

MEASURE PACKAGE PLAN (MPP) TEMPLATE

Measure package title and measure package ID, if applicable	High-Efficiency Windows, Residential
MPP submission date	12/14/2023
MPP version number and date of last submission	01
Submitting PA	SCE
Expected measure package submission date	2024 Q2 or earlier
PA contact – Name, email	Cassie Rauss, cassie.rauss@sce.com
Status of current measure package development	<input type="checkbox"/> Measure package is largely drafted <input checked="" type="checkbox"/> Measure package draft in progress <input type="checkbox"/> Measure package research in progress <input type="checkbox"/> Measure package research scoping in progress <input type="checkbox"/> Measure package preliminary analysis
Reason for measure package plan	<input checked="" type="checkbox"/> Measure package plan for new measure package – this is mandatory for all new measure packages <input type="checkbox"/> Complying with CPUC request for a measure package plan or addition of new measures to existing measure package <input type="checkbox"/> CPUC to provide feedback on research elements such as scope of research, specific research components (like surveys), or other in-progress technical analysis <input type="checkbox"/> CPUC provides feedback on the feasibility of the measure and the proposed approach
Outstanding DEER Support Requests. (Made to: DeerSupport@dnvgl.com)	<input type="checkbox"/> EUL <input type="checkbox"/> Building Type <input type="checkbox"/> Tech Type <input type="checkbox"/> Use sub-category <input type="checkbox"/> Other

BRIEF DESCRIPTION OF THE MEASURE PACKAGE MEASURE

With the recent California Decision 23-04-035 that outlines a path for eliminating incentives for natural gas equipment, windows are considered a “gas exempt” measure due to providing gas savings without incentivizing a gas appliance. The California (CA) Investor-Owned Utilities (IOUs) have been

asked by the California Public Utilities Commission (CPUC) to prioritize gas-exempt measures, such as high-performance windows, and have existing energy efficiency (EE) programs that would be able to utilize this measure package once it is developed. This proposed measure package also plays a large role in supporting equity programs. This measure has been identified as a need by Southern California Edison's (SCE) Emerging Products & Technologies group for their residential equity programs. The measure offerings will include new construction and replacement measure offerings, as incremental cost will differ between new construction and replacement scenarios.

The CA IOUs previously developed a window measure package, but the findings are outdated and the measure package is inactive in the eTRM. Residential window technology is commercially available and has become more cost-effective over the years. The lower costs provide an opportunity to revive and update the measure with current market data.

The measure package will calculate the estimated energy savings associated with high-performance residential windows in both single-family and multifamily applications through EnergyPlus building energy modelling. Modelling will be conducted for all CA climate zones and residential building types using the DEER Residential Prototypes.

The base case for new construction is defined as a standard efficiency window that meets the 2022 Title 24 mandatory requirements.¹ The U-factor requirement is 0.45 for single family, 0.58 for low-rise multifamily, and a U-factor of 1.09 for mobile home building types. Mandatory code baseline is utilized for single family and multifamily new construction as it represents the minimum efficiency required in CA new construction by code. There are no mandatory requirements for solar heat gain coefficient (SHGC) or mobile home U-factor in the 2022 Title 24 mandatory requirements, so the DEER Residential Building Prototypes² are utilized for baseline SHGC and mobile home U-factor.

For existing buildings, the DEER Residential Building Prototypes are utilized for baseline efficiency as it represents the CPUC-approved baseline assumptions for building energy modeling of residential windows.

The measure case is defined as the installation of windows that meet the U-factor and SHGC eligibility criteria specified in the ENERGY STAR® Program Requirements for Residential Windows, Doors, and Skylights, Version 7.0. To map ENERGY STAR climate zones to California climate zones, the project team considered CZ1 and CZ16 to be North-Central and all other climate zones to be South-Central ENERGY STAR climate zones.

3) **CERTIFICATION CRITERIA:**

- A. **Energy Efficiency Requirements:** Products shall have NFRC-certified U-Factor and, where applicable, SHGC ratings at levels which meet or exceed the minimum criteria specified in Tables 1 through 3. Windows, sliding glass doors, and skylights shall meet the criteria for a given ENERGY STAR Climate Zone. Swinging doors shall meet the criteria for a given glazing level. Dynamic Glazing Products shall meet the criteria while in the minimum tinted state for Chromogenic Glazing products or the “fully open” position for Internal Shading Systems.

Table 1: Energy Efficiency Requirements for Windows

Climate Zone	U-Factor	SHGC
Northern	≤ 0.22	≥ 0.17
North-Central	≤ 0.25	≤ 0.40
South-Central	≤ 0.28	≤ 0.23
Southern	≤ 0.32	≤ 0.23

ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights – Eligibility Criteria

MARKETS IMPACTS OR CONTROVERSY

Energy Solutions does not anticipate any negative impacts or controversy to the measure. The measure, if found suitable, will add a gas-exempt building envelope measure to the CA eTRM and a new option for the deemed energy savings portfolio.

COST CALCULATION METHODOLOGY

Cost analysis will be conducted through online research and outreach to market actors for both baseline and measure case products. Incremental measure cost will be determined as the cost difference between baseline and measure case costs as an average incremental cost per square foot. Costs for both baseline and measure case will represent end-use customer costs and include any markup from contractors. Labor cost for both baseline and measure case will also be included in incremental cost calculations, and new construction and retrofit application types will be analyzed.

REQUEST FOR CPUC INPUT

The CPUC will be asked to review modeling parameters, baseline efficiency, measure efficiency, EUL, program delivery type, and the incremental measure cost analysis.

ATTACHMENT/REFERENCES

2022 CA Energy Code: https://www.energy.ca.gov/sites/default/files/2022-12/CEC-400-2022-010_CMF.pdf

ENERGY STAR Residential Windows Specification V7.0:
https://www.energystar.gov/sites/default/files/asset/document/ES_Residential_WDS_V7_Final%20Specification%202022.pdf?_gl=1*rgo0v4*_ga*ODkzNDkxMDUyLjE2OTE0MTc1ODY.*_ga_S0KJTVVLQ6*MTY5ODA3ODQ2Mi4xOS4wLjE2OTgwNzg0NjIuMC4wLjA

CPUC Decision 23-04-035:
<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M505/K808/505808197.PDF>

MILESTONE REVIEW SCHEDULE

Complete the milestone review schedule for each review component; include the approximate date when the information will be made available and when the response is expected. Please include Gantt chart and other graphics if applicable. Example milestones include initial submission of MPP, data collection, data synthesis, meetings with CPUC, final submission of MPP, and estimated WP submittal date.

Milestone Description		Expected Date for Submission of Review Item	Expected Date for CPUC Comments
Measure package plan submission		12/11/2023	2/1/2024
SCE and CPUC staff discuss MPP	TBD		
Optional Meeting for Follow Up	TBD		
Measure package draft and attachments to be reviewed internally	2/1/2024		
Final draft for CPUC submission	4/1/2024	5/1/2024	