

THE UNITED STATES DEPARTMENT OF ENERGY PRESENTS

solar decathlon

The Solar Decathlon is an international university-level student competition for sustainable, innovative & energy-efficient architecture & engineering. Twenty intrepid teams compete to design, build & operate individual, solar-powered, resource-responsible & intelligent homes, creating a spectacular solar village open to academics, researchers, industrial partners & the public at large.



SUPPORTED BY THE ENERGY ENDEAVOUR FOUNDATION



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The Solar Decathlon has been held in the United States seven times, most recently in October 2015. The competition has also been held beyond the United States; in Europe (2010, 2012, 2014), China (2013) and Latin America (2015). Further competitions are planned in the United States (2017, 2019), China (2017), Latin America (2018) and the Middle East (2018 & 2020).

sd history



Initiated in 2002 by the United States Department of Energy, the Solar Decathlon invites multidisciplinary teams to the competition site (the 'solar village') where the teams assemble their houses in under just 14 days. The site becomes an open forum and exhibition, where the houses are operated and demonstrated to the public and evaluated by a jury of renowned international adjudicators. The competition is structured around ten contests. These are either measured (i.e. electrical production) or juried (i.e. architecture). The results of the contests are calculated, determining the overall winner.



The success of the Solar Decathlon in spreading energy literacy has raised interest to extend the competition format into other domains. The Energy Endeavour Foundation supports this mandate.



SOLAR DECATHLON UNITED STATES (DEPARTMENT OF ENERGY)



The U.S. Department of Energy Solar Decathlon features 10 contests that challenge collegiate teams to design and build full-size, solar-powered houses. The winning team best blends design excellence and smart energy production with innovation, market potential, and energy & water efficiency. In 2002, after two years of work, the U.S. Department of Energy brought the first-ever Solar Decathlon to life on the National Mall in Washington D.C. It has occurred in the United States seven times in total—five times in Washington, D.C. and twice in Irvine, California. The next U.S. Solar Decathlon will be held in Denver, Colorado, October 5-15, 2017.

WORKFORCE

WATER

Each of the international Solar Decathlon events in Europe, China, Latin America and Caribbean, and the Middle East, provide hands-on experience and unique training for more than 30,000 competitors, preparing them to enter the clean energy workforce. Solar Decathlons held in the United States also provide intensive consumer education in sustainability, enjoying an average of 90,000 event visitors, 500,000 web site visitors, tens of thousands of social media fans and followers, and worldwide media impressions exceeding 2 billion for a single event.

COMFORT

The U.S. Department of Energy is proud that Solar Decathlon has become a brand that engages, inspires and educates students and the public around the world. Solar Decathlon 2017 features 14 teams from three countries and introduces new contests that emphasise innovation and water use and re-use to make the competition responsive to evolving market conditions.

U.S. SOLAR DECATHLON 2017 CONTESTS >>

- 1 Architecture**
- 2 Market Potential**
- 3 Engineering**
- 4 Communications**
- 5 Innovation**
- 6 Water**
- 7 Health and Comfort**
- 8 Appliances**
- 9 Home Life**
- 10 Energy**

HOMELIFE

Each contest is worth up to 100 points, for a competition total of 1,000 points. For the first time in 2017, teams are eligible for cash prizes (US\$100,000-300,000). With its new location on a commuter rail stop in a new Denver mixed use community, Solar Decathlon 2017 encourages students and visitors to think in new ways about smart development. In addition to free tours of the houses, the event will involve a Sustainability Expo, a community festival, consumer and professional workshops, and education days for middle school (ages 11-14) students.

Calls for teams to apply to Solar Decathlon 2019 will go out in Summer 2017. Non-U.S. universities are welcome to apply.

HEALTH

website www.solardecathlon.gov

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The U.S. Department of Energy's Solar Decathlon initiative has resonated far and wide. Seven spectacular U.S. editions of the Solar Decathlon have generated widespread international interest. The European SD adventure began in 2007, through a Memorandum of Understanding signed between the U.S. & Spain. The first SDE 2010 in Madrid, the first Solar Decathlon beyond American borders, was an increasingly international event, with teams coming from 8 countries. After European 'wins' in the 2007 & 2009 U.S. SD editions, the U.S. won the inaugural European event, creating the climate of energetic exchange & shared knowledge for an international Solar Decathlon community on the go.

The SDE success in Spain led to a second edition of the Solar Decathlon in Madrid. In 2012, teams from 11 countries, including Asia & South America, competed for the ultimate best scores in the 10 contests. The SD in Europe has since become a springboard for international participation in the Solar Decathlon phenomenon.

