SOLAR DECATHLON EUROPE 2012

RULES

V.3.0 SEPTEMBER 2011

ESPAÑA 2012

SUMMARY OF CHANGES (VERSION 3.0)

	Definitions	V. 3.0	Information updated.
1.1	Organization Chart	V. 3.0	Information updated
2.8	Penalties	V. 3.0	Details added
3.2	Team Officers and Contact Information	V. 3.0	Names revised.
4.4	Footings	V. 3.0	Item e removed.
4.9	Working system	V. 3.0	Text revised and removed into Rule 52.
6.4	Entrance and Exit Routes	V. 3.0	Text revised and item a removed.
7.2.	Village grid	V. 3.0	Details added to item d.
10.1	Monitoring: Introduction	V. 3.0	Text revised and details added.
10.2	Sensors' Location and Wire Routing	V. 3.0	Details added to item e.
11.4	Team Uniforms	V. 3.0	New item f.
12.7	Safety during the event	V. 3.0	Text revised and removed into Rule 52.
12.9	Teams activities at the Villa Solar	V. 3.0	Text revised in items b and c.
18.5	Contest 4: Evaluation Criteria	V. 3.0	Details added.
18.6	Contest 4: Scoring	V. 3.0	Text revised.
19.4	Contest 5: Concepts to be evaluated.	V. 3.0	Details added.
20.5	Contest 6: Evaluation criteria	V. 3.0	Sub contests reordered.
20.5	Subcontest 6.9 - Home Electronics	V. 3.0	Text revised and details added.
26	Deliverable Submission Instructions	V. 3.0	Details added
26.2	Electronic Submission	V. 3.0	List of Abbreviations updated.
29.2	Web Site Page	V. 3.0	Text revised to items 1 and 8.
30.2	Project Drawings Template	V. 3.0	Details added to PV drawings note. Health & Safety Note text removed into Rule 52.
33	SDE Rules Checklist	V. 3.0	Details removed to last two items.
36.2	Constructive Design	V. 3.0	Details removed.
36.6	Electrical Energy Balance Simulation	V. 3.0	Details added.
37.2	Appliances Report	V. 3.0	Text revised and details added.
45.2	Site Operations Plan: Content & Structure	V. 3.0	Details added.
46	Health and Safety Report & Particular Conditions Document	V. 3.0	Rule name revised and text moved into Rule 52.
49	Construction Specifications	V. 3.0	Details added.
51.2	Adopted Codes	V. 3.0	Text revised.
51.3.1	Interior propagation spreading	V. 3.0	Details added
51.3.3	Fire Protection Systems	V. 3.0	Text revised.
51.4.1	Safety against falls	V. 3.0	Text revised and details added.
51.4.2	Safety for avoiding trapping and impact risk	V. 3.0	Text revised and details added.

51.4.3	Safety against the risk of inadequate lighting	V. 3.0	Text revised and details removed.
51.5	Accessibility	V. 3.0	Text revised.
51.6.2	Structural Safety: live loads	V. 3.0	Details added.
51.7.2	Electricity System	V. 3.0	Details added.
52	Health and Safety	V. 3.0	Rule name revised. All H&S text removed into this rule. Text revised and details added.
Appendix A.5	Official Communications	V. 3.0	Lot Selection Forum added.
Appendix B	Preliminary SDE 2012 Competition Calendar	V. 3.0	Detailed event calendar included and details added.

SUMMARY OF CHANGES (VERSION 2.0)

		V. 2.0	Competition Week changed to Final Phase of the Competition or to Contest Week
	INTRODUCTION	V. 2.0	Text revised.
	DEFINITIONS	V. 2.0	New definitions added.
1.1	Organization Chart	V. 2.0	Information updated.
2.5	SDE WAT – Workspace Area for Teams	V. 2.0	Text revised.
3.2	Team Officers and Contact Information	V. 2.0	Text revised.
3.5	Use of likeness, Content & Images	V. 2.0	Details added.
4.1	Villa Solar Specification	V. 2.0	Text revised and details added.
4.3	Lot Conditions	V. 2.0	Text revised and details added.
4.4	Footings	V. 2.0	Text revised and details added.
4.5	Construction Equipment	V. 2.0	Text revised and details added.
4.6	Lighting at Competition Site	V. 2.0	Text revised and details added.
4.7	Generators	V. 2.0	Text revised and details added.
4.9	Working System	V. 2.0	Text revised and details added.
4.10	Transport	V. 2.0	Text revised and details added.
6.1	Design Approval	V. 2.0	Photovoltaic Installation added.
6.3	Minimum & Maximum Measurable Area	V. 2.0	Details added to the definition.
6.4	Entrance and Exit Routes	V. 2.0	Details added and text revised.
7.2	Village grid	V. 2.0	Text revised.
7.3	PV Technology Limitations	V. 2.0	Text revised and details added. New item e.
7.4	Batteries	V. 2.0	Details added to item b.
11.1	Registration	V. 2.0	Text revised.
11.2	Use of the Solar Decathlon Europe Logo	V. 2.0	Details added.
11.3	Teams' Sponsors and Supporting Institutions	V. 2.0	Details added.
12.4	Public Tour	V. 2.0	Text revised. Details added.
14.5	Official Scoring	V. 2.0	Details added and text revised in Contest 4.

15.4	Contest 1 – Concepts to be evaluated	V. 2.0	Details added.
15.5	Contest 1- Evaluation Criteria	V. 2.0	Text revised. Details added.
16.4	Contest 2 – Concepts to be evaluated	V. 2.0	Text revised. Two more items included.
16.5	Contest 2 - Evaluation Criteria	V. 2.0	Text revised. Two new items defined.
18.1	Contest 4 - Objective	V. 2.0	Text revised
18.2	Contest 4 – It will be assessed on	V. 2.0	Text revised.
18.3	Contest 4 – How it will be evaluated	V. 2.0	Details added. Text revised.
18.4	Contest 4 – Concepts to be evaluated	V. 2.0	Subcontest removed. Text revised.
18.5	Contest 4 – Evaluation Criteria	V. 2.0	Subcontest removed. Text revised and details added.
18.6	Contest 4 – Scoring	V. 2.0	Details added.
19.5	Contest 5 – Evaluation Criteria	V. 2.0	Note: Text revised.
24.5	Contest 10 – Evaluation Criteria	V. 2.0	Text revised. Details added.
25	Preliminary Schedule of Deliverables	V. 2.0	Information updated. Simulation Input Report added to Deliverable #5, and SDE 2012 Official Dissemination Materials added to Deliverable #7.
26.2	Electronic Submission	V. 2.0	Teams' Names & Abbreviations updated. Deliverables Names updated.
28.2	Architectural Model	V. 2.0	Details added.
28.3	Audiovisual	V. 2.0	Details added.
30.1	Press Release	V. 2.0	Details added and text revised.
30.2	Project Drawings Template	V. 2.0	AR-051 plan name and definition modified. BA – Details added. SS-101 plan removed. SS changed to PV. PV Note – Details added. Text revised.
30.4	Workshop Documentation	V. 2.0	Details added.
30.7	SDE 2012 Official Dissemination Materials	V. 2.0	Details added.
33	SDE Rules Checklist	V. 2.0	Details added and text revised.
35	Architecture Design Narrative	V. 2.0	Introductory text moved into 35.1.
35.1	Architectural Concepts	V. 2.0	Text revised. Details added.
36.3	Plumbing System Design	V. 2.0	Text revised. Details added.
36.4	Electrical System Design	V. 2.0	Text revised. Details added.
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36.6	Electrical Balance Simulation	V. 2.0	Text revised.
36.7	Solar Thermal Design	V. 2.0	Text revised. Details added.
36.8	Building Integrated Solar Active Systems	V. 2.0	Text revised. Details added.
37.1	Technical Project Summary	V. 2.0	Details added. Information removed into 37.2
37.2	Appliances Report	V. 2.0	Text revised.
37.3	Comprehensive Energy Analysis and Discussion Report	V. 2.0	Details added. Text revised.
38.1	Communications Plan - Introduction	V. 2.0	Text revised.
38.2	Communications Project	V. 2.0	Details added.

38.3	Public Tour Description	V. 2.0	Text revised. Details added.
38.4	Team Visual Identity Manual	V. 2.0	Text revised. Details added.
38.5	Sponsorship Manual	V. 2.0	Details added.
40.2	Innovation Report – Contents index and structure	V. 2.0	Text revised.
41.2	Sustainability Report – Contents index and structure	V. 2.0	Text revised. Details added.
44	Cost Estimate and Project Financial Summary	V. 2.0	Text revised and details added.
45	Site Operations Plan	V. 2.0	Text removed into Rule 45.1
45.1	Site Operations Plan - Objective	V. 2.0	Text removed into Rule 4.
45.2	Site Operations Plan - Content & Structure	V. 2.0	Details added.
48	Electric and Photovoltaic Chart	V. 2.0	Details added.
50	Structural Calculations	V. 2.0	Details added. Text revised.
51.6.5	Structural Safety – Load bearing pressure	V. 2.0	Details added.
51.7.1	Electricity and Photovoltaic System – Grid interconnection	V. 2.0	Text revised. Details added to item 5.5 of the table.
51.7. 2	Electricity and Photovoltaic System – Electricity System	V. 2.0	Details added.
App. A.3	SDE WAT -How to edit your profile	V. 2.0	Details added.
App. A.5	SDE WAT – SDE WAT Main Screen	V. 2.0	Information updated.
Appendix B	Preliminary SDE 2012 Competition Calendar	V. 2.0	Details added.

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INTRODUCTION

Solar Decathlon

The Solar Decathlon is an international competition organized by the U.S. Department of Energy in which universities from all over the world meet to design, build and operate an energetically self-sufficient house, grid-connected, using solar energy as the only energy source and equipped with all of the technologies that permit maximum energy efficiency.

During the final phase of the competition each university team assembles their house at the National Mall in Washington DC, where houses are open to the general public, while undergoing the ten contests of the competition, reason for which this event is called Decathlon.

Solar Decathlon Europe

The Solar Decathlon Europe (SDE) was created through an agreement signed between the Ministry of Housing of the Government of Spain and the United States Government, in October 2007, who committed to organize a sustainable solar houses competition in Europe. The document specified that the European competitions were to be held in alternate years from those in America.

The SDE Organization goal is to contribute to the knowledge and dissemination of industrialized, solar and sustainable housing, and therefore has the followings basic objectives:

- To raise awareness of the students participating in the competition on the benefits and opportunities offered by the use of renewable energies and sustainable construction, challenging them to think creatively and develop innovative solutions that contribute to energy savings and how it affects our everyday lives.
- To encourage the construction professionals to select materials and systems that reduces the environmental impact of a building over its entire lifetime, optimizing its economic viability and providing comfort and safety of occupants.
- To educate the general public about responsible energy use, renewable energy, energy efficiency, and the technologies available to help them reduce their energy consumption.
- To emphasize the correct order of intervention: first reducing the building energy consumption and increasing its energy efficiency; and afterwards integrating solar active systems and/or other renewable technologies. Moreover the building systems must be selected and dimensioned using environmental and cost-effective criteria.
- To encourage the use of solar technologies and other renewable energy sources.
- To promote architecturally attractive solar system integration, working on using the solar technologies to replace conventional construction materials in the building envelope such as the roof, skylights or facades.
- To clearly demonstrate that high performance solar homes can be comfortable, attractive and affordable.

Solar Decathlon Europe objectives are consistent with the European Union goals for 2020, and has demonstrated to be effective on making students, professionals and general public aware of the importance of the energy savings. This constitutes the most immediate and cost-effective way of addressing the European energy challenges of sustainability, guaranteeing supply sources and competitiveness. The SDE participant houses present solutions that contribute to achieve the EU targets: saving 20% of the primary energy consumption, reducing 20% of greenhouse gas emissions and producing 20% of the energy from renewable resources.

Undoubtedly, the Solar Decathlon Europe brings prestige and raises the visibility of the selected participating universities; as they are part of the small group of top institutions that will compete in the world most important Solar House Event. One of the main characteristic elements of the European edition of the Solar Decathlon is its emphasis on sustainability, innovation and research. The participant teams work not only to develop and build their houses, but also to enhance the systems' integration and generation of knowledge on sustainable construction.

Solar Decathlon Europe offers students a unique opportunity for learning, taking theory and putting it into practice, and doing so through a case study. Students working on the project will be challenged to use their innovation capacity, and their ability to design and build an energetically self-sufficient solar house. The projects are developed by multidisciplinary teams, giving the student the opportunity to learn not only about technical issues but also about teamwork, communication skills, a sustainable lifestyle and socio-economic issues in order to ensure the viability of their project.

The official language for the SDE 2012 Competition is English. However, for activities involving non-members of the SDE Organization or the participant teams, the language utilized will be the language of the area.

SDE RULES

The Solar Decathlon Europe Rules are designed to achieve the Organization objectives and to promote a fair and interesting competition among teams.

The Rules for the Solar Decathlon Europe 2012 are based on the American version of the competition. However, there are important changes concerning the deliverables and contests, adding more emphasis on sustainable, energy efficiency, innovation and research aspects.

The present document "SDE2012 Rules" describes what each team needs to know to be competitive in the Solar Decathlon Europe and includes five sections:

SECTION 1.0 General Rules

Includes rules related with the general aspects of the Competition, describing the organization, the participating teams, the site, the houses, the Event final phase, and the general conditions.

SECCIÓN 2.0 Contests

In this section the SDE2012 contests and sub contests are defined, including the scoring distribution, the contests evaluation criteria and the different procedures.

SECCIÓN 3.0 Deliverables

Includes detailed information concerning all the documents, drawings and other material that the teams must submit to the Organization along with the submission dates and format requirements.

SECCIÓN 4.0 SDE Building Code

This Code primarily exists to protect the teams and public health and ensure safety. Compliance with the SDE Building Code is a prerequisite for participation in the competition.

SECCIÓN 5.0 Appendixes

It contains rules' complementary information.

The information included in the present document may change; details or complementary information will be added in the future. However, all the modifications will be clearly indicated in the SDE Rules new editions.

DEFINITIONS

General Definitions

Assembly	The period of time between the arrival of trucks and the beginning of the contests on the Villa Solar.
Communication materials	All printed or electronic publications designed to convey information to the public supporting the Competition goals.
Competition	All aspects of the Solar Decathlon Europe related to the 10 contests and the scoring of those contests, along with the project development of the competition houses.
Competition Calendar	The timetable establishing the dates of the final phase of the competition and the daily activities assigned.
Competition House	The complete assembly of physical components installed on the Villa Solar.
Contest	The Solar Decathlon Europe competition consists of 10 separately scored contests, each containing one or more sub-contests See SECTION 2.0
Contest week	The period of days on the Villa Solar when some or all contests are active.
Decision	The Rules Officials' interpretation or clarification of a rule.
Deliverables	Documentation and other materials requested by the SDE Organization to the teams along the project development, in order to verify compliance with the Competition Rules.
Disassembly	The period of time between the conclusion of public tours and the completion of the Villa Solar cleanup.
Electric and Photovoltaic Chart – Interconnection Application	A form submitted by the team's electrical engineer to the Site Operations Manager, which provides the technical details needed to determine the suitability of the team's electrical and photovoltaic systems for interconnection to the village grid.
Event	All the activities that take place on the Villa Solar including, but are not limited to, registration, assembly, inspections, contests, special events, public exhibits, and disassembly.
Event Sponsor	An entity selected by the SDE Organization to support the project and help ensuring its success.
Final phase of the SDE 2012 Competition	The period of days including Assembly, Disassembly and Contest Week periods.
Grid-Tie Assembly	The period of time during assembly after the house has been connected to the village grid (interconnected).
Inspection	Each of the inspections realized to all the Competition Houses on the Villa Solar for verifying compliance with the SDE Rules. See Rule 11.5.
Inspections Card	Official card indicating the teams' inspections' status.
Measured Sub Contest	A sub contest based on task completion or measured performance.
Jury	The group of individuals selected by the organizers to make evaluations on a specific aspect of each team's project according to a contest. Competition Area.
Project	All activities related to the Solar Decathlon Europe 2012 from the initial meetings through to the conclusion of the event.

Protest Resolution Committee	The group of individuals selected by the organizers to resolve team protests during the competition. The Protest Resolution Committee consists of people who are familiar with the project, but not part of the organization or the teams.
Public exhibit	Areas of the competition site open to the public during designated hours.
Rule	A principle or regulation governing conduct, action, procedure, arrangement, etc., for the duration of the project.
Scored period	Any period of time during which a particular measured contest is in progress.
Scoring Server	Digital application that collects data from the central data logger server, includes forms for manually entering jury and task-based sub contest results, and calculates composite scores.
SDE WAT	Solar Decathlon Europe Workspace Area for Teams is the official communication tool of the competition. See Rule 2.5.
Solar Decathlon Europe Building Code	A set of design and construction standards set forth and enforced by the Solar Decathlon Europe Building Official for the protection of public health and safety during the event
Stand-Alone Assembly	The period of time during assembly before the house has been interconnected to the village grid.
Sub contest	An individually scored element within a contest.
Juried Sub Contest	A sub contest based on Jurors assessment.
Village Grid	Bi-directional, AC electrical network system installed on the competition site which will measure constantly and individually the contribution and electrical energy consumption of each house.
Villa Solar	Competition Site, where the teams' houses are assembled along with the common areas needed for the Competition development,

SDE Organization Members

Communications Manager	The organizer responsible for the project´s public outreach, communications activities and special events. Communications Area.
Competition Manager	The organizer responsible for enforcing the Rules and stating its content, conducting a fair and compelling competition. Final responsible for assigning penalties and scorings. Competition Area.
Competition Strategies Manager	The organizer responsible for planning, coordinating and controlling all the activities related to the Competition. Competition Area.
Competition Strategies Coordinator	The organizer responsible for writing the Rules, organizing and supervising the deliverables' reviews, and planning, coordinating and controlling the activities and functions of the Juries and Observers. Competition Area.
Event Organizer	The Ministry of Public Works from the Government of Spain is the maximum responsible for the organization of the SDE 2012 Competition, with the collaboration of the American Solar Decathlon Organization, the Department of Energy (DOE) of the United States of America and the Technical University of Madrid (UPM).
HSCoordinator	The organizer responsible for evaluating the teams' Health and safety plans and consequently developing the Competition's Health & Safety Plan and supervising the houses' assembly and disassembly works at the Villa Solar. See Rule 52.3.Infrastructures Area.

Infrastructures Manager	The organizer responsible for the planning, execution, development and control of all the activities related to the assembly, functioning and disassembly of the Villa Solar. Infrastructures Area.
Inspector	An organizer responsible for carrying-out the house's inspections and filling out the corresponding Inspections Card, according to the SDE Building Code. Infrastructures Area.
Monitoring & Instrumentation Coordinator	The organizer responsible for the instrumentation system and the scoring server of the Competition. Competition Area.
Jury Coordinator	An organizer, liaison between the Solar Decathlon Europe 2012 Organization and the jury, responsible for accompanying the jury during the houses' visits, the deliberation process and the evaluation reporting. Competition Area.
Observer	An organizer assigned by the Competition Manager to observe team activities during contest week. An observer reports observed rules infractions to the Rules Officials and records the results of specific contest tasks, but does not provide interpretations of the Solar Decathlon Europe Rules. Competition Area.
Office Services Manager	The organizer responsible for planning, coordinating, and directing a broad range of services that allows the SDE Organization to operate efficiently. Office Services Area.
Organizer	A Solar Decathlon Europe employee, subcontractor, or observer working on the project.
Director	The Director is the general administrator and the main person responsible for the project on behalf of the general state administration. Represents the Ministry of Public Works of the Spanish Government and has the final decision-making authority in all the strategic aspects of the project.
Press & External Communications Coordinator	The organizer responsible for communication issues between the internal and external parties of the Solar Decathlon Europe, acting as proxy between the participant Teams and the media.
Project Manager	The organizer responsible for the management of the project and responsible for mobilizing all of the necessary resources for the achievement of the objectives, with the final decision-making authority in all the aspects related to the scope, planning, costs, quality, resources, communication, risks, sponsorship, and acquisitions of the project.
Public Events Coordinator	The organizer responsible for planning, coordinating, executing and developing all the public activities and events related to the Competition and for the public outreach of the project. Communications Area.
Rules Official	An organizer authorized to interpret the rules. The Competition Manager is the lead Rules Official. Competition Area.
Scorekeeper	The individual selected by the organizers to operate and maintain the scoring server during the competition. Competition Area.
Site Operations Coordinator	The organizer responsible for the evaluation of the teams' Site Operations plans, consequently developing the Competition site operation plan and the coordination and supervision of the houses' assembly and disassembly works at the Villa Solar. Infrastructures Area.
Social Media & Marketing Coordinator	The organizer responsible for managing the social media platforms and producing the official SDE multimedia files (videos, photos, presentations, etc). Also responsible for administrating the SDEurope Website and working toward the identification of the brand SDEurope as a recognizable name and logo. Communications Area.

Sponsorships and Exterior Relations Coordinator	The organizer responsible for developing and implementing a long-range corporate giving strategy, to identify, cultivate, solicit and steward relationships with business supporters, fostering a strong worldwide awareness and support. Communications Area.
Staff	Individuals working for the organizers on the project.
Universities Relations Coordinator	The organizer responsible for the communication with the participant teams, helping them come across the project development. Competition Area.

Team Members

Communications Coordinator	A team member responsible for the team's communications with the media and for developing all the communications materials, as well as for updating the information concerning the Communications activities through the SDE WAT. Works in conjunction with the SDEs Communication Organizers to coordinate the team's interactions with the media.
Construction Manager	A team member responsible for the planning and execution of the construction, transport, assembly, and disassembly of the house.
Contest Captain	A team member responsible for the team's primary strategies and coordination of Tasks Contests; is also responsible for demonstrating the compliance of appliances with the Rules
Decathlete	A team member who is an enrolled student – undergraduate or post graduate studies, at a participating school or has graduated from a participating school within 12 months of the beginning of assembly.
Electrical Engineer	A team member responsible for completing the Electric and Photovoltaic chart and working in conjunction with the SDE Organization electrical engineer to interconnect the house to the grid on the Villa Solar. Must be a licensed professional, which approves and signs the house's electrical systems (drawings and spefications).
Faculty Advisor	A team member who is the lead faculty member and primary representative of a participating school in the project; also provides guidance to the team on an as-needed basis throughout the project. Responsible for signing the official document certifying the compliance of the codes of the country of origin.
HS Team Coordinator	A team officer who is responsible for developing and enforcing the team´s Health & Safety Plan during the competition phases, assembly and disassembly of the houses.See Rule 52.7.1 item A.
Instrumentation Contact	A team member collaborating with the organizers' instrumentation team to develop a plan to accommodate the equipment used to measure the performance of the home during the competition
Project Architect	A team member responsible for the architectural design effort; license not required
Project Engineer	A team member responsible for the engineering design effort; license not required
Project Manager	A team member responsible for the planning and execution of the project
Safety Officer	A team member responsible for the safety measures observance during the event. See Rule 52.7.1, item B.
Site Operations Coordinator	A team member responsible for developing and enforcing the teams' Site Operations Plan during the competition phases, assembly and disassembly of the houses.

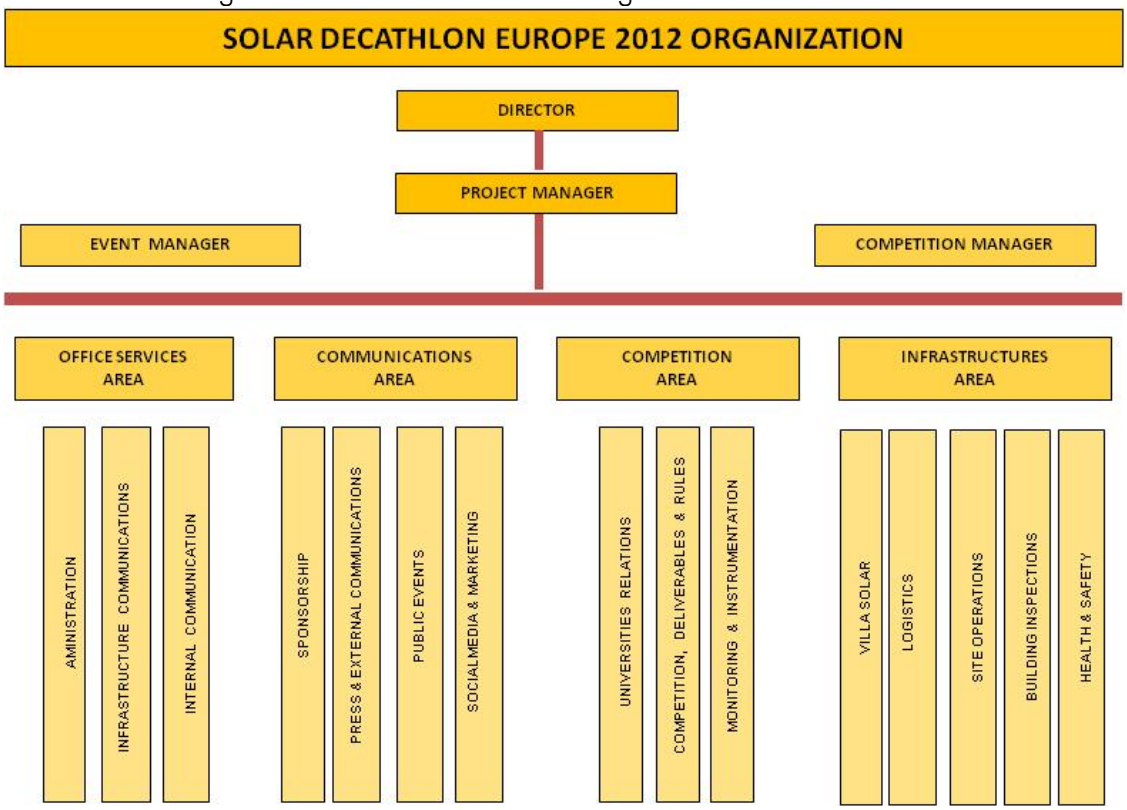
Student Team Leader	A student team member responsible for the coordination among the team. Ensures that official communication from the organizers are routed to the appropriate team member(s)
Structural Engineer	A team member responsible for approving the house's structural systems; license required
Team Crew	A person who is integrally involved with a team's project, but is unaffiliated with the participating schools; contractors, volunteers, and sponsors are examples of team crew
Team Member	An enrolled student, recent graduate, faculty member, or other person who is affiliated with one of the participating schools and is integrally involved with a team's project activities; Decathletes, Faculty Advisors, and involved staff from a participating school are all considered team members

SECTION 1.0 GENERAL RULES

Rule 1 *SDE Organization*

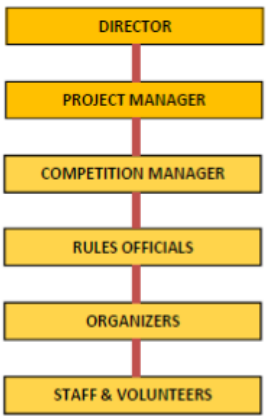
1.1. Organization Chart

The SDE 2012 Organization structure is the following:



1.2. Authority

For the SDE 2012 Competition, the following authority structure will be used for taking decisions and solving problems:



Rule 2 Administration

2.1. Precedence

If there is a conflict between two or more rules, the rule having the later date takes precedence.

2.2. Violations of Intent

A violation of the intent of a rule is considered a violation of the rule itself.

2.3. Effective Date

The latest version of the rules posted on the SDE WAT (SDE Workspace Area for Teams) and dated for the year of the event are the rules in effect.

2.4. Official Communication

It is the team's responsibility to stay continuously updated with all the official project communications. Official communication between the teams and the organizers will occur preferably through one or more of the following:

a. **SDE WAT**: is the SDE Workspace Area for Teams and is the main communication tool for the competition. See Appendix A for SDE WAT details.
b. **Email**: For expediency and to protect confidentiality, the organizers may choose to communicate with teams via team members' email addresses and the SDE Email (sde.contact@sdeurope.org). The content of the communications sent to this email address will remain confidential, unless the team grants permission to the SDE Organization to divulge the content of these communications to the other teams. However, most official communication will occur via the SDE WAT.
c. **Conference calls**: SDE Organization may invite the Teams to participate in a conference call. Invitations and instructions for participation in conference calls will be provided via the SDE WAT.
d. **Meetings**: Before the event, the teams and organizers have an in-person meeting. Notification of the date and agenda of this meeting will be made via the SDE WAT. During the event, a meeting will be held the day before assembly begins. Meetings will be held on a daily basis throughout the event.
e. **Postings at headquarters**: During the event, a bulletin board (or other venue for posting information) may be established at event headquarters. Teams will be notified via the SDE WAT if such a venue is established and the purpose for which it has been established.

2.5.SDE WAT – Workspace Area for Teams

The Solar Decathlon Europe Workspace Area for Teams (SDE WAT) is the main communication platform between the teams and the organization. The SDE WAT is a secure educational website, which is accessible only for the participating teams. All the Team Members must be registered. The primary usage of SDE WAT will be:

- receive all official communications
- calendar updates
- request and receive information or clarifications
- submit questions
- upload and download files

It can be reached through the link http://teams.sdeurope.org, See Appendix A for further information).

2.6. Decisions on the Rules

The decisions on the Solar Decathlon Europe Rules are interpretations of the rules contained

in this document, the Solar Decathlon Europe 2012 Rules. When the Rules Officials make a decision that may, in their opinion, directly or indirectly affect the strategies of all teams, the Rules Officials will add the decision to the Solar Decathlon Europe Rules and notify the teams of the addition via the SDE WAT.

Exception: if such a notification would unfairly reveal the strategies of one or more teams, the organizers may, depending on the circumstances, refrain from notifying the decision to all teams.

2.7. Self Reporting

Teams shall self-report definite or possible rules infractions that have occurred or may occur.

a. The rules do not address every possible scenario that may arise during the competition. Therefore, a team considering an action that is not explicitly permitted by the rules should ask a Rules Official for an official decision before proceeding with the action. If the team does not ask for an official decision, it puts itself at risk of incurring a penalty.
b. The Rules Official and Director will act with discretion when determining the penalty for a rules infraction. Rules infractions observed by Rules Officials and organizers, i.e., not self-reported by the team, may be subject to more severe penalties than self-reported rules infractions.

2.8. Penalties

Teams committing rules infractions are subject to one or more of the following penalties, depending on the severity of the infraction:

a. Point penalty applied to one or more contests;
b. Disqualification from part of, or all of, one or more sub-contests;
c. Disqualification from the competition.
    i. Disqualification from the competition requires prior notice to the team and an opportunity for the team to make a written statement on its own behalf.

Points penalties will also be applied to Teams not fulfilling with all the Deliverables' requirements:

- For late submission[1]
    - From 15 min after the deadline till 48 hours after - Up to 0.5 points
    - From 48 hours after the deadline till 1 week later - Up to 2.0 points
- For contents missing[1]
    - More than 5 % of the content required missing - Up to 2.0 points

Note 1- In case any participant Team delivers more than 1 week after the deadline or/and with more than 25% of the content required missing, the SDE Organization reserves the right to decide and apply a larger penalty, considering the special conditions of each particular case.

The Rules Officials shall determine the severity of rules infractions and classify them as minor or major and report them to the Competition Manager. The Competition Manager is solely authorized to apply point penalties or disqualify a team from the competition or from part of, or all of, one or more sub-contests for rules infractions.

The Competition Manager shall notify all teams via the SDE WAT when a penalty has been assessed against any team. The notification shall include the identity of the team committing the infraction, a brief description of the infraction, including its severity, and the nature of the penalty, giving the teams the opportunity to protest.

Note: Teams will be assigned penalties for not realizing the daily tasks during the Contest Week, unless there is a clear explanation for not complying with the requirements.

2.9. Protests

Official written protests may be filed by teams for any reason. A filing fee of up to 10 points may be assessed to the team filing the protest if the protest is deemed by the protest resolution committee to be frivolous.

a. Teams are encouraged to communicate with the Rules Officials in an attempt to resolve issues and complaints before resorting to the protest process. Protests should be filed only if the team and the Rules Officials are not able to resolve the dispute themselves; or if the team or the Rules Officials are too busy to engage in discussions that may result in resolution of the dispute without a protest.
b. Protests must be submitted between 9 a.m. and 7 p.m., and within 24 hours of the action being protested. The final opportunity to file a protest is 5 minutes following the conclusion of the final sub contest on the final day of contest week.
   Exception: The results of one or more sub-contests may be announced during the final awards ceremony. The results of sub contests announced during the final awards ceremony may not be protested.
c. The protest shall be submitted to the Competition Manager in a sealed envelope. It shall include the name and signature of a Faculty Advisor, the current date and time, an acknowledgement that a 10-point filing fee will be assessed, a clear description of the action being protested, and a succinct description of the protest.
d. The protest resolution procedure follows:
   i. The Competition Manager convenes the Protest Resolution Committee.
   ii. The Competition Manager submits the sealed envelope containing the team's written protest to the Protest Resolution Committee. Unless the competition manager is called by the committee to testify, he is not permitted to read the protest until after the protest resolution committee has submitted its written decision.
   iii. The Protest Resolution Committee opens the envelope and reads the protest in private. No appearance by organizers or team members is authorized during the Committee's private deliberations. No right to counsel by organizers or team members is authorized.
   iv. The Protest Resolution Committee notifies the Competition Manager if it would like to call any individuals for testimony. The Competition Manager notifies individuals called for testimony. The committee may call the Competition Manager for testimony.
   v. Testimony is provided by individuals called by the committee.
   vi. The Protest Resolution Committee notifies the Competition Manager of its decision, and indicates how many points shall be assessed as a filing fee. The decision of the Protest Resolution Committee is final, and no further appeals are allowed.
   vii. If the decision involves changes to a team's score or a refund of some, or all, of the filing fee, the Competition Manager notifies the Scorekeeper of the changes, and the Scorekeeper applies the changes to the scoring server.
   viii. The Competition Manager posts a copy of the written protest and decision on the SDE WAT.

Rule 3 *Participation*

3.1. Entry

The project is open to Colleges, Universities, and other post-secondary educational institutions. Entry is determined through a proposal process. All proposals are

reviewed, scored, and ranked. Based on the quantity and quality of proposals, a limited number of teams will be selected for entry.

Universities that have taken part in previous editions of the Solar Decathlon in United States or in Europe are welcome to submit their proposal to participate in the Solar Decathlon Europe 2012. However, as houses and projects of the previous editions of the Solar Decathlon will not be able to participate, teams will have to submit a new design proposal.

3.2. Team Officers and Contact Information

Each team must provide contact information for the Team Officers listed in Table 1 and must keep the contact information current through the duration of the project.

a. If a team's internal officer titles do not exactly match those listed in Table 1, each team shall still provide the contact information for the person fulfilling each of the areas of responsibility described (See Definitions – Team Members).
b. Teams must provide the contact information for one and only one person in each officer position; this individual is responsible for forwarding information to any "co-officers," as necessary.
c. An individual may have multiple officer titles.
d. The requested information must be included in the Press Release (please refer to Rule 30.1 for further details)

The Solar Decathlon Europe is intended to be a primarily student-run project. The only team officer who must be a faculty member is the Faculty Advisor. The structural and electrical engineers may be a post graduate student, faculty member or working professional. It is highly recommended to fill all other team officer positions with students.

Table 1: Team officers

Title
Faculty Advisor
Project Manager
Construction Manager
Project Architect
Project Engineer
Structural Engineer
Electrical Engineer
Student Team Leader
HS Team Coordinator
Safety Officers
Site Operations Coordinator
Contest Captain
Instrumentation contact
Communications Coordinator
Sponsorship manager

3.3.Safety

Each team is responsible for the safety of its operations, and each team member and crew shall work in a safe manner at all times during the project. See Section 4.0, Rule 52 for further information.

3.4. Conduct

Improper conduct will be not tolerated. Improper conduct may include, but is not limited to, improper language, unsportsmanlike conduct, unsafe behavior, distribution of inappropriate media, plagiarism or cheating.

3.5. Use of Likeness, Content, and Images

Team members and team crew agree to the use of their names, likenesses, documents, audiovisuals and/or graphics, in any communication materials issued by the SDE2012 organizers, partners, event supporting institutions and event sponsors.

a. For the Competition dissemination, SDE2012 Organizers, event supporting institutions and event sponsors, may use the teams' information (content and images).
b. The organizers and event sponsors will make all reasonable efforts to credit the sources of content and images, although they may be published without credit.

All materials provided by Teams to the SDE2012 Organization including, but not exclusively, the mandatory deliverables, must belong to the participant Teams, or the Team must have been authorized by owners of material subject to intellectual property regulations, such as background music or third party images. Therefore, the Teams must submit the SDE 2012 Dissemination Authorization (available through the SDE WAT) conveniently signed by the Faculty Advisor, with each audiovisual file.

Exception: If a team submits content or images that it would like to be kept confidential, it should make that request, with an explanation, in writing to the recipient of the content or images. Every effort will be made to honor requests for confidentiality. All confidentiality requests expire at the date of the end of the SDE2012 competition.

3.6. Withdrawals

If a participant team, during the project development, ever thinks of withdrawing from the Competition due to any reason, they must communicate it to the SDE Organization before taking its final decision.

The SDE Organization will try to help the Team come across any problem. However if the Team continues with the idea of withdrawing from the Competition, they must notify their decision to the SDE Project Manager with a letter signed by the Faculty Advisor. All written withdrawals complying with the previous items are final.

Rule 4 Villa Solar

4.1. Villa Solar Specifications

The Villa Solar specifications will be communicated through the SDE WAT, including a detailed plan drawing indicating its limits, accesses, lots, and circulation areas.

The perimeter of the Villa Solar will be limited by setting out accesses, the allotted lots, established limits and internal paths. The SDE Organization will provide general lighting of the Villa Solar, as well as the supply of water and public toilets.

4.2.Civil Liability

Each team is financially responsible for any damage it causes in and to the competition site. Therefore, teams must contract a Compulsory Insurance for the Villa Solar.

4.3. Lot Conditions

The lots size is 20.0 m by 20.0 m. Once already realized the SDE Lot Selection, the SDE Organization will notify the teams the specific conditions for each lot. Teams must design and plan all their site operations accordingly. For exceptional reasons beyond the SDE 2012 Organization, the lots size may vary.

In the Villa Solar, lots' perimeters will be clearly defined and signposted. Teams may not go beyond these limits under any circumstances. Lots must be cleaned and reestablished to its original conditions once the assembly and disassembly process is over.

As storage, unloading, assembly and disassembly will take place inside the lot's limit during the established period of time; each team will use part of their lot for storage and unloading. Therefore each team will have to plan a storage area within the lot, according to their specific needs, compatible with the later assembly of the house. This designated area will not exceed the limits of the lot neither exceed the maximum tolerable load of the terrain. The load distribution will be made using the appropriate superficial foundations.

4.4.Footings

a. Low-impact footings shall be used to support all house and site components located on the competition site. As vertical elevation change may exist across the lot design and plan adjustable footings accordingly.
b. Footings shall be designed as to comply with the soil bearing pressure criteria specified in the Solar Decathlon Europe Building Code. See Rule 51.6 for further details.
c. Ground penetration is permitted only in special cases approved by the SDE Organization.
d. Once the foundation has been laid out during the assembly, teams shall notify it to the appropriate Inspector in order to verify compliance. The assembly may not continue until this inspection has been passed.

4.5.Construction Equipment

Cranes - The crane necessary for loading and unloading in the assembly and disassembly phases will be provided by the organization. The participant teams will only have to pay the crane's use hours' cost in accordance with the costs indicated by the SDE Organization. The organization will administer the use of the crane to guarantee its maximum efficiency, attending to the needs of each team.

The participants will have to bring the auxiliary resources for the elevation and movement of the houses and their constitutive elements. They will also have to bring the components for the anchoring and supporting of their auxiliary resources. These will have to comply with harmonized legal or statutory regulation from any state of the European Union. Rule "EN" (European Rule).

Provided there is no interference with the unloading operations of the rest of the teams and it is safely done, the assembly of the house may take place, and make use of this machinery.

To facilitate the loading and unloading, the elements of the house and the materials must be as "palletable" as possible. As far as possible, the crane's or alternative means' use will be administered with assigned turns. The exclusive use of these may be possible in two specific cases:

1. With the university's express request, under the Organization approval.
2. For cranes' use incompatibility.

The exclusive use of the elevating machinery depends on the economic teams' resources and planning.

Other machinery - Forklifts or other small vehicles used during assembly and disassembly may be driven on the competition site.

Access and circulation of heavy vehicles – Truck-mounted cranes, trailers, semi-trailer trucks, etc. will arrive and will be parked in a Meeting Point near the Villa Solar. From there, they will be called in, one after the other, to guarantee the orderly entry into the Villa Solar, always through established paths and following the organization´s schedule.

Circulation of these vehicles will be generally limited to designed circulation paths. However, under special circumstances approved by the Site Operations Coordinator, trailers and semi-trailers may be driven on the Competition Site.

The organization, in accordance with the Site Operations Plan of the Villa Solar, will determine a strict entry order of the teams' trucks to access the Villa Solar and proceed to the unload. This order will be done considering the trucks' order established in each particular Site Operations Plan. The above mentioned entry of heavy vehicles will be realized only and exclusively in the specific periods established in the Competition Calendar. Only light vehicles will access the Villa Solar after this deadline, being continuously communicated and coordinated with the organization.

