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# KTP NEED ASSESSMENT WORKSHOP (ISGAN)

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Summary Report



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## KTP Need Assessment Workshop (ISGAN)-Summary Report

### A. Background

During 13th Ex-Co of ISGAN held at Gurgaon, India in March, 2017 it was agreed to organize a knowledge exchange workshop (KTP) in India in the month of Oct'17 to address topics of interest for Indian utilities. As a preparation for identifying topics of interest, a Need Assessment workshop of DISCOMS, Regulators, Consultants, Academia, and Research Institutes was planned by NPMU under guidance of MoP to identify smart Grid knowledge gap through focused group discussions amongst stakeholders. The workshop outcome is envisaged to be used to finalize the ISGAN KTP workshop topics under guidance of MOP.

### B. Proceedings

The workshop was held at POWERGRID CC, Gurgaon on 4th May, 2016 under the Chairmanship of Director, NPMU. There was participation from varied stakeholder viz Regulators, Private and Government DISCOMS, Consultants, Academia etc. List of participants is attached at Annex-I.



The workshop started with lighting of lamp by Director, NPMU, Dy. Director (Tech.), GERC, ED, MERC and senior officials of NPMU. In his opening remarks, Director, NPMU welcomed all the participants and briefly explained the intent of conducting the Need Assessment Workshop. He exhorted all the dignitaries to give their suggestions and share their experience and challenges in their respective domain regarding implementation of smart grid in Indian context.

Thereafter, DGM, NPMU gave a presentation to set the context for the workshop. In the presentation the participants were apprised about the structure, activities various initiatives etc. of the ISGAN. The presentation covered details on need of smart grid, its relevance, various components of Smart grids, Business processes, key regulations, legislation & guidelines,

funding mechanism, Cost benefit analysis, challenges etc. A brief on ongoing smart grid pilot projects and their status was also given.



In the second half a presentation on Smart Grid Pilots- Experience, expectations and standards was also given by NPMU to apprise the gathering on progress so far on above aspects.



### C. Methodology

To come out with their suggestions on topics of interest the participants were divided into three groups with participation from Regulator/Academia, Discom, and Consultant in each group. The composition of groups is attached at Annex-II. The groups were given the brief regarding requirements on output from them on Need assessment for India with targeted

fulfillment of the one or more of following Smart Grid objectives along with potential justification

- Deployment of Smart Meters and AMI – Why?
- Challenges in development of Distributed Generation (Roof Top PVs etc)
- Real-time monitoring and control of Distribution Transformers – Need and rewards
- Power quality issues and improvement measures
- EV Charging – issues for anticipated proliferation of EVs
- Development of medium sized Micro grids.

Groups were required to come out with recommendations and present them to the gathering. These recommendations would then form the basis for assessing the key areas for intervention wherein exposure to the resource pool of ISGAN will be of paramount importance. This assessed need will be taken forward, after approval of MoP to ISGAN for proposing the topic for KTP proposed in October in India.

With above premise the groups held brainstorming session for around two hours discussing threadbare each topics of interest to arrive at their recommendations. Representatives of NPMU were also passive participants in each group to provide guidance on intent, provide clarification on sticking points etc.

#### D. Recommendations of Groups

##### Group 1-



Sh. Kanti Bhuva summarised the findings of group and spoke about journey of Gujrat from being a power deficit state to power surplus. He added that handling surplus was also a challenge for regulators. He apprised that discussions in the group were more focused on

Distributed Generation and AMI aspect of Smart Grid. He mentioned that for urban consumers with more than 5KW Solar PV the benefits on account of Net Metering will be greater, due to shift in tariff slab. He emphasised on the need to address this bias against smaller installation of Rooftop. Utility's risk to be addressed in terms of control as well as quality standards for these installations. He emphasized on use of Smart Inverters 5 year down the line and necessity of Load pattern anticipation and role of DSO's for balanced grid operations. He asked for more clarity on treatment of THD and balancing of load on all the phases of DT in case when power is being injected on a single phase on the LT side of the DT.

