RESOLÜT PARTNERS

Analysis

Smart meters: The basic infrastructure for a green future

Key Takeaways

- Smart meters are essentially a data play - offering unprecedented data that can be used to bring online more green energy, curb electricity loses and reduce costs for consumers
- The sector has immense depth – USD 30 bn over just the next 2-3 years
- Large appetite for smart meter concession from global investors – largely due to robust payment mechanism and revenue protected concession model
- Potential for high IRR – with low cost ESG debt and capital recycling from the substantial revenue generated during the construction phase
- Underlying technology has larger application – including in the emerging water sector
- Smart meter concessions under RDSS considered part of “Electricity Distribution” by Ministry of Power, glide path to InvITs opened up

References to green energy or energy transition are usually associated with renewable sources of electricity generation such as solar panels and wind turbines. For the longest time, the main challenge was the ability to generate renewable electricity at a large scale and at commercially viable costs. This has now been largely achieved, with solar energy being the cheapest source of electricity today with costs of generation continuing to drop.

Only because of the massive success in developing efficient renewable energy generation tools has the energy transition moved to its second phase. Broadly, the first phase focused on generation and now, the second stage – where the underlying electricity infrastructure is being retooled to be able to support the increased generation of renewable electricity.

This underlying infrastructure has received relatively little attention so far, though this is rapidly changing. Led by addition of some legacy technologies such as transmission lines to account for the changing geographical mix of energy producing areas, and innovative products such as smart grids and smart meters to support the unique nature of most renewable sources of electricity – i.e., intermittency in production.

Renewable energy generation is heavily dependent on external factors such as the weather (whether it is sunny or windy) and is not consistent with patterns of usage. This is a challenge as electricity cannot be easily stored and the fossil fuels (such as coal) that renewable sources are displacing offer more predictable and stable generation capabilities.

This is where smart meters come in. Very simply, smart meters capture "**how much**" electricity is used and "**when**" each unit of electricity is used compared to regular meters which only measure "**how much**" electricity is used. This in essence means access to data, which smart meters provide on a near real-time basis, in a sector which was largely a data desert and had significantly hamstrung planning and execution efforts.

This access to real time data allows for a host of activities:

1. Time of day tariff: In effect this is congestion pricing, with electricity priced to be costlier during peak usage hours and cheaper during off-peak hours. This encourages users to plan their electricity consumption in some controllable areas, such as EV charging, to align with the production pattern of renewable energy. This alignment of usage patterns with consumption patterns helps reduce excess electricity production that otherwise would be wasted (with production capacity idled) or have to be stored.

2. Reduction in losses for DISCOMs: Real time data and insight into electricity throughout the grid helps plug leakages and theft. Smart meters also allow for remote bill generation and tracking which help mitigate billing and collection inefficiencies. This is a major problem in India, where state run DISCOMs are only able to collect payments for little more than 77 out of every 100 units of electricity provided[1].

[1] As per FY22 data.

3. Control over usage: The consistency in billing with smart meters would replace a system where consumers sometimes receive bills on the basis of estimates, or receive bills only a few times in a year. With real time monitoring of electricity usage, consumers have more control over their finances and are less likely to be hit with surprise bills or face inconvenience due to incorrect or delayed readings.

Smart meters that are being installed are programmed to run on a pre-paid basis which leads to a much healthier working capital cycle for DISCOMs and cuts down on costs and delays across the supply chain.

Why now?

The push for smart meters has largely come from a Union Government scheme called the Revamped Distribution Sector Scheme (RDSS Scheme) which is focussed on reducing DISCOM losses and incentivises the installation of pre-paid smart meters through a carrot-based approach.

All state run DISCOMs (which serve the vast majority of consumers in India) are provided subsidies in the form of grants for the installation of smart meters provided they also adopt a standard set of documents for the concessions - known as the SBD-4 (standard bid document version 4). If DISCOMs make any unapproved changes to the documents, they lose out on the grant from the Union Government which greatly limits any changes.

The SBD-4 is the cornerstone of investor interest in the sector, as it provides a standardised approach which lends certainty, lowers cost of participation, and helps achieve economies of scale by largely harmonising requirements.

