250 Million Smart Meters Rollout

Title of the Presentation

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Advantages of OPEX Mode of Implementation

- Smart Metering is an ecosystem wherein different infra components perform to deliver pre-determined SLAs.
- Implementation under PPP mode provides a better option compared to conventional practice of implementation in Capex Mode.
- Under Opex mode, Developer owns and provides end to end solution with **no upfront financial burden** for cash strapped Discoms.

Benefits of Opex Mode over Capex

Parameters	Opex	Capex
Upfront financial burden	Low	High
Scalability	High	Medium
Flexibility	High	Medium
Reliability	High	Low
Accountability	High	Medium
Value delivery to Consumer	High	Low

Other Benefits to Discoms

- Discoms get good control over performance and continuous improvement.
- Optimisation of costs through economies of scale.
- Leverage for state finances through systemic efficiencies.
- Propensity to reduce consumer tariffs through large scale implementation.

End to End responsibility alongwith freedom to operate under Opex mode provides a viable solution for implementing smart metering solution.

High Low Medium

DISCOM Preparedness: Ongoing Tenders & Major Concerns

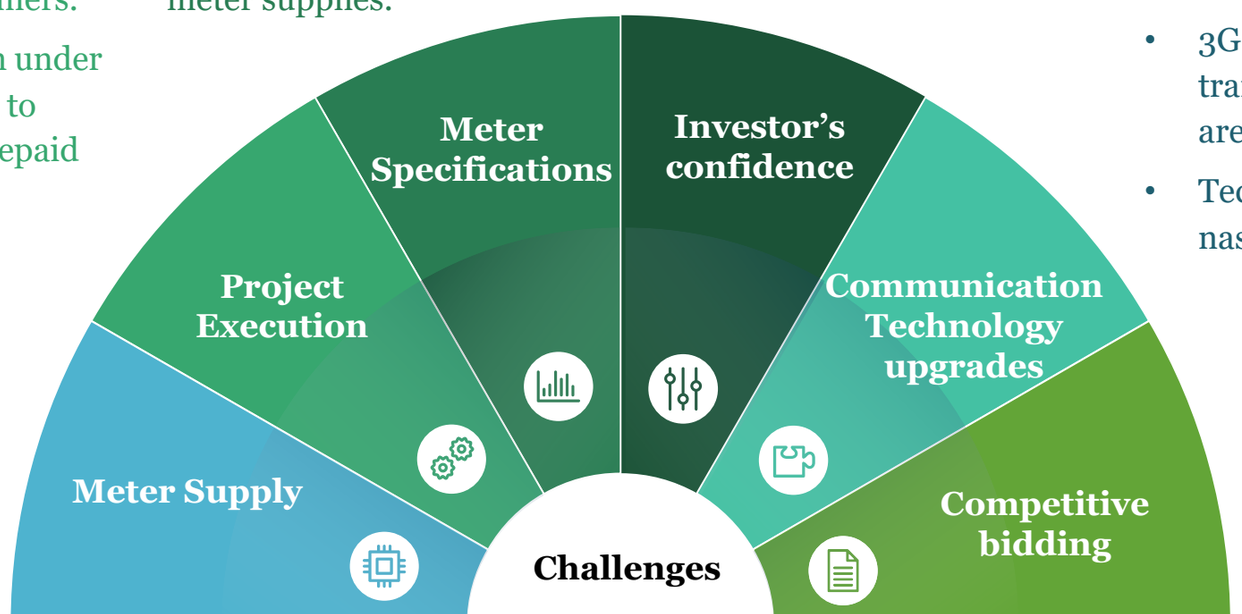
State	Meter Quantity (Lacs)	Mode
West Bengal	2.4	OPEX
Tripura	1.07	OPEX
Punjab	8.00	TOTEX
	1.17	OPEX
	0.90	CAPEX
	3.00	CAPEX
Assam	20.15	OPEX
Madhya Pradesh	22.81	TOTEX
Andhra Pradesh	16.00	TOTEX
	1.09	TOTEX
	1.13	TOTEX
	1.10	TOTEX
Total	**78.82**	

