



ICC-SRCC

500 New Jersey Avenue, NW
Sixth Floor
Washington, DC 20001
t: 888.ICC.SAFE (422.7233)
t: 202.370.1800
f: 202.783.2348
www.solar-rating.org

ICC-SRCC™ CERTIFICATION POLICY OG-100-2017-7

OPERATING GUIDELINES FOR CERTIFYING SOLAR COLLECTORS

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1. PURPOSE

This document sets forth the procedures for the operation of the Solar Rating & Certification Corporation's (ICC-SRCC) solar collector certification program. Solar collectors that meet the minimum standards set by ICC-SRCC will be approved to bear a certification label. Companion documents, ICC 901/SRCC 100, *Solar Thermal Collector Standard*, and *ICC-SRCC Test Method TM-2, Photovoltaic Water Heating Collector Test and Certification Protocol* describe the test methods and criteria used for evaluating various types of collectors for durability and thermal performance. In addition, the ICC-SRCC document, *ICC-SRCC RM-1, Methodology for Determining the Thermal Performance Rating for Solar Collectors* describes the means by which the ICC-SRCC computes the characteristic all-day energy output of a solar collector under prescribed rating conditions.

2. SCOPE

This document provides the operating guidelines for the certification of solar collectors, including flat plate, evacuated tube, concentrating, transpired, integral collector storage (ICS), nonseparable thermosiphon (NSTS), photovoltaic-thermal (PVT) and PV water heaters. It prescribes the procedures and requirements for obtaining ICC-SRCC certification and for using the ICC-SRCC certified ratings. Solar thermal collectors are eligible for certification if they can be fairly and adequately evaluated under the test sequence(s) identified in ICC 901/SRCC 100 or ICC-SRCC TM-2.

3. REFERENCES

- *ICC 901/SRCC 100-2015, Solar Thermal Collector Standard*
- *ICC-SRCC Document CS-1-05, Operating Guidelines Governing Component Substitution in the SRCC Solar Collector and Solar Water Heating System Certification and Rating Program,*
- *ICC-SRCC Testing Program Approval, Approval Policy For Testing Programs for Solar Components and Subsystems.*
- *ICC-SRCC Test Method TM-2, Photovoltaic Water Heating Collector Test and Certification Protocol*
- *ICC-SRCC RS-1, Random Selection Procedure*
- *ICC-SRCC RM-1, Methodology for Determining the Thermal Performance Rating for Solar Collectors*

4. DEFINITIONS

Accredited Laboratory - A laboratory possessing accreditation under ISO/IEC Standard 17025.

Applicant - Manufacturer seeking certification of a product or system under an ICC-SRCC certification program. (*ICC-SRCC Quality Manual*)

Approval - Formal evaluation and notification by the ICC-SRCC that a laboratory is qualified to perform the specific tests listed in the approval for the purpose of providing test data to support requests for solar collector certification.

Approved - Deemed acceptable in writing by authorized representative(s) of ICC-SRCC.

Approved Laboratory - Accredited and ICC-SRCC-approved third party testing laboratory participating in the Approved Testing Laboratory Program. (*ICC-SRCC Testing Laboratory Policy*)

Licensee - A person or business that provides a product or service under legal agreement with another person or business.

Manufacturer - Any corporation or division, any firm or person which performs at least one of the following functions with respect to solar collectors:

- a) principal design of the product;
- b) production of the product in whole or part, including any substantial processing or assembling operation;
- c) continuous sale of reasonable volumes of the collector in the open market, under its own trade name.

Manufacturer may also mean a company that assembles, fabricates, and/or sells a solar collector that has been certified by another company.

Participant - Participating manufacturers in a ICC-SRCC certification program holding active certifications. (*ICC-SRCC Quality Manual*)

Withdrawn - Cancellation of the certification of a product or system from a ICC-SRCC Certification Program by the participant.

Solar Collector - A device designed to absorb incident solar radiation, to convert it to thermal energy, and to transfer the thermal energy to a fluid coming in contact with it. The materials and dimensions of the cover (if any) and the absorber must be specified. A solar collector must contribute net gain and be able to have its solar energy conversion efficiency characterized by recognized thermal performance equations.

For ICS and non-separable thermosiphon systems, the “collector” includes the integral storage.

Photovoltaic Water Heater (PV Water Heater) - Solar water heaters that utilize one or more photovoltaic modules to convert solar radiation to electricity, which is then used to heat water. PV Water Heaters include PV module(s), wiring, controller(s), electrical conditioning components (e.g. inverters) and components used to convert electrical energy to thermal energy in water (e.g. heating elements).

