



Solar Rating and Certification Corp. SRCC

Jim Huggins
Technical Director

Industry Workshop, Stuttgart, February 8, 2010



Early History

- 1970's - State certification programs
- National program necessary
- 1980 - SRCC established
 - collector certification only: OG-100
 - nationally recognized testing standards
 - testing by 2 accredited laboratories



Early History

- 1982 – Added system certification: OG-200
 - Based on ASHRAE 95 \approx ISO 9459-1
- 1984 – End of US federal tax credit
 - Solar water heating industry collapses in US
 - SRCC hibernates
- 1990 – SRCC begins work on OG-300 for systems
- 1992 – OG-300 implemented; OG-200 discontinued



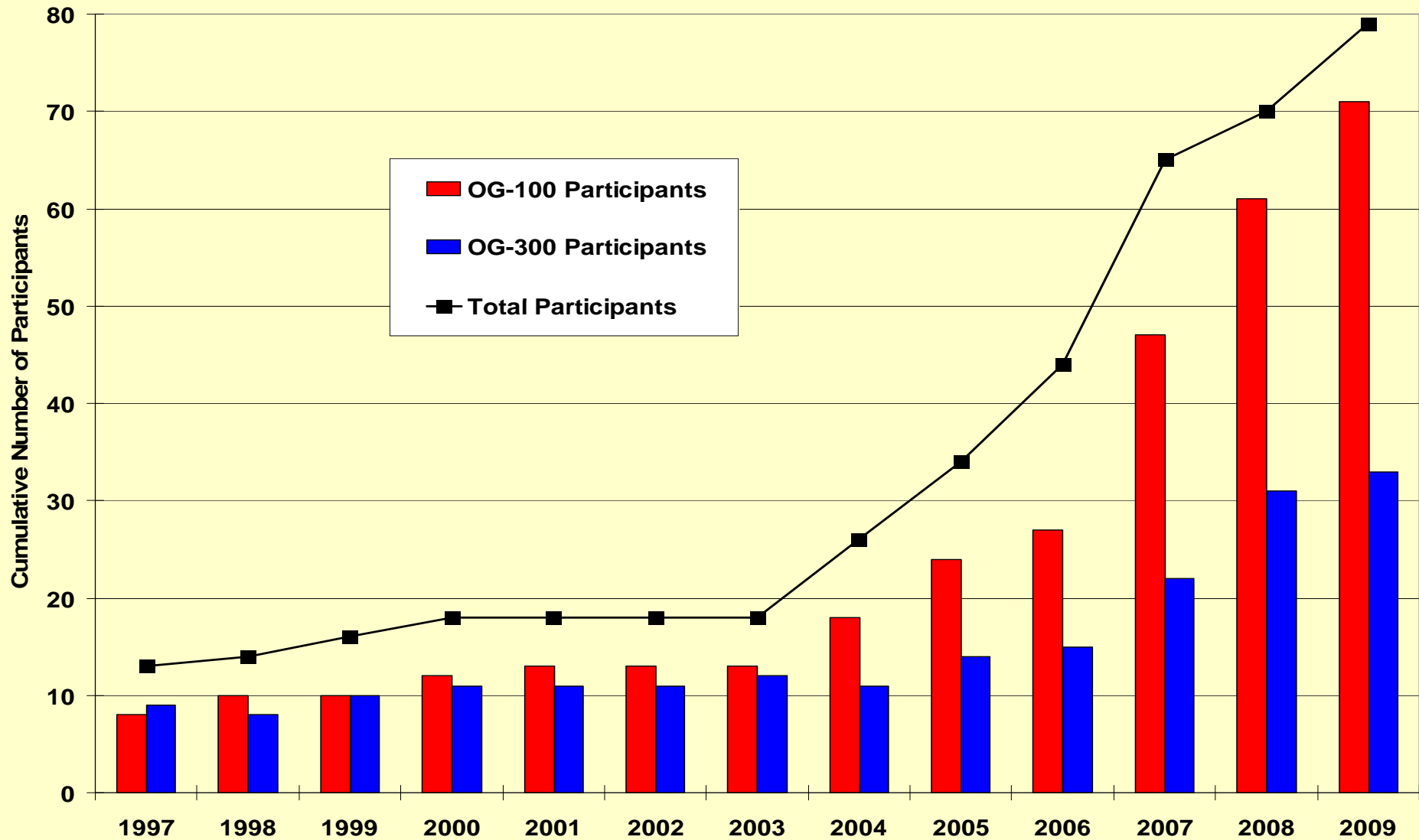
Recent History

- 1992 to 2005 – SRCC certification required for a few incentive programs
- 2005 – US federal tax credit reinstated
- 2006 to 2008 – Long wait at laboratories
- 2009 – Accredited new laboratory test programs
- 2010 – Increased staff to reduce time to certify



SRCC Participants

Total at the end of each year





SRCC Organization

- National non-profit corporation
- Governed by Board of Directors
 - Solar industry
 - State governments
 - Technical and policy experts
- Administered by contract with Florida Solar Energy Center (FSEC)



SRCC vs Solar Keymark

- Accredited testing laboratories issue reports
 - SRCC interprets certification requirements and calculate ratings
 - SRCC issues certificates
- Accredited testing laboratories issue reports
 - Laboratories interpret certification requirements and calculate ratings
 - Certification Bodies issue certificates



