

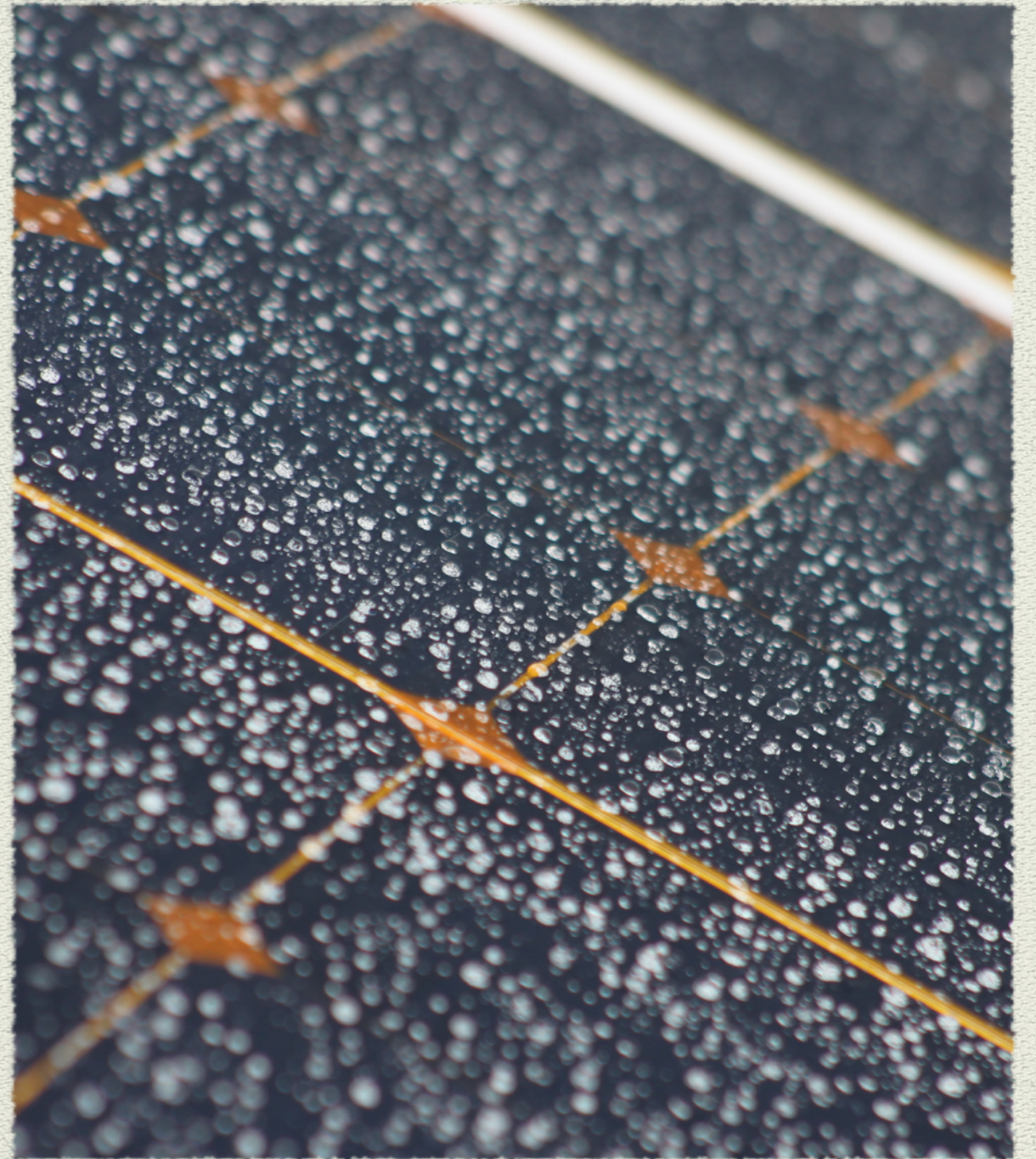
# Solar Car Media & Outreach

Solar Car Conference, March 20-22, 2015  
University of Michigan, Ann Arbor, MI  
Presented by Evan Stumpges, March 21st  
[Evan\\_Stumpges@AmericanSolarChallenge.org](mailto:Evan_Stumpges@AmericanSolarChallenge.org)  
ASC Team Coordinator & Webmaster

[www.AmericanSolarChallenge.org](http://www.AmericanSolarChallenge.org)