ICC-SRCC - The Solar Rating & Certification Corporation, Inc., the organization which is responsible for conducting the program, described herein, for certifying solar collectors. (*ICC-SRCC Quality Manual*)

ICC-SRCC Executive Director - As defined in the Bylaws of the Solar Rating & Certification Corporation. (*ICC-SRCC Quality Manual*)

ICC-SRCC Technical Director - As defined in the Bylaws of the Solar Rating & Certification Corporation. (*ICC-SRCC Quality Manual*)

Suspend - Certification temporarily placed in inactive status pending further action as specified by ICC-SRCC.

5. GENERAL

5.1 Protecting Proprietary Information

The following data and information shall be considered confidential and may be disclosed only as provided in this program and the *ICC-SRCC Quality Manual* and *ICC-SRCC Confidentiality Policy*:

- a) all data and information furnished by the applicant to ICC-SRCC, or to an approved ICC-SRCC Testing Laboratory;
- b) all test data provided by the approved testing laboratory; and
- c) all performance calculations developed by ICC-SRCC.

Certified performance ratings based on the certification test reports may not be designated confidential. Data in any certification file or application file is considered proprietary. The data may be disclosed by ICC-SRCC upon written consent of the applicant or, with notice to the applicant, pursuant to a subpoena issued by a court or other governmental agency of competent jurisdiction. Proprietary data may also be disclosed to a staff member of the Solar Rating and Certification Corporation (ICC-SRCC) or an authorized representative of ICC-SRCC having a legitimate interest therein.

As required by ICC-SRCC's accreditation provider, ICC-SRCC records and files are audited by national and international bodies to establish conformance with international accreditation and conformity assessment standards. It is understood that by executing such a certification application, applicants grant ICC-SRCC the authority to allow such access.

5.2 Impartiality (4.2)

All certification activities associated with the ICC-SRCC OG-100 Solar Thermal Collector Certification Program shall be undertaken impartially and in accordance with the *ICC-SRCC Quality Manual* and the *ICC-SRCC Impartiality Policy*.

5.3 Basis of Evaluation

Solar thermal collectors certified under the ICC-SRCC OG-100 Solar Thermal Collector Program shall comply with *ICC 901/SRCC 100 Solar Thermal Collector Standard* as modified by this document and in accordance with the *ICC-SRCC Quality Manual*.

5.3.1 Test Methods. Testing of solar thermal collectors for the OG-100 program shall be conducted as specified in ICC 901/SRCC 100, Table 401.2 for the collector type, with the following exceptions:

- a. Rain Penetration testing, as specified in ICC 901/SRCC 100 Section 401.17 shall not be required for any collector type.
- b. Mechanical Load testing, as specified in ICC 901/SRCC 100 Section 401.18, shall not be required for unglazed collectors.
- c. Photovoltaic Water Heaters shall be evaluated in accordance with the requirements contained in *SRCC TM-2 Photovoltaic Water Heating Collector Test and Certification Protocol*.
- d. Photovoltaic-Thermal (PVT) collectors shall be tested in accordance with the requirements found in ISO 9806, Section 24 and shall comply with the ICC 901/SRCC 100 standard. Testing of PVT collectors shall be conducted with the type of PV module for which the PVT is designed.

PVT Exceptions:

1. Impact Resistance testing of the solar thermal collector per ICC 901/SRCC 100 Section 302.1 shall not be required where PVT solar thermal collectors are located behind the PV module.
2. The PV module used for testing of the PVT assembly shall be Maximum Power Point (MPP) tracked during the solar thermal performance testing prescribed in ISO 9806.
3. The gross area of the PVT assembly shall be measured by utilizing the projected area of the PV module and solar thermal collector assembly.

NOTE: Testing requirements from ICC 901/SRCC 100, Table 401.2 and the exceptions above are summarized in Annex A of this document for reference purposes.

5.3.2 Code Compliance. Certified solar thermal collectors shall be designed to comply with all codes in force at the intended installation site(s). Installation manuals for the solar collector shall specify code-compliant installation methods and practices.

5.4 Test Data

5.4.1 Test data requirements. Test data submitted to ICC-SRCC in support of a basic application for OG-100 solar thermal collector certification shall comply with the following:

- a. Testing shall have been performed within the last 10 years on the same model as the one submitted to ICC-SRCC for certification.
- b. The collector shall be tested in accordance with and in the exact order specified in ICC 901/SRCC 100 as amended by Section 5.3. Any unauthorized variations to the testing sequence and specifications will void the test results' acceptability for purposes of ICC-SRCC certification and rating.
- c. Testing shall be conducted by a testing laboratory approved by ICC-SRCC as defined by the *ICC-SRCC Testing Laboratory Program Policy*.
- d. Test data shall be submitted by the testing laboratory directly to ICC-SRCC, and shall include a report of the results using the *Test Report Template* defined in Annex B1 of the *Global Solar Certification Network (GSCN) Working Rules*.

