Design of Time of Use (ToU) Electricity Tariff in the State of Gujarat by India Smart Grid Forum

ISGF has embarked on a project “Design of Time of Use (ToU) Electricity Tariff in the State of Gujarat”, with the objective to review and analyse the effect of real time pricing of electricity on consumers behaviour and its subsequent impact on generation, transmission and distribution utilities of Gujarat. This project is funded by Shakti Sustainable Energy Foundation (SSEF) and is supported by Gujarat Energy & Petrochemicals Department (GEPD) and Gujarat Electricity Regulatory Commission (GERC).

On 6th December 2019, ISGF organised Stakeholders Consultation Workshop in Gujarat to take feedback from stakeholders for detailed design and implementation strategy. The workshop was inaugurated by Shri Anand Kumar, Chairman, GERC and special address was delivered by Shri Pankaj Joshi, Principal Secretary, GEPD and Shri Mahesh Singh, Managing Director, UGVCL.
This project would include a detailed feasibility study and recommendation for the Time of Use Tariff adoption in the state of Gujarat. An implementation framework and effective roadmap will be created for the utilities to understand the procedure and required infrastructure to implement ToU tariff. This will help utilities optimize their cost and reduce carbon footprint by enabling large scale integration of renewable energy sources and optimal charging and discharging of Electric Vehicles thereby reducing the stress on distribution network. The policy and regulatory issues will also be prescribed and the impact of policy on the reduction of carbon emissions in the state would be estimated.

Appointments and Transfers

- Arvind Kumar has been appointed as Principal Secretary, Energy Department and Chairman, Uttar Pradesh Power Corporation Limited
- M Devaraj has been appointed as Managing Director, Uttar Pradesh Power Corporation Limited
- Tushar Chandravadan Vyas has been appointed as Managing Director, Madhya Gujarat Vij. Company Limited
- Rameshwar Prasad Gupta has been appointed as Special Secretary, NITI Aayog

Announcement of BASE Fellowship Program by Department of Science and Technology, Govt. of India and IUSSTF

The Department of Science and Technology, Govt. of India through its Solar Energy Research Initiative, and the Indo-U.S. Science and Technology Forum (IUSSTF) have partnered to support the Bhaskara Advanced Solar Energy (BASE) Fellowship Program - a dynamic and transformative program developed to foster contacts between students and scientists from India and the United States.

The program will provide an opportunity to the best and brightest Indian students and scientists to gain exposure and access to world-class research facilities in leading U.S. institutions to promote research and capacity building in the frontline area of Solar Energy. It will pave the way for the next generation of scientists and technologists from India to interact with their American peers, thus helping to build long-term R&D linkages and collaborations. More information about the program is available on website https://www.iusstf.org/program/bhaskara-advanced-solar-energy-fellowship. The application deadline is 31 January 2020.

For queries about the program, please contact Dr. Nishritha Bopana and Ms. Subhashree Basu at energy.fellowship@indousstf.org

Smart Grid Updates: Policy, Regulations & Standards

**INDIA**

**Karnataka Promotes Third-party Investment for Rooftop Solar Projects**

The Karnataka Electricity Regulatory Commission (KERC) has decided to encourage third-party investments in solar rooftop projects on consumers’ rooftops in a bid to accelerate capacity additions in the rooftop solar segment. The commission issued a discussion paper that proposes business models like utility-centric business model consumer-centric, or third party owned (RESCO), models. The commission also noted that the sale of energy by a third-party investor to the consumer attracts the payment of cross-subsidy surcharge and additional surcharge. The commission observed that the exemption from levying such charges for a limited period might be granted in case of all low tension (LT) domestic consumers. Read More: https://bit.ly/2toQAGC

**Guidelines for Distribution Companies Procuring Power from Decentralized Solar Projects**

The Ministry of New and Renewable Energy (MNRE) has issued guidelines to develop decentralized solar power projects in the country. The new guidelines will apply to distribution companies (DISCOMs) procuring solar power from decentralized solar power projects of capacity more than 2 MW connected to rural distribution sub-stations of 33/11 kV, 66/11 kV, and 110/11 kV. The new guidelines also state that the bidder should submit a non-refundable processing fee of INR 10,000 (~141 USD) per MW or part of the capacity applied along with the response of Request for Selection. Read More: https://bit.ly/2Z1tRMv

**Uttar Pradesh Approves Blockchain Technology for Trading Power from Rooftop Solar**

The Uttar Pradesh Electricity Regulatory Commission (UPERC) has approved a pilot project for peer-to-peer (P2P) transactions of power from rooftop solar systems using blockchain-based technology. Under this pilot project, few select government buildings in Lucknow with rooftop solar...
will carry out peer-to-peer transactions for the trading of rooftop solar power. The fees for the pilot project will be recovered in the annual revenue of the requirement of the concerned distribution licensee. By using blockchain technology, participants can transfer funds and settle trades. Read More: https://bit.ly/381Tvwsy

Amendments in Guidelines for Dispute Resolution Mechanism for Wind and Solar Developers

The Ministry of New and Renewable Energy (MNRE) has amended the order related to the Dispute Resolution Mechanism to resolve disputes between solar, wind developers, and the Solar Energy Corporation of India (SECI) or the National Thermal Power Corporation (NTPC). In this amendment, the ministry has tried to clarify further the clauses relating to the grant of time extension for projects affected by two or more unforeseeable circumstances. MNRE also asked SECI about granting an extension to wind projects (tranches 1 to V) that have been affected by changes in projects (tranches 1 to V) that have been affected by changes in MNRE also asked SECI about granting an extension to wind projects (tranches 1 to V) that have been affected by changes in

