Comment	Commenter	Commission Staff Response
Timing and Effective Dates of Updates		
According to the Rolling Portfolio schedule, DEER updates based on new information (such as EM&V data) become effective on January 1st of the full year after the new version is approved. This explains why the "Updates Based on Available Evaluation Reports and Findings" are listed as a DEER 2019 update in Table 1. The only retroactive changes allowed by Commission policy are "corrections of typographical and clerical errors, and other obvious, inadvertent errors and omissions." Therefore, the addition of new measures (e.g., Variable Refrigerant Flow) and update of measure savings driven by newer sources of data should be a DEER 2019 update. This would help with prioritizing tasks and reduce the possibility of errors in this update.	NRDC	These comments generally recommend an effective date of all revisions to be no earlier than January 1, 2018, including revisions to establish existing conditions baselines (ECB) required by D.16-08-019. However, D.16-08-019 directs the baseline changes be effective 1/1/2017 and Resolution E-4818 directs DEER updates to accommodate the baseline changes. Staff emphasizes that the DEER changes effective 1/1/2017 are those related to establishing ECBs for primarily accelerated replacement measures that were previously not a focus of DEER. For some measures, ECBs previously did not exist in DEER. Commission staff notes that PAs have been working toward program changes for 2017 to revise savings estimates to be based on ECBs. Therefore staff considers the same types of updates in DEER as necessary for 2017.
Commission Staff should consider the rolling portfolio cycle framework and the timing of the DEER2017 updates regarding the adoption of existing baselines based on D.16-08-019 and Resolution E-4818. Because the memo does not specify when the updates for DEER2017 will take effect and based on the DEER updates undertaken in 2016, SoCalGas assumes that DEER2017 updates are being proposed to be applied mid-cycle or retroactively for savings claimed in 2017. D.15-10-028 provided the DEER updates framework where updates such as new savings estimates, including baseline assumptions, were intended to flow into the program development process to provide new savings estimates informing where a current program may need to shift to continue to capture savings cost effectively. Furthermore D.15-10-028 affirms that DEER values will generally change only once per year, there will be a delay between when changes are announced and when changes are effective so that market participants have time to incorporate changes into their activities, and that there will be limited exceptions to the general rule of no mid-year changes. Updates based on the adoption of the existing conditions baseline through D.16-08-019 and E-4818 should not be considered an exception, reserved for correction of errors, and	SoCalGas	

Comment	Commenter	Commission Staff Response
should be deferred for adoption no earlier than 1/1/2018 for consideration in the on-going planning efforts for the 2018 program year.		
SCE believes that the Commission should consider program financial risk, extensive systems impacts, and potential for reporting errors in its proposed DEER2017 and DEER2018 changes1. The timing of DEER2017 and DEER2018 changes impact claimable savings for both planned and live program offerings that draw on DEER values. Proposed dual net-to-gross (NTG) values for different baselines, along with proposed investigations into altering remaining useful life (RUL) values and methods, would also require adding new complexity to multiple SCE systems responsible for cataloging of measures, the savings claim values of said measures, and the reporting of program savings. These systems changes are not currently projected to be able to be completed by the end of 2017. Performing changes to multiple systems in a compressed timeframe while also requiring a retroactive application of DEER2017 changes will necessitate a manual reporting process that is yet to be determined. Any such manual process, which will require future statewide PA and CPUC staff meetings to determine, is likely to be dependent on work-arounds instead of robust systems update and integration that would limit error potential. SCE understands that AB 802 and Resolution 4818 are the primary drivers behind proposed DEER2017 and DEER2018 changes in the Memo. Commission Staff now has the opportunity to make a key determination on how to best implement these changes. To limit program financial risk, systems impacts, and potential for reporting error, Commission Staff should delay the effective date of proposed DEER2017 changes. Assuming that a final version of DEER containing proposed 2017 changes is not available until August 10, 2017, SCE believes the more productive and lower-risk option would entail incorporating most4 proposed DEER2017, DEER2018, and DEER2019 updates into a combined work paper update process spanning approximately August 2017 through October 2017. DEER2017 and DEER2018, along with related work papers submitted and approved, would be effective within programs starting 1/1/185; DEER2019 and its submitted and approved work papers would be effective	SCE	

Comment	Commenter	Commission Staff Response
within programs starting 1/1/19. SCE's proposed revision of effective dates would be both prudent and aligned with prior precedent set in D.15-10-028, which opted against Commission Staff recommendation to retroactively apply proposed DEER2015 changes6. The same nine-month logic that rejected potential retroactive application of DEER2015 should be embraced by Commission Staff when it comes to proposed DEER2017 changes. SCE recognizes proposed changes to DEER also impact custom project activity; in our proposed alternative, the intention would be to have any new impacted custom activity follow the same effective dates within programs as SCE-proposed DEER changes by year. D.15-10-028, p. 116, states: "PAs have already made and implemented 2015 portfolios, customers have undertaken investment decisions; implementers have prepared voluminous paperwork, all in reliance on older DEER numbers. We will not reopen nine months' work by the numerous actors involved in ratepayer-funded EE programs, as would be necessary were we to make changes effective this year."		
PG&E recommends that updates to comply with E-4818 Baseline Resolution be effective in DEER2018, as the proposed updates are inconsistent with Commission policy. Updating final DEER2017 values in the fall of 2017 would result in retroactive implementation of DEER values, and is inconsistent with Commission policy on DEER updates in the Rolling Portfolio Cycle Schedule established in D.15-10-028, Appendix 6. D.15-10-028 states: "With the "bus stop" approach we adopt here, DEER values will generally change only once per year, and there will be a delay between when changes are announced and when changes are effective so that market participants have time to incorporate changes into their activities," (pg 80). If the savings values change at the end of the year, they will not match what has been filed thus far, nor will they align with incentives that have been paid based on the pre-approved savings. These changes would impact our cost effectiveness long after programs and incentives	PG&E	