Teams will have to respect **internal circulations** which will be laid out for vehicles. Only one truck per team will be permitted at a time in the Villa Solar. The rest of the trucks will have to wait for the previous truck to leave the Villa Solar. This process will be coordinated between the persons in charge of the Site Operations Plan of the Villa and those in charge of each team.

4.6.Lighting at Competition Site

Teams are responsible for their lot's lighting in case necessary for realizing specific activities of assembly or disassembly or working during the night.

4.7. Generators

Each team will need generators to guarantee the light and energy supply during the assembly and disassembly phases, considering the voltage used and the noise generated.

a. Generators are permitted to power auxiliary equipment and construction lights necessary during assembly and disassembly.
b. Engine generators maximum noise level shall be 60 dB(A) at 15 m under full load. Note that a given dB level at one distance can be converted to an equivalent dB at a different distance.
c. Generators must be equipped with secondary containment systems that can accommodate all of the oil, fuel, and coolant that the generator contains at maximum capacities.

4.8.Spill and Waste Products

During assembly and disassembly, teams must take their waste products to the disposal areas available in the Villa Solar.The release of water or other liquids in the Villa Solar must be realized according to the SDE Organization.

4.9.Working System

Each team will have to name a Construction Manager responsible for coordinating all its team's site operations. (Rule 3.2).

For the assembly and disassembly phases there is a specific period established in the Competition Calendar. During these two phases, teams may work 24 hours per day, always complying with the working shifts established by the Health and Safety responsible. Please refer to Section 4.0, Rule 52.7.4 for further details regarding working shifts and requirements according to Health & Safety regulations.

4.10.Transport

Every team is responsible for the transport to Madrid. Teams will have to consider the dimensional aspects, suggesting that the maximum load to be "palletable". The SDE

Organization suggests the participant teams to contact transport companies during the development phase of the project to guarantee that the freight transport rules will be complied with. Special attention must be paid to Customs regulations by those teams not from the European Union.

Rule 5 *The Solar Envelope*

5.1. Solar Envelope Dimensions

To protect a neighbor's right to the sun, the house and all site components on a team's lot must stay within the solar envelope shown in Figure 1.

a. The official height of a site component or set of contiguous site components is the vertical distance from the point of highest grade along the outside perimeter of the site component(s) to the highest point of the site component(s).
b. Small weather stations, antennas, air vents, and other similar components may be specifically exempted from the compliance of solar envelope if all of the following conditions are met:
    i. The team makes a request to the SDE Organization for an exemption.
    ii. The team can prove to the SDE Organization's satisfaction that the component is not significantly restricting a neighbor's right to the sun.
    iii. The SDE Organization determines that the component is sufficiently unique in function and small in size to warrant an exemption.
c. Moveable or convertible house or site components shall not extend beyond the solar envelope.

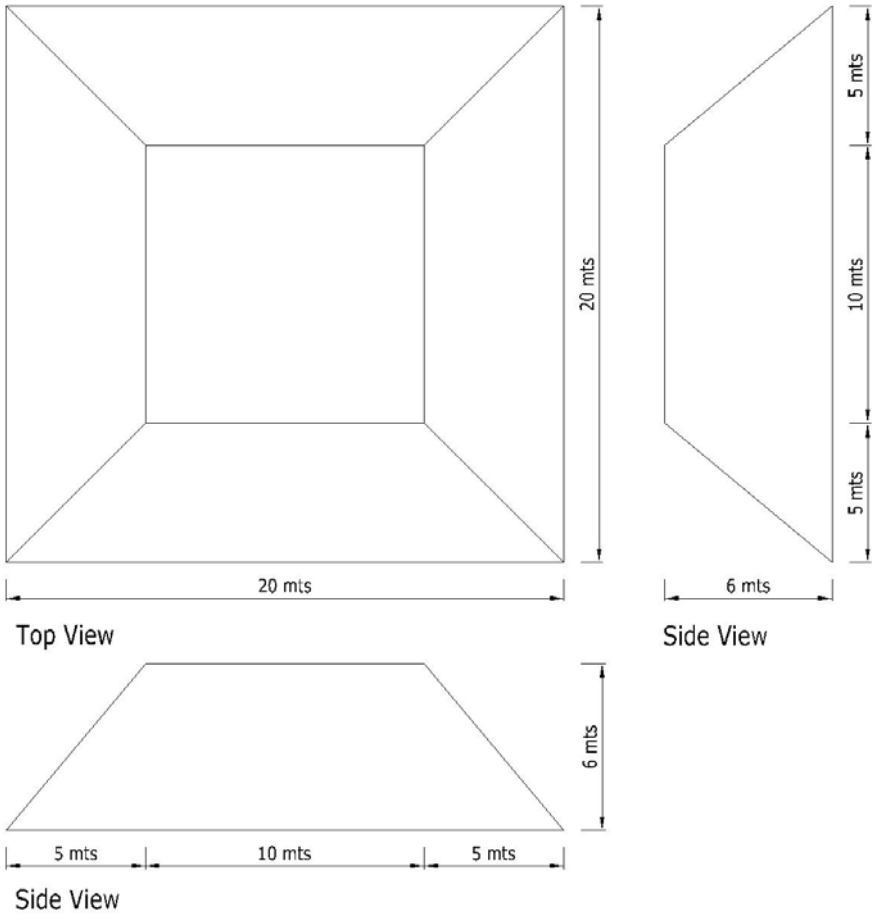


Figure 1. Solar Envelope Dimensions.

Rule 6 The House

6.1. Design Approval

Structural Design Approval - Each team must submit structural drawings and calculations that have been signed and stamped by a qualified licensed professional.

a. By signing and stamping the structural drawings and calculations, the licensed professional certifies that the structural provisions of the Solar Decathlon Europe Building Code have been met by the design, and that the structure is safe for the public to enter if it has been built as designed.
b. The licensed professional must sign and stamp the structural drawings and calculations of the house and all site components that might pose a threat to public safety if they fail.

Electrical and Photovoltaic Design Approval - Each team must submit electrical drawings and calculations that have been signed and stamped by a qualified licensed professional. They will include the conventional electrical installation as well as the photovoltaic installation.

a. By signing and stamping the electrical drawings and calculations, the licensed professional certifies that the electrical provisions of the Solar Decathlon Europe Building Code have been met by the design, and that the electric system is safe for the public to enter if it has been built as designed.
b. The licensed professional must sign and stamp the electrical drawings and calculations of the house and all site components that might pose a threat to public safety if they fail.

Codes Design Compliance - Each team must submit a document certifying compliance with the country of origin codes, signed by the faculty advisor.

a. By signing this document, the Faculty Advisor certifies that the house complies with all the codes of the country of origin, therefore the house is safe for the public to enter if it has been built as designed.

6.2. Maximum Architectural Footprint

The architectural footprint as defined below cannot exceed 150.0 m^2.

a. The footprint includes the **entire** area within the defined building perimeter (including the house and the site components).
b. The deck or platform is not included in the architectural footprint.
c. For "openings" located within the footprint: if there are elements of the "openings" which visually continue the house aesthetics, the total area of these "openings" will be included in the architectural footprint. ("Openings" are patios located in the footprint perimeter).
d. The maximum observed footprint of each component during jury tours, public hours, or the contests is included in the architectural footprint of record. For example, if a team deploys a motorized awning during public hours to demonstrate its operability, then the additional footprint attributable to the deployed awning is included in the architectural footprint of record.
e. Teams planning to use particular components must submit their proposal to the SDE Organization. The SDE Organization will evaluate individual proposals and designs and determine if its use does or does not signify a competitive advantage. Consequently the component will be approved, and established the area included in the architectural footprint (the entire area projected or exclusively its elements).

6.3. Minimum & Maximum Measurable Area

The measurable area, as defined below, shall be at least 45.0 m^2, but shall not exceed 70.0 m^2.

a. Measurable Area: The covered and constructed surface remaining when walls,

columns, and so forth are excluded.

b. The interior surfaces of walls defining the building's thermal envelope form the measurable area perimeter.
c. All primary living areas shall be located within the measurable area.
d. For multi-story houses, only the measurable area of the floor with the bigger area counts towards the maximum and minimum area permitted. Moreover, the floor with the smallest area may not have a measurable area larger than 50% of the other floor measurable area (only counts the measurable area projected on top of or beneath and coincident with the floor with the bigger measurable area).
e. If the building has convertible or moveable components, the maximum and minimum measurable areas during live presentations or shown in printed media presented by the team during jury visits, public exhibits or contests counts towards the maximum and minimum measurable areas of record respectively.
f. Closets or any other storage element, built from floor to ceiling, are excluded from the measurable area.
g. For "holes" covered by any constructive element, the 50% of its surface counts towards the measurable area permitted. ("Holes" are patios located inside the measurable area).

6.4.Entrance and Exit Routes

a. The main entrance may be placed on any side of the house. However, an accessible route leading to and from the main street of the Villa Solar to and from the main entrance of the house shall be provided.
   Possible Exception: pending the approval of the SDE Organization, teams on "corner lots" may modify the exit route so that it empties onto a "cross street." Teams requesting this option shall provide an alternate site plan in the Construction Documents that shows an exit to the cross street. The alternate site plan will be considered if the team ends up on a corner lot.
b. Teams shall clearly illustrate and label the entrance and exit routes between solar envelope "property lines" and house entrance/exit in the project drawings and in the Competition Site.

6.5. House's minimum requirements

To participate in the 10 Contests of the Competition, teams' houses must include as minimum the following:

- Appliances – See Contest 6 for specific details.
- Workstation – See Contest 5 for further details
- Public area for dinners – See Contest 6 for further details.
- Public areas of the house (at least living room and kitchen) shall be open to Public Exhibit, complying with Accessibility requirements (See Rules 51).
- Passive strategies for providing comfort conditions (See Rule 19)
- Interior and Exterior Lighting – See Rule12.6

6.6.Competition House Alternates

Alternates to the competition house may be presented by the teams in its various deliverables and/or printed and electronic media. However, all modifications shall be clearly indicated as such in the different documentation, specifying its applicability. In case of including any alternates in the Drawings, a new and independent section must be included.

Rule 7 Energy

Rule 7 applies during the grid-tie assembly but not during stand-alone assembly.

7.1. Energy Sources

Global solar radiation incident upon the lot and the energy in small primary batteries (see Rule 7.4 for limitations) are the only sources of energy that may be consumed in the operation of the house without the requirement of subsequent energy offsets, once the Contest week has started.

a. All other energy sources, such as AC grid energy, consumed in the operation of the house must be offset by an equal or greater amount of energy produced, or "regenerated," by the house.

7.2. Village Grid

The organizers shall provide the village with an electric power grid that provides AC power to or accepts AC power from the houses.

a. The organizers shall provide the necessary service conductors and connect the conductors at the utility intertie point.
b. A team must notify the organizers if its house operates with an AC service other than 50 Hz, 230V (phase-neutral).
c. The Low Voltage grounding means system of the electricity distribution grid in the Villa Solar follows a TT configuration (Note: the LV grounding means system characterizes the grounding means mode of the secondary of the MV/LV transformer and the means of grounding means the installation frames). This aspect should be carefully taken into account when designing the grounding means of the house and photovoltaic system (see grounding means requirements in the IEC standard and Spanish regulations mentioned in Rule 51.7 – Electricity and PV System - Grid interconnection).
d. There will be a General box in each of the lots with the necessaries protections for the electrical connection to the General grid of the Villa Solar. Each team has the responsibility of reaching with the conduits the General Box. In any case, conduits will be left in the general connection box of the lots and the connection will be made by an authorized technical expert of the Organization. The individual branch must have a section of 3x16 mm^2, insulation 0.6/1 kV and be free halogen.
e. The team is responsible for calculating the house electrical grounding necessities. The Organization will execute the grounding system of the Villa Solar with buried plates grounding connection points; in this way, each house will have one connection point, both for the electrical consumption (AC, alternate current) and for the electrical generation (photovoltaic system).

7.3. PV Technology Limitations

a. Bare photovoltaic cells must be commercially available to all teams by the beginning of the Final Phase of the SDE2012 Competition (September 2012) at a price not exceeding 6 € per peak watt at Standard Test Conditions [STC]. Teams may pay extra for cutting, tabbing, or lamination of the cells. Custom-designed PV modules will be permitted, provided that the manufacturer demonstrates that the PV modules have been manufactured in accordance with the relevant standards applicable (e.g. IEC 61215 for crystalline silicon terrestrial PV modules and IEC 61646 for thin-film terrestrial PV modules).
b. Encapsulated photovoltaic modules must be commercially available to all teams by the beginning of the Final Phase of the SDE2012 Competition (September 2012) at a price not exceeding 12 € per peak watt at STC.

c. Substantial modification of the crystal structure, junction, or metallization constitutes manufacture of a new cell and is not allowed.
d. Photovoltaic installation size is limited by the following rule: the maximum power of all power conditioning equipment connected to PV generation (DC/DC and/or DC/AC) is limited to 10 kW. For DC/AC power conditioning (inverters), the maximum power to be considered is the nominal power, defined as the maximum output power without time limitations/constraints.
e. If technologies different from Photovoltaic are used for electricity generation, the limit of 10 kW mentioned Rule 7.3.d applies to the aggregate of electricity generation installations (Photovoltaic and non-Photovoltaic).

7.4. Batteries

a. The use of primary (non-rechargeable) batteries (no larger than "9V" in size) is limited to smoke detectors, remote controls, thermostats, alarm clock backups, and other small devices that typically use small primary batteries.
b. If any of the teams intends to use a hard-wired battery bank, they must notify it to the SDE Organization before Deliverable #3, in order to apply for specific rules. The inverter to be used together with the battery bank must be designed for operation in a grid type TT (see Rule 7.2), this characteristic will be properly justified by the corresponding technical document. Nominal power of the battery bank inverter is limited to 5000 VA. (Note: nominal power of the inverter is the maximum output power on the AC side without time limitations/constraints).
c. The Organizers shall approve the use of small "stand-alone" (i.e., non "plug-in") secondary batteries on a case-by-case basis.
d. "Plug-in" (non hard-wired) devices with small secondary (rechargeable) batteries that are designed to be recharged by the house's electrical system (e.g., a laptop computer), shall be connected, or "plugged into" the house's electrical system whenever the devices are located in the house or on the house site. (They shall not be recharged in a system outside the house).
Exception: Devices that are not used in the operation of the house at any time during the contest week, portable electronic devices used for mobile communication, such as cell phones and PDAs, are permitted on site without having to be plugged into the house's electrical system.

7.5. Connection of the houses to the Villa Solar grid

Once the final electrical inspection (including photovoltaic systems) has been approved, the houses will be officially connected to the Villa Solar grid. The Electrical Energy Balance of the houses at the beginning of the competition will be zero.

i. From the approval of the final electrical inspection to the beginning of the contests (Contest Week), in the electrical panels of the houses only the circuit breakers of the household appliances, the independent circuit breaker for contest 6.9 (Home Electronics) and the lighting circuit breakers can be activated.
ii. The houses officially connected to the grid will not be allowed to use any thermal energy storage active system or conditioning active system until the beginning of the measured contests (during the Contest Week).

For houses with electricity storage systems:

i. The Organization may ask the teams which have the intention to use batteries to comply with some specific requirements in order to be allowed to use them during the competition.
ii. In relation with the houses using batteries, once the designs of the electrical systems (including photovoltaic systems) have been approved, the organization will let them know if they must comply with any specific requirement before the beginning of the measured contests.

7.6.Thermal Energy Storage

Thermal energy storage devices located outside of the house shall be fully shaded from direct solar radiation.

7.7. Desiccant Systems

Teams must communicate to the SDE organization if they are planning to incorporate a desiccant system. If a desiccant system is used, it must be regenerative.

a. To ensure that the desiccant has been fully regenerated by the conclusion of the Electrical Energy Balance contest, the desiccant material or device must be easily measurable.
b. In most cases, the material or device will be measured prior to and at the conclusion of the Electrical Energy Balance contest. In some cases, a measurement at the conclusion of the Electrical Energy Balance contest will not be necessary.
c. At the conclusion of the Electrical Energy Balance contest, the weight of the desiccant material or device shall be less than or equal to its initial weight.
d. Some desiccant systems with very low moisture storage capacities may be exempt from this requirement.
e. Exemptions will be granted on a case-by-case basis.

7.8. Humidification Systems

If a team is intending to use a humidification system, must notify the Organization for approval all the system's characteristics, and the corresponding certifications of the different elements.

7.9. Heat Sink

Dedicated heat sinks are not subject to the requirements of Rules 6.2 or 7.6.

- A component that may, at different times, perform as either a heat sink or a heat source shall comply with Rule 7.6. If such a component does not comply with Rule 7.6, it shall comply with Rule 6.2.

Rule 8 *Liquids*

8.1. Containers Locations

a. Supply and waste containers shall be located outside of the measurable area.
b. Solar storage, hot water, or other thermal storage tanks may be located within the measurable area.
c. Supply tank(s) or container(s) shall be fully shaded from direct solar radiation.

8.2. Water Delivery

The procedure and associated requirements for water delivery is as follows:

a. The Solar Decathlon Organization Europe will supply non potable water for the contest purposes. Every team must have all the necessary means required by the SDE 2012 Organization for this end.
b. Construction Documents must clearly indicate the fill location(s), quantity of water requested at each fill location, container(s) dimensions, diameter of the opening(s) and clearance above the tank(s). All openings must be easily accessible.
c. Teams are responsible for distributing water within their houses. This includes all necessary pumps, tanks, lines, valves, etc.
d. The organization will establish the water supply calendar before the competition. The supply in any other moment will be under express request, approval and supervision of the organization.

8.3. Water Removal

The procedure and associated requirements for water removal is as follows:

a. Construction Documents must clearly indicate the removal location(s), quantity of water to be removed from each removal location, tank dimensions, diameter of the opening(s) and clearance above the tank(s). All openings shall be easily accessible.
b. The water removal will be always under express request, approval and supervision of the Organization.

8.4. Team Provided Liquids

A team may provide its own liquids for the following purposes:

a. Personal hydration
b. Irrigation
c. Food Preparation.
d. Thermal mass (quantity limited by soil bearing pressure limit and rule 4.4; see rule 8.8 for restrictions)
e. Hydronic system pressure testing
f. Small volumes of glycol, deionized water, or other working fluids for thermodynamic systems using working fluids other than non-potable water
g. Assembly (e.g., hydraulic fluid), finishing (e.g., paint), and cleaning (e.g., mineral spirits).

8.5. Grey Water Reuse

a. In the Villa Solar, teams may reuse grey water for irrigation only.
b. Grey water reuse systems shall comply with Rule 9.2.

8.6. Rainwater Collection

A team may collect rainwater that falls on its site and use it in or as any of the following:

a. Irrigation source.
b. Water feature.
c. Heat sink.
d. Heat source (only if it is fully shaded or located within the house measurable area, or both).

8.7. Evaporation

Water may be used for evaporation purposes.

8.8. Thermal Mass

a. Teams may use liquids as thermal mass. The thermal storage containers shall be filled and sealed before their arrival on the competition site and shall remain sealed until they are removed from the competition site by the teams.
b. The thermal storage containers shall be isolated, i.e., the contained liquid shall not circulate to other containers or systems.

8.9. Grey Water Heat Recovery

Heat may be recovered from grey water as it flows from the drain to the waste tank. “Batch-type” grey water heat recovery is prohibited.

Rule 9 Vegetation

9.1.Placement

The use of potted vegetation is permitted. All potted vegetation must comply with Rules 4.4 and 4.8. Vegetation may be moved around the lot until the beginning of the contest week,

after which it shall remain stationary until the conclusion of the contest week unless the construction documents clearly show how some or all vegetation is designed to be moved as part of an integrated system.

9.2. Watering Restrictions

Grey water that may possibly contain organisms that may go septic shall not be used to water vegetation.

Rule 10 Monitoring

10.1. Introduction

A significant part of the scoring of the competition consists on the measurement of different items and on the correct performance of various tasks. The Monitoring system is responsible for controlling these measurements. All sensors, wiring, tripods and the rest of the material necessary for these tasks will be provided by the SDE Organization.

Monitoring is structured in two independent areas:

1. **Electrical:** Responsible for the monitoring of Contest 4: Electrical Energy Balance, evaluating the houses' electrical energy self-sufficiency provided by solar active technology and their electricity use intensity.
2. **Instrumentation:** Responsible for the monitoring of Contest 5: Comfort Conditions and Contest 6: House Functioning, by locating sensors where appropriate.

There are two types of monitoring: Continuous Monitoring and Monitoring Tasks, depending on whether the measurements are continuous or punctual. The following diagram shows which measurements belong to each group.

<table>
<tr><th colspan="3">MONITORING TYPES</th></tr>
<tr><th>ELECTRICAL</th><th colspan="2">INSTRUMENTATION</th></tr>
<tr><th>Continuous Monitoring</th><th>Continuous Monitoring</th><th>Monitoring Task</th></tr>
<tr>
<td>4. Electrical Energy Balance
4.1 Electricity Autonomy
4.2 Temporary correlation
4.3 Electricity use per measurable area</td>
<td>5. Comfort Conditions
5.1 Temperature
5.2 Humidity
5.3 Indoor Quality air

6. House Function
6.1 Refrigerator
6.2 Freezer</td>
<td>5. Comfort Conditions
5.4 Workstation Lighting
5.5 Acoustic

6. House Function
6.3 Clothes Washer
6.4 Clothes Dryer (1)
6.5 Dish Washer
6.6 Home Electronics
6.7 Oven
6.8 Cooking (1)
6.9 Hot Water Draws (1)</td>
</tr>
</table>

Notes:
- See the measurement periods in the Competition Calendar

(1) Subcontest based upon the observer notes, not on sensors measurements.

Further information regarding the monitoring system of the SDE 2012 Competition is available through the SDE WAT, Official Communications, Rules & Related Documentation, Monitoring Contests' Procedures.

10.2. SDE Sensors' Location and Wire Routing

a. Instrumentation.- The Organization will supply a list of all the SDE instrumentation devices necessary for the Monitoring System of the houses.
b. Sensors Location.- The location of sensors is determined by a negotiation between the team and the Organization, looking for an equitable outcome for all teams. There is flexibility regarding location and wiring details; however, not installing the sensors is not an option. The Teams are welcome to propose specific locations as your house plans progress or ask for the organization recommendations.
c. Wire Routing.- As sensors will be wired, there has to be a route for running wires from each sensor location to the data logger. The Teams are responsible to provide a wire routing that permits a quick and easy installation and removal of the SDE Instrumentation wires. These wires and sensors are installed temporarily for the contest week.
d. Feed-through.- The organization will specify to the teams the exact location of the SDE electrical meters and Dataloggers, which generally will be placed outdoors. Therefore, houses must provide feed-through to pass the instrumentation wires from the interior to the exterior of the house.
e. Instrumentation Plan and Approval.- In order to initiate the negotiations, teams must submit instrumentation drawings showing the location of the SDE sensors, meters, and the wire routing. Teams must have the Instrumentation Plan approved by the SDE Organization to be able to participate in the Final Phase of the Competition. The procedure is as follows:
    - Before the final phase of the Competition:
        1. The Team must hand in the preliminary monitoring plan.
        2. The Team will negotiate with the SDE Organization the sensors' location
        3. The Team will negotiate with the SDE Organization the location of the route, channels and holes through which the sensors' wires will go to the Datalogger.
        4. The Team will hand in the Final Monitoring Plan
        5. The SDE Organization will approve the Final Monitoring Plan
        6. The Team has to make sure to leave the spaces, channels and holes described in the Final Monitoring Plan.
    - "In situ", during the assembly period:The SDE Organization will check the spaces provided for the wiring (channels, paths, holes, etc).
        1. The Team will make the adjustments necessary to make the instrumentation system installation safer and quicker
        2. The SDE Organization will mark the location of the sensors
        3. The SDE Organization will install the wiring
        4. The SDE Organization will install and connect the sensors to the wiring and the datalogger
        5. The SDE Organization will verify the operation of the sensors.

Rule 11 The Event

11.1. Registration

All Solar Decathlon Europe participants, attending the Final Phase of the Competition, must register through the online registration site, which will be available closer to the event. Only for special cases, registration will be on-site in Madrid, Spain. Due to safety concerns, the different categories of participants will have different types of access (such as to restricted areas or during restricted times).

The following rules apply to registrants:

a. All registrants:
   i. Each event participant must register individually. Group registrations are not allowed.
   ii. When registering, event participants must complete all required information and forms before access to the event is allowed.
b. Organizers, team members and jurors:
   i. Will be required to provide a photo that will be kept on file and used for security purposes.
   ii. In order to avoid delays, the SDE Organization encourages using the online registration site and submitting the completed forms, information, and photos prior to the event.
   iii. Once the SDE Organization receives all the information required, forms, and photos, an event security ID will be issued to all individuals and must be visible at all times.
c. Staff and team crew:
   i. Will be required to provide a photo that will be kept on file and used for security purposes.
d. Visiting media:
   i. Must check in at event headquarters.
   ii. Will be required to provide a photo that will be kept on file and used for security purposes.

11.2. Use of the Solar Decathlon Europe Logo

All communication materials produced by or in collaboration with the teams, before, during and after the competition, must refer prominently to the project as the Solar Decathlon Europe and shall credit the Solar Decathlon Europe as indicated by the organizers. This includes all the materials and/or means in which companies and/or institutions refer to their collaboration with one or more teams by using their logo(s). The SDE Corporate Identity Manual includes specific instructions for this uses.

The Solar Decathlon Europe shall be recognized wherever teams' logos are used. The possible combinations between SDE and teams' logos shall be described in the team's visual identity manual (see Rule 38.4), and must comply with the SDE2012's Corporate Identity Manual (available through the SDE WAT).

11.3.Teams' Sponsors and Supporting Institutions

Teams' Sponsors & Supporting Institutions are a very important aspect of the SDE 2012 Competition. For this end, each participant Team may select the companies and/or institutions which consider best suits for the development of their purposes. However, both (the participant team, and the team's sponsors and supporting institutions) will have to comply with the SDE Rules and look over its fulfillment by third parties.

The relationship between SDEurope and teams' sponsors will always be done through the team's sponsorship contact. SDEurope will not have direct contact with the teams' sponsors.

Teams' sponsors and supporting institutions may be recognized with text, logos, or both, but the text and logos must appear in conjunction with the Solar Decathlon Europe logo and the Event Supporting Institutions and Main Event Sponsors. However, all these possible combinations must comply with the SDE2012's Corporate Identity Manual (available through the SDE WAT).

The Solar Decathlon Europe, the Event Supporting Institutions and Main Event Sponsors logos are available through the SDE WAT.

Teams may include the logo of their teams' supporting institutions and sponsors in the following:

A.Before the competition: in any element, as long as you fulfill the SDE Rules requirements regarding use and size.

B.During the competition at the Villa Solar: Commercial or technical advertising in the house's interior is forbidden, except for the following cases:

a. On the explanatory panels located inside the lot but on the houses' outside, on the waiting areas. Logos must not be bigger than 10% of the total panel surface, and included inside a vertical or horizontal strip. See Rules 12.4 and 38.3 (Public Tours).
b. In the teams' website and/or other services for mobile devices that teams may provide, included in the Sponsorship's section. Additionally, it may be included inside a vertical or horizontal strip, with a maximum size of 10% of the screen's total surface. See Rule 29 (Web Site).
c. On the informational brochure, handout or any other object that may be given to the public- See Rules 12.4 and 38.3 (Public Tours).
d. On the back of the decathletes' uniforms. See Rule 11.4 (uniforms)
e. Off-the-shelf components that feature a built-in manufacturer's logo are acceptable and do not need to comply with the SDE and team's logo requirements.
f. In any vehicle and/or material, only during assembly and disassembly phases,
g. In the team's Audiovisual #2, (see Rule 28.3).
h. Houses cannot be named after their sponsors, and houses' logos cannot directly refer to their sponsor's corporate identity ("Direct reference" is subject to the Organizers' interpretation).
i. Teams may name house's areas after their sponsors. However, any reference to these spaces must comply with SDE Rule 11.

Communication materials or other products that exist largely for the recognition of sponsors are prohibited. "Other products" include but are not limited to signs, exhibits, posters, plaques, photos, wall art, and furnishings.

11.4.Team Uniforms

a. During contest week, workshop and special events specified by the organizers, all team members present on the competition site or the site of a special event shall wear uniforms representing their team.
b. Uniforms will help to identify team's members quickly and easily, and will be composed of a series of wearable items.
c. On the front part of teams' uniforms (jacket, shirt, hat or other wearable item), only the combined version of the team's logo and the SDE's logo may be visible
d. On the back part of teams' uniforms (jacket, shirt, hat, or other wearable item), team sponsor logos may be visible only if complying with the logos rules requirements.
e. A built-in clothing manufacturer logo may be visible on the front or back of the team uniform, or both or none of them.
f. Since the Villa Solar is a public space, Teams should maintain dress code required for public areas.

11.5.Logistics

a. Each team is responsible for the transport of its house, the house's contents, and all necessary tools and equipment, and shall be responsible for any damage to or loss of such items.
b. Each team is responsible for procuring all necessary equipment, tools, and supplies.

c. Each team is responsible for transportation, accommodations, lodging, food, and beverages (including drinking water).
d. Each team is responsible for making its own reservations and arrangements and for covering all necessary costs.

11.6. Inspections

Each project shall be inspected for compliance with these rules and the Solar Decathlon Europe Building Code.

a. A team shall notify the appropriate inspector when it is ready for an inspection. When two or more teams request an inspection simultaneously, the order of inspections shall be determined in a drawing.
b. Spot checks for compliance shall take place throughout the Final Phase of the SDE 2012 Competition.
c. The Competition Manager shall check each team's inspection status, as indicated on the team's official inspection card, to determine which houses are eligible to participate in the contest. All final inspections shall be passed by the end of the inspectors' work day for a team to be eligible to participate in the following day's contest.
   Exception: Jury visits will proceed as scheduled regardless of a team's inspection status. However, jurors may be aware of the team's inspection status and may consider it in their evaluations.
d. Because open, partially functioning houses are preferable to closed, fully functioning houses, the organizers will direct the inspectors to require that an unsafe condition be corrected so public tours can occur—even if, as a consequence, the house is ineligible for participation in the contests.

Rule 12 Contest Week

12.1. House Occupancy

Under normal circumstances, when the occupancy rule is in effect, no more than six people may be located in the house at any one time.

a. Toward the end of each day during Contest Week, the SDE Organization shall post a message on the SDE WAT message board indicating the hours during which the occupancy rule is in effect the following day.
b. The house occupancy rule is automatically suspended whenever the Comfort Zone contest measurements are suspended.
c. During Dinner Party, the house occupancy rule is automatically suspended. See Rule 20.5.
d. Jurors, observers, official competition photographers and writers, and others with authority to enter a house as an organizer are not counted toward the number of house occupants.
e. Rule 12.1 remains in effect when jury walkthroughs and contest tasks are occurring simultaneously, unless it has been suspended by a. or b. above.

12.2. House Operators

Only Decathletes are permitted to operate the house and participate in the contest during contest week. All competition-related communications on the competition site shall be between the organizers and decathletes.

12.3.Late Design Changes

The final project assembled on the competition site shall be consistent with the design and specifications presented in the construction documents.

a. If there are known inconsistencies between the final project and the construction documents, the team is strongly encouraged to document these inconsistencies and submit the documentation to the SDE Organization as soon as possible after the inconsistency is known. The SDE Organization will then submit this documentation or a summary of the documented inconsistencies to the respective juries and inspectors at the appropriate time.
b. If undocumented inconsistencies are discovered during inspections, the SDE Organization will compile a summary of the inconsistencies and submit the summary to the respective juries at the appropriate time.

12.4. Public Tour

a. During Contest week, houses will be open to public tours during the times specified in the Competition Calendar.
b. Teams are required to provide an accessible route to all areas of the house and site that are available to the public during exhibition hours.
c. Teams are permitted to produce and distribute only one informational brochure or handout. Nevertheless those might be different for each of the target groups. No other handouts are permitted to be distributed. The handout material and its properties, like its recyclability, content and creativity, will be positively evaluated.
d. Teams shall develop signage that complements public tours by informing visitors about the team project and engaging visitors waiting in line.
e. Teams are prohibited from selling items to the general public on the competition site.
f. Only organizers-approved vendors may provide food and beverage to the general public on the competition site.
g. The SDE Organization will inform all Teams of the specific location of the access to each lot before the Lot's Selection.

Additional requirements

Although teams have to design only one route for all public, they may plan different explanations for each of the target groups: General public, professionals (architects, engineers, technicians and specialized press), undergraduates, teenagers and children, as well as considering long and short tours, attending to the number of public waiting.

Teams will have to manage the waiting lines during public tours, and therefore design a specific area inside the lot for them to wait and include any entertainment activity. Information panels and/or equivalent electronic equipment (always using the house's energy) may be installed in this area.

Teams are encouraged to plan their route according to the accessibility requirements (see Rule 51) trying to avoid any difficult point, such as crossing of ways, narrowings, etc. In case this is not possible, teams will have to explain how these difficult points (as well as turns, entrance and exit accesses…) are solved (see Rule 38.3 for further details concerning the information required).

Public tours and explanations must take into account those people with sensorial or motor disabilities, and will design it according to "Total Accessibility Criteria". Therefore, teams will have to plan all the necessary actions or systems to let them follow the same visit as the rest of the public, without any information loss, neither being split up or given special attention. However, only once the public tour and explanations have finished, wheel chairs and strollers/push chairs (and people accompanying them) may have a different exit from the rest of the public.

During public tours, teams must provide access to the public areas of the house (at least living room and kitchen). As houses may have two different levels, and public tours may include visiting both floor levels, access must be granted for disabled people without making use of

mechanical elements (lifts..) nor splitting the tour. Moreover, as it is mandatory to show the rest of the house, teams may make use of other means (such as models, videos, mirrors, drawings, photos) for this end.

Augmented reality systems and/or any other electronic systems to enrich the public visit are permitted, beyond those provided for people with sensorial disabilities. All auxiliary electric/electronic systems used during public tours (such as screens, beamers, audio guides, fans, music players) must be powered by the house's energy.

When planning their communication strategy during the Final Phase of the SDE 2012 Competition, teams must consider the following aspects:

- Most of the visitors coming to the Villa Solar will be Spanish speakers.
- Due to the climatic conditions in Madrid, teams are encouraged to plan shading areas, elements and/or devices inside their lot for the public waiting.

12.5. Impound

Each house shall be impounded on specified nights under the direct supervision of the organizers or staff. Team Members and team Crew are not allowed to occupy, move, or conduct maintenance on any part of the house during the Impound.
There is a 10-minute impound grace period on nights during the Dinner Party Sub contest. It is 10 minutes after dinner to have the house tidied up.

12.6. Interior & Exterior Lighting

House will have to keep all interior and exterior house lights on during specified periods of time. See the Competition Calendar for the specified periods.

a. All dimmers shall be adjusted to their highest positions and all other lighting control equipment shall be disabled or overridden so that the controlled lamps are fully and continuously on during the specified periods.
b. In case of technical problems, a team may notify it to the observer before turning selected lamps on or off, in order to avoid point penalties.

12.7.Safety during the Event

Each Team is responsible for the safety of the general public during the tours of their house.

12.8. House Configuration for Jury Tours

Teams shall show the juries, all possible configurations of the house during the jury tours.

a. House configurations that could affect the outcome of contests, but were not seen by the jury during their tours, are prohibited during contest week. Some examples of reconfigurable features are the following:
    i. A significant movable component, such as a room, wall, or bed.
    ii. Shading devices, such as retractable awnings or operable shutters.
    iii. Towel-drying locations.
    iv. Window coverings that may obstruct views or reduce light levels.
b. If there is insufficient time to do a live reconfiguration during jury tours, teams may use some other method, such as photographs or video, to show all reconfigurable features in their various configurations. Reconfigurable features that will not actually be reconfigured at any time during contest week need not be reconfigured during jury tours.
c. All plug-in or portable appliances that may be used during contest week shall be in their fully deployed locations and configurations during jury tours. Also be aware that juries may request that plug-in, portable, or hard-wired appliances be turned on so they can evaluate noise levels or other characteristics of the appliances that may not be evident when the appliance is off.

12.9. Teams Activities at the Villa Solar

a. Only SDE approved activities are permitted at the Villa Solar.
b. Teams wishing to hold any kind of activity not specified in the Competition Calendar, in their homes, lot or any other area of the Villa Solar, must request the SDE 2012 Organization for approval. These include any event co-organized by teams and governments/supporting institutions/sponsoring companies from official receptions to product presentations.
c. Further information regarding the procedure for requesting approval to the SDE Organization is available through the SDE WAT.
d. The Organization has the authority to reject or approve any request, and may issue a conditional approval or suggest a change of date or time.

SECTION 2.0 CONTESTS

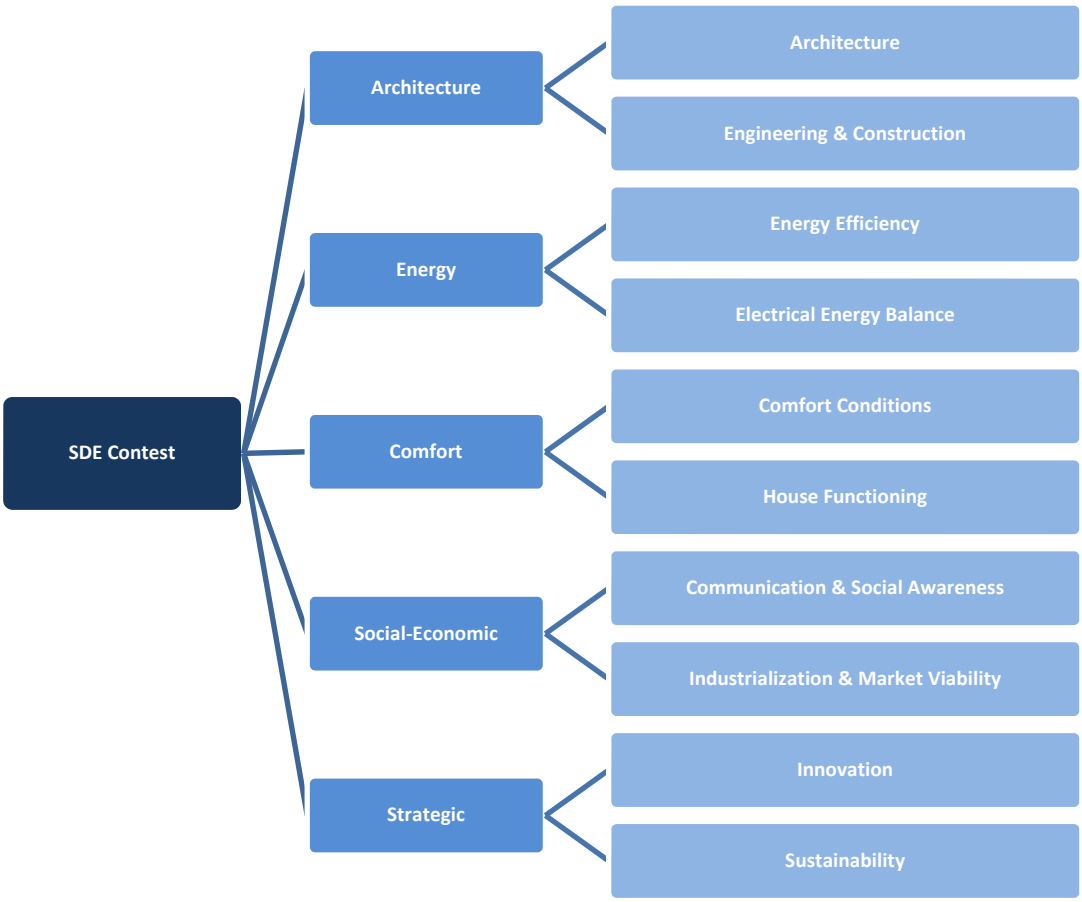
Rule 13 General Contest Information

The Solar Decathlon Europe competition consists of 10 separately scored contests. Each of these contests in the competition may consist of several sub-contests and different assessment criteria. The team with the highest total points at the end of the competition wins the competition.

13.1. Contest Structure

The ten contests of the Decathlon are divided in five major categories: Architecture, Energy, Comfort, Social-Economic and Strategic.

Chart 1: SDE Contests



Rule 14 General Competition Criteria

14.1. Scoring options

In the SDE Competition there are three different ways to earn points:

- Jury evaluation.
- Task completion
- Monitored performance

14.2. Jury Scoring

A multidisciplinary jury, composed by experts in the different matters, and internationally renowned, will use their experience and knowledge for the evaluation of the houses. The scorings will be done following the evaluation criteria and guidelines developed by the SDE organization for these contests. The Juries will be selected by the SDE organization, considering their academic and professional baggage related to the contests being evaluated.

There will be 6 different juries:

- Architecture jury
- Engineering and Construction jury
- Energy Efficiency jury
- Communication and Social Awareness jury
- Industrialization and Market Viability jury
- Sustainability jury

The evaluation process of the juries is organized in four main phases:

- Deliverables review (graphic and written documentation)
- Visits to each of the houses in the Villa Solar
- Deliberation
- Scoring Justification.

First phase: **Deliverables review.** The deliverables review gives the juries the opportunity to study the projects, to familiarize with them, and to explore the specific technical details of each of them.

