



SMART GRID Bulletin

January, 2019



ABB Microgrid to be installed at IIT Roorkee as part of Joint Smart Campus Development

ABB, an ISGF Member, inaugurated ABB Microgrid at Indian Institute of Technology, Roorkee (IITR) as part of the extended R&D collaboration between ABB and IITR to create platforms for research on various aspects of Smart City Technology deployment. The groundbreaking ceremony of ABB Microgrid with Battery Energy Storage was held on 25th January 2019 to commence the Smart Campus Development Project at IITR. This project is part of the larger R&D collaboration outlined in an MoU between ABB and IITR signed in July, 2018. The agreement for technology collaboration also includes the creation of a Smart Grid Resource Center, joint R&D facilities and support for PhD students.

The Smart Campus development, in addition to the Microgrid, would include technology solutions like Smart Metering, SCADA, Ring Main Units (RMUs) and a backbone of wireless broadband communication platform. It aims to create an operational Smart

IN THIS ISSUE

- ABB Microgrid to be installed at IIT Roorkee as part of Joint Smart Campus Development 1
- Appointments and Transfers 2
- Key Contacts 2
- Smart Grid Updates:
 - o Policy, Regulations & Standards 3
 - o Technology & Projects 4
- Key Takeaways of Distribution Utility Meet 2018 7
- India Smart Utility Week 2019 9



From L-R: Nishit Desai, Technical Advisor, ABB India; Vinod Raina, Head, Government Relations, ABB India; Pitamber Shivnani, President, Power Grids, ABB India; Professor Ajit Chaturvedi, Director, IIT Roorkee; Professor NP Padhy, Dean Academic Affairs, IIT Roorkee; and Professor Ganesh Kumbhar, Electrical Engineering, IIT Roorkee

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ABB Microgrid to be installed at IIT Roorkee as part of Joint Smart Campus Development (Contd...)

Grid Network integrating all sources of energy including Diesel Generation and Renewable Energy. Another objective is to create a research platform to meet the requirements of the evolving grid like bi-directional flow of electricity with localized generation and enhance environmental awareness to influence consumer behavior to maximize usage of clean energy. This will serve as one of the pilot projects for Government of India's Smart Cities Mission. The project cost is being partially funded by ABB India under its CSR initiatives.

IIT Roorkee currently has solar PV systems installed at 27 locations across the campus amounting to 1.8 MW of solar generation. When the 11 kV ABB Ability™ PowerStore microgrid is commissioned in 2020, ABB's advanced microgrid technology will enable the institute to increase the use of renewable energy, identify potential of demand side control, and integrate other power sources. The ABB Ability™ Microgrid, SCADA, and smart metering will enable complete remote monitoring and maintenance, as well as visualization of overall energy requirements of the campus.

"This is yet another milestone and we are privileged to work with IIT Roorkee to set-up a microgrid in the oldest engineering college campus in the country. With green energy becoming the preferred choice, grid edge technologies such as microgrids are becoming a viable option to harness renewable power for smarter, inclusive and sustainable cities and also to provide access to reliable power in communities, campuses, or in remote or off grid areas," said Pitamber Shivnani, President, Power Grids, ABB India. "This microgrid, along with the smart grid model, that will be set up on campus, will demonstrate the future of power."

IIT Roorkee has done pioneering work in recent years to build an eco-friendly campus using renewable sources. The goal is to become a self-sustaining and zero emission green campus.

"Sustainability through adoption of new technologies has been at the core of all developmental activities at IIT Roorkee. We believe this collaboration with ABB using the IIT Roorkee campus as the hub for R&D on futuristic technologies for smarter, sustainable cities will create many milestones," said Prof. Ajit Chaturvedi, Director of IIT Roorkee. "The microgrid is one such important element and the smart electricity distribution network and management system that we are undertaking will enable us to create a 100 percent green campus and achieve zero carbon dioxide emissions in the long run."

The advanced energy metering solutions will be used for energy accounting, billing and collection process. The metering solution will measure energy supplied by grid and diesel generators in separate registers to apply differential tariff, which will sensitize the campus residents/user community about the cost impact due to diesel consumption. ABB SCADA will offer the operator a centralized view of the grid condition and network snapshot. It will also enable power restoration swiftly from the central control, achieving minimum duration for power outage, thus improving availability. Retrofit of the ring main unit (RMU) will enable remote switching operation from the central command center and minimize people movement for manual switching. The wireless broadband communication backbone will pave the way to integrate other services on a common platform, which will be on the lines of an operating model of a smart city.

