



SMART GRID Bulletin

October, 2018



ASEAN Delegation in India to attend Smart Grid Foundation Course conducted by ISGF

IN THIS ISSUE



Participants of Smart Grid Foundation Course from ASEAN Countries with the Dignitaries and Speakers)

India has emerged as a leader in Smart Grid developments with impressive achievements on innovative policies, programs and projects for grid modernization. India Smart Grid Forum (ISGF) has been playing the pivotal role in Smart Grid domain with a comprehensive portfolio of activities including development of Standards, Research Studies, White Papers, Technical Reports, Policies and Regulations and Business Models on important topics and emerging technologies.

To learn from India on the implementation of Smart Grids and to address the challenges in various ASEAN countries, ASEAN Secretariat approached ISGF to conduct a Smart Grid Foundation Course for 17 Senior Officers from ASEAN countries, which was held from 01-05 October 2018 in New Delhi. ISGF welcomed the delegation from Brunei, Cambodia, Laos – PDR, Indonesia, Malaysia, Singapore, Thailand and Vietnam. The Smart Grid Foundation Course by ISGF was planned to provide latest updates, various technologies and use cases, experience sharing from the project heads of successful projects in India and around the World along with Technical Tour to the Tata Power – DDL Smart Grid Lab; SCADA Center and Northern Regional Load Dispatch Centre.

The training program comprised of three days of class room sessions and two days of field visits. Some important topics covered during the course were Smart Grid Maturity Model, T&D Automation, Smart Grid Planning, Communications and Smart Metering, Electric Vehicles and its charging infrastructure, Digital Architecture and Cyber Security for Smart Grids, VER, DER, Energy Storage, Emerging Technologies, Enterprise IT Systems, Model Smart Grid Regulations and ToU Tariff.

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ASEAN Delegation in India to attend Smart Grid Foundation Course Conducted by ISGF (Contd...)

ISGF has also been conducting Training and Capacity Building Programs for various stakeholders and Knowledge Dissemination through different platforms for past 7 years. ISGF has organised study tour of ADB sponsored participants from countries such as Armenia, Bhutan, Maldives, Sri Lanka, Bangladesh, Nepal, Philippines, etc. during its flagship event India Smart Grid Week for past three years. SAARC Energy Centre has recently engaged ISGF for Development of Roadmap for Implementation of Smart Grid-Concepts, Practices and Technologies in SAARC Region and also for a Study on Infrastructure and Enabling Environment for Road Electric Transport in SAARC Member States.



ASEAN Delegates at Tata Power Smart Grid Lab for Technical Tour



ASEAN Delegates at National Load Dispatch Center, New Delhi for Technical Tour

Rs 100 crore reward for meeting targets under Saubhagya scheme



(Image Source: www.5daryanews.com)

Shri RK Singh, Minister of State (IC) for Power and New & Renewable Energy announced an award scheme under Saubhagya to felicitate the DISCOMs / Power Department of the States and their employees for achieving 100 per cent household electrification in their area of operations. Awards would be provided for achieving 100 per cent household electrification at DISCOM/Power Department level of the States. Eight States which have already achieved more than 99 per cent household electrification prior to launch of Saubhagya (Andhra Pradesh, Gujarat, Goa, Haryana, Himachal Pradesh, Kerala, Punjab and Tamil Nadu), are ineligible for participation under the award scheme. All the remaining States and their Discoms are eligible for the award. **Read more details at the source link: <http://pib.nic.in/newsite/pmreleases.aspx?mincode=52>**

Smart Grid Updates: Policy, Regulations & Standards

NATIONAL

Kerala plans for one million EVs by 2022

Kerala has issued a roadmap for electric vehicle policy to accelerate the deployment of electric vehicles and sets an ambitious target of 100 percent electrification of all form of motor vehicles by 2030. It includes bringing one million EVs on the road by 2022 and creating a pilot fleet of 200,000 two-wheelers, 50,000 three-wheelers, 1,000 goods carriers, 3000 buses and 100 ferry boats by 2020. State's transition strategy will include the creation of common charging infrastructure, incentivizing the transition, standardizing the specifications, creating enabling policies and regulations, promoting localization coupled with training and skill development. Read More: <https://bit.ly/2RChpPh>

Delhi Government to set up EV Charging Infrastructure

The Delhi government plans to roll out the first batch of electric buses in the city from March 2019. However, the government has already started working on providing the supporting infrastructure such as charging points for these buses. The Delhi government is going to construct bus depots for the 1,000 electric buses at East Vinod Nagar, Bawana Sector 5, Burari, Rohini Sector 37, Rewla, Khanpur and Narela. Electric power for charging of electric buses and the housing of requisite numbers of charging units shall be the responsibility of the concessionaire who will arrange the infrastructure at their own cost, in consultation with DISCOMs. Read More: <https://bit.ly/2NAE6jx>

Central Government withdraws sops to Conventional Battery Vehicles under FAME

The government has extended the first phase of the FAME-India scheme for promoting electric and hybrid vehicles by another six months till March 31, 2019, but has withdrawn benefits available to conventional battery vehicles. According to a notification by Heavy Industries Ministry, the incentives under the extended scheme from 1st October 2018 will be available only for registered vehicles and electric two-wheelers and three-wheelers powered by conventional lead-acid batteries will no longer be able to avail sops from 1st October 2018. Read More: <https://bit.ly/2pM0i0F>

