DOCKETED

Docket Number:	17-BSTD-01
Project Title:	2019 Building Energy Efficiency Standards PreRulemaking
TN #:	220704
Document Title:	Stanford University Land, Buildings & Real Estate Comments Concerns about automatic sash closers
Description:	N/A
Filer:	System
Organization:	Stanford University Land, Buildings & Real Estate/Susan Lin Vargas
Submitter Role:	Public Agency
Submission Date:	8/11/2017 2:56:50 PM
Docketed Date:	8/11/2017

Comment Received From: Susan Lin Vargas
Submitted On: 8/11/2017
Docket Number: 17-BSTD-01

Concerns about automatic sash closers

Additional submitted attachment is included below.

Stanford | Land, Buildings & Real Estate

Date: August 3, 2017

To: Statewide Codes and Standards Team

From: Susan Vargas, Senior Energy Management Specialist

Subject: Comments on 6-6-17 Laboratory Fume Hoods Presentation (Docket #17-BSTD-01, TN#217908)

Representatives from Stanford University Land, Buildings & Real Estate and Environmental Health and Safety departments have reviewed the **Laboratory Fume Hoods Automatic Sash Closure Systems** presentation given at the California Energy Commission staff workshop on June 6, 2017. While we agree with the objective of the proposed rules (reducing energy wasted by poor fume hood sash management), we believe there are alternatives to the proposed automatic sash closure systems that are more appropriate for teaching and research labs and more cost effective.

One option is automatic face velocity setback based on occupancy. Stanford University utilizes zone presence sensors at each VAV hood in hood-driven labs to automatically reduce the face velocity (and hence, the volume of air exhausted) when users forget to close the sash when they are finished using the hood. A study conducted by the University of California, Irvine indicates that this approach can yield additional energy savings (on the order of $1,000 per year, per hood) over VAV alone, even with good sash management practices.[1] Automatic sash closers may yield even greater savings (on the order of $1,600 annually per hood) because the hood is at minimum flow when the sash is physically closed. However, we are concerned about both cost and user acceptance of automatic sash closure systems.

The incremental cost of maintenance used in the savings analysis seems unrealistically low at $200 over the life of the system. Our experience is that you can't change a light bulb in a fume hood for less than $200. Even if one assumes that sensors would need replacement twice over 15 years in either the auto-setback or auto-close systems, an automatic sash closer is much more complicated. We can't imagine that such a precision mechanism wouldn't require regular preventive maintenance and adjustment to insure safe functionality.

Section 140.9©2.1.c) states the system must, "Automatically close the sash after a maximum of 5 minutes of inactivity", which seems unreasonably short. Not only would this be annoying to students and researchers, but result in frequent cycling of the fans serving the hoods, potentially shortening their useful lives. We would instead recommend a maximum of 30 minutes. We also anticipate the risk of users defeating or disabling the automatic sash closure systems out of annoyance or suspicion. Therefore, the cost of an ongoing user training program should be included in the incremental cost. Stanford University would prefer to spend that time and money on educating hood users in order to achieve "perfect" sash management practices. UC Irvine estimates an additional $100 annual savings per hood if this could be achieved. We have yet to see what could be accomplished with a behavioral program with a budget of $100 per hood, but the modest "Shut the Sash" educational campaigns Stanford has implemented have yielded measureable improvements in sash management for a fraction of that cost.

[1] https://www.ehs.uci.edu/programs/energy/LowFlowFumeHoodsWebinar.pdf, slide 37

Land, Buildings & Real Estate
3160 Porter Drive, Suite 200 Palo Alto CA 94304