# Agenda

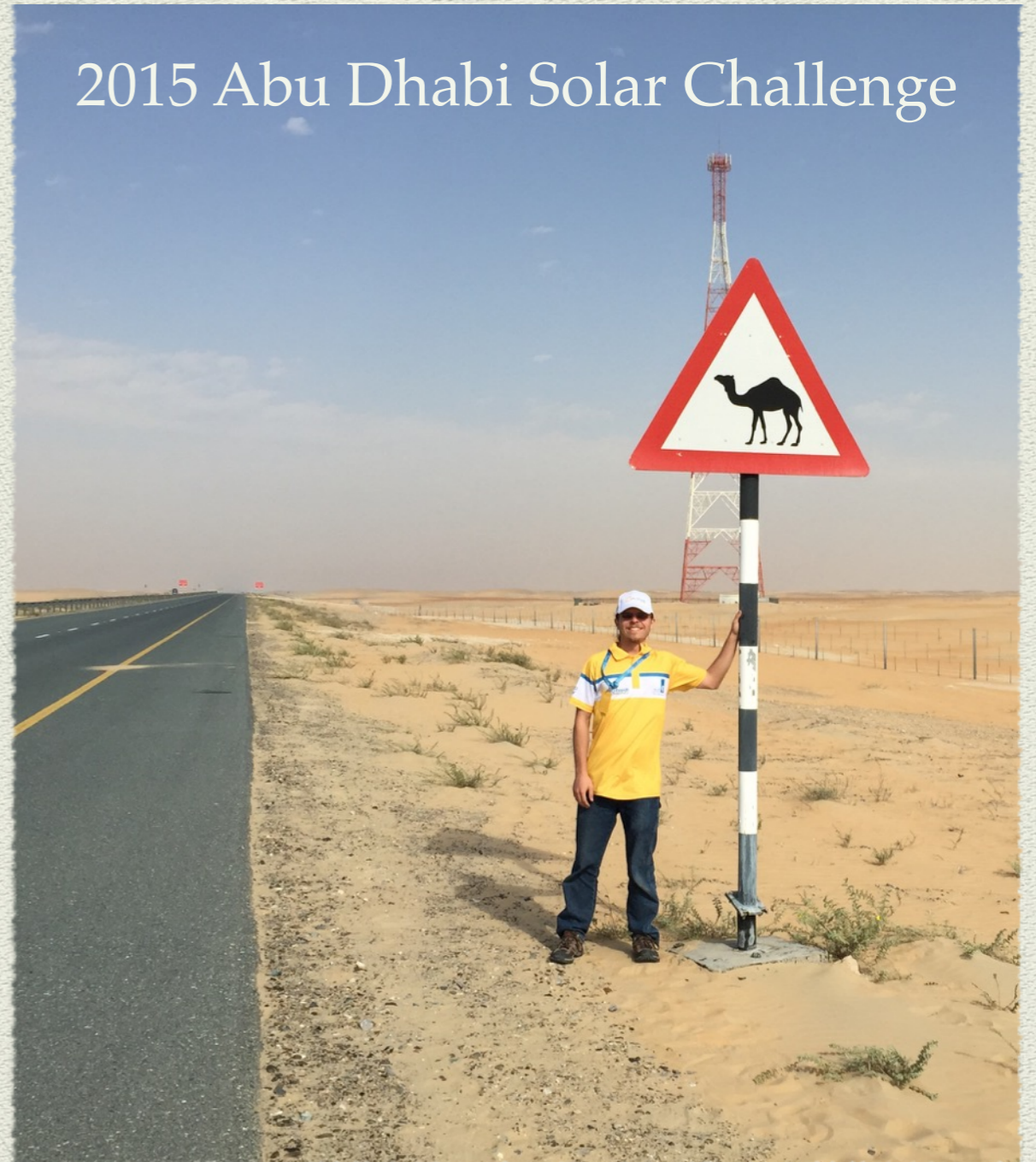
- ◆ **Media Topics**
  - ◆ Media Related Regs
  - ◆ Raster & Vector Graphics
  - ◆ Team Media
- ◆ **Outreach Topics**
  - ◆ Team Communication
  - ◆ Outreach Significance
  - ◆ Uses for Old Vehicles