Sh. Udayan Ganguly spoke about increasing the penetration of AMI and deterrence to it due to current high costs. He mentioned that consumers injecting power into grid also need to be brought under some sort of regulatory mechanism and penal mechanisms for inadequate network parameters like voltage and harmonics should be contemplated. On storage he suggested for deliberations on small lumped/distributed storage against centralized Giga Watt Storage (Cost effective solution).

Sh. Anuj Goswami mentioned that unlike other states of India maximum allowed capacity for roof top solar PV for individual consumers is only 40% of their connected load for Assam (it is 50% for rest).

#### **Group 2:**



Dr Rajendra Ambekar summarised the recommendations of brain storming and spoke about regulators dilemma as in the case of Maharashtra 16% equity is promised for Private producer that is having long term PPA. Current power scenario includes 7000 MW of Renewables and 8000MW of surplus power and there are cases of backing down the generation in order to

match the load. RE for them is costing higher than coal. He added that smart meters shouldn't vitiate existing troubles but can act as tool to address them. Following Issues were highlighted by Sh. Debasis Gupta:-

- Net Metering & Gross metering requires more clarity.
- Micro Grid are essential in panic situations but in day to day operations how to price/ take care of utility needs so that micro grid doesn't burden it
- As AMI gets huge amount of data flowing, Communication technology for Smart metering needs to be adopted on case to case basis, considering all the aspect of reliable and efficient operations.
- Standard for Smart Meters should be firmed up and frequent revisions should be avoided to give confidence to meter manufacturers for mass manufacturing.
- Most of the Utilities face 5% peak for less than 20 hrs a year (that amounts to ~100 MW capacity for CESC, Kolkata) hence PLM with lucrative Incentives to consumers to flatten the load curve should be allowed. This will reduce the substantial cost incurred towards CAPEX investment for meeting the peak Load.
- Clarity on Government guidelines for hosting of utility data on cloud within Indian Territory.

Sh. Manu Maudgal spoke about learning from effective international practices on IT architecture and data management to enable multi party analysis and to make a successful business case out of it in Indian scenario

### **Group 3:**



Prof. Sukumar Mishra from IIT Delhi summarized the view point of the group and mentioned that the group discussed more about technical issues with granular insight. He spoke about limitation of roof top capacity as DT may not support addition of Solar PV above a threshold. He talked about range of invertors currently in market being put on test and showing THD in

the range of 20% to 200%. He emphasized on Voltage Regulation and THD correction and about cases of over voltage related tripping of inverters. He suggested that it can be handled through regulation on voltage and not on capacities. He pointed that Inverters and LED's may be polluting the Grid through Harmonics generation. He highlighted the need of Smart inverters with capability of derating to protect them from overheating due to high ambient temperatures. He said that Smart meters may be used to measure Harmonics injected and Regulation must be in the place for injection of harmonics to the grid.

Sh. Rajib Das mentioned that as current tariff includes slabs with higher cost for bulk consumption, Net metering leads to higher benefit to bulk consumers due to probable restructuring of their overall slabs.

## E. Outcome of Workshop

**Based on the Discussions, the following key topics emerged as topics of interest for the KTP Workshop:-**

### **Best practices for managing Distributed Generation and Micro grids**

- Clarity on Net and Gross metering method- Uniform method can be adopted across country
- Utility/DSO to have control over Roof top generation and Microgrid- Utility supply not to be just as standby.
- Limit on capacity allowed per DT for Roof Tops
- Measurement and management of Total Harmonic Distortion.
- Norms and standards for Grid connected and hybrid/smart inverters
- Voltage regulations- For managing Roof top PV
- Use of household inverter as storage- Managing Distributed storage

### **Best practices for managing EV Infrastructure**

- EV Charging stations- Sharp peak tackling due to boost charging
- PV charging stations for EVs
- Operational challenges for facilitating household charging of EVs.