Testing shall be conducted while the testing laboratory is an approved ICC-SRCC Testing Laboratory in good standing, except any of the following cases as determined by the ICC-SRCC Technical Director:

- a) The testing laboratory was an approved ICC-SRCC Testing Laboratory at the time the testing was conducted, but was no longer an approved ICC-SRCC Testing Laboratory when the application for OG-100 certification was submitted.
- b) The testing laboratory was not an approved ICC-SRCC Testing Laboratory at the time of testing, became an approved testing laboratory by the time of certification application, and a review by the ICC-SRCC Technical Director has determined that testing was conducted in full compliance with ICC-SRCC OG-100 certification program requirements. In this case, reformatting of the test report to meet ICC-SRCC certification program specifications may be required.

In all circumstances, ICC-SRCC reserves the right to reject test data that fails to meet established ICC-SRCC requirements for the conduct of the testing or reporting of the test data, as determined by the ICC-SRCC Technical Director.

5.4.2 GSCN test data acceptance. Testing data collected by testing laboratories recognized by the Global Solar Certification Network shall be accepted for OG-100 certification where the data was collected in accordance with ICC-SRCC certification program requirements and where the testing laboratory was approved by ICC-SRCC per the *ICC-SRCC Testing Program Policy* and this document. Where the testing

dataset developed for certification by another GSCN CB is determined to be acceptable for ICC-SRCC OG-100 certification, but is incomplete and omits data specifically required by standard ICC 901/SRCC 100 and as specified in Section 5.3, ICC-SRCC shall identify the additional data required for OG-100 certification. Where the test data was collected prior to ICC-SRCC recognition as a GSCN-approved certification body, it shall be evaluated in accordance with Section 5.4.1 and shall be subject to review by the ICC-SRCC Technical Director for compliance with ICC-SRCC certification program requirements.

5.5 Performance Ratings

Performance ratings shall be calculated using the methodology established in *ICC-SRCC Document RM-1 Methodology for Determining the Thermal Performance Rating for Solar Collectors* using the test data submitted in support of the application.

For non-glass and non-tempered glass collector covers, the results of the test specified in Section 302.1.2 of ICC 901/SRCC 100 shall be used to rate the impact resistance of the cover using the scale provided in Annex B.

5.6 Denial of Certification

If ICC-SRCC determines that the application does not satisfy all criteria of certification, ICC-SRCC shall give the applicant written notice containing a statement of all reasons for the denial. Adverse actions are subject to appeal in accordance with the *ICC-SRCC Complaint Policy*.

5.7 Selection of Test Samples

Solar collectors of the model(s) to be certified shall be selected at random in accordance with *ICC-SRCC RS-1, Random Selection Procedure* and sent to the selected testing laboratory. The selection methodology to be used shall be determined by the Applicant and Laboratory, unless stipulated by ICC-SRCC. A minimum of two test samples shall be selected and provided to the selected ICC-SRCC testing laboratory. One unit is selected for full certification testing. A back-up unit is also chosen in case the selected unit is damaged during shipping or in the testing process. Selection of test samples shall be from among no less than five items, except in the case of concentrating collectors where selection shall be from among no less than two items.

Combined solar collector assemblies may use the random selection methodology if all components are shipped from the manufacturer and each subcomponent has affixed labels. It is required that collector geometry cannot change from specification at final assembly. For Combined solar collector assemblies where final assembly normally takes place at end-use locations, random selection is not necessary. For distributed solar concentrating collectors where the subcomponents are not physically connected to each other, Random Selection is also not necessary.

6. GENERAL CERTIFICATION PROCEDURES

All categories of an application for ICC-SRCC OG-100 certification shall be initiated in accordance with the following procedure:

1. **Registration with ICC-SRCC:** Before applying for any ICC-SRCC certification programs, an applicant must first be registered with ICC-SRCC. This is a one-time step that establishes an account and allows access to ICC-SRCC's automated system. Existing or past ICC-SRCC participants may skip this step and may request a login ID and password from ICC-SRCC staff.
2. **Application:** A manufacturer wishing to apply for the ICC-SRCC OG-100 Solar Thermal Collector Certification Program shall first submit an application package (available on the ICC-SRCC website at <http://solar-rating.org/apply/index.html>) for one or more qualifying solar thermal collector models.
3. **Forms:** The applicant shall review and submit the following forms, which shall be required before certification is granted.
 - **OG-100 Program Agreement:** The applicant should review the *ICC-SRCC™ OG-100 Certification Program Agreement* executed with ICC-SRCC. If payment is made using the ICC-SRCC automated system, an electronic version of the OG-100 Program Agreement is available and must be signed electronically by checking a box in order to continue to the payment screen. If payment is made by check or wire transfer, a copy of the Agreement will be sent by e-mail to the applicant for signature.
 - **Trademark and Certification Mark Use:** The applicant should review the *ICC-SRCC Trademark and Certification Mark Use Policy* through which the rights to use the registered certification mark and performance ratings granted by the Corporation are strictly controlled.
 - **Factory Location(s):** The applicant shall provide ICC-SRCC the address of all locations where final fabrication or assembly of the collector(s) seeking certification occur, along with a contact at each location using the *ICC-SRCC Factory Location Form*.
4. **Fees:** An invoice for OG-100 application and certification fees is generated upon receipt of a completed OG-100 application, as specified in *the ICC-SRCC Fee Schedule*. All fees must be paid in full prior to the granting of OG-100 certification.
5. **Category-Specific Requirements:** Applications for OG-100 certification are assigned to one of the following categories with the procedures for each as specified in Table 5.1.

TABLE 6: CERTIFICATION CATEGORY REQUIREMENTS

CERTIFICATION CATEGORY	SECTION
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Basic Certifications	6
Resize Certifications	7
Private Label Certifications	8

7. BASIC CERTIFICATION PROCEDURES

7.1 Basic Certification Scope

The Basic Certification Category applies to collectors where the fabrication or assembly is done by the company seeking certification, and where the performance is to be based on the appropriate laboratory test results for that specific model and sized of collector.

7.2 Basic Certification Process

Basic certifications shall be conducted in accordance with the following:

1. **General:** Applicant and ICC-SRCC to complete and comply with all general requirements established in Section 6.
2. **Select ICC-SRCC-Approved Testing Laboratory:** The applicant shall select a testing laboratory with an ICC-SRCC approved testing program (listed on the ICC-SRCC website at http://www.solar-rating.org/test_labs/approved_labs.html). The lab's fees and schedules are separate from those established by ICC-SRCC.
3. **Select Test Units:** Solar collectors of the model to be certified shall be selected at random in accordance with ICC-SRCC *RS-1, Random Selection Procedure*, as specified in Section 5.7, and sent to the selected ICC-SRCC-approved testing laboratory.
4. **Conduct Testing:** The approved ICC-SRCC Testing Laboratory conducts the testing as required for the type of collector and category of certification, as specified in this document.
5. **Evaluation:** Solar thermal collectors submitted for OG-100 certification shall be evaluated for compliance with the minimum requirements of the OG-100 certification program, as established by this document. Evaluation to minimum criteria will be based on documentation provided by the applicant and test data submitted by the testing laboratory.
6. **Rating:** Thermal performance and impact resistance ratings shall be calculated for each solar thermal collector seeking certification under the OG-100 program.
7. **Notification:** ICC-SRCC will notify the applicant of the result of the certification evaluation. If disapproved, ICC-SRCC will notify the applicant and provide the specific deficiencies. If all deficiencies are resolved and resubmitted to the ICC-SRCC, the solar collector will be approved and certified.

8. RESIZE CERTIFICATIONS PROCEDURES

8.1 Resize Certification Scope

Test results from a collector with a basic certification may be used to certify a differently sized model if all materials, part designs construction techniques are identical, subject to the requirements for specific collector types given below and in accordance with the *ICC-SRCC Size Change Policy*,:

1. **Flat Plate Collectors.** For glazed and unglazed liquid heating, flat-plate collectors, test results from one model may be used to certify a differently sized model if all materials, part designs, and construction techniques are identical.
2. **Evacuated Tube Collectors.** For evacuated tube collectors, test results from one model may be used to certify a differently sized model if all materials, part designs, and construction techniques are identical and only the number of tubes has been changed.
3. **Air Heating Collectors.** For air collectors, test results from one model may be used to certify a differently sized model if all materials, part designs and construction techniques are identical, collector width is held constant and only the length has been decreased. Thermal performance ratings for differently sized air collectors will be based on the longest collector test data with an adjustment of multiplying the performance of the tested collector by [gross area of the shorter collector divided by the gross area of the longer collector]. Changes to the generic location and/or aperture of an air collector's inlet or outlet ports, with all other materials, construction techniques and part designs remaining unchanged, require review by the Technical Director for determination that the design change will not result in a different efficiency at the test conditions for the tested collector in order for a model with changes in its generic port location and/or aperture to retain its certification and rating.
4. **Concentrating Collectors.** Test results from one model of concentrating solar collector may be used to certify a differently sized model if all materials, part designs and construction techniques are identical, and only the length of the collector has changed. Also, the tested unit must be the smallest of such scaled configurations.
5. **PV Water Heaters.** Photovoltaic water heater collectors sized differently than the tested model may be certified without additional testing only if review and evaluation by ICC-SRCC reveals that the new collector can be adequately modeled to determine new performance ratings.

