CPUC Comments on SWSV001-02 Duct Seal, Residential

Lead PA: PGE

Workpaper Submittal Date: 01/08/21

CPUC Comments Date: 02/04/2021

Please note responses to comments in the table below, revise workpaper, and upload the entire package to the WPA. These comments do not require a change to the workpaper version number. This workpaper has been approved and the revisions below are non-material. The revised workpaper will replace the one current on .net. If needed, please reach out to Workpaper Review Team to set up a call to discuss.

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| CPUC Comment | PA Response |
| Please edit Workpaper Title listed on the Cover Sheet to match the title of the WP as shown on the WP document | Done, Corrected WP title in the Cover Sheet. |
| On page 4 update reference 6 to the current 2019 CA T24 code and update the bullets to be in alignment with the 2019 code. Note that the duct sealing requirement for residential new construction or duct system replacement is now 5% instead of 6%. | Done, Updated to CA T24 2019 using 5% instead of 6% and the footnote. |
| In Code Requirements section on page 4, specify that the first bullet requirement refers to alterations and extensions of existing duct work. | Added “For alterations and extensions of existing duct work….” |
| On page 5 in the first paragraph under *Eligible Products* the third sentence should read: “If the Test-in shows that duct ***leakage*** exceeds minimum tightness specifications, and the technicians correct the situation, then a second test or “test-out” must be conducted to verify proper duct tightness was achieved.” | Done, Replaced the third sentence. |
| On page 5 in the second paragraph under *Eligible Products*, the second sentence needs re-writing. “The duct sealing can be performed while the system is pressurized using a duct blaster fan to ensure the target leakage thresholds are achieved and to document via photos and test results the work is performed on an existing system.” Manual duct sealing should never be performed while the duct system is pressurized using a duct blaster. Documentation of the system being existing via photos and test results seems to be a separate idea, maybe use a separate sentence. | Revised “The testing can be performed while the system is pressurized using a duct blower fan to ensure the target leakage thresholds are achieved. Duct sealing shall be performed on the unpressurized system. After installation, testing shall be performed to ensure the target leakage thresholds are achieved. Photos and test results can serve as documentation that the work was performed on an existing HVAC system. ” |
| On page 5 in the third paragraph under *Eligible Products*, include a sentence explaining why QM treatments are part of this workpaper. | Revised “Programs often bundle Quality Maintenance (QM) measures. The following prerequisites must be met before the QM treatments, such as airflow adjustments, can be implemented to ensure an HVAC system is running optimally.” The original paragraph is in the other SW QM workpapers and was taken from SCE RQM workpaper in the past since all these measures were bundled. Implementers tend to bundle measures on site and the intention was to ensure they do it in the right order and on a system that qualify. Statewide agreement to remove bullet #5 “The customer must sign a QM Service Agreement.” |
| On page 6 update the reference to CA T24 from 2016 to 2019. | Done, updated to 2019 |
| Please clarify the following in the measure case table:   1. Why is the *high to low* and *med to low* have the same values? 2. What is the high, med, and low referring to? Leakage rate?    1. Include a more detailed explanation in the narrative to include the above | 1. Because the measure scenario is the same for both; i.e., both measures go to a “low” leakage scenario (defined as 12% leakage for SFM/MFM, and 15% leakage for DMO). The Base Case Description section identifies the baseline, as-found leakage conditions separately. 2. Yes, total supply air leakage. The baseline for the “high” leakage rate of the existing duct of 40% leakage for SFm/MFm, and 35% leakage for DMo. The “medium” leakage rate of the existing duct is 24% leakage for SFm/MFm and 25% leakage for DMo. |
| The normalized value is *Cooling Cap-Tons* but the measure is also eligible for *no AC - furnace only*.  What are the cooling tons for a heating only system?   * 1. Rated airflow might be a better metric.   2. Or at least an explanation on how we get the cooling cap tons for a heating only system | Not apply per Rachel Murray (email communication, November 20, 2020). No AC - furnace only (rNCGF) to use the DEER2021-version records from both the Measure and EnergyImpact tables of PEAR/ExAnte databases. |
