

Asia Clean Energy Forum 2019

"Partnering for Impact"



The Asia Clean Energy Forum (ACEF), one of Asia's leading clean energy events was held in ADB Headquarters in Manila in from 17th-21st June, 2019. ACEF connects diverse stakeholders from across Asia and the globe, and facilitates knowledge sharing. Nearly 1,600 participants from over 78 countries took part in the forum which focused on cross-cutting themes.

Mr Reji Kumar Pillai, Chairman, Global Smart Grid Federation and President India Smart Grid Forum and several of ISGF members participated in the Forum.

Amory Lovins, Co-founder and Chief Scientist, Rocky Mountain Institute delivered a powerful keynote address at the opening ceremony describing his vision of a smart energy future, and the forces that will shape it.

These remarks led into a thought-provoking panel discussion featuring Amory Lovins, Fiza Farhan and ADB President Takehiko Nakao on pathways for energy sector development and the steps needed to deliver sustainable energy for Asia and the Pacific.

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Global Stories on Smart Grid

About 100 World Cities used 70% of Electricity from Renewable Sources in 2018: Renewables have become integral to city efforts to reduce Carbon-dioxide and other harmful emissions

Cities, at the forefront of energy transition, are increasingly adopting renewable options. At least 100 cities across the world reportedly generated 70 per cent or more of their electricity from renewable energy sources in 2018, according to REN21's Renewables 2019 Global Status Report. As cities are home to more than half the people in the world, it accounts for around 65 per cent of global energy demand. As a result, they are also responsible for 75 per cent of global carbon dioxide emissions. Renewables have thus become integral to city efforts to reduce Carbon-dioxide and other harmful emissions. In 2018, more than 230 cities worldwide adopted targets for 100 per cent renewable energy in at least one sector, it showed. The sector generated an estimated more than 26 per cent of global electricity. Around 100 GW of PV was installed — accounting for 55 per cent of renewable capacity additions — followed by wind power (28 per cent) and hydropower (11 per cent). Overall, the sector accounted for more than 33 per cent of the world's total installed power generating capacity. However, progress was concentrated only in the power sector, compared to renewables in heating, cooling and transportation.

Read more: <https://bit.ly/31X4FYD>

Global Smart Meters Market value to reach \$19.98 Billion by 2022: Revenue generation from global smart meters market is expected to grow from \$12.79 billion in 2017 to \$19.98 billion by 2022

