

**ASIA PACIFIC ECONOMIC COOPERATION (APEC)
NEW AND RENEWABLE ENERGY TECHNOLOGIES EXPERT GROUP (EGNRET) MEETING
FORTIETH MEETING**

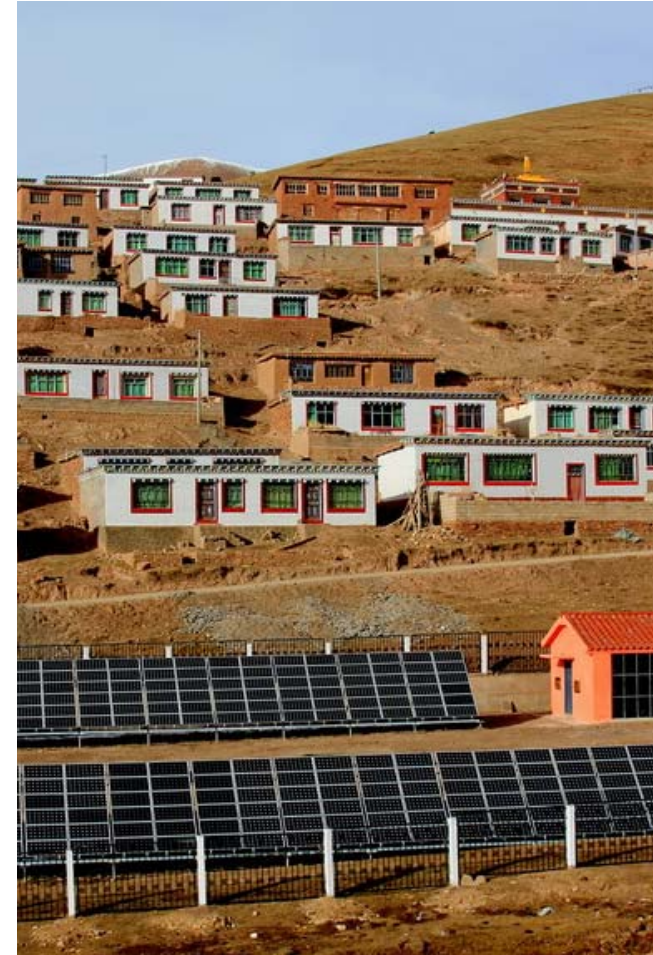
Three Concept Notes from China

**Mr. Lin WAN
Ha Noi, Viet Nam, April, 2013**

Content



1. APEC Photovoltaic Application Roadmap and Model Study (PVARM)
2. APEC Photovoltaic Communication and Cooperation Platform (PVCCP)
3. APEC Low-Carbon Model Town Development Model and tool Kit Study (LCMT-DMTK)



1. PVARM



- Photovoltaic Application Roadmap and Model Study (PVARM)
- Why PV
 - Reaching grid parity
 - Huge potential market, 50 Billion (50,000,000,000.00) USD in China within next 3 years
 - Feasible to most APEC member economy
 - Learning Curve
 - Strong cluster to carry out the job



PVARM: Goal



- Roadmap
 - possible choice
- Model
 - Solution innovation, Combined 3 technology:
 - PV Technology
 - Traditional Technology (Electricity, Real Estate)
 - IT Technology
 - Business model
- Tool kits
 - including Standard, Software, Data, Methodology, Equipment, etc
- for all APEC member economies: Improve Learning Curve -- Share the valuable data, information, experiences, lessons from casualty and mistakes

PVARM: Communication



- A written report will be published with detailed introduction of different PV application fields and models, pictures in January 2014.
- A workshop is planned to share the outcomes of this project among EWG member economies possibly in conjunction with the EWG meeting.



2. PVCCP



- Photovoltaic Communication and Cooperation Platform (PVCCP)
- Different from existing website
 - Technology
 - Policy
 - Commercial
 - From manufacturing to application