8.2 Resize Certification Process

Resize certifications for a solar thermal collector(s) meeting these conditions shall be conducted in accordance with the following:

1. **General:** Applicant and ICC-SRCC shall complete and comply with all general requirements established in Section 6. Separate applications for certification

must be submitted for separate models, including models that differ in collector length only.

2. **Rating:** Resizing of qualifying collectors shall be conducted in accordance with the *ICC-SRCC Procedure for Calculating Efficiency Equations and Ratings for Solar Collectors Sized Differently than a Tested Collector (Size Change Policy)*.
3. **Notification:** ICC-SRCC will notify the applicant of the result of the certification evaluation. If disapproved, ICC-SRCC will provide the applicant with the specific deficiencies. If all deficiencies are resolved and resubmitted to ICC-SRCC, the solar collector will be approved and certified.

9. PRIVATE-LABEL CERTIFICATIONS

9.1 Private-Label Certification Scope

A solar collector which has been certified and rated under the ICC-SRCC OG-100 program as produced by one manufacturer may also be sold by another manufacturer acting as a licensee/private labeler of the original manufacturer as long as at least one of the following conditions is met:

- a) The collector is manufactured entirely in the original Participant's facility. Certification is awarded as a private labeler, or
- b) The collector is manufactured exactly (all proprietary components are supplied by the original participant and all non-proprietary components are specified by the original participant) as originally submitted and tested, but in a licensee's facility under the direct supervision or under a licensing agreement of the original Participant. Certification is awarded as a licensee.

If at least one of the conditions listed above is not met, the Licensee/Private Labeler must submit the authorization forms above and conduct testing as required for the collector type using an approved ICC-SRCC Testing Laboratory. The testing shall be conducted on randomly selected collector that has been fabricated and/or assembled by the Licensee/Private Labeler.

Licensees/Private Labelers must meet the same conditions and program requirements for certification as are required of other ICC-SRCC OG-100 certification program participants.

9.2 Private-Label Certification Process

Private label certification for a solar thermal collector meeting one of these conditions shall be conducted in accordance with the following:

1. **Authorization:** Authorization from the original participant holding the OG-100 basic or resize certification shall be required for the specific model to be OG-100 certified as a private labeled. The authorization shall be made by logging-in at

<https://secure.solar-rating.org> and choosing Authorize Private Label from the My Options menu. The automated system will allow the certification holder to choose the manufacturer and which collector models they are allowing to private label. The manufacturer granted the private label may then apply using the automated system. Note: This step must be completed before the Private Label application and program agreement specified in Section 6 can be completed.

2. **General:** Private label applicant and ICC-SRCC to complete and comply with all general requirements established in Section 6.
3. **Notification:** ICC- SRCC will notify the applicant of the result of the certification evaluation. If disapproved, ICC-SRCC will provide the applicant with the specific deficiencies. If all deficiencies are resolved and resubmitted to ICC-SRCC, the solar collector will be approved and certified.

10. CERTIFICATION AWARD AND MARKING

Where all OG-100 program requirements are satisfied for the category of certification and type of collector, ICC-SRCC will notify the applicant of certification in writing.

The manufacturer of an ICC-SRCC OG-100 certified solar thermal collector shall identify that product as certified by means of a label. Certification label specifications shall be provided to the manufacturer by the ICC-SRCC upon the award of certification. An approved certification label shall be permanently affixed to each collector manufactured or distributed under that brand name and model number within sixty (60) days from receipt of notice of certification. This label shall be affixed to the solar thermal collector itself and not to another component of the solar system.

The ICC-SRCC registered certification trademark may be used in advertising, in catalogs and sales promotion material by the manufacturer of a certified solar collector provided clear reference is made as to which collector(s) certification applies.

Rights to use the ICC-SRCC certified ratings and the ICC-SRCC certification mark are strictly controlled through the *ICC-SRCC OG-100 Certification Program Agreement* and the *ICC-SRCC Trademark and Certification Mark Use Policy*. Only manufacturers and private labelers are eligible to become licensees to display the ICC-SRCC certification mark.

