Tax-Credit Certified Technician
Solar Test Topics

The purpose of this test is to determine if you have a minimum understanding of solar thermal energy systems, and what constitutes good design, performance and quality. These questions do not constitute in any way the breadth of knowledge needed for system design and installation.

For certification you must get at least 70 points. The test and is “closed book”. All necessary information is provided in each question. You will need a calculator. Some questions require you to show your work. Some questions are eligible for partial credit.

The following list describes concepts that may be covered in each test areas.

Photovoltaic Technology

- Ability to draw a single line diagram of common system types
- The purpose of bypass diodes to reduce shading losses
- Design current for PV system
- Design limit for total wire losses for PV system
- Inverter maximum power point range affect on the number of modules in series
- The impact of low temperature on module and string voltage
- The impact of high temperature on module and string voltage
- Estimating how much energy should be delivered by a system
- Calculating the AC voltage at the inverter when it is running
- The governing standard for utility interactive inverters
- Determining wind loading and pullout strength of roof mounted PV arrays
- Residential system size limits
- Battery voltage
- Battery based system components
- Ground wire size sufficient to protect against physical abuse
- Energy Trust program requirements for roof life
- Proper practices for roof mounting
- Design safety factor for pull-out strength of wood screws and lag bolts
- Battery enclosure design

Solar Thermal Technology

- Ability to draw a single line diagram of common system types
- Understanding of what SRCC is and does
- Thermosyphoning losses on storage tanks
- Impact of hot water use on system performance
- Sizing a system
- Collector stagnation issues
- Determining wind loading and pullout strength of roof mounted collectors
- Freeze protection strategies
- The Brightway to Heat Water™ technical specifications
- Isolation plumbing
- Estimating system efficiency
- Energy Trust program requirements for roof life
- Understanding of The Brightway to Heat Water™ technical specifications
- Use of Cross-linked polyethelyene pipe
- Appropriate pipe insulation ratings
- Understand Drainback system configuration operation and performance
- Understand Glycol system configuration operation and performance
- Understand Thermosyphon system configuration and operation

Sun Chart

- Ability to draw a sunchart
- Understanding of the impact of tilt and orientation
- Ability to calculate a site’s total solar resource fraction
- Reading a compass

Tax Credit Rules

- Purpose of tax-credit technician certification
- How to maintain status
- Who can legally install systems (licensure)
- How to determine tax credit amount
- Warranty requirements
- Required system documentation