PVCCP: to EGNRET



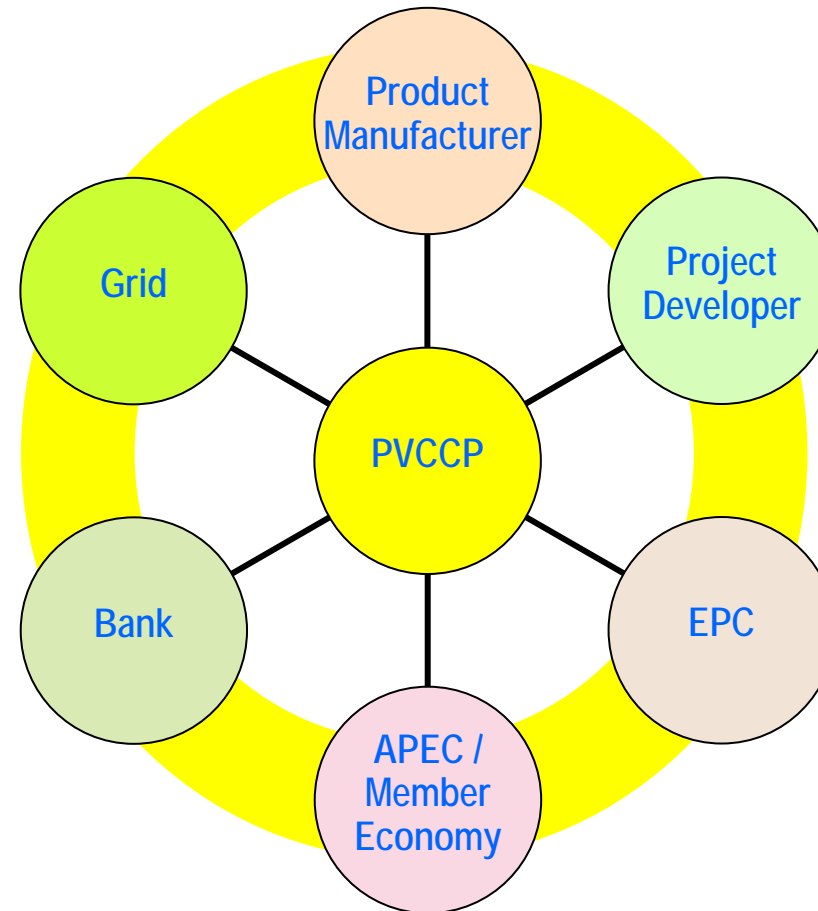
- Collecting latest valuable information
- Assisting analysis
- Delivering outcome



PVCCP: Platform



- Information
- Product
- Technology
- Service
- Electricity
- Investment
- Value Chain



PVCCP: Serve the End User



- One-stop Service platform
- Self-evaluation
- Agency service
- Find proper investor / partner
- Financing
- Trading



PVCCP: Communication



- The newly built website will provide detailed professional support to APEC Secretariat, Working Group and related stakeholders in time.
- In 2014, a special workshop will be organized in China by taking into account the work schedule of EWG, aiming to promote the research results of the project.



3. LCMT-DMTK



- APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK)
- Why
 - Large scale: more than 100 towns
 - Short time window: by 2015
 - Huge investment & market