Second phase: **Visits to the houses.** The visits take place during the Contest Week in the Villa Solar, giving the juries the opportunity to visually verify the information previously delivered and raising any question or clarification that they consider appropriate directly to the decathletes.

Third phase: **Deliberation.** The deliberation is the process where the different members of the same jury bring ideas together, sharing their opinions regarding the previous phases.

Fourth phase: **Scoring Justification.** Juries will provide a writing feedback to each team explaining the scoring assigned and the evaluation criteria considered.

14.3. Task Completion Scoring

The teams will obtain points for successfully completing the requested tasks. The carrying out of each task will be controlled by an observer, who will register the results and his remarks in the "observers' logs". The scoring is based on the approach to the goal predetermined in the contests.

14.4. Monitored performance Scoring

During the Contest week, the house will be continuously monitored and specific measurements will also be done. The scoring is based on the approach to the goal predetermined in the contests.

14.5. Official Scoring

Participant teams and general public will have access to all the information related to the monitoring of the houses, as well as to the scorings, tables, different measurements results, scorings periods, etc.

Chart 2. Solar Decathlon Europe 2012: Points distribution

No.	Contest/Sub-contest Name	Contests Points	SubContests Points	Assigned by
1	Architecture	120		Jury
2	Engineering & Construction	80		Jury
3	Energy Efficiency	100		Jury
4	Electrical Energy Balance	120		
	4.1 Electricity Autonomy		60	Monitored performance
	4.2 Temporary correlation		40	Monitored performance
	4.3 Electricity use per measurable area		20	Monitored performance
5	Comfort Conditions	120		
	5.1 Temperature		70	Monitored performance
	5.2 Humidity		10	Monitored performance
	5.3 Indoor Air Quality		5	Monitored performance
	5.4 Workstation Lighting		20	Task / Monitored
	5.5 Acoustic		15	Monitored performance
6	House Functioning	120		
	6.1 Refrigerator		5	Monitored performance
	6.2 Freezer		5	Monitored performance
	6.3 Clothes Washer		20	Task + Monitored
	6.4 Clothes Dryer		10	Task Completion
	6.5 Dish Washer		15	Task + Monitored
	6.6 Home Electronics		5	Task + Monitored
	6.7 Oven		15	Task + Monitored
	6.8 Cooking		15	Task Completion
	6.9 Hot Water Draws		20	Task Completion
	6.10 Dinner		10	Guests
7	Communication and Social Awareness	80		Jury
8	Industrialization & Market Viability	80		Jury
9	Innovation	80		Jury
10	Sustainability	100		Jury

14.6.Awards

During the Final Phase of the Competition, the following awards will be given to teams:

a. Overall Awards: In the Final Award Ceremony the Competition Overall Award will be granted. The team with the highest total points at the end of the competition wins the Overall Competition Award. There will also be awards for the teams with the second and third overall higher scores.

b. Contests Awards: Each of the ten Contests will be individually rewarded. There will be a first, a second and a third prize for each one. Juries will have to award only one team per position. As an extraordinary circumstance juries will be able to grant the third place to two different teams. Any other possibility will not be possible for Jury Contests.

c. Special Awards: In addition to the Competition Awards, other prizes or recognition will be granted to teams who have an outstanding performance in the areas evaluated out of the Competition. The Organization will inform the teams about the SDE2012 Extra-Competition Awards.

Rule 15 Contest 1: Architecture

15.1. Objectives

To assess the coherence of the design, the flexibility of the space, the integration of the technologies in the architecture and the incorporation of the bioclimatic strategies.

15.2. It will be assessed on

The deliverables relative to the project, especially the Construction Documents, as well as the on site evaluation of the house.

15.3. How it will be evaluated

A multidisciplinary jury of renowned architects specialized in the different areas of this contest.

15.4. Concepts to be evaluated

The **architecture will be assessed as**: "the conceptual organization of the space in relation to the technology sustaining it", in accordance with the following parameter and concepts:

- Jury scoring:
  - Proposal's coherence:
  - Perceptive evaluation, "in situ" verification:
  - Positive evaluation of the proposal considering spatial and lighting design, and systems' architectural integration

15.5.Evaluation criteria

Jury scoring:

- Proposal's coherence: Clarity in the conception of the space. Synthetic, essential, simple and radical proposals will be assessed positively.

- Perceptive evaluation: "in situ" verification: How the architectural design intentions have been achieved in the constructed house.

- Positive evaluation of the proposals considering:
  - Innovative Spatial Design: the use of expansion-transition areas, making the best use of space, transformable or multi-use spaces.
  - Lighting Design: the lighting quality for the space definition and the comfort provision evaluating both day and night specific needs. The suitable use of lighting highlighting the house values will also be assessed.
  - Systems' architectural integration: How naturally modules/systems are integrated with the house design concept and their coherence, and how they improve the perception of the house – which may consider aspects like form, color, texture, materials, light and transparency to create stimulating spaces.

15.6. Scoring

A total of 120 points will be awarded by the corresponding jury for this contest.

Rule 16 Contest 2: Engineering and Construction

16.1.Objective

To assess the construction and engineering systems design merit and implementation. Teams will have to demonstrate the higher level of functionality of the house structure, envelope, electricity, plumbing and photovoltaic design and construction, its safety, viability and adequate integration of them in the project.

16.2.It will be assessed on

The deliverables relative to the project, in particular the Construction Documents, as well as the on site evaluation of the house.

16.3. How it will be evaluated

A multidisciplinary jury of engineers specialized in the different areas of this contest.

16.4. Concepts to be evaluated

- Jury scoring:
  - House's Structure
  - Constructive design of the house.
  - Plumbing System Design and Construction
  - Electrical System Design and Construction
  - Photovoltaic System Design and Construction
  - Solar Thermal System Design and Construction
  - Building Integrated Solar Active Systems

16.5. Evaluation Criteria

Jury scoring:

- Houses Structure: The house structural concept and resolution: typology, hypothesis, calculations, etc. will be assessed.

- Constructive design of the house. They will evaluate the construction of the house in everything related to its constructive solutions: envelope, interior divisions, and finishes, as well as the acoustic performance of the adopted solutions.

- Plumbing and Electrical Systems Design and Construction: The concept, dimensioning and resolution of the different systems facilities and active services of the house will be evaluated, as well as the equipments' selection and its suitability considering the house's needs. The house water conservation will be positively evaluated considering low flow and water saving fixtures, greywater system, treatment and/or water reuse.

- Photovoltaic System Design and Construction: The jury will evaluate the functionality, design, implementation, robustness, and economic value of the PV system considering the following items:
  - Analysis of the Electrical Production Simulation: A detailed report about the electrical energy production of the household will be prepared for typical generation conditions of Madrid and consumption conditions corresponding to the final phase of the Competition in Madrid. See Rule 36.6
  - Technical documentation of the photovoltaic installation: Quality of the solar photovoltaic systems will be assessed, in particular compliance with the international standard IEC 60634-7-712 ("Electrical installations of buildings - Part 7-712: Requirements for special installations or locations - Solar photovoltaic (PV) power supply system's"). See Rule 36.5.

- Solar Thermal System Design and Construction: The jury will evaluate the suitability of the solar thermal system regarding each project's particular needs. The use of the solar thermal installation for purposes other than domestic hot water, such as support for HVAC systems will be also positively evaluated, as well as the final implementation of the installation in relation to the information included in the technical documentation.

- Building Integrated Solar Active Systems (BIPV – Photovoltaic, BIT – Thermal, BIPVT – Photovoltaic and Thermal): The Solar Active Systems installation will be evaluated looking forward to a perfect integration in the house. It will be considered that the "building integration" exists when the modules are elements of the house's composition, fulfilling both functions at a time: energetic and constructive.

16.6.Scoring

A total of 80 points will be awarded by the corresponding jury for this contest.

Rule 17 Contest 3: Energy Efficiency

17.1. Objective

To encourage to excellence all the systems design, looking for the reduction of the energy consumption, assessing the functionality and efficiency of all the house components. The Teams must demonstrate to what degree the house design, including its systems definition; contribute to enhance the energy efficiency of the house.

17.2.It will be assessed on

The deliverables relative to the project, in particular on the Construction Documents, as well as the on site evaluation of the house.

17.3. How it will be evaluated

A multidisciplinary jury made up of engineers specialists in the different disciplines.

17.4. Concepts to be evaluated

- Jury scoring:
  - Efficiency of the House's Envelope
  - Efficiency of passive or mostly passive systems
  - Efficiency of the active systems (heating, cooling, ventilation, lighting and hot water)
  - Energy analysis of the house and annual consumption estimation
  - Efficiency of the appliances and energy saving mechanisms
  - Efficiency increase due to the Control System

17.5.Evaluation criteria

Jury scoring:

- Efficiency of the House's Envelope: The jury will evaluate the construction of the house envelope, related to the energy efficiency of its materials and adopted solutions.

- Efficiency of HVAC systems: The concept, dimensioning and resolution of the HVAC systems facilities, passive and/or active strategies of the house will be evaluated, as well as its efficiency to fulfill the house's needs.

- Energy analysis of the house. The Jury will be looking for effective communication and synthesis of the Team's design and analysis process, focusing on the application of engineering principles, modeling, simulations and creative solutions. The influence of simulations in the decisions and changes to the house design will be evaluated, as well as the needs calculations, the thermal loads and the energy consumption of the house. See Rules 37.2 and 37.3.

- Efficiency of the appliances: The appliances selections due to its technical specifications, according to the house's dimensions and foreseen use. The inclusion of energy savings method will be positively evaluated.

- Efficiency increase due to the Control System: The BACS (Building Automation Control System) contribution to the energy saving of the house.

17.6.Scoring

A total of 100 points will be awarded for this contest in the competition.

Rule 18 Contest 4: Electrical Energy Balance

18.1. Objective

To evaluate the houses' electrical energy self-sufficiency provided by solar active technology and their electricity use intensity.

18.2. It will be assessed on

The collected data of the different electrical energy flows, by the SDE Organization´s monitoring system during the Contest Week.

18.3. How it will be evaluated

The evaluation of this contest is based on the electrical energy measurements.

Note: Due to natural shading and other unavoidable shading in the "Villa Solar", electricity generation will only be computed during the daily intervals in which all houses are free of shadows. The exact time periods will be indicated in the SDE Competition Calendar (please refer to Annex B). A current estimate is a 6 hour period center$E_{G_yearly} - E_{L_yearly} \geq 0$ed around solar noon.

18.4. Concepts to be evaluated

- Electricity autonomy in terms of aggregated electrical energy balance
- Temporary generation- consumption profile patterns correlation.
- Use of electricity per measurable area

18.5.Evaluation criteria

Sub Contest 4.1: Electricity Autonomy: This sub-contest will evaluate the degree of self-supply of the house or electrical energy balance during the Contest week. For a house to have a positive annual electrical energy balance the following relationship must occur:

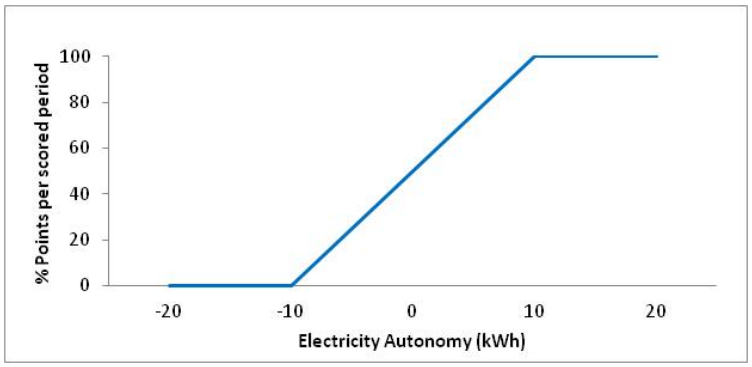
$$E_{G\_yearly} - E_{L\_yearly} \geq 0$$

Where E_{G_yearly} represents the electricity generated throughout a whole year and E_{L_yearly} represents the electric loads' consumption throughout a whole year.

Since the Competition takes place close in time to the equinox, the electrical energy balance can be considered the same the annual electrical energy balance. For this reason, in order to obtain points, the houses' electrical energy balance must be between, or above, the following limits:

$$-10kWh \leq E_{G\_contest} - E_{L\_contest} \leq 10kWh$$

Where $E_{G\_contest}$ represents the electricity generated and $E_{L\_contest}$ the electrical loads' consumption during the Contest week. The point distribution is represented by the following figure.



Full Points:				Electricity Autonomy	≤	10	kWh
Reduced Points:	-10	ppm	<	Electricity Autonomy	<	10	kWh
No Points:				Electricity Autonomy	≤	-10	kWh

Sub Contest 4.2: Temporary Generation-Consumption Correlation: One of the main advantages of Distributed Solar generation is that electricity is consumed in the same place where it is generated. This reduces the need for transmission lines and minimizes the electricity transport losses. This effect is maximized if electricity is consumed at the same time as it is generated.

This contest will evaluate the temporary correlation between electricity generation and electricity demand during the Contest week periods where electricity generation is computed (see Rule 18.3). This correlation is the following:

$$\xi = \frac{E_{G\_L}}{E_L}$$

Where E_{G_L} is the electricity generated and simultaneously consumed by the loads, and E_L is the electricity consumed by the loads.

If batteries are included the following equation applies:

$$\xi = \frac{E_{G\_L} + E_{Bat\_L}}{E_L}$$

Where E_{Bat_L} is the electricity supplied by the batteries to the loads. The measurement period for this sub-contest is still to be determined. Points will be awarded according to the following expression:

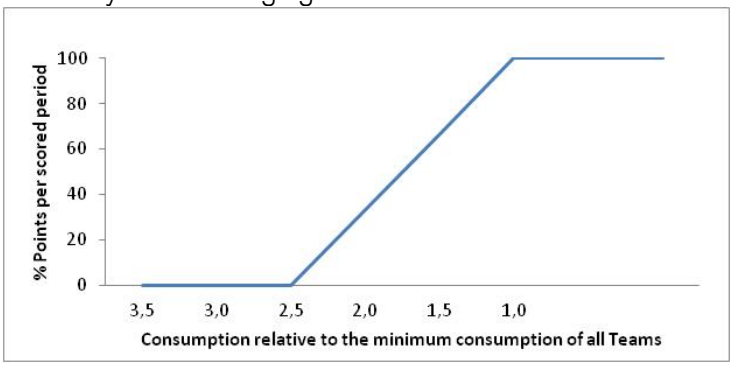
$$\text{Points obtained} = \text{Total possible points} \cdot \xi$$

Note: This contest will only be evaluated during the daily intervals in which all houses are free of shadows.

Sub Contest 4.3: Load consumption per measurable area: In order for countries to reduce their CO2 emissions and external energy dependence, it is just as important to have a large renewable energy production as efficient energy consumption. This contest aims to evaluate the electrical energy efficiency of the houses, related to their measurable area. The following equation measures the load consumption per measurable area, E_{LS}.

$$E_{\mathrm{Ls}} = \frac{E_{\mathrm{L\_average}}}{A}$$

Where $E_{L\_average}$ represents the daily average electrical loads' consumption during the Contest week and A represents the measurable area of the house, defined in Rule 6.3. The point distribution represented by the following figure:



The figure shows that all teams which consume 2.5 times more than the team which least consumes, will receive zero points. The rest will be given points in a linear manner.

Valid days for this sub-contest (to be used to compute ELs) will be only those in which the house obtains points in all Contest 6 sub-contests that require electricity, with the exception of sub-contest 6.10 (Dining).

18.6.Scoring

A total of 120 points will be awarded for this contest in the competition. The point distribution for contest 4 is: 50 points for sub-contest 4.1, 40 points for sub-contest 4.2 and 30 points for sub-contest 4.3.

Rule 19 Contest 5: Comfort Conditions

19.1. Objective

To assess the capacity for providing interior comfort through the control of temperature, humidity, acoustic, lighting and the quality of the interior air.

19.2. It will be assessed on

The collected data by the organization´s monitoring system during the competition period and the measures realized "in situ" in the Villa Solar.

19.3. How it will be evaluated

This contest is based on the measurements realized on the house during the Contest Week.

19.4. Concepts to be evaluated

- Tasks completion scoring:
  - Workstation Lighting
  - Acoustic performance.
- Monitored performance scoring:
  - Temperature
  - Humidity.
  - Air quality

19.5. Evaluation criteria

Sub-contest 5.1: Temperature

The interior temperature will be constantly measured. Two temperature sensors will be located in the two main rooms of the house. In case it is necessary a third temperature sensor will be installed. All available points are earned at the conclusion of each scored period by keeping the time-averaged interior drybulb temperature between 23°C to 25°C. See the Competition Calendar for the schedule of scored periods.

a) Reduced points are earned if the interior temperature keeps between 21°C and 23°C, or between 25°C and 27°C. Reduced points values are scaled linearly, as shown in Figure 5.1.

b)

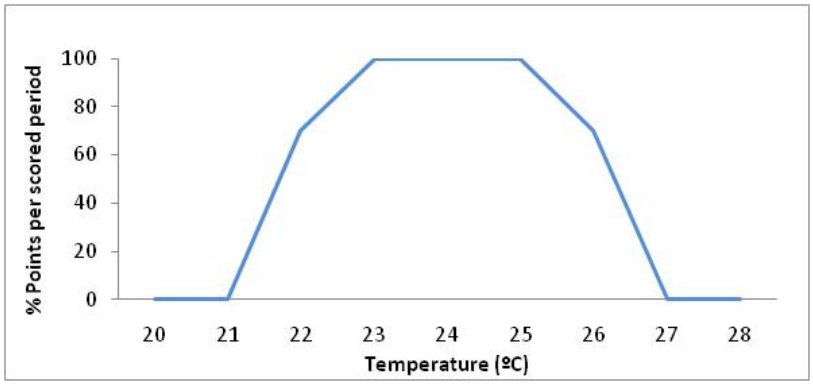


Figure 5.1: Temperature sub-contest points' distribution.

Full Points:	23 ° C	≤	Temperature	≤	25 ° C
Reduced Points:	21 ° C	<	Temperature	<	23 ° C
	25 ° C	<	Temperature	<	27 ° C
No Points:			Temperature	≤	21 ° C
			Temperature	≥	27 ° C

Sub-contest 5.2: Humidity

The relative humidity will be constantly measured. A humidity sensor will be located next to a temperature sensor. All available points are earned at the conclusion of each scored period by keeping the time-averaged interior relative humidity between 40% and 55% during the scored period. See the Competition Calendar for the schedule of scored periods.

a) Reduced points are earned if the time-averaged interior relative humidity keeps between 25 % y 40 %, or between 55 % y 60%. Reduced points values are scaled linearly, as shown in Figure 5.2.

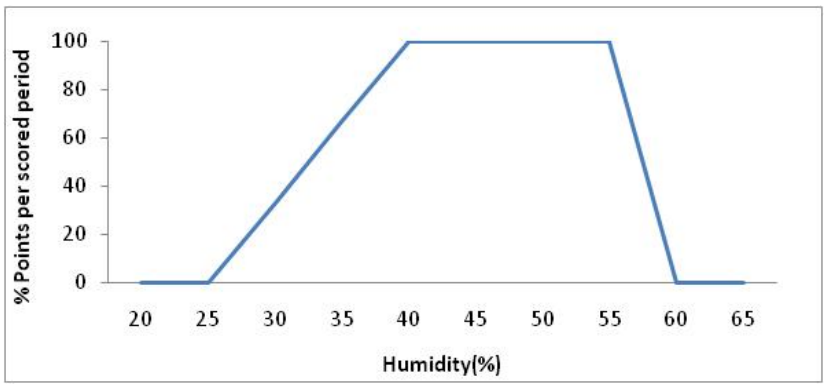


Figure 5.2: Humidity sub-contest point´s distribution.

Full Points:	40%	≤	Relative Humidity	≤	55%	
Reduced Points:	25%	<	Relative Humidity	<	40%	
	55%	<	Relative Humidity	<	60%	
No Points:			Relative Humidity	≤	25%	
			Relative Humidity	≥	60%	

Sub-contest 5.3: Air quality

The content in CO_2 in the air will be constantly measured. An air quality sensor will be located next to a temperature sensor, in most cases. Depending on the house's design, the sensor may be located in a different place. All available points are earned at the conclusion of each scored period by keeping the content in CO_2 below 800 ppm during the scored period. See the Competition Calendar for the schedule of scored periods.

a) Reduced points are earned if the content in CO_2 is between 800 ppm and 1200 ppm. Reduced points values are scaled linearly, as shown in Figure 5.3.

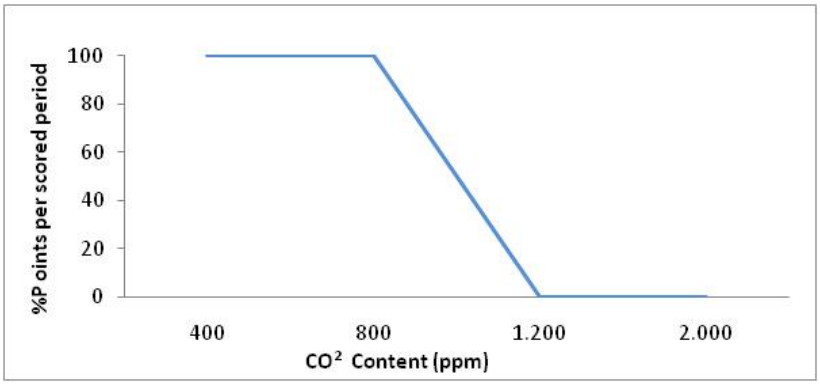


Figure 5.3: Air quality sub-contest points distribution.

Full Points:				CO² Content	≤	800	ppm
Reduced Points:	800	ppm	<	CO² Content	<	1200	ppm
No Points:				CO² Content	≥	1200	ppm

Sub-contest 5.4: Workstation Lighting

The lighting level measurements in the Workstation will take place at the scored period in the Competition Calendar. A photometer will be located in the workstation. The light intensity of the area will be measured according to the spectral levels defined by the organization. All available points are earned at the conclusion of each scored period by keeping the lighting level above 500 lux during the scored period.

a) Reduced points are earned if the lighting level is between 300 lux and 500 lux. Reduced points values are scaled linearly, as shown in Figure 5.4.
b) Light-emitting devices within 45 cm of the sensors are not permitted.

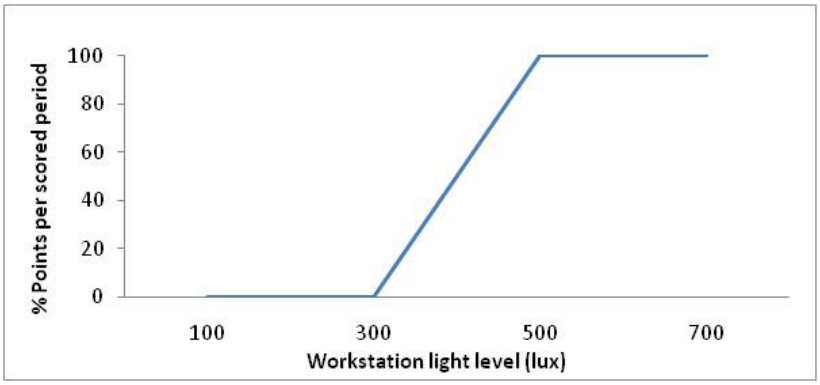


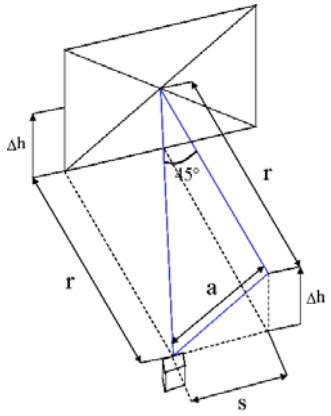
Figure 5.4: Workstation Lighting comfort sub-contest points distribution.

Full Points:				Lighting level	≤	500	lux
Reduced Points:	300	lux	<	Lighting level	<	500	lux
No Points:				Lighting level	≥	300	lux

Sub-contest 5.5: Acoustic performance

The façade airborne sound insulation will be measured. The loudspeaker global method proposed in the ISO 140-5:1998 will be used. Due to time restrictions, only one facade will be evaluated. The measurement method will be as follows:

- The unidirectional sound source will be placed outdoor, at r=5 m distance from the facade, and with a 45° angle of incidence, as indicated in the following figure:



Δh: Facade center height, measured from the ground.

S: Facade center relative horizontal displacement.

- An exterior sound measurement will be done with a microphone located at 2 m from the facade center, and at 1.5 m height from the receiving room floor.
- Receiving room sound level will be assessed by an average of the five points located according to ISO 140-5:1998 requirements. Reverberation time and background noise in the receiver room will also be measured.
- In case of existing construction compartments or more than one room on the analyzed facade, the most representative room will be considered as receiving room.
- **$D_{ls,2m,nT,w}$ (dB)** values for each of the 1/3 octave bands will be calculated between 100 Hz and 5 kHz. **$D_{ls,2m,nT,w}$ (dB)** calculated according to ISO 717-1:1996 will be used as assessment parameter.

All available points are earned at the conclusion of all the houses' sound measurements by having an acoustic value above 45 dB.

a) Reduced points are earned if the acoustic value is between 30 dB and 45 dB. Reduced points values are scaled linearly, as shown in Figure 5.5.

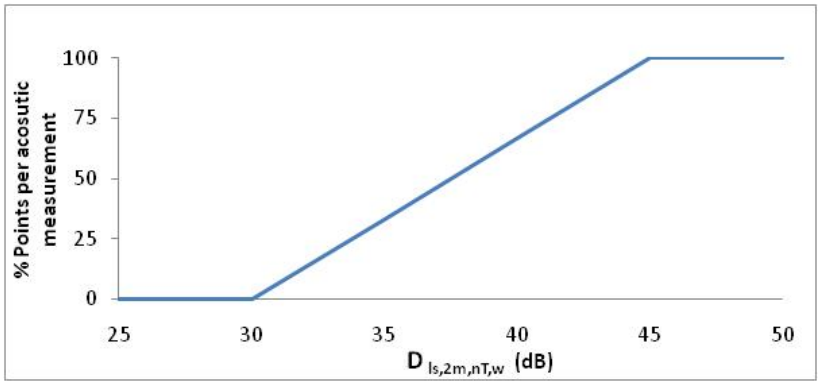


Figure 5.5: Acoustic comfort sub-contest points distribution.

Full Points:				Acoustic values	≥	45	dB
Reduced Points:	30	dB	<	Acoustic values	<	45	dB
No Points:				Acoustic values	≤	30	dB

Note: During the Contest Week, there will be several periods of time on which the house's mechanical equipment will be disconnected. Therefore, teams will have to plan passive strategies for providing and keeping the house's comfort conditions.

19.6.Scoring

A total of 120 points will be awarded for this contest in the competition: 70 for the temperature, 10 points for the humidity, 5 for the air quality, 20 for workstation lighting and 15 for the acoustic comfort.

Rule 20 Contest 6: House Functioning

20.1. Objective

To evaluate the house functionality and the efficiency of the selected appliances, in order to maximize the performance of the house, while complying with the demanding standards of present day society. This contest tries to reproduce the average energy use in a modern home.

20.2. It will be assessed on

The collected data by the organization´s monitoring system during the contest week, the measurements realized "in situ" in the Villa Solar, and the successful completion of tasks.

20.3. How it will be evaluated

The evaluation will be based on the measurements realized on the house during the Contest Week and on the corresponding tasks completion, with the exception of the Dinner Sub-Contest in which each guest team shall assign an evaluation to the host team after each dinner party.

20.4. Concepts to be evaluated

- **Tasks completion scoring:**
  - Clothes washer.
  - Clothes dryer.
  - Dishwasher.
  - Oven.
  - Hot water draws.
  - Cooking
  - Home Electronics.
- **Monitored performance scoring:**
  - Refrigerator.
  - Freezer.
- **Guests scoring:**
  - Dinner

20.5. Evaluation criteria

<u>Sub-contest 6.1: Refrigerator</u>

All available points are earned at the conclusion of each scored period by keeping the time-averaged interior temperature of the refrigerator between 1.0°C and 4.5°C during the scored period. A temperature sensor will be located inside the refrigerator and will be continuously measuring.

a. Reduced points are earned if the time-averaged interior refrigerator temperature is between 0.0°C and 1.0°C or between 4.5°C and 5.5°C. Reduced point values are scaled linearly, as shown in Figure 6.1.
b. The refrigerator volume published in the manufacturer's specifications shall be a minimum of 170 litres.
c. The refrigerator may be used to store food and beverages.

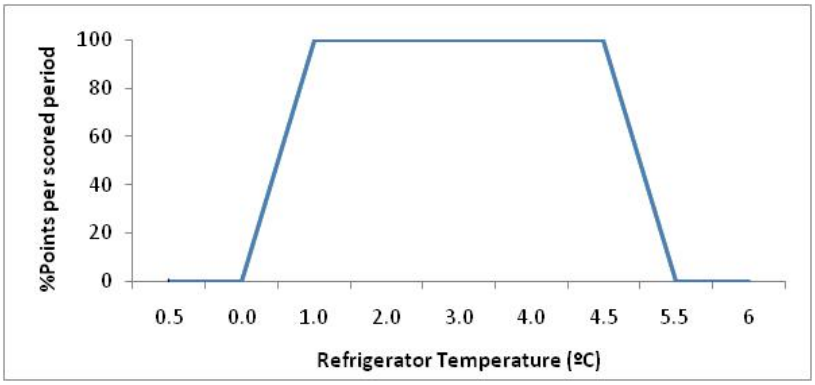


Figure 6.1: Refrigerator Sub-contest points distribution.

Full Points:	100° C	≤	Temperature	≤	4.5° C
Reduced Points:	0° C	<	Temperature	<	1.00° C
	4.5° C	<	Temperature	<	5.5° C
No Points:			Temperature	≤	0.00° C
			Temperature	≥	5.5° C

Sub-contest 6.2: Freezer

All available points are earned at the conclusion of each scored period by keeping the time-averaged interior temperature of the freezer between -29.0°C and -15.0°C during the scored period. A temperature sensor will be located inside the refrigerator and will be continuously measuring.

a. Reduced points are earned if the time-averaged interior freezer temperature is between -34.5°C and -29.0°C or between -15.0°C and -9.50°C. Reduced points are scaled linearly, as shown in Figure 6.2.
b. The freezer volume published in the manufacturer's specifications shall be a minimum of 57 litres.
c. The automatic defrost function may be disabled.
d. The freezer may be used to store food and beverages.
e.

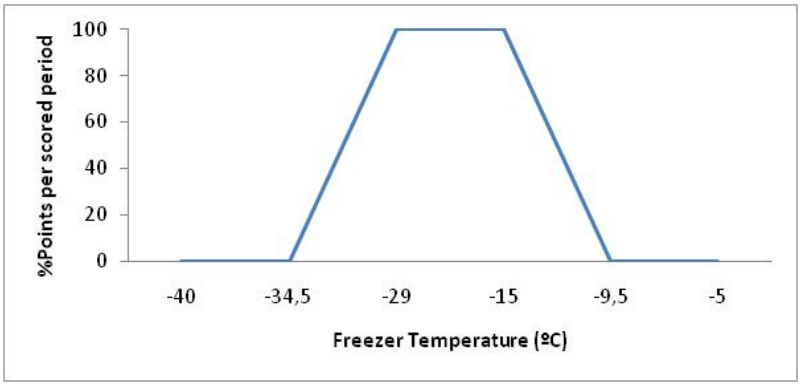


Figure 6.2: Freezer Sub-contest points distribution.

Full Points:	-29.0° C	≤	Temperature	≤	-15.0° C
Reduced Points:	-34.5° C	<	Temperature	<	-29.0° C
	-15° C	<	Temperature	<	-9.5° C
No Points:			Temperature	≤	-34.5° C
			Temperature	≥	-9.5° C

Sub-contest 6.3: Clothes washer

All available points are earned for washing laundry by running a qualifying clothes washer through one or more complete, uninterrupted, "Normal" (or equivalent) cycle(s) within a specified period of time, during which a temperature sensor placed inside the clothes washer must reach 43.5°C at some point in the cycle. The sensor will be continuously measuring during the washer cycle.

a. Half of the available points are earned if the temperature sensor reaches 41.0°C, but does not reach 43.5°C.
b. A load of laundry is defined as organizer-supplied bath towels.
c. The clothes washer shall operate automatically and have at least one wash and rinse cycle.
d. One or more complete, uninterrupted, "Normal" (or equivalent) cycle(s) in an automatic clothes washer shall be used to wash the laundry.
e. On several days during contest week, two loads of laundry are required to be washed. Teams have the option to combine double loads and wash them in one clothes-washer cycle.
f. The drying function in a combination washer/dryer shall be disabled until the completion of the wash cycle.
g. Cycle "interruption" includes the adjustment of supply temperature or flow in a manner not anticipated by the manufacturer or addressed in its operation manual.
h. Cycle completion shall be confirmed by the observance of an audible or visible signal.
i. The organizers will consult the operation manual to identify appropriate cycle settings. "Normal" or "regular" settings shall be selected, if available. Otherwise, settings most closely resembling typical "Normal" or "regular" settings shall be selected.
j. Only water may be used for clothes washing. No other kind of soap or similar products may be used during contest.

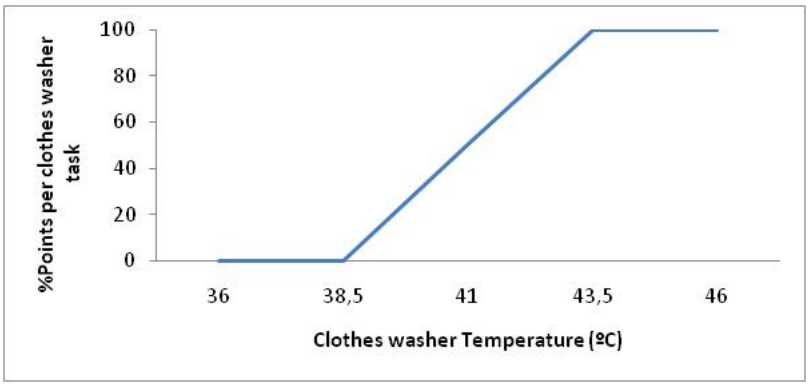


Figure 6.3: Clothes washer Sub-contest points distribution.

Full Points:	43,5°C	≤	Temperature		
Reduced Points:	41° C	≤	Temperature	<	43,5°C
No Points:			Temperature	<	41 ° C

Sub-contest 6.4: Clothes dryer

All available points are earned by returning a load of laundry to a total weight less than or equal to the towels' total weight before washing. Clothes drying shall be completed within a specified period of time.

a. Reduced points are earned if the "dry" towel weight is between 100.0% and 110.0% of the original towel weight. Reduced point values are scaled linearly, as shown in Figure 6.4.
b. A load of laundry is eligible for clothes-drying points only if the load experienced a complete, uninterrupted cycle in an automatic clothes washer. However, scoring points in the Clothes Washer sub-contest is not a prerequisite for scoring points in the Clothes Dryer sub-contest.
c. The drying method may include active drying (e.g., machine drying), passive drying, (e.g., on a clothes line), or any combination of active and passive drying.
d. To use drying methods different to the drying machine, the team **must clearly** indicate and explain it in the project documents and the drying place must be showed to the Architecture and Industrialization and Market Viability juries.
e. Drying the clothes in the floor or in other places not designed for that purpose is not permitted. Neither is permitted to wave the clothes to speed air drying
f. On several days during contest week, two loads of laundry are required to be dried. Teams have the option to combine double loads and dry them in one clothes-drying cycle, but each load will be scored separately.

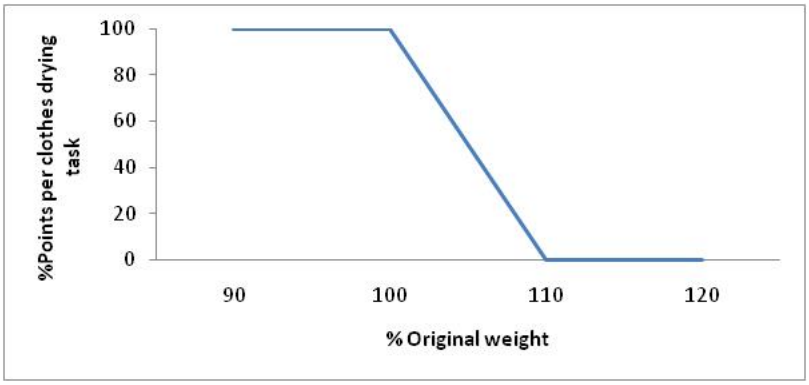


Figure 6.4: Clothes dryer Sub-contest points' distribution.

Full Points:			Weight	≤	100%
Reduced Points:	100%	<	Weight	<	110%
No Points:			Weight	≥	110%

Sub-contest 6.5: Dishwasher

All available points are earned by running a qualifying dishwasher through a complete, uninterrupted, "Normal" (or equivalent) cycle within a specified period of time, during which a temperature sensor placed inside the dishwasher must reach 49.0°C at some point during the cycle. The sensor will be continuously measuring during the washer cycle.

a. Half of the available points are earned if the temperature sensor reaches 46.0°C, but does not reach 49.0°C
b. The dishwasher shall operate automatically, have at least one wash and rinse cycle, and have a minimum capacity of six place settings according to the manufacturer's specifications.
c. If the dishwasher has a heated drying option, this option shall be disabled.
d. Cycle "interruption" includes the adjustment of supply temperature or flow in a manner not anticipated by the manufacturer or addressed in its operation manual.

e. Cycle completion shall be confirmed by the observance of an audible or visible signal.
f. The organizers will consult the operation manual to identify appropriate cycle settings. "Normal" or "regular" settings shall be selected, if available. Otherwise, settings most closely resembling typical "Normal" or "regular" settings shall be selected.
g. The dishwasher may be run empty, partially loaded, or fully loaded; the load may be soiled or clean.

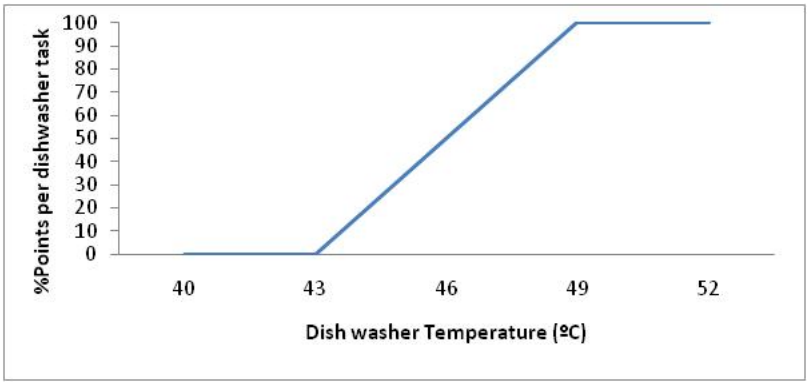


Figure 6.5: Dishwasher Sub-contest points distribution.

Full Points:	49°C	≤	Temperature		
Reduced Points:	46°C	≤	Temperature	<	49 ° C
No Points:			Temperature	<	46 ° C

Sub-contest 6.6: Home Electronics

During the assembly period the Home Electronics devices (computer, TV and DVD player) power draws will be measured during a 30 minute period, to establish dedicated power strip baseline power draw. Therefore, it will be necessary to have all these devices located in an independent circuit. This circuit must be labeled on the electrical panel providing a 7 cm free space rail DIN next to it to locate the pulse counter. All available points are earned for operating a computer, TV and a DVD player (or video player equipment) during specified periods of time and drawing at least 90% of the baseline power during the scored period.. See Event Calendar for details regarding the number of points per home electronics task and the time periods designated for home electronics tasks.

a. The TV shall be a minimum of 21 in. (48.3 cm) according to the manufacturer's stated display size. The computer display shall be a minimum of 17 in. (43.2 cm) according to the manufacturer's stated display size.
   The computer may be a notebook, laptop, or desktop computer. The computer and video displays shall be able to be operated simultaneously and controlled independently of each other.
b. It is recommended to disable the functions of "Screensaver", "Stand by", or another mode that reduces the energy consumption of these devices during the scored periods, because when some of these modes are activated the electrical consumption might fall down below the reference level. This test simulates the use of the devices and the energy saving modes are automatically activated when these is not performing its main function.

Sub-contest 6.7: Oven

All available points are earned at the conclusion of each scored period by keeping the oven temperature above or equal to 220°C during specified scored periods. A temperature sensor will be located inside the oven and will be continuously measuring every time it is turned on.

a. Reduced points are earned if the time-averaged interior oven temperature during specified scored periods is between 180°C and 220°C. Reduced points are scaled

linearly, as shown in Figure 6.6.

b. The oven volume published in the manufacturer's specifications shall be a minimum of 55 litres.

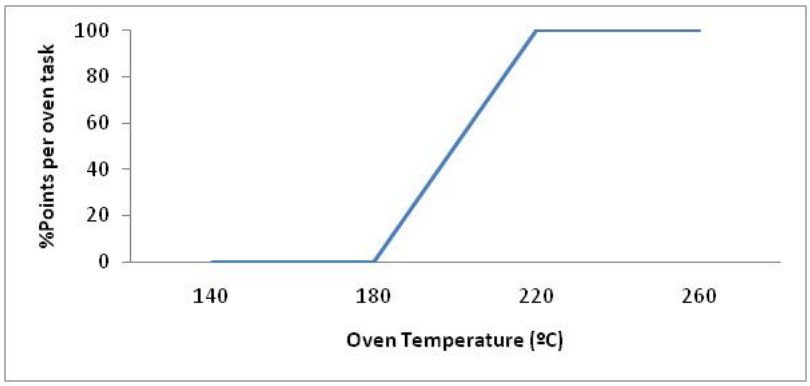


Figure 6.7: Oven Sub-contest points distribution.