Proposal to bring Hydro Power under the Ambit of Renewable Energy

The power ministry is planning to place a proposal to bring large hydro power units under the ambit of renewable energy before the Union Cabinet in a month. The move, if implemented, could prove to a major positive for capital intensive hydro projects allowing them access to global funds and the benefits available for green energy projects. Capacity of large hydro power projects stands at around 45,000 Mw, contributing to 13 per cent of the total power capacity. Read More: <https://bit.ly/2QGzXfU>

Indraprastha Gas to set up CNG Stations in Housing Complexes

Indraprastha Gas, India's biggest city gas retailer, is looking at setting up CNG dispensing stations within residential housing complexes to ease queues at CNG pumps and also has plans to foray into e-vehicle charging segment by setting up charging facility at its CNG stations for which it has tied up with a Dutch company. It has already set up one CNG dispensing pump at a residential housing complex in Noida on pilot basis. Residents of

the housing complex will get priority filling and the company will be responsible for the operation and maintenance of the facility. Read More: <https://bit.ly/2PsBtSG>

Haryana Government to set up bio-CNG Plants

The Haryana government signed a memorandum of understanding with Indian Oil Corporation (IOCL) for setting up bio-CNG plants based on paddy straw and other agriculture waste in the state. The first such compressed biogas plant (CBP) is likely to be set up in Kurukshetra and the MoU will open opportunities for setting up of 200 CBPs in the state by 2023, with total capacity of about 1,000 tonnes per day of compressed biogas. Read More: <https://bit.ly/2Of7Mli>

INTERNATIONAL

U.S. Department of Energy Invests USD 28 million to Advance Cyber Security

The U.S. Department of Energy (DOE) announced awards of up to \$28 million to support the research, development, and demonstration of next-generation tools and technologies to improve the cybersecurity and resilience of the Nation's critical energy infrastructure, including the electric grid and oil and natural gas infrastructure. The teams will pursue innovative approaches such as redesigning the current architecture that exposes the energy grid to cyber threats so that existing and future energy delivery systems can detect adversarial actions and adapt to survive while continuing to support critical functions. Read More: <https://bit.ly/2A2GhZC>

European Commission Provides Support to three Offshore Windfarms in Belgium

The European Commission has approved (under EU State aid rules) Belgium's support of a maximum of 3.5 billion euros to the Mermaid (235 MW), Seastar (252 MW) and Northwester2 (219 MW) windfarm projects, which are located in the Belgian territorial waters of the North Sea. After receiving the notification of the support to the three offshore windfarms by Belgium in August 2018 and after carrying out proper due diligence, the Commission concluded that the projects will increase the share of electricity produced from renewable sources in Belgium and reduce pollution, while limiting any distortions of competition caused by the state support. They will help Belgium meet its target of producing 13% of its energy needs from renewable sources by 2020. Read More: <https://bit.ly/2DKwStA>

U.S. Department of Agriculture Investing in Smart Grid Technology

The U.S. Department of Agriculture (USDA) will invest USD 345.5 million in 20 infrastructure projects to improve rural electric service in 14 states. USDA is making the investments through the Electric Infrastructure Loan Program. This program helps finance generation, transmission and distribution projects; system improvements; and energy conservation projects in communities with 10,000 or fewer residents. The loan include USD 7.9 million for smart grid technology. This includes computer applications, two-way communications, geospatial information systems and other tools to increase the reliability and efficiency of electric power systems. Read More: <https://bit.ly/2yf0gTJ>

Smart Grid Updates: Technology & Projects

GRID MODERNIZATION AND SMART METERING

ISGF Member Genus Power Infrastructures Ltd. Established an Advanced Metering Infrastructure Lab

The industry member of ISGF viz. Genus Power Infrastructures Ltd. has set up an Advanced Metering Infrastructure (AMI) lab at recently established Smart Grid Knowledge Centre of Powergrid Corporation of India Limited (PGCIL) at Manesar, Gurgaon. SGKC will provide support in technology development, curriculum changes in technical education, capacity building etc. Source: https://www.equitybulls.com/admin/news2006/news_det.asp?id=236342

\$20 million of Fund Allocation for SMART Grid Centre at the University of New Mexico from National Science Foundation

A consortium of universities, research laboratories and industry partners take a \$20 million grant from the National Science Foundation(NSF) to modernize the state's century-old electrical grid. The grant will fund a Smart Grid Centre at the University of New Mexico(UNM). This Smart Grid Centre has four main research objectives: improving the resilience and cybersecurity of the grid, utilizing machine-learning algorithms to optimize power production and building in simulations and testbed systems to validate performance and sustainability. This project will provide an opportunity of joint research activities between scientists from the Los Alamos National Laboratory and Sandia National Laboratories with students and researchers from New Mexico's higher education institutions. Source: <https://bit.ly/2OdXCYu>

Implementation of Smart Electricity Meters started by Nepal Electricity Authority

Under the project named Kathmandu Valley Smart metering project (KVSM), Nepal Electricity Authority is going to commission the smart electricity meters in Kathmandu. This is the biggest use case of IoT & M2M technologies in Nepal. With adoption of this technology, NEA will be able to reduce and control power leakage along with generation of digital electricity bills. The NEA took this step for theft prevention from hooking and leakage due to which they faces more than 100MW electricity wastage. Source: <https://bit.ly/2ytVr8n>

Grid Modernization and Efficiency Plan Proposed by Public Service Company of Oklahoma (US)