太阳能综合利用为核心
Core: Photovoltaic Technology



慢行及公交出行为主导
Predominate: Electric Vehicle

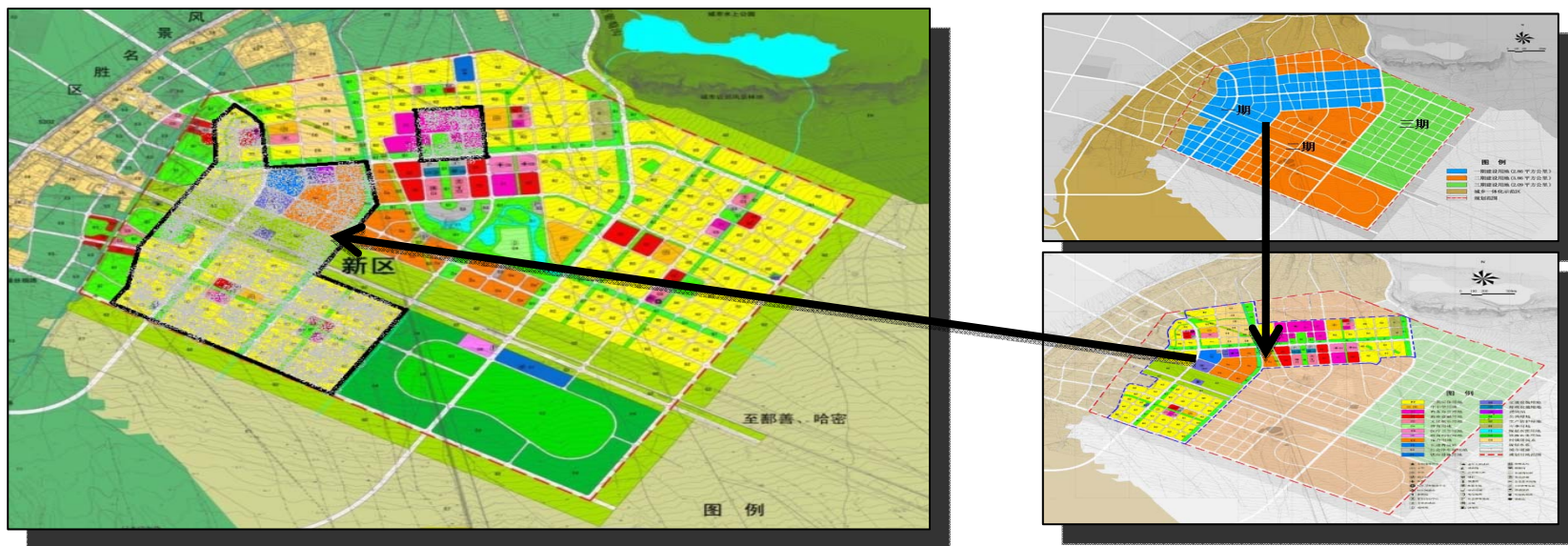


低碳社区
Low Carbon Community

LCMT-DMTK



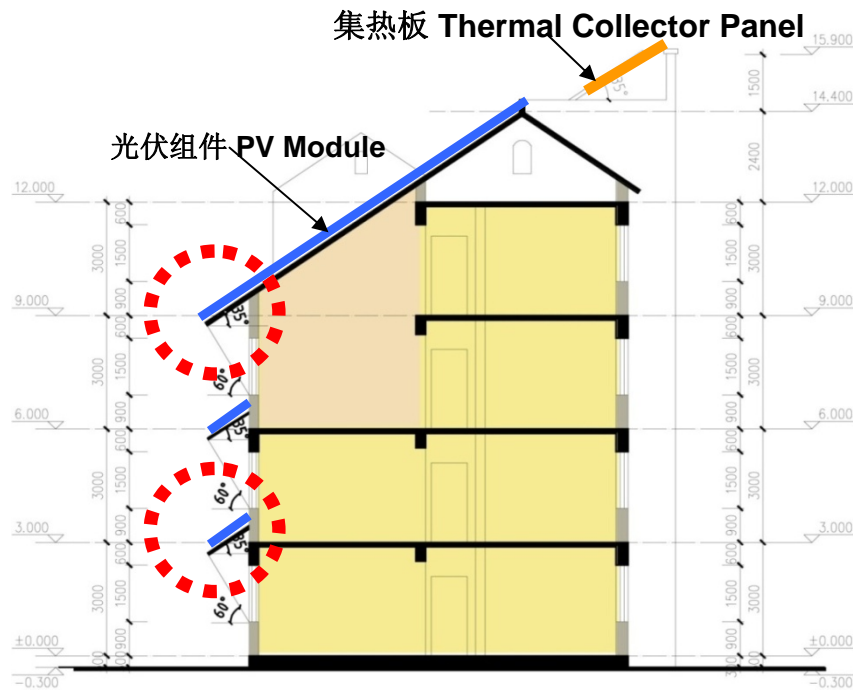
- Procedure, KPIs, Policy
- Solution, from existing project, research and other industry
- Tool kits, especially feasibility study and planning, etc.



LCMT-DMTK



- To introduce the latest outcome of China and EU cooperation
- To enhance cooperation between APEC member and EU



LCMT-DMTK



- The deliverable achievement of this project will be a published research report on the APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK).
- The project will also include one workshop in China in 2014.



屋顶光伏发电系统
PV Rooftop



小型逆变器逆变
Micro-Inverter



400V直接并网
400V Grid

Thank you for your precious time



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- Mr. WAN Lin graduated from Renmin University of China in 1994, majored in Industrial Economics and International Economics.
- He joined China Classification Society, CCS in 1994, having worked as strategy researcher, production inspector, project manager, cooperation department manager, assistant to Chairman of International Association of Classification Society (IACS). He was appointed as the general manager of China Classification Society London branch in 2003.
- In 2005, he acquired the Master degree in MSc Shipping, Trade and Finance at CASS business school, City University, London. He went to the US for Tri-State (New York, New Jersey, Connecticut) Maritime Cluster Research sponsored by the Baltic Exchange scholarship in 2005.
- He joined China General Certification Centre (CGC) as vice president in 2008, in charge of PV, solar thermal business, as well as Strategy & International Cooperation.
- He is CCAA Senior Auditor, member of China's national PV standard committee and IEC, and main contact window in renewable energy cooperation between China and US, EU, AFRICA, APEC, BRICS, Mainland and Taiwan, as well as Co-Chairman of WG Standard, Testing & Certification in China-US RE cooperation, and steering committee member of PV Quality Assurance Forum.