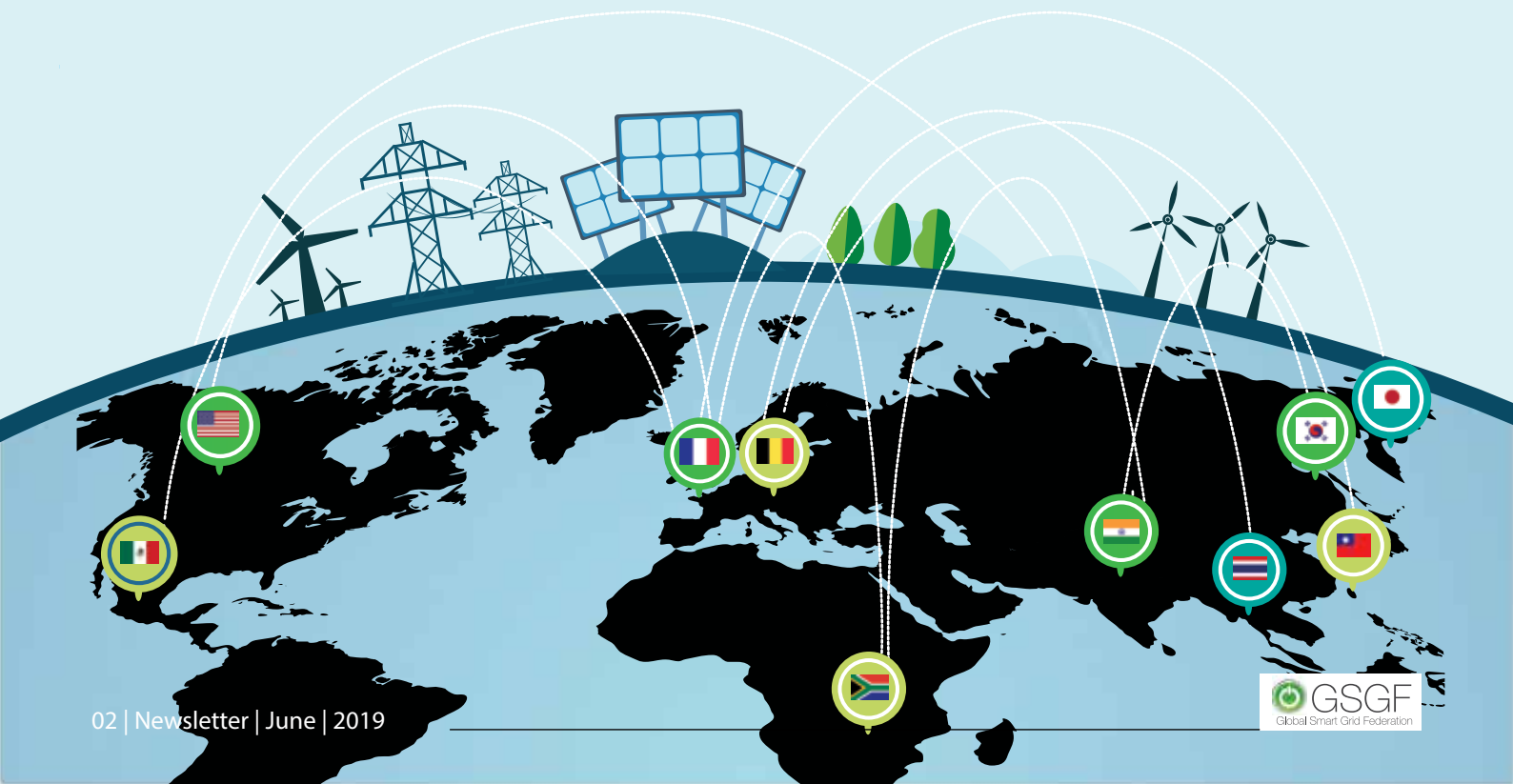
The growth can be attributed to the rising investments in smart grid projects and increasing upgradation of transmission & distribution infrastructure, government policies, and energy conservation. Asia-Pacific is estimated to be the fastest growing market for smart meters from 2017 to 2022. Factors such as government policies & mandates in developed economies and accurate billing & improved customer service are driving the global smart meters market. China is expected to grow at the fastest pace during the forecast period. Furthermore, the growing power sector in India is expected to spur the growth of the market and represents a promising opportunity for major smart meters providers. With regards to the technology segment, Advanced Metering Infrastructure (AMI) are expected to constitute the fastest growing market from 2017 to 2022 because of its advanced technology. Moreover, AMI reduces labour cost, and several power, water, & gas utilities worldwide are replacing Automatic Meter Reading (AMR) with AMI infrastructure, further creating growth opportunities for the AMI market.

Read more: <https://bit.ly/2ZL80bt>

Indian Govt eyes 500 GW Renewable Capacity by 2030: The plans were revealed by Ministry Of New and Renewable Energy Secretary, Anand Kumar, on 26th June 2019 at the 17th meeting of the International Renewable Energy Agency (IRENA) council in Abu Dhabi

India on Tuesday announced an ambitious aim to set up 500 gigawatts (GW) of renewable energy capacity by 2030 in what could potentially help the country reshape the global energy market dynamics. The announcement comes against the backdrop of the National Democratic Alliance (NDA) government running the world's largest renewable energy programme and plans to achieve 175 GW of renewable energy capacity by 2022 as part of its climate commitments. India currently has an installed renewable energy capacity of around 80 GW. Of the targeted 175 GW, 100 GW is to come from solar projects. It will comprise 60 GW from ground-mounted, grid-connected projects, and 40 GW from solar rooftop projects. Wind power projects will contribute 60 GW. There has been growing interest in India's emerging green energy sector. Earlier in June, sovereign wealth funds GIC Holdings Pte Ltd and Abu Dhabi Investment Authority agreed to invest \$495 million in Greenko Energy Holdings, in one of the largest funding rounds by an Indian clean energy producer.