Comment	Commenter	Commission Staff Response
were planned with no opportunity to adjust. This is why the bus stop principle is so important. Therefore, PG&E recommends that updates apply prospectively to DEER2018.		
The Commission Staff should make clear whether this DEER update will apply retroactively or going forward. SDG&E recommends that it apply going forward starting with 2019 planning, implementation and reporting, since Resolution (Res) 4795 has already approved the 2017 and 2018 DEER updates for 2017 savings claims and 2018 planning, implementation and reporting. Res 4795 Ordering Paragraph 2 states: Pacific Gas and Electric Company (PG&E), Southern California Electric Company (SCE), Southern California Gas Company (SoCalGas), and San Diego Gas & Electric (SDG&E), the approved Regional Energy Networks (BayREN and SoCalREN) and Marin Clean Energy (MCE) must use the updated assumptions, methods and values for 2017 savings claims and 2018 planning, implementation and reporting.	SDG&E	
A second update area left unmentioned in this Memo is alignment with the 2018 Potential and Goals Study. It is important to recognize the interdependency between DEER updates and this upcoming iteration of the Potential and Goals Study in order to ensure that market potential aligns with current and near-future utility program reality. If, for example, the completion of DEER updates does not allow for incorporating them into the 2018 Potential and Goals Study, then significant misalignment could persist until up to 2020. Staff should work to supply whatever final, draft, or "reasonably likely to occur" versions of DEER available to the authors of the 2018 Potential and Goal Study as soon as needed in order for them to either a) update the forthcoming 2018 edition; or b) perform a simplified "off year" update in 2019.	SCE	Staff acknowledges that the 2018 Goals and Potential is based on a previously adopted version of DEER that does not reflect DEER updates for existing conditions baselines. This mismatch will be addressed in the next Goals and Potential Study update as the rolling portfolio framework sets the effective date for the annual DEER updates into the future, which provides a timeframe for the next Goals and Potential Study to consider the most recent DEER updates.
Net-to-Gross for Early Retirement Measures		
Reconsider proposed NTG methodology for updates to address direction	NRDC	First, Commission staff acknowledges that the original

Comment	Commenter	Commission Staff Response
provided by E-4818: The update plan states that the DEER update will consider developing two separate NTG values for (1) segment of measure savings from Pre Existing conditions to code, and (2) for measure savings from code to efficient. NRDC assumes that this proposal arises from CPUC concern that AB802 implementation may lead to an increase in programmatic free-ridership. NRDC offers the following considerations: • Participant survey based NTG attribution estimates work best in aggregate. To subdivide a measure's saving streams and develop NTG for each stream would be an analysis exercise in false precision. • CPUC staff is working with program administrators on a measure-specific baseline list. This joint effort will help target energy savings truly stranded below code, which was the intent of AB802. Developing a program level NTG ratio before the measure baseline list is completed; an a-priori program level NTG ratio should only be developed through coordination with this process.		wording in the scoping memo may be confusing. Commission staff clarifies that the objective of this review is to identify if NTG adjustments are warranted for the "to-code" savings, that is, the savings due to the energy use difference between removed equipment and the code or industry standard practice efficiency level. The focus of this review will be to identify additional levels of free-ridership associated with the program influence over the customer's decision to replace equipment or a system prior to the end of its useful life. Commenters generally argue that any updates should be deferred and developed in coordination with the various working groups set up to implement legislative requirements of AB802 and Commission direction included in D.16-08-019 and that any outcomes of those efforts should be applied prospectively. Commission staff disagrees and notes that NTG updates have been under the purview of DEER updates since 2005. Commission staff also disagrees with the recommendation that all NTG updates should be applied prospectively. Any available information that suggests different levels of free-ridership for to-code or to-ISP savings should be examined and applied in DEER updates as soon as possible. Commission staff notes that there are at least two areas of measures where this information is available. The last three downstream lighting evaluations have examined program influence over accelerated replacement decisions. Additionally, the most recent
SoCalGas questions any potential methodology Commission Staff takes in their review to determine NTG values for the two different savings periods given the rigor of evaluation required to determine/update measure specific NTG values. SoCalGas recommends that review of NTG values and the development of dual NTG values be deferred as Resolution E-4818 does not direct the use of this methodology for dual baseline savings calculations. And prior to developing different NTG values for the two different savings values, SoCalGas suggests considering what kind of procedural changes must take place in the current policy and Reporting to accommodate dual-NTGR implementation for the cost-effective ness assessment and the performance of EE measures and programs. SoCalGas also requests clarification on the definition of first and second period savings given the following statement in the DEER Scoping Memo, "as the number of measures with savings estimated above existing baselines increases, the likelihood increases that the net-to-gross for the "to-code", or first period savings, is different than the second, or above code savings." From the Energy	SoCalGas	

