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Customer-Sited Renewable Energy Generation

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• If you are interested in installing a renewable energy system with NEM, or if you are encountering issues with your current system, please visit our Resources for Solar Customers webpage.

webpage.

Key Information

• For important information on going solar for residential customers, please visit the California Solar Consumer Protection Guide webpage.

For prospective or existing net energy metering (NEM 1.0 or NEM 2.0) customers:

Public Utilities Commission

- The current NEM tariff, NEM 2.0, is available for new customers until April 14, 2023.
- If you interconnected your system under the NEM 1.0 tariff, please see the Former NEM Tariff section of this webpage.
- General customer-sited renewable energy information: • For information on the NEM Revisit <u>Rulemaking (R.)20-08-020</u> and Net Billing tariff, please visit the <u>NEM Revisit</u>
 - For data on the number of projects and capacity of customer-sited renewable energy generation, please visit the California Distributed Generation Statistics website.

Note: The content on this webpage applies in the territories of the large electric investor-owned utilities (IOU): Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company

- (SDG&E). Also, this webpage only covers retail transactions for energy (not "non-export" interconnection, energy sales at avoided cost, or wholesale market transactions).
- **Overview**

California allows customers to install renewable electrical generation facilities primarily to offset the customers'

electrical needs, and to interconnect these facilities with the electrical grid. Customers have mostly installed solar, wind, and fuel cell facilities, but other energy sources such as biogas, biomass, geothermal, small hydroelectric, and ocean currents also count as renewable. A variety of California laws, listed below, have directed the CPUC to create rules (or "tariffs") under which the IOUs must allow customers who generate their own energy ("customergenerators") to serve their energy needs directly onsite and to receive a financial credit on their electric bills for any

surplus energy fed back to their utility. Participation in these tariffs does not limit a customer-generator's eligibility

Net Energy Metering and Net Billing

for any other rebate, incentive, or credit provided by an electric utility.

charges.

to Assembly Bill (AB) 920 (Huffman, 2009).

all transmission/distribution system upgrades.

construction) will not receive the adder.

Virtual Net Energy Metering (VNEM)

NEM Aggregation (NEMA)

SDG&E.

important programs such as low-income and energy efficiency programs.

Net Energy Metering More than 90% of all megawatts (MW) of customer-sited solar capacity interconnected to the grid in the three large IOUs' territories are on net energy metering (NEM) tariffs. Under NEM tariffs, participating customers receive a bill credit for excess generation that is exported to the electric grid during times when it is not serving onsite load, offsetting energy costs. On a month-to-month basis, bill credits for the excess generation are applied to a customer's bill at the same retail rate (including generation, distribution, and transmission components) that the customer would have paid for energy consumption according to their otherwise applicable rate structure.

NEM customer-generators must pay the same non-bypassable charges for public services as other IOU customers,

decommissioning charge, and competition transition charge. NEM customer-generators are exempt from standby

At the end of a customer's 12-month billing period, any balance of surplus electricity is trued up at a separate fair

market value, known as net surplus compensation (NSC). The NSC rate is based on a 12-month rolling average of the

market rate for energy. That rate is currently approximately \$0.02 to \$0.03 per kWh (for up-to-date NSC data, follow

these links: <u>PG&E</u>, <u>SCE</u>, <u>SDG&E</u>). This rate structure was established in Commission <u>Decision (D).11-06-016</u> pursuant

which includes Department of Water Resources bond charges, the public purpose program charge, nuclear

Rulemaking, R.14-07-002, please visit the NEM Successor Tariff webpage. NEM 2.0 differs from the previous NEM tariff ("NEM 1.0") by requiring customer-generators to pay a few charges that align NEM customer costs more closely with non-NEM customer costs. Any customer-generator applying for NEM 2.0 will: • Pay a one-time interconnection fee. Customer-generators with facilities under 1 MW must pay a one-time

interconnection fee based on each IOU's historic interconnection costs. PG&E's fee is \$145; SCE's \$94; and

SDG&E's \$132. Customer-generators with systems over 1 MW must pay an \$800 interconnection fee and pay for