No entity is entitled to:

1. use the ICC-SRCC certification mark or ratings in any written sales or advertising material;
2. state, directly or by implication, that any ratings are based on this program; or
3. suggest that any units have been tested in conformance with this program, unless authorized to do so by a Program Agreement with the ICC-SRCC

A certification award document containing basic product information and the OG-100 thermal and impact ratings shall be provided by the manufacturer with each certified

solar collector shipped, sold, or offered for sale or display. Each active certification award document will be publicly posted to the ICC-SRCC website at www.solar-rating.org

11. CERTIFICATION CONDITIONS AND RENEWAL

11.1 Period of Certification Validity

Certification of collectors under the ICC-SRCC OG-100 program remains valid for 10 years from the date of the testing conducted as the basis of the certification as long as all certification program requirements are satisfied. The date of the testing shall be established by the date of latest efficiency/output data point on the test report submitted for the certified collector. Application for re-certification of an existing model outside the period of validity is treated as a new application and submission of a new test report conducted in accordance with current testing requirements shall be required.

11.2 Annual Certification Renewal

ICC-SRCC OG-100 participants are required to renew each certification annually during the period of validity. Certifications shall be renewed upon the completion of the requirements established in this section.

11.2.1 Annual Certification Report.

Participants are required to prepare an Annual Certification Report and submit to ICC-SRCC each year in the anniversary month of the participant's first OG-100 certification. In order to be accepted, the Annual Report must be completed in accordance with the instructions on the form and include a complete and accurate explanation of the following information:

1. All reported abnormal operating experiences, equipment failures and other problems, related to the certified collector(s).
2. All complaints made known to the participant relating to the certified collector(s)' compliance with the *ICC-SRCC OG-100 Operating Guidelines*.
3. All modifications to the design or materials of the certified collector(s) that have not previously been reported to ICC-SRCC.
4. All significant changes to the manufacturing processes used to produce the collector(s).

Annual Certification Reports shall be provided using the Annual Certification Report Form provided in the *ICC-SRCC OG-100 Certification Program Agreement*. Reports shall be submitted for each certified collector, although information for families of collectors may be submitted on a single form.

The Technical Director will assess the Annual Certification Report submitted and determine whether the information provided satisfies the requirements of the Program Agreement and this document. If accepted, and the executed program agreement and annual program fees are received, the participant will be notified of continued certification.

If the Technical Director identifies any concerns or anomalies related to the information in the Annual Certification Report, corrective actions will be communicated to the participant.

11.2.2 Program Agreement

A fully executed agreement between the Solar Rating and Certification Corporation and a participant is required for certification of a solar collector under the OG-100 program. The *ICC-SRCC OG-100 Certification Program Agreement* shall be renewed annually in order to continue participation in the program.

11.2.3 Annual Participant & Maintenance Fees

Payment of the OG-100 Annual Participant Fee and Maintenance Fee is required to renew certification annually. In the event the information reported in the Annual Certification Report requires additional ICC-SRCC work or review, the participant will be charged separately for such ICC-SRCC costs and expenses at ICC-SRCC's published hourly rate. All fees shall be as established in the *ICC-SRCC Fee Schedule* and the *ICC-SRCC OG-100 Certification Program Agreement* in effect at the time of renewal.

11.3 Modification of Certified Products

Significant changes to the design of any certified collector must be reported to ICC-SRCC in a timely and accurate manner, no more than thirty (30) days after the design change or modification has occurred. The participant is required to consult with the ICC-SRCC Technical Director to determine whether a design change is minor or significant. Design changes shall be evaluated per the procedures specified in *ICC-SRCC CS-1, Operating Guidelines Governing Component Substitution in the ICC-SRCC Solar Collector and Solar Water Heating System Certification and Rating Programs*. The evaluation shall detail the effect of design changes on the durability and performance of the collector. Per the evaluation, ICC-SRCC may:

- a) require more information regarding the change;
- b) require a design analysis or partial design analysis;
- c) require retesting or partial retesting of the collector
- d) or determine that the change is minor and no action is required.

The participant must provide all required information and documentation to ICC-SRCC in order to be eligible for continuation of certification.

The Executive Director shall make final determinations, consistent with any specific provisions herein, on any and all questions that may arise under this section, but his/her determination may be appealed via the *ICC-SRCC Complaint Policy*.

11.4 Factory Production Control

Solar thermal collectors certified under the ICC-SRCC OG-100 Solar Thermal Collector Program shall be produced and assembled in facilities employing production quality control measures to ensure continued compliance with program requirements and

conditions of certification. Factory production quality control for listed products and systems shall comply with the requirements for factory production control defined in Annex C1 of the *Global Solar Certification Network (GSCN) Working Rules*. Factory production quality control shall be assessed during initial and surveillance inspections as defined in this document and the *ICC-SRCC Certification Surveillance Procedures*.

11.5 Certification Surveillance

Solar thermal collectors certified under the ICC-SRCC OG-100 Solar Thermal Collector Program are subject to ongoing certification surveillance to verify continued compliance with OG-100 certification program requirements.