### **Regulatory perspective**

- Regulatory intervention for giving benefits to consumers for participating in DSM/DR programs – 5% peak is for less than 20 hrs per year but requires huge capacity investments that can be avoided.
- In surplus power scenario- consumers bearing Fixed costs even when station not operating- increased renewable penetration and DSM handling in such situation

### **Smart Metering**

- Measurement of THD

- Managing GIS mapping and Consumer Indexing for AMI success
- Experience of various communication technologies
- IT architecture and effective data management to enable multi party analysis- Market making for AMI

## F. Conclusion

In the concluding remarks Director, NPMU thanked all the participants for their valuable inputs during brain storming session and to the groups for coming out with their recommendations on Need assessment for topics of utmost relevance for India. He apprised the group that the recommendations of groups shall be analysed by NPMU. Thereafter topics of interest shall be arrived at after taking into consideration recommendations of all the groups and put up for consideration of MoP. Thereafter it will be assessed under guidance of MoP whether the assessment arrived at is sufficient or any further workshop with stakeholders is required. After final agreement of MoP on assessed need the topics shall be further communicated to ISGAN for KTP workshop of October, 2017.

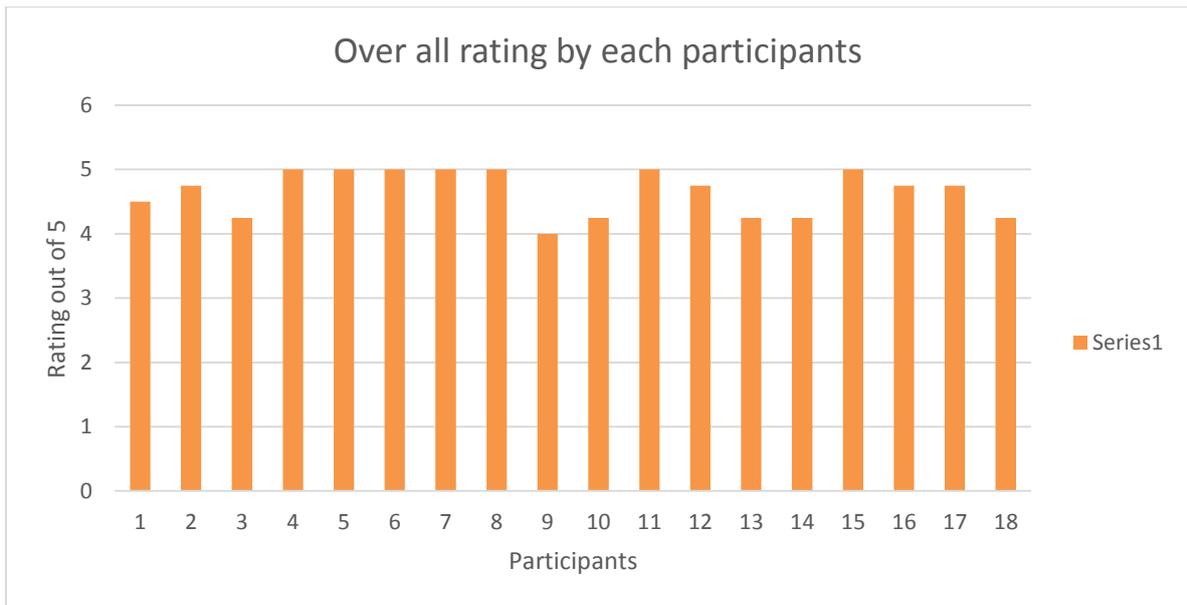
Meeting ended with a vote of thanks to all the participants.

## G. Feedback of participants

This Workshop was rated by the participants on a scale from 1 to 5 as 1=Strongly Disagree (SD); 2 = Disagree (D); 3 = Not Sure (NS); 4 = Agree (A); 5 = Strongly Agree (SA) in following four areas

1. Was the structure of the Workshop well organized?
2. Has the workshop met the expectations in terms of content and delivery?
3. Has the arrangements met your expectations?
4. Do you think that topics for discussions suffice the need?

Details of the Feedback received by the 18nos. of participants out of 22 is as follows:-



X-axis represents 18 nos. of participants. Whereas, Y- axis represents overall feedback received from participants on the (4) areas mentioned above.

