



# 9th Annual California Solar Regatta

May 13 and 14, 2022

Rancho Seco Recreational Area  
[smud.org/Solar-Regatta](http://smud.org/Solar-Regatta)



The California Solar Regatta (CSR) extends a warm welcome to all teams competing in the 2022 Regatta Cup Races.

Index

General Information ..... 3

Check List..... 5

Team Application ..... 6

Event Information..... 7

Schedule of Events.....11

Awards .....12

Required Items .....14

Technical Section .....17

Regatta Cup Point Calculation..... 27

Event Map ..... 29

Appendix A – Personal Waiver of Liability..... 31

Appendix B – Media Form ..... 33

Appendix C – W-9 Tax Form ..... 34

Appendix D – JKM250P-60 Spec Sheet ..... 35

Appendix E – Glossary of CSR Terms..... 37

## Mission

The mission of the SMUD California Solar Regatta (CSR) is to teach students about solar electricity. The program has been established to promote renewable energy through solar technology and innovation, by using an engaging way to connect design and engineering. The CSR invites teams from California to compete and showcase their boat design and innovative engineering through a variety of races and presentations.

SMUD will provide the following:

- Training for high school and college teams
- (2) 230 watt solar modules
- Kill switches
- Meals at training, orientation and competition
- Orientation
- Camping facilities
- Stipends
- Cash awards

### SMUD

Community Education & Technology Center

6301 S Street, MS A226  
Sacramento, CA 95817

[smud.org/Solar-Regatta](http://smud.org/Solar-Regatta)

Suzette Bienvenue

[suzette.bienvenue@smud.org](mailto:suzette.bienvenue@smud.org)

916-732-5175

## Team

A team entering a boat in the CSR competition shall consist of:

- A minimum of four students.
- No more than 30 team members.
- At least one mentor but not more than 5 to guide the high school students.
- A minimum of two certified pilots.

Note: All team members and mentors must sign a liability and a photo-release waiver. Team members under the age of 18 must include a parent/guardian signature.

## Entry Requirements and Procedures

Each team is required to:

- Complete each task on the checklist prior to the competition.  
See Table A.
- Complete an application form.  
See Table B.
- Submit a SMUD equipment liability waiver in order to receive the solar modules. This document will be provided by the race organizer, after the application is submitted.

The equipment liability waiver will allow your school to take possession and use the solar modules.

If you competed in previous years and are still in possession of the solar modules, a new equipment liability waiver is NOT required.

- Teams must provide a completed W-9 to the race official no later than the mandatory orientation in January 2021.(DTBD) Any stipends or award winnings will be given to the person or institution listed in the W-9.
- Pilots must complete a swimming test to the satisfaction of the team mentor/team leader.
- Provide a SMUD liability waiver for each participant. Those under 18 must have a parent/guardian's signature. Appendix A.
- Provide a SMUD media release form for each participant. Those under 18 must have a parent/guardian's signature. Appendix B.
- Provide a copy of the California Department of Boating and Waterways Safety Certificate of Completion (or substitute agency certificate) for each pilot and/or crew member in the water.
- Provide a short video (two minutes maximum) updating the event organizer on the production of the boat (See Table A for due date).
- Have at least one representative for high school teams attend a California Solar Regatta workshop. College attendance is optional.
- All teams must attend a mandatory orientation which will be held in January 2022. (See Table A for dates).



# California Solar Regatta

# California Solar Regatta

## 9th Annual California Solar Regatta 2022 Participation Application

Please note that we will accept only one team per school, college, university or organization. The deadline for all applications which will be accepted on a first-come basis is October 15, 2021. All schools must apply even if they have competed in the past.

By completing and submitting this application you are committing to participate in the 2022, 9th Annual California Solar Regatta which will be held on May 13 (High School) and May 14 (College).

Educational institution .....

Mailing address of school .....

Phone of school office or department .....

Project Lead / Faculty advisor .....

Address of Lead .....

Email of Lead ..... Cell phone .....

Department or special program .....

Name of Secondary contact .....

Address of Secondary contact .....

Email of Secondary contact ..... Cell phone .....

Please submit the application along with a three paragraph mission statement, list of partners and a proposed timeline to **Suzette.Bienvenue@smud.org**

By signing this application, you agree to use the SMUD provided solar modules in the design and the construction of a solar powered boat and commit to competing in the 2022 California Solar Regatta.

Faculty advisor or school official ..... Date .....

Faculty advisor or school official signature .....



## Dates/Times

**May 13, 2022 - High School** – Boats must be checked in by 7 a.m.- 8 a.m. on the day of the event. It is highly encouraged that boats complete the technical check and teams register the evening before. A stipend will be rewarded for early registration. The event begins at 9 a.m. Camping will save your team time and provide a stipend. You may check in by 1 p.m. on the day prior to the race day.

**May 14, 2022 - College Competition** – Boats must be checked in by 7 a.m.- 8 a.m. on the day of the event. It is highly encouraged that boats complete the technical check and teams register the evening before. A stipend will be rewarded for early registration. The event begins at 9 a.m. Camping will save your team time and provide a stipend. You may check in by 4 p.m. on the day prior to the race day.

Boats not assembled and checked in by 8:30 a.m. on race day may not be able to race (based on race official's discretion) and will have 5 points deducted from their Regatta Cup point total.

## Address

Rancho Seco Recreational Area  
14960 Twin Cities Road  
Herald, CA 95638  
1-800-416-6992

Visit [smud.org/RanchoSeco](https://smud.org/RanchoSeco) for maps and important park information including directions.

## Accommodation

CSR provides camping at the Rancho Seco Recreational Area. Camping is optional, but highly recommended. If you choose to camp the evening prior to your event, tent camping in the Group Area location is FREE. This area is adjacent to the area where the boats will be moored. Please register your team prior to camping. See Suzette Bienvenue at the event site.

- **Two large fire pits are available for bonfires. Please use the area responsibly.**
- **You may set up volleyball nets and play sports on the grass areas. Bounce houses are not allowed.**
- **No alcohol is allowed in group campsites.**
- **Use of alcohol will result in expulsion from the park and competition.**
- **Quiet time is at 10 p.m.**
- **No generators, large gatherings or games are allowed after this time.**

RV parking is not provided although available. RV parking with hook-ups will require a fee of \$40. Each RV site has a BBQ, fire pit, picnic table, drinking water and electrical outlets. Reservations must be made to use these.

Visit [smud.org/RanchoSeco](https://smud.org/RanchoSeco).

There are additional tent campsites for family and friends on the south side of the lake. A fee is required and reservations must be made to use these.

The park closes at 9 p.m. and entrance gates are locked. Please enter the park before 9 p.m. We will not register teams or check in boats after 8 p.m. No exceptions.

## Guests

Each team may invite an unlimited number of guests. Friends and family are welcome but only Team Members (who have previously registered) may participate in the actual competition. Picnic tables and BBQs are available for use by non-registered guests. Guests may also register for the additional campground and RV sites at [smud.org/RanchoSeco](http://smud.org/RanchoSeco).

No popup tents are allowed in front of designated area delimited by American flags. All tents, in ground signs and camping equipment must be 25 feet from shore behind the line of American flags. This area must be kept clear for race officials and lifeguards to have a clear, unobstructed view of the lakeshore, lake and all activities, at all times.

We would like to encourage spectators at the races. Invite your school administration, friends and family to cheer you on. There is a lot to do at Rancho Seco Recreational Area:

**Swimming** – There is a roped off area with a sandy beach.

**Boating** – Watercraft can be launched at a variety of ramps (see map). You may also rent electric motor or paddle boats.

**Fishing** – The freshwater lake supports bass, blue gill, crappie and catfish. A fishing license is required.

**Hiking** – The Howard Ranch Trail is a seven-mile loop through open grassland.

**Wildlife** – There is lots of wildlife and birds to see, including bald eagles on the north side of the lake.

**Pets** – Please make use of the dog park. Pets are not allowed in the Solar Regatta group campgrounds. If you bring a dog to the event, it must be on a leash at all times. Do not leave your pet unattended.

## Parking

Your team will receive a post-event \$100 stipend to compensate for some of the parking fees. All vehicles pay \$12/day for parking. The fee is per car only. There is not an additional charge per person.

Bus parking is \$40/day. Please follow signs to the race area and do not park in the designated boat check in lanes. DO NOT park tow rigs in the parking lots. Tow rigs must park in the gravel lot, south of the group campsite (see map).

## Registration Check In

The team mentor/team leader must register student teams. Your team will receive a registration packet once your boat passes the technical inspection.