Read more: <https://bit.ly/2Lifv5J>



Global Stories on Smart Grid

U.S. launches “Better Energy Storage Technology” Act to increase battery R&D

US Congress introduced the Better Energy Storage Technology (BEST) Act of 2019, which aims to support grid-scale energy storage R&D and improve the efficiency of the nation’s electric grid, while helping to align research efforts on energy storage technologies, increasing the affordability of these technologies by directing the Department Of Energy (DoE) to pursue a strategic plan and implement cost targets. Specifically, the BEST Act focuses on:

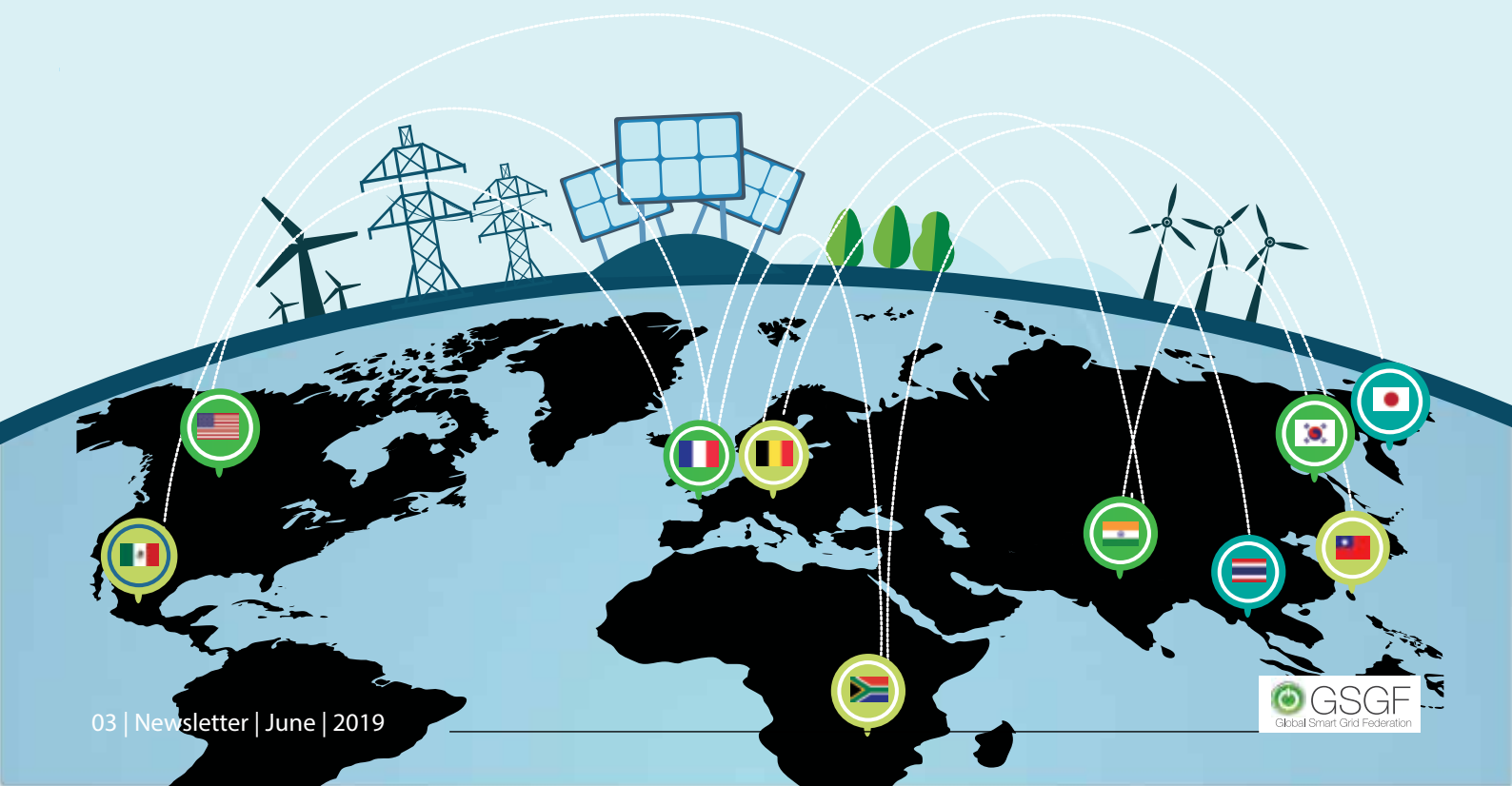
- Focuses grid-scale energy storage research and development on:
 - o Highly flexible power systems with a minimum duration of six hours and with a lifetime of at least 8,000 cycles of discharge at full output and 20 years of operation;
 - o Long duration storage systems with power output of 10 to roughly 100 hours, with a lifetime of at least 1,500 cycles and 20 years of operations;
 - o Seasonal storage systems that can store energy over several months and address seasonality concerns.
- Supports up to five demonstration projects to advance commercialization of grid-scale energy storage technologies.
- Directs DOE to develop a strategic plan and cost targets for grid-scale energy storage.
- Accelerates testing and validation of energy storage systems through the country’s National Laboratories.
- Requires coordination and alignment of research efforts to produce commercially viable energy storage systems through coordination at DOE, National Laboratories, federal agencies, and end users.
- Authorizes \$60 million annually for the program from 2020 to 2024.