The workshop received 93% positive feedback (overall) from the participants.

<b>List of Participants for Need Assessment Workshop for KTP</b>			
<b>S.no.</b>	<b>Name</b>	<b>Designation</b>	<b>Organization</b>
1	Sh. K. J. Bhuva	Deputy Director (Technical)	GERC
2	Dr. Rajendra Ambekar	Executive Director	MERC
3	Sh. Debasis Gupta	GM	CESC, Kolkata
4	Sh. Udayan Ganguly	DGM	CESC, Kolkata
5	Sh. Rajib Das	DGM	CESC, Kolkata
6	Sh. Rajesh Kumar	Ass. GM, Smart Grid	POWERGRID
7	Sh. D.P. Singh	Sr. Engineer	POWERGRID
8	Sh. Nikhil Panwar	Sr. Engineer	POWERGRID
9	Sh. Ankur Chakraborty	Engineer	POWERGRID
10	Sh. Sukumar Mishra	Professor	IIT Delhi
11	Sh. Vikash Arora	Sr. Manager	TPDDL
12	Sh. Imran Ahmed	Manager	TPDDL
13	Sh. Anuj Goswami	AGM	APDCL
14	Sh. K Sarma	Nodal Officer- RAPDRP	APDCL
15	Sh. Abhishek Sharma	Assistant Engineer (IT)	HPSEB
16	Sh. Sanjay Nayak	AVP	PFCCL
17	Sh. Anupam Kashyap	Asst. Manager	PFCCL
18	Sh. Ajay Kumar Sharma	DGM	EESL
19	Sh. Manu Maudgal	Consultant	EESL
20	Sh. Mukund Kumar	Sr. Executive (Tech.)	RECPDCL
21	Ms. Prachi Jindal	Engineer	RECPDCL
22	Sh. Devendra Kumar	DGM	POSOCO
<b>Attended in 2nd Half:-</b>			
23	Sh. P.K.Agarwal	GM	POSOCO
24	Sh. Anil Kumar Goel	SE	DHBVN
25	Sh. C.S. Arora	SE	DHBVN
26	Sh. Jai Deep	XEN	DHBVN
27	Sh. Harsh Kumar	AE	DHBVN
28	Sh. Neeraj Tyagi	JE	DHBVN
<b>NPMU participants</b>			
29	Sh. A.K. Mishra	Director	NPMU
30	Ms. Kumud Wadhwa	DGM	NPMU
31	Sh. Atul Bali	DGM	NPMU
32	Sh. S Narasimhan	DGM	NPMU
33	Sh. Sachin Shukla	Sr. Manager	NPMU
34	Sh. Sundeep Reddy	Sr. Engineer	NPMU
35	Sh. Gyan Prakash	Sr. Engineer	NPMU
36	Sh. Sachin Rajoria	Sr. Engineer	NPMU

<b>Teams for group discussions:-</b>	
<b>Group 1</b>	Sh. K J Bhuva, GERC
	Sh. K Sarma, APDCL
	Sh. Anuj Goswami, APDCL
	Sh. Devendra Kumar, POSOCO
	Sh. Udayan Ganguly, CESC Kolkata
	Sh. Anupam Kashyap, PFCCL
	Sh. Nikhil Panwar, POWERGRID
<b>Group 2</b>	Dr. R Ambekar, MERC
	Sh. Debasis Gupta, CESC Kolkata
	Ms. Prachi Jindal, RECPDCL
	Sh. Vikas Arora, TPDDL
	Sh. Manu Maudgal, EESL
	Sh. Imran Ahmed, TPDDL
	Sh. Rajesh Kumar, POWERGRID
	Sh. D P Singh, POWERGRID
<b>Group 3</b>	Prof. Sukumar Mishra , IIT Delhi
	Sh. Rajib Das, CESC Kolkata
	Sh. Abhishek Sharma, HPSEB
	Sh. Sanjay Nakay, PFCCL
	Sh. Ajay Kumar Sharma, EESL
	Sh. Mukund Kumar, RECPDCL
	Sh. Ankur Chakarborty , POWERGRID