



GUIDELINES FOR SOLAR WATER HEATING DESIGN COMPETITION

A) Overview

The Low Carbon Development Strategy (LCDS) 2030 outlines Guyana's plans to transition away from conventional sources of energy as part of realising a low carbon economy. The Government intends to undertake a strategy of decoupling economic growth from using fossil fuels for electricity generation by developing low-carbon energy resources (Solar, Hydro, Wind, Biomass, and Natural Gas) to meet the rapidly rising demand and keep greenhouse gas emissions low.

Renewable energy, as one of the two pillars of sustainable energy, is essential for energy diversification, energy security, climate change mitigation and overall sustainability. Moreover, the wider use and exploration of cleaner renewable sources of energy is important to Guyana given the fact that Guyana possesses great potential in renewable energy sources such as hydropower, solar, wind and bio-energy.

The Guyana Energy Agency (GEA), in the exercise of its mandate, continues to promote energy efficiency, energy conservation and the development and utilisation of alternative sources of energy. To this end, the Agency is launching a Solar Water Heating Design Competition to encourage the local manufacturing and use of cost-effective solar water heating systems.

The competition will be launched on February 28, 2022. Additionally, the Agency is seeking to promote innovative designs and sustainable solutions to address energy needs that may be used to stimulate a new local manufacturing opportunity.

B) Objective

The objective of the competition is to develop a design for (and ultimately construct, install and test) a low-cost solar water heating system using as much locally sourced materials as possible. Currently, the retail price of a 40-gallon solar water heater system is about G\$238,000. Submissions must result in a product that can be retailed (with profit margins) at a reduced price of between 30 to 50 percent.

C) Target Participants

The target participants are innovators, entrepreneurs, professional designers, technicians, engineering students, engineers, engineering and construction personnel and firms in Guyana. Final year students from tertiary educational institutions in Guyana are encouraged to participate.

D) Scope

The competition is divided into two stages:

1. The *Design and Model Demonstration Stage*, where participants will be required to submit an electronic copy of their design and demonstrate how the model works (this can be done through visual 2D or 3D presentations). A 10-page report should accompany submission. A shortlist of 3 finalists will be selected during this stage.
2. The *Final Stage*, where the 3 shortlisted finalists will deliver a business plan presentation and the 1st place winner will receive a cash prize for their submission as well as funding to construct the winning design into a prototype. The 2nd and 3rd place winners will also receive a cash prize for their submission.

E) General Guidelines for Submission

1. The competition is open only to the target participants.
2. Entries must be submitted in pdf format.
3. Submission of entries **MUST** include a 10-page report about the design and its application. This report must contain detailed designs for the proposed solar water heater including a two or three-dimensional model (or sketch), detailed construction drawings with dimensions, list of materials detailing type, quantity and cost, instructions to aid the construction, assembly and operation of the unit. The unit must be capable of storing 40 gallons of hot water for use on demand. The unit must be capable of functioning with a pressurized water system between 30 – 60 PSI. The design must include a thermostat controlled auxiliary electricity powered heating element that can be used during extended overcast conditions. Additionally, the design should consider locally available standard piping and other auxiliary equipment that will enable integration into typical households and facilities across Guyana.
3. Entries must include information pertaining to the **full name, name of education institution** (if attending any), **firm** (if applicable), **address, phone number** and **email address** of the submitting person/firm.
4. Entries missing any of the above information **will not** be considered.
5. Entries submitted after the deadline **will not** be considered.
6. One entry is allowed per person/firm.

7. The participant accepts that their design and prototype could be used by the Guyana Energy Agency for promotional purposes.
8. The Judges' decision is final.
9. Use of locally sourced sustainable building materials is encouraged and will be advantageous during scoring.

F) Submission

The deadline for submission is **on or before Friday, July 1, 2022 at 4:30 pm**. Submissions should be made via email address **eesd.gea@gmail.com** under the caption "**Solar Water Heating Competition 2022**". Submissions can also be sent via Dropbox or Google Drive links.

G) Judging and Results

- The entries shall be assessed by a panel of judges drawn from both private and public sectors and evaluations will be based on the elements outlined in the Judging Criteria.
- The top 3 entrants will be shortlisted for the Final Stage where each will have to prepare and deliver a presentation to the judging panel. The judges will then identify the first, second and third place winners. GEA will notify the winners prior to the award of prizes.

H) Prizes

Prizes and plaques will be awarded to first, second and third place winners. These are as follows:

- **1st Place: G\$250,000 + plaque + G\$400,000¹ towards construction of the solar water heater**
- **2nd Place: G\$100,000 + plaque**
- **3rd Place: G\$50,000 + plaque**

¹ Note this is not a cash pay-out. These funds will be managed by the GEA and used to procure materials and labour for the construction of a full-scale working model.

JUDGING CRITERIA

The following will be taken into consideration when judging submissions:

1. Design and Model Demonstration Stage

a. Technical Feasibility/Adherence to technical specification

- Size - capable of storing 40-gallon of hot water for use on demand
- List of materials detailing type, quantity, and cost
- Instructions on construction, assembly, and operation
- Pressurized water system between 30 – 60 PSI
- Thermostat controlled auxiliary electricity powered heating element that can be used during extended overcast conditions

b. Cost Effective Design

- Cost breakdown
- Breakeven cost/price
- Proposed profit margins
- Proposed retail price
- Price comparisons

c. Presentation of Report

- Degree of Research
- Content
- Visual presentation of model

d. Use of Local Material

- Locally available standard piping and other auxiliary equipment

e. Originality/Creativity

- Integration into typical households and facilities across Guyana

2. Final Stage

a. PowerPoint Presentation

- Content – Short-term and long-term Goals, Product Description, Design Concepts/Creative Design, Costs/Prices, Cost comparison with existing solar water heaters, Benefits, Strategy, Potential Customers/Markets, Opportunities, Challenges, Team members (if applicable), Financial needs/Other needs to construct prototype, Risks and Returns (if applicable).
- Creativity

b. Q&A

- Understood questions
- Clear responses