The Uttar Pradesh Electricity Regulatory Commission (UPERC) has come up with open land policies. Read More: https://bit.ly/2PAMfsP

Long-term open Access Customers get Highest Priority in Uttar Pradesh

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Subsidies for Electric Vehicle Buyers under FAME Program

The Ministry of Heavy Industries and Public Enterprises (MHIPE) has announced that about 285,000 buyers of electric and hybrid vehicles have benefitted from the subsidies provided under the Faster Adoption and Manufacturing of Hybrid and Electric Vehicles in India (FAME-India) program to the tune of INR 3.6 billion (50.2 million USD). Moreover, the government has also sanctioned 5,695 electric buses to 64 city and state transport corporations for both intra-city and intercity operations under Phase-II of the FAME program which is expected to cost the government around INR 1.75 billion (24.4 million USD). Read More: https://bit.ly/2EuZbZ7

Draft Guidelines for Solar and Wind Deviation

The Uttar Pradesh Electricity Regulatory Commission (UPERC) has issued draft regulations for forecasting, scheduling, and deviation settlement of solar and wind projects in the state. According to the new draft regulations, the qualified coordinating agency (QCA) will be appointed with the approval of the generators that have at least 51% of the combined installed capacity at the pooling substation. It also proposes that the SLDC shall undertake aggregate forecasting of solar or wind power expected to be injected into the state grid and must be responsible for the forecasting, scheduling, communication, and coordination with the QCA. Read More: https://bit.ly/2M8JHqY

Measures to Check Cyberattacks on National Power Grid

The central power ministry has informed that the government had taken multiple steps to curb cyber threats on the national power grid. For securing the transmission assets of the power grid, the communication from the substations to the control centres is done over an optical fibre network owned by the POWERGRID without any connectivity to the external networks. They are further protected through multiple firewalls. Moreover, these systems are kept isolated from the office networks to prevent any malicious online attack because of internet connectivity. Read More: https://bit.ly/34wNYmT

INTERNATIONAL

Vietnam to go Back to Solar Auctions

Vietnam has decided to go back to conducting solar auctions, doing away with the feed-in-tariff (FIT) mechanism. But all’s not over for FiTs as it will still be applicable for projects that have signed the power purchase agreement (PPA) and are commencing the construction in 2020 or are commissioned in the year apart from rooftop solar. The decision to move to auction based system has been proved beneficial, as from then several companies have entered the solar space and nearly 4.5 GW of solar generation capacity became operational by July 2019. Read More: https://bit.ly/34wNYmT

European Commission Approves Modernisation of Energy Efficient District Heating System

The European Commission has approved, under EU State aid rules, Croatian plans to support the modernisation of an energy efficient district heating system in the city of Zagreb, Croatia. The €57 million euro investment aid will support the modernisation of the hot water network through the replacement of deteriorated pipelines by the beneficiary of the aid, HEP District Heating. Furthermore, it will contribute to the implementation of the green European strategy by increasing the energy efficiency and decreasing the emission of harmful and greenhouse gases. Read More: https://bit.ly/34wNYmT

Namibia to Diversify its Power Generation Options

As state firm NamPower looks to diversify its power generation options and decrease its power imports from South Africa and Zimbabwe, it is planning to install two new wind farms n Elizabeth Bay and Kolmanskop. Wind power generation will be done under two projects, and can cost up to N$1 billion. Of the 220 MW, NamPower has been allocated 150 MW, while the 70 MW goes to an independent power plant, which will have to bid through a public tender. The new power facilities fall under the 2019-2023 strategic business plan which also includes a 20 MW PV power plant, a 40 MW wind power project, and a 40 MW biomass power project. Read More: https://bit.ly/2r4LYOL

More than 55.5 million litres of fuel have been saved, and over 138300 Tons of carbon dioxide emissions have been avoided since the implementation of FAME program

Consumers availing the interstate transmission system will also pay cross-subsidy surcharge

The project will also be partially financed by EU structural funds
AC Energy Launches Green Bonds

AC Energy, the energy platform of Philippines-based Ayala Corporation, has launched its non-deferrable green bonds. The aggregate principal amount is 400 million USD, with a fixed coupon of 5.6% for life. The bonds are set to be listed on the Singapore Exchange Limited (SGX-ST) and have been certified under the ASEAN green bonds standards set up by the Philippines Securities and Exchange Commission. AC Energy is planning to use the funds for the expansion of renewable energy across the Asia Pacific region, which includes the Philippines, Indonesia, Vietnam, India, Myanmar, and Australia, among others. Read More: https://bit.ly/2S5kF8t

Smart Grid Updates (Contd...)

California Approves New Energy Efficiency Frameworks

The California Public Utilities Commission (CPUC) to adopt frameworks for two areas of energy efficiency policy, giving support to the continued use of Regional Energy Networks (RENs) and expanding the use of market transformation initiatives (MTIs). The decision allows local governments to continue collaborating on RENs, invites new proposals and establishes an independent statewide market transformation administrator that will be hired by Pacific Gas and Electric through a competitive solicitation and managed by the commission. The decision authorizes an MTI five-year budget of $250 million to advance new efficiency programs and technology. Read More: https://bit.ly/2PV18cW

Grid Modernization and Smart Metering

Department of Energy Announces $80 Million for New Grid Modernization Lab Call Project

The U.S. Department of Energy (DOE) announced the results of the 2019 grid modernization lab call with funding of approximately $80 million over three years. This funding aims to strengthen, transform and improve the resilience of energy infrastructure to ensure the nation’s access to reliable and secure sources of energy now and in the future. In addition, these projects aiming to maintain the reliability and resilience of the grid will show meaningful results in 18 months to two years. The Grid Modernization Laboratory Consortium (GMLC) was established as a strategic partnership between DOE and the National Laboratories to bring together leading experts, technologies, and resources to collaborate on the goal of modernizing the nation’s grid. The benefits of the GMLC include more efficient use of resources, shared networks, better learning and preservation of knowledge, enhanced lab coordination and collaboration, and regional perspective and relationships with local stakeholders and industry. Read More: https://bit.ly/2PkRwVf