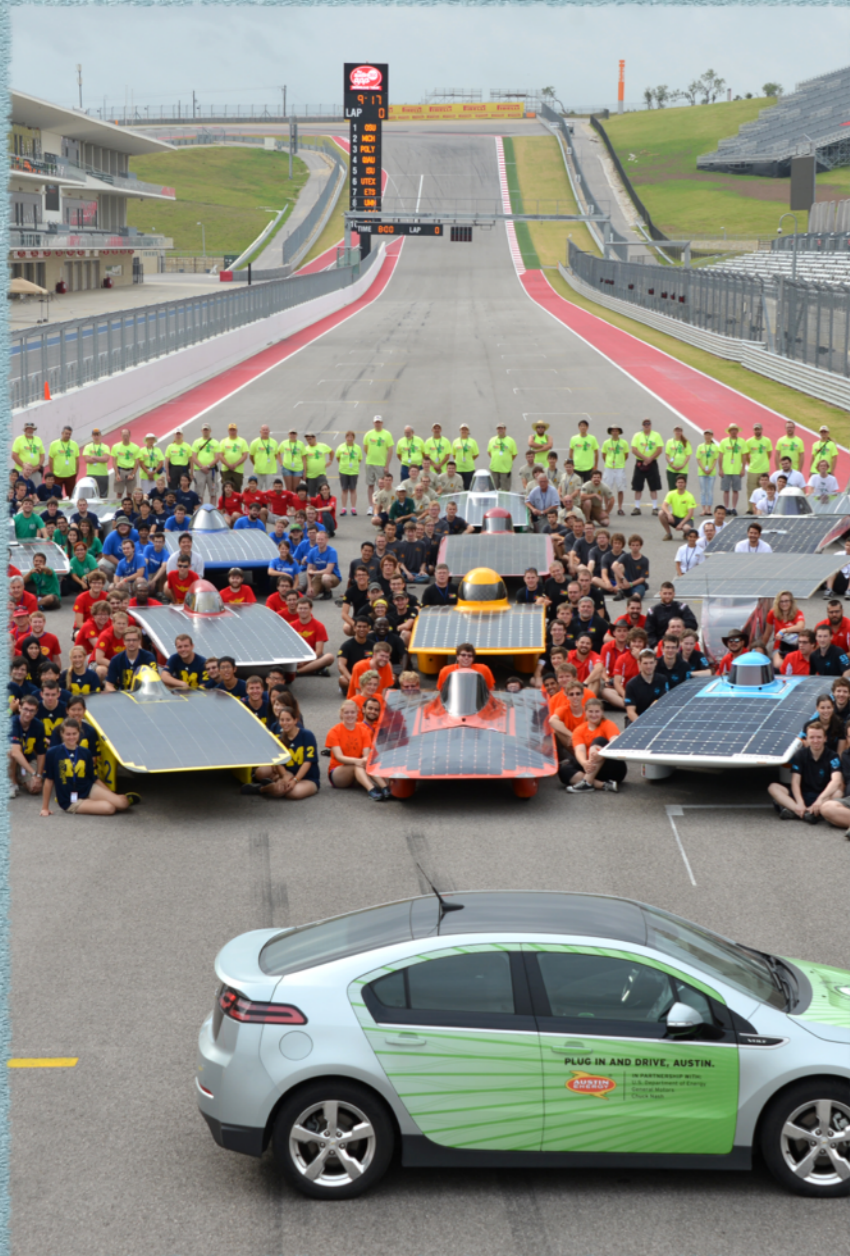


# About the Presenter

- ◆ **Education: Iowa State University**
  - ◆ Mechanical Engineering B.S.
- ◆ **Solar Car: Team PrISUm**
  - ◆ 2009-2011: Media Director
  - ◆ 2011-2012: Project Director
  - ◆ Solar Car Driver for ASC 2010, FSGP 2011, and ASC 2012
- ◆ **Event Volunteer: IEF**
  - ◆ 2012-Present: Webmaster
  - ◆ 2014-Present: Team Coordinator
  - ◆ Served as Event Staff for FSGP 2013, ASC 2014, and ADSC 2015
- ◆ **Employment: Caterpillar**
  - ◆ 2012-Present: Electric Drive Systems Engineer in Peoria, IL

## 2015 Abu Dhabi Solar Challenge





# Solar Car Media

*Generating Energy and Excitement for Your Team*

# ASC / FSGP Regulations

*Solar Car Media Requirements*



## 2016 Regulations

Revision A  
March 17, 2015

# Advertising-Promotion-Publicity

- ◆ All advertising, promotion, and publicity material produced by teams or their sponsors will refer to the Event as “The American Solar Challenge” or “Formula Sun Grand Prix”.
- ◆ If a naming sponsor is secured, teams must append the Sponsor Name to display the entire Event name, “The Acme - American Solar Challenge” or “The Acme – Formula Sun Grand Prix”.
- ◆ By entering the Event, all teams and team members agree to the use of their names and their likenesses in any publicity materials that may be issued by the Event’s sponsors or organizers.

# Team Photo Setup

- ◆ Choose the backdrop carefully
  - ◆ Try for a day with nice sunny skies!
  - ◆ Find an interesting backdrop that brings out the best in the team and institution
  - ◆ Don't make the backdrop so large that the team members and car appear small in the picture
- ◆ Must clearly feature the car (in as complete a state as possible...)
- ◆ Include as many people as possible who helped build the car
- ◆ The photo will be used in event programs and other publications

# Team Photo Submission

- ◆ Aspect ratio and image quality
  - ◆ Use a good camera to take the picture (please don't submit blurry images)
    - ◆ Submit the image as a JPG or PNG file (min size of 350x234 pixels)
  - ◆ Be sure to take the photo in landscape orientation
  - ◆ We will apply a 3:2 aspect ratio crop - you can apply this crop for us
    - ◆ If it is not possible to apply this crop without removing essential parts of the image we will add black bars to two edges of the image
- ◆ Submit the Team Photo Form along with the photo by the regulation deadline
  - ◆ If you miss the deadline you may be omitted from the event program
  - ◆ Team members in the photo must be identified by name
  - ◆ Include a brief bio / project description for use in social media posts



# Solar Car Data Sheet

- ◆ Submit the solar car data sheet by the deadline posted in the regulations
  - ◆ If you miss the deadline you may be omitted from the event program
  - ◆ In addition to solar car data, there is another tab in the Excel form for your race crew team member data (don't forget to fill out this tab)
- ◆ The solar car data sheet requires that you provide basic technical information and specifications about your vehicle
  - ◆ This information is to be provided in metric units (SI)
  - ◆ The info will be used in event programs and other publications
- ◆ **Why not also use this info create a vehicle data sheet that can be posted on your own website and shared with team sponsors?**

**Missouri S&T**  
Solar Miner VIII – #42



**L x W x H:** 4.62m x 1.57m x 1.09m  
**Weight:** 159kg  
**Array:** 1124W SunPower Mono-Si  
**Pack:** 3.7kWh Li-Po  
**Motor:** 7.5kW NGM SCM150  
**Wheels:** Three 14" NGM Style Rims  
**Chassis:** 4130 Chromoly Space Frame