APEC Concept Note

*Please submit through APEC Secretariat Program Director. Concept Notes of more than **3 pages** (including title page) or incomplete submissions will not be considered.*

Project Title:	APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK)
Source of funds (Select one):	<input type="checkbox"/> Operational Account <input type="checkbox"/> TILF Special Account <input checked="" type="checkbox"/> APEC Support Fund
Committee / WG / Sub-fora / Task-force:	Energy Working Group (EWG) / Expert Group on New and Renewable Energy Technologies (EGNRET)
Proposing APEC economy:	China
Co-sponsoring economies:	Hong Kong China, Indonesia, Korea, Malaysia, Singapore, Chinese Taipei, Thailand, USA, Vietnam
Expected start date:	September 1, 2013
Expected completion date:	December 31, 2014
Project summary: Describe the project in under 150 words. Your summary should include the project topic, planned activities, timing and location: <i>(Summary must be no longer than the box provided. Cover sheet must fit on one page)</i>	<p>The APEC economies have already possessed a great number of technologies, plans and models which apply to the Low-Carbon Model Town (LCMT), and create huge market at the same time. How to develop large scale LCMT in a short time window efficiently and properly is a big challenge to APEC member economies as a whole.</p> <p>APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK) is aimed to provide recommendation and suggestion regarding: 1) Procedure that help to improve development efficiency, 2) Solution, from existing project, research and other industry, 3) Tool kits, especially feasibility study and planning, etc., on the basis of China-EU cooperation, and the Solar Decathlon competition held in China in August 2013. The deliverable achievement of this project will be a published research report, and one symposium in China in 2014.</p>
Total cost of proposal: (APEC funding + self-funding) USD 150,000	Total amount being sought from APEC (USD): 100,000 By category: <i>Travel:</i> 10,000 <i>Labor costs:</i> 80,000 <i>Hosting:</i> 2,000 <i>Publication & distribution:</i> 6,000 <i>Other:</i> 2,000

Project Overseer Information and Declaration:

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As Project Overseer and on behalf of the above said Organization, I declare that this submission was prepared in accordance with the **Guidebook on APEC Projects** and any ensuing project will comply with said Guidebook. Failure to do so may result in the BMC denying or revoking funding and/or project approval. I understand that any funds approved are granted on the basis of the information in the document's budget table, in the case of any inconsistencies within the document.

Name of Project Overseer

Date: March 15, 2013

Project Synopsis

1. **Relevance:** Why should APEC undertake this project? What problem or opportunity will the project address and why is it important?

In June 2010 at the 9th APEC Ministerial Meeting, the APEC Low-Carbon Model Town (LCMT) Project was put forward, and Yujiapu CBD was determined to be the first APEC LCMT project. In June 2012, the 10th APEC Ministerial Meeting was held in St. Petersburg, discussed about and reached broad consensus on the progress made in recent years in LCMT Project.

The rapid development of LCMT and related technology in APEC regions have contributed to the continuous innovation of energy technology and rapid decline of application costs, and create huge market. More and more member economies and cities want to build up LCMT. At the same time, how to develop so many heavily invested LCMT projects efficiently and properly in such a short time window, is a big challenge.

The APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK) is aimed to face this challenge and provide recommendation and suggestion for all APEC economies.

2. **Objectives:** Describe the 2-3 key objectives of the project. (e.g., to... create a framework...; ensure participants will be able to...; share experiences...; enhance understanding...; develop recommendations...; build interest...; revise strategies... etc.)

To share experiences of different possible solutions for LCMT development from existing project and research, as well as other related industry.

To develop recommendations concerning LCMT large scale development, especially procedure, flowchart that help to improve development efficiency.

To introduce tool kits, especially regarding feasibility study and planning, on the basis of China-EU cooperation, and outputs from the Solar Decathlon competition held in China in August 2013.

3. **Alignment:** Describe how the project will help achieve APEC's key priorities and meet your forum's work-plan or medium-term plan.

The APEC economies have already possessed a great number of products, technologies, plans and models regarding LCMT. The LCMT-DMTK project will make the most of existing APEC LCMT research outcome and best practices, to put together valuable information, experiences and lessons learned, sorted out and summarized on time. LCMT-DMTK project will be very helpful to develop large scale of LCMT efficiently and properly in near future.