Appointments and Transfers

Mr Indu Shekhar Jha has been appointed as Member, Central Electricity Regulatory Commission

Mr Shambhu Dayal Meena has been appointed as Chairman, Karnataka Electricity Regulatory Commission

Mr H.M. Manjunath has been appointed as Member (Legal), Karnataka Electricity Regulatory Commission

Ms Varsha Joshi has been appointed as Commissioner, North Delhi Municipal Corporation

Key Contacts

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Smart Grid Updates: Policy, Regulations & Standards

INDIA

NITI Aayog floats Model PPP Concession Agreement for Electric Buses

The government of India's think-tank NITI Aayog has floated a Model Concession Agreement (MCA) for introduction of electric buses in cities for public transportation on operation expenditure (OPEX) model or per km-basis in the public-private partnership (PPP) mode. Under this model, the concessionaire shall be required to incur the necessary capex for procurement of electric buses, and operation and maintenance (O&M) infrastructure, while the (transport) authority shall incur operational expenditure on per km basis. The objective was to provide O&M efficiency of city bus fleet for the Authority, while ensuring bankability of the project for the private sector. Read More: <https://bit.ly/2STPv1j>

MNRE amends Bidding Guidelines for Solar Projects

The Ministry of New and Renewable Energy has amended the competitive bidding guidelines for the procurement of power from grid-connected solar photovoltaic (PV) projects incorporating changes to enhance the pace of solar installations in the country. As per the amendment, commissioning timeframe for solar PV projects outside or inside a solar park will be 18 months or 15 months respectively whereas the timeframe for financial closure will be 12 and nine months respectively from the date of execution of PPA. Read More: <https://bit.ly/2RwIrtv>

Final amendment to Interstate Open Access Power Regulations

Central Electricity Regulatory Commission (CERC) has finalized the amended regulations for open access in interstate transmission and has removed the underutilization of transmission corridor as one of the criteria for revising the standing clearance. From now onwards, the dispatch centres will comprehensively review the situation and do a prudence check while issuing the standing clearance to the applicant. It also stated that National Open Access Registry (NOAR) will be designed in such a manner that it can be seamlessly interfaced with the state load dispatch centres (SLDCs) software for processing the short-term open access applications pertaining to interstate transmission system. Read More: <https://bit.ly/2DfvR11>

Uttar Pradesh raises upper cap for Net-Metered Rooftop Solar

In its regulation on rooftop solar PV, Uttar Pradesh Electricity Regulatory Commission has decided to increase the upper cap for rooftop solar PV systems' size to 2 MW, and stated that this would help in achieving the target of 4,300 MW of rooftop solar PV capacity in the state by 2022. It has also stated that the tariff under gross metering will be the weighted average tariff of grid-connected solar PV projects of 5 MW and above from the previous financial year plus a 25 percent incentive whereas for or settlement under net-metering arrangement tariff has been fixed at INR 2/ kWh. Read More: <https://bit.ly/2W0reJh>

Andhra Pradesh's New Solar Policy targets 5 GW of Projects in Five Years

Andhra Pradesh has come up with a new solar policy with the aim to promote widespread usage of solar power and targets a minimum total solar power capacity addition of 5,000 MW in the next five years in the state. Solar power projects that are

commissioned during the operative period will be eligible for the incentives declared under this policy for a period of 10 years from the date of commissioning. According to the policy, Distribution companies will procure around 2,000 MW of solar power capacity in a phased manner within the next five years depending on the requirement in the state and will enter long-term power purchase agreement of 25 years with developers who are selected based on a competitive procurement process. Read More: <https://bit.ly/2DfBjux>

Rajasthan releases terms and conditions to determine Tariff for Wind and Solar Energy

Rajasthan Electricity Regulatory Commission (RERC) has issued second amendments to the terms and conditions for the determination of tariff for renewable energy sources. According to the amendment, RERC will determine project specific capital cost and tariff based on prevailing market trends for wind and solar PV and solar thermal energy projects and tariff of projects set up under renewable energy certificate (REC) mechanism will be governed RERC (Renewable Energy Obligation Compliance Framework) Regulation, 2010. Read More: <https://bit.ly/2TzQOCO>

Guidelines to make Residential and Office Buildings ready for Electric Vehicles

Ministry of Housing and Urban Affairs has issued guidelines which states that the residential buildings and commercial complexes will have to allot 20 percent of parking space for electric vehicle charging facilities, while eateries will have to reserve places for charging kiosks. The Department of Town and Country Planning under the ministry has issued guidelines through addendum to Model Building Bye-Laws 2016 and Urban and Regional Development Implementation Guidelines, 2014. For residential and institutional buildings, it has been recommended that the metering and payment will be linked with the house owner's monthly maintenance bills with metered units credited to their smart card that is plugged during charging of electric vehicles. This was first recommended in ISGF White Paper on EVSE business model in September 2018 (<http://indiasmartgrid.org/reports/ISGF%20White%20Paper%20-%20EVSE%20Business%20Models%20for%20India.pdf>). Read More: <https://bit.ly/2cPLqFZ>

INTERNATIONAL

NYPA authorizes nearly \$16 Million for Enhanced Information Technology and Cyber Security Measures

New York Power Authority (NYPA) allotted nearly USD 16 million funding for major information technology initiatives. The funding will support a comprehensive five-year Cloud Storage Program designed to support the implementation, life-extension and modernization of the enterprise computer storage systems. The cyber security measures will take a holistic approach and focus on new segmentation solutions while enhancing visibility, monitoring and security at all layers from operational systems all the way to the cloud. Read More: <https://bit.ly/2TU4vMW>

AfDB to support Nigeria's NEP

African Development Bank (AfDB) Group has approved a \$200 million loan for Nigeria and the investment is intended to support the Nigeria Electrification Project (NEP), implemented as part

