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**Additional JCEEP Comments on Improving Energy Compliance of
Central Air-Conditioning & Heat Pump Systems**

Additional submitted attachment is included below.

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October 18, 2018

Via CEC Electronic Commenting System

California Energy Commission
Docket Unit, MS-4
Docket No. 2017-EBP-01
1516 Ninth Street
Sacramento, CA 95814

Re: Additional JCEEP Comments on Improving Energy Compliance of
Central Air-Conditioning and Heat Pump Systems; Docket 2017-EBP-01

Dear Commission Staff:

I am writing on behalf of the Joint Committee for Energy Efficiency and Policy (“JCEEP”) to follow up on our July 31, 2018 comments and to respond to comments submitted by other stakeholders. There is strong consensus among stakeholders that substantially greater permit and code compliance than what is currently being achieved is needed to realize energy savings from HVAC systems. While proposals for customer education, streamlined permitting processes, workforce and contractor training, and increased enforcement are all important strategies for improving compliance, none of these will meaningfully address the fact that up to 90% of HVAC retrofit work is being performed without permits and without any code compliance oversight. For the other strategies to be effective, an HVAC sale and permit registry is necessary in order to facilitate enforcement and ensure that every central air-conditioning and heat pump system sold in California can be tracked to verification that a permit was issued, inspection was passed, and all relevant Title 24 compliance documentation was completed and filed. A sales registry is the only way to effectively change compliance rates from less than 10% to over 90%.

4003-038j

I. Interest of the Joint Committee for Energy Efficiency and Policy

JCEEP is an advocacy organization that represents the California sheet metal workers' local unions and over 25,000 technicians working for over 600 contractors throughout California. JCEEP's mission is to promote responsible environmental and indoor air quality and energy policy in California as it pertains to and impacts the HVAC industry. JCEEP's members have over 15 training facilities throughout the state and thousands of workers being trained daily in HVAC specialties, such as testing, adjusting and balancing, commissioning, green building design, energy efficiency, and indoor air quality.

JCEEP was formed on the premise that air handling systems need to be designed, built and maintained not just to manage comfort levels of indoor air, but also to protect against health threats and to ensure energy efficiency. The sheet metal workers' unions have long advocated for and participated in the development of building standards and workforce training for the installation of mechanical systems to safeguard the public health, achieve energy efficiency and ensure performance and durability of systems. With this experience comes the perspective that energy efficiency standards must not be looked at in a vacuum. Without worker education and training to ensure quality installation, energy efficient HVAC systems will not provide the energy savings expected.

II. Permit Avoidance and Improper HVAC Installation Are Pervasive and Are a Barrier to Meeting California's Energy Efficiency and Greenhouse Gas Reduction Goals

As noted in our July 31, 2018 letter, proper HVAC installation is critical for maximizing energy savings and reducing greenhouse gas emissions. The efficiency of heating and air conditioning equipment is highly dependent on the quality of its installation. Studies show that poor quality installation of HVAC systems has been found to result in a 20-30 percent increase in energy use.¹ Moreover, poor quality installation is pervasive. The California Energy Commission found up to 85% of replacement HVAC systems are installed incorrectly.² It does no good to increase

¹ California Energy Commission, Strategic Plan to Reduce the Energy Impact of Air Conditioners (June 2008), CEC-400-2008-010 at p. 5 (poor quality installation of cooling systems results in a 20-30 percent increase in energy use).

² *Id.*

efficiency requirements for HVAC equipment if these systems are not being installed correctly.

The high percentage of poor quality HVAC installation can be directly correlated with the lack of permit compliance. It has been estimated that up to 90% of HVAC retrofit work does not comply with permit, inspection and Title 24 compliance documentation requirements. A 2008 Energy Commission report found that permits are obtained for residential HVAC replacements as little as 10% of the time, and that Title 24 quality installation requirements complied with by contractors as little as 15% of the time.³ Without permits, there is no inspection, no Title 24 compliance documentation, and no Title 24 performance test compliance.

The 2008 Energy Commission report estimated that if these projects had complied with permit and inspection requirements, California peak energy demand each year could be decreased by 130 megawatts.⁴ The CPUC recently revisited the estimate of the rate of permitting and concluded that permits are obtained for less than 8% of residential HVAC replacements. The CPUC also found that the number of replacement projects is now about 1 million per year, which is nearly triple what the 2008 report estimated.⁵ **This means there could be 400 megawatts in energy savings just from increasing HVAC compliance.**

In addition, HVAC systems consume the most energy at times when peak energy demand is highest. In California, this means requiring the firing of natural gas peaking plants, which are the costliest and most inefficient power plants. Because these peak periods rely on natural gas to meet the additional demand rather than renewable energy, this additional peak period demand results in much greater greenhouse gas emissions per watt than during non-peak periods.