Certification Programs

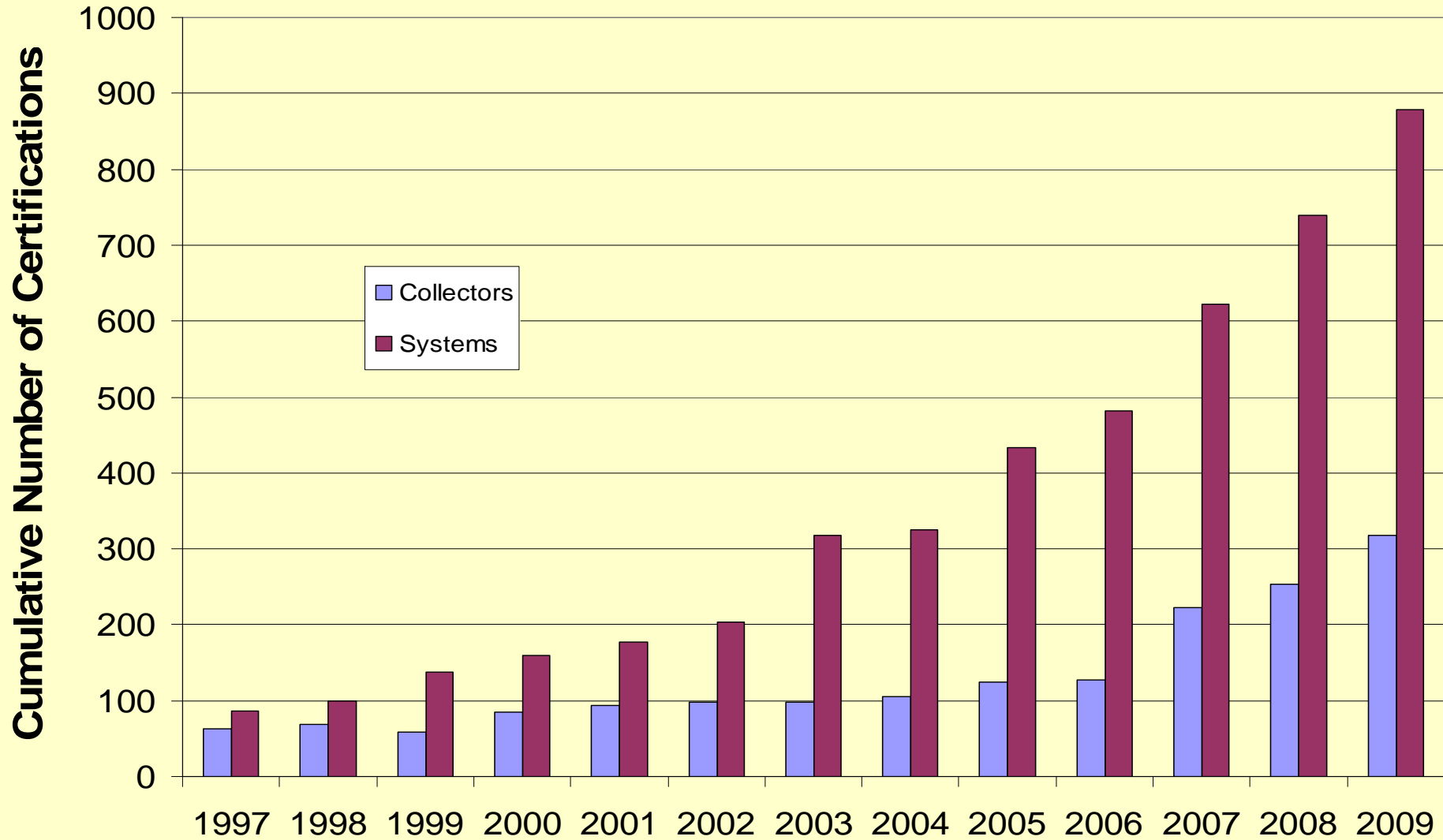
Solar Thermal

- OG-100 – “Operating Guidelines for Certifying Solar Collectors”
 - Standard 100 “Test Methods and Minimum Standards” for Glazed and Unglazed Flat Plate and Tubular Collectors
 - Standard 150 for Innovative Collectors
 - Standard 600 for Concentrating Collectors (in development)
- OG-200 – Residential Water Heating Systems (discontinued)
- OG-300 – Residential Water Heating Systems
- OG-400 – Swimming Pool Heating Systems (discontinued)
- OG-500 – Combi-systems (in development)



SRCC Certifications

Total at the end of each year





Current Certifications

	Certifications	Participant Companies
OG-100	335	73
OG-300	893	33
Total	1228	83



Currently Required

- Federal Investment Tax Credit - nationwide
- Energy Star - nationwide
- Incentive Programs
 - 15 States
 - 5 Cities
 - 14 Utility Companies
 - 1 National Code body



OG-100: Collectors

- Similar to EN 12975-1 “Solar Collectors, General Requirements”
- Standard 100 “Test Methods and Minimum Standards for Certifying Solar Collectors”
 - ≈ EN 12975-2, Solar Collectors, Test Methods
- Qualification Tests
 - Pressure, exposure, shock tests from ISO 9806-2, Qualification test procedures
 - ≈ EN 12975-2
- Efficiency Test
 - Liquid:
 - Conducted per ISO 9806-1 (glazed) and ISO 9806-3 (unglazed)
 - ≈ EN 12975-2
 - Air:
 - ASHRAE 93
- Rating for ‘Standard Day’



Standard-100 vs EN 12975

- Exposure test:
 - 30 days at 17 MJ/m²
 - Impact test required
- Efficiency test:
 - Same collector as exposure test
 - Based on gross area and inlet temperature
 - Diffuse < 20%
- Exposure test:
 - 30 days at 14 MJ/m²
 - Impact test optional
 - Mechanical load test
 - High-temperature resistance
 - Rain penetration
- Efficiency test:
 - Different collector than exposure
 - Based on aperture / absorber area and mean fluid temperature
 - Diffuse < 30%



OG-300: Systems

- Component Tests
 - Collector per ISO 9806
 - Tanks and heat exchangers per SRCC TM-1 “SDHW system and component test protocols”
 - Controller, pumps, piping, insulation per manufacturer’s specifications
- System Simulation
 - TRNSYS: Transient system simulation program
 - Data from component tests
- Daily and annual ratings



Accredited Test Laboratories

- USA:
 - FSEC in Florida
 - Pacific Energy Testing in California
- Canada:
 - Exova in Ontario
 - Labtest Certification in British Columbia
- Germany:
 - ITW in Stuttgart
 - Fraunhofer ISE in Freiburg
 - ISFH in Hameln
 - IZES in Saarbrücken
 - TÜV Rheinland in Cologne and Italy
- Switzerland:
 - SPF in Rapperswil
- Spain:
 - Cener in Navarra



SRCC Web Site

www.solar-rating.org



SOLAR RATING AND CERTIFICATION CORPORATION

Independent Certification of Solar Water and
Swimming Pool Heating Collectors and Systems

[Home](#)

[About SRCC](#)

[Certification](#)

[Standards](#)

[Ratings](#)

[Participants](#)

[Solar Facts](#)

[Education](#)

[Directors](#)

[Commercial
Systems](#)

[Apply for
certification](#)

[Laboratories](#)

[Contact SRCC](#)

Welcome to the SRCC Home Page

The combined programs of the Solar Rating and
Certification Corporation (SRCC) provide:

- one-time certification
- national recognition
- product credibility
- standardized comparisons of solar energy products.

