



EcoMotion – Sustainability Solutions

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A Review of Operations and Maintenance Providers for Aging Solar Solar Systems

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This briefing is meant to provide solar photovoltaic system owners, commercial and residential, an overview of the operation and maintenance landscape for aging solar systems in Southern California, directing them toward the services they need. It does not offer a complete survey of such service providers, nor does it comprehensively convey the suite of services available in the solar photovoltaic operation and maintenance (O&M) market. Instead, it provides a high-level description of the types of operation and maintenance services that are generally available to Southern California. This briefing is also paired with a [spreadsheet directory](#) of responsive O&M providers that will service solar systems throughout Southern California and occasionally the whole state. Look to it for specific information including service area, company type, and avenues of contact.

Introduction

Few solar photovoltaic system owners need to be reminded that their solar assets only become economical once they have recouped their installation costs, and that prolonging their systems' useful lifespans leads to greater return on investment. The same can be said of a system's environmental benefit: the longer a system operates, the more carbon emissions are avoided, and the more the environmental costs associated with production and installation are outweighed.

In accordance with this fact, most solar providers offer some sort of warranty on their workmanship, often including maintenance for the systems they have installed, sometimes through the panels' estimated useful lives. Unfortunately, not all solar providers adequately service compromised systems and some of those from years past have gone out of business.

Some combination of inverter issues, other system issues, and the simple fact that many of the solar providers that would otherwise provide maintenance have gone under, has left many current system owners in need of O&M service. This briefing can help system owners find new O&M service providers. The following paragraphs will focus on the commercial O&M space first, and the residential space second.

O&M Services for Commercial Installations

As commercial solar installations can be more complicated and represent bigger investments and bigger generation potential, the suite of maintenance services geared toward them is greater than for those meant for residential systems. The relatively few companies that service solar systems they did not install offer what can be conceived of as three main types of services: maintenance contracts, per-incident maintenance visits, and monitoring services.

Maintenance contracts generally operate on a yearly basis and are billed monthly, giving system owners confidence that solar professionals are keeping their assets in working order and clean. Ideally, they provide the assurance that should an issue arise, it will be remedied expediently. Such agreements vary greatly in terms and according to the systems, so ballpark prices are rarely provided.

Per-incident maintenance visits, or service calls, operate as they would in any other industry; if a system owner knows her array has not been generating power, or it is producing far less power than expected considering the weather conditions, she can call an O&M provider that offers per-incident maintenance services. She will cover the cost of troubleshooting and the necessary work. While this may be the cheaper maintenance option, and indeed the only option for those systems currently offline, maintenance exclusively through this avenue will not provide panel cleaning, resulting in terminal inefficiencies. (It may then prove necessary to have the panels separately cleaned from time to time.) Rates vary, but those companies that would disclose ballpark rates indicated that the fee to 'roll a truck' and receive diagnostic services was about \$450 - 750 for commercial systems. Hourly rates varied from there. However, issues are purportedly often resolved during troubleshooting.

If commercial installations do not have an operational monitoring system, some companies will install them after the fact. This may include performance tracking hardware paired with software, such as a digital model of the solar system which uses real time weather data to benchmark how the system should perform, and compare actual rates against it. The single service provider who offered approximate costs for a monitoring system suggested that initial equipment and installation was not always necessary, but that it could cost \$5,000 - 10,000, and additional monthly fees were between \$220 - 500 dollars, depending on system capacity.

Enphase O&M Marketplace: A promising O&M service for commercial solar systems is offered by a platform called Enphase O&M Marketplace. The platform, formerly known as Pronto 365, is an online marketplace meant to facilitate O&M and installation service for cleantech and “Internet of Things” asset owners. In order to use the platform, consumers create profiles of their assets with information including technology type, location, and manufacturer. From there, asset owners can create work orders when necessary, and the platform notifies qualified service providers, who then schedule with owners.

O&M Services for Residential Installations

As with commercial O&M, maintenance providers offer per-incident maintenance service in the residential space and it looks much the same as service calls in other industries. A customer will call to schedule a service, e.g., inverter replacement or troubleshooting, and have technicians out to the site once, or as many times as necessary. One notable difference as compared to other industries, which pertains to commercial per-incident visits as well, is that service providers will help customers invoke product warranties where covered hardware has failed. If service providers charge a minimum fee per visit, however, short follow up visits can become relatively costly. Diagnostic or troubleshooting services range from \$250 - 450, and if issues are not resolved immediately, job-specific proposals are made.

While a properly installed residential solar system may never need repair, systems in Southern California, where rain is scarce, benefit from cleaning services. Even those solar modules that are advertised as self-cleaning, and feature a hydrophobic top surface that allows rain to sluff dirt off of it, develop layers of dust which reduce conversion efficiency. As such, it is often recommended that residential systems are cleaned once or twice a year.

Fortunately for system owners who do not wish to clean their arrays themselves, some companies offer panel cleaning services. Some are priced at a flat rate, and some by the panel. Prices found ranged from \$249 - 650 per service, or \$7 - 9 per panel, which amounts to \$180 for an averagely sized 5 kW system with 250-watt panels.

For those residential system owners interested in streamlining their panel maintenance and making sure that their system is well cleaned, at least one company offers a residential maintenance agreement it terms an “insurance package.” The Solar Panel Doctors, based in Corona and serving Los Angeles, Orange County, and the Inland Empire, offers an annual cleaning and check up with two troubleshooting visits per year for an annual fee of \$500.