Public Service Company of Oklahoma (PSO) and Oklahoma Corporation Commission (OCC) jointly filed its Grid Modernization and Efficiency Plan which proposes the adoption of performance-based rates (PBR) on 26.09.2018. Due to the aging of electrical networks the plan is going to invest in new technology, network strengthening and efficiency enhancement so that the rates of electricity can be minimized for consumers. Along with this the proposed PBR would tie the company's financial condition to its ability to meet a set of performance incentive measures (PIMS). The filing includes a request for a rate adjustment to recover increased costs related to aging infrastructure, storms, taxes, and other expenses. Source: <https://bit.ly/2PkU7vP>

RENEWABLE ENERGY AND MICROGRIDS

Bioenergy Leads Growth in Renewable Energy Consumption to 2023- IEA

Bioenergy from liquid biofuels and biogas will lead growth in renewable energy consumption to 2023, due to its rising use in the heating and transport sectors, according to the International Energy Agency (IEA). Overall, renewable energy will continue to grow to 2023, accounting for 40 percent of energy consumption growth as countries cut their greenhouse gas emissions to try and keep global warming in check. Of the world's largest energy consumers, Brazil will have the highest share of renewables by far - almost 45 percent of total final energy consumption in 2023, driven by a significant contribution of bioenergy and hydropower. Globally, solar photovoltaic capacity is forecasted to expand by almost 600 gigawatts (GW) to 1 terawatt by 2023 - more than all other renewable energy technologies combined. Source: <https://energy.economictimes.indiatimes.com/news/renewable/bioenergy-leads-growth-in-renewable-energy-consumption-to-2023-iea/66113798>

Chernobyl begins New Life as Solar Power Park

Ukraine launched a park of photovoltaic panels at the former Chernobyl power plant on 5th October, 2018 as the country seeks to use solar power to give the scene of the world's worst nuclear disaster a new lease on life. The 1 million-euro (USD 1.2-million), one-megawatt plant is located just a hundred metres (yards) from a giant metal dome sealing the remains of the nuclear power plant which suffered a catastrophic meltdown in 1986.

The facility, which is installed across an area of 1.6 hectares (4 acres), can power a medium-sized village, or about 2,000 households. Plans are to eventually produce 100 megawatts at the site, which due to contamination from radiation cannot be used for farming. Source: <https://energy.economictimes.indiatimes.com/news/renewable/chernobyl-begins-new-life-as-solar-power-park/66094026>

Japan Transfers Excess Renewable Power Between Regions for First Time

Japan transferred excess renewable energy supplies between two of its electricity regions for the first time since a major shakeup of its power sector. The transfer of excess solar power supplies from the island of Kyushu to Japan's main island of Honshu signals an increase in flexibility in the country's previously regionalised electricity grid as the market opens up to competition. Kyushu Electric Power Co transferred up to 1.125 gigawatts on 1st October to five utilities including Kansai Electric Power and Chubu Electric Power after approval from the grid monitor known as OCCTO. It was the first transfer since OCCTO was set up in 2015 to monitor the country's electricity grid after the government stripped big power utilities of their regional monopolies and opened the \$70 billion retail power market to hundreds of new entrants. Source: <https://energy.economictimes.indiatimes.com/news/renewable/japan-transfers-excess-renewable-power-between-regions-for-first-time/66050515>

Bihar Rooftop Solar Panels on Government Buildings from November

Bihar has selected an agency to install solar panels on the rooftops of government buildings from November 2018. Under the grid connected rooftop scheme, the Centre and state equally share the burden of subsidy for installing rooftop solar panels by individual households, organizations and government buildings. Bihar Renewable Energy Agency (BREDA) is the nodal agency for implementing the project in the state.

Bihar government in May last year had approved the Bihar Policy for Promotion of New and Renewable Energy Sources 2017 to build a capacity to generate 2,969MW solar power, 244MW biofuel energy and 220MW hydel power in the state by 2022. Grid connectivity will ensure that surplus solar power generated is fed to the power grid and the consumer can sell surplus solar power to the grid on current tariffs. Source: <https://energy.economictimes.indiatimes.com/news/renewable/rooftop-solar-panels-on-govt-buildings-from-november/66113794>

MPUVN Rooftop Solar Gets Lowest Ever Tariff of Rs 1.38 per Unit

Madhya Pradesh Urja Vikas Nigam (MPUVN) announced on 5 October 2018 that it has achieved historic low tariff of Rs 1.38 per unit for central government buildings in its RESCO II rooftop solar tender, an official statement said. State government medical colleges, also a beneficiary in the tender, have got a rate of Rs 1.63 per unit for the first year. The RESCO - II tender issued by MPUVN attracted 9 international and domestic bidders, who oversubscribed its 8.6 MWp rooftop tender capacity by more than 630 per cent. The results were announced at an event on the sidelines of RE-Invest 2018, a global platform to explore strategies for development and deployment of renewables. Source: <https://energy.economictimes.indiatimes.com/news/renewable/mpuvn-rooftop-solar-gets-lowest-ever-tariff-of-rs-1-38-per-unit/66087009>

Himachal Offering Land at Re 1/sq.m for Renewable Projects

Himachal Pradesh is offering land at a rate of Re 1 per square metre to woo investors to set up renewable energy projects in the state. Speaking at an event called "2nd Global Re-invest India-ISA Partnership," the state chief minister said that the state allows for deferred royalty payment, and that the state electricity board would buy power directly from renewable projects. Source: <https://energy.economictimes.indiatimes.com/news/renewable/himachal-offering-land-at-re-1/sq-m-for-renewable-projects-cm/66080004>