The European SD has gained traction. In 2012, the French government signed an MOU with the U.S. DOE to host the SDE in 2014. Versailles, historical platform of peace treaties at the end of WW1, was chosen as the site for the 'Villa Solar'. The SDE14 in Versailles sealed the international nature of the competition. Teams from 16 nations & 4 continents participated in a charged & exciting french hub. The revised SDE14 rules incorporated themes of local urban issues & an emphasis on streamlined communications actions. The Speed Peer Review Bonanza, in which teams made 3.5-minute presentations of their house concepts to a live audience, kicked off the competition, which showcased some of the most ambitious houses yet in SD history.

COMMUNICATION

AMBITION

CONTESTS FOR THE MOST RECENT SDE >>

- 1 **Urban Design, Transportation & Affordability**
- 2 **Architecture**
- 3 **Engineering & Construction**
- 4 **Communication & Social Awareness**
- 5 **Energy Efficiency**
- 6 **Electrical Energy Balance**
- 7 **Comfort Conditions**
- 8 **House Functioning**
- 9 **Innovation**
- 10 **Sustainability**

RENOVATION

DENSITY

International in fact & in spirit, this european version of the SD competition has propelled former organisers & participants to ensure the long-term impact & vitality of the Solar Decathlon in Europe. This mandate is being stewarded by the SDE Secretariat & the Energy Endeavour Foundation, whose members eagerly await & work toward the SDE 2019, in partnership with the U.S. DOE.

[www.solardeca**thlon**.eu](http://www.solardecathlon.eu)



The Solar Decathlon China's green energy building competition places emphasis on technological aspects for participants from across the globe. Based on technologies and ideas of world-leading R&D and design teams, the competition aims to create a functionally-complete, comfortable, liveable and sustainable living space which integrates clean energy, energy conservation, environmental protection and architectural design. The competition is designed to promote the development of green building and enhance environmental awareness as well as innovative growth and commercialisation.

LOW-CARBON



The first SD China was held in 2013, in Datong, of the Shanxi province. It was a significant achievement in China-US Strategic and Economic Dialogue in 2011. 37 universities and more than 1,000 university students from 13 countries took part in the integral design and manufacturing process. Significant support and participation came from over 30 governmental agencies, 200 international institutions and enterprises in relevant industries, including 260,000 visitors.

PERMANENCE

The 2017 Solar Decathlon China (SDC 2017) has been an achievement in the seventh round of China-US Strategic and Economic Dialogue. It will be jointly held by the China National Energy Administration, and the China Overseas Development Association through an MOU with the U.S. Department of Energy. The 2017 edition will welcome 22 talented competing teams comprised of outstanding students from 44 universities in 11 countries all of whom will gather in Dezhou, of the Shandong Province.

In keeping with the directives of national urbanisation construction in China, the SDC 2017 has been positioned in order to maximize the application of outcomes from the competition for the Chinese market.

THE FEATURES OF SDC 2017 INCLUDE >>

COMMERCIALISATION

Market Orientation

The new competition format requires the building of two-story houses and the inclusion of an energy balance assessment of new electric-vehicle charging equipment.

Post-SDC 2017 Activities

The SDC Innovative Development Alliance ('Alliance') will be established by the China Overseas Development Association and the government of Dezhou. The Alliance will attract strategic partners including enterprises, universities and financial institutions to encourage membership. The "2018 SDC Village" is the initial Alliance project, applying photovoltaic technologies and housing design in the real-world context.

STRATEGY

Intelligent Low-Carbon Park

The competition arena will be permanently retained in Dezhou. The objective is to build China's first intelligent low-carbon demonstration park entity, with residential and public buildings including electric pole energy systems. Tomorrow's beautiful homes will be created by combining the innovative abilities of young talented teams, cutting-edge technologies and the ultimate achievements drawn from the spirit of competition.

ECONOMICS

The first Solar Decathlon Latin America & Caribbean (SDLAC) was initiated in 2014 through a memorandum of understanding between the Colombian Department of Energy and Mines, the municipality of Cali, Colombia, the Director of Planning of Colombia, and the U.S. Department of Energy. The signed agreement led to a successful first edition of the SD-LAC in December 2015.

The SDLAC 2015 in Cali was an important step in the promotion of national and regional sustainable development. Faced with tropical weather conditions, 15 teams from 8 different countries considered both dry and wet seasons typical for this region. Their collective proposals resulted in a remarkable assembly of houses designed and built to operate within this scope.

VIABILITY

Unique to the SDLAC is the determination to create energy-efficient and self-sufficient houses for social housing purposes. In a continent where a significant population lives with minimal resources and limited space, the 2015 challenge was to provide sustainable, yet affordable, solutions. Houses were between 60 & 80 square meters with an average cost of 80 million Colombian pesos (approximately 28,000 US dollars). Parallel to this economic consideration, the SDLAC aimed to facilitate private-public partnerships for social housing projects by giving sponsors & partners a stage onsite.