Full Points:	220 ° C	≤	Temperature		
Reduced Points:	180° C	≤	Temperature	<	220 ° C
No Points:			Temperature	<	180 ° C

Sub-contest 6.8: Cooking

All available points are earned by using a kitchen appliance to vaporize 2.3 kg of water within a specified period of time.

a. Reduced points are earned if between 0.5 kg and 2.3 kg of water are vaporized. Reduced point values are scaled linearly, as shown in Figure 6.7.
b. Any kitchen appliance may be used, but it must operate in its Normal configuration as it is vaporizing the water.
c. The water shall be vaporized in a single pot and the starting water weight shall be at least 2.75 kg.

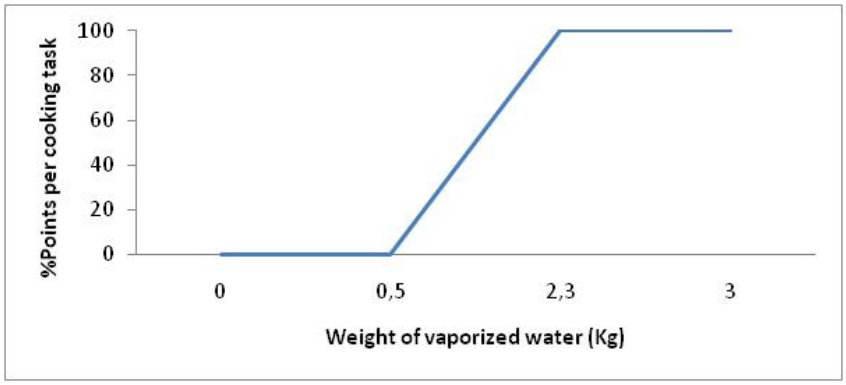


Figure 6.8: Cooking Sub-contest points distribution.

Full Points:			Weight	≥	2,3 Kg
Reduced Points:	0,5 Kg	<	Weight	<	2,3 Kg
No Points:			Weight	≤	0,5 Kg

Sub-contest 6.9: Hot water draws:

Hot water draws will occur during the times specified in the Competition Calendar. For each draw, at least 50 litres of hot water shall be delivered in 10 minutes to qualify for points. All available points are earned be delivering an average temperature of at least 43°C. An average temperature below 37°C earns no points. For temperatures between 43°C and 37°C, points are scaled linearly, as shown in Figure 6.7.

a. These hot water draws are designed to simulate most of the washing and bathing tasks that would take place in a typical day.
b. The schedule of hot water draws will most likely vary from one day to the next, just as it does in a typical home.
c. The maximum number of hot water draws for one day will not exceed three, but they may occur consecutively.
d. Teams will notify the Organization when they would like to realize the hot water draws, during the time specified in the Competition Calendar.

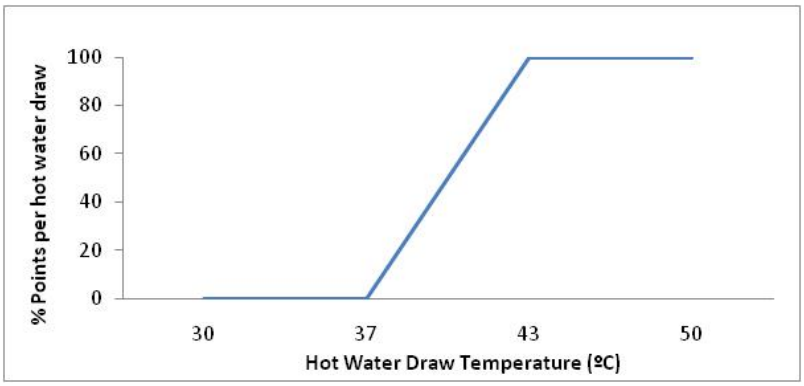


Figure 6.9: Hot water draws sub-contest points distribution

Full Points:			Temperature	≥	43°C
Reduced Points:	37°C	<	Temperature	<	43°C
No Points:			Temperature	≤	37°C

Sub-contest 6.10: Dining

Each team shall host three dinner parties during contest week. Dinner parties will feature a pair of guest decathletes from three neighboring houses, and each pair of guest decathletes shall assign a score to the host team after each dinner party.

a. To maintain consistency of this sub-contest, guest teams shall use the scoring chart that the observers will give to them (one per guest team) when entering the house for the dinner party. The guests must give the chart back to the observer, once completely filled out at the end of the dinner.
b. Each guest team shall assign a score to the host team after each dinner party. The quality of the meal, atmosphere, and overall experience needs to be considered in the evaluation as excellent, very good or good.
c. There will be 8 messmates, 2 hosts and 6 guests (2 per team). Each host team shall prepare dinner for guests and team members.
d. Non-decathletes are prohibited from preparing the meal or instructing decathletes in any way on the competition site.
e. Whereas take-out and prepared over-the-counter food items are permitted, dinner party guests are encouraged to assign higher scores to teams that use fresh ingredients to prepare the meal and those that prepare and cook the meal entirely in the house. The meal shall be served and eaten in the measurable area at the eating space designated in the Construction Documents.
f. Before and after the dinner portion of the party, the host team is permitted, but not required, to serve hors d'oeuvres and/or beverages, which may be served outside.
g. Teams are required to submit detailed dinner party menus to the organizers. The organizers will review each menu for compliance. If corrective actions are required to meet all safety requirements, a team must submit an updated version of the menu. See Rule 42.
h. Teams hosting dinner parties shall comply with the following safety requirements:
    i. The use of fire for cooking is prohibited.

ii. All water used for cooking and drinking shall be drinking water purchased in sealed containers.
iii. All dishes and cookware shall be washed with hot water and soap and rinsed prior to use.
iv. Normal domestic wastewater may go into the wastewater tank.
v. All beverages and food must be stored properly and according to the instructions on the packaging, e.g., beverages and foods marked "refrigerate after opening" must be refrigerated appropriately after opening.
vi. To help prevent allergic reactions among dinner party guests, teams shall create a list of ingredients for each of the items being served at each meal. Common food allergies include milk/dairy products, eggs, peanuts, tree nuts (walnuts, cashews, pecans), fish, shellfish, soy, and wheat. See Rule 42.
vii. Outdoor cooking and grilling equipment may be incorporated into the competition house, but the use of such equipment is prohibited on the competition site.

20.6. Scoring

A total of 120 points will be awarded for this contest in the competition: 5 points for the refrigerator, 5 points for the freezer, 20 points for the clothes washer, 10 points for the clothes dryer; 15 points for the dishwasher; 5 points for the Home Electronics; 15 points for the oven; 20 points for hot water draws; 15 points for the cooking and 10 points for the dinner.

Rule 21 Contest 7. Communication and Social Awareness

21.1. Objective

To assess the teams communication capacity to find creative, effective and efficient ways (adapted to each target group, avoiding any exclusion) of transmitting the Competition relevant topics (sustainability, innovation and energy efficiency) as well as those ideas that define the team's and project's own identity.

21.2. It will be assessed on

The deliverables relative to the project, as well as all the actions developed throughout the whole project development. These include the different events organized (activities involving interaction with the public, i.e. Public Tours) and the material submitted (information transmission by any mean: audiovisual, electronic, written, etc. such as a documentary, media impacts or web sites).

21.3. How it will be evaluated

A jury of communication professionals shall assign an overall score to the team's communications plan, dissemination actions and its core message.

21.4. Concepts to be evaluated

Jury scoring:

- Effectiveness
- Efficiency.
- Creativity.

21.5. Evaluation criteria

Jury scoring:

- Effectiveness.- The message chosen and its effective presence in the communication actions. Adequacy of the solutions designed for each target group and its pedagogic adaptation.

- Efficiency.- The audience reached compared to the resources invested. This assessment will not be only quantitative, as certain groups or geographic scopes require a greater effort.
- Creativity.- A consistent development of the team's Visual Identity and its ability for being put into any context without losing its essence. Originality and artistic value of the actions.

21.6.Scoring

A total of 80 points will be awarded for this contest in the competition.

Rule 22 Contest 8: Industrialization and Market Viability

22.1. Objective

To evaluate the house's viability regarding its promotion in the market, the industrialization of the constructive system, and its possibility of shaping urban groups. In this sense three developing points are identified:

- To identify and justify the target market of the house, emphasizing the attraction capacity for potential users and companies of the building industry.
- To develop a house making use of the industry concepts and technologies in the design and constructive process.
- To study the grouping possibilities in order to generate different types of urban groups, looking forward to multifamily housing.

22.2. It will be assessed on

The deliverables relative to the project, as well as the on site evaluation of the house: assembly and functioning in the Villa Solar.

22.3. How it will be evaluated

A multidisciplinary jury made up of architects, engineers and building industry professionals. The assessment will be made based on the technical aspects and grading the responsiveness and suitableness of the Team's project to the target market.

22.4. Concepts to be evaluated

Jury scoring:

- Market viability of the product
- Economic feasibility study and affordability
- Degree of industrialization
- Possibilities for Grouping

22.5. Evaluation criteria

Jury scoring:

- Market viability of the product .- The target market's identification of the house, as well as the way of "selling" the product, the house appeal and how to reach the buyers will be evaluated.

- Economic Feasibility Study and Affordability.- Analyzing the technical and economical possibilities of the product in at least three possible production scenarios:
  - Very low level production (1-2 houses / year)
  - Medium level production (100 houses / year)
  - High level production (1,000 houses / year)

Affordability encourages teams to design and build affordable houses that combine energy-efficient construction and appliances with renewable energy systems. In this way, the teams will demonstrate how energy-saving features can help consumers save money today, considering the house's construction cost.

- Degree of Industrialization: .- The following concepts will be evaluated: the components availability in the market; the possibility of assembly by pieces; the dimensional coordination (the pieces standardization in a market); and finally the transport and assembly easiness. The assembly process's phases and its time length will be evaluated as well as the easy understanding of the information included in the deliverable (providing an easy identification of the pieces and its assembly processes).

- Possibilities for Grouping:.- The standardization level, including the units repetition and the flexibility providing a variety of grouping typologies, as well as the possibilities towards a major development or customization, will be evaluated.

22.6. Scoring

A total of 80 points will be awarded by the corresponding jury for this contest.

Rule 23 Contest 9: Innovation

23.1. Objective

To evaluate the innovation degree of the house in the preceding contests, focusing on emergent or radical and revolutionary changes in the house, in its systems or in its components, which increase its value and/or improve its performance and efficiency.

23.2. It will be assessed on

The deliverables relative to the project, as well as the assembly and the functioning of the house in the Villa Solar.

23.3. How it will be evaluated

The five juries will evaluate this contest as an independent concept.

23.4.Concepts to be evaluated

Jury scoring:

- Innovation in Architecture.
- Innovation in Engineering and Construction.
- Innovation in Energy Efficiency
- Innovation in Communication and Social Awareness.
- Innovation in the Industrialization and Market Viability proposal.

23.5. Evaluation criteria

Jury scoring:

- Innovation in Architecture: evaluating to what degree, the proposed solutions and those built by the teams, provide new spatial and functional concepts, new languages in the formal use of materials, use of textures, and the appropriate use of light.

- Innovation in Engineering and Construction: evaluating the innovation concepts in the house's structure and systems' (plumbing, electrical and photovoltaic) design and construction, as well as in the acoustic performance of the adopted solutions.

- Innovation in Energy Efficiency: evaluating the active and passive innovative technological contributions maximizing the energy efficiency of the house; innovative ways to improve the hydrothermal, environmental, illumination and acoustic efficiency

of the house, thus promoting the livability of the house, as well as facilitating the perfect functioning of the house and its equipment will be assessed.

- Innovation in Communication and Social Awareness: assessing all of the novel initiatives proposed by the teams to attract the attention of the general public as well as disseminating clear messages such as the need for the responsible use of energy, the sustainable construction and the use of renewable energy.

- Innovation in the Industrialization and Market Viability: of the houses, assessing the novelty of the proposals for industrialized houses, especially those that can be adapted to multifamily buildings. New attractive formulas that improve the perception of the users and industry towards these typologies of housing, thus favoring their future commercialization. New ways of business, promotion and commercialization of the product.

23.6. Scoring

A total of 80 points will be awarded by the corresponding jury for this contest.

Rule 24 Contest 10: Sustainability

24.1.Objective

To evaluate the skillful and the environmental sensibility of the teams (house design, techniques, systems and components) to attain the maximum reduction of negative environmental impact, during the house components manufacturing, the construction phase, the building's live and demolition.

24.2. It will be assessed on

The deliverables relative to the project, in particular in the Sustainability Report included in the Project Manual, as well as the assembly and functioning of the house in the Villa Solar.

24.3. How it will be evaluated

A multidisciplinary jury of professionals specialized in the different areas of this contest.

24.4. Concepts to be evaluated

Jury scoring:

- Sustainability in Architecture.
- Sustainability in Engineering and Construction.
- Sustainability in Energy Efficiency.
- Communication and Social Awareness in Sustainability.
- Sustainability in the Industrialization and Market Viability proposal.

24.5. Evaluation criteria

Jury scoring:

- Sustainability in Architecture: To evaluate the passive strategies (to reduce energy consumption and resources of the proposed solutions: bioclimatic principles, eco-efficiency), the optimization of natural lighting (making optimal use of daylight), the materials selection (emphasizing its ecological aspects and its possibilities for being reused and/or recycled) and the adaptability of the spaces provided.

- Sustainability in Engineering and Construction: To evaluate the Life-Cycle, the water consumption and the residue generation of the construction process, from the materials manufacturing (including energy) to the final set up (selective demolition plan, reusability). The structure flexibility and possibilities for being reused, adapting to future technological changes will also be evaluated, as well as the adequacy of the systems selected according to the house's needs.

- Sustainability in Energy Efficiency: To evaluate the means considered to reduce energy demands, the degree of local self-supply and adjustment strategies of the temporary correlation generation-consumption. To evaluate the active strategies and systems which improve hydrothermal efficiency, artificial lighting efficiency, acoustic performance and air quality, minimizing the associated energy consumption to the proposed solution. The high efficiency equipments (heating, cooling and ventilation, among others) maintenance will also be evaluated. To evaluate the high efficiency of the electric appliances selected for each house.
- Communication and Social Awareness related to sustainability: To evaluate the capacity to transmit the key concept of sustainable construction (resources saving, renewable energy, etc.), as well as the influence on general public custom behavior towards a more sustainable model of life. The effort in making the house's consumption information available to all visitors through different means and /or devices will be positively evaluated.
- Sustainability in the Industrialization and Market Viability proposal. To evaluate the factors that directly influence the sustainability of the industrialization of houses e.g. the degree of flexibility of use, maintenance requirements, optimization of assembly and disassembly. The economic viability of industrialization will be evaluated, taking into consideration, the different possibilities of the model and system extension for one with major density and improved sustainability conditions.

24.6. Scoring

A total of 100 points will be awarded by the corresponding jury for this contest.

SECTION 3.0: DELIVERABLES

Rule 25 *Preliminary Schedule of Deliverables*

Deliverable #1	**Schematic Design Documentation**	
Electronic File	Press Release #1	2 Mar 2011
Electronic File	Project Manual #1	
Electronic File	Project Drawings #1	
URL	Preliminary Web page	
Deliverable #2	**Dissemination Materials**	
Electronic File	Press Release #2	13 Apr 2011
Model	Architectural Model	
CD/DVD	Audiovisual #1	
URL	Web page	
Deliverable #3	**Design Development Documentation**	
Electronic File	Press Release #3	14 Sep 2011
Electronic File	Project Manual #3	
Electronic File	Project Drawings #3	
Electronic File	Workshop Documentation	
Deliverable #4	**Construction Documentation**	
Electronic File	Press Release #4	8 Feb 2012
Electronic File	Project Manual #4	
Electronic File	Project Drawings #4	
Deliverable #5	**Updated Construction Documentation**	
Electronic File	Press Release #5	23 May 2012
Electronic File	Project Manual #5	
Electronic File	Project Drawings #5	
Electronic File	Simulation Input Report #1	
Hard Copies	Design Approval Documents	
Deliverable #6	**Design Adjustments Documentation**	
Electronic File	Press Release #6	14 Aug 2012
Electronic File	Project Manual #6	
Electronic File	Project Drawings #6	
Electronic File	Villa Solar Documentation	
CD/DVD	Audiovisual #2	
Hard Copies	Design Approval Documents	

Deliverable #7	As Built Documentation	
Electronic File	Press Release #7	15 Nov 2012
Electronic File	Project Manual #7	
Electronic File	Project Drawings #7	
Electronic File	SDE 2012 Official Dissemination Materials	
Electronic File	Simulation Input Report #2	

Rule 26 Deliverable Submission Instructions

Each team should follow the defined schedule in sending the deliverables in the stipulated format, specific due dates and following the guidelines of the SDE organization. As the official language of the SDE 2012 Competition is English, **all the deliverables must be in English.** Only the Constructions Specifications, to be included in the Project Manual, may be in another language different to English, in case not available in the SDE 2012 Official Language.

Deliverables are considered to be on-time if they are received by the SDE Organization by 5 p.m. in Madrid (Standard Time = GMT+1, Summer Time = GMT+2) on the respective due date. In the SDE 2012 Competition, there are two different ways for submitting the deliverables: shipped or electronic; depending on the materials or documentation required.

Teams not sending the deliverables on time, or not fulfilling with all the content requirements, will be subject of penalties.Please refer to Rule 2.8 for further details.

All the deliverables submitted are property of the SDE 2012 Organization.

26.1. Shipped Submission

The hard copies documents, along with the model and the audiovisuals are the only deliverable materials required to be sent to the following address:

Sergio Vega Sanchez
Solar Decathlon Europe
E.T.S de Arquitectura, Universidad Politécnica de Madrid
Avenida Juan de Herrera 4, 28040, Madrid, Spain

Please do not submit physical copy of any other deliverable.

26.2. Electronic Submission

All electronic files shall be uploaded to the SDE 2012 ftp. Teams wishing to reduce file upload times may archive electronic files in ZIP files. Please verify that files in ZIP archives can be extracted using WinZip. For further details please refer to the SDE WAT.

Computer Generated File Requirements

Any and all electronic files generated from a computer (drawings, specifications, renderings, etc.) shall be submitted as a PDF meeting the following criteria:

I. Embed all fonts.
II. Maintain a minimum resolution of 300 dpi.
III. The different sections shall be indicated with bookmarks

a. Whenever possible, utilize the “Save As” or “Export” to PDF functions within a CAD, 3-D rendering, or illustration application to produce a PDF.
   i. Utilizing the native application’s PDF functions usually produces a smaller, cleaner PDF with fonts defined and illustrations and drawings retained as vector objects.

ii. Available options for PDF creation vary between applications — be sure to always select the option to embed all fonts and keep image compression at a minimum of 300 dpi.
iii. If there are color options, choose no conversion if available. If not, select RGB conversion as that will typically yield a smaller file than CMYK.

b. If an application does not support a direct-to-PDF function, create a postscript file by printing to a postscript printer with the "print to file" option selected. Use this postscript (.ps or .prn) file to create a PDF using Acrobat Distiller's high-resolution job settings.
   i. Creating a PDF from scans, or by outputting the drawings into a raster image format (.jpg, .tiff, .png, .gif, etc.) and then creating a PDF from the images, is NOT ACCEPTABLE.
   ii. All-raster PDFs are large files at 300dpi, are of unacceptable quality at lower resolutions, and are not scalable without degradation.
c. For logos, submit the PDF file AND a text file containing the following additional information:
   i. Name, phone number, and e-mail of person submitting the logo PDF.
   ii. A list of all PMS or CMYK numbers used in the logo PDF.
   iii. A PNG version, with same size and resolution of the PDF logo.

Multimedia File Requirements

Teams may submit photographs, graphics or videos in each deliverable, to complete the information submitted or give further details.

a. Photographs shall be submitted in the native format of the camera, such as JPEG or RAW, if available.
b. Every file conversion or image resampling from the original results in image degradation, so keep conversions to a minimum.
c. Color photos must be in RGB, 8-bit color.
d. For multimedia files to be properly credited, the following information shall be included in each file's metadata or in a text file accompanying the files:
   I. Name, phone number, and e-mail of person submitting the file
   II. Multimedia file editor's name and affiliation.
   III. For photographs, please indicate date and location

File Naming Instructions

The required file-naming convention for all electronic files follows:

[TEAM ABBREVIATION]_[DELIVERABLE ABBREVIATION]_[SUBMISSION DATE (YYYY-MM-DD)].[EXTENSION]

Example #1: A set of Updated Constructive Development Project Drawings submitted by Universidad Politécnica de Madrid (UPM) to the organizers for follow-up review on April 5, 2009, would have the following file name:

UPM_PD#4_2009-04-05.pdf

Example #2: A set of three multimedia files submitted by Universidad Politécnica de Madrid (UPM) to the organizers on June 3, 2008, would have the following file names:

UPM_MF_1_2008-06-03.pdf
UPM_MF_2_2008-06-03.pdf
UPM_MF_3_2008-06-03.pdf

List of Team Abbreviations

Team Name	Abbreviations
American University in Cairo	AUC
Aquitaine Bordeaux Campus	ABC
Odooproject	BME
Chiba University	CUJ
TU Delft ReVolt House	TUD
Rhône-Alpes	TRA
HelioMet	ASD
Team Norge	NTNU
RWTH Aachen University	RWTH
Andalucia Team	AND
Team Brasil	BRA
PRISPA	BUC
Med in Italy	ROME
Team DTU	DTU
Tongji Team	TJU
(e)co Team	UPC
EHU Team	EHU
CEU Team Valencia	CEU
cem+nem-	FAUP
ECOLAR	HTWG

List of Deliverable Abbreviations

Deliverable Number	Electronic Documentation Name	Abbreviations
Deliverable #1	Press Release #1	PR#1
	Project Manual #1	PM#1
	Project Drawings #1	PD#1
Deliverable #2	Press Release #2	PR#2
	Audiovisual #1	AV#1
Deliverable #3	Press Release #3	PR#3
	Project Manual #3	PM#3
	Project Drawings #3	PD#3
	Workshop Documentation	WD
Deliverable #4	Press Release #4	PR#4
	Project Manual #4	PM#4
	Project Drawings #4	PD#4
Deliverable #5	Press Release #5	PR#5
	Project Manual #5	PM#5
	Project Drawings #5	PD#5
	Simulation Input Report #1	SIR#1

Deliverable #6	Press Release #6	PR#6
	Project Manual #6	PM#6
	Project Drawings #6	PD#6
	Villa Solar Documentation	VSOL
	Audiovisual #2	AV#2
Deliverable #7	Press Release #7	PR#7
	Project Manual #7	PM#7
	Project Drawings #7	PD#7
	SDE 2012 Official Dissemination Materials	ODM
	Simulation Input Report #2	SIR#2
Any Deliverable	Multimedia files	MUL

26.3.Documents Formatting Requirements

Project Drawings and Hard Copies Drawings

- ☐ ISO "A3" (297 mm X 420 mm) sheet size
- ☐ Packaged into a single PDF file (see Rule 26.2)
- ☐ Consistent with the Project Drawings Template (see Rule 30.2)

Project Manual and Hard Copies Manual

- ☐ ISO "A4" (210 mm X 297 mm) sheet size
- ☐ Packaged into a single PDF file (see Rule 26.2)
- ☐ Consistent with the Project Manual Template (see Rule 30.3)

Press Release

- ☐ ISO "A4" (210 mm X 297 mm) sheet size
- ☐ Packaged into a single PDF file (see Rule 26.2)

26.4.Revision and Evaluation Criteria

The deliverables will be reviewed by the SDE Organization during the previous phases of the Competition in order to verify the Rules compliance. Moreover the organizers are to help the teams to understand the rules and comply with them.

Specific juries of each contest will evaluate the delivered documentation by the teams following their criteria, guidelines and basic parameters previously established in the SDE Rules.

Rule 27 Deliverable Phases

27.1. Schematic Design Documentation

Deliverable #1 primary objective is to verify the work that the teams are generating among the various fields to develop in the project. It is also designed to identify, as soon as possible, any aspect or design which does not fit or match with the sense of the Competition.

In the Schematic Design Documents the project must be defined as a functional machine, demonstrating the advances, targets and goals of their original proposal, in compliance with the Solar Decathlon Building Code and the Solar Decathlon Europe Rules, or at least the intend of accomplishment. Therefore, it is not mandatory to include for this deliverable, all the sections included neither in the Project Manual nor in the Project Drawings.

Note: The proposals sent with this deliverable can be subject of complete revisions by the teams in following deliverables.

27.2. Dissemination Materials

The second deliverable of the SDE 2012 Competition is intended to compile materials from every participant team, in order to start organizing different events and activities, to contribute to the SDE goal of Disseminating Knowledge and Project Diffusion. Dissemination Materials will be verified as to comply with the SDE Rules.

The materials submitted by the participant teams in this deliverable will be used by the SDE Organization for the different dissemination activities planned.

27.3. Design Development Documentation

At this stage of the Competition, projects will have to include an extensive description of the Project details and specifications, of the materials, constructive systems, equipment, footing, structural and trades report, and details drawing. Teams will have to consider all the remarks made by the SDE Organization in the previous Deliverable, and design and plan accordingly.

This deliverable will be used to prepare the sessions that are going to be held during the Workshop in Madrid. Therefore, teams are encouraged to submit more specific documentation, in order to receive much more detailed feedback, apart from submitting the Workshop Documentation specifically required.

27.4. Construction Documentation

Deliverable #4 aims to have all the necessary information to define the Construction of the Villa Solar, and to foresee all the elements required for that purpose.

The Construction Documentation the following important functions:

- The Construction Documents shall demonstrate compliance with the Solar Decathlon Europe Building Code and the Solar Decathlon Europe Rules so that the inspectors will be able to grant final on-site approval by simply verifying that the constructed project on the competition site was accurately represented by the Construction Documents.
- The Construction Documents shall clearly describe a team's proposed assembly and disassembly procedures. The Site Operations Manager will review the teams' procedures to identify and address potential conflicts among the teams. Each team is encouraged to consult the Site Operations Manager as the relevant sections of the Construction Documents are being developed.
- The Construction Documents shall provide a residential contractor with all the information needed to generate an accurate, detailed cost estimate and to efficiently construct the building as the design team intended it to be built. The Construction Documents must be comprehensive because the design team shall assume that the contractor has had no prior communication with the design team, has no prior knowledge of the design, and has little or no experience building high-performance residences.

27.5.Update Construction Documentation

The objective of Deliverable #5 is to obtain additional information and update the documentation sent in Deliverable #4 based on the requirements made by the SDE Organization, including changes and design adjustments from the last deliverable. **Deliverable #5 is the most important deliverable of the SDE Competition before the Final Phase of the SDE 2012 Competition.**

This deliverable is planned in order to organize the documentation being sent to the Juries, and to not have any teams' documentation mistaken. Since the juries have a very limited opportunity to evaluate the constructed projects on the competition site, the Construction Documents provide the only means for a team to give a detailed presentation of its project to the juries. In the weeks leading up to contest week, each juror shall evaluate sections of the teams' Construction Documents relevant to the juror's respective area of expertise.

27.6. Design Adjustments Documentation

As stated in rule 12.3 – Late design changes "The final project assembled on the competition site shall be consistent with the design and specifications presented in the construction documents".

The Design Adjustments Documentation Deliverable will be opened to the participant teams from the day after Deliverable #5 due date. Therefore, if there is any change in your project, after Deliverable #5 – Updated Construction Documentation, you must send it to the SDE Organization, as soon as possible.

The corresponding missing and/or revised information will be passed on to the building inspections group, who will verify that the constructed house corresponds to the house design, at the Competition Site, and will not penalize your team for any incongruity. However, there will be neither feedback nor revision done if teams do not request it specifically. Please **do not send the complete documentation again**, but just the part of it being changed, attaching to the documents a brief description of the changes that have taken place.

Deliverable #6 also includes the Villa Solar Documentation, with information required to prepare the Villa Solar Visiting Guide and the Jury Reports.

27.7.As Built Documentation

The objective of deliverable #7 is to have the "as-built" drawings and specifications of the participant houses, with an extensive description of the details and specifications of the materials, constructive systems, equipment, structure, plumbing, HVAC, etc.

Teams must record any changes of the Project Documentation during the fabrication, construction or assembly process and reflect them in the As-built Documents.

Deliverable #7 is the last Deliverable of the SDE Competition, and it will be issued after the Final Phase of the SDE 2012 Competition, so it will define the house as it was built in the Villa Solar, as well as the team's strategy during the Contest Week. This deliverable includes the Simulation Input Report, which is the document that compiles the houses' technical data that will be the base of the future Scientific Strategies Plan (SSP) database.

Rule 28 Shipped Deliverable Material

28.1. Hard Copies

- Electric Drawings and Calculations (see Rule 6.1)
- Structural Drawings and Calculations (See Rule 6.1)
- Certificate of Country of origin Code compliance (See Rule 6.1)

28.2. Architectural Model

Teams must submit an architectural model of their houses to the organization within Deliverable #2. The detail level will be chosen by the team, according to the model scale and to their competition strategy. The model will be metric scale 1:25, base dimensions of 80 cm x 80 cm. It is possible to include lighting in the model but the SDE Organization may not guarantee that it will be switched on in all the exhibitions.

The model must be built and packaged with appropriate materials, in order to withstand handling and transportation. Along with the model, a methacrylate display case, 5 mm thick must be included, following the indications given by the SDE2012 organization.

Models will be shown in fairs and events around the world during 2011 and 2012, representing and explaining the SDE2012 project.

To make transportation and exhibition assembly easier, and contribute to the exhibition homogeneity, models will be sent with the display case inside a plywood box, according to the design proposed by the SDE2012 Organization.

Teams may replace their model by shipping the new model to the address specified in Rule 26.1, only after having communicated that decision to the SDE Organization via the SDEWAT, and specified if they wish to have the old model back to their university (at the university's expenses) or being discarded by the SDE Organization in Madrid.

Project Description Poster.- Teams must submit a poster describing their project. This poster will be shown with the model in exhibitions, or independently in events, to disseminate the SDE 2012 Competition. The requirements for the model, display case and poster design and packaging will be specified through the SDE WAT.

The project description poster may be updated whenever the Team wishes to, after having communicated that decision to SDE Organization via the SDEWAT.

28.3.Audiovisual

Audiovisual #1.- Teams must produce an audiovisual presentation to show the goals of the teams, explain their projects, the technologies to be used and those sustainable concepts applied. These audiovisuals will be used for the SDE Competition dissemination.

Audiovisual #2.- Teams must produce an audiovisual presentation to show its final achievements, explain their houses, the technologies used and those sustainable concepts applied. These audiovisuals will be used during and after the Villa Solar to disseminate the SDE Competition.

Audiovisuals #1 and #2 may be replaced at any time after having communicated that decision to SDE Organization via the SDE WAT. The SDE Organizers will verify compliance with the SDE Rules and replace it as soon as possible.

Technical Requirements.-

- Maximum length: 5 minutes
- Language: English. Other spoken languages might be used in punctual interventions, but they must be subtitled or doubled in English.
- A written version of all spoken parts must be given to the organization in English. (Additionally teams may send the Spanish or any other language translation).
- Format: Full HD 1080p o 1080i(1920×1080 px).
- VIDEO:
    - Encoding: Mp4 compression H.264.
    - Frames per second: 25 ó 29.97 fps
    - Minimum Bitrate: 4000 (more is better)

- AUDIO:
  - Encoding: MP3 (MPEG-1 Audio Layer 3) or Ogg Vorbis
  - Frequency: 44.8 or 44.1 Khz.
  - Number of channels: 2 channels stereo
  - Minimum Bitrate: CBR or VBR 128kb/s
- Recognition of all team sponsors and supporting institutions must be limited to a maximum of 1 minute or 20% of the total time (whichever is less).

Rule 29 Team Web Page

29.1. Preliminary Web Page

A preliminary Web site URL to a site consisting of at least three pages shall be submitted with Deliverable #1. The sites should offer then, at least, basic information about the university or universities that support the team, as well as the webmaster, communications, and sponsorship manager contacts. Solar Decathlon Europe logo must be included and linked to the competition's webpage.

29.2. Web Site Page

The final URL for the team Web site shall consist of considerably greater content than the Preliminary Web site submitted, and must comply with the following requirements. The organization will continuously monitor the team's websites, asking for those chances necessary to comply with the competition's rules and proposing improvements on them.

The final Web site URL shall be evaluated by the Communications Jury during the competition.

1. Encoding
Teams' websites must comply with the W3C encoding guidelines, as well as the international accessibility standards WCAG 2.0 (http://www.w3.org/WAI/guid-tech.html). Websites have to pass the W3C test for HTML 4.01 Transitional or XHTML 1.0 Transitional (http://validator.w3.org/).
□ File names do not contain uppercase letters, spaces, or special characters (e.g., & or $).
□ Forms include text labels that correspond with form controls and markup to associate the two.
□ Equivalent alternatives are provided for all multimedia. Pages requiring an applet or plug-in must provide a link to a page where the applet or plug-in can be downloaded.
2. Compatibility
The website will be compatible with the following web browsers: Internet Explorer (version 6 onwards), Firefox, Safari y Ópera.
□ Pages must display correctly (e.g., no horizontal scrolling is necessary to view the full width of the page) in 1024 x 768 resolution (800 x 600 resolution is also acceptable).
□ The website will be accessible by mobile devices such as smart phones and tablets. If that would be not possible an alternative dedicated version must be developed, in a way that users are diverted automatically by an automatic device detection system.
□ That website will be compatible will the most popular mobile systems, including, at least, those made by Apple and RIM and devices based on Android and Symbian operating systems.
□ Other:
□ Scripts/applets/dynamic pages (CGI, JavaScript, Java, etc.): Every script works correctly in the standard browser set.
□ Content produced by scripting languages is accessible or has an accessible alternative.
□ Pages requiring applets or plug-ins must provide a link to an accessible page where they can be downloaded.
□ If a timed response is required, the user can request more time to complete an operation.
□ Back button functionality is not impaired.

3. Style:	
□	It must have an attractive design that invites navigation
□	With contents that will make it dynamic, combining images and/or videos/demos that accompany the text.
□	Page information conveyed with color is also available without color, and foreground and background colors provide sufficient contrast. Graphic style is consistent throughout the site.
□	Basic Elements of content:
□	The objective of the page and its identification with its creator must be clear from the beginning.
□	Brief description (with the possibility of extending it) of the key identification data: who, what, description, objectives, etc.
□	It is recommended that it be regularly updated.
4. Language	
The entire website's content must be available in English, and optionally, in any other language. It is recommended to publish a shortened version in the team's mother language and in Spanish.	
5. URL	
Teams must have their own internet domain, using either a geographical (.es, .fr etc) or a generic .com or .org one.	
6. Contact	
At a minimum, an e-mail contact to the Webmaster is provided as a graphical or text link on the home page of the site. Additionally the webpage will include a press and a sponsorship contact.	
7. Sponsors' Recognition	
Teams' websites will contain a specific section where supporting institutions and sponsors will be named or represented by their logos, linking to their web pages. We encourage teams to ask those institutions and business to put the combined version of SDE + team logo, with the " Team sponsor" or equivalent heading, in their homepages, linking to the website of the team which they are supporting.	
8. SDE Brand & Organization Recognition	
□	The SDE logo must appear in every section of the web, linking to the SDE Competition URL http://www.sdeurope.org, specifying "participant team". Moreover, the SDE Organizaer's logos (level 2) must appear in these situations foreseen by the SDE Corporate Identity Manual.
□	Teams' web page must include a section for the publication of all the Press Releases the SDE Organizations sends to the teams. In this same section, teams may include any complementary information they find appropriate (for example, news, blog).
9 Advertising	
Advertisements are forbidden in team's websites. Sponsor's logos may be freely placed but commercial messages are not allowed.	
10. Current Legislation Compliance	
Contents as images, files or codes employed in programming, have to be copyleft, athorized to teams or owned by them. If forms or any kind of user information storage is enabled, it must comply with team's or it server's country law.	

Rule 30 Electronic Deliverable Documents

30.1. Press Release

The SDE Organization will use the information provided by the teams in this document for the SDE2012 Competition dissemination. Therefore, this will be the part of every deliverable which will be made public, and shall, at least, include the following elements:

- List of team members.- Team Officers, students, teachers and other collaborators indicating their studies / speciality. Moreover, students shall specify the university course they are attending, and teachers and other collaborators shall mention their degree, research field and teaching areas, making special emphasize in those aspects which the team consider most relevant. Please keep this information updated within each deliverable and make sure to include all the Team Officers (please refer to Rule 3.2).

- Project description.- Teams must include an essay from 500 to 1500 words, explaining the progress made in the project, as well as updated information on the dissemination activities realized since the previous deliverable. The target public for these documents are international mass media journalist, so it is important to use a clear structure, and include complete, updated and easy to understand information. Among others, teams should focus on:
  - Team's organization and objectives
  - Project development and current state
  - House's description and relevant items (technologies, materials, etc).
  - Dissemination activities and current impact
- Collaborating institutions and sponsoring companies.- Short description of each of them, identifying their field of work and defining the collaboration established with the team. Please keep this information updated within each deliverable.
- Project images.- Within each deliverable, teams must provide new high quality images, for their publication in printed media and/or television. These images must show the progress of the project. Among others: sketches / drawings, render, working models, interesting devices in the project, pictures of parts of the house, of the daily work of the team and of the dissemination activities realized may be included. An updated group photo of all the team members must be included with each deliverable. These images must be included in the Press Release document and submitted also as independent multimedia files (complying with SDE Rule 26.2 requirements).

Teams must keep the requested information updated from one deliverable to the next. Additionally, teams may include any other material they wish the SDE Organization to use for the SDE 2012 Competition dissemination, which complements the aforementioned information. The Teams' Press Releases will be published through the SDEurope website.

30.2. Project Drawings Template

As stated in Rule 26.3, the Project Drawings must be consistent with the SDE Project Drawings formatting template and guidelines. In order to have the Drawings of the Deliverables organized and named, it involves the basic principles to follow. It is not necessary to include all the Drawings mentioned. In case there are particular drawings which do not fit in this Template, those must be located where appropriate (you may ask the SDE organization through the SDE WAT, if necessary). If you have drawings corresponding to two different sections, put it in the most general one and indicate its final location.

To name the drawings a code will be used. The code is as follows:

- 2-3 letters; The letters indicate the corresponding block – GE-General; AR-Architecture; IN-Interiors; etc.
- 3 numbers; The numbers rank each block into three different levels:
  - the first establishes the sub-blocks (plan, section, elevation, etc.),
  - the second number identifies the different items existing inside each sub-block (footing, first floor, second, etc.) and
  - the third digit lists the specific drawings inside each item.

E.g.: The drawing AR-104 – correspond to:

AR to the Architecural block
1 to the Elevation sub-block
0 to the Site item
4 to the specific drawings – Southern Elevation

Therefore as each team, depending on their project and its particular characteristics, may

need of more or less drawings inside concrete sections, the last number is left for the specific drawings each team considers. The SDE Project Drawings formatting template and guidelines are included in the following list.