The envelope/packet will contain:

- An alphabetical list of all the **REGISTERED** students, team members and team mentors/team leaders.
- One **ORANGE** wristband for each **REGISTERED** attendee.
- One **BLUE** wristband for each **REGISTERED** pilot.
- One lunch ticket for each **REGISTERED** attendee.
- One Master Race Schedule.

NOTE: Any students, team members or team mentors not registered will not be able to use the catering services. Any students not registered, as a pilot indicated by a blue wristband, will not be allowed on the boat in the water.

Each team and individual team members must be registered by 8 a.m. on the race date or the team will receive a 5 point penalty.



## Boat Safety

- Bring your tow vehicle down the coned passageway to the boat unloading area.
- You have 15 minutes to unload your boat and equipment and bring them to your assigned mooring area. DO NOT park your tow vehicle in this lot.
- Return and park tow rig in the designated tow rig parking lot. (see map) DO NOT park tow rig in the visitor parking lot.
- Position your boat on saw horses (or any other object which raises the boat 3 feet) between the mooring flag and the line marked by American flags. *This is considered the pit area.* Your boat must be elevated before receiving technical inspection.
- Verify that your boat is 100% ready for inspection and that you have all of the safety equipment listed on page 16 before requesting a technical check. Solar modules should be installed, boat should be operable and students should be ready to answer questions.
- Contact the event organizer to request a technical check.
- Each boat must have a technical check between 1 p.m.- 8 p.m. on the day before the race or by 8 a.m. on race day. You may not be allowed to race if you miss the check in time. Once your team and boat has been reviewed by a safety inspector, you will receive the registration packet and a sticker will be placed on the laminated SMUD boat number.
- Each school will have the required student and team information listed on a separate spreadsheet. If a student is not pre-registered with SMUD, they will not be allowed to participate in the race nor receive catering services.
- Students, team leaders and team mentors will be given event wristbands. The boat's pilots will be identified with a blue wristband. Teams which fail to register in advance of the event will not be allowed to participate in the race nor receive catering services.
- Each team must have one point of contact (adult) who will be the main source of information for the team. This contact will receive all SMUD communications, schedules and the meal tickets for the group. Each team will have one backup contact person in case of emergency.
- Team numbers will be assigned on March 18, 2022 when the team paperwork packet is submitted. The identifying boat number will also be your mooring location on the lake. This along with other information will be mailed to the address provided for the main contact on the original application.
- Each team will be given a Master Race Schedule, which will list their time slots for races as well as a presentation time.
- If the boat is not undergoing any technical check or repairs, it must be moored in the water.

## Design Review

In order to be eligible to receive Cup points for technical, artistic and sustainability categories, you must request a design review appointment at check in or before the races.

- At the table by the SMUD booth, select a 15 minute time block between 7 a.m. and 2 p.m. on race day. Judges will interview your team on these additional topics and cup points.
- Have students prepared to answer questions during the designated time reservation.
- Be ready to answer questions and explain the use of solar, wiring, design, materials or mechanical operation of your boat.

## Help

SMUD employees and volunteers will be wearing **red** shirts. If you have a concern or a question, please find a volunteer.

Our employees at the SMUD Information Tent will be available to answer general questions. Minor first aid, sunblock and lip balm will be available.

If you have a technical question, please go to the Race Official tent.

## Food

**We will provide a FREE breakfast and lunch.**

Breakfast is based on a first-come, first-served basis (no ticket is required). Lunch is a barbecue. If you do not eat meat, feel free to cut in line to ensure you receive a vegetarian option. One lunch ticket is provided for each REGISTERED attendee. Lunch will be served from noon – 1 p.m.

Iced water will be available in red plastic buckets at various locations along the shoreline.

The Rancho Seco Beach Snack Shack will be open until 7 p.m. selling assorted candy, ice cream and packaged snacks. Other beach novelties and supplies are also available for purchase.

There are grills available throughout the camping and picnic area. You are welcome to use them. Please use caution when cooking with flames.

We recommend that you bring additional drinks and food. The nearest towns, lone to the east and Galt to the west, are 15 miles away.

## Race Information

Be sure to check in your boat upon entering the event area. Once your boat passes technical inspection, adhere the laminated boat numbers, which we previously mailed to you, to each side of your boat's bow. The technical inspector will give you "pass" stickers which you will place on your laminated SMUD boat number. This will show proof that your boat can be on the water.

Race schedule signs will be posted in two locations: SMUD tent and Race Officials tent. Look for your team's designated number as assigned to race entries. Your team **MUST** be prepared **15 minutes** prior to each event.

A Master Race Schedule on a large TV screen located in the Racing Officials tent will be updated continuously with current scores.

**Table C - Schedule of Events**

<b>Date</b>	<b>Time</b>	<b>Event</b>
May 13, 2022	1 p.m. – 7 p.m.	Prep boat and team registration. Camping. Technical checks are 1 – 7 p.m. Check in ends at 8 p.m. Reserve judging time.
May 14, 2022	7 a.m. – 9 a.m.	Breakfast served
	7 a.m. – 8 a.m.	Prep boat and team registration. Safety check until 8 a.m. Late arrivals will lose 5 points.  Sign up for reservation design review at the Race Officials tent.
	8:45 a.m. – 9 a.m.	Welcome and flag salute.
	9 a.m. – 9:20 a.m.	Regatta group photo.
	9:30 a.m. – 3:30 p.m.	Boat races and presentations – see Master Race Schedule for individual event times.
	noon – 1 p.m.	Lunch served
	3:30 p.m.*	Awards
	4 p.m. – 8 p.m.	College boat and team registration. Camping. Technical check in ends at 8 p.m. Reserve judging time.
May 14, 2022	7 a.m. – 9 a.m.	Breakfast served
	7 a.m. – 8 a.m.	College boat and team registration. Safety check until 8 a.m. Late arrivals will lose 5 points.  Sign up for reservation design review at the Race Officials tent.
	8:45 a.m. – 9 a.m.	Welcome and flag salute.
	9 a.m. – 9:20 a.m.	Regatta group photo.
	9:30 a.m. – 3:30 p.m.	Boat races and presentations – see Master Race Schedule for individual event times.
	noon – 1 p.m.	Lunch served
	3:30 p.m.*	Awards

\* Time dependent on timely completion of races and weather conditions.

## Award Ceremony

All winners will be announced at the end of the last race, once judges have tallied the scores. The Award Ceremony will take place at the Presentation Stage. Trophies and awards will be given at that time.

## Stipend

Team mentors/team leaders (one per team) may be eligible for a stipend up to \$400. Please fill out the attached W-9 form. Pencil in your team and school name in the top margin of the form. The check will be issued to whichever institution or person is indicated on the W-9. See Appendix C.

To receive a stipend you must comply with the following and submit a completed W-9. See Appendix C.

\$150	All properly completed paperwork was submitted by March 18, 2022 as stipulated in the check list
\$150	Team and boat registered the day before the race before 8 p.m.
\$100	Offset Rancho Seco parking fees

All stipends and awards will be sent out in June 2022. All checks will be written to the person/organization as indicated on the W-9, which is submitted during orientation.

## Promotional Materials

If you would like to promote the CSR, you are welcome to use SMUD photos and videos. Like us on Facebook to get regular updates. Post and share photos at #SolarRegatta2022. *Please credit SMUD whenever possible and notify the event organizer of news releases.*

Participants will release their rights to photos and video recordings taken by the event organizers. Photos may be used in promotional or future educational programs. Each student, team mentor, team leader **MUST** turn in a waiver, and if under 18, the waiver must be signed by a parent or legal guardian.

## Media, Advertising and Logos

- This is an educational event which is often covered by media. Please wear conservative beachwear. T-shirts and shorts are appropriate. Do not shred, tear or alter T-shirts. No crop tops, see-through clothing or bikini bottoms. Do not go shirtless.
- It's encouraged that each team have uniforms or matching T-shirts.
- Please do not choose red T-shirts for your team. This will cause confusion since we need SMUD employees and volunteers, who are wearing red, to be quickly identified in an emergency. If red is your school color, opt for a white T-shirt with red accents.
- Please coordinate with SMUD's media personnel. Notify the race organizer of any media releases, or any other contact with media. If a team is located outside of Sacramento County, you may do your own media release, but please be courteous and notify the race organizer.
- All teams will be required to do a team photo shoot with their boat and participate in the Regatta group photo.
- All teams, by individually signing the media release, agree to be photographed and/or videotaped while on the water or on shore.
- The race organizer may make a request to place a video or GoPro camera on the team's boat.