4. **Methodology:** How do you plan to implement the project? In this section, address:

- **Timeline:** Project timelines and dates for key activities and deliverables

The LCMT-DMTK project duration is 18 months. It will be officially started in July 2013. The technologies, plans and models of APEC economies which are applicable to LCMT development model and tool kit information will be collected.

In November 2013, outcome from the Solar Decathlon competition hosted in China in August 2013 will be introduced into the draft report of LCMT-DMTK.

In December 2013, recommendations concerning LCMT large scale development procedure, solutions will be suggested.

In June 2014, China-EU Low-Carbon town cooperation outcome will be introduced into this study as reference of final report.

In August 2014, outputs from the Solar Decathlon competition in China will be considered and put into draft report.

In September 2014, a specific symposium will be held to discuss the suggestions and reports of study.

In December 2014, the project will come to end and a written report will be published.

- ***Stakeholders: Beneficiaries and stakeholders (APEC & non-APEC) and how they will be engaged***

The first beneficiary of this project is LCMT developer or related stakeholders can broaden their horizon by developing projects, know about and avoid the risks, improve profits and expand the application market.

Meanwhile, to government officials, this project will provide them development model and tool kits which can be referred to and compared, and help policy makers to make reasonable choices and proper judgements.

The LCMT-DMTK project will also help to harmonize LCMT related study and practice between APEC and EC, on the basis of China-EU cooperation.

Moreover, the study will also help to offer valuable case reference to LCMT related product and service provider, to help them expand market among APEC member economies.

- ***Previous projects/activities: If and how this proposal builds on the findings or lessons learned from previous projects/activities, while avoiding duplication***

LCMT-DMTK builds on previous LCMT project phase 1 (Yujiapu CBD, China) and phase 2 (Samui Island, Thailand), and the Energy Smart Communities Initiative (ESCI) launched by U.S. President Obama and Japan's Prime Minister Kan in November 2010. This project is very much focus on how to push forward LCMT construction in large number and short time window, through combined procedure, Solution, and tool kits.

- ***Communication: How you plan to communicate the results or benefits of this project to others***

The deliverable achievement of this project will be a published research report on the APEC Low-Carbon Model Town Development Model and Tool Kit Study (LCMT-DMTK).

Meanwhile the project will also include one symposium held by China as APEC Chair in 2014.

APEC Concept Note

*Please submit through APEC Secretariat Program Director. Concept Notes of more than **3 pages** (including title page) or incomplete submissions will not be considered.*

Project Title:	APEC Photovoltaic Application Roadmap and Model Study (PVARM)
Source of funds (Select one):	<input type="checkbox"/> Operational Account <input type="checkbox"/> TILF Special Account <input checked="" type="checkbox"/> APEC Support Fund
Committee / WG / Sub-fora / Task-force:	Energy Working Group (EWG) / Expert Group on New and Renewable Energy Technologies (EGNRET)
Proposing APEC economy:	China
Co-sponsoring economies:	Hong Kong China, Indonesia, Korea, Malaysia, Singapore, Chinese Taipei, Thailand, USA, Vietnam
Expected start date:	September 1, 2013
Expected completion date:	August 31, 2014
Project summary: Describe the project in under 150 words . Your summary should include the project topic, planned activities, timing and location: <i>(Summary must be no longer than the box provided. Cover sheet must fit on one page)</i>	The Photovoltaic Application Roadmap and Model Study (PVARM) project responds to the 20 th APEC Economic Leaders' Meeting and 10 th APEC Ministerial Meeting in Russia in 2012; to explore potential field and model for large scale application of Photovoltaic in future. The key activities are: 1) to carry out case study and SWOT analysis to typical PV project, including casualty and losses, in different area and environment, 2) to bring suggestion of possible PV application roadmap for APEC economies' reference, 3) to compare and discuss the advantages and weakness of different PV development models , including large size ground-mounted power plant, industrial and commercial project, residential project, and application in agriculture, transportation, etc. A workshop will be held in China as APEC chair in 2014 and a written report will be shared in EWG website.
Total cost of proposal: (APEC funding + self-funding) USD 132,000	Total amount being sought from APEC (USD): <u>92,000</u> By category: Travel: 15,000 Labor costs: 60,000 Hosting: 5,000 Publication & distribution: 10,000 Other: 2,000

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As Project Overseer and on behalf of the above said Organization, I declare that this submission was prepared in accordance with the **Guidebook on APEC Projects** and any ensuing project will comply with said Guidebook. Failure to do so may result in the BMC denying or revoking funding and/or project approval. I understand that any funds approved are granted on the basis of the information in the document's budget table, in the case of any inconsistencies within the document.