Comment	Commenter	Commission Staff Response
Efficiency policy manual, it is SoCalGas' understanding that first period savings is the full reduced energy use between the measure and the pre-existing condition, and second period savings is the difference between the measure and code/regulations or industry standard practice.		ESPI payment resolution included an analysis of program influence over early retirement claims for package HVAC equipment. Commission staff appreciates the concerns over possible changes to reporting formats or cost-effectiveness calculation methods implied by this type of NTG update and will work internally with the data and reporting team, as well as the PAs, to minimize the impact of revisions to reporting formats. Commission staff will include a discussion and description of any NTG updates, along with all supporting calculation and analysis files, with the documentation for the draft DEER update.
Commission Staff should not implement dual NTG values until supporting data is available. The Memo identifies a need to assign differing net-to-gross values for to-codes savings baselines and above-code savings baselines, but does not provide support for adding this complexity on top of already-planned efforts to mitigate free-ridership. Specifically, D.16-08-019-mandated working groups have been tasked with producing measure-level baseline eligibility rules that could serve as a future starting point for tracking of any dual NTG needs in the future. That same Decision also mandates a move to net annual portfolio goals as sufficient framework to address other related free-ridership concerns raised by Commission Staff. Commission Staff should allow for these two efforts alone to serve as the features in place to address free-ridership concerns, dropping the pursuit of developing dual NTG values unless and until future program data illustrates the additional need. At such a time, Commission Staff would have historical program data to utilize for setting dual NTG values rather than speculating on these values as SCE assumes would currently have to be the case.	SCE	
PG&E questions the necessity of the addition of dual net-to-gross (NTG) estimates for savings that are estimated using the dual baseline approach. D.12_05_015 states "Regulations, codes, and standards applied to a baseline should be those that are known to be effective at the start of that baseline period, due to regulatory action that has been taken and will be effective at that future date." (p. 349). This suggests that savings for the second baseline period should be determined with information available at the outset of the program. From PG&E's perspective, the addition of dual NTG is not required by the E-4818 Baseline Resolution, as implied in the scoping memo. The DEER Scoping	PG&E	

Comment	Commenter	Commission Staff Response
Memo states, "…as the number of measures with savings estimated above existing baselines increases, the likelihood increases that the net-to-gross for the "to-code", or first period savings, is different than the second, or above code savings." (p9). PG&E requests that evidence to support this claim be provided, and that data be analyzed to support that the potential difference in values warrants separate fields. Adding dual NTG values would add a great amount of unnecessary complexity to EE reporting with little to no benefit as these values would have a high degree of uncertainty. Using dual NTG estimates would imply a future free ridership estimate, however all California- evaluated NTG estimates are estimates of free ridership at the time of program participation. No estimates of future free ridership exist, so there is no data on which to base a second NTG value. Utility and CPUC reporting systems as well as the Cost Effectiveness Tool would need to be updated to accommodate this change which would come at significant cost and time delay.		
EUL and RUL		
The work described in item 1.9, "Effective and Remaining Useful Life" should be undertaken as part of the regular EM&V track: Stakeholders, Staff, and PAs have repeatedly highlighted the lack of reliable EUL data. Given the extensive discussions on the record regarding the need for EUL data, before resources are spent trying to better estimate RUL, an indication of data and analysis methodology being planned to answer this (hitherto unanswerable) question should be disclosed in more detail.	NRDC	Commission staff's primary concern is that current policy limits on the maximum EUL of 20 years may disadvantage large equipment such as space heating boilers, commercial and industrial processes, or long-lasting building shell components. Commission staff appreciates these comments and consider them in its decision to make changes now or defer to other update paths and incorporate any changes into future DEER revisions.
Resolution E-4818 directed Program Administrators to apply the dual baseline calculation savings per the current standard reflected in the current Energy Efficiency Policy Manual. SoCalGas believes that a review of EUL and RUL due to the impact of the existing conditions baseline is unnecessary at this time given this direction. The introduction of new EUL/RUL methodologies that are applied only to certain measures or certain applications of the accelerated	SoCalGas	