³ California Energy Commission, Strategic Plan to Reduce the Energy Impact of Air Conditioners (June 2008), CEC-400-2008-010 at p. 17, 31.

⁴ California Energy Commission, Strategic Plan to Reduce the Energy Impact of Air Conditioners (June 2008), CEC-400-2008-010 at p. 31.

⁵ See California Energy Commission, Request for Proposals: HVAC Equipment Installation Compliance Tracking System Business Needs and Functional Requirements, RFP-16-403 (Feb. 2017) at p. 10

Contractors who are willing to do work without a permit can perform faulty work and underbid competitors. Contractors that perform unpermitted work are more likely to be unlicensed, use low wage, untrained workers, and to skip acceptance testing or commissioning of systems. If permits are not pulled, then local building departments can't enforce Title 24 Energy Code standards.

Permit compliance, however, is not sufficient on its own to ensure better installation outcomes. Even permitted jobs often fall well short of code compliance. Accordingly, permit compliance strategies need to be aligned with workforce standard and compliance documentation requirements to ensure that when permits are pulled, better code compliance and installation outcomes result. ***But without permit compliance, these other strategies cannot be enforced.*** If a permit is not pulled, you can't enforce installation and acceptance testing requirements.

III. Improper HVAC Installation Leads to Public Health Impacts

Increased permit compliance along with other compliance strategies can also increase public health outcomes associated with HVAC installations. Improper HVAC installation and duct work increases indoor air pollution and exposure to bio-toxins that can lead to public health impacts. Proper installation of ducts improves proper air distribution and filtration. Improper installation can draw in contaminants, such as carbon monoxide, rodent waste, and molds. The additional peak energy demand created by poorly installed HVAC installations also raises environmental justice issues. As discussed above, this additional peak energy demand is met through the use of natural gas peaking plants. Many of these plants have been sited near disadvantaged communities who bear the brunt of health and environmental impacts from these plants. Increasing energy savings during peak times can decrease impacts in these disadvantaged communities.

IV. An HVAC Sales and Permit Registry Is Needed to Meaningfully Address Low Permit and Title 24 Compliance Percentages

The 2016 Existing Building Energy Efficiency Action Plan Update states that “[a]ddressing the application, compliance and enforcement of building standards in existing buildings is a high priority” and calls for improving retrofit compliance with permitting and code requirements to 90% by 2020. To meet this compliance goal, the 2016 Existing Building Energy Efficiency Action Plan recommends development of an HVAC equipment sale registry that can be used to track HVAC

sales to ensure that permit requirements are being followed for all HVAC installations. JCEEP strongly supports development of such a registry.

A sales and permit registry for HVAC systems will allow for the CEC to track HVAC sales to issued permits and submitted Title 24 compliance testing, including HERS testing and Acceptance testing documentation. HVACs sold without corresponding permits, inspections and compliance documentation can be investigated, so that unpermitted work can be caught, and responsible parties held accountable. Without such a system, there is no viable way for the CSLB or local building departments to identify HVAC systems being installed without a permit. The CEC has already set forth its intention to develop a registry for Title 24 compliance documentation. By adding an HVAC sales tracking component, such a registry will become a powerful compliance and enforcement tool. Moreover, the cost of such a registry system will be offset by the approximately 400 megawatts a year in energy savings.

The current lack of permit enforcement creates a disincentive for contractors to pull permits and comply with Title 24 compliance documentation requirements. When approximately 90% of all HVAC retrofits are installed without permits, it becomes almost impossible for contractors that pull permits to win bids. A registry will flip this economic disincentive around by making it substantially more difficult and risky to perform HVAC retrofits without permits. Contractors need to know that they will be caught if they do not pull a permit, and that punishment will follow. Only then will contractors that pull permits and comply with Title 24 HERS and acceptance testing requirements be able to compete for these jobs.

This will lead to higher quality work with more skilled workers since contractors know their work will be inspected and tested. More homes will be compliant, reducing energy consumption and greenhouse gas emissions and increasing the overall impact of Title 24 regulations. Indoor air pollution will decrease, leading to healthier homes for customers.

V. Other Options to Address Compliance Require a Registry to be Effective

During this proceeding, stakeholders have suggested numerous other proposals to increase compliance. While the JCEEP supports most of these other suggestions, none of them are sufficient to flip the current 10% permit compliance

rate to a 90 or 95% compliance rate without also adopting a sales and permit registry. Moreover, most of these other suggestions have already been attempted in one form or another with only limited results.

