

# Solar Equipment Buyers' Guide for Supply Chain Traceability



## Introduction

Deployment of renewable energy systems in the U.S. has grown rapidly over the past decade. Costs have dropped, and regulatory developments and new ownership and financing models allow more Americans than ever to choose renewable energy.

In parallel, project developers and owners, end-users (e.g., homeowners and utilities), and other stakeholders are closely examining how solar equipment is manufactured. Motivations include ensuring that the products meet quality standards, corporate social responsibility requirements, environmental considerations, and applicable laws. Consequently, manufacturers are increasingly being asked to demonstrate the provenance of not only the products they sell but also key material inputs.

In response to this need, Solar Energy Industries Association (SEIA), in collaboration with Senergy Technical Services (STS) and Clean Energy Associates (CEA), created a traceability tool or protocol designed to help increase transparency in renewable energy supply chains and increase confidence in renewable energy products.

## The SEIA Traceability Protocol

The SEIA Traceability Protocol (Protocol) lays out a series of steps that a manufacturer can take to track the origin of material inputs through specified stage(s) of production, processing, and distribution, e.g., the factory location and production date of polysilicon used in a finished solar module. The Protocol aims at helping capture and making transparently available to stakeholders which companies and facilities participated in the manufacturing of renewable energy products on the market.

It is worth noting that the Protocol itself does not seek to determine other features of the product, such as product quality. Rather, it aims to equip stakeholders with trustworthy and transparent information about the supply chain.

For each “step” or “link” within the supply chain, the Protocol requires that certain information about the material inputs used within each production step is conveyed to the next step of the production process. In the event a step in the process includes multiple sources of materials, the Protocol asks for the producer to track which products use which input material and, if necessary, to segregate input materials.

In a robust implementation of the Protocol, a supplier could show the provenance of, for example, polysilicon used in a crystalline silicon photovoltaic module. This information can be used, for example, to address inquiries from U.S. Customs and Border Protection (“CBP”) or customers regarding the source of material inputs.

The Protocol also recognizes that strong organizational controls must be in place to ensure compliance and, in turn, confidence in a supplier’s claims. Examples of such controls include:

- Independent, third-party audits applied to internal processes and third-party suppliers;
- Corporate social responsibility codes of conduct;
- Security measures to safeguard information and prevent tampering of goods;
- Due diligence and monitoring of suppliers;
- Compliance programs;
- Trainings of employees; and
- Enforcement of policies and procedures along with corrective action plans.

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## Role of Manufacturers in the Application of the Protocol

Manufacturers along the supply chain are responsible for implementing the Protocol.

The Protocol offers guidelines for a manufacturer to document provenance of the materials used in production, beginning with a description of the supply chain that creates the product and followed by identification of each of the components of the product and its provenance.

As applied to the solar module supply chain:

- The module assembly operation establishes the materials used to make the module and their provenance, including the cell;
- The cell operation establishes the materials used to make the cell and their provenance, including the wafer; and
- The wafer operation establishes the materials use to make the wafer and their provenance, including the polysilicon.

When the Protocol is applied at each step of manufacturing, the module supplier gains access to data from all links in the chain and can demonstrate provenance of all components.

## Buyer's Role in the Protocol

While buyers may not play a direct role in implementing the Protocol, their role is important in ensuring the key principles of Protocol are applied. Below are some suggestions on how to become better informed about your supply chains:

- **Encourage suppliers to use the Protocol or a traceability solution which adopts the Protocol's essential elements.** Transparency in supply chains helps ensure that the products you purchase meet your needs. The Protocol has been designed to improve transparency in the supply chain.
- **Verify that suppliers adhere to the Protocol.** Buyers should ask whether manufacturers conduct due diligence to ensure compliance with the protocol, e.g., by providing a copy of an audit conducted by a qualified, independent third-party organization. This due diligence should also apply to the manufacturer's upstream suppliers.
- **Assess your suppliers.** Assessing suppliers upfront will help you better understand their policies and procedures, and therefore evaluate the potential risks. Below are potential questions to ask when talking with a supplier.

## Key Questions to Ask Suppliers

- Do you follow the SEIA Traceability Protocol? If not, why not?
- Do you and your suppliers have a corporate social responsibility code of conduct or policy in place? If so, can you share it?
- Does your code of conduct address the areas covered by the International Labor Organization's core labor standards?
- Do you communicate your code of conduct to your suppliers?
- What steps do you take to ensure that you and your suppliers are in compliance with U.S. laws and regulations?

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- Can you show where the product is manufactured and where the inputs come from? For example, can you explain where the module, cells, wafers, and polysilicon come from? Are they manufactured in locations where independent audits are allowed?
- Can you provide the most recent independent audit reports regarding your claims?
- Who conducted the audit? Was it conducted by a qualified, independent third-party organization?
- Are the audits announced or unannounced? How often are audits conducted?

## Links and Additional Resources

- [Solar Supply Chain Traceability Protocol 1.0](#)
- [Solar Industry Commitment to Environmental and Social Responsibility](#)