Policy, Regulations & Standards (Contd...)

of the Nigerian Government's 2017-2020 Economic Recovery and Growth Plan. Given the limited amount of public financing available, projects that catalyse private sector investment are essential to enable the AfDB and its regional member countries to achieve their common goal of electrifying the continent over the next decade. The AfDB-supported part of the project is aimed at rural areas where access to electricity remains low. Read More: <https://bit.ly/2CtQv5h>

EU Legislation on Renewables, Energy Efficiency and Governance

Three key pieces of legislation in the Clean Energy for All Europeans package have been published in the EU Official Journal which includes revision of Renewable Energy Directive (EU) establishing a binding EU target of at least 32% for 2030 with a review for increasing the figure in 2023. Secondly, the revised Energy Efficiency Directive (EU) sets a 2030 target of 32.5%, also with a possible upward revision in 2023. Lastly, the new Governance

Regulation includes the requirement for Member States to draw up integrated National Energy and Climate Plans for 2021 to 2030 outlining the ways to achieve the targets. Read More: <https://bit.ly/2TTCBRm>

CPUC approves first-in-state Pilot Program for Driven Autonomous Vehicle Passenger Service

The California Public Utilities Commission (CPUC) established the "Driven Autonomous Vehicle (AV) Passenger Service" pilot program in order to allow companies to provide passenger service in test AVs with a driver in the vehicle. Zoox Inc. is the first entrant into the CPUC's pilot program. Companies participating in the pilot project will submit data and reports to the CPUC on incidents, passenger miles travelled in test AVs, test AVs that are zero-emission vehicles, execution of passenger safety protocols, and other elements of passenger safety and consumer protection. Read More: <https://bit.ly/2TU6gd0>

Smart Grid Updates: Technology & Projects

GRID MODERNIZATION AND SMART METERING

DERC has Issued a Draft Framework for Virtual and Group Net Metering

Delhi Electricity Regulatory Commission (DERC) announced the draft guidelines under the draft guidelines under DERC (Net Metering for Renewable Energy) Regulations, 2014 for implementation of Group Net Metering and Virtual Net Metering Framework under Delhi Solar Policy 2016. The comments & suggestions on guidelines are accepted till 1st January 2019. Read More: <https://bit.ly/2AwDg3C>

Under the Delhi Solar Policy 2016, DERC has drafted guidelines to implement group & virtual net metering framework

Governing Body Energy Efficiency Services Limited (EESL) Order (Smart Meters) Awarded to Genus Power

Genus Power has received a smart-meter order from EESL (Rs 4.5 bn) for 1,350,000 meters and from AMI (Rs 3.1 bn) for 431,000 meters. With a healthy, Rs 14 bn, order book and with further large orders expected in "smart" metering solutions, the company expects to keep the order book strong. Read More: <https://bit.ly/2Cnfd7n>

Dayton Power and Light Seeks Approval For \$576 Million Grid Plan

Dayton Power and Light Co. (DP & L) is proposing \$576 million in capital projects over the next decade to transform its electric grid. DP&L, a subsidiary of the AES Corp., is seeking approval from the Public Utility Commission of Ohio for the proposal, which it is calling the "Distribution Modernization Plan", which is filed the plan with the Public Utility Commission of Ohio. Read More: <https://bit.ly/2Vqe5Lw>

RENEWABLE ENERGY AND MICROGRIDS

Renewables becoming a Powerful Vehicle of Democratisation creating a New World

The rapid growth of renewable energy sources and the demise of fossil fuels are causing major changes in global politics. Solar, wind and other renewables, which currently make up around a fifth of global energy production, are growing faster than any other source. The shift from fossil fuels to renewables is driven by new technologies and falling costs, increasingly making renewables as competitive as conventional sources of energy. The cost of electricity from solar sources has dropped by 75 percent since 2009 while the price of wind turbines halved over the same period. In 2017, a record 168 GW of electricity were generated from renewable sources worldwide. Read more: <https://bit.ly/2CojS9s>

Renewable Capacity Addition may Surge by 50% in 2019 in India

After a year of relative lull, renewable energy will be back on track in 2019 with new plants being set up and the introduction of the much anticipated policy on battery storage. This will also be the year when floating solar projects will add significant capacity to the India's generation scene. Recent tender results indicate a sharp dip in tariff premium over ground-mounted plants, while the falling cost and constraints in land and transmission capacity will force policymakers to prioritise floating solar. Total renewable energy capacity addition in 2019 will be 15,860 megawatts (MW), up 50% compared to 2018, when there was a lack of clarity on goods and services tax (GST), safeguard duty and BIS standards, besides slow construction of large parks and poor grid connectivity. Read more: <https://bit.ly/2CctVhu>

Total renewable energy capacity addition in 2019 will be 15,860 MW, 50% higher than what was in 2018