Read More: <https://bit.ly/2wjQWwD>

Britain to Launch New Scheme to Pay Households for Unused Renewable Power: Around 800,000 homes in Britain have solar panels installed and the scheme will replace a feed-in-tariff system which ended in April 2019

Britain will launch a new scheme to pay households producing energy from renewable sources, such as solar panels, for their surplus electricity. Around 800,000 homes in Britain have solar panels installed and the scheme will replace a feed-in-tariff system which ended in April. Monthly installation of new solar panels in Britain fell to a 9-year low in April, following the end of the feed-in-tariff scheme, provisional government data shows. Under the new scheme, households will be paid for the power they produce by their energy supplier, which sets the prices offered. The new guarantee will apply to homes with up to 5 megawatts of renewable power capacity installed, with generation tracked by smart meters. The government will set legislation for the scheme to become mandatory for any energy supplier with more than 150,000 customers from January 1 2020.

Read more: <https://bit.ly/2X8Gs33>



Global Stories on Smart Grid

Duke Energy gets approval for grid modernization project with solar + battery microgrid and standalone battery systems

The American electric power utility, Duke Energy, announced that regulators have approved two projects involving energy storage worth about \$30 million. The first project is a microgrid for Madison County that will consist of a 2-MW (AC) solar facility and a 4.4 MW / 4.4 MWh lithium-based battery storage facility. The microgrid will provide a safe, cost-effective and reliable grid solution for the Hot Springs area as well as energy and additional bulk system benefits for all customers. The project is part of Duke Energy's grid modernization plan that it previously announced. The second project is a large battery storage project in the city of Asheville where Duke Energy will connect a 9-MW / 9-MWh lithium-ion battery system at a Duke Energy substation site in the Rock Hill community – near Sweeten Creek Road. The battery will primarily be used to help the electric system operate more efficiently and reliably for customers.

Read More: <https://bit.ly/2Qo4i3W>

New Zealand unveils 5G connected self-driving smart shuttle

New Zealand's first self-driving smart shuttle has been launched in Christchurch. The fully electric smart shuttle is like a mini bus with a capacity of up to 15 adults. The vehicle's parts have been 3D printed. The vehicle uses 5G connectivity. The first public trial of the shuttle was at the Christchurch airport. The airport plans to use this self-driving smart shuttle across its premises in future that will ferry passengers from one terminal to another.

