

中国电源学会

中源函〔2018〕55号

寻找创意之光 点亮亿万人生 EBL 国际创意设计大赛亚太赛区方案征集通知

各有关单位:

“寻找创意之光 点亮亿万人生” EBL 国际创意设计大赛（“IEEE Empower a Billion Lives”，简称 EBL）是由 IEEE 电力电子学会（IEEE PELS）发起举办的一项旨在帮助全球贫困缺电地区寻找基础电力供应解决方案的国际性竞赛活动，活动同时得到世界银行等机构的支持。

该项竞赛在全球设立 5 个赛区，其中亚太赛区比赛委托中国电源学会作为组织单位，现面向亚太地区高校、企业、非营利性组织及相关机构征集参赛队伍和方案。相关安排如下:

一、组织机构

主办单位: IEEE 电力电子学会 中国电源学会

承办单位: 中国电源学会科普工作委员会、国际交流工作委员会

二、竞赛背景

• 全球 30 亿人面临能源短缺问题，其中 11 亿人处于无电状态。

- 非洲撒哈拉以南地区 95 % 的电力公司无法收回运营和资金成本。

- 太阳能照明改善了 1.1 亿人的境况，但其中大多数人仍然达不到电力供应 Tier 1 标准(最低 12 瓦时/天)。

- 离网电力服务仅仅改善了 180 万人的生产和生活状况，使其达到电力供应 Tier 2 标准（最低 200 瓦时/天）。

如果利用传统的发电和传输方案解决 30 亿人的能源短缺问题，将引发全球环境危机。现有方案已经无法满足需求，需要寻找创新性的电力解决方案。

为此，IEEE PELS 发起“寻找创意之光 点亮亿万人生” EBL 国际创意设计大赛，面向全球征集应对能源短缺挑战的创新方案，解决贫困地区人民用电困难问题，全球总决赛优胜队奖金总额 100 万美元。

中国电源学会负责本次大赛亚太赛区竞赛组织，旨在引导全社会关注能源短缺、能源高效利用，鼓励相关技术、运营管理、市场模式等领域的集成创新，加强多领域知识交叉及国际交流合作。

三、 竞赛要求

1、 方案针对的目标群体

供电条件：无电或每天供电低于 2 小时的人群

购买力：低于全球贫困线（<1.90 美元/天）

生活区域：90 % 以上在农村

银行账户：普及率低于 50 %

2、方案应满足的用电需求

Tier2 标准（最低 200 瓦时/天、4 小时/天）及以上，具体用电需求包括：

家庭用电：照明和手机充电（必需）、通信、TV、空调、水泵等。

社区用电：公共照明、水泵和洗涤等。

产业用电：农业生产、轻工制造、商业等。

以上需求中照明和手机充电为必须解决的需求，如方案能够满足更高需求则评价更高。

3、方案要求

本次竞赛征集方案包括能源供应技术方案及商业解决方案。重点评估方案快速、可持续地解决十亿目标群体用电问题的能力和潜在影响力。可考虑的内容包括：

- 以技术为基础的整体解决方案；
- 基于目标群体现实情况的可行的商业及运营方案；
- 根据方案需要可考虑包含通信、支付，网络安全、小额信贷等创新方式；
- 集中式和分布式供电模式均可；
- 需考虑系统设备运营维护的可行性；
- 可考虑通过方案为目标群体带来新的收入机会的可能性；
- 可考虑通过方案为系统投资者实现商业价值增值的可能性
- 方案应注重低碳环保，并考虑系统的使用寿命。

具体竞赛要求及评审标准请参见竞赛网站：

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

四、竞赛组别

单户式方案组：可满足单户家庭 Tier2 级用电需求的方案。

集中式方案组：集中规划实施的发电和配电方案。基于习惯的创新运营和计费模式，可包含一定程度的单户发电和储能功能。方案应具备可持续运营能力和经济可行性。

以上两组均包含两个分组：

A) 商业化方案组：方案已商业化并在市场中应用

B) 创意方案组：方案具有创新技术和模式，但尚未商业化。

五、参赛队伍

参赛队伍以单位进行组织，各有关高校、科研单位、企业及相关机构均可组队参赛，每个单位可单独组织若干支队伍参赛，也可以联合参赛。参赛队伍包括领队 1 名，队员若干名。

参赛队伍需提供一份由领队签名的支持函，同意指导参赛队伍、并为参赛队伍提供必要支持，包括实验场地、实验材料、必要的参赛费用等。

六、竞赛报名及安排

1、参赛队网上报名：2018 年 5 月 31 日之前

参赛队伍在规定时间内在线提交报名信息，包括团队成员信息，以及对方案的简要介绍等。

报名网址：<http://ebl.cpss.org.cn>

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
Tsorng-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

2、组织委员会（排名不分先后）：

主席

汤天浩 上海海事大学

副主席

章进法 台达电子上海设计中心

刘进军 西安交通大学

Philip T. Krein 伊利诺伊大学厄巴纳-香槟分校

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王来利 西安交通大学
李楚杉 浙江大学伊利诺伊大学厄巴纳香槟校区联合学院

联系方式

联系人：杨乃芬

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邮箱：competition@cpss.org.cn

竞赛网址：<http://ebl.cpss.org.cn>

附件：EBL Pacific Asia Flyer





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 website.



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

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



**EMPOWER
A BILLION LIVES**

An IEEE Power Electronics Society Initiative

Pacific-Asia Regional Competition



IEEE

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*

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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

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Register and find more information on

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