5000 MW Solar Plant to be built in Ladakh making it the World's largest

Ladakh, known for its pristine natural beauty and colourful mountains towering over vast swathes of desolate land, is set to add another feature to its fame - the world's largest single-location solar photo-voltaic plant. Some 200km to the south in Kargil, another mega project will join forces to light up the plains, keep glaciers cool by saving 12,750 tonne of carbon emission a year, remove dependence on diesel generation sets and create livelihood for the local population that remains cut off for 6-8 months. Solar Energy Corporation of India (SECI) is promoting the projects in Jammu & Kashmir on a scale matching the grandeur of their locations – 5000 MW for Ladakh and 2500 MW for Kargil – to be completed by 2023 at an estimated investment of Rs 45,000 Crore. Read more: <https://bit.ly/2Mf5eG5>

Ladakh to have the world's largest single-location solar photo-voltaic plant saving 12,750 tonnes of carbon emission a year

Grid Flexibility, Energy Storage, Microgrids win Funding in NYPA 2019 budget

The New York Power Authority (NYPA) on 11th December, 2018 announced hundreds of millions of dollars in funding for energy storage, demand management, microgrids, electric vehicle charging and other distributed energy resources. NYPA made the announcement following a board of trustees vote to approve its 2019 budget. The budget includes \$250 million for grid flexibility that will help fund up to 150 MW in projects, largely energy storage and demand management. NYPA will seek demonstrations by utilities and municipal electric cooperatives, as well public and private partnerships as it identifies initial project locations. The authority designated \$5 million to jump-start innovative clean energy projects through December 31, 2025 under the Clean Distributed Energy Resource (DER) Grant Program. The money will supplement such technologies as microgrids, solar PV, solar plus battery storage, standalone storage and smart inverter functionality. Each project will include software technology that feeds into the authority's energy manager system, which monitors energy performance and efficiency of government buildings. Read more: <https://bit.ly/2UxIGUF>

Storage is the Key for Utility-Scale Microgrid Yielding 70% Renewables

The microgrid is made up of a 6-MW, 3.5-MWh battery system from Switzerland-based Leclanché, about 1.5 MW of wind energy, 3 MW of solar and an existing diesel system that provides backup. The company recently upgraded an existing project — originally developed by another European company — that included the solar, wind and diesel. Leclanché added the battery energy storage and associated controls. What makes this utility-scale microgrid unique is the important role of energy storage. The wind, solar and diesel resources all flow through the battery first, and the battery decides how to distribute the energy to the grid that supplies the whole island. Read more: <https://bit.ly/2D8fRaI>

Smart City Roadmap for Public Power Utilities Released in USA

The paper provides a roadmap for cities and utilities considering implementing a smart city program, offering guidelines and recommendations for public power utilities, while recognizing that each utility is as unique as the community it serves. The paper also lays out key questions to consider in the process of implementing a smart cities program, including which stakeholders to include in the planning, which materials to develop to support the project, and other key operational considerations. The Association defines a smart city as a city that better the lives of residents and businesses through mindful investments and deployments of advanced technologies. Public power utilities need to engage in conversations early in the process to make sure there is proper coordination, as well as to ensure their interests are not superseded. There are risks associated with utilities not engaging with the public and private sector on smart city initiatives. Read more: <https://bit.ly/2RqMdpN>; Paper Link: <https://bit.ly/2D93xqD>

EV AND ENERGY STORAGE

Government of India issued Electric Vehicle Charging Infrastructure guidelines

Key Highlight: 20% parking space to be reserved for EV charging infrastructure

The department of town and country planning under the ministry has issued guidelines to provide for electric vehicle charging infrastructure through addendum to Model Building Bye-Laws, 2016 and Urban and Regional Development Plan Formulation and Implementation Guidelines, 2014. The guidelines on charging infrastructure mandate provisions in various buildings such as Residential and commercial complexes will have to allot 20 per cent of their parking space for electric vehicle charging facilities, while eateries will have to reserve space for kiosks. Read More: <https://bit.ly/2M3yEXw>

NTPC and Goa Government to launch E-buses in Goa

The Goa government has signed an agreement with the National Thermal Power Corporation Ltd (NTPC) for assistance in procuring 100 electric buses and setting up charging stations at all major bus stands across the state. Read More: <https://bit.ly/2FnJ2rA>

NTPC to help procure 100 e-buses for Goa

UK plans largest Retail EV Charging Network

Volkswagen and Tesco have collaborated to roll out the largest retail network of EV chargers across the UK. The charging network will comprise of 2,400 EV charging bays to be deployed at 600 Tesco stores within the next three years. The charging bays will be based in Tesco Extra and Superstore car parks throughout the UK and will be installed by UK-based independent public charging network operator, Pod Point. Customers will be able to charge their electric cars using a standard 7kW AC charger for free or the use of a rapid 50 kW charger for a small cost in line with the market rate. Read More: <https://bit.ly/2QA8Gzx>

The planned UK charging network will have 2,400 EV charging bays deployed at 600 Tesco stores within next three years

SMART CITIES

Mangalore Smart City Company Ltd decided to construct seven smart roads in the city at a cost of Rs 40 crore under the third package of Smart City scheme, meeting of the board of directors held at the city corporation conference hall on Monday December 31. The smart roads proposed include the ones between A B Shetty Circle and Rosario Church, Clock Tower and Hampankatta Junction, Hampankatta and Jyothi circle, Jyothi Circle to Balmatta, Nellikai Road and Bombay Lucky etc. Under smart city scheme, a Mangalore city upgrading intensive care unit of Wenlock Hospital into a 33-bed well-equipped intensive care unit from the current capacity of 12 beds. Source: <https://bit.ly/2C6X6m8>