Comment	Commenter	Commission Staff Response
replacement sub-categories will create additional unnecessary complexities to baseline savings calculations without clearly adding value given the extent of how EUL/RUL methodologies may increase/decrease across these measures. If Commission Staff chooses to conduct this review, both the review methodologies and outcomes should be subject to stakeholder review before anything is adopted.		
Window film EUL should increase from 10 yrs to 15 yrs and Window EUL should increase from 20 to 30 yrs.	WFA	An increase of the window EUL from 20 to 30 years would result in the window film (an add-on equipment that by policy has an EUL limited to the RUL of the underlying item) to get by policy the RUL of the window which defaults to 1/3 the window EUL and thus 10 years which is the DEER current value. There is no policy support for a window EUL above 30 years. The EUL is the point at which 50% of a technology remain in service and the RUL is the expected period for which any measure, independent of its age, would be expected to remain in service.
Technology and Measure Updates		
Water Chillers		
Commission Staff should perform updates to water-cooled chillers in as expedited a manner as possible. Water-cooled chiller updates are correctly classified in the Memo as related to previous errors in DEER. Commission Staff has already been working with SCE to perform identified corrections for DEER2017. However, SCE wishes to reiterate that attention to this matter as soon as possible is both preferred by SCE and warranted by Commission Staff given that they are authorized to correct errors in DEER without a resolution.7 If water-cooled chiller corrections are not finalized until August 10, 2017, per the Memo, then SCE anticipates not having an approved work paper available to	SCE	As discussed in the scoping memo, Commission staff plans to update water cooled chiller measure definitions in a way that the most efficient products available in the market place can be incorporated in to PAs programs. Since savings methods and measure definitions will likely be updated, Commission staff will review all measure definitions, including air cooled chillers, to ensure that all savings calculations and measure definitions follow the same methods. This

Comment	Commenter	Commission Staff Response
offer measures until October 2017 at earliest—over nine months after the error was identified. This would result in SCE alone losing savings opportunities of an estimated half million kWh for the 2017. To prevent such impacts and facilitate savings opportunities, Commission Staff should prioritize updating DEER2017 errors to water-cooled chillers sooner than the proposed overall DEER updates timeline. Secondarily, for DEER2019 or beyond, Staff should also pursue the development of part-load performance curves that would better reflect the technology's usage.		will likely result in changes to air-cooled chiller measure definitions and savings.
Per the DEER 2018/2019 scoping memo, the ED is considering revising the measure definitions to include lower part-load efficiency levels, per SCE's request. PG&E supports this and agrees with SCE's finding that the DEER 2017 water-cooled chiller baseline and measure efficiencies effectively eliminate a large percentage of high part-load efficiency chillers from the program. In addition, we request that the DEER team explore the development of part-load performance curves that better reflect the part load energy savings of water-cooled chillers. Air-cooled chillers are not included in the DEER 2018/2019 scoping memo. However, the switch to IPLV and EER tier definitions from an IPLV or EER definition has caused a misalignment between the program and the market place. As with large unitary, the use of IPLV and EER results in the elimination of a substantial percentage of equipment with high part load efficiencies and energy savings potential from the marketplace. In addition, the performance maps used by DEER to describe the part load efficiencies of air-cooled chillers underrepresent the part load savings that can be achieved. We recommend that the ED explores the development of performance curves that can better model the part load efficiency of high efficiency air-cooled chillers. As described in our 2016 response, we also recommend that alternative tier definitions be explored that allow more of the energy savings being achieved by high IPLV air-cooled chillers to be captured.	PG&E PG&E	

Comment	Commenter	Commission Staff Response
Heat Pump Water Heaters		
The DEER database is out-of-date regarding electric heat pump water heaters. DEER's Remote Ex-Ante Database Interface (READI) version 2015 gives savings of between 635 and 745 kWh/yr for a 50-gallon electric heat pump water heater (HPWH) with an energy factor of 2.0. There are no HPWH available on the market with an energy factor of 2.0. The best mainstream HPWH now have an energy factor of 3.5, and most models have an energy factor of 3.0. However, energy factor represents the performance under lab conditions per the US Department of Energy's test method. When accounting for temperature and water draw effects, real-world performance (known as annual coefficient of performance or aCOP, or just COP) is often lower. NRDC and Ecotope performed a simulation study in 2016 (https://www.nrdc.org/experts/pierre-delforge/very-cool-heat-pump-water-heaters-save-energy-and-money), that found that the average COP of a 2014 HPWH (EF 3.25) in California was 2.5. Extrapolating to the latest technology (EF 3.5) this corresponds to a COP of roughly 2.75. This is a 65% reduction from a 0.95 EF electric resistance tank, or 2.5x more than the 25% savings estimated in DEER. The Ecotope model used in NRDC's study has been validated both by the Northwest Energy Efficiency Alliance (NEEA report #E15-306; http://neea.org/docs/default-source/reports/heat-pump-water-heater-saving-validation-study.pdf?sfvrsn=8), and by the California Energy Commission who has integrated this software in the building code's compliance software CBECC-Res 2016, currently used for every new building project in California (Contacts: Danny Tam, Danny.Tam@energy.ca.gov, Bruce Wilcox, bwilcox@lmi.net). The CPUC should use the same data source as the CEC to evaluate the energy savings from modern HPWHs. One potential source of discrepancy could be that DEER may de-rate HPWH savings to account for interactive effects with space heating. This means that if a heat pump water heater is located in an indoor closet without air intake or	NRDC	Commission staff agrees and will include revised measure definitions and impacts for heat pump water heaters in this DEER update.