11.5.1 Additional Surveillance.

In addition to Annual Certification Reporting, ICC-SRCC retains the authority to conduct additional surveillance in the following cases:

- a) Design changes: Where a product design is changed sufficiently, in the judgment of ICC-SRCC, to impact performance or durability.
- b) Manufacturing process changes: The manufacturing process used to produce the product is changed in a way deemed to be significant by ICC-SRCC or the Participant changes third-party suppliers.
- c) Complaint investigation: Where a formal complaint is filed with ICC-SRCC in accordance with the *ICC-SRCC Complaint Policy* and the applicable Program Guidelines against a certified product. As part of a complaint investigation or corrective action program ICC-SRCC reserves the right to conduct additional surveillance.
- d) Non-conformance: Where a non-conformance has been identified, a corrective action plan may require additional and/or more frequent surveillance measures.
- e) Resumption of certification: Where a certified product was suspended for a prolonged period, or has been withdrawn or terminated, and a Participant wants to regain certified status for that product.

11.5.2 Inspection Forms.

Inspections of facilities conducted for the ICC-SRCC OG-100 Solar Thermal Certification Program shall be reported using the *Global Solar Certification Network Inspection Report* contained within Annex B-2 of the *GSCN Working Rules*. In-person inspections of facilities conducted for the for the ICC-SRCC Small and Medium Wind Turbine Programs shall be reported using the *ICC-SRCC Initial Inspection Report* or *ICC-SRCC Surveillance Inspection Report*, as applicable.

11.6 Suspension or Withdrawal of Certification

11.6.1 Manufacturer Initiated

The manufacturer of a certified solar collector may voluntarily withdraw certification by giving written notification to ICC-SRCC. The notice shall state the effective withdrawal date and reason for termination.

11.6.2 ICC-SRCC Initiated

ICC-SRCC may withdraw or suspend certification of a solar collector or may terminate the Program Agreement in the event of:

- A. Misrepresentation of material fact in an application for certification.
- B. Misrepresentation that a certification of a particular model applies to other models which have not been officially certified. This includes the use of components other than those listed with the original certification application.
- C. Design changes or modifications to the certified product not approved by ICC-SRCC.
- D. Claiming continued certification for a solar collector which, after certification, has been changed or modified without the written approval of ICC- SRCC.
- E. Failure to comply with a condition of certification or labeling.
- F. Test results indicate failure of the solar collector to meet minimum standards for certification.
- G. Failure to comply with the conditions and terms of the *ICC-SRCC OG-100 Certification Program Agreement* Failure to pay fees as established by ICC-SRCC.

The Executive Director shall determine if suspension or revocation of a previously granted certification or the termination of a participant's Program Agreement is warranted. If so, the Executive Director shall give the program participant confidential written notice containing a statement of reasons for the proposed action and those steps, if any, available to the program participant to avoid the proposed action. Where applicable, specific instructions of steps which must be taken to correct the cause(s) for revoking or suspending certification shall also be contained in the notice.

The program participant may contest the reason(s) for the proposed revocation, suspension or termination by filing with the Executive Director a written appeal in accordance with the *ICC-SRCC Complaint Policy* within thirty (30) days of receipt of the written notice. In the event of a request for review, ICC-SRCC shall follow the procedures defined in the *ICC-SRCC Complaint Policy*. If a written request for review is not received by ICC-SRCC within thirty (30) days of the program participant's receipt of

the written notice, the proposed action of the ICC-SRCC Executive Director shall become final and conclusive.

In the event of revocation, suspension, or termination in accordance with the preceding paragraph, notice to such effect shall be made pursuant to the *ICC-SRCC OG-100 Certification Program Agreement*. In the event of revocation, suspension, or termination, the right to the use of the Official Seal and ICC-SRCC ratings by the program participant shall, consistent with the action to be taken, cease and be concluded immediately. If the program participant fails to discontinue use of the Official Seal and all references to ICC-SRCC certification and/or ratings, ICC-SRCC shall have the right to an immediate temporary and/or permanent injunction restraining the program participant from any and all further use of, or reference to, the Official Seal, certification and/or ratings.

ANNEX A: COLLECTOR TESTING SUMMARY

Testing for basic collector certification under the OG-100 program is summarized in Tables A-2 for liquid heating collectors and A-2 for air heating collectors. The collector must be tested in the exact order specified in Table A-1 or A-2. Any unauthorized variations to the testing sequence and specifications will void the test results' acceptability for purposes of ICC-SRCC certification and rating.