Bloom Energy Secures \$100M in Financing; Demand Grows for Fuel Cell Microgrids

Fuel cell manufacturer Bloom Energy has secured \$100 million in project financing from Key Equipment Finance, as it sees demand grow for microgrids. Bloom Energy says it will now be able to offer shorter term deal structures for customers that find it difficult to sign long-term contracts. Bloom Energy uses solid oxide fuel cell technology to deliver clean, on-site and reliable electric power. The company says its servers generate electricity from natural gas or biogas without combustion, enabling them to produce 60 percent less carbon dioxide emissions than the power that they offset from the US grid. Source: <https://microgridknowledge.com/bloom-energy-secures-100m-financing-microgrid-demand-grows/>

EV AND ENERGY STORAGE

Uttarakhand unveils Electric Vehicle Policy

The state government of Uttarakhand has released 'The Uttarakhand EV Manufacturing EV Usage Promotion and Related Services Infrastructure Policy 2018' with a 5-year plan. This policy aims to make Uttarakhand a suitable hub for investments and generate employment opportunities in EV manufacturing facilities. The state government will offer term loans of Rs.100-500 million to micro, small and medium enterprises (MSMEs) as well as various tax incentives for encouraging EV promotion. Source: <https://bit.ly/2pJ0fmm>

BHEL Plans to Manufacture E-buses; Initial E-bus Launch Expected by March 2019

Bharat Heavy Electricals limited (BHEL), Trichy, is set to foray into electric bus (e-bus) manufacturing. The company foresees potential business opportunity and has decided to get technology support from NIT Trichy to manufacture electric buses. BHEL plans to launch its first e-bus by March 2019. NIT, Trichy, will provide a complete digital solution for manufacturing e-bus with the help of its state-of-the-art centre. Source: <https://bit.ly/2A1VHxt>

Megawatt-scale Energy Storage Project Proposed for Siberia

SAFT, France and Hevel Group, Russia's largest solar module manufacturer and PV project developer, have signed an agreement to pioneer megawatt-scale energy storage systems (ESS) for solar power plants in the Altai Republic, a remote region in southern Siberia. Integrating Saft's lithium-ion (Li-ion) energy storage technology with the solar plants will ensure a reliable and predictable supply of electricity as well as providing a range of ancillary services to maintain the stability of the local power grids. To demonstrate the capabilities of ESS technology a pilot project is being carried out to install a Saft Intensium Max containerized lithium-ion (Li-ion) system at the existing 10 MW Kosh-Agach solar plant. This is one of the sunniest places in Russia, with over 300 cloudless days per year. Depending on the results of the pilot, the next stage will be to move to commercial implementation, with several ESS units with a total power in excess of 20 MW, mainly in off-grid locations, to be installed between 2020 to 2022. Source: <https://bit.ly/2Rnleb7>

Denmark Proposes ban on Petrol and Diesel Cars to support EV Revolution

Denmark has propounded a ban on the sale of new petrol and diesel cars from 2030 and hybrid from 2035, joining international efforts to promote electric-only vehicles to reduce air pollution and combat climate change. The plan is subject to parliamentary approval to become law and will be presented to parliament in mid-October. Source: <https://bit.ly/2OdNtKR>

German Scientists Conduct Research on Pumped Heat Thermal Electricity Storage

The German Aerospace Center (DLR), the University of Stuttgart and the Karlsruhe Institute of Technology (KIT) will jointly build a research facility for energy storage called NADINE (national demonstrator for isentropic energy storages). The NADINE

project at the research sites in the German cities of Stuttgart and Karlsruhe focuses on so called “Pumped Heat Thermal Electricity Storages (PTES)”. These systems convert electrical energy into heat or other forms of energy such as mechanical or chemical energy. NADINE is intended to demonstrate that PTES can store electricity with an efficiency of up to 70 percent. Source: <https://bit.ly/2Pxjo5S>

SMART CITIES

Seoul Mayor Plans \$108 Million Fund to Build Blockchain Smart City

Park Won-soon, the Mayor of Seoul, has revealed a five-year plan to invest \$108 million to develop the South Korean capital as a smart city powered by blockchain technology. Park announced that Blockchain Urban Plan for 2018–22 will cover 14 public services in five areas, with a government budget totaling \$108 million. Park also indicated aims to spend another \$53 million, building two complexes by 2021 to house 200 blockchain startups by utilizing parts of the Gaepo Digital Innovation Park and Mapo Seoul Startup Hub. Seoul’s blockchain effort is also in line with the roadmap announced by South Korea’s Ministry of ICT, which would invest \$9 million in the coming years to lead blockchain adoption in six major public services. Source: <https://bit.ly/2OMZ7w0>

Abu Dhabi Launches 5-year Plan for Smart Cities and Artificial Intelligence

The Department of Urban Planning and Municipalities in Abu Dhabi has launched the pilot phase of the five-year plan for Smart Cities and Artificial Intelligence (2018-22) named as Zayed Smart City Project. It is a pioneering project for managing the infrastructure by using the Information Technology and the Internet of Things. The project aims to envision the future, drive innovation and provide infrastructure at world-class standards. The Smart Cities project stems from the vision of Abu Dhabi, and the implementation of the municipal system’s policies aimed at achieving sustainability, and improving the quality of living in Abu Dhabi emirate. This will help build future by focusing on digitization, evolution, and modernity to improve the quality of life. Source: <https://bit.ly/2y9c3SA>

The City Thiruvananthapuram is Gearing up for a Green Future, Part of the upcoming Smart City Project

The Thiruvananthapuram Corporation in Kerala is planning to introduce e-autos at 13 centres in the city at a cost of Rs 2 crore. The Corporation has already identified centres where the 50 autos will be launched. In the initial phase, it will be introduced in Thampanoor. The e-auto project comes under the Low Carbon Ananthapuri campaign started by the City Corporation. According to the Smart City project, the e-auto project will be a boon at a time when fuel prices are escalating on a daily basis. Source: <https://bit.ly/2OLqre9>

CYBER SECURITY

China Electric Council Partners with CHAdeMO to Develop a Fast EV Charging Standard

A Memorandum of Understanding was signed by the CHAdeMO association and the China Electric Council on August 28th in Beijing, with consent from the governments of both countries. The partnership aims to co-develop a joint standard. The communication between the charger and the cars is CAN in both standards.