Investors are usually wary of dealing with State DISCOMs as they are seen to be unreliable counterparties. DISCOMs are plagued with heavy losses (with cumulative losses in FY22 estimated at USD 6.5 billion), largely a result of electricity theft and collection inefficiencies. Their stretched finances lead to consistent delays in payment to electricity generators and other vendors thereby raisings costs across the supply chain. The RDSS scheme through the SBD-4 also mitigates this counterparty risk through a few important components in the payment structure of the concessions:

1. Direct Debit facility: Online payments by consumers of electricity are pooled into a single escrow like account from which the concessionaire or the “AMISP” is paid before the DISCOM can access any cash. This offers significant comfort as there is no DISCOM intervention to require payments to flow to the AMISP. While the DISCOM is mandated to ensure at least a 5x payment cover of the monthly payments to the AMISP – the per meter per month charge ([payable to the AMISP) is relatively low and range about INR 70 - INR 100.

   While the bills are to be paid within 45 days, practically this happens much earlier – and

the recent provision of at least 1/10th of the bill being paid each day promises to further shorten the revenue cycle.

2. Restricted ability to dispute invoices: The DISCOM is obligated to payout the entire amount invoiced by the AMISP, even if there is any dispute on the amounts due. If the DISCOM does not clear all payments within 45 days, then interest at 12.55% (400bps over 1-year SBI MCLR) is automatically added on. If any payments are still delayed for a further 45 days, then it can be an event of default under the concession agreement and the AMISP can move to terminate.

3. Standardised documents: The entire set of documents – from the technical documents to the tender forms are largely standardised and allow for a balanced distribution of risk. The risk distribution is quite simple - with most risk post installation of the meter being borne by the DISCOM.

What about the DISCOM bankruptcy risk?

Even in the unlikely scenario that a state run DISCOM undergoes an insolvency process, it is very unlikely to affect the revenues of the AMISP. Since the meters are critical to ensuring operations of the DISCOMs the payments to AMISPs are very likely to be unaffected. This is because the insolvency resolution professionals (the people who run the company when it is undergoing an insolvency process) are mandated to maintain the company as a going concern. The SBD-4 also makes it clear that payments to the AMISP are to be seen as operational expenditure.

Stopping payments to AMISPs is also not a practical option due to the very nature of the meters. Smart meters, unlike conventional meters, require constant technical expertise to operate and maintain, and run on specialised software, none of which are readily available with DISCOMs. With consumers ability to access hinging on functioning meters, cutting off payments to AMISPs is impractical at best.

Bankruptcy remains a far-out risk as DISCOMs, while infamous for delaying payments, have yet to be declared insolvent and, crucially, enjoy a shadow state guarantee.

How does a typical concession under the AMISP concession scheme work?

The concession is based on a DBFOOT (Design Build Finance Own Operate Transfer), TOTEX model. Essentially, the bidder is responsible for end-to-end planning, installation and operations of the smart meter system including financing the capex and opex (TOTEX).

Anyone with experience in the infrastructure sector can bid for smart meter concessions, with no restrictions on foreign players. Bidders must fulfil two basic criteria (“credentials”): (a) net worth requirement - amounting to 50% of the estimated project cost; and (b) technical requirements - the total quantum of projects executed (whether in India or otherwise) in the

infra space should amount to at least 1/3rd of the estimated project cost (additionally, there is also a requirement to have operational expertise in smart meter/ allied industries - which is rather straightforward).

These credentials can also be “borrowed” from a 26% equity shareholder.

The tender documents are exhaustive and contain detailed information including on payment timelines, the quantum of lump sum amount (which is fixed upfront), the duties of the AMISP and the DISCOM. There is no negotiation of terms post-contract/ bidding. For the bid, bidders are required to submit a quote for the meters expressed as a monthly charge amount. The type of tenders vary, with single-bid tenders being the standard, with reverse bidding also adopted in quite a few recent tenders.

The typical life cycle of a concession:

1. **Month 0-6** – this is the project planning stage beginning right after the concession is signed. During this time, the concessionaire usually negotiates contracts with their suppliers and agrees on a project implementation schedule with the DISCOM. During this time, the AMISP is also required to carry out consumer awareness programmes.

2. **Month 7-27** – the installation phase where the actual installation of smart meters is undertaken. Revenue starts to flow-in from month 7 and is calculated on a per meter per month basis – i.e., payments are made for each meter that has been operational for the past month.

3. **Month 28-Month 120** – the O&M phase – at this stage, installation has been completed. The AMISP only provides operational support in running the system. This continues until the earlier of (a) the AMISP collecting the total revenue provided in the contract, or (b) the outer time limit of 120 months. Typically, this ends in month 111 unless there have been delays in installation of meters.