The SRCC programs serve three primary constituencies:


- the solar energy industry
- solar consumers
- state and federal regulatory bodies.

All three constituencies benefit from the SRCC programs by
obtaining a national:

- state-of-the-art rating system
- a mechanism to develop consumer confidence
- rational and defensible criteria for tax credit qualification
and other solar incentive programs.



Collector Certification

SOLAR COLLECTOR CERTIFICATION AND RATING  SRCC OG-100	CERTIFIED SOLAR COLLECTOR SUPPLIER: Alternate Energy Technologies 1057 N. Ellis Road Jacksonville, FL 32254 USA MODEL: AE-21 COLLECTOR TYPE: Glazed Flat-Plate CERTIFICATION#: 2002001A
---	--

Collector Thermal Performance Rating				Collector Thermal Performance Rating			
MegaJoules Per Panel Per Day				Thousands of BTU Per Panel Per Day			
Category (T _i -T _a)	Clear Day	Mildly Cloudy	Cloudy Day	Category (T _i -T _a)	Clear Day	Mildly Cloudy	Cloudy Day
A (-5 °C)	28.6	21.6	14.7	A (-9 °F)	27.1	20.5	13.9
B (5 °C)	26.0	19.0	12.1	B (9 °F)	24.7	18.0	11.4
C (20 °C)	21.8	14.9	8.1	C (36 °F)	20.7	14.2	7.7
D (50 °C)	13.1	6.9	1.5	D (90 °F)	12.4	6.6	1.5
E (80 °C)	5.1	0.7	0.0	E (144 °F)	4.8	0.7	0.0

A- Pool Heating (Warm Climate) B- Pool Heating (Cool Climate) C- Water Heating (Warm Climate) D- Water Heating (Cool Climate) E- Air Conditioning

Original Certification Date: 22-NOV-02

COLLECTOR SPECIFICATIONS

Gross Area:	1.931 m ²	20.78 ft ²	Net Aperture Area:	1.78 m ²	19.20 ft ²
Dry Weight:	33.6 kg	74. lb	Fluid Capacity:	3 liter	0.8 gal
Test Pressure:	1103. KPa	160. psig			

COLLECTOR MATERIALS

Frame:	Anodized Aluminum
Cover (Outer):	Low Iron Tempered Glass
Cover (Inner):	None

Pressure Drop

Flow		ΔP	
ml/s	gpm	Pa	in H ₂ O
20.00	0.32	18.00	0.07
50.00	0.79	116.0	0.5
80.00	1.27	301.00	1.21

Absorber Material:	Tube - Copper / Plate - Copper Fin
Absorber Coating:	Selective Coating

Insulation Side:	Polyisocyanurate
Insulation Back:	Polyisocyanurate

TECHNICAL INFORMATION

Efficiency Equation [NOTE: Based on gross area and (P)_i=T_i-T_a]

	Y INTERCEPT	SLOPE
SI UNITS: η = 0.691 - 3.39600 (P) _i - 0.01968 (P) _i ²	0.706	-4.910 W/m ² ·°C
IP UNITS: η = 0.691 - 0.59821 (P) _i - 0.00193 (P) _i ²	0.706	-0.865 Btu/hr.ft ² ·°F

Incident Angle Modifier [(S)=1/cosθ - 1, 0° < θ <= 60°]

Ka = 1	-0.194 (S)	-0.006 (S) ²	Linear Fa
Ka = 1	-0.20 (S)		

Model Tested:	AE-21
Test Fluid:	Water
Test Flow Rate:	38.8 ml/s 0.61 gpm

REMARKS:


February, 2010

Certification must be renewed annually. For current status contact:
SOLAR RATING & CERTIFICATION CORPORATION

c/o FSEC • 1679 Clearlake Road • Cocoa, FL 32922 • (321) 638-1537 • Fax (321) 638-1010

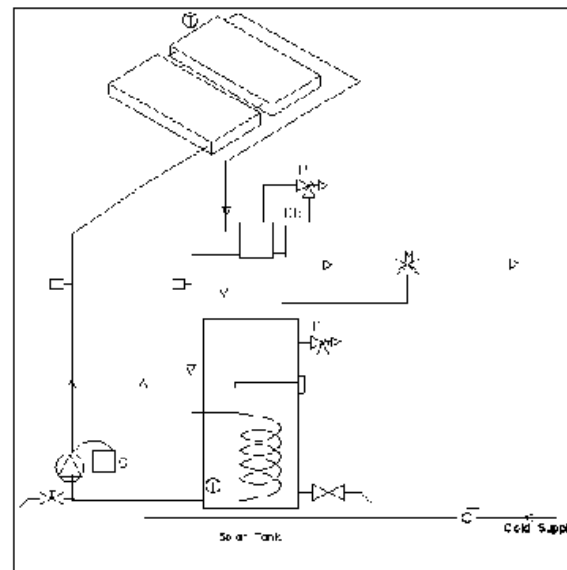


System Certification

SOLAR WATER HEATING CERTIFICATION AND RATING  SRCC OG-300	CERTIFIED SOLAR WATER HEATING SYSTEM SUPPLIER: Alternate Energy Technologies 1057 N. Ellis Road Jacksonville, FL 32254 USA (904) 781-8305 (904) 781-1911 Fax (800) 874-2190 SYSTEM NAME: EagleSum SYSTEM TYPE: Indirect Forced Circulation LOCATION: <input type="text"/> Select Location
--	--

Description: Glazed Flat-Plate, Differential Controller, Shell and Tube Heat Exchanger Not found, No Load Side Heat Exchanger , Freeze Tolerance: -20 F, Fluid Class I, Electric Auxiliary Tank

System Model Name	Cert 300#	Cert Date	Collector Panel Manufacturer	Collector Panel Name	Total Panel area(Sq-m)	Total Panel area(Sq-ft)	Solar Tank Vol(D)	Solar Tank Vol(g)	Aux Tank Vol(D)	Aux Tank Vol(g)	SEP
DEB-80-52	2009029B	16-JUN-09	Alternate Energy Technologies	AB-26	4.7	50.7	303	80			2.1
DEB-80-52	2009029B	16-JUN-09	Alternate Energy Technologies	MSC-26	4.8	52	303	80			2.1
DEB-80-64	2009029C	16-JUN-09	Alternate Energy Technologies	AB-32	5.9	63.8	303	80			2.8
DEB-80-64	2009029C	16-JUN-09	Alternate Energy Technologies	MSC-32	6.1	65.3	303	80			2.8
DEB-80-80	2009029C	16-JUN-09	Alternate Energy Technologies	AB-40	7.4	79.6	303	80			4.7
DEB-80-80	2009029C	16-JUN-09	Alternate Energy Technologies	MSC-40	7.8	84.3	303	80			4.7
DEB-120-64	2009029B	16-JUN-09	Alternate Energy Technologies	AB-32	5.9	63.8	454	120			2.5
DEB-120-64	2009029B	16-JUN-09	Alternate Energy Technologies	MSC-32	6.1	65.3	454	120			2.5
DEB-120-80	2009029F	16-JUN-09	Alternate Energy Technologies	AB-40	7.4	79.6	454	120			4
DEB-120-80	2009029F	16-JUN-09	Alternate Energy Technologies	MSC-40	7.8	84.3	454	120			4



OG-300 System Reference:2009029B SVG Diagram Display



Contact Information

Jim Huggins

Solar Rating and Certification Corp.

1679 Clearlake Road

Cocoa, Florida 32922

+01 321 638 1537

www.solar-rating.org

jhuggins@solar-rating.org