**Georgia Tech: Solar Jackets**  
Endeavour – #49



**L x W x H:** 4.80m x 1.80m x 1.22m  
**Weight:** 273kg  
**Array:** 1000W Sunvia Mono-Si  
**Pack:** LiFePO4  
**Motor:** 7.5kW NGM SCM150  
**Wheels:** Three 14" Al Rims  
**Chassis:** 4130 Chromoly Space Frame

**Polytechnique Montreal: Esteban**  
Esteban VII – #55



**L x W x H:** 4.95m x 1.75m x 1.01m  
**Weight:** 240kg  
**Array:** 1350W SunPower Mono-Si  
**Pack:** 3.24kWh Li-Po  
**Motor:** Dual 1kW Mitsuba M1096-II  
**Wheels:** Three 16" Al Rims  
**Chassis:** Carbon Fiber Monocoque

**Southern Illinois University: SIUE**  
Black Nova – #57



**L x W x H:** N/A  
**Weight:** 192kg  
**Array:** 1000W SunPower Mono-Si  
**Pack:** 4kWh Li-Ion  
**Motor:** 7.5kW NGM SCM150  
**Wheels:** Three 16" NGM Style Rims  
**Chassis:** Tempered Al Space Frame

**Qazvin Islamic Azad: QIAU HAVIN**  
HAVIN 2 – #73



**L x W x H:** 4.50m x 1.80m x 1.10m  
**Weight:** 240kg  
**Array:** 1200W SunPower Mono-Si  
**Pack:** 5kWh Li-Ion  
**Motor:** Dual 1.8kW CSIRO  
**Wheels:** Four 16" Rims  
**Chassis:** Carbon Fiber Monocoque

**ETS Quebec: Eclipse**  
Eclipse 8 – #92



**L x W x H:** 4.49m x 1.77m x 1.14m  
**Weight:** 205kg  
**Array:** 1200W SunPower Mono-Si  
**Pack:** 5.07kWh Li-Po  
**Motor:** 1.8kW CSIRO  
**Wheels:** Three 14" Rims  
**Chassis:** 4130 Chromoly Space Frame

ASCC 2014 EX.

# Solar Car Graphics

## ◆ Battery Enclosure Markings

- ◆ The top of each battery enclosure must be marked using 10 mm high letters with “Caution: Chemical Hazard” and “High Voltage” and any other standard hazard markings specific to the type of battery enclosed. The type (i.e. Li-ion, Pb-Acid) of the battery must be marked on the top of the battery enclosure(s) in 10 mm high letters.

## ◆ Electrical Shock Hazards

- ◆ All exposed or easily exposed conductors, junction boxes, solar cells, etc., operating at greater than 32 V must be protected from inadvertent human contact and must be marked “High Voltage” in letters at least 10 mm high.

## ◆ **Power Switch**

- ◆ Must be marked in letters at least 10 mm high as the “Power Switch” with “ON” and “OFF” designations. These markings must be clearly visible to the driver inside the solar car and to rescue personnel outside the solar car.

## ◆ **External Power Cutoff Switch**

- ◆ Must be clearly marked by the international marking of a red spark within a white-edged blue equilateral triangle, with a minimum side length of 150 mm. In addition, clear directions how to open the switch must be displayed using letters (10 mm minimum height).

