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Comments on Guideline 36 Proposal for Title 24 2025 Update

Additional submitted attachment is included below.

Comments on Guideline 36 Proposal for Title 24 2025 Update

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7/12/2023

ASHRAE Guideline 36 *High-Performance Sequences of Operation for HVAC Systems* represents a major step forward for the control of HVAC systems in commercial buildings in terms of improved building operation – energy use, occupant comfort and equipment wear. The standardization has potential benefits for controls installation and maintenance.

However, for Guideline 36 to be successful, its use requires a rigorous approach to customization, installation, commissioning, operation, monitoring and diagnostics. This will require a substantial fraction of the relevant work force, including designers, installers, commissioning providers, building operators and service technicians, to understand the new, more complex strategies and sequences of operation in Guideline 36 so that the pre-programmed sequences do become “black boxes”. In particular, there is a belief among some of the more experienced commissioning providers and building operators and energy managers that more complex control strategies and sequences require monitoring, continuous commissioning and automated fault detection and diagnosis (see, for example, [here](#)). These methods have been developed and demonstrated but have not, typically, been implemented at scale. These issues need to be addressed in Title 24 to enable Guideline 36 sequences to improve on conventional systems in practice.

The *ctrl-flow* tool, under development by Lawrence Berkeley National Laboratory, Taylor Engineers, Building Intelligence Group and others¹ aids configuration of the sequence of operations. The tool allows the user to select the appropriate sections of the sequences for VAV systems and zone equipment interactively.

Title 24 adoption of Guideline 36, and support for ancillary tools and training, would spur the market for advanced controls. In particular, it would encourage more comprehensive adoption of Guideline 36 libraries and incentivize technical support for the use of these libraries by a greater fraction of control system vendors that serve the medium and large commercial building subsectors.

As noted above, the sequences of operation in Guideline 36 make greater demands on the knowledge and abilities of installers and of operations and maintenance staff. As noted in the CASE Report, the knowledge deficiencies need to be addressed through training at scale, starting with the utilities’ energy training centers, and this training needs to be mandated, potentially through a certification scheme. However, increasing the ability levels in the workforce will require hiring more capable and better trained people, who will typically command higher salaries. This issue may be outside the scope of Title 24 but can be expected to have a significant impact on the success of Guideline 36 and of other technical advances.

The bottom line is that the Title 24 2025 Update needs to require the use of ASHRAE Guideline 36 control sequences, supplemented by tools and training, to achieve improved building operation, reduced energy use, and occupant comfort

¹ Lawrence Berkeley National Laboratory, Taylor Engineers, Building Intelligence Group, Modelon, DEPT and Solamen