CPUC Comments on SWWP005-02 Enhanced VFD on Irrigation Pump

Lead PA: PGE

Workpaper Submittal Date: 12/21/2020

CPUC Review Date: 2/25/2021

Please note responses to comments in the table below, revise workpaper, and upload the entire package to the WPA. If needed, please reach out to Deemed Review Team to set up a call to discuss.

|  |  |
| --- | --- |
| CPUC Comment | PA Response |
| CPUC reviewers note that the assumed annual operating hours (2,368) is based on a 2011 report (ITRC Report No. R 11-005), as shown on page 8 of the workpaper. However, CPUC reviewer experience with observed operating hours for a sample of pumps, as reported in Section 5 of the PY2018 Small/Medium Commercial evaluation report, indicates that this is may be a higher than realistic estimate. The evaluation-based source is from (largely dedicated) AMI meters serving the pumps that were evaluated, which is a reliable and accurate source of operating hours, given relatively long pump runtimes and 15-minute interval data. The workpaper team should take this data source under consideration for workpaper updates. Additionally, a PY2019 report will be available in spring of 2021 providing additional annual operating hour findings for a representative sample of agricultural pumps with VFDs.  Furthermore, it is recommended that other potential data sources for operating hours be researched, including potentially DEER for agricultural pumping measures or other workpapers for agricultural pumping measures. In fact, the savings calculations for the Tier 1 pump VFD workpaper (SWWP002-02) are based on a database of pumps which includes pump runtime in Attachment A to the workpaper. The workpaper team should triangulate using other available sources in order to further vet the 2,368-hour assumption. | Resolution E-5082 recommended a reduction on the NTG of 50% in response to the PY2018 results. The updates included in this revision modified the previous NTG value from 0.6 to 0.3, this change will bring the saving claims by this measure close to the recommendation included in PY2018.  Using AMI meter data to evaluate hours of operation and to determine energy savings should be consider for future updates, however, enough data needs to be collected to validate this approach.  Other agricultural pump measures were revised to determined if the hours of operation assumption (2,368-hour) needs to be updated. Workpaper SWWP002-02 shows an average value of 2,112 hours with a standard deviation equal to 931, and a range of 550 – 5460. These two values are relatively close and since the original database used to determine the hours for SWWP005 used a larger sample, we recommend to keep the 2,368 Hours ‘til a new workpaper revision using the AMI data can be developed. |
| CPUC reviewers note that for retrofit VFD installations the assumed pump motor EUL is 15 years, based on a 2008 CPUC Excel summary source; refer to page 12 of the workpaper. It is notable that for retrofit application this value governs the EUL of the VFD, based on an assumed RUL of the pump motor, resulting in a 5-year EUL for retrofit VFD installations. However, this value of 15 years is considerably higher than agricultural pump EULs indicated in DEER – 12.7 years for a centrifugal booster pump, 8.3 years for a submersible booster pump, 6.5 years for a submersible well pump, 9.3 years for a turbine booster pump and 6.8 years for a turbine well pump. CPUC evaluator experience has shown that most agricultural irrigation pumps are vertical turbine pumps.  It is recommended that the workpaper team base the pump motor EUL on a relevant DEER source. | SWWP005 involves adding a new VFD to a motor; it doesn’t include any pump retrofit or upgrades, which we believe is the purpose of the EUL codes:  PumpCentBstr  PumpSubBstr  PumpSubWell  PumpTurbBstr  PumpTurbWell |

Please take the following additional input into consideration for use in future workpaper updates. These comments do not represent any immediate concern, and no workpaper response or follow-through is expected at this time.

|  |  |
| --- | --- |
| CPUC Comment | PA Response |
| CPUC reviewers believe that future workpaper updates can benefit from results and methods used to derived gross impacts under the Small/Medium Commercial evaluations for PY2018 and PY2019. Roughly 40-50 pumps were modeled in each years’ evaluation. These results can be mined for use in workpaper updates.  Furthermore, the evaluation gross impact modeling approach makes use of models that are calibrated using AMI data. AMI data, often dedicated to a particular pump/utility account, ensures that the resulting models accurately account for actual pump runtime and the pump load distribution across pump speeds. This results in highly accurate results/models. It might be possible for the utilities to build upon the evaluation dataset using a similar modeling approach.  CPUC reviewers find this to be preferential to ongoing use of legacy custom program and new construction program ex ante impact calculations. For example, it is unclear if those estimates were similarly calibrated.  The evaluation also presents various sample point metrics that might be mined for use in developing ex ante savings values for the workpapers – such as annual pump run hours, peak coincidence factors, crop type, acres served, etc. | We agree with this recommendation. There is enough information from previous projects to make these necessary adjustments to future version of this measure. The use of AMI data to determine energy savings and runtime hours is of a particular value to this measure |
| CPUC reviewers believe that AMI data should also be considered as a valuable tool for project screening for eligibility for retrofit applications, in order to ensure that pumps operate in excess of 1,000 hours per year, pumps operate at substantially reduced flows, and pumps don’t run uncontrolled prior to VFD retrofit. | Concur |
| CPUC reviewers believe that prior to future workpaper updates the ISP base case should be explored once more. It is notable that VFDs provide a host of non-energy benefits that can lead to adoption, even absent program influence: telemetry, soft-start, maintaining constant pressure in the manifold and distribution lines, and reduced pump maintenance and extended life.  Importantly, ISP study updates should differentiate base case by pump size and pump type (booster vs. well). CPUC reviewers would want to participate in the study design and analytic approach. | We welcome this recommendation and the interest of CPUC to participate on the design of the ISP study. We should consider this measure for the 2022 ISP Studies |