## Required Items Check List Section

Application	One per entry	One per school. <b>Due before October 15, 2021.</b>
SMUD School Equipment Liability Release	One per entry	One per school, listing solar modules to be loaned (this must be signed prior to delivery of solar modules). <b>Due January 28, 2022 in order to receive solar modules.</b>
W-9	One per team	Must be written and signed by person or institution which will accept stipends or awards. <b>Due January 28, 2022.</b>
SMUD Liability Waiver	One per participant	Signed by parent/guardian if student is under 18. Must also be completed by teacher and any other adult participating as mentors. <b>Due by March 18, 2022.</b>
Media Release	One per participant	Signed by parent/guardian if student is under 18. Must also be completed by teacher and any other adults participating. <b>Due by March 18, 2022.</b>
Proof of Boating Safety Attendance	One for the pilot and alternates or ANYONE in the water	<p><b>California State Parks Division of Boating and Waterways</b>            One Capitol Mall, Suite 500            Sacramento CA 95814            Home Boating Safety Course  <a href="mailto:pubinfo@parks.ca.gov">pubinfo@parks.ca.gov</a>   916-327-1833   <a href="http://dbw.ca.gov">dbw.ca.gov</a></p> <p><b>Due by March 18, 2022</b>            A boating license is not required.  <i>The exam consists of 60 questions and is completed with exam packets and returned for scoring. Students receiving 80% or better will receive boating safety certificates.</i></p> <p><i>*You may choose a different source to attain Boating Safety certificates. Please note that other organizations may charge fees for this process.</i></p>
Drop-Dead Date	No exceptions	No paperwork will be accepted after March 18, 2022. Teams not complying will be disqualified from participating.

## Safety Equipment

Life jacket	One for pilot and anyone else on the boat.	USCG approved, Type I, II or III worn by boat pilot(s).
Air horn	One per boat.	Used for emergencies only. Must be easily reached by seated boat pilot.
Orange flag	One per boat.	This flag must be displayed in the event of a breakdown. Must be easily reached by seated boat pilot.
Fire extinguisher	One per boat.	USCG approved with a one pound capacity. Must be easily reached by seated boat pilot.
Paddle or oar	One per boat.	Must be easily reached by seated boat pilot.
25 feet of rope	One per boat.	Attached to center of the bow. Must be a minimum of .25 inches in diameter. The other end must be easily reached by seated boat pilot.
Vented battery box	One per boat.	
Protective footwear	Each participant in the water or on the boat.	Water shoes, sandals, tennis shoes.
Protective eyewear	One for anyone handling the battery.	Sunglasses are OK.
Dead man or "kill" switch	One per boat and for pilot.	This device will be provided by SMUD at orientation. It shuts power to the motor if the pilot loses control of the craft. This device should be wired to disconnect power to the motor when the switch is shorted. It must be functional at all times when the pilot is in the boat and must be <u>demonstrated</u> during the technical inspection.
Walkie talkie	One for the pilot and one for the team mentor/team leader.	This is needed to communicate information between the team on shore and on the boat.



## Be Safe

- ONLY those students wearing blue wristbands (pilots) can be in the water past their knees.
- EVERYONE in the water must be wearing water shoes, sandals, or sneakers.
- Have a safety word that you can yell, like “clear,” before turning on the prop, whether on land or on water.
- Do NOT attempt to adjust or remove vegetation from prop unless the motor is disconnected.
- Do NOT walk in the “Keep Clear” walkway area in front of the pit areas.
- Stay hydrated. Red buckets filled with iced water bottles will be found along the shoreline.
- Use sunscreen, which can be found in the SMUD information tent.
- If your boat sinks, do NOT attempt to retrieve it. Swim towards the SMUD rescue boat.
- If your boat gets stuck in the weeds, takes on water or you lose the ability to steer, put up your orange flag immediately! This is not only to signal rescue boats, but also to alert other boaters that you have lost control of your craft.
- Lost & Found will be located at the SMUD information tent.

## Technical Section

### Definition

A solar powered boat makes direct use of the sun's energy. The solar energy must be received exclusively by on-board photovoltaic cells. On-board energy storage into the battery bank is permitted. No additional batteries may be used. The design of the boat should only use solar as the form of energy (cannot use wind, human, or other source of energy).

Participating teams may either custom build a boat from scratch or modify an existing boat to create a solar-powered boat. The boats can be no longer than 20 feet (bow to stern) and no wider than 8 feet to allow for legal trailer towing. The solar boats shall use SMUD's provided solar module (JKM230P-60).

### Classes

High School will compete on Friday, May 13, 2022. Colleges, community colleges and universities, will compete on Saturday, May 14, 2022.

### Solar Module Specifications

Any solar module, which appears to have been modified, will be disqualified and must be removed prior to the race.

College students must use JKM230P-60 loaned by SMUD. See Appendix E for JKM230P-60 specification.

### Battery Specs

The battery bank must consist of a sealed, marine quality battery/batteries having a total rating of not more than 180 Watt-hours. Example: 15 amp-hours @ 12 volts. If a charge controller is used in

the solar charging system of the boat, a visible means to disconnect the battery from the charging system must be installed. No shore charging of batteries will be permitted using a generator or any other means. Once the battery bank has been inspected, approved and tagged, it may not be exchanged. **Participants must bring a copy of the battery specifications in a clear, plastic sleeve envelope.** This will be verified during the boat check-in procedure.

### Motor/Drive Specifications

The team can install a DC motor of their choice. The motor cannot have any internal batteries. It cannot be changed out during the Regatta without race official approval. Props may be changed between races.

### Training

High school teams are recommended to attend a workshop in November to prepare them to succeed in the competition. Topics to be covered:

- How to establish a project timeline
- Team management
- Accessing community resources
- Electronics
- Boat design and building techniques
- Where to test your boat

All teams are required to attend a mandatory orientation in January to review rules and regulations and to receive SMUD donated equipment.

## Boat and Personal Safety

- The Regatta Technical Inspectors will perform a full safety inspection of each boat prior to the Regatta. All boats must float and pass a technical inspection in order to be in the water to race. Boats passing the technical inspection will be tagged with a sticker.
- All boat pilots/passengers must have passed a boating safety course, be able to tread water for at least 1 minute and easily swim to shore.
- Life jackets and footgear are required for all participants on or in the water. Any team member not wearing footwear or a life jacket will be given one warning before taken out of the race. The team mentor/team leader is responsible to assure swimming ability.
- Any accident or injury must be reported immediately to the event staff and lifeguards.
- Any team operating their craft unsafely will be given one warning by Event Staff. Further unsafe behavior will result in disqualification and possible ejection from the event.
- Make sure all of your safety devices: ropes, air horn, flag, tow rope are easily within reach of seated pilot.
- If your boat takes on water, stalls, loses steering or gets stuck, raise the orange flag to signal for a tow. You do not need to keep your flag up during the tow.
- Make sure your kill switch is operable. The motor should stop automatically when the kill switch is engaged.

### If your boat sinks:

- Wave the orange flag.
- Use the air horn with three short blasts.
- Immediately swim away from the boat.
- Do not try to retrieve the boat.
- Swim toward the rescue boat. A life ring will be tossed in your direction.
- Paddles or oars can be used to get your boat back to shore after a race to avoid becoming a safety hazard. Paddles or oars may not be used during the actual race.
- Each boat must have 25 feet of rope attached to the center of the bow and not be encumbered by the solar modules.
- A communication unit (walkie-talkies) to communicate with the team members on shore is required.

## Paperwork

Each team must supply, prior to competition, a SMUD waiver of liability form for each participating student and advisor and a SMUD photo release form. Lack of documents will prevent participation at the event without exception. All documents must be received by March 18, 2022. **Team mentors/team leaders who submit their paperwork on time, complete and in order will receive a \$150 stipend. No paperwork will be accepted after March 18, 2022. Teams with missing/incomplete paperwork will be disqualified.**

Documents can be submitted in person at SMUD's Customer Service Center Security Kiosk at 6301 S Street, Sacramento CA 95817, or by express mail. Documents must be submitted in a sealed envelope, addressed to Suzette Bienvenue/CE&TC, with the **school, mentor name and phone number clearly labeled on the front.**



The envelope should be labeled on the outside with your school name and contain:

- Alphabetized by last name, a list of all the student participants.
- Alphabetized by last name, a list of all of the team mentors/team leaders.
- Alphabetized **completed** SMUD media release and liability forms.
  - NOTE: If a student is under 18, a parent/guardian must sign these forms
- Boating certificates for each pilot.