How are revenues structured?

AMISPs are paid in two phases: (a) a lump sum payment – this is received in the month after installation of a meter, and typically amount to ~10% of the total revenue per meter; and (b) monthly AMISP charge – this is the monthly payment per meter which is paid out every month after installation.

Unlike a typical user-pays infrastructure model where there is some risk involved in projecting demand, for instance traffic numbers for highways, AMISP concessions are de-risked – with the AMISP being paid based on availability rather than usage.

Risks to revenue is further mitigated as the DISCOM backstops against any damage to the smart meters after installation, i.e., if, for instance, meters are damaged due to floods,

then the DISCOM will pay for the replacement of these meters or will continue to pay the contracted monthly rent for the life of the concession on a “deemed availability” basis.

What is a typical business model?

Though the industry is fairly new, it has seen a lot of interest due to the unique nature of the concessions where substantial revenue generation occurs during the construction phase allowing for recycling of cash and a rather capital efficient business model.

The legacy players are mostly constrained by a lack of capital since smart meters cost >6-7 times that of legacy meters with the cost being borne upfront and a 10 year payout period. Along with the low barriers for entry, this has led to the emergence of many infra players participating in tenders, though they largely prefer to supply capital and outsource the entire execution of the concession back to the legacy meter suppliers.

Essentially, this is a typical platform play with (a) a bidding entity, (b) the EPC suppliers (usually multiple non-exclusive suppliers engaged on a project by project basis), and (c) the AMISP.

A bidding entity bids for a concession, which is then implemented by an AMISP (in the form of an SPV). Bidders usually tie up supply after signing a contract - there are various components in a smart meter system with multiple suppliers, due to the specific eligibility criteria set out in the SBD4.

The smart meter system consists of 5 specialised services:

a. the physical smart meter itself,

b. the Head-End System (HES),

c. Meter Data Management System (MDMS),

d. communication module (RF/Cellular); and,

e. system integration.

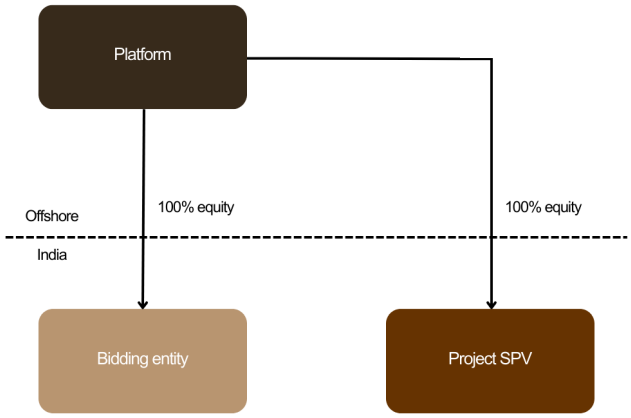
With many components involved, players who have integrated inhouse solutions tend to have a better execution track record and are less prone to delays.

One of the more important considerations in structuring a smart meter deal from an investor protection angle is on the matter of credentials. Ideally, credentials should accrue to the platform entity for value consolidation.

The structure of the platform also plays a crucial role due to the interplay of domestic Indian legislation and practical concerns in relation to the bid documents. For instance,

while a pure play foreign bidding entity or an InvIT/ AIF bidder are allowed, an Indian bidding vehicle, in the form of a company, seems to be a preferred option.

Like other infrastructure assets housed in SPVs, there are the typical concerns such as rollover to InvITs, being classified as an NBFC-CIC (though this may be an overblown risk factor - you can read our article "***Investing into Infrastructure Holding Companies: What if you become a core investment company?***", here), and on the returns optimisation concerns such as thin cap norms (there may be significant cost savings through adopting a more practical reading of thin cap norms - you can read our article "***Ambiguity with thin cap norms: Private credit players risk significant tax leakage***" here). As with any platform deal, there are also practical calls that will need to be taken about the relationship with the operational partner including on exclusivity and pricing.



Typical platform structure.

With a typical infra debt to equity ratio of 70:30, the overall payment structure results in a very low-cost requirement from sponsors.

Though the typical concession length is only a maximum of 10 years, and no concessions have yet reached this mark, AMISPs can expect these projects to be a continuous cycle as the requirement for new meters should continue (the outer limit for smart meters seems to be around 15 years) along with the requirement for the technical expertise and the software necessary to operate smart meters.