Mangalore to get seven Smart Roads under Smart City Scheme

Japan to redesign Roads and Grids in ASEAN Smart Cities

Japan will help build “smart cities” across Southeast Asia, using artificial intelligence and networked devices to tackle problems like road congestion and energy conservation. The 10-member states of the Association of Southeast Asian Nations have drawn up a framework to develop environmentally friendly smart cities and have selected 26 locations for the program. Vietnam, for instance, is seeking technical assistance and training to design and run a traffic control system for Hanoi. Myanmar’s second-largest city, Mandalay, also is looking to use data analysis to ease traffic congestion, while Jakarta wants to introduce cashless payment for mass transit. The urban population in emerging economies, including Southeast Asia, will surpass 4 billion in 2030, up from 3 billion in 2015, the United Nations projects. Global spending on information technology for smart cities will reach \$135 billion in 2021, growing at an average annual rate of nearly 20%, research company IDC projects. Source: <https://s.nikkei.com/2VsDNwz>

Key Highlight: Japan and ASEAN establish framework to develop environmentally friendly smart cities at 26 locations

CYBER SECURITY AND STANDARDS

UN Commission sets Cyber Security Regulations for Europe

United Nations Economic Commission for Europe (UNECE) has confirmed to integrate ISA/IEC 62443 series of standards into its forthcoming Common Regulatory Framework on Cybersecurity (CRF). The ISA/IEC 62443 standards are developed by the ISA99 committee of the International Society of Automation (ISA), with consent and reviewed by the Geneva-based International Electrotechnical Commission. This series of standards as per ISA999 are applicable to all industry sectors and critical infrastructure, providing a flexible and comprehensive framework to address and mitigate current and future security vulnerabilities in industrial automation and control systems. Read more: <https://appdeveloper magazine.com/un-commission-sets-cyber-security-regulations-for-europe/>

British Standards Institute has released a new Cyber Security Standard for Self-driving Cars

British standards institute has released a new cyber security standard for self-driving cars. This cyber security standard will improve the resilience and readiness of the industry and help keep the UK at the forefront of advancing transport technology. PAS 1885:2018 is the fundamental principles of automotive cyber security Specification standard. This PAS has been written to help all parties involved in the vehicle lifecycle and ecosystem understand better, how to improve and maintain vehicle security and associated intelligent transport systems (ITS). It sets out fundamental principles on how to provide and maintain cyber security in relation to reducing threat and harm to products, services and systems within increasingly connected and collaborative intelligent transport ecosystems. Read more: <https://www.uktech.news/cybersecurity/new-cyber-security-standard-self-driving-cars-20190102>, <https://shop.bsigroup.com/ProductDetail/?pid=000000000030365446&ga=2.267667464.704902458.1545217114-2008390051.1545217114>

DISRUPTIVE TECHNOLOGIES

Major Spanish Energy Company using Blockchain in Renewable Energy Tracking

Spain’s major energy company, Iberdrola, has started using blockchain to track renewable energy. The first trial was conducted in cooperation with Kutxabank, a local bank, and its subsidiary Cajasur. During the pilot, Iberdrola monitored the renewable energy delivered from two wind farms and one power station. The company used Energy Web Foundation — an open source blockchain platform designed to the regulatory, operational and market needs of the energy sector— in their pilot. They found that blockchain enabled the company to establish a hierarchy of the producers and to automate the process of energy distribution. Read more : <http://www.indiasmartgrid.org/viewnews.php?id=5127>

Utilities Leveraging AI to Harness the Power of Renewable Energy

Artificial Intelligence (AI), along with a slew of advanced technologies such as machine learning, deep learning, and advanced neural networks, has demonstrated huge potential to transform the energy and utilities sector. With decarbonization, decentralization, and the rollout of novel technologies, utilities, independent power producers (IPPs), and other energy companies are employing AI to manage the imbalance in demand and supply caused by the growing share of renewable energy sources. Frost & Sullivan’s recent analysis, “Impact of Artificial Intelligence on Energy and Utilities, 2018”, includes a detailed analysis of current and future applications of AI across the segments of renewables management, demand management, and infrastructure management. It examines technology, geographical, as well as industry trends, key companies that dominate the global AI market, and presents use cases with specific applications of AI. Read more: <http://www.indiasmartgrid.org/viewnews.php?id=5128>

SMART GAS AND SMART WATER

Karnataka's Public Transport can use Natural Gas: PNGRB

In Karnataka, the ratio of clean fuel to non-clean fuel usage is 55:45 and there is good scope for increasing usage of natural gas, as stated by the Petroleum and Natural Gas Regulatory Board (PNGRB). Another potential area of natural gas usage is in public transport. If the State transport corporations switch to natural

gas, they can achieve savings up to 37 per cent. In the 10th round of CGD bidding, six geographical areas (GAs) covering 15 districts in Karnataka – Kolar, Bagalkot, Koppal, Raichur, Hassan, Chikkamagaluru, Kodagu, Kalaburgi, Vijayapura, Mysuru, Mandya, Chamarajanagar, Uttar Kannada, Haveri and Shivamogga had been offered by the PNGRB. Read more: <http://www.indiasmartgrid.org/viewnews.php?id=5104>

