Meeting log: Carrier HVAC North America meeting on Gas Furnace and Boiler NPR
5/1/2024

Non-CPSC Attendees and their titles and affiliation:
Jason Thomas, Director, Regulatory Affairs, HVAC North America
Kate Martinez, General Counsel for Carrier HVAC North America
Paul Haydock, Principal Engineer, North America RLCS HVAC
Neal Cohen, Neal Cohen Law LLC
Boaz Green, Neal Cohen Law LLC

CPSC Attendees:
Joel Recht, EXHR
Dan Vice, OGC
David DiMatteo, OGC
Ron Jordan, ESMC
Caroleene Paul, ESMC
Mark Kumagai, ESMC
DeWane Ray, OEX

In the Open Section of the meeting:

- Carrier suggested ways in which the Proposed Rule can be improved to enhance consumer safety.
- Carrier expressed claims of deficiencies in the NPR which they asserted must be corrected to meet the Commission's obligations under the CPSA, including their claims of:
    - CPSC's failure to evaluate reasonable technical alternatives to the proposed standard.
    - How and why the Proposed Rule did not establish that it would be effective.
    - How and why the Proposed Rule did not establish that it would be feasible with current technology.
    - Why it was incorrect to group together central gas-fired furnaces and boilers in a single blanket technical proposed standard.
    - How the cost-benefit analysis in the Commission's current proposal is flawed.
    - How the proposed effective date is unreasonable.
- Carrier provided the attached presentation

Carrier expressed that the 10-year lifespan for sensing devices used in the options outlined in their presentation was sufficient to design furnaces to include.

In the Closed Section of the meeting, Carrier explained its Proprietary Product Development Program.

The following presentation was presented by Carrier HVAC North America. It has not been reviewed or approved by, and may not represent the views of, the Commission.

CARRIER & CPSC MEETING

May 1, 2024

Safety Standard – CPSC-2019-0021

Carrier Team: Jason Thomas, Kate Martinez, Paul Haydock
Counsel: Neal Cohen, Boaz Green

Product Safety Focus

Focus on product safety is paramount to Carrier in all aspects of the product value stream.

Vision

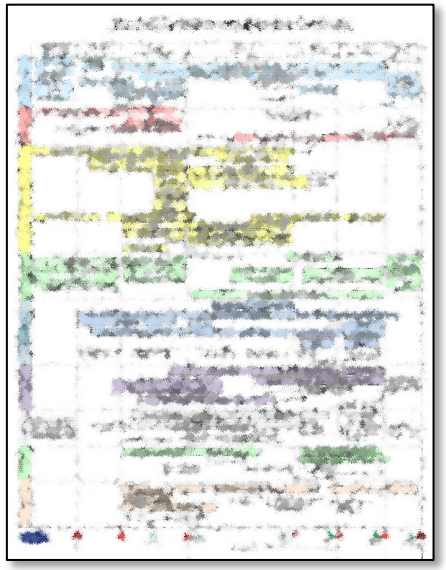
Deliver outstanding products … that are always reliable, compliant, and safe for customer use across the value stream

Culture

Safety of Employees, customers, and the public is paramount. Never compromise safety to save money or schedule.

Process

Safety and compliance assurance through robust processes.