Name of Project Overseer

Date: March 18, 2013

Project Synopsis

1. **Relevance:** Why should APEC undertake this project? What problem or opportunity will the project address and why is it important?

The photovoltaic (PV) technology is one of the most feasible renewable energy solutions for almost all APEC member economies, and it is now at the historic moment of reaching Grid Parity in lots of areas. In Europe, especially Germany, with large scale application of PV system, PV has already reached grid parity and plays an important role in the whole energy system. Among APEC member economies, PV industry not only has huge potential market, but also could be one of the most important strategic choice and economic technology to ensure energy security.

The manufacturing sector of PV is quite mature now, however, the PV application is still relatively at its beginning stage. There are lots of very valuable experiences and expensive lessons that could be shared among APEC member economies, especially about the typical case study, roadmap and different models.

The Photovoltaic Application Roadmap and Model Study (PVARM) project would make the most of whole APEC economies' experiences in PV application, through learning from each other in time.

2. **Objectives:** Describe the 2-3 key objectives of the project. (e.g., to... create a framework...; ensure participants will be able to...; share experiences...; enhance understanding...; develop recommendations...; build interest...; revise strategies... etc.)

To carry out **case study** and SWOT analysis to typical PV projects, including casualty and losses, in different area and environment.

To develop recommendations of **best practices** concerning how to improve PV project's safety, quality, efficiency, etc.

To create framework of how to develop PV application **roadmap**, including where and how we can use PV technology, balance with other resources.

To develop recommendations for PV application **model**, including large size ground-mounted power plant, industrial and commercial project, residential project, and application in agriculture, transportation, etc, according to various conditions of energy demand, cost, area, environment, size and technology.

3. **Alignment:** Describe how the project will help achieve APEC's key priorities and meet your forum's work-plan or medium-term plan.

PVARM project responds to the declaration of 20th APEC Economic Leaders' Meeting in Vladivostok, Russia in September 2012, "Integrate to Grow, Innovate to Prosper" and addresses the promotion of technology development and deployment of renewable energy sources. This project also responds to the declaration of 10th APEC Ministerial Meeting in Russia in 2012, Energy Security: Challenges and Strategic Choices. Both meetings appealed to increase renewable energy use.

There are lots of precious acknowledgements and experiences among APEC member economies regarding PV application during past years. It will be very valuable and important to integrate good PV practice from individual economy, even more important, to learn from mistakes, casualties and lessons, and to avoid heavier losses at each and every APEC member economy.

As PV has been very close to grid parity in many areas in recent years, pushing forward large scale PV application could play a valuable role as one of EWG's measures on Energy Security Initiative (ESI).

4. **Methodology:** How do you plan to implement the project? In this section, address:
 - **Timeline:** Project timelines and dates for key activities and deliverables

1) August 2013, to carry out survey and investigation to collect PV project information.

An investigation form will be developed and delivered to related partners and stakeholders to collect latest typical PV application information, to find out as many as possible the different fields and development models in APEC area.

2) October 2013, Collecting valuable PV system experiences and serious casualty / losses information, for example, in China, there are more than 3GW PV installations per year in past years, including large scale PV power plant and small size distributed project. Those projects were built in varied environment and conditions. Some casualties could hardly happen in other economies, and could bring valuable lessons to the whole industry and society among APEC member economies.

3) December 2013, to compare and discuss the advantages and weakness of different PV technology, solution and development model.

4) April 2014, to bring draft suggestions of possible PV application roadmap for APEC economies' reference.

5) A workshop concerning APEC Photovoltaic Application Roadmap and Model will be held in China in May 2014. Those draft suggestions will be discussed on the workshop and improved by the experts and participants, then put into final report.

6) July 2014, project will be finished and a report will be published in EWG website.

- **Stakeholders: Beneficiaries and stakeholders (APEC & non-APEC) and how they will be engaged**

PV still need subsidy and government support in most APEC economies. APEC economy policy-makers and government officials responsible for energy policy can get information regarding what field PV could be used properly in a specified economy, according to different environment and condition.

PV industry, including manufacturers, design firms, construction companies, developers, and other stakeholders can improve their learning curve and avoid expensive losses.