- Construct of the Bids – Separate Tenders for meters and Backend system (MDM /RMS)
- Restrictive / Preferential Qualification Requirement. Limiting Entry for specialised developers and investment
- Pocketed Geographies /Discreate category considered for implementation – High Cost and low reliability
- Lack of adequate timely Payment / Investment security mechanism
- Unrealistic Performance Requirement

Following SBDs will streamline and fasten the bid process and improved participation

AMI Implementation Challenges

- Variation/add-ons in smart meter specifications with respect to IS/CEA specification leading to variance in standard smart meter supplies.
- Lower market attractiveness due to possible payment defaults from Discom.
- Resistance from consumers.
- DISCOM legacy system under process of upgradation to handle SM data and prepaid billing.
- 3G sunset issues and 4G transitioning in Project areas.
- Technology agnostic soln. in nascent stage.



- Smart Meter Manufacturing capacity
- Global Crisis for chipset delivery impacting meter supply (delay increased from 8 to 24 weeks).
- Significant variation from SBDs.
- Piecemeal projects hampering economy of scale.

These implementation challenges may lead to spill over of metering targets.

Implementation Snapshot | UK

Structure – Government

- Regulated under **Smart meter Act 2018**
- **Department for Business, Energy and Industrial Strategy** is responsible for policy and supporting regulations
- **Regulated by Ofgem**
- **Smart Energy Code (SEC) -** govern end-to-end management
- **SMETS 2 Program** - Vision to connect electric, gas and water meter through single system level implementation.

Key features

Market structure	Unbundled – Network and Supply
Metering body	Suppliers
Types of meters	AMR, Advanced, AMI
Major players	British Gas, EDF, Eon, SSE, Scottish Power, Npower, Landis+Gyr, Elster, AES
Communication*	Interoperability at System Protocol and Module level , Single band & Dual Band comms for wider reach

Structure - Corporate

- **DCC** – National level licensee for establishing and managing data & communications network for smart metering .
- **OPEX-based model** - equity investors procure meters & lease them against a fixed monthly fee, Lenders (banks) invest money against an RoI.
- Majorly funded by Suppliers & Investors alongwith national funding.
- **Smart Grid GB** – Independent forum for promoting rollout & raise consumer awareness.

Meter Asset Providers (MAP)

- Private Corporations and Investors participate with energy suppliers with innovative commercial models..
- Carry out sourcing, procurement and financing for meter asset provision
- Carry out Electric, Gas and water metering, Data services and other ancillary services.

Smart Metering functionalities

- Remote connect/Disconnect
- Prepaid
- Net Metering
- Outage Reporting
- Time-of-Use pricing
- Critical pricing
- Variable peak pricing
- Voltage Monitoring
- Tamper Detection
- Interoperability