The First Harmonized Approach to Smart Meter Safety Certification was Formally Certified in Europe

Smart meter certification performed using this protection profile by any of the certification bodies members of the SOG-IS agreement will be recognized across the 17 European countries that have signed that agreement. The development of smart energy grids is dramatically changing the grid and traditional energy services and markets are undergoing a significant transformation. Internet of Things (IoT) communication networks are already in use and enable modern energy services provided by grid operators and energy service companies. With this increasingly connected environment comes the risk of vulnerabilities, which could affect the reliability of the energy system and the trust of consumers. Therefore, securing the smart grid and the related communications systems is essential for a successful energy transition. Read More: https://bit.ly/2P1sTLP

inteGRIDy, an EU Horizon 2020 Project pushes for Energy Self-Sufficiency

inteGRIDy is an EU Horizon 2020 Project that investigates how electric grids of the future could work by analyzing the results of 10 energy pilot schemes running in countries across the European Union. The pilot schemes are based on the project’s four main pillars: demand response, smartening the distribution grid, energy storage and smart integration of transport-focused grid users. inteGRIDy aims to develop what it calls “integrated Smart GRID Cross-Functional Solutions for Optimized Synergetic Energy Distribution, Utilization and Storage Technologies.” With a total budget of EU15.8 million, inteGRIDy has some ambitious goals. inteGRIDy starts with a focus on integrating existing technologies to implement a smart grid distribution platform. Specifically, the network of inteGRIDy partners are working to offer “smart grid energy services” for low voltage (LV) and medium voltage (MV) networks. Read more: https://bit.ly/35fyIrQ

Saudi Electricity Co. Awards $2.6 Billion Smart Metering Project

Saudi Electricity Co. (SEC) has awarded a Smart Metering project at a cost of 9.56 billion Saudi riyals ($2.55 billion), the company announced on 15 December 2019. The project will start on 19 December 2019 and entails installing and commissioning 10 million smart meters for consumers across Saudi Arabia. A consortium of Ethidat Etsalat Co. (Mobily) and Alfanar Construction will implement the project in Central and Eastern areas, while a branch of China Electric Power Equipment and Techn. Square General Contracting Company will implement it in Western and Southern areas. The project will be funded through SEC’s internal resources as well as external financing, the company said in a statement adding that 3.5 million meters will be purchased from local manufacturers.
The project is expected to be completed on March 30, 2023, and a positive impact is expected on the company’s results starting to 2021. Read More: https://bit.ly/2FpOoHK

**Electric Vehicles (EV)**

**Electric Vehicles to Make Up a Quarter of All Automobile Sales in China by 2025**

The draft report from the Ministry of Industry and Information Technology said China would aim to ensure that either hybrid or full-electric vehicles were one in four of all vehicles sold in 2025. The initiatives are partially aimed at ensuring that the country meets its goals for air pollution and increasing Beijing’s reliance on imported oil. China would also continue to develop battery technology for electric vehicles improve infrastructure for hydrogen fuel cell vehicles and driverless cars. A previous state target set in 2017 had called for 20 per cent of cars sold to be electric vehicles by 2020, but the draft released on 10th December gave no indication whether China was on track to meet that goal. Fuelled by rising incomes and benefits from government purchases, China is the golden goose on which the global automotive industry has staked its future. But after years of strong growth, for the first time since the 1990s, car sales plummeted last year, hit by a slowing economy, U.S. trade tensions, and a Chinese crackdown on dubious lending practices that cramped outlets for car financing. Sales of passenger vehicles have now fallen in China for 15 consecutive months. Read more: https://bit.ly/2PKZHZI

**Europe is Gaining Ground in International Electric Car Sales**

Europe is set to lead global growth in electric car sales as governments across the region are offering consumers ever sweeter incentives to buy new vehicles in 2020. Momentum is building on a market that is already the second largest in the world – well behind China but well ahead of North America – as the European Union unveiled an ambitious project on mid-century carbon neutralization. For car manufacturers now facing the strong choice of either selling emission-free cars or paying heavy EU fines on polluting models, 2020 is shaping up like do or die for the industry. According to Bloomberg NEF, sales of pure electric and plug-in hybrid passenger cars in Europe are expected to grow 35 percent in the first nine months of 2020, a rate well above China and North America. Across the three regions, battery-only cars have long obsolete plug-in hybrids. The outlook for this year’s European growth of 32 percent compares to a demand slowing in China as the government pulls back on subsidies and in North America. Read more: https://bloom.bg/34jOlkG

**Energy Storage**

**Spain’s First Grid Scale Lithium-Ion Battery Storage System Unveiled**

The energy storage system is located in Caravaca de la Cruz in Murcian. The 3MWh plant will help the utility to improve energy supply in Cañada de la Cruz, Inazaers, Moralejo, Barranda, El Moral and Los Royos. The plant will be used to store energy generated from solar facilities and provide up to five hours to the main grid. The energy storage system can operate in isolation and comprises an intelligent platform that estimates both the consumption and the potential renewable generation power of the solar plants. The project is expected to reduce supply interruption times during emergencies as well as ensure the stability of the main grid during peak demands period.