• Pay non-bypassable charges in each metered interval. Like other utility customers, customer-generators must

pay small charges on each kilowatt-hour (kWh) of electricity they consume from the grid. These charges fund

• Transfer to a time-of-use (TOU) rate. If a customer-generator is not already on one, they will be required to take

The CPUC created the current NEM tariff, commonly known as "NEM 2.0," in 2016. For information on the NEM 2.0

service on a **TOU** rate to participate in NEM 2.0. Pursuant to <u>D.14-03-041</u>, customer-generators are allowed to remain on the NEM 2.0 tariff for 20 years from the date they interconnected, or they are permitted to switch to the current tariff. **Net Billing**

The new Net Billing tariff (NBT) will be available for customer-generators who submit interconnection applications on

or after April 15, 2023. It will apply to the types of renewable electrical generation facilities that would previously have

is applied to a customer's bill at a rate reflecting the value of this generation to the grid. The value of the export

compensation is usually lower than the retail rate, but can rise above the retail rate on late summer evenings.

Customer-generators can maximize bill savings under the NBT by installing battery storage along with their

- used standard NEM tariffs (i.e., not facilities eligible for the tariffs listed in the next section). As with NEM 2.0, onsite generation is first used to serve onsite load under the NBT, offsetting energy costs. The NBT's major difference from NEM 2.0 is that under the NBT, compensation for excess generation exported to the electric grid
- generation, so they can use or export stored energy during these high-value hours. There are some additional aspects of the NBT that are different from NEM 2.0:

• Export compensation adder: Residential PG&E and SCE customers who apply to interconnect NBT facilities to

higher electric rates.) Customers who are required to add solar (e.g., by California's building code for new

• "Electrification" TOU rate requirement: If a customer-generator is not already on one, they will be required to

take service on a specific TOU rate with lower off-peak prices and higher on-peak prices than other TOU rates.

These rates reduce GHG emissions and strain on the electric grid by discouraging energy use at peak demand

times of day, and they encourage customers to use electric vehicles and appliances by charging less for energy

at other times. The rates currently approved are E-ELEC for PG&E, TOU-D-PRIME for SCE, and EV-TOU-5 for

the grid before the end of 2027 will receive slightly higher-than-normal bill credits for exported energy for nine

years. (SDG&E customers are excluded because their solar systems generate more bill savings due to SDG&E's

• Nine-year legacy period: The original customer who causes a generation facility to be interconnected to the grid under the NBT will be guaranteed the use of the NBT tariff for nine years. Customer-generators who move to the NBT from a previous NEM tariff are not eligible for the NBT legacy period. • Monthly bill payment: Payment for bill charges will be due monthly, so that customers are not surprised by a large annual bill after their true-up date. In months when there are excess solar bill credits, the credits will roll

over to following months, until the annual true-up. For more information on the NEM Revisit Rulemaking (R.20-08-020) and Net Billing tariff, please visit the NEM Revisit webpage. Other Customer-Sited Renewable Energy Programs

<u>Virtual net energy metering</u> (VNEM) enables an owner of a multi-tenant property to allocate a renewable electrical

renewable generation bill credits between common load areas and tenants along a single or multiple service delivery

generation facility's benefits to tenants across multiple units. Tariff rules allow the system owner to allocate

points. Otherwise, the bill credits function the same as under the standard NEM tariff.

adjacent, or contiguous to the generation facility. A customer-generator must be the sole owner, lessee, or renter of the properties in order to utilize NEMA. For example, an agricultural customer could use a single renewable generation system to provide NEMA bill credits to

Senate Bill (SB) 594 (Wolk, 2012) authorized NEM aggregation (NEMA). NEMA allows an eligible customer-generator to

aggregate the electrical load from multiple meters, and NEM credits are shared among all property that is attached,

offset the electrical load from their home as well as from an irrigation pump located on an adjacent parcel. As of

November 30, 2022, roughly 1% of all NEM projects were NEMA projects. The Commission authorized the IOUs to

implement NEM aggregation in Resolution E-4610 and established a bill credit calculation methodology in

Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT)

This tariff enables local governments and universities to share generation credits from a system located on one

government-owned property with billing accounts at other government-owned properties. The system size limit

under RES-BCT is 5 MW, and bill credits are applied at the generation-only portion of a customer's retail rate. RES-BCT

was established by AB 2466 (Laird, 2008) and codified in Section 2830 of the Public Utilities Code. In 2021, SB 479 was signed into law, which expanded RES-BCT eligibility to California Native American tribal governments. Information on the IOUs' RES-BCT programs can be found at the following links: PG&E, SCE, and SDG&E.