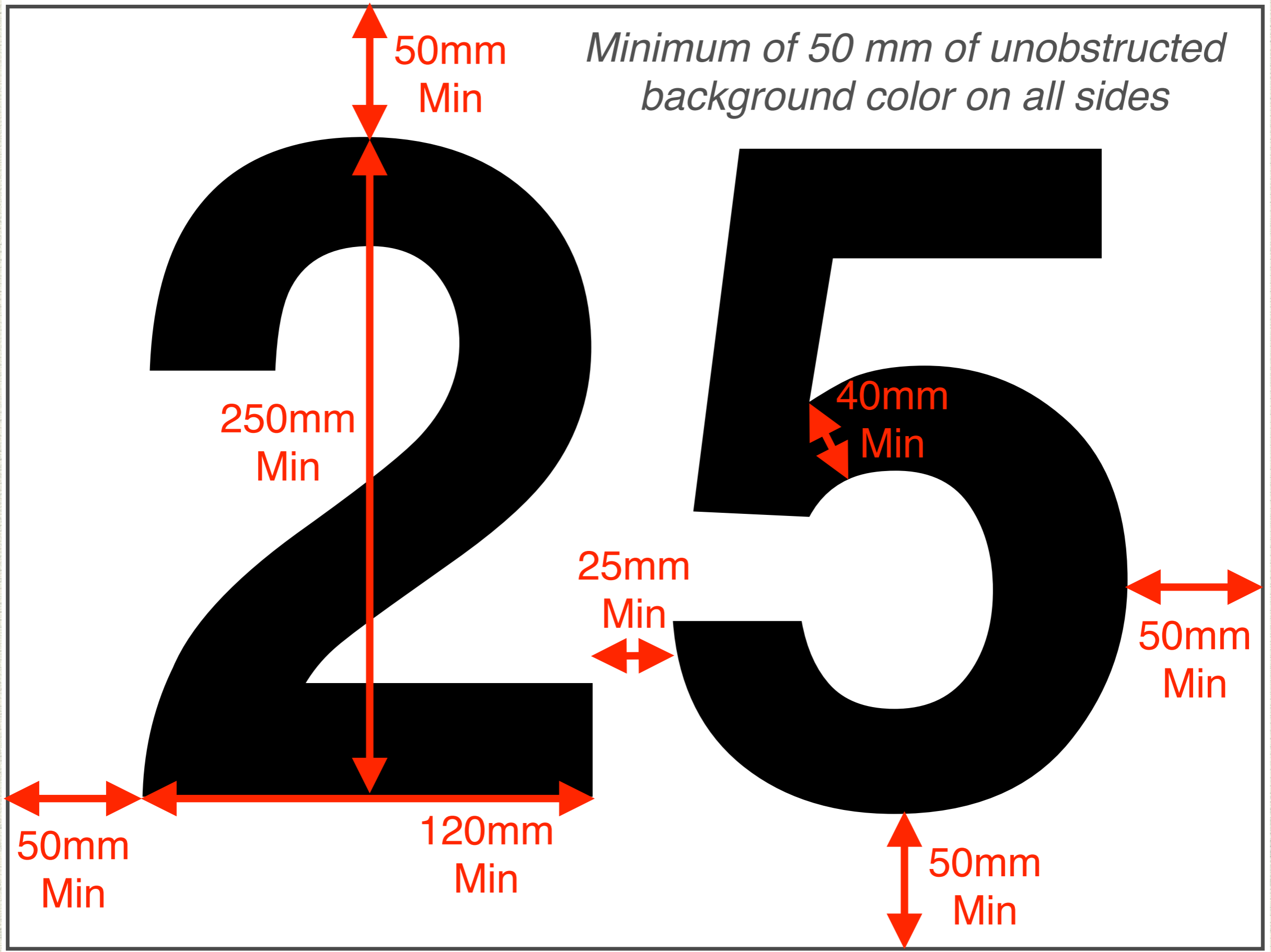
## ◆ **Canopy**

- ◆ The perimeter of the egress opening on the canopy shall be clearly marked with a 25 mm wide stripe that is of a high contrast color. The external canopy release shall be marked with letters “OPEN” with a minimum height of 20 mm in the same high contrast color as the egress opening marking.

## ◆ Solar Car Numbers

- ◆ Number must be clearly displayed on both sides of the solar car and clearly visible from a distance of 3 m perpendicular to the side of the vehicle at a viewing height of 1.8 m above ground.
- ◆ Each number must have a minimum of 50 mm of unobstructed background color on all sides.
  - ◆ Colors can be black on white, white on black, or another high-contrast color approved by Headquarters.
- ◆ The numerals themselves must be a minimum of 250 mm high, 120 mm wide (except the numeral one), and have a minimum brush stroke of 40 mm.
- ◆ Numbers containing more than one digit must have a minimum of 25 mm spacing between the digits.

*Minimum of 50 mm of unobstructed background color on all sides*



## ◆ **Institution Name(s) & Sponsors**

- ◆ The name of the Institution(s) hosting the team must be clearly displayed on both sides of the solar car and clearly visible from a distance of 3 m perpendicular to the side of the vehicle at a viewing height of 1.8 m above ground.
- ◆ Headquarters must approve use of abbreviations / initials.
- ◆ The Institution's name shall be larger and more prominent than any team sponsor name / logo.
- ◆ Additional graphics related to a team's institution(s) or sponsors are permitted, provided they are neither offensive nor disruptive.

## ◆ Event Logo

- ◆ This decal will be provided by Headquarters and will measure no more than 200 mm high by 300 mm wide.
- ◆ Must be clearly displayed on both sides of the car and visible from a distance of 3 m perpendicular to the side of the vehicle at a viewing height of 1.8 m above ground.

## ◆ National Flag

- ◆ The national flag of the country of the team must be displayed on both sides of the solar car adjacent to the windscreen and clearly visible from a distance of 3 m perpendicular to the side of the vehicle at a viewing height of 1.8 m above ground.
- ◆ The minimum size is 70 mm by 40 mm.



# Team Uniforms

- ◆ During the event from 7:00 am to 8:00 pm, team members shall wear uniforms representing their Institution(s).
- ◆ The uniforms are required to have the Institution name, car number, and Event logo (ASC or FSGP).
  - ◆ Event logos can be downloaded from the ASC website.
- ◆ If team sponsors are displayed, the event sponsor(s) must also appear in a similar manner on the team uniform.