The project has eliminated the construction of 22km of overhead power lines. The project is part of plans by Iberdrola to invest in smart grid technologies and low-carbon energy resources to address climate change. Read more: https://bit.ly/2sAMnP

**Australia’s 1414 Degrees to Supply Abandoned Aurora CSP Site with PV, Thermal Storage**

Plans for electricity generation at the Aurora concentrated solar power (CSP) project site have been rekindled by Adelaide-based thermal energy storage company 1414 Degrees. The 150 MW Aurora plant, billed as the world’s biggest, ground to a halt earlier this year after U.S. developer SolarReserve struggled to secure financing. 1414 Degrees announced plans to acquire SolarReserve Australia II, which owns the Aurora project in South Australia and two more solar sites in New South Wales. The company’s plan is to refocus the Aurora site and build up to 400 MW of solar PV coupled with a grid-scale thermal energy storage system (TESS-GRID), which it plans to progressively scale up to several thousand megawatt-hours of storage capacity. TESS-GRID at this scale could supply many hours of dispatchable electricity with spinning reserves from its turbines, while offering a range of frequency control ancillary services (FCAS) to support grid stability. It could also buy and store electricity generated by other renewable energy projects on the regional high-voltage transmission network, to strengthening firming services and earnings from market arbitrage. Read more: https://bit.ly/2rPvz7g

**IIT-Hyderabad Collaborates with ItsEV Inc for Development of Li-ion Batteries**

The Indian Institute of Technology, Hyderabad (IIT-H) announced a partnership with Japan-based ItsEV Inc. to develop lithium-ion (Li-ion) batteries for several applications including electric vehicles (EVs). A research group led by Surendra K. Martha, Associate Professor, Chemistry Department, IIT Hyderabad, has shown that lithium-ion high-energy batteries have double the energy produced in 2018 from equivalent batteries. In the Defence Research and Development Organization (DRDO) laboratory, the researchers have demonstrated 100-200 mAh sodium-ion cells at the Research Centre Imaat (RCI) in Hyderabad. The two partners are now working on developing a Li-ion battery that they consider to be superior. Its EV will provide full technical support to train technicians, students and scientists in Japan so that lithium-ion batteries can be produced indigenously and help to increase EV production in India. Read more: https://bit.ly/35ied1F
Solar Energy Corporation of India (SECI) Tweaks 1.2 GW Renewables Plus Storage Tender

Solar Energy Corporation of India (SECI) has invited bids to set up an aggregate 1,200 MW of capacity with Inter-State Transmission System (ISTS)-connected wind/solar/wind-solar hybrid projects, along with energy storage, throughout India. The projects—to be developed on a build-own-operate basis—will be awarded through an e-bidding process, followed by a reverse auction. A single RE developer can bid for any capacity from 50 MW to 600 MW, quoted only in multiples of 10 MW. SECI shall enter into power purchase agreements (PPAs) with the successful bidders for a period of 25 years. Tariff payable to the selected developers for the entire PPA duration shall comprise both off-peak and peak tariffs—fixed at a flat rate for energy generated during off-peak hours and tariff discovered through e-reverse auction for energy generated during peak hours. For energy storage systems, developers are allowed to use any of the battery, pumped, mechanical and chemical technologies, or combinations thereof. Irrespective of the energy storage technology chosen, the projects—solar, wind or a combination thereof—are expected to supply power for a minimum of six hours per day during periods of peak demand. Read more: https://bit.ly/ZtktssR

Renewable Energy and Microgirds

50 MW Jordan based Risha Solar PV Plant is Online

ACWA Power and the National Electric Power Company (NEPCO) in Jordan officially announced the launch of commercial operations of the 50-MW Risha Solar PV Independent Power Plant (IPP) as of 1 December 2019, following completion of all necessary commissioning and start-up tests. ACWA Power and NEPCO initially signed the power purchase agreement for Risha PV in 2017, setting the lowest renewable energy tariff in Jordan at 0.042 JD / kWh (US 5.9 cents per kWh). Risha PV IPP was developed in line with the Government of Jordan’s ambitions to attract investment and ensure a 20% renewable energy contribution to the country’s total energy mix by 2020. It is estimated that this project will generate around 115 GWh per year and pave the way for future economic growth in Jordan. NEPCO is keen to uphold its pledge to implement renewable energy projects while ensuring the efficiency and sustainability of our state-of-the-art electrical system. Read more: https://bit.ly/2EisdAF

India in Top 10 Nations on Renewable Power and Energy Use Efficiency Index

India is among the top 10 nations as per the Climate Change Performance Index (CQCI) which is based parameters like renewable power and energy use efficiency. This assumes significance in view of India’s resolve to reach 175 GW of clean energy capacity by 2022. The country has already achieved around 84 GW of clean energy capacity, including 32 GW of solar and 37 GW of wind energy. The Power Minister, RK Singh, said 355 industrial units and other establishments have participated in the awards and have collectively achieved savings of Rs 5,283 crore by saving 105.66 billion units of electricity. Singh highlighted the importance of energy conservation in the country’s sustainable development approach. He emphasised the need for taking measures in order to reduce carbon dioxide emissions so as to minimise the adverse impact of climate change. The power minister also lauded the efforts of the Bureau of Energy Efficiency and complimented the industry for making sincere efforts in implementing various schemes. This year, energy conservation was celebrated through week-long activities culminating in the National Energy Conservation Day. Read more: https://bit.ly/2POITpB

Japan’s Soft Bank Group to Invest Rs 30,000 Crore in Renewable Energy in Gujarat

SB Energy, a sister company of Soft Bank of Japan, has announced that it will invest USD 4 billion or Rs 30,000 crore in renewable energy sector in Gujarat. The announcement was made at a meeting between chief minister Vijay Rupani and Executive Chairman of SB Energy Manoj Kohli. The investment will be in solar energy, wind energy and other unconventional renewable energy sources. The present installed capacity of renewable energy in Gujarat is 8,885 MW and the state government aims to ramp it up to 30,000 MW by 2022. Read more: https://bit.ly/2EjVK9b

