



# EMPOWER A BILLION LIVES

An IEEE Power Electronics Society Initiative

## Pacific-Asia Regional Competition



Organized by



## Global Competition to Develop Scalable Solutions to Energy Poverty

### The Issues

- **3 BILLION** people live in energy poverty, including 1.1 Billion people without any access to electricity
- **95%** of utilities in the Sub-Saharan Africa cannot recover their operational and capital costs
- **110MILLION** people have gained improved access using solar lanterns -however most of them don't even meet minimum Tier 1 requirements for electricity access
- **ONLY 1.8 MILLION** people have Tier 2 access that enables improved livelihood and productivity using off-grid electric services

Empower a Billion Lives (EBL) is a biennial global competition (starting 2018) organized by the IEEE Power Electronics Society to crowdsource regionally relevant innovation to accelerate deployment of energy access solutions around the world.

**Pacific-Asia regional** which is one of the EBL regional competitions is organized by IEEE Power Electronics Society (PELS) and China Power Supply Society (CPSS).

### The Goal of the Competition

Foster interdisciplinary innovation in the global community to develop and demonstrate solutions to electricity access that are designed to scale, regionally relevant, holistic, and leverage 21st century technologies that feature exponentially declining prices.

### What Are the Targeted Electricity Needs?

Tier 2 electricity access (200 Wh/day) and above including:

- **Household uses:** lighting and phone charging, telecommunication, entertainment, air circulation, refrigeration, water pumping, etc.
- **Community uses:** public lighting, water pumping & purification, etc.
- **Productive uses:** agricultural manufacturing, light manufacturing, commerce, etc.

### Preliminary Design Criteria

The competition is agnostic to energy sources, technologies, business models, and will primarily evaluate potential impact and ability to rapidly and sustainably scale the solutions to a Billion customers.

- Holistic sustainable technology-based solutions that are designed to scale
- Accompanied by a viable business plan designed for the Base of the Pyramid
- Integrate communications, Pay/Go, Cybersecurity, microfinance as needed
- Enables electricity access from the bottom-up; without centralized planning
- Address challenge of managing a fleet of millions of devices
- Create new income generating opportunities for target customer group
- Additional value streams for external stakeholders
- Utilizes carbon neutral technologies and consider the system life time



Register your intention to participate on the [ebl.cpss.org.cn](http://ebl.cpss.org.cn) website.



Supporting organizations: World Bank, GOGLA, IEEE Smart Village, Georgia Tech CDE, TU Delft

<http://ebl.cpss.org.cn>



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A BILLION LIVES**

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### WHO IS THE TARGET CUSTOMER GROUP?

- Off-grid or have access < 2 hours a day
- Purchasing power below global poverty line (< \$1.90/day)
- > 90% live in rural areas
- < 50% have bank accounts

### WHO IS THIS COMPETITION FOR?

- Student teams, Research laboratories
- Small and medium-sized companies
- International corporations
- Nonprofit organizations
- Everyone!

### PACIFIC-ASIA REGIONAL IMPORTANT DATE

- Team Registration with Preliminary Proposal **May 31, 2018**
- Submission of Proposal **Aug. 31, 2018**
- Notification of Regional Final Team **Sept. 15, 2018**
- Submission of Final Reports **Oct. 25, 2018**
- Regional Final of Evaluation at IEEE PEAC Shenzhen, China **Nov. 3, 2018**
- Award Ceremony of Pacific-Asia **Nov. 6, 2018**
- Global Final at IEEE ECCE Baltimore, USA **Sept. 2019**

**TARGET PRIZE PURSE > \$1,000,000  
FOR FINAL**

### COMPETITION TRACKS

- **Track 1: Decentralized Model:** Ability to serve single homes at the Tier 2 level without creating an entire distribution infrastructure in advance of when it is needed.
- **Track 2: Centralized Utility Model:** Centrally planned and implemented power generation and distribution model. Operations and billing follow traditional utility models, and may include some level of customer-owned generation and storage. Proposed solution will address physical and transactive elements needed for sustainable operation and economic viability.

Tracks above include two subtracks; A) Commercially available solutions and, B) Emerging solutions.

### COMPETITORS TO KNOW

- **Registration:** Make the registration online with team information and a preliminary proposal to briefly introduce the initial scheme.
- **Proposal:** Including the items as follows based on competitors' specialty.
  - A main proposal, with a total of up to six pages, the language should be in English.
  - It is suggested that two pages be used for the general proposal, with one page each to address issues related to Impact Score, Tech Score, and Business Score. One page can also be used for figures, tables etc.
  - The team may upload a short video (less than 3 minutes)
- You can find more details about proposal requirements, judging rubric and other competition rules in [Competition Guide](#).
- **Final Report:** Further revise and improve the proposal to form the final report.
- **Global Final:** The winning teams of the regional will get the qualification of the Global Final.

### PACIFIC-ASIA COMMITTEE

#### Steering Committee

##### Chair:

Mark Dehong Xu, *Zhejiang University*

##### Members:

Sewan Choi, *Seoul National University of Science and Technology*

Yaow-Ming Chen, *National Taiwan University*

Braham Ferreira, *Delft Univ. of Technology*

Jung-Ik Ha, *Seoul National University*

Jun-ichi Itoh, *Nagaoka University of Technology*

Philip T. Krein, *UIUC*

Dong-Choon Lee, *Yeungnam University*

Tsornng-Juu Liang, *National Cheng-Kung University*

Sanjib Panda, *National University of Singapore*

Toshihisa Shimizu, *Tokyo Metropolitan University*

Kenji Wada, *Tokyo Metropolitan University*

Jinfa Zhang, *Delta Electronics*

Lei Zhang, *China Power Supply Society*

#### Regional Organizing Committee

##### Chair:

Tianhao Tang, *Shanghai Maritime Univ.*

##### Co-Chairs:

Jinfa Zhang, *Delta Electronics*

Jinjun Liu, *Xi'an Jiaotong University*

Philip T. Krein, *UIUC*

#### Secretariat of Pacific-Asia

China Power Supply Society

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Register and find more information on

<http://ebl.cpss.org.cn>