The values of family, community & heartfelt loyalty to Latin-American culture were strong throughout the SDLAC 2015. Houses were designed to accommodate a household of two parents, two children & one guest. A large glittering solar-powered christmas tree was featured at La Villa Solar, stimulating holiday spirit for all and the multi-generational families visiting the SDLAC 2015. The popularity of the SDLAC competition served to educate & raise social awareness with optimism, ingenuity & intrepid spirit.

An unexpected 71 000 visitors enjoyed Cali's Villa Solar. They experienced numerous activities, lectures, workshops and house tours. The dynamic experience was topped off with delicious food & a rich cultural program of Colombian music, state-of-the-art salsa-dancing, movie nights & other celebrations that lasted well into the warm evenings.

COMMUNITY

SOLAR DECATHLON LATIN-AMERICA & CARIBBEAN 2015 CONTESTS >>

- 1 **Architecture**
- 2 **Engineering and Construction**
- 3 **Energy Efficiency**
- 4 **Energy Management**
- 5 **Comfort Conditions**
- 6 **Sustainability**
- 7 **House Functioning**
- 8 **Communication & Social Awareness**
- 9 **Urban Design**
- 10 **Viability & Innovation**

CLIMATE

Plans for the next SDLAC are underway, with continued incentives for students worldwide to thrive. The SDLAC is a unique opportunity to put innovative skills to the service of creative houses of the future for Latin-America & Caribbean. Cali proved to be a wonderful host city and stands first in line to host the next SDLAC competition in responsible architecture.

ACCOUNTABILITY

SOCIETY





Solar Decathlon Middle East (SDME) was confirmed in June 2015 in a signed agreement between the Dubai Electricity and Water Authority (DEWA), of the Government of Dubai, and the U.S. Department of Energy. The agreement will bring two competitions to Dubai, in 2018 and 2020.

The SDME Dubai 2018 will be the most international Solar Decathlon competition to date, with 22 teams from 16 countries. This competition challenges teams to design, build and operate houses that respond to Middle East necessities, including severe weather conditions such as dust, high temperature and high humidity.

MOBILITY

Emphasis in the SDME is on sustainability, innovation and research. Participating teams must provide ideas to increase energy-efficiency, propose novel solutions and generate knowledge for a more sustainable built environment. Architectural design and the integration of solar systems are also key elements in the SDME. The SDME projects will demonstrate that high energy performance houses can also be comfortable, attractive, and affordable.

SUSTAINABILITY

ENTREPRENEURIAL POTENTIAL

The educational and social awareness efforts of the SDME go beyond housing topics and include those of sustainable mobility and district energy management. The "Dubai Solar Hai", the SDME competition site, will have a Smart Grid that will be designed for two purposes: optimising energy management, and raising awareness on energy management. Another competition feature will include the use of electrical vehicles. SDME houses will be able to produce energy to maintain their interior comfort, cover all their energy necessities and charge their electrical vehicles.

SOLAR DECATHLON MIDDLE EAST 2018 CONTESTS >>

- 1 Architecture**
- 2 Engineering and Construction**
- 3 Comfort Conditions**
- 4 House Functioning**
- 5 Energy Management**
- 6 Sustainable Transportation**
- 7 Communication and Social Awareness**
- 8 Innovation**
- 9 Energy Efficiency**
- 10 Sustainability**

CONSTRUCTION

SOCIAL AWARENESS

The SDME will celebrate various extra-competition awards such as "Vegetation and Hardscaping" and the "Interior Design" prizes. In order to foster innovation, there will be a monetary prize for an innovative product or solution with great market or entrepreneurial potential.

Visiting the "Dubai Solar Hai" in 2018 will be a unique experience. There will be activities designed specifically for professionals, the general public, and children. Visitors will enjoy house tours, with decathletes providing first hand demonstrations of attractive designs and novel sustainable solutions.

The second SDME edition in 2020 will be linked to the 2020 World Expo, also set for Dubai. The Expo 2020 will bring together more than 180 nations and an international audience of 25 million visitors. It will be one of the greatest shows on Earth.

contact info

SOLAR DECATHLON UNITED STATES OF AMERICA

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SOLAR DECATHLON EUROPE

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AMBITION

HEALTH

COMMUNICATION

CONSTRUCTION

HOMELIFE

COMFORT

WORKFORCE

SOCIETY

HOUSE FUNCTIONING

solar decathlon

DENSITY

CLIMATE

The ultimate competition
in responsible architecture.

SOCIAL AWARENESS

ACCOUNTABILITY

MOBILITY

COMMUNITY

VIABILITY

URBAN DESIGN

RENOVATION

WATER

SUSTAINABILITY