1	GENERAL (GE)	
	GE-001	Cover sheet
	GE-101	Sheet List. (This is the "table of contents" or "index". It is not too useful in a bookmarked PDF, but it is essential in printed copies.
	GE-201	General Symbols. (Define symbols and list notes used throughout the entire drawing set.)
	GE-301	General Abbreviations. (List of abbreviations used throughout the entire drawing set).
	GE-401	Exterior Renderings.
2	ARCHITECTURAL (AR)	
	AR-001	Villa Solar Plan. (Site plan including the lot location inside the "Villa Solar").
	AR-011	Site Plan. (Showing Solar Envelope and Architectural Footprint compliance).
	AR-021	Floor Plan
	AR-031	Roof Plan
	AR-041	Reconfigurable features.- (Plan showing the exterior moveable components, the Solar Envelope and the Architectural Footprint).
	AR-051	Maximum & Minimum Measurable Area. (Show compliance with minimum & maximum measurable area).
	AR-101	Site Elevation. (Site elevations showing Solar Envelope and Architectural Footprint compliance).
	AR-111	Building Elevations
	Sections	
	AR-201	Longitudinal Sections
	AR-211	Transversal Sections
	AR-301	Window Schedule and Details (Included thermal transmittance)
	AR-311	Door Schedule and Details (Included thermal transmittance)
	AR-321	Floor Construction Details (Included thermal transmittance)
	AR-331	Roof Construction Details (Included thermal transmittance)
	AR-341	Wall Sections and Construction Details (Included thermal transmittance)
	AR-351	Partitions Details
3	BIOCLIMATIC ANALYSIS (BA)	
	BA-001	Bioclimatic drawings (passive design strategies)
4	INTERIORS (IN)	
	IN-001	Floor
	IN-101	Reflected ceiling
	IN-201	Elevations
	IN-301	Furnishings
	IN-401	Kitchen Plan (Furniture and Appliances)
	IN-411	Kitchen Elevations (Furniture, Appliances and Details)
	IN-501	Bathroom plan (Fixtures and Accessories)
	IN-511	Bathroom Elevations (Fixtures and Accessories)
	IN-601	Interior Renderings
5	STRUCTURAL (ST)	
	ST-001	Foundation Plan and Details
	ST-011	Structural Floor Plan(s)
	ST-021	Structural Roof Plan
	ST-101	Structural Longitudinal Sections
	ST-111	Structural Transversal Sections
	ST-201	Structural Blow ups
	ST-301	Structural Details
6	FIRE PROTECTION (FP)	
	FP-001	Fire Protection. (Detection, alarm, suppression and egress).
7	PLUMBING (PL)	
	PL-001	Plumbing Plan. Supply and removal (cold and hot water)
	PL-011	Grey Water
	PL-021	Drain / Waste / Vent
	PL-101	Schematic diagram
	PL-201	Supply and removal Isometric (cold and hot water)
	PL-211	Grey water Isometric
	PL-221	Drain/Waste/Vent Isometric
8	SOLAR WATER HEATING (SW)	
	SW-001	Plan
	SW-101	Isometric
9	MECHANICAL (ME)	
	ME-001	HVAC distribution Plan
	ME-011	HVAC equipment
	ME-021	Heating
	ME-031	Cooling

	ME-041	Ventilation	
	ME-101	Mechanical room elevations	
	ME-201	HVAC System Schematic drawings	
	ME-211	Heating mode Schematic drawings	
	ME-221	Cooling mode Schematic drawings	
	ME-231	Controls	
	ME-301	Isometric Distribution	
10	ELECTRICAL (EL) Note 1		Please refer to
	EL-001	Grid interconnection	
	EL-201	DC wiring diagram	
	EL-301	Power plan	
	EL-401	Lighting plan	
	EL-501	One-line Diagram	
	EL-601	AC Circuit layout	
11	PHOTOVOLTAIC SYSTEM (PV) Note 2		Please refer to
	PV-001	Photovoltaic system: general	
	PV-011	Photovoltaic system: DC circuits	
	PV-021	Photovoltaic system: AC circuits	
	PV-031	Photovoltaic system: grounding system	
12	TELECOMMUNICATIONS AND BUILDING AUTOMATIZATION SYSTEM (BAS)		
	BAS-001	Wiring plan	
	BAS-101	Schematic diagram	
	BAS-201	Equipment	
13	SDE INSTRUMENTATION DRAWINGS (ID) Note 3		Please refer to
	ID-001	Site plan	
	ID-101	Floor Plan	
14	SITE OPERATION (SO) Note 4		Please refer to
	SO-001	Outside Logistic. Villa Solar	
	SO-101	Inside Logistic. Approximation	
	SO-201	Load / Unload	
	SO-301	Assembly / Disassembly	
15	HEALTH AND SAFETY (HS)) Note 5		Please refer to
	HS-001	Health and Safety in the lot and surroundings	
	HS-101	Health and Safety during the Outside Logistic	
	HS-201	Health and Safety during the Inside Logistic	
	HS-301	Health and Safety during load / unload.	
	HS-401	Health and Safety during assembly / disassembly.	
16	PUBLIC TOUR (PT)	Note 6	Please refer to
	PT-001	Site accessibility	
	PT-101	House tour floor plan	
	PT-201	House Tour General Information	

Notes:

1. The ELECTRICAL (EL) drawings must include electrical layouts, a detailed electrical components information and complete electrical diagrams of the conventional electrical installation showing all elements and protections (including those of the interface between the Photovoltaic system and the electricity distribution network).

   The PHOTOVOLTAIC SYSTEM (PV) drawings must include electrical diagrams describing all components (equipments), wiring and protections. The general diagram of the photovoltaic system (PV-001) shall include the interface with the electrical installation of the house and the electrical distribution network. Drawings reference numbers indicated show the minimum drawings required for approval. Additional drawings can be included, provided that they are placed on the corresponding sub-section, for example: for details of DC circuits, new drawings with reference numbers PV-012, PV-013,… up to PV-019 can be added; the same applies to details of the PV system as a whole (new drawings: PV-002 to PV-009), AC circuits (PV-022 to PV-029) and Grounding system (PV-031 to PV-039).
2. The INSTRUMENTATION DRAWINGS (ID) must show de location of all the sensors, meters and dataloggers of the SDE Monitoring System and indicate the wires routes and the feed-throughs to pass the instrumentation wires from the interior to the exterior of the house. Also must include the location of the house appliances and electronic devices (clothes washer, clothes dryer, dishwasher, TV, computer, DVD, refrigerator, freezer, oven and house workstation) as well as technical room or closet, and the electrical panel.

3. The SITE OPERATIONS (SO) shall describe graphically or textually the following aspects (see Rule 45):
   - Outside logistic. Villa Solar: Brief description of the Villa Solar using the drawings that will be given to the contestants, the intrinsic conditions of the villa and the way to solve them will be identified.
   - Inside logistic. Approximation: detailed process of approximation of transport vehicles, up to their arrival at the lot. Indicating: Type and number of vehicles, order of entry, dimensions and load per axle of each vehicle, turn ratios, characteristics and dimensions of the load to be transported (with the weight of all the elements), way to proceed with the unloading, etc.

- Load/ Unload: Execution plan of loading and unloading operations. The lot, accesses, loading and unloading area, elements and materials stock area and footprint of the house in its final position will be signposted graphically.
- Assembly/ disassembly: Plan for the assembly and disassembly. It will include graphics with the assembly and disassembly phases, work units, persons that will take part, necessary machinery, auxiliary resources, necessary timing, etc.

4. HEALTH AND SAFETY (HS) Please refer to Rule 52.2.2.

5. PUBLIC TOUR (PT) Illustrate the tour in detail, marking objects, furniture, obstacles during the tour and how will they be solved (dimensions, distances, ramps percentage, turning circle, heights). If there are any movable elements which are going to be shown to the visitors, include a sketch of the moving mechanisms and measures adopted to assure the safety of the visitors.

30.3. Project Manual Template

As stated in Rule 26.3, the Project Manual must be consistent with the SDE Project Manual formatting template and guidelines. In order to have the Project Manual of the Deliverables organized and named, it involves the basic principles to follow. It is not necessary to include all the sections mentioned. In case there are particular sections which do not fit in this Template, those must be located where appropriate (you may ask the SDE organization through the SDE WAT, if necessary). If you have information corresponding to two different sections, put it in the most general one and made the appropriate reference of its location wherever corresponds.

The SDE Project Manual formatting template and guidelines are included in the following list.

1. COVER SHEET.-
2. SUMMARY OF CHANGES.- See Rule 31
3. TABLE OF CONTENTS.- See Rule 32
4. RULES AND BUILDING CODE COMPLIANCE CHECKLIST.- See Rule 33
5. CONTEST SUPPORT DOCUMENTS.- See Rule 34
    1. Architecture Design Narrative.- See Rule 35
    2. Engineering and Construction Design Narrative.- See Rule 36
    3. Energy Efficiency Design Narrative.- See Rule 37
    4. Communications Plan - See Rule 38
    5. Industrialization and Market Viability Report - See Rule 39
    6. Innovation Report - See Rule 40
    7. Sustainability Report - See Rule 41
6. DINNER PARTY MENU - See Rule 42
7. CONTEST WEEK TASKS' PLANNING- See Rule 43
8. COST ESTIMATE AND PROJECT FINANCIAL SUMMARY- See Rule 44.
9. SITE OPERATIONS Report - See Rule 45
10. HEALTH & SAFETY PLAN - See Rule 46
11. DETAILED WATER BUDGET - See Rule 47
12. ELECTRIC AND PHOTOVOLTAIC CHART - See Rule 48
13. CONSTRUCTION SPECIFICATIONS - See Rule 49
14. STRUCTURAL CALCULATIONS - See Rule 50

30.4. Workshop Documentation

Public SDE 2012 Workshop Dissemination Brochure: Teams must submit the following information which will be used for the SDE 2012 Workshop Dissemination Brochure:

- Text: Include the name of the house, of the team, and of the university. Also a brief description of the project, of approximately 200 words, explaining its main goals and innovative elements. This text will be published in English and translated into Spanish. (Therefore, additionally teams may send the Spanish translation).
- Images: three photographs for the public dissemination of the project:
    - House's render: 1 high quality render (minimum 300ppp .jpg) or vector (.eps or .pdf).
    - House's Plan, vertical and cross sections: 1 clean vector file of the vertical section,

plan and cross section, scaled 1/500 - 1/1000 (.eps or .pdf).
- Other relevant image: 1 high quality picture of the project (.jpg minimum 300ppp, or vector .eps or .pdf).

Teams description poster: Teams must submit a poster describing their team's organization. This poster will be shown with the model in exhibitions, or independently in events, to disseminate the SDE 2012 Competition. The requirements for the poster design will be specified through the SDE WAT.
The teams' description poster may be updated whenever the Team wishes to, after having communicated that decision to SDE Organization via the SDEWAT.

30.5.Villa Solar Documentation

The Villa Solar Documentation will include two different types of documentation:

Information to prepare the Villa Solar Visiting Guide:
Details to be determined.

Jury Reports:
Teams must submit a **brief report or summary** for each one of the six Juried contests. These briefings intend to make juror's revision easier by giving them a short summary per participating team. Therefore, before the event begins, these reports will be given to the members of the juries associated with each of the contest activities. The jurors and judges use the reports and the documents submitted by the teams to preview what they would be evaluating at the event. The following reports must be submitted:

- Architectural Brief Report
- Engineering and Construction Brief Report
- Energy Efficiency Brief Report
- Communication and Social Awareness Brief Report
- Industrialization and Market Viability Brief Report
- Sustainability Brief Report

Apart from the relevant information, all of them must include a detailed description of all the innovative aspects considered in order to evaluate them for the Innovation Contest,
These reports give the teams the opportunity **to emphasize the most important aspects of their proposal regarding the corresponding contests**. Moreover, the following requirements must been met:

- The length, including all text, figures, tables or equations, may be no more than 4 pages (A4 sheets or 8.5 in. x 11 in) per Juried contest.
- The body text and captions must be in 11 pt. (or larger) font size.

30.6.Simulation Input Report

One of the main objectives of Solar Decathlon Europe competition is to generate knowledge about the industrialization and sustainability conditions of housing and to provide the best conditions to promote scientific advances and to disseminate the knowledge acquired. The main tool used to achieve this goal is the Scientific Strategies Plan (SSP). This plan is intended to compile, document and manage the technical information produced in the process of creating the houses' projects.

After the SDE 2012 competition, all the documentation generated in the Scientific Strategies Plan will be shared with Universities, Schools and Institutions with the aim of laying the foundations of future researches and publications in the field of sustainable building construction.

The SSP consists on the Simulation Input Report (SIR), plans and reports submitted by the teams that take part in the competition. The Simulation Input Report is the document that compiles the houses' technical data that will be the base of the future SSP database. It contains two main documents: technical files in excel format and files.

SDE Organization would like to make decathletes aware of the importance of this document and, consequently, invites you to be rigorous and to fill it in completely.

30.7.SDE 2012 Official Dissemination Materials

The SDE 2012 Official Dissemination Materials will be used for the SDE Official Book, among other publications in magazines, brochures, webs, etc.
Details to be determined.

Rule 31 Summary of changes

Changes and additions to the Project Drawings and Project Manual listed here will be reviewed. Anything not listed here is assumed to be unchanged from the previous version of the Project Drawings and Project Manual.
As always, an important question to ask before submitting is, "Will the information be easy for the reviewers and jurors to find?"

Rule 32 Table of contents

Most users of the document will be reviewing it electronically and will navigate using the PDF bookmarks and hyperlinks. For the benefit of the reviewers and jurors, Teams must use the basic bookmarking structure and section titles supplied by the SDE Organization.
Remember that some users will print the document, so make sure that the printed version is also easy to navigate, i.e., clearly numbered sections and/or pages are essential. Also remember to design the margins appropriately. For example, the SDE2012 Rules PDF document is intended for electronic and printed viewing, so we included PDF bookmarks and hyperlinks, as well as margins and end-of-section blank pages designed for double-sided, spiral-bound, portrait printing. A similar approach is recommended for the Project Manual. It might be a good idea to do a "test print" of some or all of the document to make sure everything prints successfully and looks OK in a 3-ring binder.

Rule 33 SDE Rules Checklist

SDE Rules Checklist is intended to make revisions easier. Participant teams must fill in each of the aspects required, specifying the drawing or section where included.

	Rule Description		Content Requirement(s)	Drawing(s)/ Report(s)
□	3.2	Team Officers and Contact Information	Team officer's contact information completely fulfilled in Table 1 (SDE WAT)	
□	4.3	Lot Conditions	Drawing(s) showing the storage and unloading areas and corresponding load's calculations	
□	4.3	Lot Conditions	Calculations showing the structural design remains compliant even if there is a level difference, and drawing(s) showing shimming methods and materials to be used in case.	
□	4.4	Footings	Drawing(s) showing the locations and depths of all ground penetrations on the competition site	
□	4.4	Footings	Drawing(s) showing the location, contact area and soil-bearing pressure of every component resting directly on the ground	
□	4.5	Construction Equipment	Drawing(s) showing the assembly and disassembly sequences and the movement of heavy machinery on the competition site and specifications for heavy machinery	
□	4.7	Generators	Generators' specifications	

□	4.8	Spill and Waste Products	Drawing(s) showing the locations of all equipment, tanks and pipes containing fluids during the event and corresponding specifications
□	5.1	Solar Envelope Dimensions	Drawing(s) showing the location of all house and site components relative to the solar envelope
□	6.1	Structural Design Approval	Structural drawings and calculations signed and stamped by a qualified licensed professional
□	6.1	Electrical and Photovoltaic Design Approval	Electrical and Photovoltaic drawings and calculations signed and stamped by a qualified licensed professional
□	6.1	Codes Design Compliance	List of the country of origin codes complied, properly signed by the faculty advisor.
□	6.2	Maximum Architectural Footprint	Drawing(s) showing all information needed by the Rules Officials to digitally measure the architectural footprint
□	6.2	Maximum Architectural Footprint	Drawing(s) showing all the reconfigurable features that may increase the footprint if operated during contest week
□	6.3	Minimum & Maximum Measurable Area	Drawing(s) showing the Minimum & Maximum Measurable Area.
□	6.4	Entrance and Exit Routes	Drawing(s) showing the accessible public tour route, specifying the entrance and exit from the house to the main street of the Villa Solar
□	7.3	PV Technology Limitations	Specifications and contractor price quote for photovoltaic components
□	7.4	Batteries	Drawing(s) showing the location(s) and quantity of stand-alone, PV-powered devices and corresponding specifications
□	7.4	Batteries	Drawing(s) showing the location(s) and quantity of hard-wired battery banks components and corresponding specifications
□	7.6	Thermal Energy Storage	Drawing(s) showing the location of thermal energy storage components and corresponding specifications
□	7.7	Desiccant Systems	Drawing(s) describing the operation of the desiccant system and corresponding specifications
□	7.8	Humidification systems	Specifications for humidification systems and corresponding certifications of the different elements.
□	8.1	Containers locations	Drawing(s) showing the location of all the water tanks
□	8.2	Water Delivery	Drawing(s) showing the fill location(s), quantity of water requested at each fill location, tank dimensions, diameter of opening(s) and clearance above the tank(s).
□	8.3	Water Removal	Drawing(s) showing the quantity of water to be removed from each fill location, tank dimensions, diameter of opening(s) and clearance above the tank(s).
□	8.5	Grey water reuse	Specifications for grey water reuse systems.
□	8.6	Rainwater Collection	Drawing(s) showing the layout and operation of rainwater collection systems
□	8.8	Thermal Mass	Drawing(s) showing the locations of water-based thermal mass systems and corresponding specifications
□	8.9	Grey Water Heat Recovery	Specifications for grey water heat recovery systems.
□	9.1	Placement	Drawing(s) showing the location of all vegetation and, if applicable, the movement of vegetation designed as part of an integrated mobile system
□	9.2	Watering Restrictions	Drawings showing the layout and operation of greywater irrigation systems
□	10.2	SDE Sensors' Location and wire routing	Drawing(s) showing the location of bi-directional meters, metering box, sensors, cables and feed-through to pass the instrumentation wires from the interior to the exterior of the house.

□	11.2	Use of the Solar Decathlon Europe Logo	Drawing(s) showing the dimensions, materials, artwork, and content of all communications materials, including signage
□	11.3	Teams' sponsors & Supporting Institutions	Drawing(s) showing the dimensions, materials, artwork, and content of all communications materials, including signage
□	11.4	Team Uniforms	Drawing(s) showing the artwork, content and design of the team uniform
□	12.4	Public Tour	Drawing(s) showing the public tour route, indicating the dimensions of any difficult point, complying with the accessibility requirements.
□	20.0	Contest 6: Drying Method	Drawing(s) showing the drying Method. (ie the place where the clothes wire will be located)
□	20.0	Contest 6: House Functioning	Drawing(s) showing the location of all the appliances and corresponding technical specifications.
□	36.5	Photovoltaic systems design	Specifications of PV generators, inverters, wiring, cables, protections, earthing systems, interface with the electricity distribution network.
□	36.5	Photovoltaic systems design	Inverters' certificates
□	36.5	Photovoltaic systems design	Maintenance plan for PV generators, supporting structure, inverters, wiring, cables, protections and earthing system
□	36.5	Photovoltaic systems design	The corresponding table "design summary" must be filled out
□	51.3	Fire Safety	Specifications for Fire Reaction of Constructive elements, extinguishers and fire resistance of the house's structure.
□	51.3	Fire Safety	Drawings showing compliance with the evacuation of occupants' requirements and fire extinguishers location.
□	51.4	Safety against falls	Specifications of compliance with the slipperiness degree classes of floors included in House tour
□	51.4	Safety against falls	Drawing(s) showing compliance with conditions for uneven flooring, floors with different level, Restricted Areas stairs, Public Areas Staircases,Restricted Areas Ramps and Public Areas Ramps
□	51.4	Safety for avoiding trapping and impact risk	Drawing(s) showing compliance with conditions for avoiding trapping and impact risk
□	51.4	Safety against the risk of inadequate lighting	Specifications for level of illumination of house tour areas light fittings
□	51.5	Accessibility	Interior and exterior plans showing the entire accessible tour route
□	51.6	Structural Safety	Specifications for the use of dead loads, live loads, safety factors and load combinations in the structural calculations
□	51.7	Electrical System	Specifications of the wiring, channels, panels and protections of the electrical installation
□	51.7	Electrical System	One-line electrical diagram and drawings showing the grounding, execution and paths

Rule 34 Contest Support Documents

The Contest Support Documents will be used to justify the Teams' strategies towards the 10 contests of the Competition, as well as describing the projects objectives in the different aspects considered in each of the Contests. The following rules describe the specific content required for each Contest Support document.

Rule 35 Architecture Design Narrative

35.1.Architectural Concepts

The architecture design narrative must include a complete description of the architectural concepts taken into consideration in the house design. Therefore, it is necessary to explain the process, from the primitive idea up to the final house design, its coherence, the space flexibility and definition, the systems' integration and the passive strategies used. In the same way, the house materials and construction shall be described, as well as all the concepts and architectural elements included. For further details, please refer to the criteria established in Contest 1 – Architecture.

35.2. Summary of reconfigurable features

This summary will be used before, during, and after jury tours to verify that the team complies with Rule 6.2. Be sure to include references to relevant drawings and/or specifications. If you are not sure whether something is considered a "reconfigurable feature", include it in this summary, just in case. The Competition Manager will review the summary and notify the team if any of the listed items are not considered "reconfigurable features".

35.3. Lighting Design Narrative

The lighting design narrative shall describe both the use of natural and artificial lighting, to fulfill the house light needs. The calculations of the lighting systems and the energy efficiency shall be included. The lighting quality for the space and comfort definition will be positively assessed, evaluating the night and day specific needs. The lighting use to highlight the house's architectural values will be also evaluated.

Rule 36 Engineering and Construction Design Narrative

The engineering design narrative shall include a description of the following aspects:

- Structural design
- Constructive design
- Systems design: plumbing, electrical and photovoltaic
- Electrical Production Simulation

36.1. Structural Design

Teams shall explain the structural design of the house, from the initial premises to its consequent project development, describing the materials used, its objectives and the main reasons for the final adopted solution. The calculations are to be included in the Structural Calculations section in the Project Manual.

36.2. Constructive Design

Teams shall explain the constructive design of the house, from the initial premises to its consequent project development, describing the materials used, its objectives and the main reasons for the final adopted solution, as well as explaining the acoustic performance of the adopted solutions (defined as follows):

Acoustic performance of the adopted solutions: Materials, characteristics, calculations, simulation (with reverberation time). The report contents are:

- Estimate indoor reverberation time: In order to complete the reverberation time estimation, you must include the most significant internal coating materials absorption coefficients and the calculations carried out. The reverberation time may be estimated theoretically or through acoustic simulation. The absorption coefficients and the reverberation time must be shown for the following frequencies: 125 Hz, 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, 4000 Hz.

The specifications and technical data of all the materials are to be included in the Construction Specifications section in the Project Manual.

36.3. Plumbing System Design

Teams shall submit a general description of the design criteria adopted for the plumbing system of their house. Moreover, a detailed description of the electrical systems of the house, shall be included, including detailed calculations of the needs. Teams must describe the water cycle of the house, explaining the recycling and/or reuse of rainwater, greywater, etc. Details shall be included of the accessibility of the installation for maintenance and repair tasks, the effectiveness of the insulation and the control systems.

36.4. Electrical System Design

Teams shall submit a general description of the design criteria adopted for the electrical system of their house. Moreover, a detailed description of the electrical systems of the house, shall be included, including detailed calculations of the needs and expected energy contribution by the installation. Details shall be included of the accessibility of the installation for maintenance and repair tasks, the effectiveness of the insulation and the control systems.

36.5. Photovoltaic Systems Design

A document about the solar Photovoltaic system must be written, containing at least the following aspects:

- General description of the Photovoltaic system and design criteria followed.
- Design and specifications of: Photovoltaic generator(s) (including characteristics of the Photovoltaic modules used), inverter(s), batteries (in case existing), cables and wiring methods, protection, earthing system, interface with the electricity distribution network.
- Maintenance plan, with specific recommendations for the different components: Photovoltaic modules/generator(s), supporting structure, inverter(s), cables and wiring methods, protections and earthing system, etc.
- Inverters certificates, which demonstrate compliance with the requirements stated for grid interconnection (Rule 51.7, Over/under voltage and frequency; Rule 7.4 for the battery bank inverter, if applicable).
- As a summary, the table entitled "Photovoltaic system design – Summary" (following table) must be filled in, including references to the relevant (sub) sections of the Contest Support Document "Engineering and Construction Design Narrative" where the specific information is to be located. The table provides a checklist of the most relevant aspects of the standard IEC 60364-7-712 (sections and sub-sections indicated in the first column). Teams are reminded of the importance of complying with this standard for safety reasons.

PHOTOVOLTAIC SYSTEM DESIGN – SUMMARY	
712.312	Types of distribution system
712.312.2	Types of earthing system
	Indicate the type selected, from the following options: - *None of the live conductors on the DC side is earthed.* - *One of the live conductors on the DC side is earthed, if there is at least simple separation between the DC side and the AC side.*
712.4	Protection for safety
712.41	Protection against electric shock
712.411	Protection against direct and indirect contact
	- *Measures adopted to guarantee protection against direct and indirect contact.*
712.413	Fault protection
	- *Measures adopted (and protective devices used) to guarantee fault protection on the DC and AC sides.*
712.433	Protection against overload on the DC side
	- *Measures adopted to guarantee protection against overload on the PV*

	modules and DC cables (PV string cables, PV array cables, PV DC main cable).
712.434	Protection against short-circuit currents
	- *Measures adopted to guarantee protection against short-circuit currents on the PV supply cable.*
712.444	Protection against electromagnetic interference in buildings
	- *Measures adopted to minimize voltages induced by lightning.*
712.5	Selection and erection of electrical equipment
712.511	Compliance with standards
	- *Compliance with standards of the PV modules and junction boxes used.*
712.512	Operational conditions and external influences
	- *Voltage compatibility between the PV strings/PV array/PV generator and inverter.* - *If blocking diodes are used, reverse voltage compatibility with the corresponding PV strings.*
712.513	Accessibility
	- *Location of electrical equipment (PV modules, junction boxes, inverter, protection devices, etc.) must guarantee proper operation and maintenance, according to good design & installation practices and manufacturers' indications.*
712.52	Wiring systems
712.522	Selection and erection in relation to external influences
	- *Selection criteria of DC cables (PV string cables, PV array cables and PV DC main cables) to minimize the risks of earth faults and short-circuits.* - *Selection criteria of wiring systems in order to withstand the expected external influences.*
712.53	Isolation, switching and control
712.536	Isolation and switching
	- *Means of isolating the PV inverter from the DC side and AC side.* - *Warning labels to be placed on all junction boxes*
712.54	Earthing arrangements, protective conductors and protective bonding conductors
	- *Location of protective equipotential bonding conductors, if applicable.*

36.6. Electrical Energy Balance Simulation

A detailed report about the electrical energy balance of the household will be prepared for typical generation and consumption conditions. It must include at least the following aspects:

- Introduction: Description of the methodology for the estimate of the electrical production and the environmental benefits.
- List of the electric loads (house-hold appliances, lights, etc) used in the household, including the main technical characteristics given by the manufacturer, and the estimated consumption for their use during the Contest Week. [Note: it is recommended to make experimental measurements with the idea of obtaining information as realistic as possible, aspect of interest for all of contest 4. See Rule 18.0.]
- Photovoltaic system description: brief summary explaining PV generator(s) (types of modules and wiring), inverter(s) and batteries (in case existing). Further detailed information (e.g. characteristics) to include in the Project Manual, Contest Support Documents, Engineering and Construction Narrative, Photovoltaic System Design
- Description of the tools used for the simulations. These could be commercial software or tools created by participating teams, in which case the algorithms used must be included.
- Results of the simulations:
    - The electrical energy balance analysis consists of an annual, monthly and contest week estimates of the electricity demand by the electric loads, the electricity

generated by the photovoltaic installation and the electricity extracted from the electricity grid (in case the solar generation is not enough). A critical analysis of the results must be included.

- An Energy Payback Time analysis (time needed for the PV installation to generate the energy used to construct all of its components, for typical solar radiation and temperature conditions of Madrid) as well as the CO_2 reduction associated to a standard year of use must be included. (More information is available in the website of the International Energy Agency – Photovoltaic Systems Programme - Task 10 – www.iea-pvps.org, report IEA-PVPS-T10-01:2006).

Simulations Requirements:

a. The simulations will be done in an hourly base.
b. For the electrical energy balance simulation of the PV installation, solar radiation and temperature data from a Typical Meteorological Year of Madrid will be used (file "MADRID-TMY.csv"). Teams may use other weather data files, provided that they indicate the reference.
c. For the electricity demand, the average consumption for the whole contest week will be considered as a constant consumption for the whole year. For the contest week simulation, the consumption profile of each day will be used.
d. Monthly and yearly results, as well as the results corresponding to the Contest week, will be presented, both in numeric and graphical forms.

Format Requirements

There are no restrictions on the simulation tools that can be used for this analysis, but all such tools should be clearly identified.

36.7.Solar Thermal Design

Teams must include detailed need estimations and expected contribution of the system, and information about the supporting structure, storage system, backup energy source, the accessibility of the installation for maintenance tasks, the effectiveness of the insulation and control systems. Moreover, the cost of the installation shall be clearly indicated.

36.8.Building Integrated Solar Active Systems

Building-Integrated Solar Active Systems (BIPV, BIT, BIPVT) are materials that are used to replace conventional building materials in parts of the building envelope such as the roof, skylights, or facades. They are increasingly being incorporated into the construction of new buildings as a principal or ancillary source of electrical power, although existing buildings may be retrofitted with these modules as well. The advantage of integrated solar active systems over more common non-integrated systems is that the initial cost can be offset by reducing the amount spent on building materials and labor that would normally be used to construct the part of the building that these modules replace.

Teams shall explain the house "Building Integrated Active Solar System" concept and selection criteria, how the active solar systems fulfill energetic and aesthetical functions, and the economic impact of the integration in the house's design, according to the following items:

- Aesthetical Integration: How the "Building Integrated Active Solar Systems" enhance the house's aesthetical values.
- Constructive Solution: Quality and consistency of the constructive details, and how adapted are the modules to the structure, to the modularity and to the other conventional materials of the house,
- Energy Balance positive impact: Impact of the integrated modules in the cooling and the heating loads, and how it may affect the energy balance of the house.

- Additional properties: Conformity of the systems performing architectural functions, like weather protection, thermal insulation, noise protection, modulation of daylight etc, always considering the functioning requirements of the systems.
- Maintenance: Specific conditions for operating, maintaining and repairing the systems.
- Cost of the installation: including its economic justification considering the savings for replacing conventional materials, electrical energy production and possible extra energy saving costs by the influence of the systems integration in the house general performance (architectural function).

Rule 37 Energy Efficiency Design Narrative

37.1.Technical Project Summary

From Deliverable #3 and onwards, Teams must submit the following information, as a summary of the House's technical characteristics:

1.	**Project Dimensions**	
	Gross area	(m^2)
	Gross Volume	(m^3)
	Surface area	(m^2)
	Net floor area	(m^2)
	Conditioned Volume	(m^3)
2.	**House envelope**	
	Insulation types and thickness	(m)
	Walls area and Thermal Transmittance	(m^2) (W/m^2.K)
	Floor area and Thermal Transmittance	(m^2) (W/m^2.K)
	Roof area and Thermal Transmittance	(m^2) (W/m^2.K)
	Glazing area, Thermal Transmittance & Glazing Solar gain	(m^2) (W/m^2.K) (SHGC)
3.	**HVAC Systems**	
	Heating system	(Type, capacity (Kw) and COP)
	Cooling system	(Type, capacity and (Kw) COP)
	Refrigerant	(Type)
	Heat Recovery Ventilation or Energy Recovery Ventilation	(Type, capacity and Efficiency)
4.	**Domestic Hot Water**	
	System	(Type, capacity)
	Solar thermal Collectors area	(m^2)
	Storage Tanks	(capacity)
5.	**Electrical Energy production**	
	PV Modules	(Type)
	PV panels area	(m^2)
	Installed PV power	(kWp)
	Estimated energy production	(kWh/year)
6.	**Energy consumption**	
	Estimated energy consumption	(kWh/year)
	Estimated electrical consumption per conditioned	(kWh/year per m^2)
	Energy Use Characterization	(% of total energy consumption)
	Heating	(%)
	Cooling	(%)
	Ventilation	(%)
	Domestic Hot Water	(%)
	Lighting	(%)
	Appliances and Devices	(%)
7.	**Energy Balance**	
	Estimated energy balance	(kWh/year)
	Estimated CO2 emissions	(Tn/year)
8.	**List of Singular and Innovative materials and systems**	

37.2.Appliances Report

From Deliverable #4 and onwards, teams must submit a list with detailed description of the appliances characteristics, provisions and specifications to be evaluated. Moreover, Teams shall send the to the SDE Organization the manual of all the appliances required for Contest 6: House Functioning development.

Note: Teams intending to use energy saving programs during the Final Phase of the SDE 2012 Competition must communicate it to the SDE Organization.

37.3. Comprehensive Energy Analysis and Discussion Report

From Deliverable #3 and onwards, Teams must submit the Comprehensive Energy Analysis and Discussion Report, consisting of two sections:

Section I – Projected Performance of Final House Design: Minimum requirements

1. Introduction
    a. Energy analysis objectives and methodology
    b. Climate Data and Weather Analysis
    c. Team Energy Strategy
2. House and Systems' Description
    a. Overall description of the project geometric, envelope, air-tightness and any singular element that could contribute to the house energy efficiency.
    b. Passive design strategies and Energy efficiency measures (EEM) analyzed (EEM is a design, operation or technology change for the purpose of reducing energy consumption)
3. House and HVAC Simulations (Annual and for the two completion weeks)
    a. Brief simulation descriptions, tools used (capabilities and limitations).
    b. House modeling assumptions, including internal gains, occupancy behavior patterns, ventilation and comfort temperature.
    c. Houses energy loads
4. Results and Discussions
    a. House energy performance on both, whole-house basis and system-by-system basis. Heat gains and losses by the building envelope.
    b. Predicted indoor temperatures in passive analysis
    c. HVAC systems selection criteria, description and simulations
    d. Predicted Heating and cooling loads and HVAC energy demand
5. Conclusions

Notes:

1. Monthly and yearly results will be presented in both, numeric and graphical form.
2. Team could include parametric of CFD studies realized for a house system or element optimization. Specific simulation related with an singular component of your house, experimental works or any other information that have help the team in the house energy performance optimization.

Section II – Influence of Energy Analysis on House Design and Competition Strategy:

The objective of this report is to summarize the schematic energy analysis supporting the development of the Team's original house design. During the period of time since the first analysis until the final deliverable of the construction project, it is likely that Teams have continued to use energy analysis tools and techniques to iteratively "fine-tune" the house design, to develop detailed system designs, and perhaps even to develop competition strategies. In this section, the teams must describe how the energy analysis was used to improve the house thermal performance and its energy efficiency since the previous deliverable. Discussion should highlight key features of the house design that were affected by energy analysis and simulation results:

1. Influence of the energy analysis in the house design (House design optimization)
2. Influence of the energy analysis in the HVAC systems (System optimization)

Rule 38 Communications Plan

38.1.Introduction

Communication is one of the main strategies in any activity done by teams, and is made up of five basic elements: source, message, media, receptor and response. So, the first thing to consider is the image we want to disseminate, the message, and how and whom we want to reach. As communication planning is a systematic process that cannot be left to improvisation or intuition, teams must develop a Communication Plan, identifying the message(s) to transmit, adapting it to the different target groups.

Some of the basic activities that have to be carried out are the following:

- Analyze the starting point situation.
- Establish our objectives, what do we want.
- Decide to whom is our communication for.
- Think about the idea to transmit.
- Fix the budget for communication actions.
- Set timing and resources in a plan
- Choose the means and the frequency to use them adequately
- Develop a media plan.
- Measure the impact.

Planning Process.- A plan is the result of an entire process, and it attends to the specific needs of each team. The Communications Plan is the document that articulates the communicative policy of a project and orients it towards materializing its vision of the future.

Carrying out the correct planning for the Communication implies an analytical and methodical process from which a rational choice of the objectives to be achieved can be deduced. It also means the selection of possible alternatives for action in order to be able to achieve them.

It is most likely that no two teams will have identical needs, which is why it is important to be able to count on the support and assessment of people trained in the subject (professionals or students with Communication skills) to design a communications plan which is adjusted to the needs, resources and objectives of each team.

These people could be:

- Students and Teachers of advertising, Journalism, Marketing or Public Relations
- Communications Department of the Faculty
- Consultants or Communications Agencies
- Students and Teachers of Graphic Design, Web sites.

Communications Plan Content.- The Communication Plan is the result of the above described process. Consisting of the following documents, it must be updated within each deliverable, explaining the project development and progress:

1. Communication Project.- Defines the message and establishes the target public and the specific approach to each of these groups, with calendar dates and planning, as well as budget for all these actions, filling in one single descriptive page for each action.
2. Public Tour Description.- Describes the communication strategy which will be used for showing the house to public in the Villa Solar.
3. Visual Identity Manual.-Defines the "personality" of the project, establishing the physical and visual identity of the project for media appearances.

4. Sponsorship Manual.- Includes the information and advantages offered to sponsors and those interested in joining the team's project.
5. Material for the Project Dissemination.- Teams shall send an Appendix to the Project Manual, including all the communication material generated up to the moment of the deliverable.

38.2. Communications Project

The Communication Project must be submitted in Deliverable #3 and onwards, explaining the team's intentions, plans and activities already realized to disseminate the project during its development. However, in Deliverable #6, teams must only describe what was really realized and its results.

The Communication Project must include the following aspects:

- Abstract.- Synopsis of the Plan: 1 – 2 pages
- Analysis of the Situation.- Includes the information necessary to understand and put in context the Plan, defining its strategy, stating the introduction, and broadly setting out the conclusions of the analysis, describing the most relevant factors. Teams may also include a SWOT plan (Strengths, Weaknesses, Opportunities and Threats).
- Definition of the Communications Objectives.- Includes the team's goals aimed to achieve with the Communication Plan. There could be a single objective which encompasses everything proposed by the Plan. However, it is much more common, to have a main objective supported by other specific objectives which cover other areas; media dissemination, finding sponsors, awareness.
- Identification of the Target Groups.- Identify the groups of people to whom the team's communication is addressed. It is clear that one of the target groups will be the communications media, although they are not the final target group. A correct and precise definition of each target group is essential when identifying messages and channels of communication appropriate to achieve our objective. At least teams must consider the SDE target groups: children, teenagers, young people, Professionals and General Public.

  Regarding the means of communication, in order to make the information distribution process easier, it will be helpful to draw up lists, identifying to whom we must address our project.
- Message/s establishment.- In general, our communication's strategy will revolve around an axismessage. However, when dealing with different target groups, it is also necessary to define the main message to transmit specifically to each of these groups.
- Actions' description.- Describe all the activities to be carried out during the project development. Teams are encouraged to include a timetable (where, at a simple glance you can schematically have a complete panorama of the work to be carried out), and a budget (including the cost of each action and each element used). For example: cost of brochures, insertions in the press, communications agency fees or similar, if it is used, merchandising costs, etc.

  For classifying the actions, teams may use the following structure:
  - Previous to the competition: addressed to three different scopes: university, city and country; and for the target groups identified. Nevertheless international activities may be included.
    - Team's participation in events organized by themselves, or by others.
    - Information on the project produced in any format, by the teams or by third parts, from an article in a newspaper up to a collaboration with an art creator.
  - During the competition:
    - Public tours
    - Leaflets/object to be given to the public

- Audiovisual #2, to be shown at the Villa Solar.

• Tracking Table of the Communication actions.- Teams must include a table defining all the following actions:

- Project appearances in national media (from the team's country of origin) and/or international media if identified.
- All the materials generated for the team's dissemination, either done on teams' or third parts' stands, different than media ones.
- Events organized or with confirmed celebration in the future.

Teams must include the latest version (including ALL the information, not only that added after the latest deliverable) of the tracking tables of the communication actions in each deliverable.

38.3. Public Tour Description

Teams must describe the route proposed for the Public Tours at the Villa Solar, from Deliverable #3 and onwards, indicating: access and exit of the lot (it must be located in the main road side); access and exit of the house; where the waiting lines will be formed and controlled; the house tour itself (a single route for all visitors).

For this end, teams must submit drawing/s showing the route and contouring: intersection paths' circle diameter, width of doors, corridors, crossings and narrowings, demonstrating compliance with the accessibility requirements stated in Rule 51.

A complete visit description is required, indicating the stops established along the visit and how will the house's highlights be explained (if different explanations are planned for the different target groups, please include a brief description of each). Moreover, teams must explain the types of visits' routes (if there is one decathlete going along with the visitors or if they are positioned in specific points), the time length, the languages available and the number of people per group.

Teams intending to realize life demonstrations of the house's mobile elements (in case existing), must include sketch/s showing the adopted measures in order to guarantee public safety. If teams plan any measure for sensorial or motor disabled, it must also be described.

Teams must plan entertainment for the public while waiting the line (indicate any type of activity planned and its organization).

In order to verify compliance with the rules, teams will have to submit, before the final phase of the competition, the design of the brochure (or) handout (or any other) object to be given out to the visitors. Please refer to Rule 12.4, item c, for further details. In the same way, any additional information sources must be described, indicating its format (such as posters or electronic means), location and content.

All this information may be explained either with drawing/s and/or on a written document.

38.4. Team Visual Identity Manual

The first thing to be taken into account is the "personality" of the team that wants to be reflected in the teams' image of the brand. Once it is defined, it is important to consider the following aspects at the time of developing the brand (branding):

- Simplicity
- Practical – that it can be used in any kind of media
- Consistent – in all of the elements that are used
- Unique - that it does not resemble any other brand
- Memorable – that it is easy to remember and identify
- Reflexive – that it reflects the objectives and values set out
- Connective – that it connects with the public to whom it is directed

The way a company is perceived is through its corporate image. The corporate image might consist of one or more elements, which together or independently, achieve the same function, accentuate the graph and the soundness of the company's identity, as well as determining its characteristics and values.

Teams must submit to the SDE Organization in Deliverable #3 and onwards, a pdf version of the manual and an annex .eps, including the vectorial versions of all the different components. The manual must be consistent with the SDE Organization's manual which will be available in the SDE WAT, and will include the design of, at least:

- Name of the house and of the team.
- Team's logo in its three possible versions (isolated, combined with the SDE's logo, and combined with the team's supporting institutions and sponsors, in vectorial format, and colored and grayscale variations).
- Rules of use and possible compositions, and if the team has a Legend or Motto.
- All the team's supporting institutions and sponsors' logos
- The chosen typography

In each deliverable, the Visual Identity Manual must be updated, containing all the information submitted in the previous deliverables, as well as the developments realized. Before the final phase of the Competition, teams must also include their uniforms design, in order to verify compliance with the SDE Rules.