| Please spell out all terms before using the acronym. | Done with all the acronyms. |
| For the BW measures the vintage is assigned as Ex in this workpaper, but Old may be more appropriate given that pre-2006 buildings will be targeted and the majority of those will fall into the Old category.  Additionally, the Duct sealing EM&V report published 4/20/2020 using found electric RR=98% and gas RR=130% using billing data methods. This indicates that deemed savings estimates were low for the 2018 PY. Given that future programs will target older buildings for the BW duct sealing measure the increase to deemed savings using the Old building vintage may be appropriate.  This change would only be applicable to SFm and MFm duct sealing with MAT=BW. The average Old vintage unit energy savings in these categories is 8% higher than Ex for electric savings and 27% higher for gas savings. | For the SFm and MFm building type measures, we have updated the savings to use Old vintage DEER impacts for the measures using the BW MAT.  We have also included the Old vintage savings for the DMo building type measures so that savings can be used by PAs when they track the building vintage for DMo. We have included that DMo Old vintages are before 1995, while non-mobile home is before 2002.  We have also added in the details of vintages to the workpaper document. |
| Resolution E-5802 specifies certain materials that must be used for duct sealing. Please specify those materials in this workpaper. | We have added the following language to address this:  “Per Resolution E-5082 “duct connections must not be sealed with duct tape (cloth-backed rubber adhesive tapes). Mastic or aerosol sealant materials are preferred, and butyl tape can be used where mastic or aerosol are impractical.” |
| The cost of the installed measure at approximately $100 per ton of cooling would not include the cost of duct blaster testing. However, the Eligible Products section seems to say that a duct test is required to identify duct sealing measures. Please clarify. | Original costs from WO017 include both duct testing and sealing ( <http://www.calmac.org/publications/2010-2012_WO017_Ex_Ante_Measure_Cost_Study_-_Final_Report.pdf>).    During duct sealing work the duct blaster is attached to find where the leaks are and remain in place during the sealing process to constantly measure leakage. |
| The workpaper does not specify which duct testing procedure should be used for the “test in” and “test out.” There are many testing procedures such as “Total leakage”, “Leakage to outside”, and “Delta Q” testing procedures all of which produce different results with varying degrees of accuracy in measuring system leakage. If any/all of these tests are sufficient to purpose for this workpaper, this should be stated. | We have added the following language to address this:  “Any test compliant with the Title 24 2019 Residential Compliance Manual can be used to justify duct leakage for this measure, such as the total leakage or the leakage to outside tests.” |
| The data collection requirements section should specify that if duct testing is performed then the type of test must be documented. Also, if duct testing is required then the data should be required to be collected. | We have added the following language to address this:  “In order to verify compliance with measure requirements and the correct measure selection, the following information must be collected for each installation:   * Building information such as: building type, vintage (year), and climate zone * HVAC System type, capacity in tons (for systems with cooling) or kBTUh (for systems with no heating), make and model number * Duct testing information include:   + Type of duct test conducted   + Pre and post install duct leakage rate percentages   + Duct sealing material used” |
| The residential duct sealing NTGRs were updated to 95% in Resolution E-5082 based on the most recent Impact Evaluation Report HVAC Sector – Program Year 2018. Please update NTGR accordingly. | This workpaper is for PY 2021.  The NTG Res-sAll-mHVAC-DuctSeal (0.95) has a start of 2022.  We will continue to use current NTG of Res-Default>2 (0.55) |
| Update the GSIA to the default value of 1.0 using GSIA ID “Def-GSIA”. This is supported by duct sealing being a direct install measure with expected installation rate of 1.0. The default GSIA is supported by the recent 2018 HVAC EM&V Report that found GRR=95%. The evaluation methodology was billing analysis which captures installation rate and realization rate in the GRR value. | We have updated GSIA to “Def-GSIA” in the workpaper document, EAD, and MeasureDataSpec based on this comment.  The DEER GSIA definition for Res-DuctSeal-All needs update. |