



August 21, 2023

Honorable Steven S. Cliff, Ph.D., Executive Officer
California Air Resources Board
and Stationary Hydrofluorocarbon Reduction Measures Unit, Research Division
Via email: hfc reduction@arb.ca.gov

**Comments on LG Electronics Application for a Variance from the Requirements
of California Code of Regulations, Title 17, Sections 95374 and 95375.**

Dear Dr. Cliff:

Thank you for the opportunity to comment on the LG variance application.

We agree with LG on the need to mitigate the emissions from all non-compliant dehumidifier units expected to be sold in the US. All original equipment manufacturers are likely to opt to sell units that comply with California standards and those of other states that have adopted the CARB requirements; big box distributors for their products (Amazon, Home Depot, Lowe's, Walmart, etc.) will expect and want full compliance with all applicable regulations nationwide.

LG's proposed mitigation plan, however, is completely dependent on unsupported assumptions for units sold, annual average leak rates, equipment lifetimes, and EOL losses for the non-compliant dehumidifiers and the split AC heat pump units proposed for early compliance. The company presents no justification for these assumptions, which are inconsistent with CARB's main documentation for its ozone-depleting substances (ODS) substitutes emission inventory, published in 2014 (<https://pubs.acs.org/doi/full/10.1021/es403447v>) and used for the 2016 GHG emission inventory.¹

For window AC units (most analogous to the LG dehumidifiers), CARB assumes a 2 percent annual average leak rate and 100 percent EOL loss (see page S8 in https://pubs.acs.org/doi/suppl/10.1021/es403447v/suppl_file/es403447v_si_001.pdf), which is similar to LG's estimates (1 percent annual average leak rate and 98.5 percent EOL loss). We think it's reasonable to assume consumers will use these hermetically sealed units until either the electronics fail or the refrigerant leaks out, and that they will be discarded and replaced

¹ We could not find any updates to these two categories of equipment in the 2017-2021 GHG emission inventory documentation, https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/method_updates_compilation.pdf

rather than serviced like a home HVAC system. So more likely than not, they will go straight to a landfill and no refrigerant will be recovered. While the assumed 5-year average life of equipment seems short and needs to be justified, it doesn't affect the amount of emissions that needs to be mitigated.

For residential central AC units, CARB assumes a 10 percent annual average leak rate and 56 percent EOL loss, while LG assumes a 15 percent annual average leak rate and 80 percent EOL loss. On one hand, LG's high annual average leak rate for HFC-32 is disturbing in that this is by no means a low-GWP refrigerant compared to what's being achieved for passenger car air conditioning units, commercial refrigeration, consumer products, and other categories. Presumably, refrigerant losses will lead to more inefficient AC and higher GHG emissions related to electricity production, most of which is currently generated in the US with fossil fuels. Since LG's assumptions for early compliance of split AC heat pumps are higher than CARB and other published studies,² the company's application potentially artificially inflates the mitigated amounts of R-410A. While the assumed 15-year average equipment lifetime seems reasonable, it needs to be justified.

Another concern is that LG appears to plan to mitigate only 4,000 annual dehumidifier units—even though the company's products on the market will be non-compliant for a year and a half. Perhaps the state and its efforts to meet the 2030 HFC reduction target under Senate Bill 1383 would be better served if LG was required to increase its commitment under the new R4 program for usage of recovered R-410A in new equipment and servicing (see <https://ww2.arb.ca.gov/our-work/programs/california-significant-new-alternatives-policy-snap/r4-program>, requiring 10 percent refrigerant reclaim use by AC manufacturers in 2023).

At a minimum, LG should be required to justify their assumptions and submit a revised variance application.

We would appreciate hearing your response to these concerns. Thank you for considering them.

Sincerely,



Stephen Rosenblum
For Climate Action California



Daniel Chandler
For 350 Humboldt

² Peter Tomlein, Michal Tomlein, Matúš Tomlein (2019) Evaluation of Refrigerants Leakage Ratios based on Electronic Logging and Reporting System, Proceedings of The 25th IIR International Conference of Refrigeration, DOI: [10.18462/iir.icr.2019.148](https://doi.org/10.18462/iir.icr.2019.148).