## Technical Specifications at Race

Any craft not in compliance with the rules will not be allowed to participate or will need to correct the deficiency prior to 9 a.m. of the race date with permission from the race official.

Each team must have one student designated as the student boat engineer who will need to communicate directly with the Regatta Technical Inspector and be able to explain the mechanical, electrical, construction and technical operation details of the boat. The Regatta Technical Inspector will be able to add up to 3 points toward the Regatta Cup if the student boat engineer is able to completely describe the electrical system of the boat, or deduct 3 points if the boat or students are unprepared.

- The battery bank will be tagged for compliance and the tag must not be removed for the duration of the event. Unless directed by race officials, only one battery bank may be used. Once tagged, the battery or bank may not be swapped out unless directed by a regatta official.
- Boat may not be longer than 20 feet or wider than 8 feet.
- The maximum height above waterline is 5 feet.
- Boat materials must not be toxic or pollute the water.
- The pilot must be visible at all times.
- The throttle mechanism on the craft must be free moving and when released, must return to the zero current position.
- The battery/solar selector switch must be placed within each boat and in visual sight of the pilot. The motor switch must be easily visible to the Race Starter Officials who will check that the switch is in the correct position.
- The kill switch, which is provided by SMUD, must cut power to the motor in the event of an emergency. Typically, one end of the lanyard is connected to the switch and the other is connected to the pilot.
- The pilot's cockpit must allow for easy entry/egress.
- The solar modules must be attached with mechanical fastening to the hull. The design should take into account the possibility of gusty winds.
- Boats must have their laminated boat ID number displayed on both sides of the bow. If the bow is not in a good location, the safety official will choose a location to attach the number. The laminated signs must be properly affixed for the duration of the event to be easily seen from shore, as they also display the technical inspection "pass" sticker.
- Team names are recommended but optional.
- Race officials reserve the right to disapprove any graphics.
- In case of inclement weather, teams must bring a duplicate battery to be able to run the races on battery power.

## Procedure for Check-in

Make sure that your boat is assembled and completely ready to be checked in before proceeding to your mooring spot. This area will be clearly marked by a numbered mooring flag.

**Do not proceed until you are ready.**

At the mooring spot in the pit area:

- Position your boat on the saw horses in the pit area.
- Your boat will receive a thorough inspection.
- Verify that your boat is 100% ready and that you have all the safety equipment before requesting the technical inspection.
- Contact event organizer to request a technical check. Each boat must pass a technical check between 2 p.m. – 7 p.m. on the day before the race or by 8 a.m. on race day.
- Technical check should not take more than 15 minutes.
- Pick up your team envelope/packet which will contain:
  - Meal tickets for all registered students and team mentors/team leaders.
  - Event wristbands for all registered students and team mentors/team leaders.
  - Pilot wristbands for all having proved a passing score for the boating safety exam.
  - Alphabetized list of participants who have registered.

- Master Race Schedule and Schedule of Events (may be subject to change so verify completeness).

- Fender to tie off at the end of your rope.

- Immediately upon passing inspection and receiving your boat numbers, securely tape your boat number to each side of the bow.
- Immediately move your tow vehicle to the gravel tow-rig lot. DO NOT park your tow rig or U-Haul in the main parking lot. See event map.
- You may then place your boat in the water and tie off to your mooring.
- The boat should only be up on sawhorses during the technical inspection or for repairs. Otherwise, the boat should be in the water moored.

## Repairs

On your boat:

- All repairs must be made on a raised surface like sawhorses and only in your designated pit area.
- Any damage must be promptly notified to the race official.
- After repairs have been completed, the Regatta Technical Inspector must reinspect.
- After repairs have been completed, return the boat to the mooring area.

## Safety

It is the responsibility of the team to decide whether to compete in the events. Water sports can be unpredictable, therefore, involves an element of risk. Lifeguards will be on hand.

By entering the CSR, each team and individual team member acknowledges that:

- Each team member, by signing the liability waiver, is aware of the risks involved in racing.
- The safety of the participants is the main consideration of the race organizer.
- Each team is responsible for the safety of the boat, and all team members on shore and on the water.
- Each pilot will wear a life jacket.
- No pilot will use a harness or seat belt.
- Each pilot will wear a safety “kill switch” release.
- All teams will be courteous to other boats, teams and observers.
- No pop-up tents, in-ground signs, flags or coolers in front of the area delineated by American flags in grounds. Race officials and lifeguards must have a clear, unobstructed view of the lakeshore, lake and all activities. They must also have clear and free access in the walking area.

## Electronics

- Do not fly drones.
- No boom-boxes within 100 feet of race announcer or race officials tents.

## Weather or Cancellation

The race organizer may cancel any race due to weather or any reason.

If there is rain or lack of sun, races will be modified to have the boats run on battery power for the sprint and slalom races. Have a duplicate battery available.

## Events, Judging and Awards

It is the intention to conduct the following races: Slalom, Sprint and Endurance. The race courses will be set by the race organizer. Teams will be notified of any changes on the Master Race Schedule in the Racing Official Tent.

Once a heat has been announced, the team racing next must be in the water near the event and ready within 5 minutes or the boat will be disqualified for that race.

There will be trophies and/or monetary awards for the following categories:

## Slalom Race

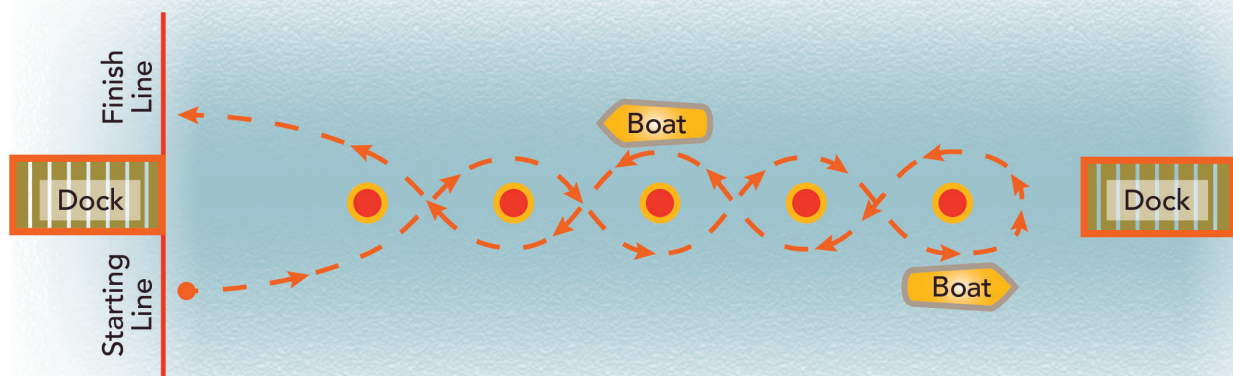
**Solar only – battery is switched off and not operable.**

This race is coded in **ORANGE** on the Master Race Schedule and marked by **ORANGE** race flags on the course.

In this race, boats compete in a test of maneuverability and speed, moving through a specified obstacle course defined by a series of buoys, without hitting or missing any buoys. This is an individual competition. The winner of the Slalom Race will be the boat that completes the course in the quickest time.

- To begin the race, boats must arrive at the Slalom Race Starting Dock at their designated time.
- The pilot will communicate with the Slalom Race Starting Official to determine where to position the boat before the start.
- The pilot will verify with the Slalom Race Starting Official that the boat's battery switch is in the "OFF" position.
- The Slalom Race Starting Official will start the race, monitor the race to assure the boat stays on course and doesn't miss or hit any buoys, and times the race.
- The race will start with an air horn blast from the Slalom Race Starting Official.
- The boat will complete the slalom race course as indicated by the map below (approximately 150 yards in each direction). Please note the start and finish line locations.
- Hitting or missing a buoy will cost the boat a penalty, adding 20 seconds to the boat's racing time per incident.
- Each boat will make one timed run.
- At the completion of the race, the Slalom Race Starting Official will add any time penalty to the boat's racing time.
- Failure to complete the race will result in a score of DNF.
- After the race is finished, the boat will return to its mooring location (or next race if applicable).
- The Slalom Race Starting Official's recorded time is final and will be reported to Race Official's tent.