For citizens, PVARM report could provide wide and in-depth understanding concerning latest development and future of PV, and encourage their willingness and confidence to increase using PV in their life.

- **Previous projects/activities: If and how this proposal builds on the findings or lessons learned from previous projects/activities, while avoiding duplication**

The PVARM project builds on previous study of *Renewable Energy for Urban Application in the APEC Region* published by EGNRET on January 29, 2010, and the workshops including: *Defining Cost-Effective PV in the APEC Region* in Taipei in Oct 2008, *APEC Conference on PV Policy and System Development*, Taipei 2011, *Conference on Solar Technology Standards & Conformance* at San Francisco, USA in September 2011. As PV industry develops very fast in recent years, and the cost drops rapidly, the PVARM project will collect as much as possible new PV technologies, solutions, models and put together for all APEC member economies' reference.

- **Communication: How you plan to communicate the results or benefits of this project to others**

A written report will be published with detailed introduction of different PV application fields and models, pictures in July 2014.

A workshop is planned in China as APEC chair in 2014 to share the outcomes of this project among EWG member economies.

APEC Concept Note

*Please submit through APEC Secretariat Program Director. Concept Notes of more than **3 pages** (including title page) or incomplete submissions will not be considered.*

Project Title:	APEC Photovoltaic Communication and Cooperation Platform (PVCCP)
Source of funds (Select one):	<input type="checkbox"/> Operational Account <input type="checkbox"/> TILF Special Account <input checked="" type="checkbox"/> APEC Support Fund
Committee / WG / Sub-fora / Task-force:	Energy Working Group (EWG) / Expert Group on New and Renewable Energy Technologies (EGNRET)
Proposing APEC economy:	China
Co-sponsoring economies:	Hong Kong China, Indonesia, Korea, Malaysia, Singapore, Chinese Taipei, Thailand, USA, Vietnam
Expected start date:	September 1, 2013
Expected completion date:	August 31, 2014
Project summary: Describe the project in under 150 words. Your summary should include the project topic, planned activities, timing and location: <i>(Summary must be no longer than the box provided. Cover sheet must fit on one page)</i>	The Photovoltaic Communication and Cooperation Platform (PVCCP) project is to: 1) establish a PV System Life-cycling Risk Management Scheme, to identify and control potential risks of different period including planning, design, manufacturing, construction, maintenance, etc, 2) develop tool kits to carry out risk analysis and provide compatible and consistent evaluation systems, standards, evaluation methods, and database, 3) provide support to EGNRET and related stakeholders who wish to evaluate the risk and quality of specific PV project, 4) provide content and tool support concerning PV to the Knowledge Sharing Platform (KSP) of Energy Smart Communities Initiative (ESCI). A workshop will be organized in China in 2014.
Total cost of proposal: (APEC funding + self-funding) USD 120,000	Total amount being sought from APEC (USD): 90,000 By category: <i>Travel:</i> 10,000 <i>Labor costs:</i> 75,000 <i>Hosting:</i> 3,000 <i>Publication & distribution:</i> <i>Other:</i> 2,000

Project Overseer Information and Declaration:

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As Project Overseer and on behalf of the above said Organization, I declare that this submission was prepared in accordance with the **Guidebook on APEC Projects** and any ensuing project will comply with said Guidebook. Failure to do so may result in the BMC denying or revoking funding and/or project approval. I understand that any funds approved are granted on the basis of the information in the document's budget table, in the case of any inconsistencies within the document.

Name of Project Overseer

Date: March 11, 2013

Project Synopsis

1. **Relevance:** Why should APEC undertake this project? What problem or opportunity will the project address and why is it important?

Most of the APEC member economies have rich solar resource. In recent years, PV technology has shown its great potential capacity to meet *Challenges and Strategic Choices*, and increase renewable energy use, which was addressed by 10th APEC Ministerial Meeting in Russia in 2012.

APEC has become world biggest PV manufacturing center, and contributes a lot to the quality management in product level. APEC could become world biggest implementation area and market as well, because of strong energy demand and PV rapid price drop.

However, PV system technology and solution is still relatively immature compared to other energy, especially considering the different environmental, grid, and technology factors among APEC member economies, it is very important and valuable to develop a basic scheme to evaluate and control PV system Life-cycling risk, and tool kits to carry out the analysis and evaluation.

We learnt important lessons from nuclear power industry: one casualty happened in Japan could damage the whole industry all over the world, wherever has the tsunami risk or not. Thus we badly need an efficient platform to help all related stakeholders to share latest knowledge and lessons at this historic stage. This PV platform could also provide experience to other fields like wind, biomass, etc in future.

