Net Billing Tariff (NBT) Impacts on Single Family New Construction

2022 Building Energy Efficiency Standards (Title 24, Part 6)
Complete Report

Effective Date: January 1, 2023

The California Public Utilities Commission (CPUC) decision in December 2022 eliminated net energy metering as of April 15, 2023, for the three main investor-owned utilities in the state and replaced net energy metering with a Net Billing Tariff (NBT). The NBT allows an electricity customer to generate and consume electricity on their property and be credited with the full retail value of that locally generated and consumed electricity.

In June 2023, the Statewide Reach Codes Team published the 2022 Cost-Effectiveness Study: Single Family New Construction. This study focused on newly constructed single family residential buildings identifying cost-effective measures and measure packages in all 16 California climate zones but used the prior Net Energy Metering 2 (NEM2) tariff for analyses.

While the updated study is now available, this shorter document includes some results for annual and monthly electricity cost for the 2,100 square foot single family prototype. The old Net Energy Metering 2 (NEM2) tariff is compared to the new Net Billing Tariff (NBT). Only Investor-Owned Utility (IOU) tariffs were used, bill discounts were not considered, and gas utility cost was not calculated.

Prototypes:

Three variations of the 2,100 square foot single family prototype were evaluated in this effort:

- Base model mixed fuel building
- Minimally compliant all-electric model
- All-electric model with solar photovoltaics (PV) that match 100 percent of the annual energy usage

Climate Zones: All 16

Comparison of NEM2 and NBT

There are three major differences between NEM2 and NBT. In order of importance, they are:

1. The export rate under NBT is much lower than it was under NEM2.
    a. Under NEM2, the export rate per time-of-use (TOU) period was equal to the import rate for the same TOU period minus the non-bypassable charge (NBC) portion of the import rate which was rather small. Under NBT, the export rates are derived from the results of CPUC's Avoided Cost Calculator which is updated every two years. In this study, the 2024 values were used.
2. NBT customers must use a specific main tariff per IOU that was already available prior to April 15, 2023, but that was not commonly selected by customers.
    a. Those tariffs are E-ELEC for PG&E customers, TOU-D-PRIME for SCE customers, and EV-TOU-5 for SDG&E customers.
3. NBT introduces a new feature called "no-netting" which captures grid imports that are hidden within the hourly intervals in which the IOUs report *net* electricity usage to customers.
    a. The study totals for annual import and export energy usage include the no-netting calculation for NBT but not for NEM2.

Study Results

The complete study includes annual results for all scenarios, grouped by climate zone (and by utility when two utilities were used in one climate zone). Each climate zone table has 10 results, corresponding to the specific prototype variation as described here:

- Three results for the base case mixed fuel model (labeled as Base)
- Four results for the minimally compliant all-electric model (labeled as AE)
- Three results for the all-electric model with 100% PV (labeled as AE100PV)

The primary finding is that NBT yields higher electric bills as compared to NEM2, but the increase is less for the AE prototype variation (all-electric buildings with minimally compliant PV) than for the Base variation (mixed fuel buildings with minimally compliant PV) or the AE100PV variation (all-electric buildings with 100% PV). For example, in Climate Zone 1, the annual electric bill increased by 170% for the Base model, 22% for the AE model, and 234% for the AE100PV model.

A secondary finding is that the NEM2 annual electric bill results are often substantially higher than the NEM2 results in the original 2022 single family cost-effectiveness report published in June 2023. This is largely due to rate increases in the main tariffs from 2022 to 2023.

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