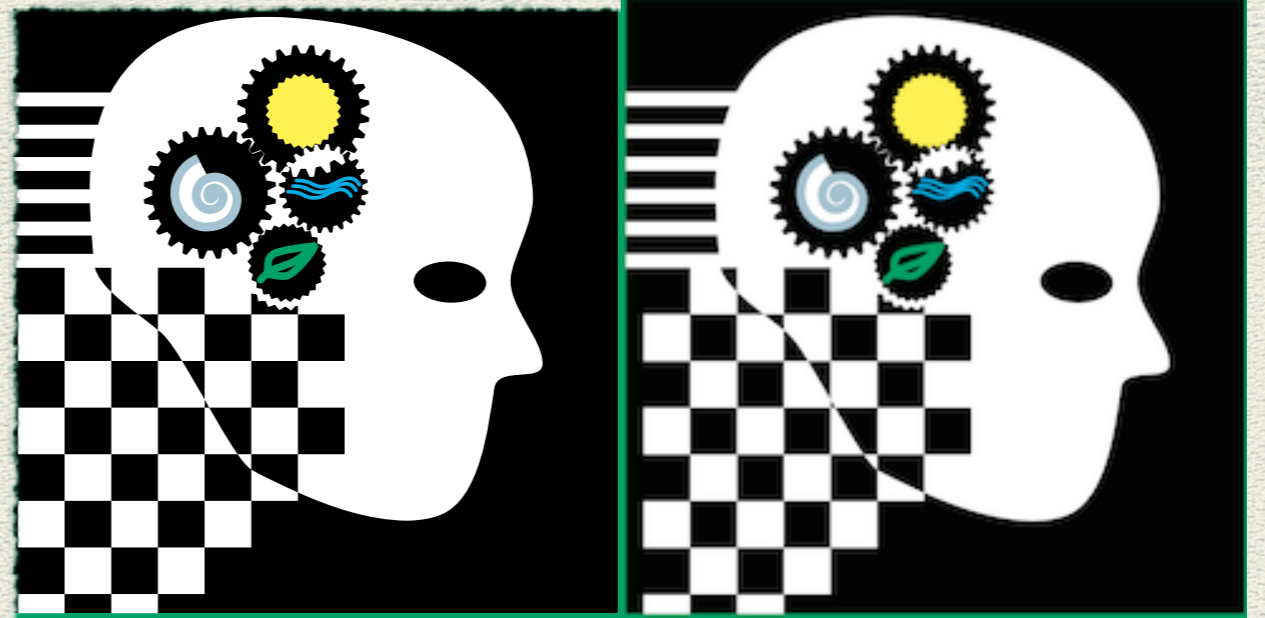
# Support Vehicle Graphics (ASC Events Only)

- ◆ The solar car number (at least 250 mm tall, with a 40 mm brush stroke) must appear on both sides and the rear of every vehicle.
- ◆ The name of the team's sponsoring Institution(s) must be displayed prominently on every vehicle.
- ◆ The scout, lead, and chase vehicles must display the solar car number on the top passenger side of the front windshield (at least 15 cm tall)
- ◆ Headquarters will provide two Event Logos per support vehicle to be placed on the sides of each vehicle and the trailer. These logos will not be larger than 310 mm height by 460 mm wide.

- ◆ A sign must appear on the rear of the chase vehicle to warn overtaking traffic of the solar car caravan.
- ◆ Signs will be provided by ASC Headquarters at a size of no larger than 500 mm by 500 mm.
- ◆ Teams wishing to create their own signs may do so provided “CAUTION: SOLAR CAR CARAVAN ADHEAD” is the wording used and is clearly indicated on a contrasting background. Alternative signage must be pre-approved by Headquarters.
- ◆ Additional support vehicle graphics are permitted, provided they are neither offensive nor disruptive.

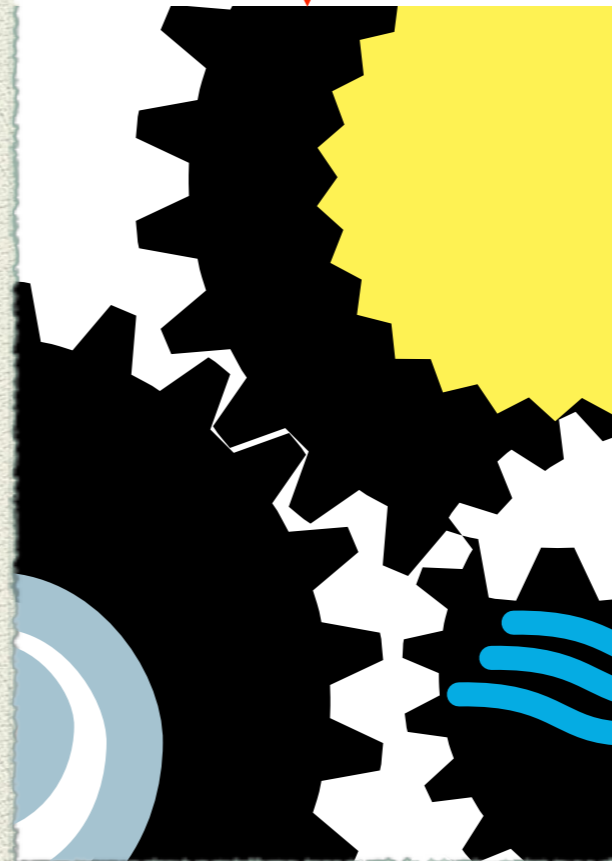
# Raster & Vector Graphics

*The Battle Against Pixellation*



Vector Graphics File

Raster Graphics File



# Raster Graphics

## (JPG, PNG, GIF, etc.)

- ◆ **Description**

- ◆ Bitmap files consisting of pixels
- ◆ Becomes “pixelated” when made larger than native resolution (drawback)
- ◆ Some file formats support transparency (alpha channel) but JPG does not

- ◆ **Common Uses**

- ◆ Photographs and enhanced/modified photos
- ◆ Web content
- ◆ Graphics with complex colors and blending (advantage)

- ◆ **Examples of Editing Software**

- ◆ Adobe Photoshop
- ◆ MS Paint
- ◆ Paint.NET
- ◆ Pixelmator (Mac)

# Vector Graphics

(PDF, SVG, EPS, etc.)