ASEAN’s Largest Off-Grid Hybrid Microgrid Now Live

The inaugural project in CleanGrid Partners’ $100 million microgrid investment portfolio has gone live in the Philippines. Installed by the WEnergy Global Fund’s Sabang Renewable Energy Corporation (SERC), the off-grid hybrid microgrid is located in the town of Cabuyagan on the Philippine island of Palawan. It’s the first $20 million investment from the CleanGrid Partners Investment Fund to partly fund and develop four solar-storage-diesel microgrids across the island slated to come online in the next two years, according to the Singapore-based developer. WEnergy led development of the Cabuyagan’s Sabang hybrid microgrid project, which will serve some 700 residents and customers, the company says. At its core, is a 1.4-MW solar PV system, a 2.4-MWh battery storage system, 1.2-MW of diesel-fuelled power and 8.7 miles of new transmission line. An in-house, real-time performance monitoring and control platform runs the entire system. WEnergy says project completion will smooth the way forward and pave the way for similar projects to be carried out at a much faster pace. Read more: https://bit.ly/2YXdeSF

Hyundai Motor India Begins Feasibility Study for Fuel-Cell Electric Vehicle in India

Hyundai Motor India Limited has announced that it is evaluating the Feasibility of bringing Fuel Cell Electric Vehicles for India. Fuel Cell Electric Vehicles are free from any greenhouse gasses emissions as vehicle filters and purifies the air during its drive. When Air filters through FCEV, 99.9 per cent of particulates are purified, cleaning the environment. Hyundai is a Responsible and Caring brand with cause and has always led the “Zero Emission Mobility” Revolution for a Greener, Cleaner and Brighter future of India. As a Technology and Innovation-driven brand, Hyundai is aligned and committed to embark on the journey of India’s future mobility. During the recently concluded first International Organisation of Motor Vehicles Manufacturer (OICA) Conference (November
26-29, Mumbai) in India, Korea Manufacturers’ Association (KAMA) shared the strong developments made in the area of Fuel Cell technology and also talked about the Global Success of commercially available Fuel Cell Electric Vehicle - Hyundai NEXO. Read more: https://bit.ly/2arW5yZ

Electric Revolution: Start-up’s Powering the EV Ambition of India

Over the past few years, India’s transport and mobility landscape has changed so dramatically that it’s hard to imagine this revolution just the start. While the advent of technology has changed the way, Indians go to work and their daily tasks, the infrastructure boost in terms of roads and ports has transformed shipping and intercity transport. The Indian government has proposed selling in the country by 2030 only electric vehicles. According to a study by NITI Aayog, this could help save up to 64 percent of the country’s road transport energy costs and reduce carbon emissions by 37 percent. The government is looking at an electrical transition for three-wheelers by 2023, beginning with some electrical public transit options, and most two-wheelers by 2025. The cornerstone of this plan is the Faster Adoption and Manufacture of Electric Vehicles scheme also known as FAME. The transition to electric vehicles is not going to take place overnight. With the support from the side of the government, creativity does not come primarily from the traditional car giants, but from the start-up ecosystem of India. The ecosystem consists of start-ups manufacturing two-wheelers as well as start-ups working in the fields of battery tech, vehicle diagnostics and analytics, charging and other electric vehicle aspects. India’s sustainability goals rely on electrical mobility. Read more: https://bit.ly/35ikelW

Standards and Cyber Security

The Energy Industry, USA Practices for a Black Swan Cyberattack that Could Take Down the Grid

More than 6,500 government officials and big players in the energy sector came together to conduct a simulated cyberattack on the electrical grid. The event is called GridEx, and takes place every two years. It imagines the U.S. under attack from a foreign country, through the power grid. It’s a scenario that planners say is unlikely, a black swan event, but one that could have devastating impacts if it came to fruition. Those ripple effects could go far beyond leaving homes without heat or citizens without smartphones, bringing down big portions of the telecommunications, media and finance sectors. This is why, organizers said, they aimed to gather as many stakeholders as they could to run through how they would respond. Read more: https://cnb.cx/2L14uRM

Lessons from the Cyberattack on India’s Largest Nuclear Power Plant

Indian officials acknowledged on October 30th that a Cyberattack occurred at the country’s Kudankulam nuclear power plant. An Indian private cybersecurity researcher had tweeted about the breach three days earlier, prompting Indian authorities to initially deny that it had occurred before admitting that the intrusion had been discovered in early September and that efforts were underway to respond to it. While reactor operations at Kudankulam were reportedly unaffected, this incident should serve as yet another wake-up call that the nuclear power industry needs to take cybersecurity more seriously. Read more: https://bit.ly/3600Fbk

Utah, Western United States Renewable Energy Supplier Hit by Cyberattack

A renewable energy provider in Utah was hit by a Cyberattack. This is the first instance of power grid operator in the US to have lost connection with its power generation installations as a result of a cyber attack. The root of the problem was traced to an unpatched firewall and the attacker used a vulnerability in a Cisco firewall to crash the device and break the connection between sPower’s wind and solar power generation installations and the company’s main command centre. sPower said it mitigated the intrusion by patching outdated devices. Read more: https://bit.ly/2YaAoKQ

Small, Regional Utilities, Michigan Located Near Critical Infrastructure Targeted in Cyberattack as Per Wall Street Journal

