Potential of India's Virtual Power Purchase Agreements

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The infrastructure required to improve virtual power plant transactions for corporate in India is already a reality with some very large IPPs that have renewable assets across sources such as solar, wind, storage and even hydrogen. From a policy perspective, our new electricity regulation will permit interstate energy transmission, which will further go to fuel the VPP market.

Many states have even gone so far as to incorporate peer-to-peer transactions in their regulations (Uttar Pradesh and Karnataka for instance). There are a few potential business cases for VPP to be incorporated,

- In residential and commercial complexes with multiple resources shared across consumers
- Within the state utilities and larger RE IPP asset owners to improve the energy mix for a region
- Decentralized peer-to-peer transactions among similar energy consumers (such as an IT or industrial park with all having clean mandates).

The last mile is the integration of digital technologies to incorporate this multi-layered energy management and resolution solutions for energy consumers and developers.

U-Solar is partnering with some very key digital infrastructure players in the market that not only have the ability to create VPPs but also work towards overall net-zero solutions for the corporate clientele. Distributed renewable energy coupled with energy management, storage solutions, and digital infrastructure could be the first step in creating the foundation for larger VPPs for C&I segments in India. Off-site RE projects to eliminate any further consumption of fossil fuel will be most probable with a much larger IPP- this disruption is not too far in the future, in fact, there are successful pilots.

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In line with last year's commitment to achieving net zero by 2070, India, at its pavilion at the 27th session of the Conference of Parties or COP27 is talking about a climate-friendly, sustainable lifestyle. As renewable energy (RE) plays a huge role in cutting down GHG emissions, the country has already pledged to have 500 GW of non-fossil-fuel-based capacity by 2030.

Virtual power purchase agreements (VPPAs) have emerged as a popular mechanism the world over for improving RE penetration. A VPPA is a bilateral contract entailing a financial agreement between a generator and a buyer of RE, without any physical delivery of energy. Under the agreement, the generator receives a fixed RE price from the buyer, and transfers the green attributes to the buyer. The generator continues to sell power in the market at the prevailing market price. If the market price is greater than the fixed price agreed with the buyer, the generator pays the difference (amount) to the buyer, while if the market price is lesser, the buyer compensates the generator for the difference. The consumer (buyer) is also free to source its power requirement from other sources such as distribution companies, power exchanges, etc.

Globally, VPPA's potential for achieving RE targets is established. According to Bloomberg NEF, in 2019, around 100 corporations signed clean energy contracts for a 19.5 GW capacity, of which 80% were VPPAs. When compared to physical PPAs, VPPAs offer strategic advantages like positive environmental impact, no physical requirements of electricity delivery, economic gains if traded wisely, and a reliable source of green certificates over time.

The World Wide Fund-India report "Virtual Power Purchase Agreement for C&I Consumers in India" released in June this year has highlighted the huge potential of VPPAs, putting their total estimated demand at 104 GW by 2030. This can help in meeting 27% of the nation's 500 GW non-fossil-fuel-based capacity target. Commercial and industrial consumers (constituting 50% of total electricity consumption) can influence the growth of VPPAs considerably, which can go a long way in meeting India's sustainability goals.

But India is yet to see the uptake of VPPAs, primarily due to the regulatory jurisdiction dispute that surrounded it for over a decade. Last year, the Supreme Court settled the tussle between the Securities and Exchange Board of India or SEBI (that has jurisdiction over all financial instruments/contracts), and the Central Electricity Regulatory Commission or CERC (that exercises power as the national electricity regulator). The verdict said that CERC would regulate the physical-delivery-based forward contracts and SEBI would regulate the financial derivatives.

While the ruling has cleared the path for VPPAs, more measures are needed for their effective utilization as an enabler of carbon neutrality. Better clarity and awareness about the ruling need to be built among the concerned parties. Also, a proper framework for the bilateral transactions of green certificates, single-window clearance for VPPAs, and standardized PPA documents for such transactions would be needed. Further, given that VPPAs are exposed to dynamic market pricing, appointing a hedging entity would be crucial to deal with the related aspects.

When implemented well, these measures—together with the recent initiatives of the Government towards promoting innovative solutions for RE procurement (like introducing green tariff policy and notifying "Promoting Renewable Energy Through Green Energy Open Access Rules, 2022")—can help realize the potential of VPPAs.