38.5. Sponsorship Manual

The sponsorship manual shall include:

- Supporting institutions and companies' tracking: consisting on a list of sponsoring/collaborating institutions and companies indicating their names, field of work and type of collaboration with the team, as well as the contact details of the person of the team in charge of the communication with the company or entity: full name, telephone and e-mail address. This contact information will be used by the SDE Organization only for statistical purposes, in order to assess the companies' implication impact in the competition in their R&D (Research& development) activity. This information must be included from Deliverable #3 onwards.
- Presentations used to raise sponsorships

Rule 39 Industrialization and Market Viability Reports

39.1. Design Report

The teams shall present this report for Deliverable #1, indicating the Market target towards which they expect their house to fit and Market studies and potential user's characterization to figure out in which field the house should be viable. The teams shall work in the possibility for industrialization and versatility of the proposal for individual houses, semidetached houses and block houses.

39.2. Construction Report

The following four items must be included in the Industrialization and Market Viability Report of Deliverables #3, #4, #5, #6 and #7:

- Market Viability of the product
- Economic feasibility study
- Industrialization degree
- Possibilities for grouping

Market viability of the product.- In first place, the **target market must be defined**: the house's population sector and their needs. To define a market, the most common variables are:

- Buyer related:
  - Socio-cultural aspects (if it satisfies their prospects)
  - Economical aspects (if it is affordable for the buyer)
  - Age (if it does fulfil the basic needs of people of that age)
- Location related:
  - Geographical situation (if it adapts to climate, topography, etc.)

The target market may be distinguished as much for geographical features as for social aspects. In order to **adapt the product to the potential customer's specific needs**, this differentiation shall be detailed enough. However, as a very exclusive market may limit the product running, be careful not to go too far.

Once the target market is identified, we shall make sure the house satisfies its needs and prospects, and is affordable. **The house shall be a product adapted to its potential customers'** prospects for size, aesthetic, closings, spaces, distribution, equipment, etc.

Usual market viability's characteristics: appeal, spatial distribution, flexibility, innovative components, etc., as well as the **house's ecologic and economical benefits must be commercially exploited.** Environmental advantages, renewable energies' use, high energy efficiency, the use of green, recycling or recyclable materials, among others shall be highlighted. On the other hand, the **economic benefits** to make the house's commercialization become viable shall include information regarding its energy expenses' reduction: explain how and how much money is saved due to the appropriate house's design, the high energy efficiency of the systems and the inclusion of renewable energies.

Economic feasibility study.- To identify **the circumstances where the house's production will be most viable**, it would be helpful to set out different scenarios:

- Low production level (1-2 houses/year)
- Medium production level (100 houses/year)
- High production level (1000 houses/year)

A table comparing the three production scenarios' cost's, recovery time of the initial investment and benefits shall be included.

Industrialization degree.- The industrialization degree of the house, as well as its suitableness for a mass production (as much for its constructive system as for its assembly process) shall be explained. It is recommended to include the following aspects:

1. Constructive system
   - Dimensional coordination (market standardized pieces)
   - A list of all the catalogue's components used and its relation % to the total.
   - An explanation of the industrialized 2D and 3D components' use and composition.
   - A definition of the innovative components and systems used to make house's production or assembly easier or reduce its costs.
2. System's easy understanding
   - System's clear explanation (Explanatory graphics, 2D and 3D components)
   - Modular systems: Used module explanation. (For example include: Grid and "tartan" hatches drawings)
3. Transport and assembly process
   - Specify assembly and transport means, (vehicles and travel number, tones / per travel, crane need and capacity, especial equipment, etc.)
   - Assembly phases and corresponding time tables explanation and graphic representation (for example: exploded or isometric views)

Possibilities for grouping.- Study the house's possibilities for grouping and the different proposed variations, including:

1. House's or its components' adaptation towards grouping or urban typologies of major density shall be explained and graphically described.
2. The house's or its components' spatial variations or extensions shall be explained and graphically described.
3. The house development looking towards multifamily housings, explaining its units, possible combinations and the constructive process.

Rule 40 Innovation Report

40.1. Objective

The objective of the innovation report is that the teams reflect in a document, in a systematic and organized way, all those innovative elements or systems, used for the design, development, construction and management of the proposals.

40.2. Contents index and structure

The report structure shall correspond to the following index, including all elements that refer to the innovation of the proposal. In case that the required documentation has been already mentioned in another section of the deliverable, it will not be necessary to incorporate again this information in the report. However it is recommended to indicate it in the corresponding section of the deliverable.

1. Innovation in Architecture: new spatial and functional concepts, new languages in the formal use of materials, use of textures, and the appropriate use of light.
2. Innovation in Engineering and Construction: innovation concepts in the house's structure and systems' (plumbing, electrical and solar systems) design and construction.
3. Innovation in Energy Efficiency: the active and passive innovative technological contributions maximizing the energy efficiency of the house; innovative ways to improve the hydrothermal, environmental, illumination and acoustic efficiency of the house, as well as facilitating the perfect functioning of the house, and innovative aspects of house's appliances and equipment.
4. Innovation in Communication and Social Awareness: novel initiatives proposed to attract the attention of the general public.
5. Innovation in the Industrialization and Market Viability: novelty of the proposals for industrialized houses, especially those that can be adapted to multifamily buildings. New ways of business, promotion and commercialization of the product.

Rule 41 Sustainability Report

41.1. Objective

The objective of the sustainability report is that the teams reflect in a document, in a systematic and organized way, those elements related to the sustainability of the proposals, in such a way that they can be visualized as a whole and make a holistic vision possible as to how this variable has been integrated into the work that has been developed.

41.2. Contents index and structure

The report structure shall correspond to the following index, including all elements that refer to the proposal's sustainability. In case that the required documentation has been already mentioned in another section of the deliverable, it will not be necessary to incorporate again this information in the report. However, teams must indicate it in the corresponding section of the deliverable.

1. Introduction: Sustainability concept applied

Sustainability is a complex and multidimensional concept, which in the formulation of the proposal the teams will have analyzed, reflected on it and translated it in their approach and strategies, obtaining both quantitative and qualitative results evaluable by the judges. It will be requested that the sustainability of their proposal in terms of the architectonic conception be explained in 20 lines.

2. Bioclimatic Strategies: Passive design strategies

This section must include a brief description of the bioclimatic strategies (passive design strategies) integrated in the proposal, schematically representing its functioning. Some aspects to consider are:

- House envelope, taking into account the level of insulation, air tightness, finishes and construction.
- Glazing orientations, types and sizes. Solar protections to minimize the interior overheating. Daylight controls to provide evenly distributed and sufficient natural lighting.
- Distribution of the interior spaces according their heating and cooling requirements, and the use of thermal buffers spaces.
- Passive heating strategies using direct and indirect solar gains, as well as the use of thermal energy storage.
- Passive cooling strategies, i.e. natural ventilation, thermal mass with night ventilation, evaporative cooling and night radiation.
- Use of semi-passive systems to maximizes the effect of passive strategies with very low energy consumption.
- Improvement of the microclimate around the house, through the bioclimatic design of exterior spaces. And the application of strategies to reduce the urban heat island effect.

3. Water

The strategies related to the management of water will be described in accordance with the following classification, highlighting which alternatives have been evaluated in the development of the work and justifying the choice that has finally been carried out for the house:

- Strategies for the reduction of consumption
- Recycling, reuse
- Rain water
- Grey water system
- Treatment of waste water

4. Solid Waste

The management of the solid waste will be described in the following sections:

- Assessment Plan.- Descriptive document of the final destination of the different types of material involved in the construction process, highlighting the percentages (in mass) of their final destination, which will be the garbage tip, an incineration system, recycling or reuse.

  The final destination of the waste generated by the work will be specified, as will be the waste once the home has come to the end of its useful life.
- Management of Domestic Waste.- Description of the solutions contemplated for the management of the domestic waste from the house.

5. Materials

The description of the materials will be made, highlighting the following sections:

- Materials selection.- Description the constructive materials selected, making specific reference to the presence or absence of renewable materials, recyclable, reusable and

possible toxic substances identified.

- Enclosure description.- Description of the enclosure's character: design and composition, in order to reduce energy demands.
- Maintenance Plan .- Description of the necessary tasks and the frequency in which the correct maintenance of the home must be undertaken.
- Incorporated Energy.- Calculation of the energy incorporated in the materials of the house, which allows establishing an energy/constructed m^2 factor.

6. Solar Facilities

Regarding the solar facilities, the documentation will reflect the following elements:

- Description of the time calculation of the energy recovery, (the time it would take for the facility to generate the energy necessary to manufacture its components, under solar radiation and temperature conditions of an average year).
- Calculation of the CO2 emissions savings associated to a year of functioning.
- Description of the accessibility for the maintenance of the facilities.

7. Equipment

It will include a description of the characteristics of the house's equipment (appliances, lighting, HVAC and Hot water equipments), making reference to its contribution to the house's sustainability.

Rule 42 Dinner Party Menu

Teams will have to submit the dinner menu, indicating:

- Name of the courses and drinks
- List of ingredients and quantities per course
- Food preparation
- Enclosing an image of every course

Rule 43 Contest Week Tasks' Planning

Teams are encouraged to include a planning for the realization of the tasks subcontests during the Contest Week. This timetable will help the team and the SDE Organization to provide the resources needed and plan it in advance.

Rule 44 Cost Estimate and Project Financial Summary

Teams will have to submit the Cost Estimate and the Business and Fund Raising Plan, including updated information and details, from one deliverable to the next. This section should provide a clear understanding of the costs associated with the project and the need for fund raising, how that fund raising is planned, and whether there are available or obtainable equipment, instrumentation, and facilities.

- Business and Fund-Raising Plan: Teams are required to submit plans that describe their overall project, including a projected budget and fund-raising plan. The plan should include a description of each team's interactions with other departments involved in fund raising (e.g., the school's development office), identify key sponsors, and describe the means by which these sponsors may be reached.
- Cost Estimate: Teams must provide complete, current, and accurate cost or pricing. A project summary budget is required according with the price cost proposal form (available in the SDE WAT). The following guidelines help teams fill in the cost estimate table.
    - Direct Materials: Direct materials are normally purchased parts, purchased

items or services (e.g., welding, minor fabrication etc.), raw materials, standard commercial items, interdivisional transfers at other than cost, etc. All direct materials should be identified separately on an attached sheet with the quantity, unit price, and total amount provided. Further, price/cost proposal should indicate whether the unit price for each direct material item was determined and documented using written vendor quotes, catalog prices, prior invoices, engineering or shop estimates, or some other method with an explanation provided. Provide supporting documentation (cost or pricing data) such as the written vendor quotes, copies of the catalog page indicating the price, or prior invoices for all direct material items.

- Material Overhead: If accounting system includes material overhead, propose such indirect costs in this area. Indicate the rate(s) used and provide an appropriate explanation.
- Direct Labor: Direct labor should indicate the hours, hourly rate, and total for each individual or category of labor proposed.
- Labor Overhead and Fringe Benefits: If accounting system includes labor overhead, propose such indirect costs in this area. Indicate the rate(s) used and provide an appropriate explanation. If fringe benefits are not included in direct labor and are not a portion of the labor overhead, identify fringe benefits in this area and provide the same type of information concerning fringe benefits as required for labor overhead.
- Lower-tier Subcontractors: Identify each proposed lower-tier subcontractor and obtain a cost proposal containing the same information and in the same format from each proposed lower-tier subcontractor.
- Consultants: Identify each proposed consultant and the estimated budget of their services.
- Other Direct Costs: Include any direct costs not covered by one of the other cost elements in this area. A detailed list of each cost item including description, and estimated budget is required. An example of this type of costs could be general and administrative expenses, indirect expenses, security activities and services, cost of models, communications costs etc.
- Travels and costs for final phase in Madrid. The travels costs will be, for some universities, an important chapter of their budget. It must be defined the number of team members and the unit cost estimated of travels, transports, expenses allowance, lodging accommodations and miscellaneous expenses.
- Assembly, transports, and disassembly processes. According with the house designed by the universities, it will be necessary an important amount for the transportation to Madrid, including trucks, cranes, scaffoldings, assembly and disassembly processes.
- Insurance Policies: According with the MOU (Memorandum of Understanding) that will be signed between the SCHOOL and the UNIVERSIDAD POLITÉCNICA DE MADRID, "*their respective officers, directors, employees, agents, contractors, subcontractors, and representatives (the "Released Parties") from any and all claims, losses, expenses, and demands, including those resulting from injury or death to any person or damage to any property, arising from the SCHOOL's work on or participation in the Event or any activities incidental thereto".*

  Liability Insurance costs, transport insurance, accidents and medical insurances, must be included in the estimated budget of the project.

- Additionally, teams will have to **clearly specify the Total Construction Cost of the House**, indicating the items exclusively corresponding to the construction process and materials. Teams may do so underlining the items in the above mentioned cost estimate or elaborating a Construction Cost Budget apart.

Rule 45 Site Operations Plan

45.1.Objective

The Site Operations Plan is an executive document for planning, specific for each team, in which they must take into account all of the activities, resources, needs and deadlines. The Plan has to guarantee the assembly and disassembly of the house with logic, order and total safety. Every team must hand in its Plan to the organization, who will draw up the general Site Operations Plan of the Villa Solar that will harmonize the needs of all teams and avoid interference. The organization will revise all of the Site Operations Plans of the teams to verify their efficiency and identify possible conflicts between them.

The organization will develop a general Site Operations Plan of the Villa Solar; based on the information sent by the teams in their Site Operations Plan. This is why it is very important for the plans to be as specific as possible.

45.2.Content & Structure

The Site Operations Plan will be required from Deliverable #3 onwards and will have to comply with all the requirements specified in Rule 4 – Villa Solar. Information will be updated and specified along with the project development, including further details in each deliverable. The plan consists of the Site Operations drawings (to be included in the Project Drawings), the Site Operations Report (to be included in the Project Manual). The Site Operations report must, at least, include the following sections.

1. Precedents and aim
2. General Data
3. Site Operations Team Coordinator
4. Outside Logistic. Villa Solar
    i. Phases description
    ii. Transport
    iii. Heavy vehicles circulation
5. Inside Logistic. Approximation
    i. Phases description
    ii. Deciding factors
    iii. Infrastructures
    iv. Waste management
6. Load / Unload
7. Assembly / Disassembly
8. Timeline. Trucks and machinery needed entrance times, order, unload, interval between vehicles and assembly times associated.
9. Site Operations Chart (Teams must fill in this file, available in the SDE WAT).
10. Assembly & Disassembly Chart (Teams must fill in this file, available in the SDE WAT).

Rule 46

Health & Safety Report & Specific Terms and Conditions Document

The Health & Safety Report, as well as the Health & Safety Specific Terms and Conditions Document, are part of the Health & Safety Plan of the project. Please refer to Section 4.0, Rule 52 for further details.

Rule 47 Detailed Water Budget

The water budget information may either be split between the Project Drawings and this section of the Project Manual, or provided entirely in the Project Drawings. If the information is split, make sure this section of the Project Manual is clearly referenced on the relevant drawing sheet(s).

Rule 48 Electric and Photovoltaic Chart

In order to adapt the monitoring system for the Electrical Energy Balance contest, teams must provide the SDE Organization with the Electric and Photovoltaic Chart, from Deliverable #3 onwards. Teams which do not send the required information will not be allowed to include the following specific elements: DC Loads, hard-wired battery bank and battery inverter, and special grid voltage and/or frequency.

Rule 49 Construction Specifications

- The following structure organizes all the different divisions of the project construction specifications. If there are no specifications under a particular division, simply delete that division's bookmark
- EVERY specification shall be clearly referenced on one or more relevant sheet(s) in the Project Drawings. Hyperlinks between references in the drawings and corresponding specifications in the Project Manual is greatly appreciated, but certainly not required because current software does not seem to facilitate this level of construction document integration.
- Develop a clear, consistent method to differentiate competition house specifications (and drawings) from competition house alternate specifications (and drawings). See Rule 6.6 for more information about alternates.

01 Structure
- 01 Foundation
- 02 Structural floors and sections

02 Architecture
- 01 Enclosure
- 02 Openings
- 03 Partitions
- 04 Finishes
- 05 Appliances
- 06 Furnishings

03 Systems Installations
- 01 Fire Suppression
- 02 Plumbing
- 03 HVAC
- 04 Electrical
- 05 Solar Systems – Photovoltaic and thermal
- 06 Telecommunications and Building Automatization

Apart from this information, Teams must submit the Fire Safety & Safety in Use tables (Teams must fill in this file, available in the SDE WAT).

Rule 50 Structural Calculations

Structural calculations that have been stamped by a qualified, licensed design professional must be submitted. Only the printed version must be signed by a qualified, licensed design professional. By signing the structural calculations, the licensed professional certifies that the structural provisions of the Codes of their country of origin have been met by the design. (Rule 6.1).

The structural calculations justification must have the following sections:

a. The structural solution adopted justification, including a description of the house bearing system and the list of codes used for the design and construction.
b. A description of the materials and its resistant properties.
c. Employed actions. Particularly, the different wind hypothesis of pressure/suction over the envelope will be detailed making use of sketches. Combinations made and safety factors used. Loads considerations during the house transportation, assembly and disassembly.
d. Calculations model (s) description. If it proceeds, identifying the software (program object and application field), and indicating the adopted simplifications, the methodology of the analysis done, specific models of singular areas where traditional material resistant theories can't be applied, edging or supporting conditions, type of connections, etc.
e. Tensional and distortional verification results, explaining the representation of the software or calculations results obtained, indicating the phases or hypothesis in which dreadful efforts are produced, and covering all the different phases (transport, assembly and use).
f. Deflection calculations and tabulated results. Applicable expansion, contraction, and crack-control measures.
g. Superficial footing design, indicating soil bearing pressure of each footing (For further details, please refer to Rule 4.4).
h. Structural fire resistance justification, according to the team's country of origin national codes.

For materials not being considered in the rules, teams must submit a document signed by a competent technician. This document justifies the resistant properties of the materials and the design, from a structural safety point of view, considering the actions indicated in their national rules.

SECTION 4.0: SDE BUILDING CODE

Although there is some degree of overlap between the two, it is important to note some crucial distinctions between the Solar Decathlon Europe Rules and the Solar Decathlon Building Code. The Rules primarily exist to promote a fair and interesting competition. The Building Code primarily exists to protect the public health and ensure safety. Failure to comply with the Rules may result in official warnings, penalties point, or disqualification from the competition. Failure to comply with the Building Code may prohibit the participation of the house in any aspect of the overall competition. Therefore, compliance with the Building Code is a prerequisite for participation in the competition.

Rule 51 Building Codes Application

51.1. General Criteria

Due to the international character of the Competition, it has been decided that the participating universities will use the Building Code and Regulation of their country for the designing the houses. All the participating countries have similar regulations developed with recognized reliability and safety. The only exception that will be made to the above is concerning health and safety, in which case the European Community or Spanish regulations will be applied.

a. Each team shall submit a certificate assuming the compliance of the country of origin codes signed by the faculty advisor. By signing this document, the faculty advisor certifies that the house complies with all the codes of the country of origin, and so the house is safe for the public to enter if it has been built as designed.
b. Each team is responsible for complying with the European Union or Spanish Building Code regarding Health and Safety.
c. Technical revision of the proposals will include a risk analysis of the different proposals, evaluated neutrally, making those suggestions and recommendations deemed necessary to guarantee the safety of the people in accordance with Spanish regulations.

51.2. Adopted Codes

The Solar Decathlon Europe Construction Code includes an extracted selection of the most significant safety aspect that the Spanish construction regulations enforce to. The following regulations have been adopted as a reference for the drawing up of the Solar Decathlon Europe Building Code:

- *Reglamento de Instalaciones Térmicas en los Edificios* (RITE) y *sus Instrucciones Complementarias* (ITE) (Regulation of Thermal Installations in Buildings and its Complementary Instructions)
  Royal Decree 1027/2007, 20th July, Ministerio de la Presidencia
  B.O.E (Official Government Journal): 29th Aug. 2007
  Correction of errors: B.O.E.: 28th Feb. 2008

- *Reglamento Electrotécnico para Baja Tensión* (REBT) y las *instrucciones Técnicas Complementaria* (ITC) (Electro-technical Regulation for Low Tension and its Complementary Instructions)
  Royal Decree 842/2002, 2nd Aug., *Ministerio de Ciencia y Tecnología* (Ministry of Science and technology)
  B.O.E.: supplement to n° 224, 18th Sep 02
  Correction of errors: B.O.E.: 5th April 04

- *Promoción de la accesibilidad y supresión de barreras arquitectónicas*. (Promotion of accessibility and suppression of architectonic barriers)
  Law 8/1993, 22nd June, from the *Presidencia de la Comunidad de Madrid* (Office of the Madrid Regional Government's President)
  B.O.C.M., n° 152, 29th June 1993

- *Código Técnico de la Edificación* (CTE) (Spanish Technical Building Code)
  Royal Decree 314/2006, 17th Mar.,
  Ministerio de Vivienda (Ministry of Housing)
  B.O.E.: 28th Mar. 2006
  Correction of errors: BOE 25th Jan 2008

Text modified by RD 1371/2007, 19th Oct., *Ministerio de Vivienda* (Ministry of Housing)
B.O.E.: 23-OCT-2007
Correction of errors: B.O.E.: 20th Dec 2007

Text modified by RD 1675/2008, 17th Oct, *Ministerio de Vivienda* (Ministry of Housing)
B.O.E.: 18th Oct 2008

- Basic Document SE-AE. Structural Safety Actions in building
- Basic Document SUA. Safety of use and accessibility
- Basic Document SI. Fire Safety

The building is destined to be representative of a single-family home, and since it will be open to the public in general, in accordance with the regulations contained in the CTE the following will be taken as the scope of applications: **single-family home and public building concurrency.** As only a part of the buildings will be visited in the guided public tour, two different code requirements have been established:

- Public Areas – Parts of the buildings which form part of the guided tour.
- Restricted Areas- Parts of the buildings of exclusive use by the participants and accessible for the juries.

51.3. Fire Safety

1. Interior propagation spreading

Reaction to fire of the construction, decoration and furnishing elements.

Constructive elements must comply with the fire conditions set out in following table:

Fire Reaction types of building materials

Location of the element	Coverings (1)	
	Ceilings and walls (2) (3)	Flooring (2)
Occupied areas (4)	C-s2,d0(5)	E_{FL}

(1) When the elements exceed 5% of the total areas of all walls, all ceilings or all floors within considered site.
(2) It includes pipes and ducts running through the areas listed above, without a fire-resistant coating. In the case of pipes with linear thermal insulation, the fire reaction type would be as shown, but including the L subscript.
(3) It includes those materials that constitute an inner layer incorporated in the roof or wall, which is not protected by a 30 EI layer, at least.
(4) It includes both the as areas in which people remain and unprotected traffic areas.
(5)Exception: Fire reaction class D will be permitted providing there are two fire extinguishers in the house's interior.

Textile cover elements integrated into buildings, such as tents, will be M2 class, in accordance with UNE 23727:1990 "Fire reaction tests of building materials. Construction materials classification"

2. Evacuation of occupants.- In the application of the Fire Safety Document from Building Technical Document (CTE), and considering the exceptional nature of the houses, in order to set out the areas that will be part of the house tour shall be considered as:
Lobbies, public areas in basement floors, ground floors and mezzanines should consider an occupation density of 2 m2/person.

The dimensioning of the evacuation elements, should take place in accordance with the following table:

Dimensioning of the evacuation elements

Type of element	Dimensioning
Doors and doorways	W ≥ P / 200 ≥ 0,80 m The width of any door should not be less than 0.60 m, and not more than 1.23 m
Hallways and ramps	W≥ P / 200 ≥ 1,00 m

W = Element width, [m]
P = Total number of people who are expected to pass through the dimensioned point.

3. Fire protection systems.- The building will have at least a portable fire extinguisher inside the house and another one in the exterior, both of 21A -113B efficiency.

4. Fire resistance of the structure.- The structure's fire resistance will be R30 (the structure must resist for 30 minutes).

51.4. Safety in use

1. Safety against falls

Slipperiness of the floors .- In order to avoid the risk of slipping, floors included in house tours shall comply the following degrees of slipperiness:

Required floor classes depending their location

Location and floor characteristics	Class (*)
Dry interior areas	
- Surface's slope less than 6%	1
- Surface's slope equal to or greater than 6%. Stairs included	2
Humid interior areas, such as building entrances from the outside (1), roofed terraces, bathrooms, toilets, kitchens, etc.	
- surface slope less than 6%	2
- surface slope equal to or greater than 6%. Stairs included	3
Exterior areas	3

(1) Direct access to restricted areas excluded.

Floors are classified according to their resistance to slipping value Rd, as follows:

Floor classification in accordance with their degrees of slipperiness

Resistance to slipperiness R_d	Type
Rd ≤ 15	0
15 < Rd ≤35	1
35< Rd ≤45	2
Rd > 45	3

The resistance **to slipperiness** value Rd, is determined by the pendulum testing as described in Appendix A in UNE-ENV 12633:2003, using C range in a test-tube without accelerated

wear. The sample will be representative of the most unfavorable conditions for slipperiness.

Exception: In case the slipperiness values permitted by the country of origin codes differ from those stated above, the SDE Organization will study the equivalency possibilities.

Uneven flooring.- With the exception of restricted or exterior areas, in order to limit the risk of falling, as a consequence of tripping or stumbling, the floor should meet the following conditions:

a. It must have no imperfections or irregularities which has more than 6 mm difference in level. The projected pavement elements, isolated and small (i.e. door locking devices) shall not be projected from pavement more than 12mm, and projections of more than 6 mm at its opposing sides, in the direction of the circulation of the people must not form an angle of more than 45°.
b. The uneven areas which do not exceed 50 mm will be resolved with a slope that does not exceed 25%
c. In interior circulation areas, the floor shall not have perforations or holes through which a sphere of 15 mm diameter may pass.
d. Areas of circulation may not have a single step, or two consecutive ones, with the exception of areas that are not part of the house tour.

Differences in the floor level .- In order to limit the risk of falling, there will be protective barriers [1]in differences in level, holes and openings (both horizontal and vertical), balconies, windows, etc. where the difference in the floor level are more than 550 mm, except when layout makes falling improbable or when a barrier is incompatible with the intended use. In public areas, the perception of the differences shall be made easy through visual and tactile differentiation, when level differences do not exceed 550 mm and when the water surfaces perimeter are susceptible to causing falls. The differentiation shall be at least 30 cm wide, for example by means of sand, gravel or similar texture.

Restricted Areas stairs.- Stairs from non-public areas shall comply with the following conditions:

a. The width of the tread shall be at least 800 mm.
b. The riser shall be 200 mm maximum, and the tread at least 220 mm. The tread area is measured on each step, depending on the direction of the house tour.
c. In curved stairs, the tread is measured on the stair's axis when it is less than 1,000 mm wide. If the stairs wide is bigger, the tread will be measured at a distance of 500 mm of the narrowest side. In addition, the tread will measure at least 50 mm in the narrower side and 440 mm in the wider side.
d. Landings may have steps at 45° and steps without a riser. In the latter case, the tread projection will overlap at least 25 mm. The measurement of the tread does not include the vertical projection of the upper tread.
e. Stairs must have handrails in open sides.

Public Areas Staircases.- Public stairs must comply with:

a. All steps must have the same riser and all steps from straight stretches of stairs will have the same tread.
b. In straight stretches of stairs, the tread will measure at least 280 mm. In the straight-stairs or curved stairs, the riser will be at least 130 mm and 175 mm maximum. In curved stairs, the tread will measure at least 280 mm at a distance of 500 mm from

[1] They will have a minimum height of 900 mm . The height will be measured vertically from ground level, or in the case of stairs, from the vertex of the steps, to the upper limit of the handrails. They must be resistant to a horizontal force of 1,6 kN/m; and will not have openings which a 150mm diameter sphere can pass through.

the inside edge and 440 mm at the outer edge.

c. Each flight will have at least 3 steps, and cover 3.20 m maximum in height. The clear width of the fligh twill be at least 1m, and obstacle free.
d. Stair landings arranged in flights on a staircase in the same direction will have at least the stair width, and 1,000 mm length measured from its axis.
e. Stairs that cover a height of more than 550 mm shall have continuous handrails on at least one side. If its width exceeds 1,200 mm it will have handrails on both sides. Intermediate handrails will be arranged when width of the flight greater than 4000 mm, this being the maximum separation between handrails. The handrails shall be 900 and 1100 mm in height.´

Ramps.- Floors with more than 4% of slope will be considered as ramps and will have to comply with the following items' requirements.
The ramps shall not have more than 10% slope, when the length of the ramp is less than 3 m. When the length of the ramp is not more than 6 m, its slope will be less than 8%. When ramp's length is not more than 9 m it shall not have more than 6% slope. In all cases its transversal slope will be no more than 2% and the flights will be straight or with a radius of curvature of at least 30 m. The minimum useful width is 1200 mm.
Landings arranged with the same direction as the ramp's flights will have at least the ramp's width and a minimum length of 1500 mm, measured in its axis. In case two flights are in different direction, the ramp's wisth must not be reduced along the landing.
. Ramps assigned to handicapped people, which cover a height difference greater than 185 mm and have a slope of at least 6%, shall have continuous handrails on both sides, and its free edges must have skirting boards of elements for side protection of at least 10 cm high.

2. Safety for avoiding trapping and impact risk

Impact due to fixed elements .- The clearance height in house tour areas will be at least 2,200 mm. In areas which are not part of the house tour, they will be at least 2,100 mm. The height of the threshold of the door will be at least 2,000 mm.
Fixed elements projecting from facades and located in circulation areas will be at least 2,200 mm in height.
In house tour areas, walls shall not have projected elements which do not start from the ground, project more than 150mm at a height of between 150mm and 2,200mm measured from the ground, and arise risk of impact.

Impact due to opening elements .- In public tour areas, doors on the sides of the hallway shall be arranged so that the sweep of the door does not invade the hallway.

Impact due to fragile elements .- Glass, in impact risk areas[2], of glazed surfaces that do not have a protective barrier will have a classification performance of X (Y) Z in accordance with the UNE EN 12600:2003 whose parameters set out below must comply with the following. There are excluded from the above mentioned condition the glasses which major dimension does not exceed 30 cm.

Parameter values X(Y)Z depending on the difference in elevation

Level difference at both sides of glazed surface	Parameter value X	Y	Z
More than 12 m	any	B or C	1
Between 0,55 m and 12 m	any	B or C	1 or 2
Less than 0,55 m	1, 2 or 3	B or C	any

[2] In doors, the area between the ground level, a height of 1500mm and a width equal to that of the door plus 300mm each side of it; in fixed wall sections, the area between the ground level and a height of 900mm.

X: Highest impact class in which the glass does not break or breaks remaining in its place or disintegrates in small pieces. The lowest class is 3 and the highest is 1.
Y: Breakage way. It can be A - in pieces that can be big and with cutting rims (conventional glasses); B - in pieces that can be big but remain together and do not separate (typical laminated glasses); C - The glass disintegrates in small particles (typical tempered glasses).
Z: Highest impact class in which the glass does not break or breaks remaining in its place.

Glazed doors and glazed shower screens shall comply with the requirements stated in the table above for level differences smaller than 0.55 m. Therefore, glass or glazed surfaces not compliant with this requirement will not be permitted under any circumstance.

Impact due to not very perceptible elements.- In glazed surfaces that reach the ground and can be mistaken for doors or openings, warnings of between 850 mm and 1100 mm in height and to a higher altitude between 1500 mm and 1700 mm shall be provided; warnings are not necessary if the glazed surface has transoms spaced 60cm apart, or if it has at least a crossbeam at the aforementioned height.

Trapping .- In order to restrict the risk of trapping produced by a manual sliding door, sliding on the surface of the wall, the distance to the nearest fixed element will be at least 200 mm.

3. Safety against the risk of inadequate lighting.- In house tour areas, light fittings must provide a minimum illumination level of 20 lux for exterior areas and of 100 lux for interior areas.

51.5. Accesibility

Access to the interior of the building.- The route of the house tour must be accessible. At least one entrance to the interior must be free of architectonic barriers and obstacles that block the access. Public tour routes, which communicate main road access to the house, and traffic areas between interior public spaces, must meet the following specifications:

a. Circulations will be adapted for handicapped people; the volume of its development will be continuous, made up of the length of the route, and an area of 1.20 m wide perpendicular to the floor. The only exception permitted are narrowings with the maximum length 0,50 m and minimum width of 1,00 m.
b. Level differences must be solved by means of ramps, in accordance with Rule 51.4.1-Ramps. Steps are not permitted.
c. In the Public Tour Route, where there are turns of 180° foreseen, the minimum unobstructed area available shall inscribe a circle of 1.5 m of diameter.
d. In the Public Tour Route, the minimum width of the doors will be 80 cm, providing there is an unobstructed space for the movement of the doors of 1.20 diameter, both before and after them.

51.6.Structural safety

1. Dead loads.- The dead load to consider consists of the weights of structural elements, enclosures, dividing elements, partitions, all carpentry types, coatings, fillings, fixed equipment and all permanent loads. In general, the dead load characteristic value of the constructive elements will be determined as its mean value, between its nominal dimensions and its specific mean loads. For dwellings, it will be enough to consider a load of 1,0 kN per m2 of built area, for partition's dead load.

2. Live loads.- The live load includes all the forces (weights) that vary within the building's normal operation cycle. It may be simulated by the application of a uniformly distributed load. The following table includes the loads to apply:

Live loads characteristics values

Use category		Use sub-category		Uniform load [kN/m2]
A	Residential Areas	A1	Dwelling and room areas in, hospitals and hotels	2
B	Walkable roofs only for private access			1
C	Roofs only accessible for maintenance (1)	G1(5)	Roofs with slopes lower than 20°	1(2) (4)
			Lightweight roofs over straps (without slab) (3)	0,4(2)
		G2	Roofs with slopes over 40°	0

(1) For roofs with slopes between 20° y 40°, the qk value will be determined as a linear interpolation between the correspondent values of G1 and G2 sub-categories.
(2) The indicated value refers to the horizontal projection of the roof surface.
(3) A lightweight roof is understood as that which its permanent load due only to its enclosure is not superior to 1 kN/m2.
(4) A tributary area may be adopted whenever the adopted solution figures in the building maintenance plan; it will be inferior to the total roof area, not less than 10 m2 and located in the most unfavourable place of it.
(5) This live load of use is not considered concomitant with the rest of the variable actions.

The handrail, parapets or catchments of terraces, oriels, balconies or stairs must resist a uniformly distributed horizontal force, applied at 1,2 m or, in case being located below this height, over the element's superior edge. The value of this force will be 0,8 kN/m for restricted areas and 1,6 kN/m for public areas. In general, the wind load is a force perpendicular to the surface of each exposed point, or a static pressure, which may be defined as the following expression:

$q_e = q_b \cdot c_e \cdot c_p$ being:

qb the dynamic wind pressure. To simplify you may consider 0,5 kN/m2.
ce the exposition factor[3], variable with the considered point height, based on the roughness degree of the environment where the construction is located.
cp the pressure or wind factor

For multi-storey buildings with slabs connecting all the facades, small casement or hermetic openings or windows, the following factors may be adopted:

Wind factor for multi-storey buildings (Walls)						
	Slenderness in the plane parallel to the wind					
	< 0,25	0,5	0,75	1	1,25	< 5,0
Pressure wind factor, C_p	0,7	0,7	0,8	0,8	0,8	0,8
Suction wind factor, C_s	-0,3	-0,4	-0,4	-0,5	0,6	0,7

For horizontal roofs:

- Pressure wind factor, C_p 0.2
- Suction wind factor, Cs -0.7

[3] Urban area IV, industrial or forest, roughness degree will be considered. The factor will be 1,3 in a point considered at a height of 3m.

3. Safety factors.-

Safety factors that must be considered:

- Ultimate Limit State Design
- Partial Safety Factors for Strength of Materials

MATERIAL	FACTOR
Concrete	γ_C= 1,50
Corrugated steel	γ_S= 1,15
Structural steel	γ_{m0}= *1,05 (plasticity)* γ_{m1}= *1,05 (instability)* γ_{m2}= *1,25 (last resistance, material and joints)* γ_{m3}= *1,1 (Sliding resistance of ELS pre-stressed screw joints)* γ_{m3}= *1,25 (Sliding resistance of ELU pre-stressed screw joints)* γ_{m3}= 1,4 (Sliding resistance of pre-stressed screw joints and almond-shaped holes or with over measure)

The following safety factors will be considered for the calculation of the design loads:

ACTION	ADVERSE	BENEFICIAL
Dead Load	γ_G= 1,35	γ_G= 0,80
Imposed Load and Wind Loads	γ_Q= 1,50	γ_Q= 0,00

4. Load Combinations.-

The following ELU load combinations, corresponding to normal control, will be considered.
Loads denomination:

G_k: Dead load and selfweight
Q_k: Live loads (Q1 Determinant variable action)

Permanent or transitory situation

$$1{,}35\ G + 1{,}50 \cdot Q1 + \Sigma\ 1{,}50\ \psi 0{,}i\ Qk{,}i$$

This hypothesis will be considered for the following situations depending on the determinant live load.

Imposed use
Wind in direction 1
Wind in direction 2

In addition, the following combination factors will be considered for the calculation combinations determination.

ACTION	Combination factor γ_0
Walkable roofs live load of use	0,70
Roofs only accessible for maintenance live loads of use	0,00
Storeys live loads of use	0,70
Wind	0,60

5. Load bearing pressure

The load bearing pressure to be considered for the SDE 2012 Competition is 50 KN/m^2.

51.7.Electricity and Photovoltaic System

1. Grid Interconnection

The Photovoltaic system will be connected to the electricity distribution network following a single-phase configuration (connection to the phase and neutral).

The interface between the Photovoltaic system and the electricity distribution network shall comply with the international standard IEC 61727 (Photovoltaic (PV) systems - Characteristics of the utility interface) and the Spanish regulation RD 1663/2000 (Royal Decree 1663/2000, of 29 September 2000, about requirements for interconnection of photovoltaic systems to Low Voltage electricity distribution networks).

The particular requirements of RD 1663/2000 are included in the following table, where the first column refers to the corresponding section of IEC 61727 standard.

NOTE: Small changes might be introduced in the Spanish requirements for small PV systems (now under RD 1663/2000), which will be updated in following versions of the SDE 2012 Rules.

4	UTILITY COMPATIBILITY
4.1	Voltage, current and frequency
	Nominal voltage and frequency in Spanish Low Voltage distribution networks are: - Voltage: 230 V (phase-neutral) . - Frequency: 50 Hz.
4.2	Normal voltage operating range
	Normal voltage operating range is defined by the following limits: - Over voltage: 230 V + 10% - Under voltage: 230 V – 15%
4.5	Normal frequency operating range
	Normal frequency operating range is defined by the following limits: - Over frequency: 50 Hz + 2% - Under frequency: 50 Hz – 2%
5.2	Over/under voltage and frequency
	The photovoltaic system shall disconnect from the utility system (grid) whenever voltage or frequency are outside the specified ranges. To this aim, an automatic switch will be used to guarantee protection against over/under voltage and frequency. This switch can be integrated in the inverter (in which case the inverter will be the equipment performing the tasks of connection/disconnection), provided that: a) Connection/disconnection tasks are performed by a contactor that rearms automatically once the voltage and frequency have recovered to within the specified ranges. b) The contactor shall be normally governed by the inverter. It will be also possible to manually activate the contactor. c) The state of the contactor ("on/off") will be clearly shown in the front part of the inverter. d) Sealing of the protections against over/under voltage and frequency will be possible, or the inverter manufacturer shall certify: 1. The limiting values of the over/under voltage and frequency protections. 2. The type and characteristics of the device used to detect over/under voltage and frequency (model, brand, calibration, etc.). 3. That the inverter has passed specific tests related to the voltage and frequency limits. e) If the over/under voltage and frequency protections are performed by software, sealing of such protections will be substituted by a certificate of the inverter manufacturer, where it is mentioned explicitly that the software is not accessible to the photovoltaic system user.

5.4	Response to utility recovery
	The photovoltaic system shall automatically reconnect to the utility system whenever the voltage and frequency have recovered to within the specified ranges.
5.5	Earthing
	Earthing of the photovoltaic system equipment shall be done without disturbing the earthing of the utility distribution system, ensuring that no defects are transferred to the distribution network. See Rule 4.4 for Ground Penetration limits. The photovoltaic system shall guarantee galvanic separation between the low voltage distribution network and the photovoltaic system, either by means of an isolation transformer (included in or external to the inverters) or by any other means fulfilling its function, based on state-of-the-art technological development. In this sense, inverters with high-frequency transformers or transformerless inverters are permitted, provided that the inverter(s) manufacturer(s) provides a certificate guaranteeing that the maximum DC current to be fed into the grid is smaller or equal than 0,5% of the nominal output current of the inverter(s). Teams must include in the project documents certificates of the inverters manufacturers that demonstrate compliance with the galvanic separation requirement as well as with other requirements of the Royal Decree 1663/2000 mentioned in Rule 51.7 (for example, protection against over/under voltage and frequency).
5.6	Short circuit protection
5.7	Isolation and switching
	The photovoltaic system shall include the following protection devices at the utility interface: - A "general manual switch", a magnetothermic switch with short circuit current higher than the value indicated by the electricity distribution company. This switch will be accessible to the electricity distribution company in order to be able to perform a manual disconnection of the photovoltaic system. - An automatic Residual Current Device, for personnel protection against indirect contact. Both protections will be provided to the teams by the Organizers.