According to the Wall Street Journal’s list of targeted utilities there are Klickitat Public Utility District in Washington, Basin Electric Power Cooperative in North Dakota, Cloverland Electric Cooperative in Michigan, Wisconsin Rapids Water Works and Lighting Commission and Flathead Electric Cooperative, which serves members on the Montana-Wyoming border were targeted in Cyberattack. Some of the utilities were unaware of the attacks until the Federal Bureau of Investigation told them they had been targeted, according to the Journal. Read more: https://bit.ly/3600L2G

US Power Grid Attack Points Surge with Proliferating DERs

As the United States’ electric system becomes more distributed, security experts say the growing array of internet-connected sensors and industrial control systems presents a potential vulnerability that is not clearly understood and could be exploited to cause blackouts. So far, utilities have kept hackers from disrupting the grid and Critical Infrastructure Protection (CIP) standards have helped to keep defenses robust. But the attack surface is only growing. Read more: https://bit.ly/34KeWsi

Disruptive Technologies

Waves Blockchain Used to Track Russian Energy Consumption

Russian power grid company is piloting a blockchain-based system that’ll automate electricity metering. Those behind the pilot, so far implemented in 400 homes in the Kaliningrad and Sverdlovsk regions, are planning on expanding the pilot to serve the regions’ combined population of 5.3 million early next year, before rolling out the system nationwide.

Pilot program already being used by 400 homes and nationwide expansion planned in the coming years
Under the system, information about how much electricity a household consumes is logged on a decentralized ledger, then displayed in an app that consumers can use to monitor electricity usage. The app also analyzes electricity habits, and can provide suggestions to a consumer about how to switch to a more cost-efficient plan. A smart contract then divides the payment between sales and grid companies. Read more: http://www.indiasmartgrid.org/viewnews.php?id=4262

Japan’s Second Biggest Energy Firm KEPCO Expands Renewable Blockchain Tests with Power Ledger

Australian blockchain firm Power Ledger announced an extension of its trial with Japan’s Kansai Electric Power Company (KEPCO) to create and track renewable energy certificates (RECs) along with solar energy trading. The two firms previously completed a peer to peer (P2P) energy trading trial for surplus power in Osaka, with automatic settlements using cryptocurrency. Under the new agreement, KEPCO will use Power Ledger’s blockchain platform to create, track, trade and provide for the settlement of non-fossil value (NFV) certificates (a type of REC) generated by rooftop solar systems.

In 2018, Japan started issuing NFVs as proof that electricity came from a renewable energy source. The NFVs can be used by enterprise electricity consumers to comply with RE100 standard, a global initiative for corporates committed to using 100% renewable electricity. To date Power Ledger’s tests and deployments have been more focused on P2P energy trading than RECs. But the underlying process is not dissimilar, i.e. tracking and measuring solar production and its transfer to a customer. Now, the blockchain will track a REC through its lifetime — from generation to being claimed. Read more: http://www.indiasmartgrid.org/viewnews.php?id=4263


U.S. Department of Energy’s (DOE’s) Advanced Research Projects Agency-Energy (ARPA-E) announced $15 million in funding for 23 projects to accelerate the incorporation of machine learning and artificial intelligence into the energy technology and product design processes as part of the Design Intelligence Fostering Formidable Energy Reduction (and) Enabling Novel Totally Impactful Advanced Technology Enhancements (DIFFERENTIATE) program.

Launched in April of this year, the DIFFERENTIATE program aims to develop streamlined solutions to next-generation energy challenges. The program identified three general mathematical optimization problems that are common to many design processes. The selected projects then conceptualized machine learning and artificial intelligence-based solutions to help engineers execute and solve these problems in a manner that dramatically accelerates the pace of energy innovation. Read more: http://www.indiasmartgrid.org/viewnews.php?id=4259

Smart Cities

Kalyan-Dombivli Smart City, Maharashtra, India Issues Tender for 1.3 MW of Rooftop Solar Systems

The Smart Kalyan Dombivli Development Corporation Limited (SKDCL) has issued a Request for Proposal (RfP) for 1.3 MW of grid-connected rooftop solar systems. The solar systems will be installed on the buildings owned by the Kalyan Dombivli Municipal Corporation (KDMC) in Maharashtra. The projects under this tender will be installed under the RESCO model. The corporation has identified 35 prospective locations for the installation of these systems. The deadline for the submission of bids is January 3, 2020, while the opening date for the technical proposals is scheduled to be held on January 4, 2020. The prospective bidders are expected to pay a sum of ₹1 million (~$13,974) as an earnest money deposit (EMD), which will be valid for six months. According to the tender document, the bidder should have prior experience of installing and commissioning on-grid or off-grid solar projects under the CAPEX or RESCO model in the last five years. The bidder should have an average annual turnover of at least ₹50 million (~$698,728) from solar revenue in the previous three years. Read More: https://bit.ly/2Ek8DF

Finance Minister Nirmala Sitharaman Invites Swedish Businesses to Build Smart Cities in India

India plans to spend Rs 100 lakh crore on building and upgrading public infrastructure over the next five years, Finance Minister Nirmala Sitharaman said on 03 December 2019 and asked multinational corporations to participate in various upcoming greenfield and brownfield projects. India is looking at building more smart cities where Swedish businesses can contribute, she said while addressing the India-Swedish Business Summit. The country is determined to further improve the ease of doing business. At the same time, India offers a huge market with large middle-class which is aspirational and has real purchasing power. India and Sweden have seen concrete outcomes in life sciences and other sectors which have benefitted both the countries. Read More: https://bit.ly/2stOzAY

India, Canada Announced 10 Joint Science and Tech Projects: Smart Cities, Renewable Energy and more