- ◆ **Description**

- ◆ Resolution independent files based on geometric shapes / drawings
- ◆ Can be printed at any size without quality degradation (advantage)

- ◆ **Common Uses**

- ◆ Fonts
- ◆ Logos / Decals / Signs
- ◆ Graphics with relatively simple colors and blending (disadvantage)

- ◆ **Examples of Editing Software**

- ◆ Adobe Illustrator
- ◆ CorelDRAW
- ◆ Inkscape
- ◆ iDraw (Mac)

- ◆ **Vector graphics importance for solar car teams**
  - ◆ Graphics for shirts
  - ◆ Large posters
  - ◆ Vinyl decals
  - ◆ Team logo
- ◆ **How to obtain vector graphics**
  - ◆ Vector logos for many large companies can be found online at Wikipedia and other sources
  - ◆ Some sponsors will provide vector logos upon request
  - ◆ Vector graphics can be extracted from PDF documents
  - ◆ Create your own graphics using a vector graphics editor
  - ◆ Vector ASC and FSGP logos can be downloaded from the ASC website for shirts and other media production

# Team Media

*Maximize Public Engagement*





# Get Organized

## ◆ **Media Leadership**

- ◆ The media function is important enough to have at least one team member dedicated to serving these needs
- ◆ This can be an elected or appointed leadership position with a title like media director, PR manager, etc.

## ◆ **PPT Presentation Template**

- ◆ It's worthwhile to develop a nice PowerPoint template for your team to have available for both internal and external presentations

## ◆ **Posters/Flyers**

- ◆ This is critical for effectively recruiting and publicizing events
- ◆ Develop a strategy for having a presence around town and on campus

# Social Media



- ◆ **ASC has Facebook and Twitter accounts (follow us!)**
  - ◆ This is a good source for up to date news during ASC & FSGP events
  - ◆ We use this as a method for making announcements and posting topics of interest to solar car teams / enthusiasts throughout the year
  - ◆ We also use this to highlight and promote things going on with solar car teams around the world
- ◆ **We suggest that teams create Facebook pages and Twitter accounts**
  - ◆ Use to share team photos, images, videos, news, etc.
  - ◆ Have a team member dedicated to keeping your social media feeds active (the whole team can help contribute content though)

# More Traditional News Outlets

## ◆ **Newsletter**

- ◆ Many teams produce a monthly, quarterly, or semesterly newsletter
- ◆ Can be in the form of a printed publication, PDF, blog post, or email format
- ◆ Send it out to sponsors and alumni to keep them up to date
  - ◆ Keep master contact lists of team sponsors and alumni for this purpose
- ◆ Paper copies can be placed at strategic locations around campus to generate interest among faculty and assist with recruiting new team members

## ◆ **Team News Coverage**

- ◆ Never turn down the chance to have your team participate in a newspaper, magazine, radio, or TV story
- ◆ This is a great way to get your team's name and mission out in your community, state, and potentially a national or even international audience

# Google Group Community

- ◆ This is a discussion forum open to a wide range of topics relevant to solar car teams and enthusiasts around the world
- ◆ It's currently not used as widely or effectively as it could be
- ◆ Mostly we just need more users!
  - ◆ Ask your team members join this group
  - ◆ Post lots of questions, responses, and let's bring it to life...
- ◆ <https://groups.google.com/forum/#!forum/solarcarteams>

# Team Website Management

## ◆ Domain Name

- ◆ Many teams choose to purchase their own domain name
- ◆ Others use their university's domain name for free

## ◆ Hosting

- ◆ Universities often have hosting services that are freely available to teams
- ◆ If you choose to use a private provider outside the university, ensure they can handle the web traffic during races
  - ◆ ASC site had this problem until switching hosting providers in 2012

## ◆ Platform

- ◆ Choose something that is easy for team members to manage and update
- ◆ ASC use WordPress, which is a convenient and easy to use platform

# Team Website Content

- ◆ News / Blog
- ◆ Links to social media accounts, school website, and ASC website
- ◆ Information about your team members
- ◆ Information about how to join the team
- ◆ Information about your current vehicle and upcoming races
- ◆ Information about past vehicles and race history
- ◆ Information on how to sponsor or support the team
- ◆ Sponsorship recognition page
- ◆ Contact information

# Team Video

- ◆ Create a YouTube channel to share videos (or similar service)
- ◆ Content Ideas
  - ◆ Time-lapse videos during vehicle manufacturing / assembly
  - ◆ Interviews with team members or sponsors
  - ◆ Live feed of your shop viewable from your office or possibly by alumni / sponsors
  - ◆ Mounting Go Pro cameras to the solar car
  - ◆ Videos of solar car or component testing
  - ◆ Race documentaries