A. Online Permitting

Numerous stakeholders have suggested that streamlining the permit process could increase compliance. Permitting can be expensive and time consuming – creating an additional barrier to compliance. Stakeholders have noted that waiting for permits can take up to four hours, increasing costs to customers for contractor hours billed. An online system could streamline this process to minutes, saving time and money. JCEEP supports the proposal that the CEC work with contractors and local building departments to develop an online system that works for all stakeholders. Such a system could also facilitate tracking HVAC sales to permits.

There is no evidence, however, that online permitting alone, would significantly increase the number of contractors who pull permits. Unpermitted work will continue to be less expensive than pulling a permit, even if it is online. Without a registry system to ensure unpermitted work is caught, making permits easier will not fix the noncompliance issue.

B. Contractor and Workforce Training and Continuing Education

Some stakeholders have suggested that additional education of contractors and workers would increase permit compliance. No basis is provided for this assumption. Contractors do not receive a license without being taught and tested on permit requirements. Moreover, un-licensed contractors are not allowed to pull a permit since they are not authorized to do this work. Furthermore, no amount of education will change the economics of HVAC retrofit bidding which penalizes contractors that increase their costs by investing in worker training and complying with permit and Title 24 compliance documentation requirements. Simply increasing training will not fix the problem of being underbid by contractors that do not follow permit and compliance documentation requirements.

The CEC can provide new training and guidance on advances in HVAC technology and system design, but without a sales registry, these trainings will not fix the noncompliance issue.

C. Increased Penalties

Some stakeholders have suggested that the lack of permit compliance could be addressed simply by increasing penalties. Currently, there is a general sense that penalties for failing to pull a permit are lax. Even when a contractor faces the maximum penalty of having its license pulled, contractors simply form new entities with a different license.

More striking, however, is the lack of perceived need to pull a permit due to nonenforcement overall. When 90% of HVAC retrofits are not pulling permits, the issue is not the size of the penalty, but rather is the low likelihood of being caught. The strictest penalty scheme possible will have no effect if there are no effective means to enforce permitting. Before considering modifying penalties, a sales registry is needed to increase permitting enforcement so that contractors know they are being watched and that failing to pull a permit has consequences.

D. Increased Local Government Enforcement

Some stakeholders have suggested that the CEC could address the lack of permit compliance by assisting local governments with enforcement efforts. It is unclear, however, what the CEC could do to assist local enforcement other than create an HVAC sales and permit registry. Neither the CEC nor local agencies have the resources to patrol for HVAC installations and ask for permits. Nor is this practical since most of this work is on private property, often in back yards or indoors where the work is not readily discernible. A sales registry that can provide that information through data analysis would be much more effective, feasible and practical. The CEC must work to improve enforcement but cannot do so without developing a system to ensure that those who perform unpermitted work will be caught.

E. Customer Education

Some stakeholders have suggested that the lack of permit compliance could be addressed by making customers aware of the value of pulling permits, hiring skilled workers, and the value of proper installation. While contractors should communicate to customers that doing HVAC work the correct way will save them money over the long-term, the idea that the 90% rate of permit non-compliance can be addressed by customer education lacks validity or support.

Customers can ask for work to be done properly but do not have the knowledge or means to enforce this. They necessarily rely on the representations of their contractors as to what must be done and as to the quality of the work they perform. Contractors that don't pull permits will continue to tell customers that they will do the same quality work with or without a permit. Moreover, most customers are more concerned about short term costs than long term operational costs. Education alone will not change that calculus.

Furthermore, educating HVAC customers is a highly inefficient method of addressing this problem. Most customers only replace their HVAC systems every 15-20 years. Given the length of time between HVAC sales for each customer, an education campaign would have to be in place for decades to touch every customer in California and there is little indication that it would have any meaningful impact on permit compliance rates.

VI. Conclusion

Flipping the rates of compliance by 2020 is a monumental but critical effort for the CEC to take on. Up to 90% of HVAC retrofits are installed without any permit and Title 24 compliance documentation. The only viable way to address this issue is through an equipment registry system. Such a system will streamline enforcement and Title 24 compliance documentation. Moreover, its costs will be greatly outweighed by the hundreds of megawatts a year in energy savings that will result.

An HVAC registry will decrease energy consumption and greenhouse gas emissions, improve public health, and save consumers money. While the other efforts identified by stakeholders in this process are also needed, none have the capacity to flip compliance rates from 10% to 95%. Each of these other efforts will only be effective when combined with an HVAC sales and permit registry.

October 18, 2018
Page 9

JCEEP thanks the CEC for the opportunity to submit these comments.

Sincerely,

A handwritten signature in blue ink, appearing to read 'KJ', with a long horizontal flourish extending to the right.

Kyle Jones
Counsel for JCEEP

KCJ:ljl

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