SEAL BEACH MUTUAL NO. SIX

Physical Property

Maintenance and Procedure for Solar Panels

1. POLICY

It shall be the policy of Mutual 6 to obtain the maximum life and usefulness of the solar systems installed and identified below.

2. BACKGROUND & HISTORY

Mutual 6 was the first in the Leisure World Community to install Solar Panels from Carports to Laundry Rooms. Beta site was Carport 73 to Laundry Room 130 in June 2014. Based on data accumulated, five systems were installed in 2015, and the last 2 were installed in 2016. All systems will generate sufficient power to offset costs of the operation of Laundry Rooms, carport lighting, walkway lighting and sprinkler controllers. Installations are fairly simple with Panels installed on the roofs of carports, feed to a single inverter, and then wired into the Solar Ready Meter Panel. Inverter, production meter, and cut -off switches are housed in a utility cabinet adjacent to the carport or attached to the wall of the carport. This utility cabinet also contains a sub-panel that will be utilized for charging electrical vehicles or hybrid electric vehicles.

3. LOCATION, SYSTEM SIZE (MODULES) AND SOLAR GENERATION START DATE

3.1. Carport 73 - Laundry Room 130, 44 Modules (300-Watt Ea.), June 13, 2014
3.2. Carport 72 – Laundry Room 134, 33 Modules (315-Watt Ea.), July 16, 2016
3.3. Carport 76 – Laundry Room 63, 30 Modules (315-Watt Ea.), June 16, 2016
3.4. Carport 74 – Laundry Room 67, 44 Modules (300-Watt Ea.), April 16, 2015
3.5. Carport 77 – Laundry Room 61, 41 Modules (300-Watt Ea.), March 16,2015
3.6. Carport 78 – Laundry Room 55, 30 Modules (300-Watt Ea.), June 16, 2015
3.7. Carport 79 – Laundry Room 58, 33 Modules (300-Watt Ea.), June 16, 2015
3.8. Carport 80 – Laundry Room 143,33 Modules (300Watt Ea.), March 16, 2015
3.9. All systems identified above, were installed by Ameco Solar, Paramount, CA

4. WARRANTY INFORMATION

4.1. **Solar Panels (Modules)** – Twenty-Five Years by LG Electronics Corporation, subject to panel degradation of ¾ of 1%/year (.0075%/yr.) or 20% maximum at 25 years.
4.2. **Inverter** – Twenty years by Fronius USA
4.3. **Full System** – Ten years, no cost repair or replacement of system components to include Labor, by Ameco Solar, Paramount, CA
4.4. **Roof Penetrations** – Ten years by Ameco Solar, Paramount, CA.
4.5. Serial Numbers for both the modules and inverters are on file with the GRF

Physical Properties Dept.

5. WARRANTY REPAIR

5.1. GRF Physical Properties Inspector will be responsible for contacting the Supplier, Ameco Solar, 7623 Somerset Blvd., Paramount, CA. 90723, Telephone (562) 633-4400 for warranty services.

6. SYSTEM MONITORING

6.1. It shall be the responsibility of the Mutual to determine if the system(s) are operational by checking the output on the Analog Electrical Meter located in the Solar Utility Cabinets.

6.2. Using the internet and visiting the SCE Website. The site is user and password protected and contains usage data, production data, (down to a 15-minute time interval) on a daily basis, available on the site the next day. Historical data is also available to include month over year comparative data, billing, etc. and Demand, explained in detail on page 4 of this document.

7. MAINTENANCE PROCEDURE

7.1. **Filters:** Each Solar Utility Cabinet contains disposable filters located in visible locations on the side walls and above the doors. Standard furnace filters are to be changed in May/June of each year. There are two filters, rectangular in shape measuring about 5 x 4 inches on each side of the inverter. Clean with a soft brush at the same time as the disposable filter.

7.2. Dust off all electrical switches, meters etc. – once per year

7.3. Wash the solar panels once per year using the mobile four chamber filter with Solar Brush. The cleaning of the panels should only be performed if we have had no rain during the past 12 months. If required, the idea time to clean the panels would be the end of May prior to the Summer Peak Rate increase. Average time to clean the panels should be approximately one hour per location. Early morning only.