# Team Photography

- ◆ Create a Flickr or similar online photo sharing account to share select images with the public
  - ◆ This is a great way to publicize the progress you are making on your solar cars and outreach/education events your team is involved with
  - ◆ Alumni and sponsors love to see lots of photos!
- ◆ Our staff takes pictures throughout Events for our Flickr page
  - ◆ <https://www.flickr.com/photos/americansolarchallenge/>



- ◆ Unfortunately written documentation can be lacking on teams
  - ◆ Taking good photos throughout the manufacturing and assembly process can help fill this gap and assist future teams
  - ◆ Need to have a central repository / database for photos taken by all team members - ideally come up with a good organizational structure for the photos that makes it easy to find the right photos later on
    - ◆ Encourage all team members to take pictures and add them to this repository
  - ◆ Sorting build pictures by date can help the next team reconstruct a vehicle timeline and help ensure they don't leave out important process steps
  - ◆ Pictures are useful as a reference when servicing the solar car to ensure things get taken apart and put back together correctly
  - ◆ Pictures of a past vehicle can be valuable as a reference when designing the next solar car

# ASC Media Vehicles

- ◆ We realize teams want solar car photo and video footage
  - ◆ Must be respectful of other teams & traffic congestion
- ◆ Guidelines for media vehicles on ASC
  - ◆ Media vehicles can never travel in the solar car caravan
  - ◆ If possible conduct media operations from lead / chase
  - ◆ Marked or unmarked external team media vehicles may not impede other solar vehicles or cause traffic congestion
    - ◆ Stopping off the road to take pictures and videos is OK
    - ◆ Overpasses can provide a great viewing opportunity



# Solar Car Outreach

*Embracing Education as Fundamental Team Mission*

# Team Communication

- ◆ Event regulations require teams to set up a generic team email account that can be used for ASC Event correspondence and that always forwards mail to the current Project Manager / Department Manager(s)
  - ◆ The team is responsible for ensuring that as team leaders are replaced the email forwarding is updated accordingly
  - ◆ It is recommended and more professional to have this email address be @ your team's or institution's domain name if possible
- ◆ We suggest having at least one team email address that is listed publicly on your website
  - ◆ Use techniques that offer some protection from spam as opposed to using plain text
  - ◆ Some teams choose to setup multiple team emails for different functions that forward to different team members
    - ◆ Ex: outreach, info, webmaster, etc.

# Outreach Leadership

- ◆ The outreach function is also important enough to have at least one team member dedicated to serving these needs
  - ◆ This can be an elected or appointed leadership position with a title like outreach director, event manager, etc.
- ◆ Encourage outreach event attendance by all team members as this will help with team cohesion and give them a greater sense of the importance of the team and vehicle as a whole

# Outreach Event Ideas

- ◆ Solar car facility tours
- ◆ Visit community colleges, high schools, and middle schools
- ◆ Freshman orientation at your institution
- ◆ FIRST Robotics / LEGO League events
- ◆ Sports events
- ◆ Conferences
- ◆ Parades
- ◆ State or local fairs

# Outreach Significance

- ◆ **Educating the public**

- ◆ At the core, outreach is about educating the public about your organization, your solar car, and the competition
- ◆ Audience demographics can vary greatly between events
  - ◆ Try to get an idea of the base knowledge / interests of the audience so you can tune the presentation to match

- ◆ **Improving communication skills**

- ◆ Many engineers aren't the strongest with communication skills
- ◆ Outreach events encourage team members to interact with people and explain technical aspects of the car so anyone can understand

- ◆ **Increasing team member knowledge & interaction**
  - ◆ One of the best ways for new team members to learn about the solar car is for them to hear more experienced members explain the vehicle to people at outreach events and then learn how to explain it themselves
  - ◆ Outreach events allow team members in different fields and areas of expertise to meet each other and learn about aspects of the vehicle they normally don't work on
- ◆ **Recruiting**
  - ◆ What better way to recruit new team members than to display the solar car on campus and talk directly to students passing by about the team?



## ◆ Sponsorship

- ◆ Market your university as a vital recruiting tool that helps attract/retain good talent at their school
  - ◆ Doing lots of outreach to prospective students, including high school and middle school students is a key part of this
  - ◆ The more you can get your team to have a strong presence at college events, the more valuable you become and the more you can ask for in return
- ◆ Outreach can also be effective in securing new or recurring sponsorship from companies and organizations
  - ◆ Make it a point to visit as many of your sponsors with your solar car throughout the year as possible
  - ◆ At every outreach event, be on the lookout for people from companies or organizations that might have an interest in partnering with or supporting your team

# How to Handle Old Vehicles

## ◆ Ideas for disposing of old vehicles

- ◆ A common problem for solar car teams is what to do with old vehicles when they run out of storage space
- ◆ These can be donated / sold to museums or companies to be put on public display
- ◆ These can be donated / sold to high school or college solar car teams who are just getting started with the sport
- ◆ Note: for schools who can't legally sell their vehicles due to university regulations, a long term lease might be feasible



# Open Discussion