



Residential Solar Photovoltaic System Inspections: What to Expect

This document can help explain what to expect if your PV system has been selected for inspection by the Massachusetts Clean Energy Center (MassCEC). MassCEC selects projects for inspection both randomly and based on a number of factors including installer volume, time since last inspection, previous inspection scores and available budget. MassCEC is a quasi-public state agency whose objective is to increase the statewide adoption of renewable energy, while driving down the costs and delivering financial and environmental benefits to ratepayers. MassCEC works closely with residents, businesses, and municipalities to develop programs that provide renewable energy solutions for their energy needs, including solar finance and education programs such as Mass Solar Loan, Solarize Mass, Solar Connect, and Commonwealth Solar programs.

In order to assure quality assurance for solar PV projects participating in MassCEC programs, MassCEC has contracted with The Cadmus Group (Cadmus) as a third-party Technical Consultant. Cadmus has conducted more than 3,000 detailed inspections of solar photovoltaic (PV) systems across the United States, with the goal of ensuring the safe and effective operation of PV systems installed on and around homes and businesses. Cadmus works for public agencies, utilities, financiers, solar developers, and government entities and has been involved in the solar energy industry since 2002. Cadmus: “We pride ourselves on providing a thorough and professional inspection of completed PV systems, and all of our solar inspectors have extensive training, hands-on experience, and the best tools and resources available to conduct inspections safely and efficiently. Further, our Cadmus solar inspectors provide in-depth training to solar installers, municipal electrical inspectors, and firefighters, so you know that the inspection of your solar system is being conducted by industry leaders that understand solar installation requirements and best practices.”





What to Expect from Your Solar PV Inspection

With Cadmus,¹ your inspection experience will start with scheduling your PV inspection. In some cases, Cadmus will work with your system installer to coordinate the inspection, and in other cases, you may be contacted by one of Cadmus' courteous staff to identify a convenient time for us to conduct the inspection. When scheduling an inspection, Cadmus will always provide:

- Exact date and time the inspection will start (you will not be given a "window" of time in which you have to wait for our inspector to arrive)
- Approximate length of the inspection (typically 60-90 minutes for a residential PV inspection)
- General overview of items the inspector is likely to look at and areas he or she will need to access during the inspection
- Contact information, should you need to cancel or reschedule the inspection

Prior to arriving on site, the inspector will be properly prepared and equipped to perform a prompt, thorough inspection. Once onsite, you can expect the inspector to have a professional appearance and introduce him or herself before beginning the inspection. He or she will have boot covers to encase his/her footwear if weather conditions may cause dirt or mud to enter the house. Care always will be taken to treat your home with respect.

If the system installer is not present, the inspector may ask to be shown where key equipment is located. For a complete and thorough inspection, the inspector will ask for permission to access the solar modules (typically on a home's roof), the PV system electrical components, the main electrical panel, the route taken by conduit, and the attic (if applicable/accessible). As a common courtesy, the inspector always will ask permission before visiting any location in the house or before moving around your property. The inspector may need to shut down your system for a short time to safely complete parts of the inspection but will always strive to minimize any possible downtime or inconvenience.

What Cadmus Inspects

Cadmus uses a proprietary database, called the PV Quality Evaluation and Scoring Tool (or PVQUEST, for short) that includes more than 600 of the most common PV installation issues. Using an iPad, the inspector will populate PVQUEST with photographs and notes about your PV system in order to complete a detailed inspection report for your installer. The inspector will carefully conduct a visual inspection of all equipment, including opening relevant enclosures and removing the covers from some equipment to examine the wiring and connections. Our inspectors will not make any changes to your

¹ Your city or town's electrical inspector may have previously visited your residence to review and approve the PV system for local permitting purposes. Cadmus' inspection is separate from and supplementary to the local inspector's review.

system and will ensure that all equipment is returned to its original condition before leaving the site. Our inspectors use relevant codes and standards as the basis for inspection, including:

- The National Electrical Code, with key articles such as:
 - Article 690: Photovoltaic (PV) Systems
 - Article 705: Interconnected Electric Power Production Sources
 - Article 310: Conductors for General Wiring
 - Article 240: Overcurrent Protection
 - Article 250: Grounding and Bonding
- The International Building Code, with key articles such as:
 - Article 1505.9: Photovoltaic panels and modules
 - Article 1507.2.9: Flashings
- Equipment listing in compliance with Underwriter’s Laboratory requirements and manufacturer installation instructions

A Cadmus Solar Inspector Using PVQUEST to Inspect a Solar PV System



Cadmus will also check the “solar access” of your system by measuring the impacts of shading, tilt, and orientation on your expected electricity output. We will also make sure that your system’s equipment and configuration match the relevant design records and incentive documentation. Before leaving, the Cadmus inspector will ensure that your system is operational and let you know that the inspection is concluded.

Following the inspection, Cadmus will provide your system installer with a complete report of our inspection findings. In most cases, we will work with your installer to ensure that your installer addresses any deficiencies, and you are left with a functional PV system that will reduce energy your costs for 20 years or more.

For More Information

More information about the Massachusetts Clean Energy Center can be found at: www.masscec.com. To learn more about additional renewable and clean energy programs managed by MassCEC, go to <http://www.masscec.com/get-clean-energy/residential>.

More information about Cadmus’ solar quality assurance work can be found at <http://www.cadmusgroup.com/our-services/energy-services/renewable-energy/>