Comment	Commenter	Commission Staff Response
exhaust ducts to outside the conditioned space, the water heater scavenges heat from the conditioned space, increasing heating energy use in the cold season, and reducing cooling energy use in the warm season. Heating interactive effects shouldn't be included for the following reasons: 1. HPWH are, and should be, preferentially installed in garages, basements, or outdoor vented closets, in California climates, they should never be installed indoors when that can be avoided. 2. In the infrequent cases where HPWH have to be installed indoors for lack of a more appropriate location, modern HPWHs can now be ducted to the outdoors (or basement or attic) to avoid any interactive effects. The NEEA Advanced Water Heating specification requires ducting capability as part of Tier 3 requirements, and most of the market has now moved to Tier 3. We recommend that DEER includes savings of Tier 3 HPWHs only since they now constitute the majority of the market and guarantee a good level of customer satisfaction on a wide range of factors including efficiency, controls, and sound level.		
Residential Clothes Washers		
Residential Clothes Washer Measures: In the CLASS study, it is stated that, "Overall, more than half of all clothes washers sampled failed to meet energy star minimum requirements" (p.4-132). The proposed baseline for the front loading, 2.20 MEF, is higher than the current and 2018 Title 20 Code, 1.84 MEF. That will potentially reduce the savings for ROB measures since ISP is higher than the code. Most of SCG deemed rebates, including HE clothes washers, are based on ROB measure application type. It should be noted that the clothes washer market offers customers with both top-loading and front-loading models on a wide range of MEF ratings. SCG suggests to consider applying 1.00 NTG ratio if the industry standard practice is to be applied for the baseline since the free-ridership is already imbedded in the baseline. In this case, the average MEF should be calculated	SoCalGas	Commission staff agrees that updates to baselines should be developed in consideration of the likely population of program participants. Therefore, Commission staff will reexamine the data used for developing existing baselines for clothes washers.

Comment	Commenter	Commission Staff Response
from both standard (top-loading) and horizontal-axis (front-loading) MEF values, not just from horizontal-axis data in CLASS. An alternate approach would be using the top-loading code-required MEF for the baseline on high-efficiency clothes washer measures if the NTG less than 1.00 will be used. The free-ridership should be evaluated, or the DEER NTG Ratio should be used in this case.		
For DEER 2018 update, consider updating measure case efficiencies to the ENERGY STAR 8.0 specification effective 2/5/2018.	PG&E	Commission staff appreciates this recommendation and will consider adding new measures.
Large Unitary Equipment		
Large unitary equipment is not included in the DEER 2018/2019 scoping memo. However, switching from IEER or EER to IEER and EER has caused the upstream program to become misaligned with the market place, as predicted. This has resulted in the elimination of a substantial percentage of high efficiency equipment from the program with a resultant sharp drop in upstream applications and a sharply negative impact on our upstream program. Our detailed recommendations can be found in the letter from last year and still apply. In brief, we believe that switching back to an IEER or EER tier requirement better represents the available equipment efficiencies in the market and allows the program to more accurately capture the energy savings that high IEER equipment is able to achieve. An alternative proposal to better capture available energy savings was to define a tier structure based on the upcoming federal standards based on IEER alone.		Commission staff intends to update measure definitions for large package unitary HVAC equipment. However, Commission staff also notes that DEER efficiency levels for package HVAC equipment are based on federal standards. Changes to those efficiency levels or metrics will be made if and when the governing federal standards are updated. Until that time, the IEER and EER implementation is consistent with the current standards.
Pool Pumps and Motors		
Pool pump and motors are not included in the DEER scoping memo. Pool pumps are subject to T20 in CA which requires two speed baseline, but sales data by major brand and OEM manufacturers report single speed	PG&E	Commission staff encourages PG&E to submit any data that would support a revision in the baseline for pool pumps. Even if this data cannot be incorporated into DEER at this time, PG&E is encouraged to utilize any available data to inform proposed revisions to existing

Comment	Commenter	Commission Staff Response
		workpapers.
SDG&E Residential VSD Pool Pump Program" (Final Draft). The study had a significant number of samples and utilized actual site level metering. SDG&E believes that this empirical approach is superior to engineering estimates.	SDG&E	Commission staff agrees that recent site investigations for installed VSD pool pumps may serve to update pool pump measures, but also notes that monitoring data is needed for both removed and installed equipment. Commission staff will review the report for any information that may support adding pool pumps to DEER. Even if pool pumps cannot be added at this time, SDG&E is encouraged to review the available EM&V site data and consider proposing revisions to existing workpapers.
Residential Gas Furnace		
SoCalGas was unable to verify on 2012 CLASS Final Report whether 81% was fairly constant through the vintages. Similar to the comments made on 1.1 Residential Clothes Washer Measures, when the Standard baseline of 81% is used, an appropriate treatment to the NTGR should be considered since the free-ridership may be embedded in the baseline efficiency.	SoCalGas	Commission staff agrees that updates to baselines should be developed in consideration of the likely population of program participants. Therefore, Commission staff will reexamine the data used for developing existing baselines for furnaces.
Variable Refrigerant Flow HVAC Systems		
DEER has created savings values for VRF equipment based on the assumption that there are energy efficiency tiers in VRF equipment and that these can be incentivized. However VRF manufacturers do not create equipment with different efficiency tiers. Efficiencies have increased over time. Using this historical increase as a basis for efficiency tier is logically questionable since the older lower efficiency equipment may no longer be sold.	PG&E	As with any HVAC equipment, there is a range of efficiency available in the marketplace. The VRF measure tiers are based on efficiency values reported by manufacturers to AHRI. In some cases tier levels extend beyond currently available equipment to allow for future efficiency improvements.
Nonresidential Refrigerant Charge Adjustment		
With respect to 5.2 Non-Residential Refrigerant Charge Adjustment, SDG&E recommends examining the full spectrum of HVAC EM&V studies available	SDG&E	Commission staff considers all applicable EM&V findings when updating DEER. Nonresidential