Ten new joint projects on Cyber Physical Systems to support Green Buildings in Smart Cities and also in biotechnology related areas have been announced between the Indian Ministry of Science & Technology, and Canada at the India-Canada Science & Technology Innovation Dialogue organized on 9 December 2019. The projects span areas like carbon capture, renewable energy, hydrogen technology, new materials, earthquake resistance and so on for smart cities. The key areas identified for possible India-Canada collaborations are food security, water management, energy security and affordable healthcare. New initiatives of the DST that were open for international collaboration were highlighted, including supercomputing, big data analysis, and quantum computing integrated water management. Read More: https://bit.ly/2Ekz63

Tech Mahindra to Power ₹500 Crore Pimpri Chinchwad Smart City Project in Pune, Maharashtra, India

Tech Mahindra will provide Information and Communication Technology (ICT) solutions for the ₹500 crore smart city project in Pimpri Chinchwad Municipal Corporation (PCMC) located in Pune, Maharashtra, India. The project will be budgeted under Prime Minister’s Smart Cities Mission. Launched in 2015, the mission strives to set up 100 smart cities in the country with a
total investment of ₹50,802 crore during the first five-year phase ending in 2019. The PCMC project will be implemented over a period of one year, with operations and maintenance taking another 5 years. The ICT solutions by Tech Mahindra will have a wide range of applications and will help improve the management of water supply, traffic, parking, sewerage, and CCTV network of the city. This is the sixth smart city project involving Tech Mahindra, which is already working on similar projects in Kanpur, Nasik, Jaipur, Jabalpur and Gandhinagar. Pimpri Chinchwad is one of the leading industrial belts of Maharashtra with a population of over 15 lakh citizens. Read More: https://bit.ly/2PjlJ76

Smart City projects in Hubballi, Karnataka, India School and Hospital Nominated for National Awards

Notwithstanding criticism for the slow pace at which several Smart City projects in the twin cities are being implemented, two initiatives: one in the health sector and the other in the field of education, have been recognized by the Union ministry of urban development. The Hubballi-Dharwad Smart City Ltd (HDSCL), Hubballi, Karnataka, India confirmed that they had been officially intimated from the coordinator of the award programme. The Hubballi Lamington School, where HDSCL undertook initiatives leveraging technology for learning, will compete with Jabalpur Smart City Ltd and Lovely Professional University in education, Chintaguppi Hospital in Hubballi is vying with the Kochin Smart City Ltd in the domain of health. The ‘Smart City-Empowering India Awards’ is a ceremony being held to acknowledge the efforts of both public and private bodies for their successful execution of pioneering initiatives as part of the Government of India’s vision to develop 98 smart cities across the country. The awards are presented to those agencies for planning and successfully executing projects aimed at making sustainable development Programmes integral part of urban life. Read More: https://bit.ly/38C3bXI

Smart Gas

New Payment Options Introduced by GAIL for Domestic PNG Connections

GAIL Gas Limited has introduced various pocket friendly payment options for obtaining domestic PNG connections and has also negated the registration fee charges.

These payment options will help prospective customers belonging to various income groups to opt for PNG as the fuel of their kitchen. GAIL also provides flexibility through these payment options which will attract the customers with the reduction of Rs 1,000 in the connection security deposit. The customers will pay Rs 4,000 refundable connection deposit before the gas supply starts. The second option limits the payment of connection security deposit in easy EDI (Equal Daily Installment) options of paying Rs 5 per day refundable amount for 1,000 days and no upfront connection security deposit will be taken.

In the third option, Only Re one per day (plus applicable taxes) will be charged as rental along with the invoice and the same will be non-refundable. In all the above options, Rs 500 refundable payment security deposit against the gas consumption will be charged before start of gas supply. No registration fee will be charged. This project will benefit about 17 lakh people and GAIL has started DPNG registration in many parts of Delhi. GAIL will start providing gas connection based on the registration obtained from the customers. Read More: https://bit.ly/2qYIJuP

Dibrugarh becomes First District in Assam to have CNG Bus Service

Stepping towards a pollution-free Assam, the first compressed Natural Gas (CNG) fuelled bus was flagged off during a ceremony at Assam State Transport Corporation (ASTC) office at Chowkideminghee in Dibrugarh, Assam, India. Stating it as a historic moment, DC Mr. Pallav Gopal Jha said that it is a step towards a pollution-free transport system in the district and hopes that operation of the CNG bus will attract others to switch over to CNG. He also stated that efforts are on to introduce more such buses in the district in near future. Read More: https://bit.ly/2PRvD9X

Smart Water

Tennessee Utility Collaborates with Itron to Improve Water Delivery

Itron, Inc. which is innovating the way utilities and cities manage energy and water, signed a contract to modernize the water distribution system at Consolidated Utility District (CUDRC) of Rutherford County, Tennessee. The utility will install Itron Smart Water communication modules throughout their 1,400 miles of water lines. CUDRC will leverage Itron’s network to improve operational efficiency, monitor water loss and streamline meter reading. The solution will also position the utility to transition to Advanced Metering Infrastructure (AMI), which will equip the utility to access valuable consumption data insights in near real-time. Read more: https://bwnews.pr/35VstV5

Odisha Students Develop Smart Water Dispenser

Students of Odisha’s Kendriya Vidyalaya, Berhampur, Odisha, India have developed a ‘Smart Water Dispenser’ to ensure equal distribution of drinking water through pipelines in any urban or rural habitat to combat future water crisis. After participating in ‘Atal Tinkering Marathon 2018-19’, this innovative project, in August 2019 was shortlisted as top 50 innovations under ‘Atal Innovation Mission’ of Niti Aayog. With the support from their teachers this ‘Smart Water Dispenser’ has been developed by P. Biswanath Patra, Sawambhu Mandal and Sritish Kumar Gouda. Read More: https://bit.ly/2qYnfG3
Transformation Journey of Haryana Power Distribution Utilities in becoming Second Best in India

