

From 8 pm until 7 am, the customer's solar PV does not generate energy. Net consumption, therefore, is equal to gross consumption during those hours. The solar PV generates energy from 8 am until 7 pm; during these hours the customer's net consumption declines by the amount of generation. From 10 am until 7 pm, generation exceeds consumption and the customer's net consumption is negative, indicating that the customer is exporting power to the grid. The shaded area of the chart represents the energy exported to the grid.

Under NEM, the customer receives bill credits for exported generation, effectively "spinning the meter backwards" during periods when generation is greater than consumption. The bill credit is calculated based on the applicable rate.¹⁷ If, at the end of the month, bill credits for exported energy are greater than the bill cost for imported energy, the remaining credit is carried over to the following month.

For a customer on a time-of-use (TOU) rate, the net consumption is computed by time period, and the bill credit is based on the full retail rate at the time the energy is exported. Since TOU rates are higher during the peak period, it is possible for TOU customers to have bill credits that more than offset their bill even when they consume more energy in a month than they produce. Essentially, this customer sells back energy at a high rate, and buys energy at a low rate.

Currently, the amount of excess generation credited by the utility is bounded. At the end of a 12-month billing period any remaining credit for net-excess generation is forfeited to the utility, and the customer begins the new 12-month billing period with a zero balance. This provision of the law reduces any incentive for the customer to oversize generation with respect to load.

With the enactment of AB 920, beginning in 2011¹⁸ customers may carry forward indefinitely their bill credit for any net-excess generation, or receive Net

¹⁷ Under P.U. Code 2827 solar NEM customers receive compensation at the full retail rate; other rules apply to biogas, fuel cells, and wind NEM customers.

¹⁸ Customers may sign-up for Net Surplus Compensation beginning in January 2010; they will not receive compensation until 2011, at the end of the 12-month period that would otherwise expire.

Surplus Compensation for the excess generation at a rate to be determined by the CPUC.

3.1.1. NEM Costs

A cost of the NEM program to the utility and, by extension, to ratepayers, is the “purchase” price paid to the customer for any excess generation. The sum of these individual “purchases” makes up one cost component of NEM. Currently, the utility purchases excess generation monthly at the full retail rate¹⁹, providing customers with bill credits. However, the bill credits currently expire if not used to offset other purchases (i.e. consumption from the grid) within a 12-month customer-specific true-up period. Beginning in 2011, customers may continue to carry over bill credits beyond the 12-month true-up period, or receive payment for the excess generation balance. This payment or carryover represents an additional cost to ratepayers.

To administer the NEM program, utilities also incur additional overhead costs. We consider the incremental billing costs of NEM in our base case analysis. Since the NEM statute prohibits utilities from charging customers for interconnection, interconnection costs born by the utility are another cost of NEM. Because we had only limited data on interconnection costs associated with NEM, we evaluate this cost in a sensitivity test.

3.1.2. NEM Benefits

The energy obtained from NEM exports does not need to be purchased elsewhere and delivered by the utility to customers. Therefore, the benefit of NEM is the sum of the costs that the utility avoids as a result of customer generation exported to the grid. The avoided costs considered in our analysis include: energy purchases; generation capacity or resource adequacy; line losses; transmission and distribution capacity; air pollution permits and offsets including

¹⁹ This is true for NEM solar customers, which are the focus of this report. Other types of generation (e.g. biogas, fuel cells) receive less than the full retail for some or all of their bill credits. All customers receive the full retail rate value for the portion of their generation that is used to directly offset load, but only *exported* generation is relevant to the this study.