### Slalom Race (single boat)



## Sprint Race

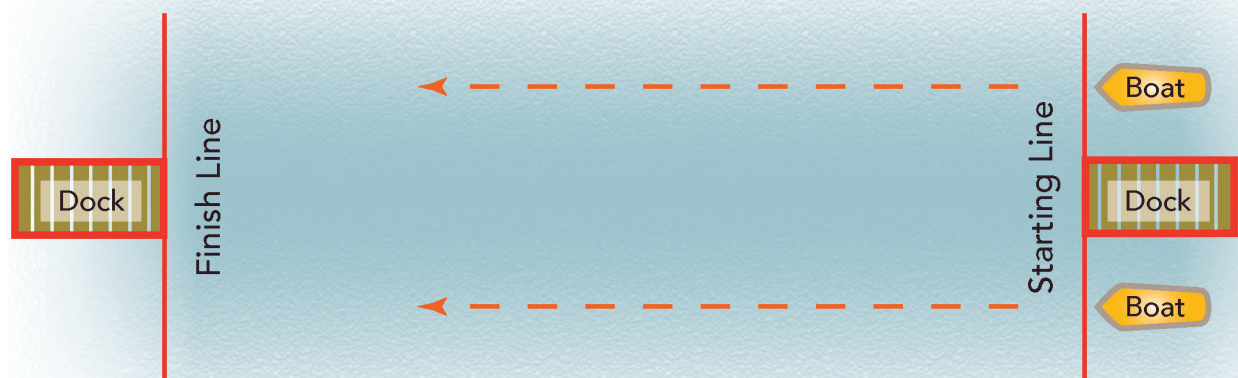
**Solar only – battery is switched off and not operable.**

This race is coded in **RED** on the Master Race Schedule and marked by **RED** race flags on the course.

In this race, two boats will race side-by-side to see which is the fastest. This is an individual competition. The winner of the Sprint Race will be the boat that completes the course in the quickest time.

- To begin the race, boats must arrive at the Sprint Race Starting Dock at their designated time.
- The pilot will communicate with the Sprint Race Starting Officials at the Sprint Race Starting Dock to determine where to position the boat before the start.
- The pilot will verify with the Sprint Race Starting Official at the Sprint Race Starting Dock that the boat's battery switch is in the "OFF" position.
- The Sprint Race Starting Official at the Sprint Race Finishing Dock will start the race, monitor the race to assure the boat stays on course, and times the race.
- The race will start with an air horn blast from the Sprint Race Starting Official at the Sprint Race Finishing Dock.
- Each boat will complete the sprint race course as indicated by the map below (approximately 100 yards). Please note the start and finish lines.
- Each boat will race twice, approximately once in the morning and once in the afternoon. Please see Master Race Schedule for assigned times.
- Failure to complete the race will result in a score of DNF.
- After the race is finished, boats will return to their mooring location.
- The Sprint Race Starting Official's recorded time is final and will be reported to Race Officials tent.

## Sprint Race (two boats)





## Endurance Race

**Battery only – solar system is switched off and not operable.**

This race is coded in **BLUE** on the Master Race Schedule and marked by **BLUE** race flags on the course.

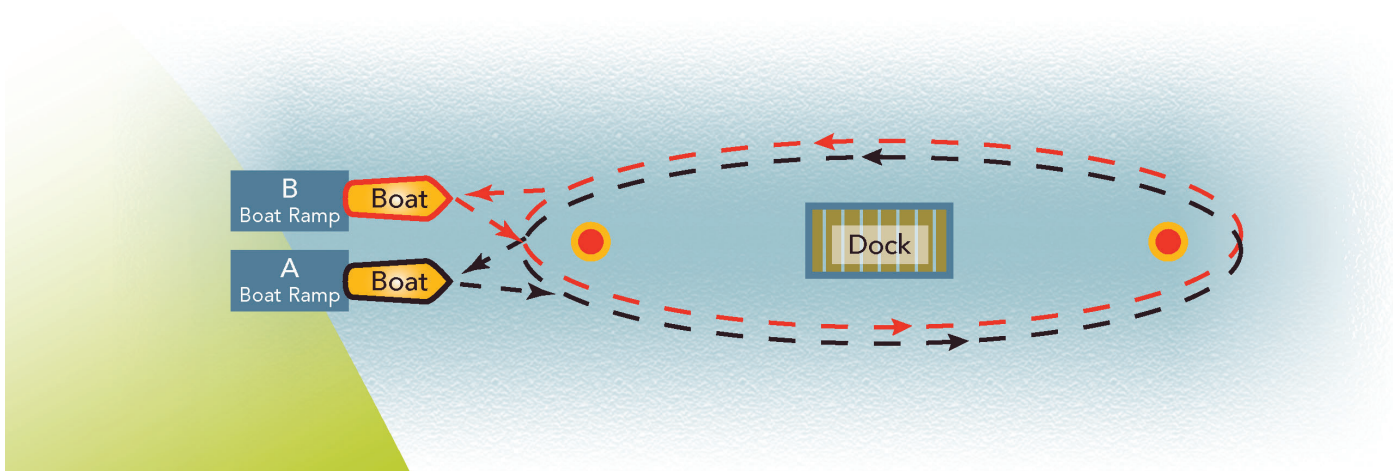
In this race, a boat will test its endurance and battery effectiveness, racing around a designated course, as far as it can in 25 minutes. The boat must switch its pilot halfway in the race. The winner of the Endurance Race will be the boat that completes as many laps as it can around the course before running out of time or running out of battery.

- Boats must arrive at the Endurance Race Starting Ramps, located at the west end of the Mooring Area, at their designated time. Each boat is assigned a ramp, Ramp A or Ramp B. See the Master Race Schedule for race times and ramp assignment.
- This race requires two Pilots. Midway through the race, the boat will return to its assigned ramp. Ten feet from shore, the pilot will turn off the motor to glide in. The change-out pilot will hold steady the boat and turn it around. The pilots will switch places and push the boat out. The motor can restart at 10 feet out. Buoys will mark this “no motor” zone. Teams not complying with the “no motor” zone will receive a 1 lap penalty.
- Boats do not have to run this race with the solar modules attached.
- If any team tries to push their boat, are in the water without wearing shoes or operating in any unsafe manner, the Endurance Race Captain will give one warning before enacting disciplinary measures.
- To begin the race, the pilot will communicate with the on shore Endurance Race Captain at the Endurance Race starting ramps to determine where to position the boat before the start.
- The pilot will verify with the Endurance Race Captain that the boat’s battery switch is “ON” and the boat’s solar system is “OFF” and not operable.
- The Endurance Race Captain will start the race. The Endurance Race Official, located on the Endurance Race Dock, will monitor the race to assure boats stay on course.
- The race will start with an air horn blast from the Endurance Race Captain.
- Each boat will proceed along the specified route moving in a counter clockwise direction on the course layout (approximately 200 yards around buoys). Please see map on the next page.
- Boats will make as many laps as possible until a second air horn blast from the Endurance Race Captain is sounded (at about the 10-minute mark).

## Endurance Race (*continued*)

- At the sounding of the second air horn, pilots will return to their respective ramps (A or B) on shore, switch pilots and continue with the race.
- Only the two pilots will be allowed in the water.
- The Race will end at the sound of a third air horn blast from the Endurance Race Captain (at the 25-minute mark).
- Hitting or missing a buoy will cost the boat a penalty of reducing the total number of laps by ½ lap per incident.
- The Endurance Race Official will record the number of laps by each boat, to the nearest quarter lap, and report the number to the Race Official.
- Failure to complete the race will result in a score of DNF.
- After the race has ended, boats will return to their mooring locations, **not** to the Endurance Race Starting Ramps (A or B). A ½ lap penalty will be applied to any team that blocks or returns to the Endurance Race Starting Ramps.

## Endurance Race (two boats)



## Presentation

**10-15 minute student presentation about their boat, its design and operation.**

This event is coded in **GREEN** on the Master Race Schedule and marked by **GREEN** race flags on the stage.

A presentation is an opportunity to earn points toward the Regatta Cup, which does not require money or technical skills. Student teams will give a short (10 – 15 minute) presentation on stage in the Presentation Area about their solar-powered boat. The presentation should be targeted to both a general audience and the Presentation Judges. After their presentation, students will take questions from the Presentation Judges. The winner of the Presentation Award will be the team that scores the highest total points from evaluations of the five topics listed below.

- Student Presentation – Teams must arrive at the Stage in the Presentation Area at their scheduled time. Please see the Master Race Schedule.
- Access to a computer is not available. Students may use poster board or other handouts.
- Students may NOT bring their boats to the stage.
- Students must cover the following five topics:
  - Sustainability** – What did the team learn about materials and the use of recycled or repurposed items?
  - Technical design** – What was the inspiration for the mechanical systems? Why was a particular control system used?
  - Design** – What was the inspiration and the reason for a particular design?