The sector boasts enviable depth, with the Union Government looking to install 250mn smart meters by 2025-26, a more than USD 30 billion opportunity which is growing larger by the day with an estimated annual growth rate of 4% in new electricity connections.

What about project level debt?

Though this a relatively nascent sector, it is a high rated ESG play, and existing players have already tapped concessional lines of funding from international development institutions such as the US International Development Finance Corporation (DFC) and there is

significant appetite from traditional bank lenders due to the robust payment security.

The protections provided to lenders under the concession documents which include the right to substitute the AMISP and the asset ownership vesting with the AMISP during the concession are seen as credit positives, though the unique nature of the asset - being situated at homes - requires work with lenders who are more accustomed to typical oversight rights in infra projects which may not be feasible.

With projects generating revenue during the construction phase, for optimisation of returns the accounting of project revenues as equity contribution is usually preferred though to achieve this requires some amount of work with traditional bank lenders who tend to hew to the view of direct equity infusions as the only comfort. Recently, with a large number of concessions reaching construction stage, some lenders seem to be deriving more comfort with such structures.

What are the key risks?

1. Underlying cost inflation risk: The concessions are fixed price with no pass through of costs – they also usually allow for a reduction or increase of up to 20% / 30% and therefore it crucial to ensure that supply is secured from reliable suppliers on a fixed price basis with passthrough of quantity variations.

2. Supplier risk: The diversified supplier base provides challenges especially given the compact planning and implementation periods. Some current AMISPs who have contracted out all functions back-to back to a diverse pool of suppliers are now facing lengthy delays due to problems with their suppliers. A straightforward way to mitigate such risks is to lock-down capacity with an exclusive supplier who can provide a full suite of services – though the number of players with such capabilities are very limited.

3. Legacy assets and exit opportunities: Since the bidder is required to maintain a 51% equity stake in the AMISP for the duration of the concessions and 100% for the first 51 months – rolling over of existing assets to a platform becomes challenging and also impedes any asset-by-asset sale.

   However, a recent change has allowed for an indirect sale of shares of SPV i.e., the sale of shares of the HoldCo. This simplifies asset rollover, and smart meter players structuring for a potential platform play are better served to house assets one layer removed (housed under a clean HoldCo) from the main operating company to allow for a simpler structure for an incoming investor.

InvIT eligibility – the ambiguity

There was some ambiguity earlier on whether smart meter concessions were InvIT eligible.

Recently, the Power Ministry has clarified that smart meter concessions under the RDSS Scheme are to be considered as part of “Electricity Distribution” which is one of the sub sectors in the harmonised list that determines InvIT eligibility.

This clarification should fan away any concerns emanating from the informal SEBI guidance on smart meter concessions not being InvIT eligible – which was based on a rather plain text reading of smart meters not being explicitly called out in the harmonised list.

Though the Finance Ministry determines the constituents of the harmonised list, the clarification from the Power Ministry should clear the decks for a similar clarification. This will unlock more efficient structuring of investments and spur greater interest from the more traditional infrastructure investors among PFs and SWFs.

Commercially, the nature of the concessions with a limited lifespan of 10 years, and a construction period that takes up 30% of the concession life, along with structuring considerations around retention of credentials makes a transfer to InvITs challenging.

Conclusion

Smart meters are in essence a data play, bringing in visibility where there was none available earlier. This rests on a simple practicality - to be able to understand, you first need to be able to measure. The underlying technology has applications far beyond electricity and can be deployed across vast industries like water supply which face significant inefficiencies largely driven by a lack of actionable data.

The ESG benefit from smart meters is not only the direct effect i.e., the ability to integrate more renewable energy onto the grid but also the more ancillary benefits. This includes the ability to bring in more distributed sources of electricity, a power plant in each home (with solar panels), that will help create a more resilient grid. The positive effect smart meters have on the finances of state DISCOM promise to catalyse greater investments in the grid and bring more renewable energy online (which has now largely become the domain of the Solar Energy Corporation of India (or SECI) or larger private off takers).

Importantly, smart meters are also a positive social play. They promises to make electricity, which is an essential commodity, more affordable to all consumers by bringing down the costs of power through cutting down on theft and inefficiencies. This should lead to greater access since regular consumers are paying not only for their own electricity consumption but also for the 22% of units that are being lost or stolen.

