

SGIP Greenhouse Gas Rules

Background

On August 1, 2019, the CPUC finalized a decision adding new rules to the Self-Generation Incentive Program intended to ensure that every energy storage system that receives a rebate from the program reduces greenhouse gas emissions.

These rules were developed because early SGIP systems resulted in increases in greenhouse gas emissions. For commercial customers, this was mostly because systems were discharging to address customer peak demand and recharging immediately after the demand spike. Due to round trip efficiency losses, customers were using more energy than they would have without storage and were not shifting their load to low-emission time periods. On the residential side, it was mostly because customers were on non-TOU rates or on TOU rates with time periods that were out of sync with grid needs, so they had no incentive to time their charging in ways that reduce emissions.

The chart below is an estimate of the hourly greenhouse gas intensity of the grid in kg/kWh. Generally, a battery will reduce emissions if it charges during the daytime and discharges at night, as long as it cycles enough to overcome round trip efficiency losses. If it does not coordinate the timing of charging and discharging, it can increase emissions.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.3968	0.3843	0.3054	0.3856	0.3487	0.4126	0.4441	0.4432	0.4655	0.4556	0.4689	0.4764
2	0.3874	0.3922	0.3104	0.3460	0.3377	0.3701	0.4381	0.4352	0.4450	0.4405	0.4514	0.4958
3	0.3996	0.3825	0.2729	0.3499	0.3253	0.3685	0.4347	0.4385	0.4424	0.4439	0.4439	0.4988
4	0.4096	0.3864	0.2870	0.3825	0.3721	0.3867	0.4402	0.4441	0.4509	0.4562	0.4473	0.4967
5	0.4069	0.4048	0.3366	0.4272	0.4226	0.4019	0.4609	0.4684	0.4502	0.4485	0.4610	0.4983
6	0.4244	0.4564	0.4132	0.4356	0.3641	0.3683	0.4411	0.4864	0.4609	0.4921	0.4714	0.4732
7	0.4653	0.5057	0.4029	0.3207	0.2611	0.2672	0.4304	0.4804	0.4563	0.5176	0.5278	0.5361
8	0.4735	0.4266	0.1858	0.1975	0.1869	0.2460	0.4177	0.4203	0.3954	0.4445	0.4956	0.5627
9	0.3716	0.3035	0.1030	0.2173	0.2844	0.3028	0.4294	0.4119	0.3622	0.3809	0.4416	0.4700
10	0.3242	0.2853	0.1585	0.2019	0.3022	0.3401	0.4459	0.4460	0.3747	0.3852	0.4232	0.4376
11	0.3208	0.2692	0.1731	0.1862	0.2853	0.3399	0.4563	0.4539	0.4237	0.3912	0.4425	0.4281
12	0.3282	0.2843	0.1502	0.2139	0.3229	0.3704	0.4631	0.4795	0.4120	0.4309	0.4196	0.4129
13	0.3162	0.3131	0.1643	0.2531	0.3265	0.4065	0.4756	0.5289	0.4469	0.4697	0.4395	0.4217
14	0.3364	0.3605	0.1816	0.2092	0.3038	0.4130	0.4988	0.5446	0.4562	0.4656	0.4595	0.4259
15	0.3363	0.3457	0.1810	0.2402	0.3374	0.4523	0.5338	0.5555	0.4670	0.4649	0.4878	0.4417
16	0.3877	0.3646	0.1929	0.2604	0.3819	0.4685	0.5540	0.5558	0.5027	0.5187	0.5325	0.4887
17	0.4494	0.4153	0.3078	0.3483	0.3926	0.4953	0.5585	0.5830	0.5369	0.5823	0.5454	0.5195
18	0.5224	0.5108	0.4560	0.4677	0.4763	0.5609	0.6235	0.6481	0.5558	0.5794	0.6308	0.6112
19	0.5414	0.5235	0.5073	0.5006	0.5022	0.6209	0.6585	0.6474	0.5873	0.5606	0.5752	0.5977
20	0.5215	0.5022	0.4759	0.5115	0.5054	0.5854	0.5995	0.6006	0.5229	0.5446	0.5995	0.6236
21	0.4979	0.4865	0.4675	0.4969	0.4757	0.5283	0.5261	0.5508	0.5206	0.5308	0.5667	0.6101
22	0.4708	0.4504	0.4494	0.4765	0.4771	0.4948	0.4814	0.5028	0.4878	0.4899	0.5198	0.5886
23	0.4230	0.4230	0.3498	0.3944	0.3876	0.4156	0.4499	0.4605	0.4646	0.4509	0.4995	0.5271
24	0.3944	0.3652	0.3239	0.3554	0.3710	0.4268	0.4492	0.4616	0.4700	0.4890	0.4502	0.4871