Key Takeaways of Distribution Utility Meet 2018

About DUM 2018

The 2nd edition of the Distribution Utility Meet (DUM) 2018, was held on 01 - 02 November 2018 in Mumbai, organised by India Smart Grid Forum (ISGF) and hosted by Tata Power Company Ltd. NREL, Rocky Mountain and EPRI joined DUM 2018 as Knowledge Partners. The DUM 2018 included Plenaries, Presentations, and Breakout Sessions. Invited International and Indian Utilities and Knowledge Partners presented on select topics. Case studies and project experiences were discussed in separate breakout sessions.

Key Takeaways from DUM 2018

Considerable disruptions in the power sector arising from a combination of policy, technological and customer change is transforming how we produce, distribute, manage and use electricity.

- How to produce/purchase power close to where it is consumed, especially with availability of Solar Rooftop and Solar Feeders for Agricultural customers
- How to get Consumer Affection by empowering them with insights (using structured as well as Unstructured data and intelligence from Analytics) for necessary actions to optimise usage
- Large Scale Renewable Energy (RE) Integration considering challenges like intermittency of renewables, need for fast Base Load Ramp up / down Rates, Voltage Stabilisation, Frequency Control, Harmonics, Power Quality and Distributed Energy Resources (DER) Control system for maintaining Grid Stability
- Regulatory Challenges and need for necessary reforms in Power Sector with increased Collaboration within Discoms
- How Utilities need to be prepared with new Business Models, before New Competitors (Technology Companies?) start becoming threat to existence of Discoms

New Challenges for Indian Discoms

- Increase in customer expectations In view of more supplier options being made available after expected Amendments in Electricity Act
- Continuous changes in technology as well as fast changing regulatory requirements forcing Discoms to be on its toes
- Non availability of Regulatory support for fast, dynamic power market needs, leading to a question, "Is Regulation really required for this Industry"?
- Captive Power Plants, Roof Top Solar offered with Net Metering option (using Units settlement) rather than Rupees Settlement option. This is resulting in loss of revenue, making Discom operations unviable
- Cross Subsidies is no more sufficient as High Value Consumptions (Commercial, Industrial customers) turning Prosumers

Whether Wire and Supply Business can be separated for Indian Discoms

- Wire business can be mainly Asset and financial Management of Depreciated investments in order to build infrastructure, if separated this can be run efficiently with assured revenue and monitored and governed by Regulators to ensure necessary quantity and quality of power to consumers
- Supply Business can be possibly deregulated to bring competition, in-line with Power Generation and Transmission Business
- Dynamic Consumer needs and expectations can be addressed well by supplier, who will be able to provide necessary Service levels as well as provide customer insights with use of technologies like Analytics, AI, ML, etc.
- Meter can be owned by wire business, providing access to its data (may be selected) to supplier
- Alternatively, role of Distribution System Operator can be evolved, who will also handle meter data management for the Discoms

Smart Metering suitable for Indian Market - Discussion

- Few experts opined in keeping Meter simple with Precise Measurement, focussing on addressing communication Challenges, since Smart Metering investments are giving Negative (-) NPV for the Distribution Companies
- Majority of Utility companies are excited to bring maximum features to Smart Meters, being deployed and create Digital Platform for system operation and monitoring; and monetise this investment by offering value added services to Customer increasing customer satisfaction and revenue for DISCOM
- OPEX model proposed by ISGF can be explored by DISCOMs with higher ATC losses, ensuring no additional capital investments. This OPEX investment (recoverable through tariffs) may help to identify the source and address the high ATC problems.
- All smart vendors should ensure standardisation in Meter Communication to effectively use different make/models across Discom
- For DISCOMs with low AT&C losses, Smart Metering will help in forecasting, planning, faster Outage Response, Connect / Disconnect facility to increase efficiency of system operation and maintenance as well as increase consumer trust / affection.
- Deliberations happened around whether to use Prepaid or Post-paid meters, but smart meters can be operated as prepaid or post-paid

Business Models for evolving Opportunities

- DISCOMs need to revisit their current business model, roles, capabilities and skills, and consider evolution
- They need to think of alternate revenue streams as existing Revenue and Margins are likely to decline due to increased prosumers in the network. Gross Metering instead of Net Metering in practice can alleviate the situation
- Discoms can optimise their cost and meet the ever changing technology landscape by sharing the required Communication Infrastructure. (As done by Telecom Companies e.g. Indus Tower)
- Alternatively the Combined entity / Single Discom can setup their own Communication Network and generate revenues by using ubiquitous network across states and country
- Supplier on the other hand can adopt strategies of Customer Centricity and Transformation / value added Services (what Telecom Companies did earlier) to retain consumers
- Considering unpredictable power generation and need for fast Base Load Ramp up / down Rates, Distribution system operators (DSOs) will have a role to play
- Distribution system operators (DSOs) could be new player to ensure optimization mechanisms for orchestrating and optimizing DERs, platform operators, Microgrid Operators, etc. connecting participants in the energy system. The role of the DSO would be integration of all elements of the system, ensuring reliability and efficiency in the system operation

