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Energy Commission Workshop on Refrigerants & Building Decarbonization

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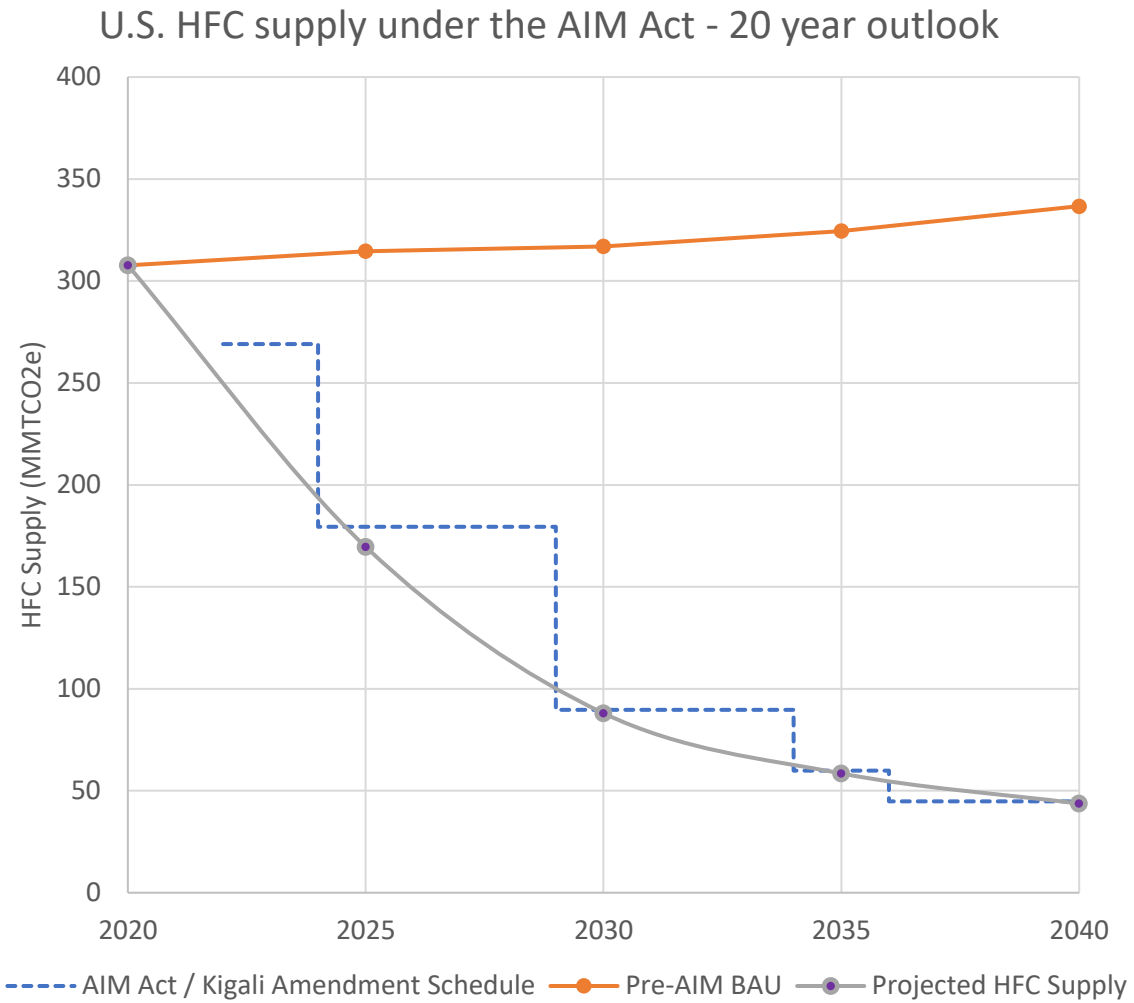
8/26/21

The Good News about HFCs!