This main aim of this MOU is to develop next generation of a single fast charging standard with the Japanese CHAdeMO. As per MOU, the china fast charging standard (the Chinese GB/T) and Japanese CHAdeMO will make a common standard which will be compatible with the older GB/ T compatible cars. These ultra fast chargers will have DC output in the range of 900kW(1500 volt, 600 Amps)

It is expected that the new standard will not be limited to Chinese and Japanese markets but might also be introduced globally in the near future. This standard will enhance the development of electrified vehicles and unify the next generation of fast charging systems internationally. Source: <http://www.futurecar.com/2620/China-Partners-with-CHAdeMO-to-Develop-a-Fast-EV-Charging-Standard>

The Government of India has set up a National Cyber Coordination Centre (NCCC) to Address Various Kinds of Cyber Security Threats

The government of India has set up a National Cyber Coordination Centre (NCCC). The purpose of creating NCCC is to address various kinds of cyber security threats and also threats related to misuse of social media information. Government has noticed many instances with misuse of social media, including creating social disturbances which can impacts public. In addition to it Information Technology Act is also taken for removal or blocking of such content which affects the interests of sovereignty and integrity of India, defence of India, security of the state, friendly relations with foreign states. Source: <https://telecom.economictimes.indiatimes.com/news/govt-sets-up-cyber-coordination-centre-to-address-cyber-security-threats/63617629>

DISRUPTIVE TECHNOLOGIES

Blockchain Technology can Unlock the Potential of Renewable Energy

Eloncity, a Singapore-based renewable energy project powered by blockchain technology, targets on providing affordable clean energy to underserved communities – and has just raised \$20 million in support of its cause.

Renewables, such as solar and wind power, are often only able to be harnessed during short windows of time throughout the day. Energy is typically difficult to store for long periods, and renewable energy isn’t always cheaper than that produced by non-renewables such as coal and oil. These are the challenges that the AI Grid Foundation, a Singapore-based nonprofit organisation founded by Andy Li in April this year, has been trying to address with the launch of its new Eloncity project. The Eloncity model combines microgrid technologies and blockchain protocols to store, distribute and lower the cost of renewable energies for communities around the world. Source: <http://www.indiasmartgrid.org/viewnews.php?id=4747>

Energy Web Foundation emphasized importance of Blockchain for EV Growth, Community Solar

Distributed energy solutions such as solar PV, batteries, and smart controls are getting cheaper by the day and will soon outperform traditional energy sources such as coal, gas, and nuclear power according to Energy Web Foundation.

Hervé Touati was recently appointed CEO of the Energy Web Foundation (EWF), an energy Blockchain non-profit based in Zug, Switzerland, with a hub in Berlin. He emphasized importance of Blockchain for EV Growth as Blockchain can make green power certificates cheap, fast and tamper-proof, allowing peer-to-peer energy transactions; Cost of tracing solar PV production can be reduced by a factor of 5 to 10; Blockchain will force digital identities on electronic equipment, making cyber-attacks less likely; As electric cars become mainstream, Blockchain can optimise battery charging and ease pressure on power grids; Technology is operational, more work needed to scale it up; On the regulatory side, it is essential that the EU opens the distributed energy market. Source: <http://www.indiasmartgrid.org/viewnews.php?id=4732>

SMART WATER AND SMART GAS

ADB Recommended Fine for Water Wastage

ADB India head suggests penalty for wastage of water. The municipal administration should work out a feasible method of penalising households for water wastage on the basis of meter readings, according to the country director of the Asian Development Bank (ADB) that is funding a 24x7 water supply project.

The Kolkata Municipal Corporation has installed 2,200 meters across wards 1 to 6 as part of a project. The consumption readings in some households have left engineers and officials involved in the project shocked. Water consumption in some households of Paikpara and Belgachhia is 800 litres per person per day. The national average, as calculated by the Central Public Health and Environmental Engineering Organisation, is 135 litres a day. Per capita daily water consumption in Chennai is 84 litres, 100 litres in Bangalore and 170 litres in Mumbai. Source: <http://www.indiasmartgrid.org/viewnews.php?id=4745>

100MW Power-to-Gas Energy Storage Feasibility Study in United Kingdom

ITM Power will receive a funding from Innovate UK for a feasibility study to deploy a 100MW Power-to-Gas (P2G) energy storage project 'Project Centurion' at Runcorn, Cheshire, UK. This world-class project explores the electrolytic production, pipeline transmission, salt cavern storage and gas grid injection of green hydrogen (H2) at an industrial scale. The feasibility study will explore the system design and costs and will assess the business case for deployment. Source: <http://www.indiasmartgrid.org/viewnews.php?id=4742>

Piped Gas to Fuel Kitchens in 44 lakh Chennai Homes Soon

Residents of Chennai will get more than 44 lakh piped natural gas connections and 333 Compressed Natural Gas (CNG) pump stations over the next few years under the Centre's city gas distribution (CGD) project. The Petroleum & Natural Gas Regulatory Board recently finalized the ninth round of bids under the project and Torrent Gas Private Limited and AG&P LNG Marketing Pvt Ltd will set up the facilities in Chennai, including the pipeline for uninterrupted supply of natural gas.