Comment	Commenter	Commission Staff Response
when revising DEER measure definitions and savings estimates related to non-residential refrigerant charge adjustment. Laboratory investigations, such as those in HVAC-5, do not capture observations in the field. Specifically, SDG&E recommends consideration of HVAC-3 and HVAC-4 to capture actual in field observed values.		refrigerant charge measures are no exception. Commission staff will review all recent evaluation findings for package HVAC maintenance measures when developing any updates to nonresidential refrigerant charge measures.
T8 LED Replacement Lamps		
SDG&E recommends that LED T8 "plug-n-play" replacement lamps be added to DEER because they have the potential to be instrumental in reaching the Commission's goals.	SDG&E	Commission staff appreciates the preference for including high impact measures, such as tube LEDs, in DEER. However, the two year time horizon for DEER updates incorporated into the rolling portfolio framework, along with the two-to-three year lag in publishing of evaluation findings and, more importantly, the underlying data, make it extremely difficult to ensure that ex ante values contained in DEER are reasonable, forward looking values, particularly for rapidly changing technologies such as LEDs. For this reason, Commission staff has taken the approach of incorporating calculation methods and assumptions (such as annual hours of use, coincident demand factors and HVAC interactive effects) but allow PAs to propose measure and baseline values using workpapers, which can be updated as new products are introduced into the marketplace.
Lighting Measure HVAC Interactive Effects		
SDG&E suggests that the interactive effect impacts of both residential and nonresidential lighting need to be updated. SDG&E understand that Energy Division initiated an empirical investigation for residential applications and looks forward to seeing the results of that study. Moving forward, SDG&E recommends that interactive effects be developed using billing analysis as	SDG&E	Residential HVAC interactive effects were updated for DEER 2017 and Commission staff agrees that updates to nonresidential values should be a priority for future DEER updates. Commission staff encourages SDG&E to submit more detailed comparison of empirical

Comment	Commenter	Commission Staff Response
engineering models are based on a priori assumptions that have not been empirically validated. On the other hand, billing analysis can take advantage of the robust actual site level data that is now available.		investigations and how those indicate the DEER interactive effects are incorrect. To date, Commission staff has concluded that the DEER simulation methods yield reasonable interactive effects values that are appropriately adopted for use in DEER.
Peak Demand Period Definition		
PG&E requests that the DEER definition of peak demand be updated. Updates should be made to all DEER measures with kW savings estimates that are affected by the updated definition of peak demand. Increasingly, energy efficiency (EE) is being considered as one of several Distributed Energy Resources. For EE to make the transition from a self-contained entity to a competitive resource able to address grid needs in California, alignment of policies and metrics is essential. Among the most pressing needs is alignment of peak hours for the determination of demand savings. The current DEER peak hours do not align with recent shifts in the net peak load, or the time periods of highest avoided costs from electricity savings. Here we present a brief case that DEER peak hours should be shifted to later in the evening, between the hours of 4 – 8 pm. For this discussion we draw an important distinction between total system load and net load: Net Load = Total Load – Variable Load The total load is the full demand that must be serviced due to end use electricity consumption. In recent years, variable generation, which consists of renewable resources, including wind power, utility scale solar, and distributed solar photovoltaics, has met an increasing fraction of total demand. The net load that must be serviced by traditional resources is the total load minus the variable load as indicated in the above equation. To accurately value the avoided costs, GHG reduction, and peak demand	PG&E	Commission staff will not incorporate any demand period updates into this DEER revision. However, a process for investigating alternative definitions for peak demand periods is addressed as part of the Draft Resolution for adopting DEER updates.

Comment	Commenter	Commission Staff Response
reduction from EE, increasingly the net load is of utmost importance. Several recent studies demonstrate that as more renewable resources have been incorporated into the California generation mix, the peak in the net load demand has shifted to the evening hours. For example, a 2016 report shows that the 'Duck Curve' is becoming exacerbated at an even faster rate than originally forecast, with mid-day solar generation dramatically reducing net load, in particular from the hours of 9 am – 5 pm. That study showed that average net load peaked between the hours of 5 – 9 pm throughout the year, with the exact peak-time depending on the season. Recent research from the National Renewable Energy Laboratory reinforces these conclusions and explores the issues of overgeneration and curtailment. This study forecasts the need for significant curtailment of solar generation, even with conservative parameters, between the hours of 8 am – 4 pm. The effects of overgeneration are already being seen in California. CalISO curtailed 80 GWh of renewables in March of this year, a dramatic increase from the 47 GWh curtailed in March of 2016. The chart in Ref. shows that net load was at a minimum during the current DEER peak hours of 2 - 5 pm and that solar and wind curtailment were at a maximum during those DEER peak hours. For the reasons discussed above among others, PG&E has designed time of use rates with peak periods of 4 – 8 pm. These hours result from thorough research and analysis that should not be discarded within the context of EE. Taken together, the evidence yields a clear picture. For EE to be valued accurately, the DEER peak hours must be shifted later into the evening. Peak hours should be aligned between cost effectiveness calculations, rate structures and determination of peak kW reduction. As stated in PG&E's Application A.17-01-015 for approval of the Business Plans: In September of 2016, the Commission revised the avoided cost for demand side resources. The hourly capacity factors were modified to reflect the shift of peak hours from afternoon to evening. The ability of EE to drive electricity savings and peak demand reductions during peak hours is an important consideration in how PAs allocate rate payer funds. For EE to be competitive as a grid resource, relevant policies,		