New Product Development Process Overview

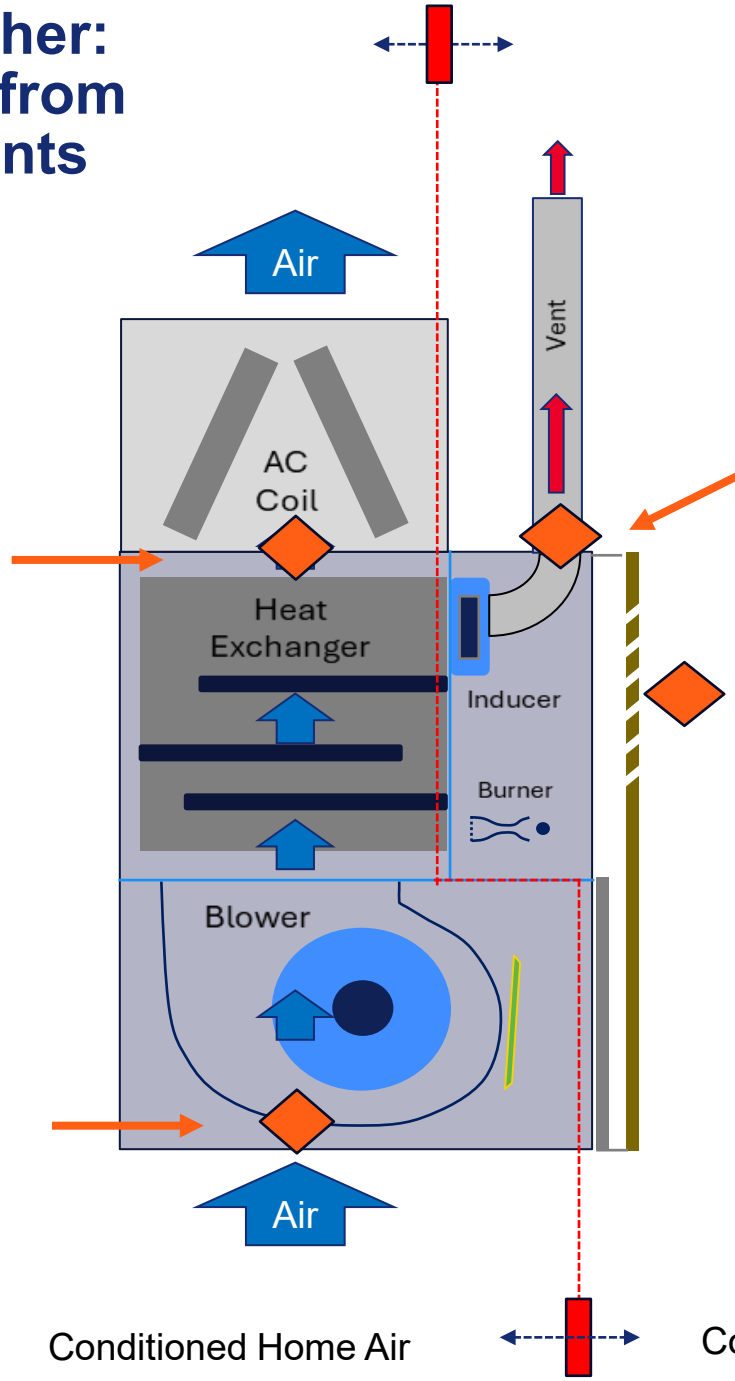
Brief Overview of Comments

- Carrier shares interest in product safety and the goal of reducing potential CO exposure
- NPR did not identify and analyze reasonable alternatives
- NPR did not show rule is feasible
- Cost benefit deficiencies
- Proposed effective date of 18 months is unreasonable
  - Requires shortcuts to well-established safety product development protocols
  - Will lead to potential safety and performance problems

ALTERNATIVE TECHNICAL APPROACHES

Furnace Design Refresher: Technical Approaches from Carrier Written Comments

All sensor options integrated into furnace for automatic shutoff



Option 1: VENT Integrated Flue-Gas CO Sensor Proposed in CPSC NPR (Nemoto)

Option 3: SUPPLY Air-Based Integrated CO Sensor (Conditioned Home Air Side)

Option 4: Integrated PROXIMITY Air-Based CO Sensor Monitoring in Furnace Room

Option 2: RETURN Air-Based Integrated CO Sensor (Conditioned Home Air Side)

Options 2, 3, and 4 rely on in-home, air-based sensor technology currently in use inside of CO detectors

Alternative Technical Approaches

Option	Design Option	Senses CO	Shuts down appliance	Technical Readiness	Reliability	Availability & Supply Chain	Consumer Cost	NPR Included
1	Flue-gas sensor (NPR)						$$$	Yes
	Indirect Method (NPR)						$$	Yes
2, 3, & 4	Integrated Air-based sensor						$$	No
	CO Alarm / Detector						$	No

Concept Considerations Summary

Concepts	Discussion
Integrated air-based sensor	• Not evaluated in NPR (by neither Staff nor consultants) • Capable of being integrated into appliance control for automatic shut down of appliance • IDI data provided during CSA working group supports air-based sensor efficacy • Widely used; large variety of sensors and suppliers available

Flue-gas sensor approach	• The only direct measure option considered in NPR
	• NPR does not provide evidence of use in gas furnaces
	  ○ Sensor identified in NPR used exclusive to Japanese boilers (not furnaces)
	• Flue-gas sensors not technically capable for gas furnaces in U.S.A.
	  ○ Sensor manufacturer states clearly, "< 95% RH (non-condensing)"
	  ○ Not demonstrated in multi-poise gas furnaces
	  ○ Failure rate and unanticipated outcomes are cause of considerable concern
	• CPSC's NPR consultants identify incapability and question viability of flue-gas sensor
	• Limited supply chain
	  • Single source for industry
	  • Ability of supplier to meet capacity for U.S. heating appliance industry not shown

Implementation timeline	• 18-mo
	  ○ Does not consider company established safety & development qualification procedures
	  ○ Does not consider overlapping or conflicting regulations (DOE AFUE, R454b, PFAS)
	• Multi-year development time is necessary for a control adaptation

End of Section 1 of the Presentation

- Thank you for your attention.
- We will proceed with the closed proprietary section of the meeting shortly.