U.S. HFC phasedown under the AIM Act about to begin starting 2022

- GWP-weighted HFC supply will fall nationwide by 85% over the coming 15 years (graph at right) under AIM Act/Kigali Amendment

- Coming federal EPA regulations on:
  - End-use HFC bans
  - Refrigerant management
  - Reclaim and reuse of HFCs

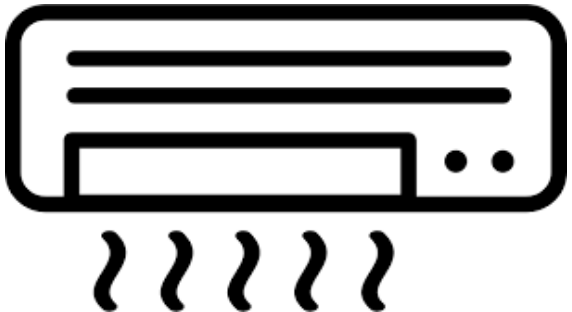


Source: NRDC analysis of data provided in EPA's AIM Act Allocation proposed regulation. U.S. EPA, 2021.

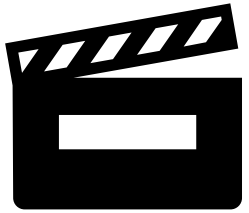
Heat pump phase up

Meanwhile, we must rapidly roll out heat pumps – which today mostly use HFCs – to decarbonize building heating.

- Refrigerant use likely to rise
- But most homes and buildings already have AC, so plenty of heat pump refrigerant is not ‘additional’
  - Should design heat pumps to be refrigerant-thrifty
- Climate-friendlier alternative refrigerants exist, which will be used going forward.
  - Hydrocarbons, HFC-32, R-454B, CO_2, others



Action areas



There’s still lots to do to make the HFC phasedown a success.

1. Removing and/or avoiding barriers

2. Using well-structured incentives

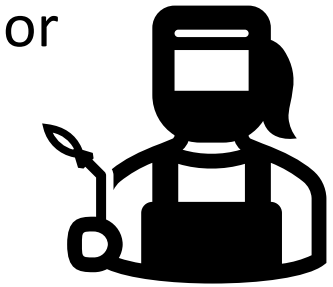
3. Bringing together decarb & refrigerant stakeholders

#1: Remove/avoid barriers

- CA building mechanical code currently prohibits climate-friendlier alternatives to HFCs in space heating and cooling.
  - Must approve building mechanical code updates in CA to permit safe use of climate-friendlier “A2L” and “A3” refrigerants ASAP

- Workforce of technicians able to work on climate-friendly systems still needs to be developed and expanded

- Additional capital cost of climate-friendlier equipment must be borne or mitigated, at least in some circumstances



#2: Use well-structured incentives

Targeted HFC reduction incentives make sense in some contexts:

- For new technologies with significant additional capital cost and emissions reductions potential, prior to regulatory requirements
- To help transition facilities, residences, and buildings in low-income communities and communities of color first
  - Avoids saddling these communities with old infrastructure and rising costs

Please note…

Market transformation policies for heat pump deployment should not be restricted to low-GWP, i.e. should not be conditional on use of low-GWP alternatives. Low-GWP ‘kickers’ are OK.

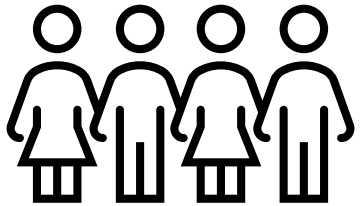
- Climate benefit of heat pumps is larger than any ‘refrigerant penalty’
- Let’s not let our solutions get in each others’ way!

#3: Bring together decarb & refrigerant stakeholders

- Every refrigerant-using subsector, no matter how important to decarb goals, will need to transition to lower-GWP alternatives

- Order of transition may follow end-uses' exposure to HFC supply phasedown
  - Heat pump water heaters, for example, use and emit very little refrigerant today. But that will change if every home in America has one someday.

- Again, transitioning refrigerant should not impede pace of rollout of heat pumps



Thank you!

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