *PassiveHaus* standard. See the PAE building in Portland for an example.