2. **Objectives:** Describe the 2-3 key objectives of the project. (e.g., to... create a framework...; ensure participants will be able to...; share experiences...; enhance understanding...; develop recommendations...; build interest...; revise strategies... etc.)

1) To establish a PV System Life-cycling Risk Management Scheme, to identify and control potential risks of different period including planning, design, manufacturing, construction, maintenance, etc.

2) To develop and recommend tool kits to carry out risk analysis and provide compatible and consistent evaluation systems, standards, evaluation methods, and database.

3) To provide support to EGNRET and related stakeholders who wish to evaluate the risk and quality of a specific PV project.

4) To provide content and tool support concerning PV to the Knowledge Sharing Platform (KSP) of Energy Smart Communities Initiative (ESCI). To build a platform for communications among APEC secretariat, working group, policy makers, project developers, manufacturers, bankers and insurers, etc in the PV sector. Thus they may share knowledge and information of full life-cycling PV project in time.

3. **Alignment:** Describe how the project will help achieve APEC's key priorities and meet your forum's work-plan or medium-term plan.

With the booming development of global new energy industry and low carbon economy, APEC Secretariat and its member economies have shared successful experience and knowledge through meetings, activities, websites, etc.

The Energy Smart Communities Initiative (ESCI) was launched in November 2010 by the U.S. President Barack Obama and Japanese Prime Minister Naoto Kan with APEC. One of the components of ESCI is the Knowledge Sharing Platform (KSP).

Considering fast development and huge potential of PV market in APEC area, to build up PV platform to provide content and tool support to ESCI-KSP and EWG / EGNRET, can not only enhance the function and influence of them, but also can help all the APEC member economies and PV industry to improve PV System Life-cycling Risk Management capacity. Thus APEC could bring into play its advantages in high-end coordination, and promoted different economies to enforce compatible and consistent risk management scheme, evaluation systems, standards, tools, and database for PV industry.

4. **Methodology: How do you plan to implement the project? In this section, address:**

- **Timeline: Project timelines and dates for key activities and deliverables**

This project's duration is one year. It will be jointly carried out by the experts not only from PV industry, but also from electricity, grid, IT, financing and insurance sectors.

- ✕ August 2013: To organize the expert team, and collect suggestion to establish a systematic framework of standards applicable to the PV industry within APEC, based on the existing IEC, UL and VDE standards, as well as the output from PV QA Forum.
- ✕ September 2013: To discuss with University of Pennsylvania Institute for Urban Research and the Taiwan Institute of Economic Research, concerning how to contribute to ESCI-KSP, and discuss with the experts of the National Renewable Energy Laboratory (NREL), USA on how to make the most of current System Advisory Model and/or other existing model.
- ✕ December 2013, To develop a draft PV System Life-cycling Risk Management Scheme.
- ✕ March 2014: To develop a set of tool kits that could be used to carry out evaluation of different projects.
- ✕ May 2014: To complete analysis and evaluation of a demonstration project and provide it to various parties for reference and revision suggestions, and thus further improve the scheme and tool kits.
- ✕ June 2014: To organize a special workshop in China to discuss and collect comment, suggestion to the research results of the PVCCP project.
- ✕ July 2014, improve the research results according to workshop discussion and project closed.

- **Stakeholders: Beneficiaries and stakeholders (APEC & non-APEC) and how they will be engaged**

Through a set of more harmonized risk management scheme and tool kits, the policy makers of various economies could carry out basic evaluation and analysis of safety and performance of PV project. The whole PV industry chain could use more consistent and standardized analysis tool, KPI, documents and data format, discuss and exchange ideas on the PV project cooperation. The general public could also be engaged, better understand the PV technology and industry, and assist the widespread promotion of PV.

- **Previous projects/activities: If and how this proposal builds on the findings or lessons learned from previous projects/activities, while avoiding duplication**

The PVCCP project is built upon Conference on Solar Technology Standards & Conformance (San Francisco, USA, September 2011), APEC Workshop on Ensuring Photovoltaic (PV) Reliability and Durability (Chinese Taipei, October 2011). This project will make the most of previous outcome, develop and recommend new systemic scheme and tool kits on the basis of latest development.

- **Communication: How you plan to communicate the results or benefits of this project to others**

In 2014, a special workshop will be organized in China as APEC chair, by taking into account the work schedule of EWG, aiming to promote the research results of the project.