Storage systems paired with solar do not necessarily get credit for charging at zero emissions. If program evaluators determine that a customer would have installed solar whether or not SGIP encouraged the addition of storage, they conclude that the clean generation would have been exported to the utility were it not for the storage system.

Charging the battery in that case leads to an increase in grid power generation and is assigned the grid GHG value for that electricity.

The new rules will apply to systems that submit an SGIP Rebate Reservation Form after April 1, 2020. Any project that submits a complete application before that date will be considered a legacy project.

New Commercial Customers

Emission Reduction Amount

The program will soon produce real time data on the greenhouse gas intensity of grid power. Energy storage providers will need to manage charging and discharging to ensure annual greenhouse gas reductions of at least 5 kg/kWh for each system, in addition to managing charging and discharging for customer bill savings. If the battery is used for TOU load shifting, these will generally go hand in hand. If the battery is focused on reducing peak demand, the operator may need to do some additional cycling timed with GHG values to achieve emission reductions.

Penalty

If a system does not reduce emissions by at least 5 kg/kWh in a full year, the customer will lose part or all of the performance-based incentive for that year at a rate of one dollar per kg (\$1000/ton). The penalty cannot exceed the PBI amount for that year.

Other Commercial Requirements

- The cycling requirement for new projects will be reduced from 130 cycles per year to 104 cycles.
- Currently, systems smaller than 30 kW are not on performance-based incentives. Under the new rules, all commercial systems will be on PBI. The PBI schedule will remain the same with half of the rebate paid up front and the other half paid annually for up to five years based on annual cycling.
- After the PBI period, SGIP developers can be suspended from the program if their fleets repeatedly increase greenhouse gas emissions.

New Residential Customers

All new residential systems must have a single-cycle round trip efficiency of at least 85 percent.

The cycling requirement of 52 cycles per year is eliminated, but the rate requirement below will likely push customers to cycle more than that.

All new residential customers must be on TOU rates with a peak period starting on or after 4 pm and a differential between peak and off-peak rates of at least 1.69. The following rates currently qualify:

- PG&E EV2
- PG&E EV-B (closed to new customers)

- SCE TOU-D-PRIME
- SCE TOU-EV-1 (closed to new customers)
- SDG&E TOU-DR1
- SDG&E EV-TOU (must have EV)
- SDG&E EV-TOU-2 (must have EV)
- SDG&E EV-TOU-5 (must have EV)

Customers of municipal utilities that do not offer qualifying rates can instead use one of two solar plus storage operating modes – solar-only charging or solar self-consumption.

SGIP project developers will need to submit data twice per year on kWh charged or discharged in every hour. If a developer fleet increases emissions as a whole, the developer could be subject to program suspension.

Legacy Commercial Projects

Commercial projects already in place or that submit complete applications before April 2020 will have three options.

Option 1

Comply with the 66.5 percent annual round trip efficiency requirement that has been in place. The cycling requirement is removed.

Option 2

- Cycle 130 times per year and enroll in a CAISO demand response program or the Demand Response Auction Mechanism; or
- Cycle 130 times per year and be on a rate designed for storage, including PG&E Option S, PG&E A-1-STORE, SCE Option E, and SCE TOU-GS-1-ES.

Option 3

Reduce emissions on a developer fleet level below zero (as opposed to the -5 kg/kWh standard for new systems)

Legacy Residential Systems

The 52 cycle requirement is maintained but the annual round trip efficiency requirement is eliminated.

Developer fleets must reduce emissions, but without threat of suspension if they fail to do so.