Read More: <https://bit.ly/31T6WEj>

World Bank to support Nigeria's rural electrification

World Bank has allocated Nigeria a loan of 350 million USD for the development of its rural electrification projects. The funding will be used to electrify 2.5 million people and 70,000 small businesses in rural communities across the country. The loan will facilitate private investments in the sector through the development of mini-grids, and the provision of solar home installations to communities. Part of the funds will also be used to staff seven universities with reliable electrical installations. Two university hospitals will also be among the beneficiaries, as part of the Energizing Education Program (EEP).

Read More: <https://bit.ly/31v5h7J>

Fund of 100 million euro to support clean energy investments

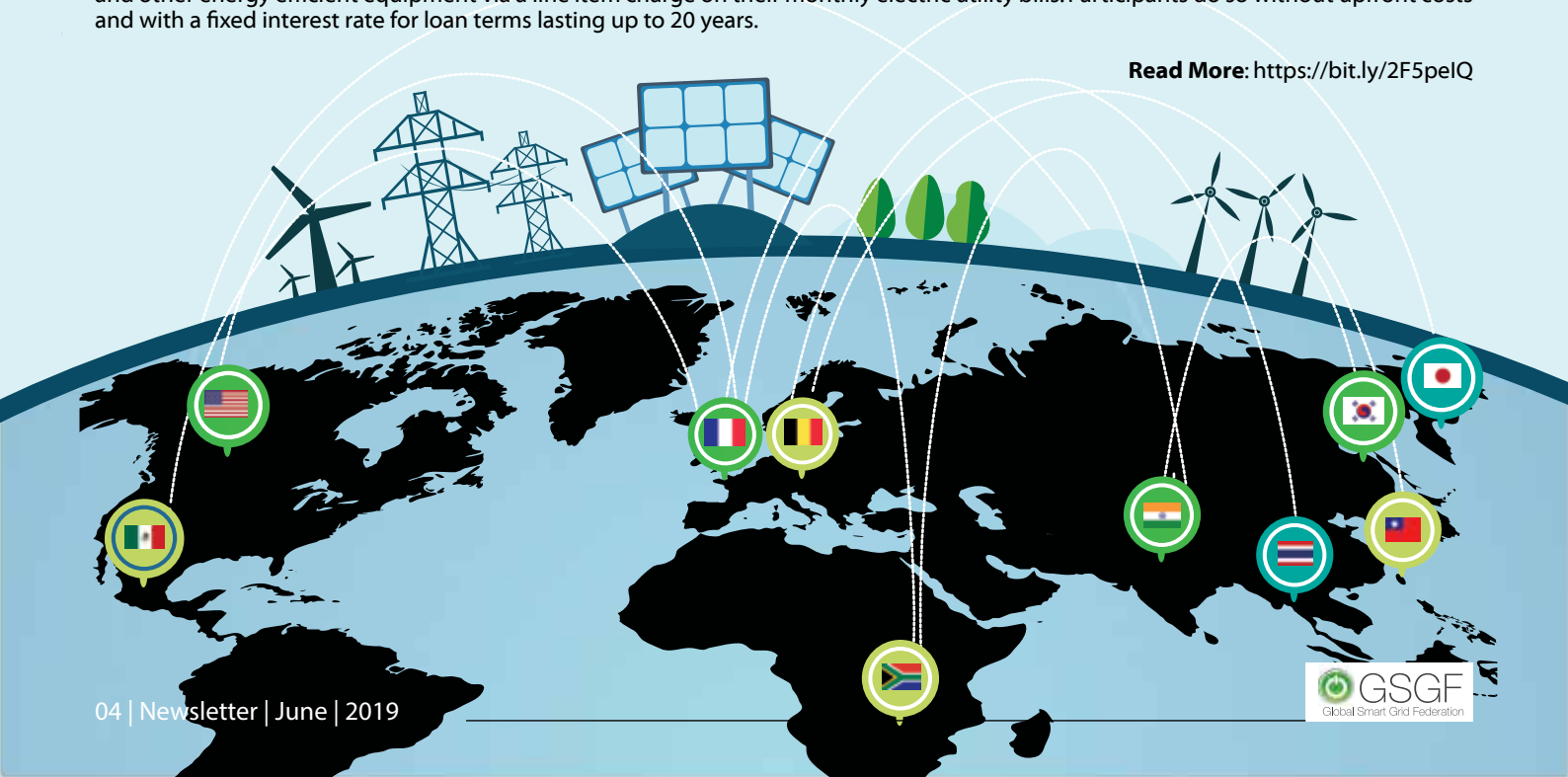
In the Fourth Mission Innovation Ministerial meeting, a new 100 million euro investment fund namely Breakthrough Energy Ventures Europe (BEV-E), was established by the European Commission, the European Investment Bank and Breakthrough Energy Ventures. The fund will help develop innovative European companies and bring radically new clean energy technologies to the market. It will support Europe's best clean energy entrepreneurs whose solutions can deliver significant and lasting reductions in greenhouse gas emissions. The first of its kind, it caters to the capital intensity and long development horizons suitable for energy technologies.