Adani Gas Limited, Indian Oil Corporation and a few other private players have won the tender to set up similar pump stations and PNG connections in other parts of Tamil Nadu. These projects aim at making Indian cities greener by putting up a gas grid by 2020. Source: <http://www.indiasmartgrid.org/viewnews.php?id=4733>

IBI Group Launches Real-Time Energy Management Solution for Urban Water Distribution

In Japan, IBI Group, a global design and technology firm, launched BlueIQ, an intelligent, real-time software solution that uses predictive analytics to determine the most cost effective and energy efficient way for urban water utilities to operate their water distribution systems. A proven solution, unique to the water distribution market, BlueIQ by IBI Group benefits water utilities by conserving energy and reducing operating costs, with an associated reduction in greenhouse gas emissions, while assuring the level of water quality and service to customers. Source: <http://www.indiasmartgrid.org/viewnews.php?id=4769>

Appointments and Transfers

- Mr. Prakash Mhaske has been appointed as Chairperson, Central Electricity Authority (CEA)
- Mr. DS Misra has been appointed as the Chairperson, Chhattisgarh Electricity Regulatory Commission
- Mr. Vinod Deshmukh has been appointed as the Member (Judicial), Chhattisgarh Electricity Regulatory Commission
- Mr. Vivek Pandey has been appointed as Secretary, Electricity Department, Lakshadweep
- Ms. Snehal R. has been appointed as Managing Director, Mangalore Electricity Supply Company Limited
- Ms. Rakesh Agarwal has been appointed as Managing Director, Assam Power Distribution Company Limited
- Mr. BP Singh has retired from the position of Member, Delhi Electricity Regulatory Commission

Smart Grid Updates: Pilot Projects in India

Sr. No.	Project Name and Location	Name of Consultant	Key Functionalities	Key Vendors	Customers (Nos.)	Project Completion Date	Latest Progress
1	APDCL (Paltan Bazaar, Narengi, Ulubari - Assam)	Medhaj Techno Concept Pvt Ltd	AMI-R, AMI-I, PLM, OMS, PQM, DG	M/s Fluentgrid Ltd M/s Sinhal Udyog	15083 (15938)*	2018	<ul style="list-style-type: none"> 13361 smart meters has been installed Installation of Control Centre hardware equipment is under progress A total of 193 DCUs installed in Narengi, Paltan Bazar and Ulubari areas as of Sep/18 8768 meters communicating to Control Center FAT for software modules has been completed Integration of Smart Grid system with R-APDRP SAP-MBC system is not yet started
2	PSPCL (SAS Nagar, Punjab)	POWERGRID	AMI-R, AMI-I, PLM		2,734		<ul style="list-style-type: none"> MDM development is in progress by M/s Analogics Tech. Bids are under evaluation for Smart Meter Tender
3	TSSPDCL (Jeedimetla Industrial Area, Telangana)	CPRI	AMI-R, AMI-I, PLM, OMS, PQ	M/s. ECIL	11,904	2018	<ul style="list-style-type: none"> The agreement period is extended up to September'2018, as permitted by the MoP 5000 number Single Phase Smart Meters are installed at Jeedimetla area Erection of 60 RMUs out of 62 have been completed Erection of 59 autoreclosers out of 77 have been completed Erection of 20 sectionalizers out of 89 have been completed Commissioning of SGCC (Smart Grid Control Centre) is under progress. 20KVA UPS Commissioned at SGCC 2000 Smart meters connection to Data Acquisition system is under process.
4	TSECL (Agartala - Tripura)	POWERGRID	AMI-R, AMI-I, PLM	M/s Wipro M/s JnJ Powercom	42,676	2018	<ul style="list-style-type: none"> Total 30839 meters are installed and communicating with server 234 DCUs have been installed and commissioned successfully Rooftop Solar net metering & billing is being integrated with AMI system Billing of 6,700 consumers done with smart meter data Control centre hardware and software installed Acceptance testing of applications completed Expected date of completion is September 2018"
5	WBSEDCL (Siliguri, Darjeeling, West Bengal)	POWERGRID	AMI-R, AMI-I, PLM	M/s Chemtrols M/s CMS Computers Limited	5,275	Yet to be decided	<ul style="list-style-type: none"> 5069 smart meters installed out of which 2235 are communicating 50 DCU installed at site out of 100 DCU Material & hardware for Control centre setup has been received and installed except Printer and 55 inch LED Display Design document for integration with SAP (billing and collection) system has been finalised and work is in progress
6	PED (Puducherry)	POWERGRID	AMI-R, AMI-I	M/s Dongfang	34,000	2018	<ul style="list-style-type: none"> 23656 smart meters has been installed. 154 DCU installed. Control centre installation completed and operational 202 CT meters and 31 DT meters are installed 4000 meters communicating with Control Centre."
7	UGVCL (Sabarmati, Gujarat)	POWERGRID	AMI-R, AMI-I, OMS, PLM, PQ	M/s Genus Power M/s Cyan Connode M/s Fluentgrid Ltd	39,422	June 2018	<ul style="list-style-type: none"> 19948 nos 1 phase & 1912 nos 3 phase smart meters and 16 nos 3 phase CT smart meters installed at Naroda site. 144 RF Gateways(DCU) are installed. Control Centre Hardware installation, configuration has been completed 21000 meters data acquisition started. Application customization is under progress: the billing data, load survey data, notification & alerts requirement, remote connect-disconnect connection facility are tested / verified. The billing of 1 Phase 12000 consumers has been done."