8. SERVICE MAINTENANCE RESPONSIBILITY

8.1. Changing of the filters

8.2. Washing of solar panels using Mutual Owner Solar Brush, and filter chamber

8.3. Visit the SCE Website on a weekly basis to check “demand” on each SCE Service Meter located at each Laundry Room, on a weekly basis because of our extensive use of solar. The website is user, and password protected.

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9. BOARD RESPONSIBILITIES

9.1. Overall responsibility for the operation of the solar systems by physically checking the analog production meter located in the Utility Cabinet. See System Monitoring, Item 1. This should be performed on a weekly basis.

9.2. The Board will make a decision at the end of each relevant period to accept a check from SCE in payment for excess generated electricity or roll any excess generated power over to the next relevant period. Currently all excess generated electricity is purchased by SCE and we are receiving a check. Form 14-906 available online from the SCE website is utilized for changes.

10. SYSTEM SHUT DOWN AND START UP

10.1. In the event that the system need to shut down for repair or maintenance of electrical, or electronic component the following will be the procedure:

10.1.1. **Shut down – (1) SCE Meter Panel:** Turn the knife switch (located to right of the meter) to its off position. **(2)** The inverter switch located on the bottom of the inverter, should be turned to the "off" position. Inverter is located in the solar utility cabinet.

10.1.2. **Start Up** – Reverse the order as it appears above.

10.2. **Note:** A Red LED light will be visible on the inverter for approximately five minutes and then will turn Green. Do not proceed to the SCE Service Panel until the Green Light appears.

11. COMMON TERMS AND DEFINITION USED IN SOLAR

11.1. **Net Metering Agreement (NEM)** – The Agreement between the Mutual and SCE for the Operation of a Solar Power Generation Facility. This agreement provides for the amount of power that can be generated, Rate Schedules (Tariffs) and other operating parameters. An original agreement is maintained by Physical Properties Dept. and a Copy is maintained in Solar File maintained by the President.

11.2. **Permission to Operate (PTO)** – The approval date given by SCE upon completion of all inspections. This date generally corresponds to the start of the relevant period.

11.3. **Relevant Period** – The start date of a 12 period of time going forward that usage and generation is tracked. At the end of the Relevant Period, debits (usage) and credits (generated power) are balanced. This happens 1 month after the close of the relevant period and we then have the option of selection to carry excess generated power forward to the next relevant period, cash out excess generated power and receive payment for the excess, or if we do not generate sufficient

power pay SCE the difference. Note: Credits are accumulated under one tariff and excess generated power under a separate tariff.

11.4. **Net Energy Surplus Electricity Compensation** – This is a rate schedule that explains how SCE will pay the Mutual for excess generated power. It was approved by the Public Utilities Commission, to bring the excess power generated by the Mutual, comparable with competitive pricing for electricity purchased by SCE, of course at a lower rate.

11.5. **CPUC – California Public Utilities Commission** – The agency that sets rates for transportation and all utilities that are privately owned such as water, gas and electric and telecommunications. The commission is appointed by the Governor of CA.

11.6. **Solar Panel** – Collects the energy of the Sun as direct current (DC). Panels are individual solar cells, wire together into a panel that will produce power from 100 Watts to about 350 Watts.

11.7. **Inverter** – An electronic device that solar panels are connected that will transform the DC power from the solar panels in usable AC power.

11.8. **Demand** – Can easily be compared to the acceleration of a car, the harder you press the gas pedal the faster the car goes. The same is true with electricity, the more load you add (starting multiple dryers at one time is a good example) the higher the demand. Our tariff (TOU- GS-1) allows 3 violations of a 20-kW overage in a calendar year without penalty. Penalty for exceeding a 20-kW threshold will jeopardize the use of Tariff TOU-GS-l and SCE will place us in Tariff GS-2 for minimum of one year. Higher rates would apply, and it would be difficult for the solar as configured to realize the cost savings we are now realizing. There is a Demand Controller installed in each laundry room connect to the incoming power of the SCE Meter.

Document History

Adopted: 23 Sept 2016 Action

Keywords: Maintenance Procedures Solar Panels