Read More: <https://bit.ly/2WxxY4f>

On-bill financing program unlocks energy upgrades for the masses

In Hawaii, the Green Money Saver (GEM\$) on-bill financing program creatively solves the split incentive problem by linking the repayment obligation for energy efficiency upgrades to the utility meter rather than an individual. Under the program, participating homeowners, renters, small businesses and non-profits pay back the cost to install rooftop solar panels, solar water heaters, heat pump water heaters, and other energy efficient equipment via a line item charge on their monthly electric utility bills. Participants do so without upfront costs and with a fixed interest rate for loan terms lasting up to 20 years.

Read More: <https://bit.ly/2F5peIQ>



Korea Smart Grid Association Member Manageon launches Electric Vehicle Mobile Charger with billing function



Since its establishment in 2013, Manageon Inc. has grown into a company specializing in managing Demand Response (DR). It recently entered markets for EV chargers and officially launched 'EVolt', which is a EV mobile charger.

'EVolt' is a EV mobile charger that has billing (measurement and settlement) functions. One of its characteristic's features are it can install its own LoRa Communication Device along with RFID tags and can prevent unauthorized use of public electricity and can also accurately check charging location. It also provides graphic and voice guidance through ergonomic design and LCD. This device has increased stability by embedding a temperature sensor and a circuit to protect electric leakage.

'EVolt' uses a 220V power outlet, which doesn't require separate electrical work separately. The charging of the Electric Vehicle also doesn't require a parking space in public area. Dedicated applications can also identify charging locations, charging volumes, real-time charges and estimated amounts.

Get to know PEER and ISO 50001: Green Business Certification, Inc.

By integrating the Energy management framework within a projects' everyday business practices will help in continual improvement of energy performance and efficiency. ISO 50001, the International Organization for Standardization specifies requirements of an energy management system (EnMS) for a project to develop and implement an energy policy, establish objectives, targets, and action plans, which take into account legal requirements and information related to significant energy use. Layering PEER on top of this proven framework "fortifies" a project, ensuring sustainable power system performance and accelerating the transformation of our electricity sector.

ISO 50001 provides a framework for establishing energy management best practice in helping projects to:

- Develop a policy for more efficient use of energy
- Fix targets and objectives to meet the policy
- Use data to better understand and make decisions concerning energy use and consumption
- Measure the results
- Review the effectiveness of the policy
- Continually improve energy management

PEER does a rigorous assessment on projects' electrical infrastructure based on sustainable performance criteria. This provides a framework in benchmarking, recommending policies, and standards exercised across different industries globally. In addition to this, PEER provides measurement and verification that a project is sustainable compared to other projects.

Both ISO 50001 and PEER are based on the Plan-Do-Check-Act continual improvement framework and incorporates energy management into everyday project practices.

Member Updates

- **Plan:** conduct the energy review and establish the baseline, objectives, targets and action plans necessary to deliver results in accordance with opportunities
- **Do:** implement the energy management action plans.
- **Check:** monitor and measure processes and the key characteristics of operations
- **Act:** take actions to continually improve.