NEM Fuel Cell (NEMFC)

Resolution E-4665.

eligible for the NEMFC tariff. NEMFC was established by AB 1214 (Firebaugh, 2003) and codified in Section 2827.10 of the Public Utilities Code. NEMFC bill credits are applied at the generation-only portion of a customer's retail rate. The program has a separately defined program cap of 500 MW. As of November 2022, 120 MW of fuel cells were installed under this tariff. Fuel cells must commence operation on or before December 31, 2023 to participate in NEMFC. **Income Qualified Solar Programs**

The <u>California Solar Initiative</u> included a Single-family Affordable Solar Homes Program and a Multifamily Affordable

Solar Housing Program. Both of those programs are closed, though the MASH VNEM tariff can still be used by eligible

properties. The Solar on Multifamily Affordable Housing (SOMAH) Program provides financial incentives for the

programs, described on the Solar in Disadvantaged Communities webpage, that are designed to increase adoption

Customer-generators may be eligible to receive compensation for the RECs associated with any excess generation. To

Pursuant to <u>SB 656</u> (Alquist, 1995), the CPUC created NEM in 1996. Customer-generators interconnected their systems

, these customer-generators are allowed to remain on the former tariff for 20 years from the date they interconnected,

to the grid under the NEM 1.0 tariff between then and the 2016-2017 NEM 1.0 sunset dates. Pursuant to D.14-03-041

installation of solar PV systems on multifamily affordable housing properties. Additionally, there are several

Fuel cells that use renewable or non-renewable fuels and meet a greenhouse gas (GHG) emissions standard are

Western Renewable Energy Generation Information System and have it certified to be eligible by the California Energy Commission. For small customer-sited generation facilities, the compensation that would be earned by RECs is not generally high enough to be worth the time and fees involved in this process.

imports

Credits for energy exports

before true-up basis

Credits for net surplus

energy at true-up basis

Non-bypassable charges

calculation basis

Interconnection fee

Installation size limit

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energy@cpuc.ca.gov.

of renewable generation in disadvantaged communities.

Former NEM Tariff (NEM 1.0)

or they are permitted to switch to the current tariff.

Renewable Energy Credits (REC)

receive compensation, a customer must register their generation facility with the

Key differences between the three standard NEM/NBT tariffs are described below.

NEM 1.0 NEM 2.0 NBT Eligible import rate Specific "electrification" TOU rates **TOU** rates Any schedule Onsite use of generated Yes Yes Yes energy avoids energy

Import rates

customers)

\$75-145

Wholesale price of energy to IOUs

Net energy consumed in a metered

interval (1 hour for residential and

15 minutes for nonresidential

Customer's annual electric load

with limited exceptions

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Billing and true-up period Annual billing, annual true-up Annual billing, annual true-up (both charges and credits roll over (both charges and credits roll over for 12 months) for 12 months)

1 MW

None

Import rates

Wholesale price of energy to IOUs

Net energy consumed (imports

Customer's annual electric load

with limited exceptions; capped at

minus exports) in a year

Successor Tariff - NEM 2

NEM Revisit

Net Energy Metering NEM 2 Evaluation **Resources for Solar Customers**

Net Energy Metering Rulemaking (R.)14-07-002

Public Process to Develop Proposal for the NEM

Virtual Net Metering California Solar Consumer Protection Guide

NET ENERGY METERING

\$75-145 Monthly billing (pay monthly); annual true-up (credits roll over for 12 months) Customer's annual electric load plus up to 50% if customer attests to need If you have any additional questions about information on this webpage, please contact the CPUC Energy Division at

CALIFORNIA STATE CAMPAIGNS

Register to Vote

Save our Water

Flex Alert

Price of energy that IOUs could

Wholesale price of energy to IOUs

buy elsewhere instead

All energy imports

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