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Shreejith's approach is to deliver practical legal advice rooted in a deep understanding of the commercial foundations of each transaction. He advises sovereign wealth funds, global financial sponsors and large...*read more*

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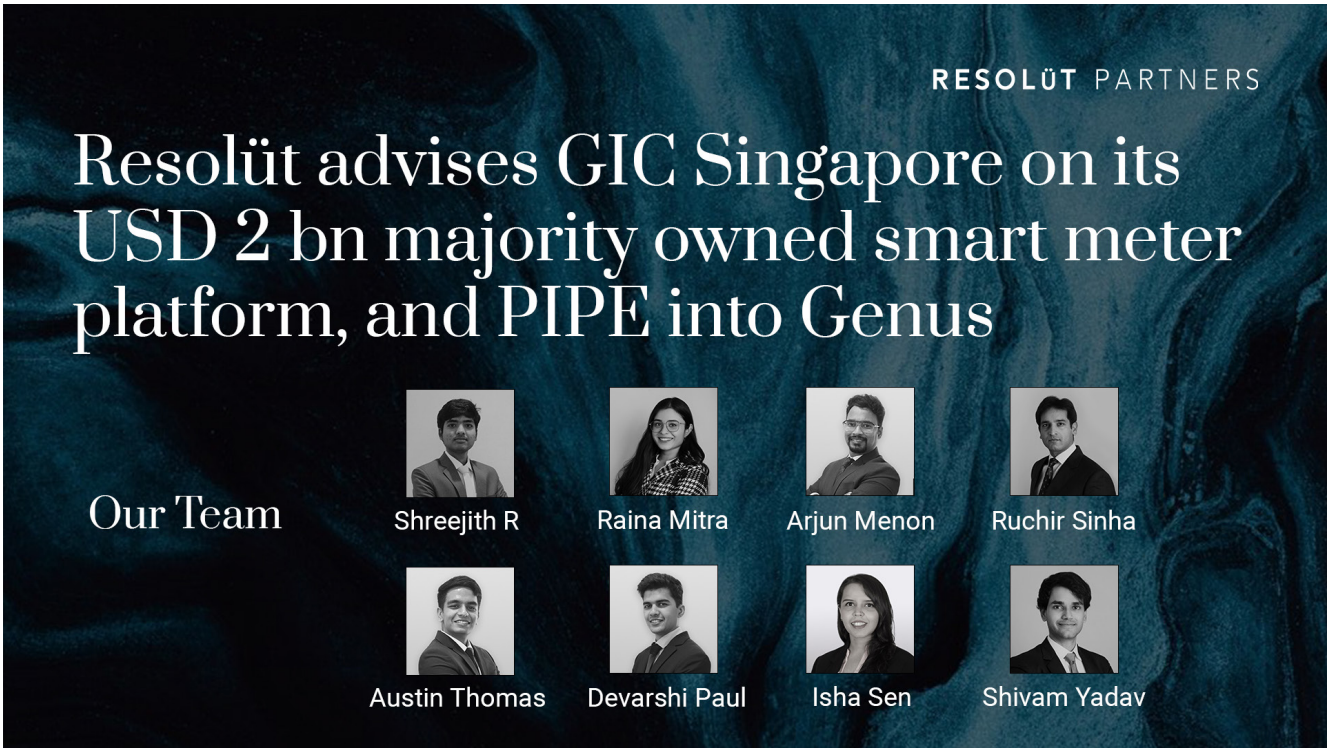

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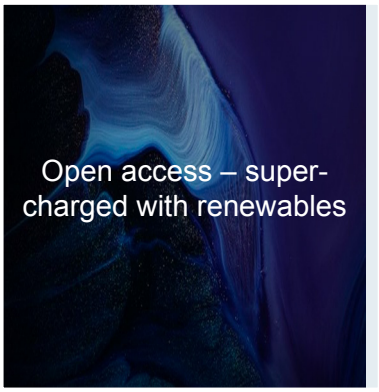

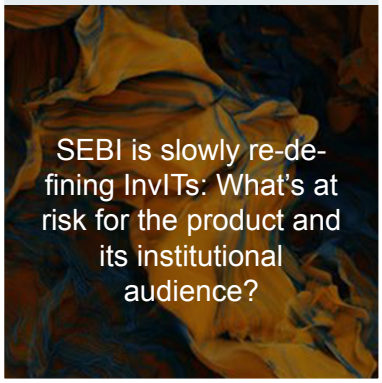

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