Most of the state owned power distribution companies in India are running into losses. Haryana power distribution companies, Uttar Haryana Bijli Vitran Nigam (UHBVN) and Dakshin Haryana Bijli Vitran Nigam (DHBVN) serving 6.7 million consumers were also making huge losses for several years. The new Haryana Government in 2015 under Chief Minister Manohar Lal made a firm decision to transform the power sector. The responsibility was given to the new Chairman cum Managing Director, Mr Shatrujeet Kapur, from the Indian Police Service with the target to improve the existing billing efficiency of ~70%, AT&C losses of ~30% and accumulated losses of ~ INR 350 billion. Mr Kapur took charge with the mandate to turnaround the two loss making distribution companies of Haryana in September, 2016 and transformed them into profit-making utilities by taking several stringent measures within two and half years. It all became possible because of the support from the state government and tremendous efforts of Discom leadership. Details of the measures taken to bring this change are as follows:

**Human resource empowerment**

Transfer and assignments were made predictable and were linked to individual performance. A grading system based on quantifiable parameters was adopted to provide stability in tenure of engineers. The managing director personally visited all the circles and interviewed every official in the presence of technical directors to ensure that a fair performance-based transfer policy was in place.

**Connecting to the last man in the field**

The managing Director visited every circle to spread awareness about all the schemes. He personally met staff from lineman to superintending engineer; generally the first half of the day was spent with officers i.e., junior engineers to the superintending engineer and the second half with all the ground staff including assistant linemen, linemen, foremen and clerical staff. He discussed the contribution of the state government in taking up the financial burden of DISCOMs and made targets very clear to everyone to meet the expectation of the state government, central government and people in general. He made sure that the lengthy UDAY MoU document is translated into a five to six-page document in Hindi and shared with everyone down the line. Safety issues were accorded utmost importance; safety kits were also distributed to the workforce. In stead of issuing circulars, pep talks were adopted as a regular practice.

Better communication was established with workers’ union and rules were made clear to everyone. The entire system was made transparent to generate trust among employees. Anyone could walk-in to discuss their issues and the same were addressed in time.

**Reward and recognition**

A system of reward and recognition was put in place to acknowledge employees’ contribution. A Policy for compensation to the victims of accidents was framed and implemented on priority. A persistent problem of delay in grant of pension and other retirement benefits was resolved by adopting a policy to release pension on the day of retirement.

The Managing Director personally honored individual contributors on every 15th August and 26th January. Outstanding performers were sent to premier Institutes to learn new management concepts and best practices in power distribution.

**Electricity theft control**

Haryana DISCOMs were grappling with wide spread culture of theft endemic to large parts of the state. Despite many good provisions in the new electricity act, law enforcement was ineffective. Such issues were handled by putting in place a new Standard Operating Procedure (SoP) with reduced documentation and simplified Proforma. Officers were permitted to prepare theft report in office with the help of pictures and videos instead of doing it at site. To instill a sense of fear amongst uncourless elements indulging in theft of electricity, 96000 police cases were registered in the year 2017-18; one in every six thefts across the country were detected in Haryana.

This resulted in expansion of the consumer base with the addition of more than one million new consumers, who were earlier stealing the power. Corruption was also curbed with an iron hand by adopting zero-tolerance policy, which saw major penalties to several employees including termination of the services of a Chief Engineer.

Systemic changes and process reengineering resulted in reduced time for release of new electricity connections. As a result, AT&C losses were reduced up to 7% in Gurugram region, which is a benchmark in public DISCOMS. The entire transformation took place in a short duration of two and half years, which has set an example for the country.

**The Turnaround**

The two Haryana DISCOMs collectively made a profit of INR 4.12 billion in the financial year 2017-2018 and continued the same trend in 2018-2019 by making a profit of INR 2.80 billion despite non-receipt of INR 6 billion subsidy from the state government. The target to become profitable was achieved two years ahead of the targetted timeline of March 2020. Annual rating has changed from B to B+ to A in subsequent years. Now one of the DISCOMs is expecting A+ rating by Ministry of Power and is likely to figure in the top five best performing Power Distribution Company in the country.
Smart Grid Events

INDIAN


February 19 – 21 2020: Internet of Things India 2020, New Delhi, [https://www.iotindiaexpo.com/](https://www.iotindiaexpo.com/)

March 03 – 07 2020: India Smart Utility Week 2020, The Lalit Hotel, Barakhamba Road, New Delhi, India, www.isuw.in


INTERNATIONAL

January 06 – 09 2020: FloCon 2020| Savannah, GA, [https://resources.sei.cmu.edu/news-events/events/flocon/](https://resources.sei.cmu.edu/news-events/events/flocon/)


March 31 – April 03 2020: The International Microgrid Event, Australia, [https://www.igpc.com/events-international-microgrid](https://www.igpc.com/events-international-microgrid)


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India SMART UTILITY Week 2020
03 - 07 March 2020
The Lalit Hotel, Barakhamba Road, New Delhi, India

International Conference & Exhibition on
SMART UTILITIES FOR SMARTER CITIES

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Conference Themes of ISUW 2020

FLEXIBLE GRIDS & DIGITAL UTILITIES
24X7 QUALITY POWER
CROSS CUTTING THEMES
SMART MICROGRIDS & ENERGY STORAGE
ARTIFICIAL INTELLIGENCE, BLOCKCHAIN AND ADVANCED ANALYTIC
VOICE OF THE CUSTOMER
SMART MOBILITY & ELECTRIC VEHICLES
SMART & SUSTAINABLE CITIES
SMART WATER DISTRIBUTION
SMART CITY GAS DISTRIBUTION
VOICE OF THE CUSTOMER

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