DUM 2018 Recommendation to Discoms and Regulators

- Make Distribution Utility Business more glamorous by use of Technology and new business models to attract right talent, skills as well as active participation of customers
- Privacy of customer data need to be ensured, as it will be the additional responsibility of Utilities, which require right policies for compliance
- Task force on Discom Cybersecurity need to be setup for creating templates for customer data privacy as well as establishment of Security Operation Centre (SOC) for safe system operations.
- In order to ensure the stability of grid, investors of Renewable Energy Resources need to be controlled by Discoms
- DISCOMs may setup and run the EV charging stations to address declining revenue and ensure sustainability of operations. Since Utilities are experts in managing heavy assets across cities / states, they can ensure the wide spread availability of EV Charging across regions
- Rigorous customer as well as Discoms' enablement with educational/ learning programs from Regulators to increase communication between the two as well as ensure customer participation during this transformation



12 - 16 March 2019
Manekshaw Centre, New Delhi, India

**International Conference & Exhibition on
SMART UTILITIES FOR SMART CITIES**

12 March 2019 Tuesday	13 March 2019 Wednesday	14 March 2019 Thursday	15 March 2019 Friday	16 March 2019 Saturday
Master Classes	Conference and Exhibition Welcome Reception	Conference and Exhibition	Conference and Exhibition ISGF Innovation Awards 2019 and Gala Dinner	Technical Tours and Cultural Tour

THEMATIC SESSIONS

- 1 Cyber Secure Energy Transition and Utility Transformation**
 - Digitalisation and the Digital Customer
 - Resiliency and Future Readiness
 - Mainstreaming Renewables
 - Energy Storage and E-Mobility
 - Workshop on Smart Microgrids - Lead by US DoE*
- 2 Utility of the Future**
 - Regulatory Reform in the Indian Context
- 3 Energy Storage**
 - Stationery Applications
 - Mobility Applications
 - Energy Storage Roadmap for India
- 4 Electric Vehicles**
 - Mobility Transition in Smart Cities (Lead by Rocky Mountain Institute)

PARALLEL SESSIONS

- **7th EU-INDIA Smart Grid Workshop** (In collaboration with European Commission)
- **Smart Grid Pilot Projects:** Presentation of Results of Successful Project (In collaboration with NEDO, Japan)
- **Workshop on Blockchain for Utilities** (In collaboration with Energy Blockchain Consortium, USA and Energy Web Foundation)
- **Future Skills 2030 - Skilling for the Jobs in 2030** (In collaboration with Indian School of Business and Skill Council for Green Jobs)
- **Workshop on Power Markets Design** (In collaboration with European Commission, Florence School of Regulations and Central Electricity Regulatory Commission)
- **Smart Water Distribution** (In collaboration with CEEW)
- **5th US-INDIA Smart Grid Workshop** (In collaboration with US Commercial Services and USTDA)
- **4th SWEDEN-INDIA Smart Grid Workshop***
- **Roundtable on Interconnection of Regional Grids in Asia:** ASEAN Grid – SAARC Grid – GCC Grid
- **Smart Gas Distribution**
- **Roundtable on Women in Energy** (In collaboration with C3E Initiative*)

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PROGRAM AGENDA

Key Theme: Cyber Secure Energy Transition and Utility Transformation

**ISGF SMART UTILITY
MASTER CLASS SERIES**

12 MARCH 2019 (TUESDAY)

Theme-1: Cyber Secure Energy Transition and Utility Transformation

- Resiliency and Future Readiness
- AMI Related Utility Transformation
- Digitalization and the Asset Health

Tutors: Anant Venkateswaran, Randall Schmidt, ENEDIS*

Theme-2: Next Gen Technologies for Utility Transformation

- Blockchain
- Artificial Intelligence and Machine Learning
- BOTs for Utilities

Tutors: Toni Giroti, Oriol Pujoldevall, Lorien Gamaroff, Reena Suri

Theme-3: DER and Energy Storage Technologies, Energy Storage Roadmap for India; and EV Rollout Challenges

- Battery Technologies for Grid Storage and E-Mobility

Tutors: Arumugam Manthiram

PARALLEL SESSION

IEC – IEEE World Smart Energy Standardation Coordination Workshop*

13 MARCH 2019 (WEDNESDAY)

CONFERENCE DAY - 1

THEMATIC SESSIONS

Inauguration of ISUW 2019 Conference

Release of Reports and Signing of Contracts

Inauguration of ISUW 2019 Exhibition

Digitalisation and the Digital Customer

- Virtualised Utilities
- AMI and AMI related Utility Transformation
- Advanced Analytics; Artificial Intelligence and Machine Learning
- New Utility Business Models

Resiliency and Future Readiness

- Flexibility in Power Systems
- Grid Interactive Buildings and Campuses
- Extreme Events and Grid Stability
- Smart Asset Management and Decision Making Framework
- Cyber Security in the Era of Quantum Computing