Smart Grid Projects Completed in India

8	UHBVN (Panipat - Haryana)
9	HPSEB (Kala Amb Industrial Area - Himachal Pradesh)
10	CESC (Mysore - Karnataka)
11	IIT Kanpur - Smart City Pilot (Kanpur, Uttar Pradesh)

Smart Grid Projects under NSGM in India

12	CED (Chandigarh)	POWERGRID	AMI, DT monitoring, Substation Automation, Rooftop Solar PV, IT infrastructure	N.A.	29,433	Yet to be decided	<ul style="list-style-type: none"> REC Power Distribution Company Limited (RECPDCL) appointed as Project Management Agency on 30 Aug 2016 Project Contract Awarded to M/S Analogics
13	Amravati, MSEDCL, Maharashtra	No consultant	AMI, OMS, DR	N.A.	1,48,495	Yet to be decided	<ul style="list-style-type: none"> Bids are opened on 3rd May 2018 and evaluation is under progress.
14	Congress Nagar, MSEDCL, Maharashtra	No consultant	AMI, OMS, DR, SCADA	N.A.	1,25,000	Yet to be decided	<ul style="list-style-type: none"> Bids are opened on 3rd May 2018 and evaluation is under progress.

Abbreviations: "Abbreviations: AMIR/I - Advanced Metering Infrastructure Residential/Industrial, DT - Distribution Transformer, PLM - Peak Load Management, OMS - Outage Management System, PQ - Power Quality, PQM - Power Quality Monitoring, DG - Distributed Generation, SCADA - Supervisory Control and Data Acquisition, DR - Demand Response, EV - Electric Vehicles, IT - Information Technology, HEMS - Home Energy Management System, HAS - Home Automation System, PV - Photovoltaic, DTMU - Distribution Transformer Monitoring Unit"

*Latest number of customers

New Tenders for Smart Metering in India

Sl. No.	Utility	Tender Details	Submission Dates	Source
1	MSEDCL	Supply, installation and FMS activity for LTAC Single Phase 10-60 A Smart (Postpaid/ Prepaid) Static Energy Meter	22 October 2018	https://bit.ly/2IRf9j8
2	MSEDCL	Procurement of LTAC Single Phase 5-30 Amps Static Energy Meters with 6 LowPAN based internal Low Power Radio Frequency connectivity for communication with and without enclosure	29 October 2018	https://bit.ly/2yeU5yT
3	UGVCL (Gujarat)	Request For Proposal For Supply of Smart Meters For Implementation of Advance Metering Infrastructure (AMI) Under IPDS Scheme for All DISCOMs of Gujarat	20 October 2018	https://bit.ly/2Oqqltn
4	MPPOKVCL, MPPAKVCL, MPMKVCL	Expression of Interest (EOI) From Advanced Metering Infrastructure (AMI) Solution Providers for Roll Out of Smart Metering At Selected Cities In Three DISCOMs of MP	22 October 2018	https://bit.ly/2ClQeyd
5	KSEB	Implementation of AMI With Smart Meters Under IPDS for All The Consumers of Electrical Section, Kesavadasapuram	25 October 2018	https://bit.ly/2ROyvcG
6	KSEB	Appointment as Implementing Agency for Implementation of AMI/ Smart Metering systems covering 3,21,800 nodes under IPDS in 63 towns of Kerala state	19 November 2018	https://bit.ly/2CLqHnY
7	BSES Yamuna	Supply & installation of smart meters (single phase, three phase WC, LTCT, HT, and DT)	19 October 2018	https://bit.ly/2pBtDuO
8	BSES Rajdhani	Supply & installation of smart meters (single phase, three phase WC, LTCT, HT, and DT)	19 October 2018	https://bit.ly/2MZRqOo
9	Jammu & Kashmir Power Development Department	Full Turnkey Contract For Project Implementation of 1 Lac Smart Meter In Jammu City And 1 Lac Smart Meter In Srinagar City Under PMDP Scheme	18 October 2018	https://bit.ly/2xFWdzz
10	Chhattisgarh State Power Distribution Company Limited	Appointment Of Project Management Agency (PMA) for Implementation Of Smart Metering Project In 4 Towns (Ambikapur, Korba, Raigarh & Rajanandgaon)	29 October 2018	https://bit.ly/2ITGsJF

Challenges: Behavioural Energy Efficiency in domestic electricity consumer segment

Vishal Kapoor

Director at Ministry of Power, Government of India

Behavioural energy efficiency is an important part of the bouquet of interventions Governments all over the world are implementing today to provide subtle nudges to enable citizens make informed choices. While these interventions are indeed effective in laboratory conditions, getting them off the theoretical horse on to the ground poses significant challenges.

Rationality is a virtue of the past. We have all come around the fact that we live in an imperfect world comprising of irrational human beings. Our daily lives are replete with examples of irrationality which we exhibit every single instant. Turning of the car steering on a curved road is not an outcome of a well thought out decision; it just happens automatically and instinctively. A batsman hitting a pace bowler for a six on a 22-yard cricket pitch doesn't have even a fraction of a second to decide whether he is going to defend the ball or to go for an all-out attack. He does it with an instinct, theoretically also called as a heuristic based decision taken by an automatic mind. Behavioral interventions leverage this automatic mind by making things easier for the human mind to enable them to make their choices quickly.