-**Solar** – Is there a working knowledge of solar/electric systems?

-**Teamwork** – Did students take the lead designing and working on the boat? Did all students have active participation?

- Up to 5 points will be awarded for each topic. The final presentation score will be the total of the scores in the five topics.

## Additional Awards

These awards are also factored into the Regatta Cup points. To be eligible, your team needs to make an appointment for a review at check-in between 7 a.m. – 9 a.m. on race day.

**Best Design, Technical** – This is based on the Judges' decision for the best mechanical and electrical design.

**Best Design, Sustainability** – This is based on the Judges' decision for best use of recycling or repurposing of materials.

**Best Design, Artistic** – This is based on Judges' decision for most creative and artistic design or theme.

## Scoring

A rubric will be used to tally points.

See TABLE D.

DNF (Does Not Finish) or DNQ (Does Not Qualify) will count as zero points.

In the case of a tie, any supplemental awards received will be taken into consideration. Point penalties may be applied.

**Table D – Regatta Cup Championship Calculation Points**

Event	1st Place	2nd Place	3rd Place	School/Points
Slalom	15	10	5	1.
				2.
				3.
Speed	15	10	5	1.
				2.
				3.
Endurance	15	10	5	1.
				2.
				3.
Presentation	15	10	5	1.
				2.
				3.
Technical	10	5	3	1.
				2.
				3.
Sustainability	10	5	3	1.
				2.
				3.
Artistic	10	5	3	1.
				2.
				3.
Check In Points	+3 to -3			1.
				2.
				3.
CUP WINNER				

## Supplemental Awards

These categories will also receive trophies.

**Best Design, Drive Train** – This is based on the Judges’ decision for the best drive train design built from scratch (not bought).

**Best Video** – This is a SMUD award for the best boat design video.

**Leading by Example** – This is based on the Judges’ decision for who has set the best examples in good sportsmanship.

**Best Built** – This is based on the judges’ decision for the best designed and hand-built boat.

## Prizes

Trophies will be given for all Regatta Cup Categories, Additional Awards, and Supplemental Awards.

The Regatta Cup winning teams will receive \$2,000. All teams must complete a W-9 form due by the January orientation. See Appendix C.

**Reminder** – All awarded checks for stipends and prizes will be made out in accordance with the W-9 forms submitted.



# California Solar Regatta

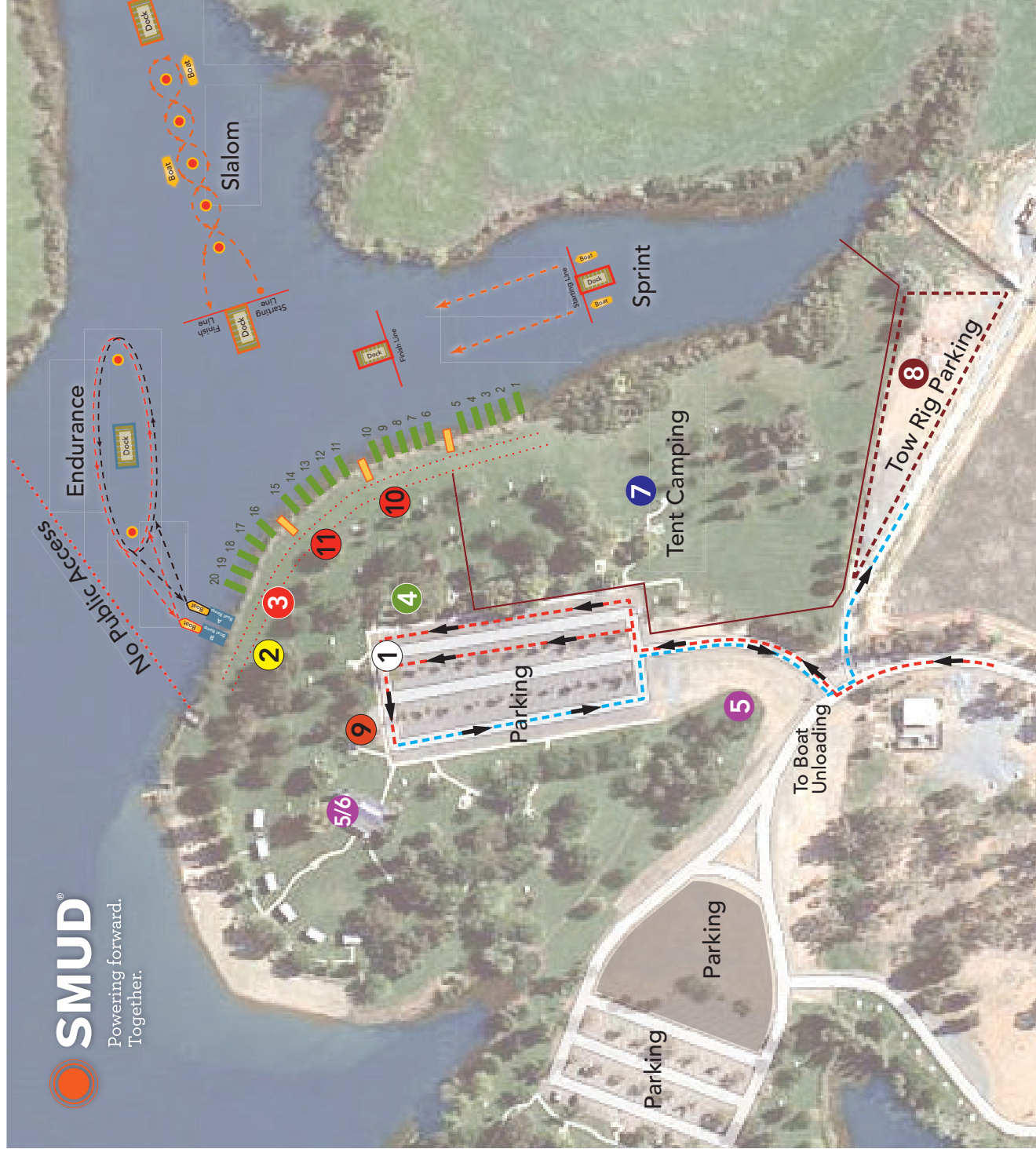
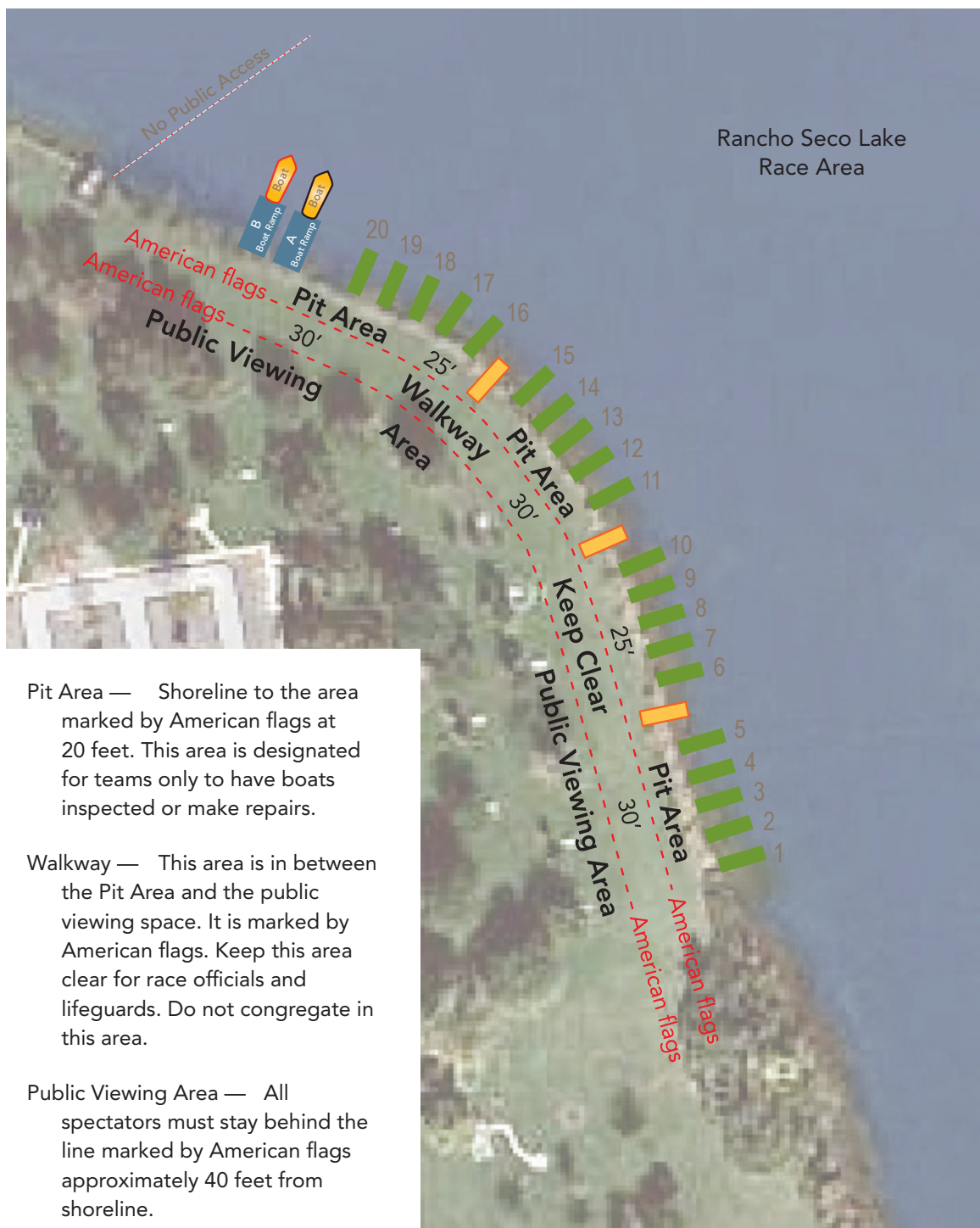