2. Electricity system.- For electrical system is understood all collection of equipments and circuits associated to a particular purpose: electrical energy production, conversion, transformation, transmission, distribution or use.

The electrical system must comply with the following requirements, based on the Low Voltage Electrotechnic Regulation and complementary technical instructions; This Regulation was approved by Real Decree 842/2002, the 2nd August, and its scope is all the Spanish State.

Technical Report of Design

A technical report of design must be prepared in order to provide the general data and characteristics of the system's design. The authorized installer or competent qualified technician signing the corresponding report will be the direct responsible for adapting it to the regulations requirements.

The Technical report of design will include the following items:

- Owner, report author technician, location, use and aim identification.
- General description of the system, general design criteria and justifying calculations.
- Receiver's nominal relation to its power.
- Design and specifications of: wiring, mains, panels and protections.
- Drawings and complete electrical diagram of the interior system, including all the elements and protections. Mainly, a single-line diagram, and earthed, site and paths drawings

Grid voltage and frequency

For exterior grid connection, the house's voltage will be 230 V between phase and neutral, for a maximum intensity of 63 A (14.490 W). Connections to three-phase grid (400 V between phases) will not be admitted. The frequency used in the grid will be 50 Hz.

Other voltages and frequencies, if in single-phase distribution, may be used, only if required by the Teams' country of origin electrical codes. In that case, teams must communicate the organization, in writing, the voltage, frequency, and foreseen power by filling-in the Electric and Photovoltaic Chart defined in Rule 48. This way, the organization may foresee all the materials means needed to make the connection to the exterior grid, so no significant disruption take place in other systems operation.

Equipment and materials

All materials and equipment used in the installations must be used in the same way and for the same purpose as it was manufactured. Those included in the application field of transposing regulation of the European Union Directives, must comply with that established.

All necessary indications for the correct use and installation must be included along with the equipments and materials. The following minimum indications must be indicated:

a. Manufacturer, legal representative or commercialization responsible identification.
b. Brand and model.
c. Assigned voltage and power (or intensity)
d. Any other indication appointed by the manufacturer referring to a specific use of the material or equipment

System's execution and start up

Electric systems start up and use is conditioned to the following procedure:

a. A technical documentation describing the system characteristics must be prepared before construction. (Technical Report with the minimum content indicated above).
b. An authorized installer must verify the installation, with the project representative supervision, in order to check the correct execution and the safe operation of the installation.
c. Once the installation is finished, and all the appropriate verifications have been realized, the authorized installer, responsible for the installation execution, issues an installation certificate. The certificate must state that the installation has been realized in accordance with the Regulation and the complementary technical instructions, as with the technical documentation. In case there are changes between the construction and the technical documentation, the variations must be identified and justified.
d. Only authorized installers may realize the electric installations.

Prescriptions Compliance

Installations realized on approval with the prescriptions included in this item (based on the Low Voltage Electrotechnic Regulation) will be considered to provide the safety conditions required in accordance with the technical state, in order to preserve people and goods, when used according to its purpose.

The following minimum conditions, based on the Low Voltage Electrotechnic Regulation prescriptions, are compulsory. These minimums will be considered as met:

a. By direct application of the ITC correspondent prescriptions, or
b. By equivalent safety techniques application. Understanding for this, those not causing disruption in the distribution systems of the supplying companies, and providing a safety level at least, comparable to the one indicated above. The equivalent safety techniques application must be justified properly by the installation designer and approved by the competent Governing Body.

Regulation Compliance

The following table consists of a checking list with the most relevant items to include in the document:

Note.- The following table refers to items included in the ITC – Complementary Technical Instructions ("Instrucciones Técnicas Complementarias") which will be detailed in the next draft of the Rules.

ITC-BT-12	Connection systems Diagram for a unique user
ITC-BT-13	Connection systems Protection general box: location, type and characteristics
ITC-BT-14	Connection systems Supply general line: location, section, wire type, voltage drop and characteristics.
ITC-BT-15	Connection systems Individual branch: installation type, wire section and kind, voltage drop.
ITC-BT-17	Connection systems Protection and control general and individual devices: Power control switch General automatic switch General differential switch 4-pole breaker switch Overvoltage protection devices
ITC-BT-18	Earthed systems Earth conductors Protection conductors Earthed resistance
ITC-BT-19	Interior systems General prescriptions Conductors nature and section Admissible voltage drops Admissible maximum intensities Conductors identification Direct or indirect contact protection measures Current and connections socket
ITC-BT-20	Interior systems Installation systems General prescriptions: power circuits, disposition, circuit gap, access and mains identifications. Particular conditions: main type choice and its location. Unit through constructive elements
ITC-BT-21	Interior systems Protective tubes and channels Tubes minimum characteristics considering the installation kind. Tubes and channels assembly types
ITC-BT-22	Interior systems Over-intensities protections
ITC-BT-23	Connection systems Over-voltages protections
ITC-BT-24	Interior systems Direct and indirect contact protection Direct contact protection types Indirect contact protection conditions in TT diagrams
ITC-BT-25	Interior systems

	Circuits number and characteristics	
		Applicable electrification kind
		Necessary number of circuits, conductors section and admissible voltage drops calculation.
		Use points related considering the type of room
ITC-BT-26	Interior systems	
	General prescriptions	
		Earthed system: earthed socket, protection conductors, main lines and branching.
	Protection and control devices general box.	
		Active and protective conductors nature and section.
		Installations execution.
ITC-BT-27	Interior systems	
	Rooms with shower and bath	
		Protection volumes classification
		Protection
		Electrical materials choice and installation
ITC-BT-28	Electrical Installation in locals of Public Concurrency	
	General prescriptions	
	Emergency lighting	
ITC-BT-34	Systems for special purposes	
	Stands and fairs	
		Luminaries and wire kinds
		Emergency switches and lighting
		Mains, current sockets, and control boxes, panels and wardrobes.

Therefore, to comply with the safety criteria concerning the aforementioned applicable regulations (REBT and ITC), the interior installation of the houses must consist of:

a) A general circuit breaker (supporting at least 6 kA short circuit current) in the electric box of the house
b) Protections against overload, short circuit (thermal magnetic circuit breaker, MCB or MCCB) and imbalance (residual current circuit breaker, RCD) for all the interior circuits of the house.
c) At least 5 basic circuit inside the house (for lighting, sockets for general use and refrigerator, for the cooker and oven, for the washing machine, dishwasher and electric water heater, and to feed sockets at bathrooms and auxiliary bases in the kitchen) protected by an independent circuit breaker.
d) All metallic mass existing in the installation area and the accessible metallic mass of the receiving devices must be connected to the grounding, as well as those metallic parts of deposits, general heating and plumbing systems, TV and radio aerials.
e) Wires to use must be insulated, made of copper and have a minimum nominal voltage of 450/750 V. Sections must be in accordance with the consumptions and assigned protections.

51.8.Water Use

1. Greywater

Water coming from bathtubs, showers, bath sinks and clothes washers is considered greywater.

a. As stated in Rule 8.5, greywater may only be used for irrigation. Greywater may be reused to water vegetation only if it is first processed by an approved greywater reuse system which avoids undesired organisms (see Rule 9.2).
b. Teams are not permitted to transport manually greywater from the tanks to the vegetation's location.
c. The approval of the greywater system by the SDE organizers will only be effective at the Villa Solar in Madrid during the public event. The greywater systems will be approved evaluating each particular case and considering the following criteria:
    - No black water source can be connected to a greywater storage or distribution system. Water coming from kitchen sinks and dishwashers is considered black water. As a reminder, the water closet will not be connected to the sewage disposal system during the event. This leaves bathtubs, showers, bath sinks and clothes washers as the only fixtures available for connection to a greywater storage/use system.
    - If any team pretends to use any water treatment system, they will have to send the appropriate information to the SDE Organization, indicating the fixtures connected to the greywater system, the pipes system and tanks and any other discharge points. A note must be included, indicating the safety label for any greywater reuse system.

Rule 52 Health and Safety

As stated in Rule 3.3, *"each team is responsible for the safety of its operations and each team member and team crew member shall work in a safe manner at all times during the project."*
Due safety is an area of major importance for the organizers of the Competition; great emphasis is going to be made to confirm that the teams are complying with:

- Planning and executing a safe process of production: all along the project development Teams must plan and develop every single phase of the competition considering Health and safety requirements as a must.
- The European Union and/or Spanish law for the Prevention of Labour Risks (Health and Safety at Work). This is absolutely mandatory, since the event is located in Madrid.

52.1.Spanish Applicable Regulation

The prevention of risks must be integrated during the preparation, assembly, executing, maintenance and disassembly of the Solar Decathlon Europe 2012 event.
The teams must comply with the regulations based on the International Labour Organization (ILO) and the corresponding European directives, especially the Spanish law for the Prevention of Labour Risks (Health and Safety at Work).
Considering Health and safety (HS) in the workplace, the actions to be done during this competition are regulated by the Labour Regulation from Spain, member of the European Union.
For the definition of the preventive documents, the indications of the "Guía Técnica de Interpretación del RD 1627/1997" (Technical Guide oof the RD 1627/1997 interpretation) will be followed. This guide is produced and edited according to legal attribution of the "*Ley 31/1995 de Prevención de Riesgos Laborales*" (Law 31/1995 of the Labour Risks Prevention), by the "*Instituto Nacional de Seguridad e Higiene en el Trabajo*" (Health and Safety in the Work National Institute).
Health and Safety Spanish regulation focus on the analysis of risks for persons **related to construction works**, and the way to resolve them. Any other safety regulations (safety in use,

structural safety, etc.) belong to other areas of this Competition and therefore are not included in this rule.
Decathletes may be subject to the risk of accidents during the construction of the houses. These risks are mainly the same as those labour accidents regulated in the aforementioned Spanish law.

The same law is applicable for all the contracted staff.
As a result, Rule 52 of the SDE Rules are based on the Health and Safety Spanish Regulation, and they are mandatory for all the Team members.

52.2.Work Phases

To comply with the two aforementioned objectives (complying with Spanish regulation and developing a safe process) there are four different steps to be made:

1. Process of analysis
2. Health and Safety Plan (HS Plan)
3. Preparing for construction works
4. Construction works

52.2.1. Step 1: Process of analysis

Safety measures must be defined as the consequence of the analysis of the assembly, maintenance and dismantling of the house. The suggested process is as follows:

A. Breakdown the PROJECT in work-units or activities. For example foundation execution, façade assembly, installation of PV panels, etc.
B. Identify the TASKS to be developed in each work-unit, among others: transport, unloading, stock up, on-site layout, assemble, etc.
   For example, the structural tasks for a modular house will consist on:
   1. Transporting the module
   2. Unloading the module
   3. Stocking the module
   4. Making the on-site layout
   5. Laying the module on site
   6. Assembling the module with the rest of the structure.
C. Identify the AGENTS (human resources, machinery, materials, etc.) that take part in each task:
   Following the previous example:
   1. The truck
   2. The load
   3. The Health & Safety Operations' coordinator responsible for managing the work
   4. The workers
   5. …
D. Identify the RISKS associated to each task, advising of the MEASURES to take for solving them:
   Following the previous example:

Task 1: Unloading module
Risk 1a: *getting knocked down by the transport truck in the working area.*
Solution 1a: *Certified truck driver, marking circulation ways separated from the workers path, etc.*

Risk 1b: ...
Solution 1b: ...

Task 2: laying the module on site
Risk 2a: *getting knocked down by the load.*
Solution 2a: *controlling the load with ropes from at least four opposite points, keeping workers far away from the module; Crane controller with specific license, etc.*
Risk 2b: ...
Solution 2b: ...

Figure 52.1 shows the Process of Analysis explained above, which aim is to answer three questions:

1. Which agents (elements) are taking part? Identify the workers, machinery, auxiliary resources, etc.
2. What can/would happen to the workers? For each task, carefully examine what could

cause harm to the workers. Therefore, identifying the hazards, who might be harmed and how.

3. How can each risk be solved? Describe the measures to be adopted to solve each risk.

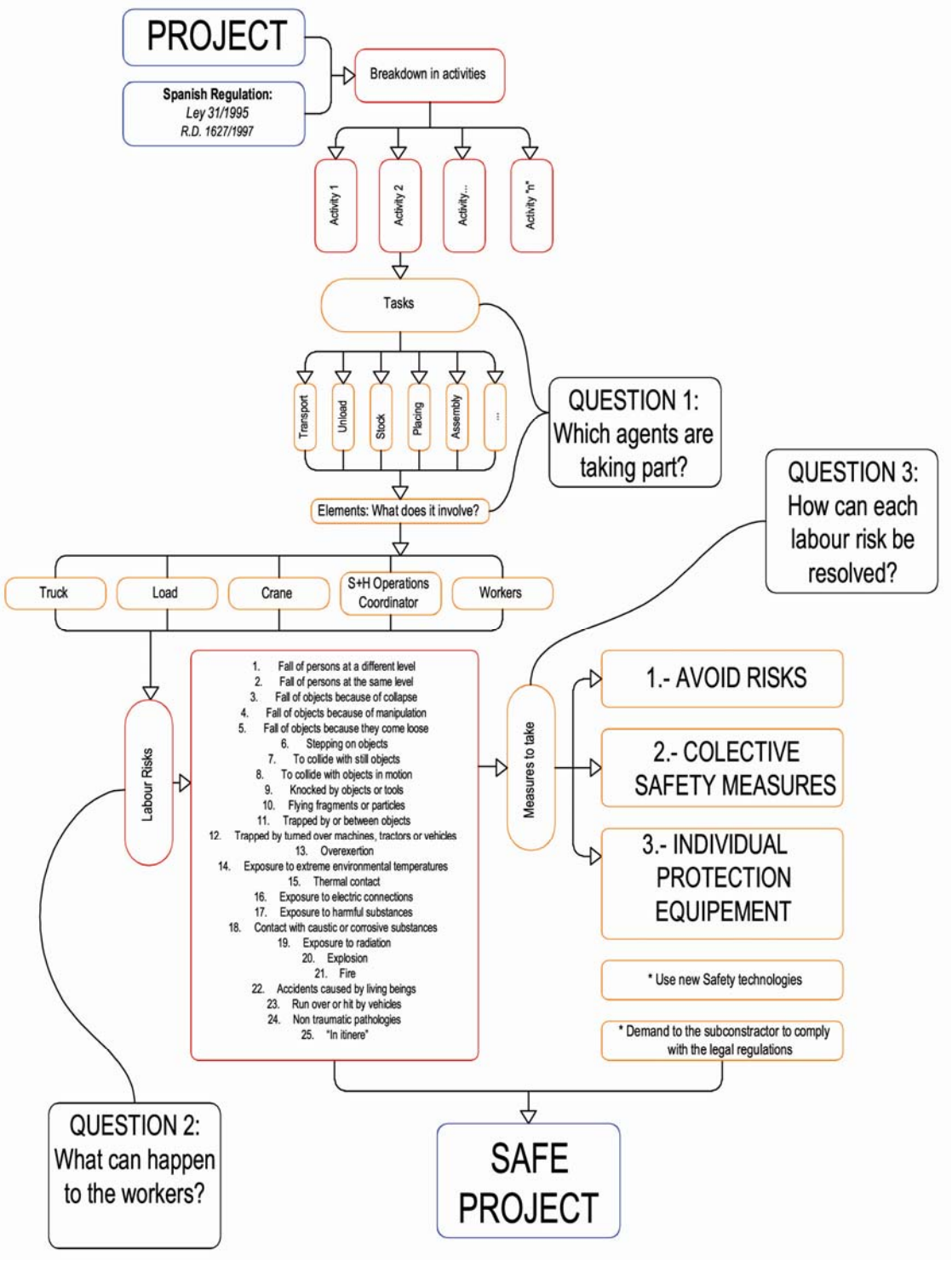
The following list is based on the list of labour risks established in the Spanish Regulation. For the risk Analysis, select those which may take place in every work unit.

25 risks

1. Fall of persons at a different level
2. Fall of persons at the same level
3. Fall of objects because of collapse
4. Fall of objects because they come loose
5. Fall of objects because of manipulation
6. Stepping on objects
7. Colliding with still objects
8. Colliding with objects in motion
9. Knocked by objects or tools
10. Flying fragments or particles
11. Accidents caused by living beings
12. Trapped by or between objects
13. Trapped by turned over machines, tractors or vehicles
14. Overexertion
15. Exposure to extreme environmental temperatures
16. Thermal contact
17. Exposure to electric connections
18. Exposure to radiation
19. Exposure to harmful substances
20. Contact with caustic or corrosive substances
21. Explosion
22. Fire
23. Run over or hit by vehicles
24. Non traumatic pathologies
25. "In itinere"

It is important to remember that the Risk Analysis must cover not only the construction process, but all the activities of the SDE Competition: project development, previous works at university, decathletes training, transport, assembly, maintenance during competition, disassembly, etc.

Figure 52.1 Process of analysis of the Health and Safety Plan



52.2.2. Step 2: Health and Safety Plan

The main objective of the Health and Safety Plan (HS Plan) is preventing and solving any incident that may arise during the construction works, and must include assembly and disassembly in the Villa Solar, maintenance during contest week, and vehicles accesses and exits to the Villa.

All the HS documents will be a useful guide for the Team about the know-how to carry out the activities.

The HS Plan must explain and describe the aforementioned process of analysis. HS Plan will be required from Deliverable #3 onwards. Information will be updated and specified along with the project development, including further details in each deliverable. The plan consists of:

1. Health and Safety Drawings **(HS Drawings)**, to be included in the corresponding section of the Project Drawings.
2. Health and Safety Report **(HS Report)**, to be included in the Project Manual, in the Health and Safety Plan Section.
3. Health and Safety Specific Terms and Conditions Document **(HS Particular Conditions Document)**, to be included as well in the Project Manual, in the Health and Safety Plan Section.

The HS Plan must be developed according to the following explanation, updated as many times as necessary, approved (please refer to Rule 52.4) and posted on the Team's lot wherever it is accessible to all persons working there and to the SDE Organizers.

A. Health and Safety drawings

HS Drawings must clearly define the safety measures to adopt in every work phase. As minimum, must consist of:

- Identify the work Phases, determining the activities to be developed in each one, the risks associated and the safety measures adopted to solve them.
- Specify the Number of Team members and their corresponding task
- Collective protections to be used (position in each phase, details for its installation, etc.)
- First aid area inside the lot (first aid bag)
- Delimit the different areas inside the lot
- Determine the location of the most important elements for each work phase: movement of trucks, movement of modules (any heavy load in movement), position of crane, position of scaffolding, etc.
- Individual Protections to be used
- Signposting
- Emergency evacuation plan during the assembly and disassembly periods. (corresponding to item 17 of the HS Report).
  The evacuation plan must show the procedure in case of emergency or accident, and must include at least:
  - Drawings indicating the evacuation path
  - Route to the sanitary centre
  - Procedure to follow in case of accident
  - Emergency phones, assurance ID, etc.

  As mandatory, the Evacuation Plan must be kept visible inside the lot (using, for example, a waterproof mobile signpost) during the final phase of the Competition. Moreover, each Team member must have a copy of it and keep it with him during their working periods.

Note: The SDE Organization suggests teams to develop the HS Drawings as assembly sketches of each unit, step by step, including all the aforementioned information for a better understanding of the adopted measures and its effectiveness.

B. Health and Safety Report.

The Health & Safety Report is the document that complies with the regulation done trough the article 5.2.a of RD 1627/1997. For the SDE Competition, a report with the following sections will be enough:

1. Health and Safety Plan Precedents and Aim
2. General data of the project
3. Health and Safety plan Objectives
4. Conditions of the site where construction will take place, and interesting data related to the prevention of risks during the construction process
    a. Constructive process
    b. Type and characteristics of the materials and elements
    c. Site description
    d. Climatology description
    e. Accesses and paths for vehicles
    f. Determining factors for the house placing
    g. Overlaps with the affected services and other circumstances or activities of the environment, able to cause risks during the construction
    h. Planned activities
    i. Trades whose intervention is affected by the risks prevention
    j. Auxiliary resources planned for the construction
    k. Machinery planned for the construction
    l. Construction site installations
    m. Characteristics table for the stocks
5. Activities for risks prevention
    a. Construction plan: determination of work effective timing.
    b. Overlaps and incompatibilities in the construction
    c. Number of Team members taking part in the construction
    d. Contracting planned
6. Critical work phases for risks prevention
7. Risks identification and efficacy evaluation of the adopted protections
    a. Location and identification of the areas where the works involving special risks will be developed.
    b. Risks identification and efficiency evaluation of the adopted protections
8. Collective protections to use
9. Individual protection resources to use
    a. Signposting of the risks
10. Safe working procedures of every Team member
11. Machinery and auxiliary resources
12. Planned Measures in case of accident
    a. First aids
    b. First aids bag
    c. Preventive medicine
    d. Accident victims evacuation
13. Risks identification for possible later works
14. Useful plans and information for possible later works
15. Adopted system for the level of health and safety control during works
16. Formation and information about health and safety
17. Emergency evacuation plan during the assembly and disassembly periods

Annex 1: Identification of risks and evaluation of the efficiency of the adopted protections.
Annex 2: Identification of risks for possible later works.

*** For Annex 1 and 2, Teams will have to use the SENMUT EXPERTO tables.** SENMUT EXPERTO applied prevention evaluation table, with examples and detailed instructions to fulfill it, will be available through the SDE WAT.

C. Health and Safety Specific Terms and Conditions Document

The Health & Safety Specific Terms and Conditions is the document that satisfies the Spanish Regulation of the article 5.2.2.b of RD 1627/1997 law. For the SDE Competition, the following documents are required:

1. A statement in which the Team commits itself to avoid or minimize the risks derived from the work process.
2. A statement in which the Team commits itself to envisage the health and safety demands from all the people taking part in the project (decathletes, sub-contracted workers, etc.), and in which the Team declares to have considered those demands in the HS Plan.
3. Complete technical specifications of the collective protections that shall be used (see Rule 52.7.6).

4. Complete technical specifications of the individual protections that shall be used (see Rule 52.7.7).
5. A description of the terms and conditions of the Safety Plans that each Team member has to comply with.
6. A statement that all the Team members have passed specific medical examinations for the works that they will carry out and have the necessary qualifications. All Team members shall be properly identified in this statement and it shall clearly specify that all are of legal age.
7. A statement that the Team has received the specific training to assemble and disassemble the house that will be exhibited, preventing unexpected risks. All Team members shall be properly identified in this statement.
8. For contracted staff:
    a. Medical examinations of the workers (see item 6)
    b. Specific training (see item 7)
    c. A statement of compliance with the Health and Safety Plan
    d. If necessary, a specific description of the adaptation of their own procedures to the Health and Safety Plan (see 52.7.3.C).

Examples of the documents will be available through the SDE WAT.

52.2.3. Step 3: Preparing for construction works

The third step consists on developing all the previous measures planned to prevent risks. As described in the Health & Safety Report, in order to prevent risks, all the staff shall:

- Receive the appropriate training for the tasks they will have to carry out: using machinery and power tools, etc.
- Obtain driving licenses and the necessary certificates (or licenses) for trucks, motorized platforms and all the necessary auxiliary measures.
- Attend first-aid courses.
- Undergo medical examinations.

All the certificates and documents derived from these activities shall be included in the HS Report (section 16), and in the HS Specific Terms and Conditions Document (sections 6 and 7).

Note: The SDE HS Area encourages all Teams to practice the assembly and disassembly processes prior to the Final Phase of the Competition in Madrid. This training may help minimize the hazard chances at the Villa Solar by facing real risks', having a realistic feedback and identifying improvement areas. The team training is an important safety measure.

52.2.4. Step 4: Construction works

During the final phase of the competition, Teams shall always keep in mind the measures described in the Health & Safety Plan, which are those that they have decided to assume.

The teams shall analyze all the solutions before starting with the works in order to avoid unexpected risks. Accordingly, Teams may modify the actions described in the Health and Safety Plan. For this end, Teams have to inform the SDE Health and Safety Area immediately and wait for their approval, as any change shall at least ensure the same safety level.
During the assembly, maintenance and disassembly the Team must identify and provide all the safety and associated controls that are necessary to ensure a safe work site and activities such as:

- Providing adequate lighting to safely perform work
- Establishing work schedules/shifts to ensure Team members have adequate rest to safely work on site (see Rule 52.7.4)

- Identifying other considerations related to the work each Team member will be performing.

During the assembly, maintenance and disassembly of the houses, it is mandatory to obey all the orders and instructions given by the SDE Health and Safety Area.

52.3.SDE Health and Safety Area

As part of the SDE Organization, the SDE Health & Safety Area is the group of people in charge of Health and Safety, working to help Teams comply with the H&S established objectives.

The SDE HS Area consists of:

- HS Coordinator: Person in charge of all the Area and Director of all the works. He is the Health and Safety Coordinator of the Villa Solar during the construction, in compliance with Spanish Regulations.
- HS Inspectors: People helping the HS Coordinator with the Health and Safety activities: checking out deliverables, realizing inspections during the construction, etc. Druing the HS Coordinator's absences, HS Inspectors have the same authority.
- HS Observers: As a complementary preventive measure, during the construction, the HS Area is supported by observers, which will inform of any incident taking place to the HS Coordinator. They may not give any type of orders to the teams.

The members of the SDE HS Area will be in constant contact with the SDE HS Coordinator. In case the works involve serious and imminent risks, the HS Coordinators or HS Inspectors will have the power to stop the works, as stated in the Law 31/1995 of Labour Risks Prevention, article 4, item 4.

Which says: *A "serious and imminent labour risk" is the one which is rationally probable to take place in an immediate future, and may mean a serious damage for the health of the workers.*
In case of exposition to agents susceptible to causing a serious damage to the health of the workers, it will be considered that there is a serious and imminent labour risk when an exposition to the mentioned agents is rationally probable to take place in an immediate future and would cause serious damage to health, even when they are not evident immediately.

52.4.HS Plan Approval

The Final HS Plan will be considered acceptable only when the SDE HS Coordinator certifies that all items are properly developed. When teams have their HS Plan with an acceptable level, the SDE HS Coordinator will issue them a certificate of approval.

Without the certificate of approval, the Team will not be authorized to assemble the house in the corresponding lot of the Villa Solar.

Once the HS Plan has been accepted, the participant teams are responsible for making updates whenever the parameters change, and ask for a new approval. For example, if you did not plan to use a crane to place your house when your plan was submitted, but later on you decide that a crane will be necessary, you must update your plan accordingly, must ask for the updated HS Plan approval and wait for the SDE HS Coordinator authorization to start working.

52.5.Construction works control

During the competition, the SDE HS Area will participate in daily meetings with all the teams. The SDE Organization will give specific instructions based on the activities to perform throughout the day. Therefore, according to the experience during the previous days, the actions to be repeated or avoided will be indicated.

Throughout the competition, the HS Coordinator, HS Inspectors and/or HS Observers will inspect the lots of all the Teams. The objectives of these inspections will be:

- Work with the Teams, helping them to solve any problem related with the HS Area.
- Verify compliance with the HS measures.
- Accordingly decide if bonus and/or penalties are to be applied
- If necessary, stop the works immediately (some activities or all of the works). As stated in Rule 52.2.2, the HS Coordinator and HS Inspectors have the authority to stop the works.

As mandatory, Teams must post a copy of the approved HS Plan on the team's lot during the complete final phase of the Competition. The SDE HS Area members may require it at any time.

52.6.Health and Safety Bonus and Penalties

Complying with the safety measures is a prerequisite for participation in the Competition. The SDE HS Area has the authority to apply bonus, penalties and/or act on the competition according to the following:

52.6.1. Bonus

After Deliverable #5, Teams complying with the three following items will obtain up to 5 points of bonus for the total score of the Competition:

- All the documents required for Deliverable #5 regarding Health and Safety are received on time.
- No explanations or additional documents are needed to complete the Health and Safety deliverable.
- The SDE HS Coordinator considers that the documentation submitted by the Team is complete enough to receive the certificate to work in the Villa Solar.

52.6.2. Penalties

A. Teams will not receive any penalty if working in safe manner and following their Health and Safety Plan.
B. No penalties will be applied to trivial situations which are immediately corrected. However, Penalties may be applied in case of repetitive trivial situations.
C. To avoid risks and possible penalties, if a team has any doubt concerning the HS measures to be adopted for a specific task, they must confirm with the SDE HS Officers that the planned measures are adequate and sufficient.
D. If the HS Area detects any non-trivial HS fault the procedure will consist on:
    1. Order the Team to stop the works immediately.
        - The HS Area will decide the number of Team members stopping (all the Team or only those involved in the fault).
        - The HS Area will decide if it is necessary to solve the fault before stopping. In this case, only the minimum number of Team members necessary will resolve the fault and will leave the lot once they have finished.
        - The HS Area will decide for how long the work is to be stopped.
        - If the HS Area stops all the works, it is absolutely mandatory to keep out of the lot for the time established. This time counting will start immediately after the last Team member called to stop is out of the lot. The Team shall wait for instructions from the HS Area to resume the works again.
    2. In order to prevent recurrence, the SDE HS Area will meet with the Team to analyze the fault and indicate the measures to be taken to resolve this type of risk.
    3. The HS Area will order the Team members involved in the task to immediately solve the problem.
    4. Depending on the degree of the fault (see Rule 52.6.3), the HS Area may apply point or time penalties (stopping the works), or both. Moreover, in case of serious

fault the HS Area may recommend the SDE Organization to adopt another kind of action. The penalties will be applied according to the Table 52.

5. In case of intolerable fault, the HS Area will meet with the SDE Organization to discuss the possible disqualification of the Team from the Competition.

The HS Area will fill in a report signed by the Safety Officer and the HS Area in which the degree of the fault, the details of the incident, and the measures taken, etc. are defined.

Table 52. Table of Penalties:

Grade	Qualification of fault	Points penalty up to (1)	Time stopping up to (minutes)	Economic sanction up to (€)
1	Trivial	-	0	0
2	Tolerable	-	30	0
3	Moderate	2	50	6.000
4	Important	6	100	12.000
5	Intolerable (2)	10	240	48.000

(1) Point penalties will be applied only during assembly and maintenance phases.
(2) In case of intolerable fault, or reiterative faults that compromises the Health and Safety of students, the SDE HS Coordinator will meet the SDE Organization to evaluate the need to stop the works of the Team, as well as it immediate expulsion from the Competition

The SDE Organization, through the SDE HS Coordinator, has the authority to determine the grade of every fault, and the penalty to apply (type and quantity). Any economic sanction will be applied as a deduction of the economic support derived from the M.O.U.

The Spanish Administration, in compliance with current Laws, may impose sanctions (including economic, civil and/or penal), regardless those applied by the SDE Organization.

52.6.3. Degree of the faults

- Degree 1. Trivial fault. (with serious and imminent unexpected risks):
  - Temporary lack of individual protections or incorrect use of them.
  - Temporary incorrect work procedure.
  - Temporary lack of the necessary signs.
    - Examples:
      - Not wearing a hard hat, without works taking place in higher levels.
      - Carrying excessive loads.
      - General signs in the entry of the lot removed and not replaced.
- Degree 2. Tolerable fault. (with serious and imminent unexpected risks):
  - Lack of collective protections, or ineffective ones, with tolerable risks as a consequence.
  - Repetitive degree 1 fault.
- Grade 3. Moderate fault.
  - Lack of collective protections, or ineffective protections, with moderate risks as a consequence.
  - Systematic degree 1 fault, or repetitive with moderate risks as a consequence.
  - Not following the SDE HS area instructions, with moderate risks as a consequence.
- Degree 4. Important fault.
  - Lack of Collective protections, or ineffective ones, with important risks as a consequence.
  - Systematic grade 1 fault, or repetitive with important risks as a consequence.
  - Not following the SDE HS area instructions, with important risks as a consequence.
- Grade 5. Intolerable fault.
  - Negligent attitudes.
  - Deliberate actions that cause or may cause important risks for the Team member or any other person.
  - Not following the SDE HS Area orders given to the Safety Officers to resolve an expected serious and imminent risk.

52.7. Health and Safety Teams General Requirements

52.7.1. Team members in charge of Health and Safety

A. HS Team Coordinator

HS Team Coordinator is the team member in charge of Health and Safety at the Villa Solar, and has the ultimate responsibility for the development and enforcement of the Team´s HS Plan. Spanish regulations identify the HS Team Coordinator as the Health and Safety Coordinator during the construction. This person is responsible for health and Safety of the whole Team: including every operation of each of the team members. This includes: students, faculties, contracted staff, etc.

The Health and Safety Team Coordinator during the design process is the person who signs the HS Plan, certifying the truthfulness of the information submitted, and is responsible for every decision established in the HS Plan.

In compliance with Law 38/1999 *"ley de Ordenación de la Edificación",* it is mandatory that the HS Team Coordinator (during design and construction) has a qualified university degree, according to its responsibilities, which, among other, may be:

- Architect
- Building Engineer
- Engineer
- Technical Engineer

Moreover, it is mandatory to clearly identify the HS Team Coordinator in the HS Plan.
Note: The SDE HS Area suggests that a Faculty or another person with authority in the team assumes the role of HS Team Coordinator, during design and construction.

B. Safety Officers

The Safety Officers are in charge of the safety measures observance. The Spanish Regulations identify Safety Officers as preventive resources. As mandatory, Teams must designate Safety Officers and must clearly identify them in the HS Plan.

Safety Officers need to be persons with:

- Enough knowledge of the assembly/disassembly process
- Enough experience to identify risks and to look for the best way to solve them.
- Enough authority inside the team to lead the rest of the team members, and to stop the activities or all the assembly or disassembly process when necessary.

As responsible for developing and enforcing the team´s Health and Safety Plan, the HS Team Coordinator (or at least one of the HS Officers) must be in the lot while any activity is being carried out inside. It is also mandatory for them to have a distinctive sign so that they can be easily identified among the members of the Team. The SDE Organization will provide special hard hats for the Safety Officers and the HS Team Coordinators of all the teams.

52.7.2. Relationship with the SDE HS Area

The SDE HS Coordinator and SDE HS Inspectors will announce the orders only to the HS Team Coordinator or Safety Officers, who will be responsible for informing the rest of the Team. The HS Area will only talk to the rest of the team in case of imminent important risks.

The HS Team Coordinator and/or Safety Officers will participate in daily briefings at the Villa Solar. Moreover, they are encouraged to hold a similar daily briefing with the rest of the members of the team to inform them of the instructions given by the Organization.

52.7.3. Contracted staff

Any contracted staff will be considered as another Team member. It is mandatory for all the contracted staff (truck drivers, crane controller, etc.) to comply with the SDE Rules and Spanish Regulations.

A. It is important to demand the contracted staff the observance of Spanish regulations (and include them as mandatory items) before signing the contract with them. This will guarantee that all the Labour risks during the development of their work will be resolved by themselves.
B. The SDE Organization may apply penalties to the team because of the actions of their contracted staff.
C. The HS Plan must include the activities to be developed by the contracted workers following one of the two possible options:
    1. (Preferable): The contracted company or workers accept to comply with the HS Plan of the Team, in all the aspects concerning their work, and declare to observe the whole document. In this case, the Plan must include a statement signed by the contracted workers with their acceptance.

    A detailed HS Plan must include the complete description of all the works to be done. Teams shall ask the contracted staff to help them develop the Health and Safety Plan sections where the tasks in which they will be working are included.

    2. In compliance with Law 54/2003, Teams may ask the contracted staff to develop a HS Plan with their own measures. This means:
        - The Team makes the HS Plan
        - All contracted workers or employees do their own HS Plan document, with the same index, but only including the work activities that concern them. It is necessary to indicate that this document is the HS Reformed Plan from the HS Plan of the team regarding the items that concern the contracted staff.
        - Item 8 of the HS Specific Terms and Conditions Document must include a reference to these documents.

52.7.4. Working Shifts and Resting

A basic measure to reduce risks is to guarantee the rest of the Team members, as a high number of accidents are due to the tiredness or lack of concentration. A strict planning of activities and shifts among the Team members, help prevent this risk and fulfill the mandatory Spanish Regulations.

In compliance with the Local Regulation (*Convenio Colectivo de la Construcción de la Comunidad de Madrid*), the maximum number of working hours is 7.5 hours per day and worker. Therefore, Teams are recommended to organize three working shifts of 8 hours, including 1 hour for lunch and a 15 minutes break for each shift. Teams are also encouraged to have a specific area for having lunch or resting, or even better, to order Team members to leave the lot while resting.

The working shift regulation must be considered to decide the number of team members and/or HS Officers that will be necessary at the Villa Solar. As stated in Rule 52.7.1, a HS Officer or the HS Team Coordinator must be in the lot while any activity is being carried out inside.

During the construction works, the SDE HS Area may demand Teams the daily list of Team members for every shift, as well as the schedule for each one.

52.7.5. Emergency and Accident Procedures

A. The HS Plan shall include all the information concerning this subject:
    - HS Drawings: location of first aids bag, route to the health centre, planned signposting, etc.

- HS Report: Items 12, 13, 16 and 17, etc., shall indicate information like: insurance that will cover their stay in Madrid, the health centre (in accordance with the insurance instructions), etc.
- HS Specific Terms and Conditions Document. If appropriate, when indicating the Team members' education/training, Teams shall include information about accident procedures, first aids, etc.

B. Before start working
- Teams are encouraged to realize an emergency training prior to the final phase of the Competition, including a visit to the health center (especially to familiarize all the team with the fastest way to get there) in accordance with the insurance instructions.

C. During the construction works
- As stated in Rule 52.2.2, the Evacuation Plan must be kept visible inside the lot (using, for example, a waterproof mobile signpost) during the final phase of the Competition. Moreover, each Team worker must have a copy of it and keep it with him during their working periods.
- Regardless the HS measures of the SDE Organization, every team shall have a first-aid box inside their lot.
- During each shift there must be a Team member responsible for first aid, being a qualified trained person on the subject. Moreover, all the Team members are encouraged to have first-aid training.

D. In case of accident
- Act as described in the HS Plan: evaluation, first aid, etc.
- Evaluate the emergency. Take in the whole picture.
- Call or notify the SDE Organization
- If necessary, ask the SDE Organization for any type of additional help.

Information regarding the actions protocol in case of accident, in coordination with the SDE Organization, will be available through the SDE WAT

52.7.6. Collective protections

All Teams shall provide every work unit with collective protections, during the assembly, maintenance and disassembly phases of the house.

All team members, crew and volunteers that will use the collective protections need to be trained on their proper use, inspection, and limitations.

Concerning complete technical specifications of the collective protections: in accordance with the current Legislation (Machines RRDD. 1435/1992, of 17/XI; 56/95 of 30/I; 1495/86 of 26/V and 1644/08 of 10/X. Protection Equipments RD 733/97 of 30/V and Work Equipments1215/97 of 18/VII and 2177/04 de12/XII all the protection equipment, auxiliary means, machinery, etc. shall have the "CE" branding, guaranteeing their adaptation to the regulation in force. In case of scaffolds, this premise may be exceptionally replaced by the possession of a fulfillment certificate of Rule UNE-EN, ISO-EN o AFNOR-EN; during their use, fulfilling RD 2177/04 of 127XII, which also regulates the ladders and the hanging works by means of ropes.

52.7.7. Individual protection

Each team has to provide their staff (team members and crew) with protective and safety equipment (PPE) during the assembly and disassembly phases of the house. This equipment should also be available whenever considered necessary (for example during maintenance operations).

CE

All team members, crew and volunteers need to be briefed on the proper use, inspection, and limitations of the PPE.

Concerning complete technical specifications of the individual protections: in accordance with the current Legislation (Machines RRDD. 1435/1992, of 17/XI; 56/95 of 30/I; 1495/86 of 26/V and 1644/08 of 10/X. Protection Equipments RD 733/97 of 30/V and Work Equipments1215/97 of 18/VII and 2177/04 de12/XII all the protection equipment, auxiliary means, machinery, etc. shall have the "CE" branding guaranteeing their adaptation to the regulations in force.
During the assembly, maintenance and disassembly phases, a minimum level of PPE is mandatory and required at all times:

- A hard hat
- Safety glasses
- A shirt with sleeves and long trousers
- Safety boots with ankle supports.
- A reflective jacket

Additional PPE or safety equipment must be used if required for the task being performed.

52.7.8. Vehicles in the Villa Solar

Regardless the additional measures to adopt, in order to guarantee all risks are resolved, when trucks or any other vehicle is moving in the Villa Solar:

- The speed of the trucks will adapt to the step of a man.
- One person must walk in front of the truck
- Another person must walk behind the truck

These two people will have to:

- Establish the maximum speed of the vehicles
- Direct the movements of the truck
- Avoid the accidents with people, with the rest of vehicles and/or with the different elements of the Villa Solar.

SECTION 5.0 APPENDIXES

Appendix A. SDE WAT

1. Introduction

The Solar Decathlon Europe Worksite for Teams (SDE WAT) is the main communication platform between the teams and the organization. The SDE WAT is a secure educational website, which is accessible only for the participating teams (personal password is required). All the Team Members must be registered to be informed about the project. It can be reached through the link:

http://teams.sdeurope.org,

The primary usage of SDE WAT will be:

- receive all official communications
- calendar updates
- request and receive information or clarifications
- submit questions
- upload and download files

This user manual explain you how to use the Solar Decathlon Europe 2012 Worksite Area for Teams (SDE WAT). Teams are responsible for the communications made by their team members through the SDE WAT.