https://www.smartdcc.co.uk/

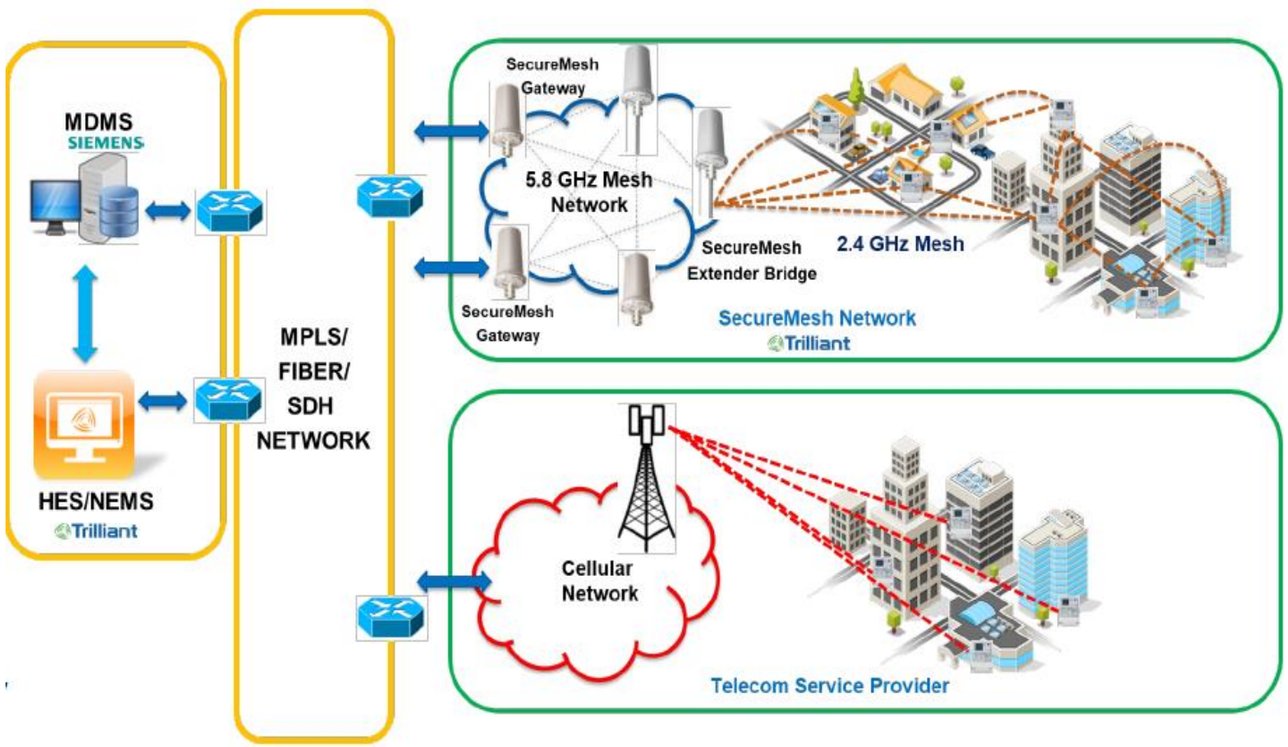
* SMETS (Smart Meter Equipment Technical Specification)