TABLE A-1: OG-100 LIQUID HEATING SOLAR COLLECTOR TEST REQUIREMENTS¹

TEST	ICC 901/ SRCC 100 SECTION	LIQUID HEATING COLLECTOR TYPE																
		UNGLAZED			GLAZED (FLAT PLATE, TUBULAR)			PROTECTED BY CONTROLS ²			NONSEPARABLE STORAGE (ICS)			PHOTOVOLTAIC- THERMAL (PVT)			PV WATER HEATER ⁴	
		1	2 Q	2 P	1	2 Q	2 P	1	2 Q	2 P	1	2 Q	2 P	1	2 Q	2 P		
Test Specimen Selection	401.3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Baseline Inspection	401.4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
High-Temperature Resistance	401.5	X	X		X	X		X	X		X	X		X	X			
Stagnation Temperature	401.6	X	X		X	X					X	X		X	X			
Exposure	401.7	X	X		X	X		X	X		X	X		X	X			
External Thermal Shock	401.8.1	X	X		X	X		X	X		X	X		X	X			
Internal Thermal Shock	401.8.2	X	X		X	X					X	X		X	X			
Internal Pressure	401.9	X	X		X	X		X	X		X	X		X	X			
Freeze Resistance ³	401.12	X	X		X	X		X	X		X	X		X	X			
Thermal Capacity/Time Constant	401.13	X		X	X		X	X		X	X		X			X		X
Thermal Performance	401.14	X		X	X		X	X		X	X		X			X		X
Incident Angle Modifier (IAM)	401.15	X		X	X		X	X		X				X				X
Pressure Drop	401.16	X	O	O	X	O	O	X	O	O				X	O	O		
Rain Penetration	401.17																	
Mechanical Load	401.18				X	X		X	X		X	X						
Impact Resistance	302.1	X	X		X	X		X	X		X	X						
Final Inspection	401.19	X	X		X	X		X	X		X	X		X	X			

NO TESTING PER ICC 901/SRCC 100 STANDARD. SEE ICC-SRCC TM-2 DOCUMENT FOR REQUIREMENTS.

1: Table derived from Table 401.2 in the ICC 901/SRCC 100-2015 standard, but differs where the OG-100 program calls for testing varying from the standard. Differences from Table 401.2 in ICC 901/SRCC 100 are highlighted with gray fill.

2: Liquid heating collectors unable to withstand dry stagnation.

3: Applies only when freeze tolerance claimed.

4: PV water heaters consist of a PV module(s), wiring, any conditioning electronics (e.g. inverter), and heating element.

TABLE A-2: OG-100 AIR HEATING SOLAR COLLECTOR TEST REQUIREMENTS¹

TEST	ICC 901/SRCC 100 SECTION	AIR HEATING COLLECTOR TYPE					
		CLOSED LOOP			TRANSPIRED		
		1	2	2 P	1	2 Q	2 P
Test Specimen Selection	401.3	X	X	X	X	X	X
Baseline Inspection	401.4	X	X	X	X	X	X
High-Temperature Resistance	401.5	X	X		X	X	
Stagnation Temperature	401.6	X	X		X	X	
Exposure	401.7	X	X		X	X	
External Thermal Shock	401.8.1	X	X		X	X	
Internal Thermal Shock	401.8.2	X	X		X	X	
Leakage	401.10	X	X				
Rupture & Collapse	401.11	X	X		X	X	
Thermal Capacity/Time Constant	401.13	X		X	X		X
Thermal Performance	401.14.1	X		X	X		X
Incident Angle Modifier (IAM)	401.15	X		X	X		X
Pressure Drop	401.16	X	O	O			
Rain Penetration	401.17						
Mechanical Load	401.18	X	X		X	X	
Impact Resistance	302.1	X	X		X	X	
Final Inspection	401.19	X	X		X	X	

1: This table is derived from Table 401.2 in the ICC 901/SRCC 100-2015 standard, but differs where the OG-100 program calls for testing varying from the standard. Differences from Table 401.2 in ICC 901/SRCC 100 are highlighted with gray fill.

ANNEX B: IMPACT RESISTANCE RATING

The results of the test specified in Section 302.1.2 of ICC 901/SRCC 100 are used to rate the impact resistance of the cover using the following scale. Tempered glass covers are given a scale rating of 11 as testing is not required per Section 302.1.1 of ICC 901/SRCC 100.

TABLE B ICC-SRCC IMPACT RESISTANCE RATING SCALE

ICC-SRCC Impact Resistance Rating	Minimum height at which the cover sustains damage
0	No rating provided
1	0.4 m (1.3 ft)
2	0.6 m (2.0 ft)
3	0.8 m (2.6 ft)
4	1.0 m (3.3 ft)
5	1.2 m (3.9 ft)
6	1.4 m (4.6 ft)
7	1.6 m (5.3 ft)
8	1.8 m (5.9 ft)
9	2.0 m (6.6 ft)
10	> 2.0 m (6.6 ft)
11	Tempered glass cover (no testing required)