ISO 50001 meets PEER's stringent requirements for continuous improvement, and also ISO 50001 satisfies parts of PEER obligations. For example, ISO 50001 certified project can achieve on of the credit under PEER's Grid Services category for implementing energy conservation plan to "encourage projects to reduce the electricity consumption that serves customers sustainably over the short and long term".

In addition to the energy conservation PEER also evaluates projects' electrical infrastructure across different parameters that includes Safety, Reliability and Resilience.

Events Supported by GSGF



For participation in the above events
please write to info@globalsmartgridfederation.org

Supply Constrained Distribution Planning

By

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“Ambassador for the Americas”, Global Smart Grid Federation, USA

Executive Chairman, Biosirus Inc., Canada



For the last 100 years, (the world over), infrastructure planning (power, gas, water), is based on the western philosophy, which fundamentally assures “plentiful supply” in the future to feed the consumers’ projected loads/demands. It then attempts to optimize this model using best growth assumptions, good governance, and regulatory oversight to grow or add assets to assure this “promised supply”. The extra cost is allocated to the rate-payers.

This philosophy worked well in the past. I too was a part of this during my long Canadian utility career, but now in my international advisory assignments and visits to many developing countries, I am having second thoughts. The above electric infrastructure planning approach that was good sixty years ago (when the world had fewer people, few mega cities and little urban growth), may now be in trouble for adopting such planning philosophies. The population growth (Asia, Latin America, Africa and parts of the Middle East), increased migration to cities and modern lifestyle comforts, is forcing utilities in these jurisdictions to rapidly grow their assets (6-8%) to meet this demand. Yet, tariff subsidy in these same jurisdictions has prevented recovery of such utility investments.

Mega city growth takes two forms (1) ringed expansion outwards and (2) vertical growth due to densification. In endeavoring to grow electricity assets to meet demand, generation is often the easiest to add (particularly fossil-based), followed by limited added transmission (limited ROW). But often the distribution system is unable to grow due to urban congestion. Upgrading supply voltages (to feed more power) is also not possible as it creates clearance problems, larger distribution transformer footprint and other safety hazards.

Fortunately, today, we have newer forms of distributed/discretized power assets in last-mile applications (CHP, Heat pumps, PV, inverters, storage, DSM) that was not available/affordable 10 years ago. Adding sensors and ICT to this mix makes for very smart interplay between localized demand-supply balance and customer’s ability to control them.

So, I pose the question, “is it time to introduce Supply Constrained Distribution Planning (capacity and energy) into our formal growth framework?” The customer can enjoy load growth up to a stated limit and beyond that they would be forced to invest themselves (behind the meter). One would argue, that the current planning process deals with growth through utility investment and regulatory oversight, but this is predicated on the assumptions that (1) the tariffs reflect market price and (2) the utility asset growth can be accommodated. It however discounts additional factors such as (1) forcing long-term energy efficiency; (2) forcing customer behavioral changes; (3) customer enabled load management; (4) free-market innovation; and (5) customer accountability for densification.

The stark reality is that perpetual urban growth cannot be sustained and will always pose affordability limits and last-mile constraints (particularly for developing countries). Only an explicit acknowledgement in stating future supply limits, will enable long-term market efficiency, customer-owned initiatives, loss management and a shared vision/framework for managing with less.

If one accepts this view, the power system architecture will change considerably with even more profound changes in ICT investments. I would love to hear your thoughts on this.



GSGF at a glance

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Think Smart Grids



India Smart Grid Forum



Japan Smart Community Alliance



Korea Smart Grid Association



Smart Grid Mexico



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Energy Block Chain Consortium

Current Working Groups

- **Smart Grid Roadmaps:**
Chair-Smart Grid Mexico
- **Smart Grids for EVs:**
Chair - Think Smartgrids, France

Working Groups in Pipeline

- Blockchain for Utilities
- AI and Advanced Analytics for Utilities
- Robotic Process Automation for Utilities

Contact us for more information.

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