I am not writing this with respect to consumers having a basic lifeline access to electricity, or having no access to electricity at all. Talking about energy efficiency for such consumers/ would-be consumers would largely be pointless. Electricity access to such people is a socio-political issue, and little opportunity exists for behavioral energy efficiency with such a population. The subject of this article therefore is the aspirational middle class, upper middle class and the rich domestic consumer, who presents a reasonable opportunity for reducing or deferring her energy consumption.

Electricity is not salient in the urban consumer's lives. it is not considered as a product or a commodity by consumers who are the target group for energy efficiency. Come to think of it; how many times a day would the urban consumer think about electricity and its usage? The answer would not but be in a naught. We deal with our Air-conditioners, television sets, music systems, geysers, etc, on a daily basis. The use is defined by deriving utility or hedonistic pleasure out of usage of that equipment. At any time during the usage of these equipment, we never spare a thought for electricity, which is the proverbial raw material for operation of these equipment. Why is it so?

People act on priorities, and priorities are all about what is visible, audible, or occupies a prominent place in our mind. A priority issue therefore automatically becomes salient to a humans' mind, and serves as a constant reminder to act upon the same. Thus, to evoke an action, saliency is a must. One of the effective stimulus to evoke saliency in humans is an economic signal, especially a change in price levels. Therefore, to bring saliency of electricity in people's lives, price signals, or differential/market pricing of electricity on basis of supply and demand would be the most effective instruments.

However, price signals have a limitation. Above a particular income level, the cost of electricity becomes an insignificant percentage of the household expenses. In such cases, the effectiveness of price signals weakens, as she has several other more salient costs to deal with. More so, since the variation of prices of electricity are likely to be within the tolerance range of such consumers, price signals based on the supply/demand of electricity dynamic tariffs become ineffective. So, is that an end of road for behavioral energy efficiency for such consumers? Fortunately, there indeed are other ways, which can be used either individually or in combination to alter consumption behavior. But as we see further, the path towards achieving the same is also fraught with challenges.

Several Behavioural experts cite availability of other-than-price-signal mechanisms to bring saliency to electricity in people's lives. These interventions build up on the general human tendency to conform to social norms. After all, haven't we seen the same people behave different ways in different realms on the same parameter? The same commuter who throws waste on Railway tracks would look out for a dustbin to throw garbage while he travels on Delhi Metro. Try standing up and offer a reserved seat in a crowded bus to an elderly lady, and you would see men sitting next to you on those reserved seats offer their seats to ladies as well. We are sticklers to social norms, and instinctively follow what others are doing. We live in Rome as romans do.

Leveraging this human penchant for adhering to social norms, some behavioural energy efficiency measures try to prime consumers by presenting relative statistics of how well she is faring in respect to similar households in the neighbourhood. This could be done either through monthly bills or through Apps connected to Smart electricity meters installed at home. It has been proven in a few studies that such measures that leverage the "availability heuristic", as this is technically called, achieve as much as 3-4% of efficiency. In short, both price signals as well as other behavioural interventions intrinsically aim at increasing saliency of electricity in consumers lives, thereby stimulating the automatic brain to act upon the stimulus to bring a behavioural shift in energy consumption.

Increasing saliency seems to theoretically sound as a very good option, but it suffers from competing saliency interventions crowding out our mental space. Mobile phones, advertisements, App notifications, colourful advertisements, both print and electronic, vie for our attention 24 hours. Digital billing and payment ecosystems involving automatic billing and payments of bills by consumers have given benefits of timely payments and avoided delays to consumers, but at the same time come with negative externalities. Many consumers

Challenges: Behavioural Energy Efficiency in domestic electricity consumer segment (Contd...)

don't see their bills for months together, thereby creating an artificial barrier between the intervention and the consumer. At the same time, in this part of the world, easy availability of Servants with affluent Indians to take care of their billing and payment needs, further creates a barrier for any such behavioural intervention reaching the "target consumer".

In all, the path to Behavioural interventions is not an easy one. Very few people know that many times, human behaviour manifests itself in opposite ways to the same stimulus. For example the "Hot hand effect", and the "Gamblers fallacy" tend to evoke directly opposite consumer reactions to the same stimulus. Further, we have already seen that increasing saliency has its own challenges in the crowded space of notifications vying for our attention all the time. Therefore, Utilities, policy makers and experts would have to work together and conduct considerable diligence before rolling such interventions out, for if the interventions themselves are not effective, and become the new normal, they run the risk of being ineffective even when the intervention is rolled out duly rectified.



EU-India Smart Grid Workshop, 19 – 22 November 2018, Florence and Rome, Italy

ISGF announces 6th EU – India Smart Grid Workshop in Florence, Italy scheduled on 19 -22 November 2018. The Workshop will be hosted by Florence School of Regulations and will be followed by site visits to ENEL's Facilities in Rome on 22nd November 2018. The importance of EU-India cooperation on Smart Grid has been underlined in the Joint Declaration on a Clean Energy and Climate Partnership adopted by EU and India on the occasion of the visit by India's Prime Minister Modi to the European Leaders in Brussels on 30 March 2016.

The Florence Workshop will involve Indian and European Policy Makers, Network Operators, Regulators and Technology Providers in interactions on the following themes:

- Regulatory Frameworks enabling RE Integration
- European and Indian demonstration projects on Energy Storage to promote the integration of Renewable Energy and Electric Vehicle
- Evolving role of Distribution System Operators in the context of Smart Grids
- Upscaling and transferring promising Smart Grid demonstrations in Indian and European contexts

To join the delegation from India, please contact Ms. Reena Suri at India Smart Grid Forum (reena.suri@indiasmartgrid.org)

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5

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6

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7

Most Progressive Gas Utility in India

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Most Progressive Water Utility in India

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10

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