Comment	Commenter	Commission Staff Response
including the DEER peak hours, must reflect consistency and the best available data and net load should be the driving consideration.		
Existing Conditions Baselines		
Consider appropriate segment of CLASS data for update to Pre Existing Conditions baseline: The current update proposal does not state how the CLASS dataset will be applied to determine Pre Existing conditions baseline for applicable measures. NRDC recommends that Pre Existing Conditions baseline be determined by only considering those sampled equipment that have RUL less than or equal to a third of the EUL of the measure; this would be consistent with the current DEER assumption of RUL = EUL/3. This will ensure that the segment of the population most likely to be replaced get considered for baseline development. Considering the full population of equipment sampled by CLASS to develop pre-existing conditions baseline makes sense for measures that have shorter measure EULs, such as non-LED light bulbs, but not for measures with longer EULs like refrigerators and domestic water heaters. Consider appropriate granularity of CLASS data for analysis: The CLASS sample design was constructed in consideration of a sample based on utility, climate zone group, CARE/FERA, and level of annual energy consumption. What the data shows beyond this level of stratification are at most general trends (e.g., newer homes have generally more efficient equipment than older homes). These trends should not be used to develop data for specific categories that are beyond sample consideration. CLASS study authors should be consulted to determine whether inputs developed using CLASS study are aligned with the study construct. Moreover, NRDC respectfully requests that Energy Division and its consultants document how their use of CLASS data during this update is consistent with the study's sampling and design.	NRDC	Commission staff agrees that the population weighted efficiency levels from CLASS may not represent the typical existing efficiency levels of the population of expected program participants, particularly if programs are adapted according to AB802 to target stranded potential. Any proposed revisions to existing baselines (previously called "Customer Average") will be developed in consideration of the likely participant population. All assumptions and calculations will be published for review along with the draft DEER update.
PG&E requests that the methodology for measure baselines informed by CLASS	PG&E	All assumptions and calculations will be published for

Comment	Commenter	Commission Staff Response
data be refined in time for review and comment. The DEER Scoping Memo proposes using CLASS data to inform several measure baseline updates and states in multiple places that the DEER team will perform more complete analysis of the CLASS data, and verify whether the data is sufficiently representative of the market for which it will be used. PG&E requests that the final analysis methods and data be provided 60 days prior to the Draft Resolution release to allow time for review and comment.		review along with the draft DEER update.
PG&E also notes that baseline efficiency cannot be set as the average efficiency of all installed equipment as suggested in the Scoping Memo, since the older less-efficient equipment is more likely to be upgraded before newer more-efficient equipment. The current methodology discussed in the Scoping Memo would raise the baselines for the measures listed which is inconsistent with the intent of AB802's goal to allow EE programs to reach stranded potential, and would, in fact, further strand potential.	PG&E	Commission staff agrees that the population weighted efficiency levels from CLASS may not represent the typical existing efficiency levels of the population of expected program participants, particularly if programs are adapted according to AB802 to target stranded potential. Any proposed revisions to existing baselines (previously called "Customer Average") will be developed in consideration of the likely participant population.
One update area for further consideration is additional measure-level identification of Resolution 4818 activity. SCE's technical staff is unable to perform a comprehensive review of all measures in DEER to determine if the items listed in Table 1 of the Memo represent all activity requiring update due to Resolution 4818. With more time, SCE would be able to complete this exercise. Both SCE and Commission Staff should work between now and the Memo-proposed date to additionally verify measures eligible for modified baselines due to Resolution 4818. SCE will complete its review of measures by June 10, 2017, with Commission Staff ideally performing any identified modifications by draft Resolution completion (July 10, 2017).	SCE	Commission staff encourages SCE to submit the results of their measure review as soon as possible so that those results can be examined and considered for this DEER update.
Investigate Shell and Building System measures additions to DEER in accordance with E-4918	PG&E	Commission staff will examine available EM&V findings and consider updates.
Investigate updates to Pipe Insulation in accordance with E-4918	PG&E	Commission staff will examine available EM&V