2. Login

For the first access to the SDE WAT, the SDE Organization will give each team only two username with its own personal password. These two users are for the Faculty Advisor Contact and for the Student Team Leader. After the first access, the team may request additional users to the organization.

To request additional users the Faculty Advisor shall send an e-mail to wat@sdeurope.org filling in the excel format table, named "New Wat Users", available through the SDE WAT, including the personal details of the new members. Teams may request additional users all throughout the project development.

Once you have your Username and Password go to login page, insert your Username [1] and Password [2], and press "Enter" [3] in order to access the main page. It is important that you edit your user information when you first log in.

3. How to edit your profile

When you first login, click on your name (in the upper right corner of the next image) and edit your user information with accurate data (select the "Edit profile" tab). Please set the following values to these settings:

- Email display: Allow everyone to see my mail address
- Email activated: The email address is enabled.

Before updating your profile, press the "Show Advanced" button and fill in the following fields:

- Web page
- Institution
- Department
- Phone
- Address
- Description (Logo, name, or any relevant information)

In order to the login information to be retained it is NECESSARY that all areas have information. In case some information is still under construction by your team, please fill in the words "under construction". In the area called description, place your name or whatever information you wish, but you have to input some text.

If you want to upload an image, photo or logo, a .png file shall be uploaded with an aspect ratio of 1:1, 100x100 px and a maximum file size of 300KB.

4. SDE WAT Main Screen

Once you are logged in you will have access to the screen showing the SDE WAT Main Screen. The following SDE WAT Main Areas are visible in the middle section of the main screen and a shortcut to view all competition participants (People->Participants) in the left side of the screen[4]:

- Official communications
- Global workspace
- Private Team Area

In the right side there are some useful tools, such as:

- Calendar: shows all of the contest's relevant dates (including deliverable deadlines). To view more information about a specific event, place the mouse over the date and a dropdown list will appear.
- Server clock: Shows the current official time of the SDE WAT.

In areas other than the main screen, these other tools are available in the right side:

- Latest news: displays information about news posted in each area
- Upcoming events: displays upcoming events and a link to the user calendar
- Search forum:

In the left hand side of all the different areas, the following tools are available:

- Navigation
  - My Home – Overview of the different areas the user has access to
  - Site Pages – Browse through blogs and tags
  - My Profile – View user's profile and actions
  - My Areas – Direct access to all areas the user has access to
    - Participants – Shows a list of the users in that specific area
    - General – List of the area forums
- Settings
  - My Profile Settings – Allows the edition of the user's profile settings.

5. Official Communications

Access to these message boards is granted to all users but only SDE 2012 organization members may create or modify posts. The Official communications area has seven message boards:

- Rules and Related documentation: will include the latest version of the SDE Rules and related documentation needed for the projects developments.
- FAQ (Frequently Asked Questions): will include the most frequently asked questions and the organization answers.
- Announcements: including relevant information for the competition, such as changes in

rules or deadlines, required documentations, deliverables and events (meetings, workshop, etc).

- Multimedia: including photos, videos and presentations of the SDE Competition development
- Jury: including the jurors curriculum
- Protest Resolution Committee: including the curriculum of its members and their decisions
- Scoring Results: including the maximum points assigned to each contest and the competition results
- Lot Selection: including all the information and details concerning the selection of the lots at the Villa Solar.

6. Global Workspace

The SDE Organization, as well as all teams, may create posts in this area. This is the SDE WAT's main work area and is organized in the following sections:

- Events and activities: including information related to the Participant Teams' and SDE Organization's presentations, events, or any other useful information.
- Questions to the Organization: working as a public forum, open to all teams, for posting any question regarding the Competition. (For private questions, teams must use their Private Team Area).
- Teams chat forum: where all the participants are invited to comment on their own personal ideas or development regarding the Competition.

7. Private Team Area

The team's private area is a space where the team's members can establish communication between themselves and with the organization. Only the team and organization members have access to this message board. This private area comprises the following message boards:

- Communications to & from the Organization: team members may use this message board to ask private questions to the SDE organization.
- Media Communications Forum: this forum must be used by the team to inform the SDE organization about SDE 2012 media communications.
- Team's private communication forum: it is a private message board for use only by the team members to communicate rapidly and efficiently between themselves.

8. Media Communications Forum

The team's media communications forum must be used by the team's members (specifically by the team's communications coordinator) to inform the SDE organization about SDE 2012 related news, press releases, media and /or information displayed on the team's website.

Teams must submit and keep updated the following information, which will be confidential unless teams clearly express the opposite:

- List and information of the team's supporting institutions and sponsors.- All the supporting institutions (universities, research centers and governmental departments among others) and sponsoring companies listed must include a brief description of the institution/company activity and the way in which it is involved in the Team's project, indicating the contact person working along with the team (name, surname, position, email and/or phone number).
- Coverage and press clipping of the Team's appearances in media .- Teams must track the appearances of their project in their country's media, including television, radio, press, websites and blogs, among other. Furthermore, teams must include any appearance in foreign media notified to them, indicating the contact information of the journalist or related professional interested in the SDE Competition.

- Team's dissemination activities and materials.- The organization or participation in business fairs, congresses, summits, exhibitions or any other event must be listed, indicating: name of the event, celebration place and date, brief description of the event, description of the team's participation (indicating if its time length was the same as for the whole event, or if not specifying date and time), estimated audience for the team's participation and public profile. It will include a complete relation of the communication material distributed to the public in those events, and a copy of it in pdf format. Additionally, teams will have to attach this pdf copy to the following SDE2012 deliverable.

9. Team Privacy Levels at SDE WAT Areas

1. *Official communications Area (public, read)*
   User access: organization, all teams.
   Teams may only read posts.
2. *Global workspace (public, read/write)*
   User Access: organization, all teams.
   Teams may read and write posts, as well as upload files, in every message board.
3. *Private area for Team X (private, read/write)*
   User access: organization, Team X.
   Each team may read and write posts, as well as upload files, in every message board.

Appendix B. Preliminary SDE Competition Calendar

1. Introduction

The Preliminary SDE Competition Calendar for the Solar Decathlon Europe 2012 consists of:

- General Event Calendar
- Detailed Event Schedule
- Jury Schedule

The information included in the present document may change; details or complementary information will be added in the future. However, all the modifications will be clearly indicated in the SDE Rules new editions.

SDE 2012 GENERAL EVENT CALENDAR SEPTEMBER 2012

SOLAR DECATHLON EUROPE

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
	03-Sep-12	04-Sep-12	05-Sep-12	06-Sep-12	07-Sep-12	08-Sep-12	09-Sep-12
		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
	TEAMS WELCOMING	START ASSEMBLY PERIOD	ASSEMBLY PERIOD	ASSEMBLY PERIOD	ASSEMBLY PERIOD	ASSEMBLY PERIOD	ASSEMBLY PERIOD
	10-Sep-12	11-Sep-12	12-Sep-12	13-Sep-12	14-Sep-12	15-Sep-12	16-Sep-12
	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13
10:00 12:00 12:00 14:00 14:00 16:00 16:00 18:00 18:00 20:00 20:00 22:00	ASSEMBLY PERIOD	ASSEMBLY PERIOD	ASSEMBLY PERIOD	FINAL ASSEMBLY PERIOD	COMPETITION OPENING CEREMONY Media Visits PUBLIC VISITS Instrumentation Testing	PUBLIC VISITS Instrumentation Testing	PUBLIC VISITS Instrumentation Testing
	17-Sep-11	18-Sep-11	19-Sep-11	20-Sep-11	21-Sep-11	22-Sep-11	23-Sep-12
	DAY 14	DAY 15	DAY 16	DAY 17	DAY 18	DAY 19	DAY 20
8:00 10:00 10:00 12:00 12:00 14:00 14:00 16:00 16:00 18:00 18:00 20:00 20:00 22:00 22:00 0:00	COMPETITION ACTIVITIES Jury Visits PUBLIC VISITS (PROFESSIONALS) COMPETITION ACTIVITIES	COMPETITION ACTIVITIES Jury Visits PUBLIC VISITS (PROFESSIONALS) COMPETITION ACTIVITIES	COMPETITION ACTIVITIES Jury Visits PUBLIC VISITS (PROFESSIONALS) Architecture Contest Award COMPETITION ACTIVITIES	COMPETITION ACTIVITIES Jury Visits PUBLIC VISITS (PROFESSIONALS) Engineering Contest Award COMPETITION ACTIVITIES	COMPETITION ACTIVITIES Jury Visits PUBLIC VISITS Industrialization Contest Award	PUBLIC VISITS Communication Contest Award	PUBLIC VISITS
	24-Sep-11	25-Sep-11	26-Sep-11	27-Sep-11	28-Sep-11	29-Sep-11	30-Sep-11
	DAY 21	DAY 22	DAY 23	DAY 24	DAY 25	DAY 26	DAY 27
8:00 10:00 10:00 12:00 12:00 14:00 14:00 16:00 16:00 18:00 18:00 20:00 20:00 22:00 22:00 0:00	COMPETITION ACTIVITIES Jury Visits PUBLIC VISITS (GROUPS) COMPETITION ACTIVITIES	COMPETITION ACTIVITIES Jury Visits PUBLIC VISITS (GROUPS) COMPETITION ACTIVITIES	COMPETITION ACTIVITIES Jury Visits PUBLIC VISITS (GROUPS) Sustainability Contest Award COMPETITION ACTIVITIES	COMPETITION ACTIVITIES PUBLIC VISITS (GROUPS) Energy Efficiency Contest Award COMPETITION ACTIVITIES	COMPETITION ACTIVITIES PUBLIC VISITS	PUBLIC VISITS	PUBLIC VISITS Closing Ceremony
	01-Oct-12	02-Oct-12	03-Oct-12	04-Oct-12	05-Oct-12	3-Jul-10	4-Jul-10
	DAY 28	DAY 29	DAY 30	DAY 31	DAY 32		
	START DISASSEMBLY PERIOD	DISASSEMBLY PERIOD	DISASSEMBLY PERIOD	DISASSEMBLY PERIOD	FINAL DISASSEMBLY PERIOD		

IMPORTANT NOTE ALL THE SPECIFIC ACTIVITIES AND TIME SCHEDULE FOR THE ASSEMBLY AND DISASSEMBLY PERIOD ARE STILL TO BE DETERMINED
DUE TO THE NATURAL AND OTHER UNAVOIDABLE SHADINGS IN THE VILLA SOLAR, SOME SUBCONTESTS OF CONTESTS 4, 5 & 6 WILL TAKE PLACE ONLY DURING A DAILY INTERVAL IN WHICH ALL HOUSES ARE FREE FROM SHADOWS.

Friday 14th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Media Visits / Spots Filming	Communication		ACT				
Official Opening	Communication		ACT				
Teams Private Visits	Communication		ACT				
Public Visits (General Public)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Monitoring tests - Systems' functioning	Competition		SDE				

Saturday 15th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Public Visits (General Public)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Monitoring tests - Systems' functioning	Competition		SDE				

Sunday 16th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Public Visits (General Public)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Monitoring tests - Systems' functioning	Competition		SDE				

Monday 17th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	60	6,563
Humidity	Competition	Rule 19.5	MEAS	10	640	60	0,938
Air Quality	Competition	Rule 19.5	MEAS	5	640	60	0,469
Work Station lighting	Competition	Rule 19.5	TASK	20	208	24	2,308
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1	1	15,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Dishwasher	Competition	Rule 20.5	TASK	15	8	1	1,875
Oven	Competition	Rule 20.5	TASK	15	8	1	1,875
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	1	1,875
Home Electronics	Competition	Rule 20.5	TASK	5	208	24	0,577
DAYLY AVAILABLE POINTS							47,978
ACCUMULATED AVAILABLE POINTS							47,978
Public Visits (Professionals)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Architecture Jury Visits	Competition	Rule 15	JURY				

SEE JURY'S SCHEDULE

CONTEST TYPES _ ACT OFFICIAL ACTIVITIES | TASK MONITORING TASKS
SDE SDE ORGANIZATION | MEAS CONTINUOUS MONITORING
JURY JURY

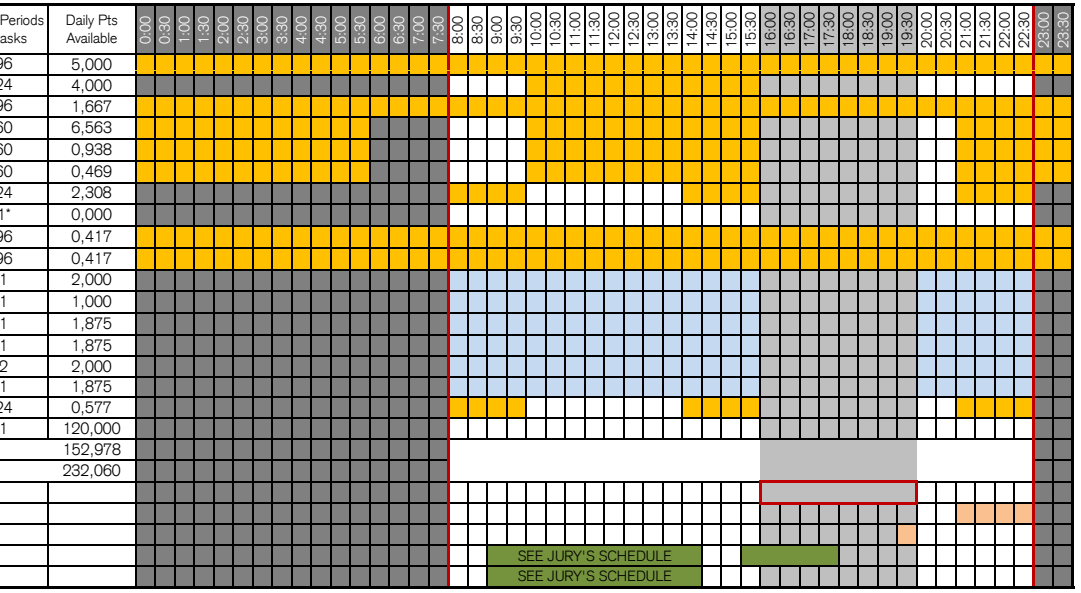
IMPOUND HOURS | PUBLIC VISITS

During the dinner the team have to switch on the exterior lights. For the interior lights, teams may do as they prefer.

The acoustic subcontest takes place on various days of the Competition week. Each day, a different group of houses will undertake this ccontest. Therefore,only once all the measurements are made the scoring will be public.

Tuesday 18th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	60	6,563
Humidity	Competition	Rule 19.5	MEAS	10	640	60	0,938
Air Quality	Competition	Rule 19.5	MEAS	5	640	60	0,469
Work Station lighting	Competition	Rule 19.5	TASK	20	208	24	2,308
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1*	1*	0,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Oven	Competition	Rule 20.5	TASK	15	8	1	1,875
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	1	1,875
Home Electronics	Competition	Rule 20.5	TASK	5	208	24	0,577
DAYLY AVAILABLE POINTS							31,103
ACCUMULATED AVAILABLE POINTS							79,082
Public Visits (Professionals)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Architecture Jury Visits	Competition	Rule 15	JURY				
Engineering & Construction Jury Visits	Competition	Rule 16	JURY				

Wednesday 19th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	60	6,563
Humidity	Competition	Rule 19.5	MEAS	10	640	60	0,938
Air Quality	Competition	Rule 19.5	MEAS	5	640	60	0,469
Work Station lighting	Competition	Rule 19.5	TASK	20	208	24	2,308
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1*	1*	0,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Dishwasher	Competition	Rule 20.5	TASK	15	8	1	1,875
Oven	Competition	Rule 20.5	TASK	15	8	1	1,875
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	1	1,875
Home Electronics	Competition	Rule 20.5	TASK	5	208	24	0,577
Architecture Contest	Competition	Rule 15	JURY	120	1	1	120,000
DAYLY AVAILABLE POINTS							152,978
ACCUMULATED AVAILABLE POINTS							232,060
Public Visits (Professionals)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Architecture Contest Award	Communication	Rule 15	ACT				
Engineering & Construction Jury Visits	Competition	Rule 16	JURY				
Industrialization & Market Viability Jury Visits	Competition	Rule 22	JURY				



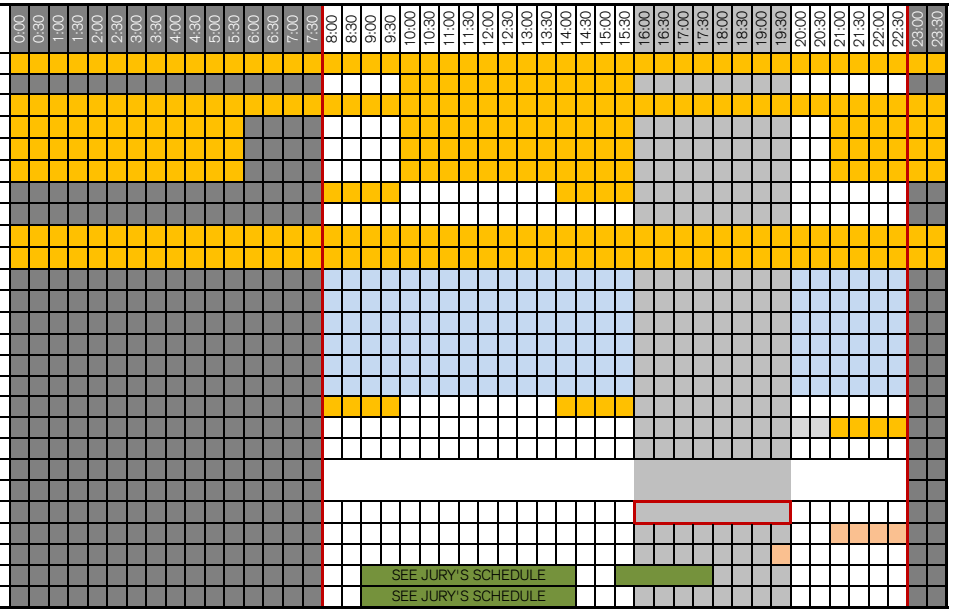
CONTEST TYPES _ ACT OFFICIAL ACTIVITIES TASK MONITORING TASKS
SDE SDE ORGANIZATION MEAS CONTINUOUS MONITORING
JURY JURY

IMPOUND HOURS PUBLIC VISITS

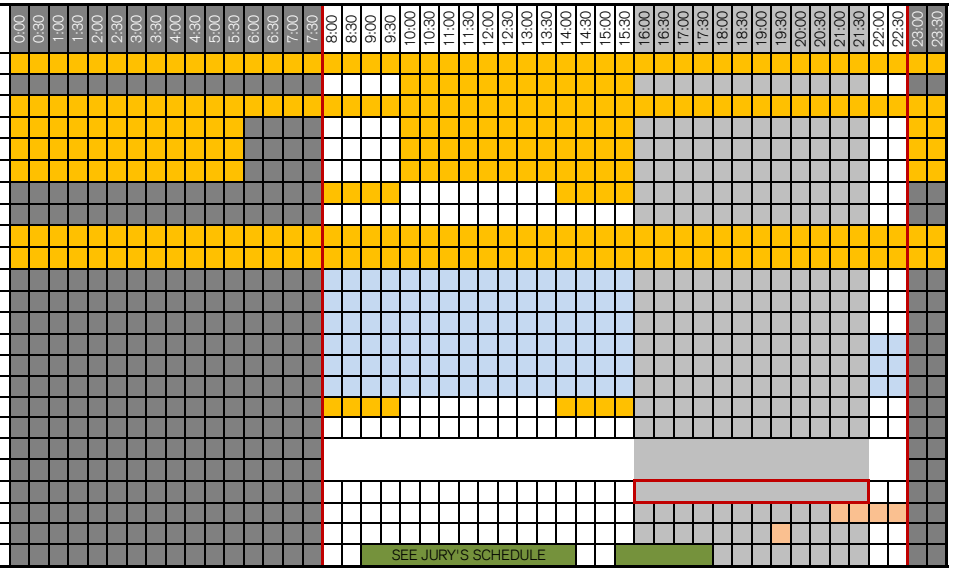
During the dinner the team have to switch on the exterior lights. For the interior lights, teams may do as they prefer.

The acoustic subcontest takes place on various days of the Competition week. Each day, a different group of houses will undertake this ccontest. Therefore,only once all the measurements are made the scoring will be public.

Thursday 20th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	60	6,563
Humidity	Competition	Rule 19.5	MEAS	10	640	60	0,938
Air Quality	Competition	Rule 19.5	MEAS	5	640	60	0,469
Work Station lighting	Competition	Rule 19.5	TASK	20	208	16	1,538
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1*	1*	0,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Dishwasher	Competition	Rule 20.5	TASK	15	8	1	1,875
Oven	Competition	Rule 20.5	TASK	15	8	1	1,875
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	1	1,875
Home Electronics	Competition	Rule 20.5	TASK	5	208	16	0,385
Dinner *	Competition	Rule 20.5	TASK	10	2	1	5,000
Engineering & Construction Contest	Competition	Rule 16	JURY	80	1	1	80,000
DAYLY AVAILABLE POINTS							117,017
ACCUMULATED AVAILABLE POINTS							349,077
Public Visits (Professionals)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Engineering & Construction Contest Award	Communication	Rule 16	ACT				
Industrialization & Market Viability Jury Visits	Competition	Rule 22	JURY				
Communication & Social Awareness Jury Visits	Competition	Rule 21	JURY				



Friday 21st September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	52	5,688
Humidity	Competition	Rule 19.5	MEAS	10	640	52	0,813
Air Quality	Competition	Rule 19.5	MEAS	5	640	52	0,406
Work Station lighting	Competition	Rule 19.5	TASK	20	208	16	1,538
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1*	1*	0,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Dishwasher	Competition	Rule 20.5	TASK	15	8	1	1,875
Oven	Competition	Rule 20.5	TASK	15	8	0	0,000
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	0	0,000
Home Electronics	Competition	Rule 20.5	TASK	5	208	16	0,385
Industrialization & Market Viability Contest	Competition	Rule 22	JURY	80	1	1	80,000
DAYLY AVAILABLE POINTS							107,204
ACCUMULATED AVAILABLE POINTS							456,281
Public Visits (General Public)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Industrialization & Market Viabiliaty Contest Award	Communication	Rule 22	ACT				
Communication & Social Awareness Jury Visits	Competition	Rule 21	JURY	120			



CONTEST TYPES _ ACT OFFICIAL ACTIVITIES; TASK MONITORING TASKS; SDE SDE ORGANIZATION; MEAS CONTINUOUS MONITORING; JURY JURY; IMPOUND HOURS; PUBLIC VISITS

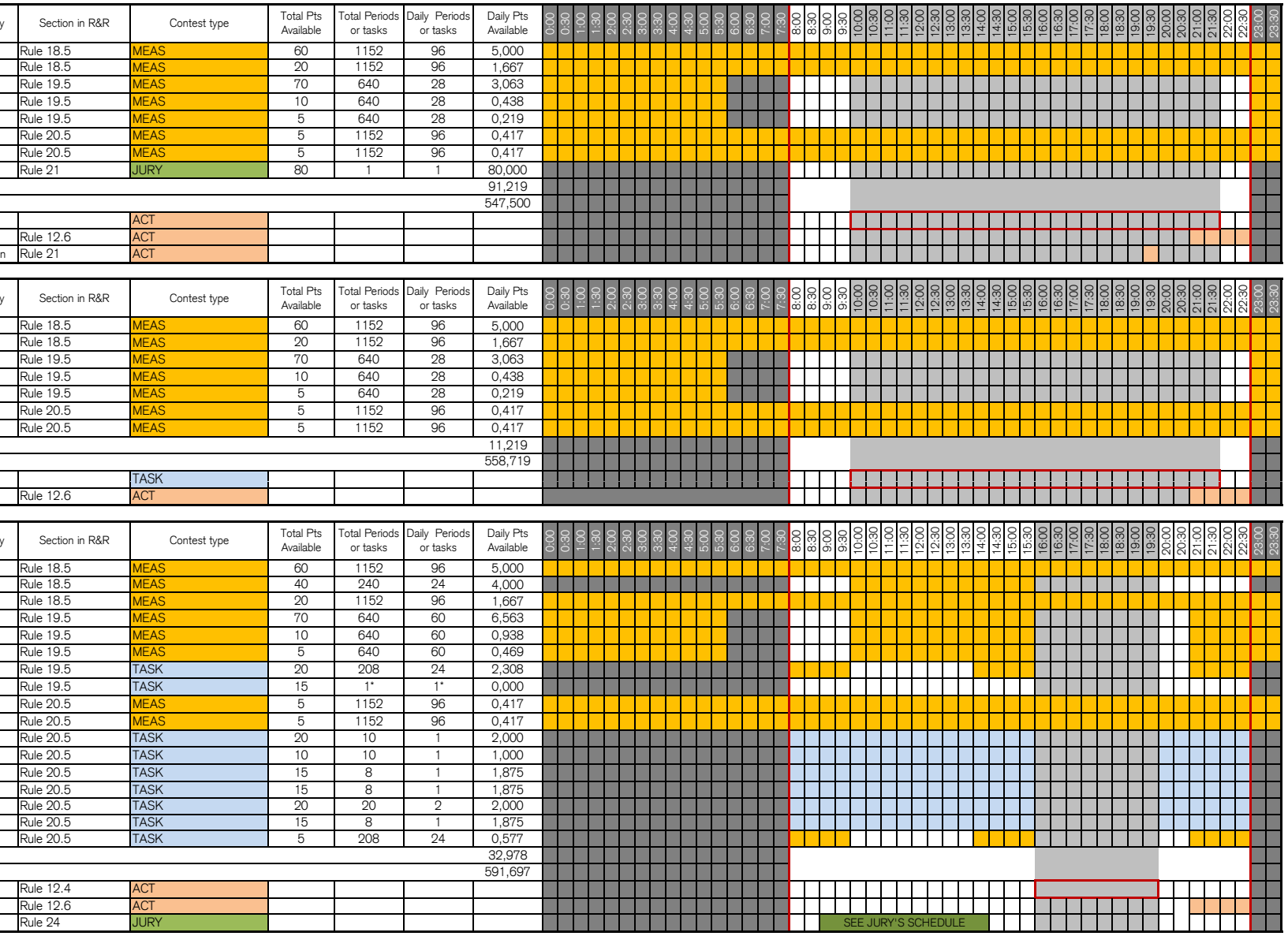
During the dinner the team have to switch on the exterior lights. For the interior lights, teams may do as they prefer.

The acoustic subcontest takes place on various days of the Competition week. Each day, a different group of houses will undertake this ccontest. Therefore,only once all the measurements are made the scoring will be public.

Saturday 22nd September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	28	3,063
Humidity	Competition	Rule 19.5	MEAS	10	640	28	0,438
Air Quality	Competition	Rule 19.5	MEAS	5	640	28	0,219
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Communication & Social Awareness Contest	Competition	Rule 21	JURY	80	1	1	80,000
DAYLY AVAILABLE POINTS							91,219
ACCUMULATED AVAILABLE POINTS							547,500
Public Visits (General Public)	Competition		ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Communication & Social Awareness Contest Award	Communication	Rule 21	ACT				

Sunday 23rd September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	28	3,063
Humidity	Competition	Rule 19.5	MEAS	10	640	28	0,438
Air Quality	Competition	Rule 19.5	MEAS	5	640	28	0,219
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
DAYLY AVAILABLE POINTS							11,219
ACCUMULATED AVAILABLE POINTS							558,719
Public Visits (General Public)	Competition		TASK				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				

Monday 24th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	60	6,563
Humidity	Competition	Rule 19.5	MEAS	10	640	60	0,938
Air Quality	Competition	Rule 19.5	MEAS	5	640	60	0,469
Work Station lighting	Competition	Rule 19.5	TASK	20	208	24	2,308
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1*	1*	0,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Dishwasher	Competition	Rule 20.5	TASK	15	8	1	1,875
Oven	Competition	Rule 20.5	TASK	15	8	1	1,875
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	1	1,875
Home Electronics	Competition	Rule 20.5	TASK	5	208	24	0,577
DAYLY AVAILABLE POINTS							32,978
ACCUMULATED AVAILABLE POINTS							591,697
Public Visits (Groups)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Sustainability Jury Visits	Competition	Rule 24	JURY				



CONTEST TYPES _ ACT OFFICIAL ACTIVITIES TASK MONITORING TASKS
SDE SDE ORGANIZATION MEAS CONTINUOUS MONITORING
JURY JURY

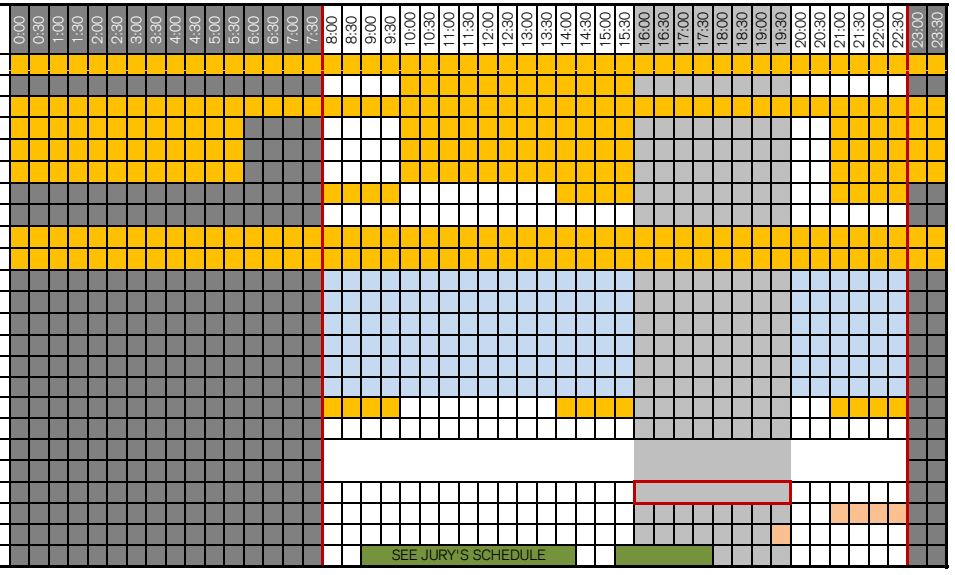
IMPOUND HOURS PUBLIC VISITS

During the dinner the team have to switch on the exterior lights. For the interior lights, teams may do as they prefer.

The acoustic subcontest takes place on various days of the Competition week. Each day, a different group of houses will undertake this ccontest. Therefore,only once all the measurements are made the scoring will be public.

Tuesday 25th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	60	6,563
Humidity	Competition	Rule 19.5	MEAS	10	640	60	0,938
Air Quality	Competition	Rule 19.5	MEAS	5	640	60	0,469
Work Station lighting	Competition	Rule 19.5	TASK	20	208	24	2,308
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1*	1*	0,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Oven	Competition	Rule 20.5	TASK	15	8	1	1,875
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	1	1,875
Home Electronics	Competition	Rule 20.5	TASK	5	208	24	0,577
DAYLY AVAILABLE POINTS							31,103
ACCUMULATED AVAILABLE POINTS							622,800
Public Visits (Groups)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Sustainability Jury Visits	Competition	Rule 24	JURY				
Energy Efficiency Jury Visits	Competition	Rule 17	JURY				

Wednesday 26th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	60	6,563
Humidity	Competition	Rule 19.5	MEAS	10	640	60	0,938
Air Quality	Competition	Rule 19.5	MEAS	5	640	60	0,469
Work Station lighting	Competition	Rule 19.5	TASK	20	208	24	2,308
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1*	1*	0,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Dishwasher	Competition	Rule 20.5	TASK	15	8	1	1,875
Oven	Competition	Rule 20.5	TASK	15	8	1	1,875
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	1	1,875
Home Electronics	Competition	Rule 20.5	TASK	5	208	24	0,577
Sustainability Contest	Competition	Rule 24	JURY	100	1	1	100,000
DAYLY AVAILABLE POINTS							132,978
ACCUMULATED AVAILABLE POINTS							755,779
Public Visits (Groups)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Sustainability Contest Award	Communication	Rule 24	ACT				
Energy Efficiency Jury Visits	Competition	Rule 17	JURY				



CONTEST TYPES _ ACT OFFICIAL ACTIVITIES TASK MONITORING TASKS
SDE SDE ORGANIZATION MEAS CONTINUOUS MONITORING
JURY JURY

IMPOUND HOURS PUBLIC VISITS

During the dinner the team have to switch on the exterior lights. For the interior lights, teams may do as they prefer.

The acoustic subcontest takes place on various days of the Competition week. Each day, a different group of houses will undertake this ccontest. Therefore,only once all the measurements are made the scoring will be public.

Thursday 27th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	60	6,563
Humidity	Competition	Rule 19.5	MEAS	10	640	60	0,938
Air Quality	Competition	Rule 19.5	MEAS	5	640	60	0,469
Work Station lighting	Competition	Rule 19.5	TASK	20	208	16	1,538
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1*	1*	0,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Dishwasher	Competition	Rule 20.5	TASK	15	8	1	1,875
Oven	Competition	Rule 20.5	TASK	15	8	1	1,875
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	1	1,875
Home Electronics	Competition	Rule 20.5	TASK	5	208	16	0,385
Dinner *	Competition	Rule 20.5	TASK	10	2	1	5,000
Energy Efficiency Contest	Competition	Rule 17	JURY	100	1	1	100,000
DAYLY AVAILABLE POINTS							137,017
ACCUMULATED AVAILABLE POINTS							892,796
Public Visits (Groups)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Energy Efficiency Contest Award	Communication	Rule 17	ACT				

Friday 28th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Electricity autonomy	Competition	Rule 18.5	MEAS	60	1152	96	5,000
Temporary generation-consumption correlation	Competition	Rule 18.5	MEAS	40	240	24	4,000
Load consumption per measurable area	Competition	Rule 18.5	MEAS	20	1152	96	1,667
Temperature	Competition	Rule 19.5	MEAS	70	640	52	5,688
Humidity	Competition	Rule 19.5	MEAS	10	640	52	0,813
Air Quality	Competition	Rule 19.5	MEAS	5	640	52	0,406
Work Station lighting	Competition	Rule 19.5	TASK	20	208	16	1,538
Accoustic Performance **	Competition	Rule 19.5	TASK	15	1*	1*	0,000
Refrigerator	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Freezer	Competition	Rule 20.5	MEAS	5	1152	96	0,417
Clothes-washer	Competition	Rule 20.5	TASK	20	10	1	2,000
Clothes-dryer	Competition	Rule 20.5	TASK	10	10	1	1,000
Dishwasher	Competition	Rule 20.5	TASK	15	8	1	1,875
Oven	Competition	Rule 20.5	TASK	15	8	0	0,000
Hot Water Draws	Competition	Rule 20.5	TASK	20	20	2	2,000
Cooking	Competition	Rule 20.5	TASK	15	8	0	0,000
Home Electronics	Competition	Rule 20.5	TASK	5	208	16	0,385
DAYLY AVAILABLE POINTS							27,204
ACCUMULATED AVAILABLE POINTS							920,000
Public Visits (General Public)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				

CONTEST TYPES _ ACT OFFICIAL ACTIVITIES TASK MONITORING TASKS
SDE SDE ORGANIZATION MEAS CONTINUOUS MONITORING
JURY JURY

IMPOUND HOURS PUBLIC VISITS

During the dinner the team have to switch on the exterior lights. For the interior lights, teams may do as they prefer.

The acoustic subcontest takes place on various days of the Competition week. Each day, a different group of houses will undertake this ccontest. Therefore,only once all the measurements are made the scoring will be public.

Saturday 29th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Innovation Contest	Competition	Rule 23	JURY	80	1	1	80,000
DAYLY AVAILABLE POINTS							0,000
ACCUMULATED AVAILABLE POINTS							1000,000
Public Visits (General Public)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Scoring Revision	Competition		SDE				

Sunday 30th September	Type of activity	Section in R&R	Contest type	Total Pts Available	Total Periods or tasks	Daily Periods or tasks	Daily Pts Available
Public Visits (General Public)	Competition	Rule 12.4	ACT				
Interior & Exterior Lighting	Competition	Rule 12.6	ACT				
Closing Ceremony	Communication		ACT				

CONTEST TYPES _ ACT OFFICIAL ACTIVITIES; TASK MONITORING TASKS; SDE SDE ORGANIZATION; MEAS CONTINUOUS MONITORING; JURY JURY; IMPOUND HOURS; PUBLIC VISITS

During the dinner the team have to switch on the exterior lights. For the interior lights, teams may do as they prefer.

The acoustic subcontest takes place on various days of the Competition week. Each day, a different group of houses will undertake this ccontest. Therefore,only once all the measurements are made the scoring will be public.

SDE 2012 JURY SCHEDULE

SOLAR DECATHLON EUROPE

	SUNDAY 16.Sep	MONDAY 17.Sep	TUESDAY 18.Sep.2012	WEDNESDAY 19.Sep.2012	THURSDAY 20.Sep.2012	FRIDAY 21.Sep.2012	SATURDA 22.Sep.20	SUNDAY 23.Sep.20	MONDAY 24.Sep	TUESDAY 25.Sep.2012	WEDNESDAY 26.Sep.2012	THURSDA 27.Sep.20
9:00 AM		ARCHIT LOT N.01	ARCHIT LOT N.09 / ENGIN LOT N.01	ENGIN LOT N.09 / INDUSTR LOT N.01	INDUSTR LOT N.09 / COMM LOT N.01	COMM LOT N.09			SUST LOT N.01	SUST LOT N.09 / EFF.EN LOT N.01	EFF.EN LOT N.09	
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9:10 AM												
9:15 AM												
9:20 AM												
9:25 AM												
9:30 AM												
9:35 AM												
9:40 AM		ARCHIT LOT N.02	ARCHIT LOT N.10 / ENGIN LOT N.02	ARCHIT LOT N.10 / INDUSTR LOT N.02	INDUSTR LOT N.10 / COMM LOT N.02	COMM LOT N.10			SUST LOT N.02	SUST LOT N.10 / EFF.EN LOT N.02	EFF.EN LOT N.10	
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10:10 AM												
10:15 AM												
10:20 AM		ARCHIT LOT N.03	ARCHIT LOT N.11 / ENGIN LOT N.03	ARCHIT LOT N.11 / INDUSTR LOT N.03	INDUSTR LOT N.11 / COMM LOT N.03	COMM LOT N.11			SUST LOT N.03	SUST LOT N.11 / EFF.EN LOT N.03	EFF.EN LOT N.11	
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11:00 AM		ARCHIT LOT N.04	ARCHIT LOT N.12 / ENGIN LOT N.04	ARCHIT LOT N.12 / INDUSTR LOT N.04	INDUSTR LOT N.12 / COMM LOT N.04	COMM LOT N.12			SUST LOT N.04	SUST LOT N.12 / EFF.EN LOT N.04	EFF.EN LOT N.12	
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12:10 PM		ARCHIT LOT N.05	ARCHIT LOT N.13 / ENGIN LOT N.05	ARCHIT DELIBERATION & FINAL DECISIONS / ENGIN LOT N.13 / INDUSTR LOT N.05	ENGIN DELIBERATION & FINAL DECISIONS / INDUSTR LOT N.13 / COMM LOT N.05	INDUSTR DELIBERATION & FINAL DECISIONS / COMM LOT N.13	COMMUN DELIBERATION & FINAL DECISIONS		SUST LOT N.05	SUST LOT N.13 / EFF.EN LOT N.05	SUST DELIBERATION & FINAL DECISIONS / EFF.EN LOT N.13	EFF.EN DELIBERATION & FINAL DECISIONS
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12:40 PM		ARCHIT LOT N.06	ARCHIT LOT N.14 / ENGIN LOT N.06	ENGIN LOT N.14 / INDUSTR LOT N.06	INDUSTR LOT N.14 / COMM LOT N.06	COMM LOT N.14			SUST LOT N.06	SUST LOT N.14 / EFF.EN LOT N.06	EFF.EN LOT N.14	
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12:55 PM												
1:00 PM												
1:05 PM												
1:10 PM		ARCHIT LOT N.07	ARCHIT LOT N.15 / ENGIN LOT N.07	ENGIN LOT N.15 / INDUSTR LOT N.07	INDUSTR LOT N.15 / COMM LOT N.07	COMM LOT N.15			SUST LOT N.07	SUST LOT N.15 / EFF.EN LOT N.07	EFF.EN LOT N.15	
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2:05 PM		ARCHIT LOT N.08	ARCHIT LOT N.16 / ENGIN LOT N.08	ENGIN LOT N.16 / INDUSTR LOT N.08	INDUSTR LOT N.16 / COMM LOT N.08	COMM LOT N.16			SUST LOT N.08	SUST LOT N.16 / EFF.EN LOT N.08	EFF.EN LOT N.16	
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4:10 PM		ARCHIT DEBATE & CONFERENCE	ARCHIT LOT N.18 / ENGIN DEBATE & CONFERENCE	ENGIN LOT N.18 / INDUSTR DEBATE & CONFERENCE	INDUSTR LOT N.18 / COMM DEBATE & CONFERENCE	COMM LOT N.18			SUST DEBATE & CONFERENCE	SUST LOT N.18 / EFF.EN DEBATE & CONFERENCE	EFF.EN LOT N.18	
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4:45 PM												
4:50 PM			ARCHIT LOT N.19	ENGIN LOT N.19	INDUSTR LOT N.19	COMM LOT N.19				SUST LOT N.19	EFF.EN LOT N.19	
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