



CO-OPS Engineering Bulletin 20-004

Engineering Change: Standardize to 40 Watt Solar Panels and Create a 10 Year Replacement Cycle for Solar Panels

Systems Affected: All CO-OPS Stations Utilizing Solar Power

Originating Team: Chesapeake and Seattle Instrument Labs

MSCS Approval Date: 07 February 2020

Background: As NOAA CO-OPS continues to upgrade to new sensor types, add more sensors to current data collection platforms, and generally increase the overall amount of data retrieved, the power budget for CO-OPS monitoring stations has continued to grow. In order to meet the new power budget needs there has been a large push to replace all of the older solar panels still installed in the field with new 40 Watt Ameresco or Kyocera Solar Panels. The new 40 Watt panels have already shown significant improvements in charging during harsh winter conditions and prolonged periods of minimal solar radiation. As a result of the panel swaps, data ingestion rates have consistently increased across all stations where the new panels have been fully implemented. CIL and SIL are requesting that all solar panels smaller than 40 Watts, installed for more than 10 years, or showing visible signs of aging be upgraded to new 40 Watt Ameresco units to further enhance CO-OPS observational tides and currents network.

Action Required: Replace all existing 10, 20, and 30 Watt solar panels during the next regularly scheduled site visit, unless otherwise noted by one of the instrument labs in the eSite comments for that particular solar panel. Any 40 Watt solar panels that have been installed for 10 or more years will also need to be replaced. Replacement of the solar panel should also include installation of new mounting hardware and associated power cable to the solar panel. Older panels can be identified via eSite and should be documented by field crews as they complete emergency and annual maintenance visits. Once a panel has been identified for replacement, the requirement should be added to the project instructions for that station. If possible crews could also try to address the solar panel swap while onsite (if they have equipment available or will be onsite long enough to have the proper equipment shipped to them). Some stations have implemented mounts that were designed in-house and will need to be updated in order to fit the new solar panels. As a result, these stations should be documented in eSite so the instrument labs can access the new mounting needs and consult DDET as necessary. For new stations, if non-standard solar panels are necessary or requested then the appropriate instrument lab should be consulted on the size and mounting options for those panel(s) during the station design phase.

Older 30 and 40 Watt solar panels can usually be identified by their non-white backing on the rear of the panel and large white diamonds or a blue crystalline face on the front of the panel. Two examples of 30 Watt solar panels are shown below for reference:



Anything smaller than a 30 Watt solar panel should also have a noticeably smaller size that can further be used to identify non-standard panels. If you have questions regarding the type or wattage of solar panel please contact CIL or SIL for clarification (please provide pictures or any identifying features when sending the request).

For panels of unknown wattage that do not have any identifying features, one technique to check the size would be to measure the output current of the panel in question and compare it to the output current of a known good 40W panel at the same site. If the output of the unknown panel is lower than the output of the known good panel it is either a smaller panel or is performing sub-optimally and should be replaced.

Estimated Time To Complete: 1 hour per solar panel that needs to be swapped. This includes the installation of the new mount/panel and running of the power cable through conduit. Please note, the time required to complete the work may vary depending on the need to upgrade the mounting solution, especially if DDET resources are required.