Comment	Commenter	Commission Staff Response
		findings and consider updates.
Methods and Assumptions		
Provide reasonable level of detail in scope of update: For various action items, the DEER scoping memo lists the planned update along with sparse details regarding the update's analysis plan. The questions the Ex Ante teams are attempting to answer through the proposed updates are complex; sufficient detail on the proposed analysis methodology for each update is necessary to solicit useful feedback.	NRDC	Commission staff appreciates the commenter's request for additional details on the analysis plan. Methods, details, underlying data and back-up calculations will be published with the draft DEER update.
Additionally, SCG requests information on which DEER models and how they will be adjusted to re-calculate with the proposed new baselines, and how these models and documentations will be available to PAs. It is also requested to consider providing comparisons of results (savings and UEC) before and after the updates. UEC values in DEER measures can be very useful for many other non-DEER measures.	SoCalGas	All back-up data and analysis tools, along with resulting changes to calculation assumptions will be published with the draft DEER update. Sample comparisons of currently approved and proposed revised updates will be included in the final DEER update documentation.
SCE requests support material for DEER prototypes are included as part of already-stated Memo updates. Given the potential migration of these prototypes from the DOE-2 energy analysis program to EnergyPlus, processes and procedures for creating, updating, calibrating, and testing the prototypes should be documented thoroughly as part of Commission Staff's overall DEER updates.	SCE	DEER prototype information is updated and published with each DEER update. Commission staff understands that using DEER prototype data and simulation files to create energy modeling inputs for different software platforms is not a straightforward task. In the past, Commission staff has met with other energy modeling specialists to provide background on the use of currently published prototype information and will continue to provide this type of interaction and support.
DEER measures should include the vintage of the assumptions to clarify how old the assumptions are and provide an indication of when the information was last updated. For example, first year savings for a measure were last updated in 2013, measure life was last updated in 2010; measure cost was last updated in	SDG&E	Over the past several DEER revisions, values in the ex ante database have been identified with the DEER version as a way to help identify when those values

Comment	Commenter	Commission Staff Response
2009, etc. In addition, SDG&E recommends that DEER also include a field that indicates the rigor with which DEER assumptions were developed, similar to the Commission requirement that program administrators/implementers provide preponderance of evidence for non-DEER Deemed measures. The backup data relied upon to develop the DEER assumptions should be made available as part of DEER documentation.		were last updated.
General Comments Related to Measure Updates		
SDG&E believes that most measures that are currently being addressed in dispositions be moved to DEER. While SDG&E believes that the work paper process is nimbler and probably the best medium for lower impact and new measures, the energy efficiency community is better served if the higher impact measures (e.g., LED lamps and fixtures) were part of the more formal DEER process. Including these measures in the DEER process will provide more certainty in program planning and allow more transparency to the public.	SDG&E	Commission staff appreciates the preference for including high impact measures in DEER. However, the two year time horizon for DEER updates incorporated into the rolling portfolio framework, along with the two-to-three year lag in publishing of evaluation findings and, more importantly, the underlying data, make it extremely difficult to ensure that ex ante values contained in DEER are reasonable, forward looking values, particularly for rapidly changing technologies such as LEDs. For this reason, Commission staff has chosen to incorporate calculation methods and assumptions (such as annual hours of use, coincident demand factors and HVAC interactive effects) but allow PAs to propose measure and baseline values using workpapers, which, as the commenter states, provides a much nimbler approach for rapidly changing technologies.
SDG&E also believes that the work paper disposition process is inappropriate for some DEER updates. Updates to the baseline equipment for screw-in lighting as implemented in the Wattage Reduction Ratio, for example, should be investigated in a more formal manner through an independent EM&V study. Currently, DEER/READI only provides savings using a base case that is a	SDG&E	Commission staff notes that the recent disposition covering screw-in lamps that, among other ex ante values, adjusted wattage reduction ratios for CFLs and LEDs, included analysis of recent EM&V findings as well as available market sales data from third party

Comment	Commenter	Commission Staff Response
weighted average of assumed existing equipment. The DEER should be updated to provide energy savings based on code and for the results of a formal EM&V study.		sources. Direction provided in the disposition was also developed in consideration of current codes and upcoming changes to codes, such as the CEC minimum performance requirements for LEDs.
SDG&E encourages the Commission Staff to use completed EM&V studies as the first source for updating relevant assumptions.	SDG&E	Commission staff always looks to available EM&V findings as a primary source of information to update methods and values contained in DEER. The challenge is to use the available supporting data to develop reasonable forward-looking values that represent likely savings across a population of participants at the time the adopted DEER values go into effect.
Staff should also begin to investigate how the results from behavior programs and normalized meter energy consumption methods to validate project savings would be incorporated to update DEER.	SDG&E	Commission staff appreciates this recommendation, will be following the development of BRO and NMEC programs and consider how those outcomes can be used in DEER updates.
Technology Costs		
In regards to Updates due to Baseline Resolution, SoCalREN recommends that updates to Planned Clothes Washer Measures, Residential Refrigerator & Freezer Measures and Domestic Water Heater Measures also include updated costs.	SoCalREN	Cost updates will be considered in future DEER updates.
SDG&E recommends that ED initiate a measure cost study update. The current available data is outdated for many measures and does not offer values for many high impact measures (e.g., LED lamps). SDG&E recommends that ED could get a quick start by having a contractor review costs for the highest impact measures. Given the fluid nature of some of the costs, SDG&E recommends that ED retain resources that can review the costs of high impact measures on an on-going basis.	SDG&E	

Comment	Commenter	Commission Staff Response
SDG&E recommends that as part of updating DEER, a nimbler methodology for updating costs should be investigated and developed to keep up with market changes.		