Special Plenary: Utility of the Future - Regulatory Reform in the Indian Context

PARALLEL SESSIONS

7th EU-INDIA Smart Grid Workshop – In collaboration with European Commission

Smart Grid Pilot Projects in India: Evaluation of Results of Successful Projects – Lead by NEDO, Japan

Workshop on Blockchain for Utilities - Lead by Energy Blockchain Consortium, USA

Future Skills 2030 - Skilling for the Jobs in 2030 - In collaboration with Indian School of Business and Skill Council for Green Jobs

WELCOME DINNER

14 MARCH 2019 (THURSDAY)

CONFERENCE DAY - 2

THEMATIC SESSIONS

INAUGURAL PLENARY: Mainstreaming Renewables

Mainstreaming Renewables

- Policy and Regulatory Support for Mainstreaming Renewables
- Proliferation of Prosumers and DER Impact on Distribution Grids
- Community Energy
- REMCs and RE Forecasting in India

Workshop on Advanced Microgrids - Lead by US DOE

PARALLEL SESSIONS

Workshop on Power Markets Design – In collaboration with European Commission, Florence School of Regulations and Central Electricity Regulatory Commission*

Smart Water Distribution

5th US-INDIA Smart Grid Workshop - In collaboration with US Department of Commerce, USTDA and USAID

15 MARCH 2019 (FRIDAY)

CONFERENCE DAY - 3

THEMATIC SESSIONS

INAUGURAL PLENARY: Energy Storage and E-Mobility

Energy Storage – Stationery

- Technologies and Applications: Grid Balancing; RE Integration; E-Mobility
- Storage Projects: International Best Practices and Lessons for India; Pilots Projects in India and Results
- Local manufacturing of Energy Storage Systems in India
- Business Models for Energy Storage Systems in the Indian context and Regulatory support

Electric Vehicles: Mobility Transition in Smart Cities - Lead by Rocky Mountain Institute

Valedictory Session

- Address by Chief Guest
- Distribution of Mementos to Partners and Exhibitors
- Lucky Draw for Visitors to the Exhibition
- Vote of Thanks and Announcement of ISUW 2020

PARALLEL SESSIONS

Roundtable on Interconnection of Regional Grids in Asia: ASEAN Grid – SAARC Grid – GCC Grid

Smart Gas Distribution

Roundtable on Women in Energy – In collaboration with C3E Initiative*

Presentation of Select Technical Papers (Top 20 Papers)

ISGF INNOVATION AWARDS AND GALA DINNER

Hotel Le Meridien, New Delhi



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**India
SMART UTILITY
Week 2019**

**International Conference & Exhibition on
Smart Utilities for Smart Cities
12 - 16 March 2019**

Manekshaw Center, New Delhi, India

Supporting Ministries



ISUW 2019 Utility Partners

Hosts Utility



Co-Host Utility

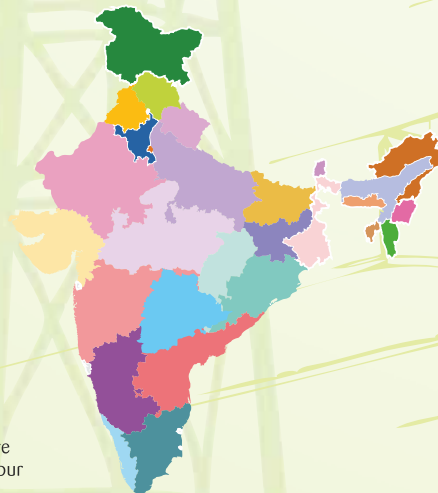


Partners Utility



Electric Utilities in ISGW

- Andhra Pradesh
 - APSPDCL
 - APTCL
- Assam
 - APDCL
- Chattisgarh
 - CSPDCL
- Gujarat
 - GETCO
 - MGVCL
 - PGVCL
 - Torrent Power
 - UGVCL
- Haryana
 - DHBVN
 - UHBVN
- Himachal Pradesh
 - HPSEBL
- Karnataka
 - BESCOM
 - CESC Mysore
 - GESCOM
 - HESCOM
 - MESCOM
- Kerala
 - KSEBL
- Madhya Pradesh
 - MPPKVCL - Indore
 - MPPKVCL - Jabalpur



- Maharashtra
 - MAHATRANSCO
 - MSEDCL
 - Reliance Infra
 - Tata Power
- New Delhi
 - BSES Yamuna
 - BSES Rajdhani
 - Delhi Transco
 - NDMC
 - NTPC
 - POSOCO
 - Power Grid
 - TPDDL
- Odisha
 - OPTCL
 - WESCO
- Punjab
 - PSPCL
- Tamil Nadu
 - TANGEDCO
- Telangana
 - TSPDCL
- Uttar Pradesh
 - Noida Power
- West Bengal
 - CESC Kolkata
 - WBEDCL

and many more Indian and foreign utilities...

Contact for Sponsorship and Exhibition

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Register before 15 Feb 2019 and avail 15% Discount on ISUW 2019 Delegate Registration using code **ISUW2019-15**