Implementation Snapshot | Malaysia

An integrated multi-tiered, multi-technology communications platform

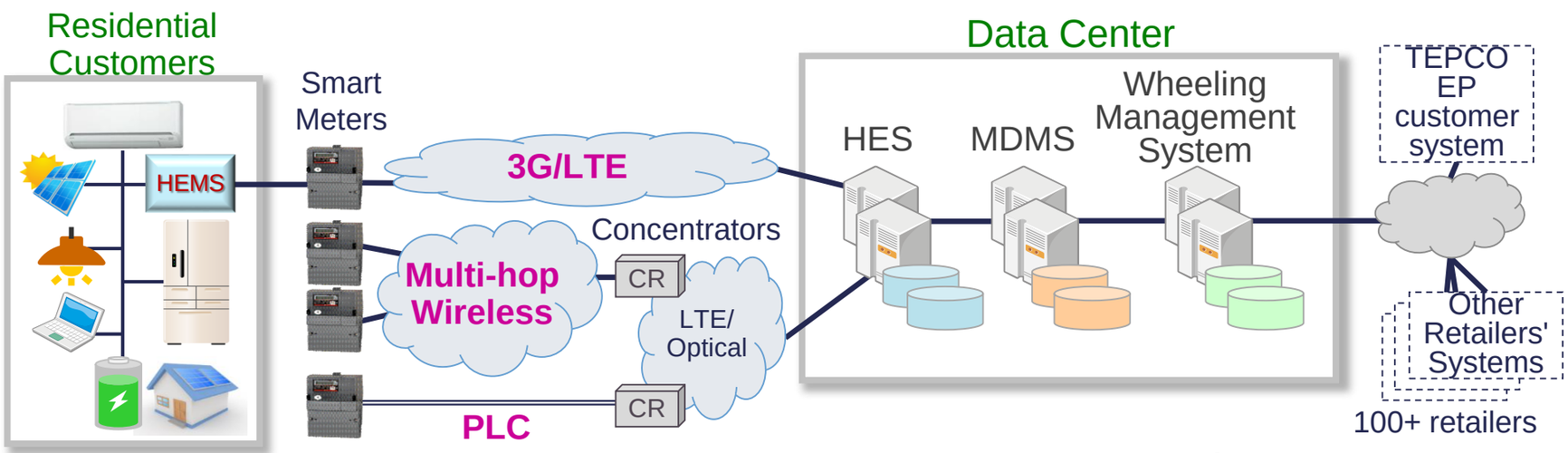
Structure

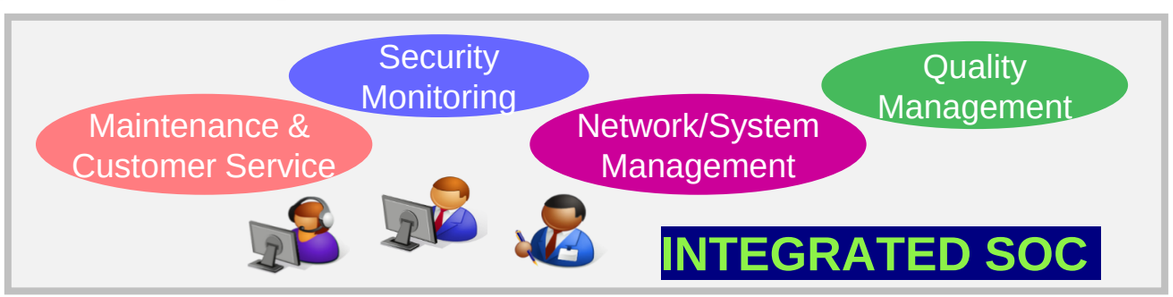
- **Led by TNB Malaysia – The Central Utility:** Responsible for smart meter policy, implementation and supporting regulations.
- **TNBIP:** SPV under TNB for implementation of smart meters.
- **Contractual Arrangement:** Between TNB and TNBIP based on specific margin.
- **CAPEX-based model** – TNBIP procures the meters and installs on the ground alongwith strategic partners.
- Majorly funded by debt and national funding.

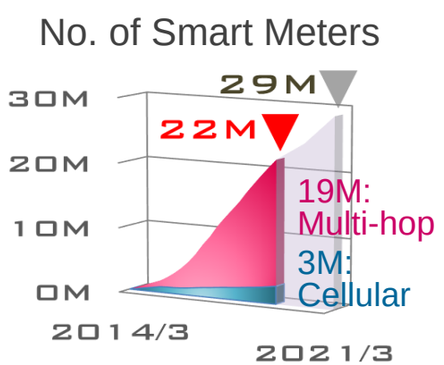


Implementation Snapshot | TEPCO AMI

- Smart meters transmit meter readings to HES every 30min, and Wheeling Management System publishes 30-minute intervals within 60min
- Approx. 29 Million Smart meters installed







https://www.tepco.co.jp/en/pg/development/domestic/smartmeter-e.html

What Should India Do?

Policy & Guidelines

- National Programme Framework & Governance Model
- Project for Mass Rollout (State Level) phased Meter deployment
  - Economy of Scale
  - Manage Complexity of backend system & deskill field work
- Code of Practice & Standardisation
  - Meters & Pluggable Communication
  - Base Use cases & Interface definition
  - Uniform Customer interface services
- Upgradation / AMC of the DISCOMs Legacy system

Engagement & Experience

- Customer engagement and Capacity Building
- Capacity / skill building of Field Resources for SM deployment in large volumes
- Big Improvement is required in building effective and innovative approach to customer engagement
  - Surveys , Workflows , supporting tools , training , awareness programs
- Smooth transition process to prepaid smart metering

System & Process

- Reliable Communication – Customised, Hybrid and Pluggable
- Resilient ,Scalable & Versatile Back-end IT system to run this Critical Infrastructure 24X7
- Unparallel Security which shall evolve constantly to meet emerging threats
  - Device & Comms security – Keys /Certificates / Encryption
  - Data Handling and storage; threat-led defence approach; authentication -people and Information ; practical compliance techniques for risk assessment

SoPs and Cultural Shift

Smart Meter Provisioning is much more than fixing meter in consumer premise

- Volume Rollout needs institutionalisation of processes and ‘right first time’ commitment to enrol smart meters at the first attempt to sustain and improve the rate of deployments
- Focus should shift from purely percentage performance measurements to improving overall experience and value to the end customers.

Thank You

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