Table E - Event Map



**Pit Area** — Shoreline to the area marked by American flags at 20 feet. This area is designated for teams only to have boats inspected or make repairs.

**Walkway** — This area is in between the Pit Area and the public viewing space. It is marked by American flags. Keep this area clear for race officials and lifeguards. Do not congregate in this area.

**Public Viewing Area** — All spectators must stay behind the line marked by American flags approximately 40 feet from shoreline.

## SMUD Personal Waiver of Liability



Please Print

Name	School	Email
Phone	Mentor Name	Are you over 18? (Circle one) YES / NO

**WARNING: RECREATIONAL SITES ARE INHERENTLY DANGEROUS PLACES. A PERSON CAN BE INJURED OR EVEN KILLED WHILE AT A RECREATIONAL SITE.**

The effect of your execution of this document will prevent you, your heirs, assigns, personal representative(s), next of kin, guardian(s) and legal representative(s) ("releasor(s)"), from making any claims against the Sacramento Municipal Utility District ("SMUD"), its directors, officers, representatives, agents and employees of ("releasees") arising out of, in consequence of, or in any manner relating to your presence at or near entry upon the Rancho Seco Park located at: **14960 Twin Cities Road, Herald CA** ("premises") during the period of: **May 12-14, 2022.**

**Release, Waiver And Indemnity:** In consideration of being permitted to enter the Premises, I, on behalf of myself, heirs, assigns, personal representatives, next of kin, guardians and legal representatives hereby:

1. Release, Waive, Discharge, and Covenant Not to Sue the Releases for all claims, loss, damage, expense and liability on account of any injury, including death, arising from the negligence or other acts or omissions, howsoever caused, arising out of, in consequence of or in connection with my presence at or near, or entry upon the Premises.
2. Agree to Indemnify, Defend, Protect and Hold Harmless the Releases from all claims, loss, damage, expense and liability they may incur arising from any claim brought by myself, on my behalf, or by my heirs, assigns, personal representatives, next of kin, guardians or legal representatives and excepting only such loss to the extent it directly results from the sole negligence or willful misconduct of Releases.

**Acknowledgement of Risks:** I understand and am aware that being at or near the Premises and the engagement in activities on the Premises poses risks of injury or death. The possible risks include, but are not limited to:

1. Injuries arising from slipping, falling, tripping or drowning;
2. Injuries arising from supervision or instruction, negligent or otherwise; or
3. Being struck by, colliding with, or injured by falling objects, other participants or vehicles, equipment, materials, supplies or structures.

**General Terms And Conditions:**

1. The partial or complete invalidity of any one or more provisions of this Release of Liability and Indemnity Agreement shall not affect the validity or continuing force and effect of any other provision.
2. This Release of Liability and Indemnity Agreement is intended to be as broad and inclusive as permitted by the laws of the State of California.
3. No oral representations, statements or inducements apart from the foregoing written agreement have been made.



## SMUD Personal Waiver of Liability - *continued*

This Release of Liability and Indemnity Agreement extends to and includes any and all claims, liabilities, injuries, damages and causes of action that the parties do not presently anticipate, know, or suspect to exist, but that may develop, accrue or be discovered in the future.

**RELEASOR EXPRESSLY WAIVES ALL RIGHTS UNDER CALIFORNIA CIVIL CODE SECTION 1542, WHICH PROVIDES:**

"A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her must have materially affected his or her settlement with the debtor."

**Knowing and Voluntary Execution:** I have carefully read this Release of Liability and Indemnity Agreement and fully understand its contents. I understand that by signing this document I am waiving valuable legal rights and agree to be bound to the terms and conditions set forth above.

**IF YOU ARE OVER 18, you may sign, otherwise please have your guardian complete the Consent and Release.**

Signed: \_\_\_\_\_ Dated: \_\_\_\_\_

Print Name: \_\_\_\_\_

School and Team Name: \_\_\_\_\_

**Parent's Consent and Release for Minor:**

I certify that I am the parent/legal guardian of this minor who is under the age of 18, and I acknowledge that I have read this Agreement and fully understand its contents. I understand that by signing this document I am waiving valuable legal rights of this minor, and agree to be bound fully by the terms and conditions set forth above.

Signature of Parent or Guardian: \_\_\_\_\_

Relationship: \_\_\_\_\_ Date: \_\_\_\_\_

## Media Release Form

**Are you over 18? (YES) (NO)**

Event and Location of Photo/Video or Audio Recording:

**9th Annual California Solar Regatta in Rancho Seco Recreational Area**

Event Date: May 13-14, 2022

I, the undersigned, do hereby consent to the use and give the Sacramento Municipal Utility District (SMUD) permission to record my image and/or voice and grant SMUD all rights to use these sounds, still or moving images in any media whatsoever for promotional, advertising, or other purposes of the Sacramento Municipal Utility District.

I agree that all rights to the sound, still or moving images, and any and all plates, negatives, recording tape, memory and/or digital files belong to SMUD.

I waive all claims to compensation or damages based on the use of my image or voice, or both, by Sacramento Municipal Utility District. I acknowledge I am participating on a voluntary basis and have not been promised, nor do I expect, any compensation for my participation.

I also waive the right to inspect or approve any finished photograph or video or audio recording.

I understand that this consent is perpetual, that I may not revoke it, and that it is binding on me, my heirs and assigns.

I am 18 years of age or older and I am competent to contract in my own name or I am the parent and/or legal guardian of the minor person named below.

I have read this consent form before signing below, and I fully understand the contents, meaning and impact of this consent form.

Participant's Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_

.....  
If the participant is under 18 years of age, a parent or legal guardian must sign below agreeing to and acknowledging the terms stated above on behalf of the participant.

Parent/Guardian Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Address (if different): \_\_\_\_\_

Phone (if different): \_\_\_\_\_





## Request for Taxpayer Identification Number and Certification

**Give Form to the  
requester. Do not  
send to the IRS.**

Print or type See Specific Instructions on page 2.	Name (as shown on your income tax return)	
	Business name/disregarded entity name, if different from above	
	Check appropriate box for federal tax classification: <input type="checkbox"/> Individual/sole proprietor <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate  <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ► _____  <input type="checkbox"/> Other (see instructions) ► _____	Exemptions (see instructions):  Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____
	Address (number, street, and apt. or suite no.)	Requester's name and address (optional)
	City, state, and ZIP code	
List account number(s) here (optional)		

### Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

**Note.** If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number									

Employer identification number									

### Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below), and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

<b>Sign Here</b>	Signature of U.S. person ►	Date ►
------------------	----------------------------	--------

### General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** The IRS has created a page on IRS.gov for information about Form W-9, at [www.irs.gov/w9](http://www.irs.gov/w9). Information about any future developments affecting Form W-9 (such as legislation enacted after we release it) will be posted on that page.

### Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, payments made to you in settlement of payment card and third party network transactions, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the

withholding tax on foreign partners' share of effectively connected income, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct.

**Note.** If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

**Definition of a U.S. person.** For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

**Special rules for partnerships.** Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.



# JKM250P-60






## POLY CRYSTALLINE MODULE

230-250 Watt

Jinko Solar Introduces a brand-new line of high performance modules in wide application.



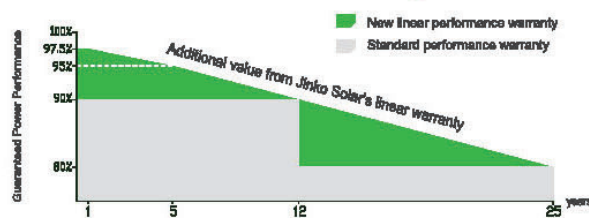
### KEY FEATURES

-  High module conversion efficiency (up to 15.27%), through superior manufacturing technology
-  Anti-reflective coating improves light absorption and reduces surface dust
-  Excellent performance in low-light irradiance environment
-  Entire module certified to withstand high wind loads (2400 Pascal) and snow loads (5400 Pascal)
-  High salt mist and ammonia resistance

### QUALITY & SAFETY

- Positive power tolerance of  $-0/+3\%$  \*
- 10 year warranty on material & workmanship \*
- Industry leading power output warranty (12 years/90%, 25 years/80%)
- Premium linear performance warranty \*

#### Premium Performance Warranty



\* Based on customer requirements and contract terms

ISO9001:2008、ISO14001:2004、OHSAS18001 certified factory  
IEC61215、IEC61730 certified products

### APPLICATIONS



On-grid residential roof-tops



On-grid commercial/industrial roof-tops

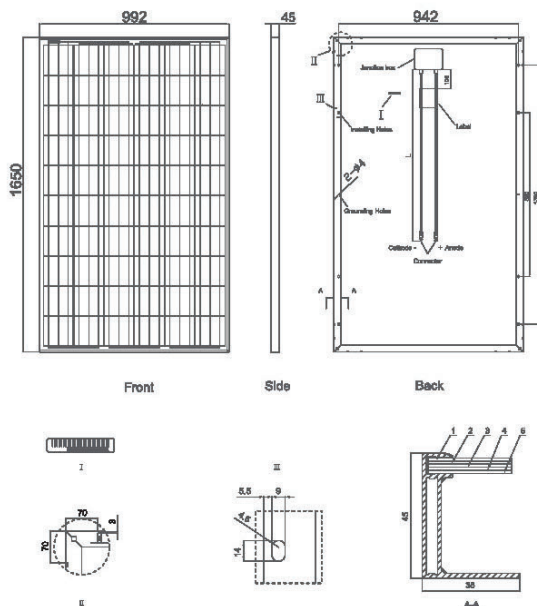


Solar power plants



Off-grid systems

## Engineering Drawings

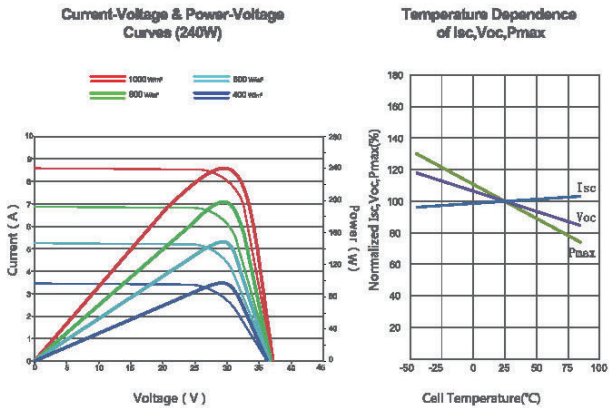


## Packaging Configuration

(Two boxes=One pallet)

23 pcs/box, 46 pcs/pallet, 644 pcs/40'HQ Container

## Electrical Performance & Temperature Dependence



## Mechanical Characteristics

Cell Type	Poly-crystalline 156×156mm (6 inch)
No. of cells	60 (6×10)
Dimensions	1650×992×45mm (64.97×39.06×1.77 inch)
Weight	19.0kg (41.9 lbs.)
Front Glass	3.2mm, High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP65 Rated
Output Cables	TÜV 1×4.0mm² / UL 12AWG, Length:900mm

## SPECIFICATIONS

Module Type	JKM230P	JKM235P	JKM240P	JKM245P	JKM250P
Maximum Power at STC(Pmax)	230Wp	235Wp	240Wp	245Wp	250Wp
Maximum Power Voltage (Vmp)	29.6V	29.8V	30V	30.2V	30.4V
Maximum Power Current (Imp)	7.78A	7.89A	8.01A	8.12A	8.23A
Open-circuit Voltage (Voc)	36.8V	36.9V	37.2V	37.4V	37.6V
Short-circuit Current (Isc)	8.35A	8.47A	8.56A	8.69A	8.81A
Module Efficiency(%)	14.05%	14.35%	14.66%	14.97%	15.27%
Operating Temperature(°C)	-40°C~+85°C				
Maximum system voltage	600V (UL) /1000V (IEC) DC				
Maximum series fuse rating	15A				
Power tolerance	±3% / -0~+3% (Based on customer requirements and contract terms)				
Temperature coefficients of Pmax	-0.45%/°C				
Temperature coefficients of Voc	-0.27%/°C				
Temperature coefficients of Isc	0.05%/°C				
Nominal operating cell temperature (NOCT)	45±2°C				

STC: Irradiance 1000W/m²



Module Temperature 25°C AM=1.5

\* Power measurement tolerance: ± 3%

# Glossary

## Event

- SMUD – Sacramento Municipal Utility District
- Regatta Cup – Award for winning the whole Regatta
- California Solar Regatta (CSR) – Official Name
- CSR – Acronym
- Cup Races – Endurance, Sprint, Slalom

## Staff

- Event and Race Organizer – Suzette Bienvenue
- Race Official – Any responsible official, on shore or on dock
- Race Captain – Responsible race official on shore
- Race Starting Official – Responsible race official on dock
- Event Staff – SMUD employees and volunteers
- Regatta Safety Inspector – Responsible race official conducting safety check and battery inspection
- Presentation Judges – Responsible race official for judging presentations
- Judges – Responsible race official for evaluating the additional awards and the supplemental awards

## Location and Detail

- Master Race Schedule – All races and presentation time schedule
- Individual Race Schedule – Individual race and presentation time schedule
- Technical Check and Battery Inspection – What all boats must complete to be able to compete
- Battery Inspection Tag – Tag placed on battery after Safety Check and Battery Inspection
- Identifying Boat Number – Laminated number to be secured on both sides of the front bow of the boat
- Boat Check-in Area – Area in parking lot where Safety Check and Battery Inspections are conducted and team packets are handed out
- Schedule of Events – Daily time schedule listing all activities
- Event Map – Map showing locations of all activities and races
- SMUD Information Tent – General information and First Aid Tent
- Racing Official Tent – Race coordination and Official Time/Lap Recording Tent
- Technical Check-in – Boat must pass a thorough check for safety prior to event registration
- Design review – To be eligible for Cup points, teams must be interviewed by judges on the design and technical detail of the boat
- Pit area – The location where the boat will be inspected and repaired. This area is between the shoreline and the line marked by American flags

Location and Detail (continued)

- Presentation Area – Area where opening information is given, presentations are made and awards are given
- Presentation Stage – Stage in presentation area
- Award Ceremony – Ceremony for race and presentation winners

Race Detail

- Boat Ramp – Ramp from shore into water to launch boats
- Mooring Location – Individual location on shore where boats are secured
- Mooring Area – Area along the shore where boats are secured
- Dock – Floating dock in lake where races start and finish
- Buoy – Obstacle in lake for boats to maneuver around
- Race Heat – There are two Race Heats for the Sprint Race, one in the morning and one in the afternoon. Team will record the best time.

Participant

- Team Mentor – Adult or teacher responsible for underage team members
- Team Leader – Captain or leader of the boat team
- Team Member – Registered as part of the school team
- Attendee – Any registered student, mentor, or parent volunteer
- Pilot – Student piloting the boat (must have a boating Safety Certificate)
- Crew Member – Team member not piloting the boat
- Student Boat Engineer – Team member responsible for electrical and technical information about the team boat
- Spectators – Those not actively participating in the races or competition





**SMUD<sup>®</sup>**

Sacramento Municipal Utility District

[smud.org/Solar-Regatta](https://smud.org/Solar-Regatta)