

Host Utilities



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ORGANIZER



India SMART UTILITY Week 2024

TOWARDS NET ZERO THROUGH SMART METERING

Presented By

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Supporting Ministries



- Prevention of climate catastrophe
- Monitor and control the energy consumption -critical role in the fight against climate change
- Smart meter – paves the way for the sustainable future
- Revamped Distribution Sector Scheme (RDSS) – by GoI - roll out 250 million smart meters (SM) – by 2026
- Net zero carbon emission - GoI target– 2070
- Decarbonize electricity - Generating more and more green energy and smart usage
- RDSS aims to improve the efficiency by reducing losses to 12-15% AT&C losses by 2025

Utility's / DISCOMs Perspective

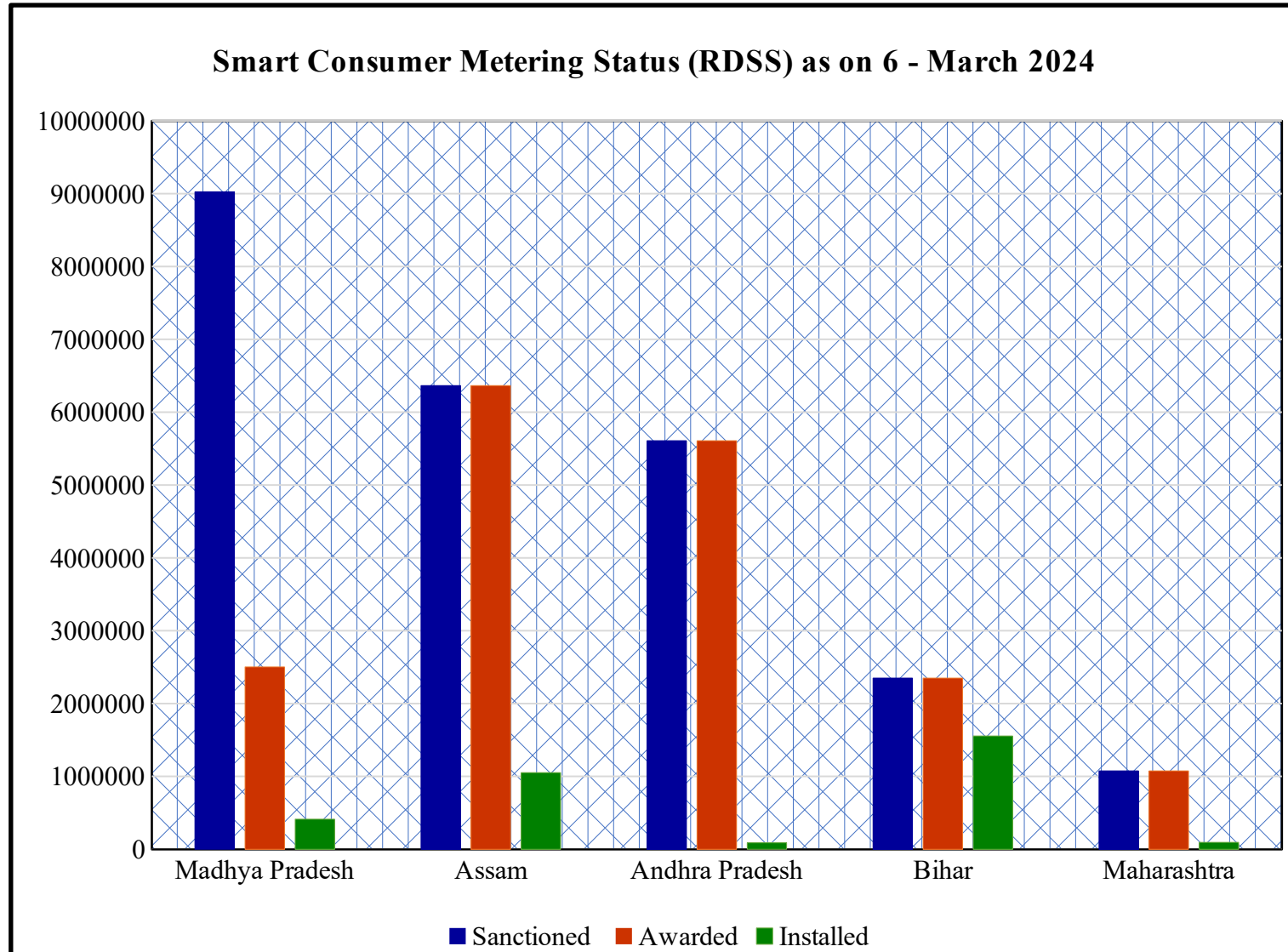
- Consumers energy usage pattern
- Renewable energy generation – to meet out the power balance
- Peak demand reduction
- Reduced meter reading cost
- Improved financial and operational efficiency
- Energy usage data from smart meters helps to better predict energy demand especially with growing EV usage.

Consumer's Perspective

- Consumption pattern and the usage – Load shifting based on dynamic pricing- Reduced electricity bill
- Smart time-of-use tariffs – reduce carbon footprint
- Improved reliability and quality of service
- Enable peer to peer energy trading
- EV charging - time of use tariff or during off peak period.
- V2G / V2X – energy from EV battery to grid or for other requirements

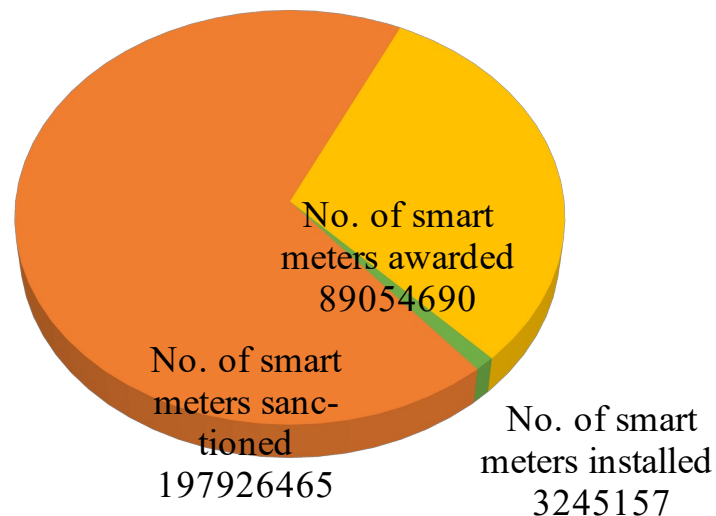


- Consumer's experience on smart meter installation:
 - around 92% reported a smooth installation experience
 - 50 % found improvements in billing, convenient with smart meter apps
 - Expressed concerns related to limited access to detailed bill, desire for flexible payment features, timely alert for easy recharge process etc.
- DISCOMs
 - regularly monitor the electricity consumption and parameters in real time at the end user side for every 15 minutes or 20 minutes
 - remotely control the meter operations - the ability to remotely disconnect and reconnect the consumers' electricity supply
 - supply power on a prepaid or post-paid basis
 - implement net metering, time of day tariff and demand response features

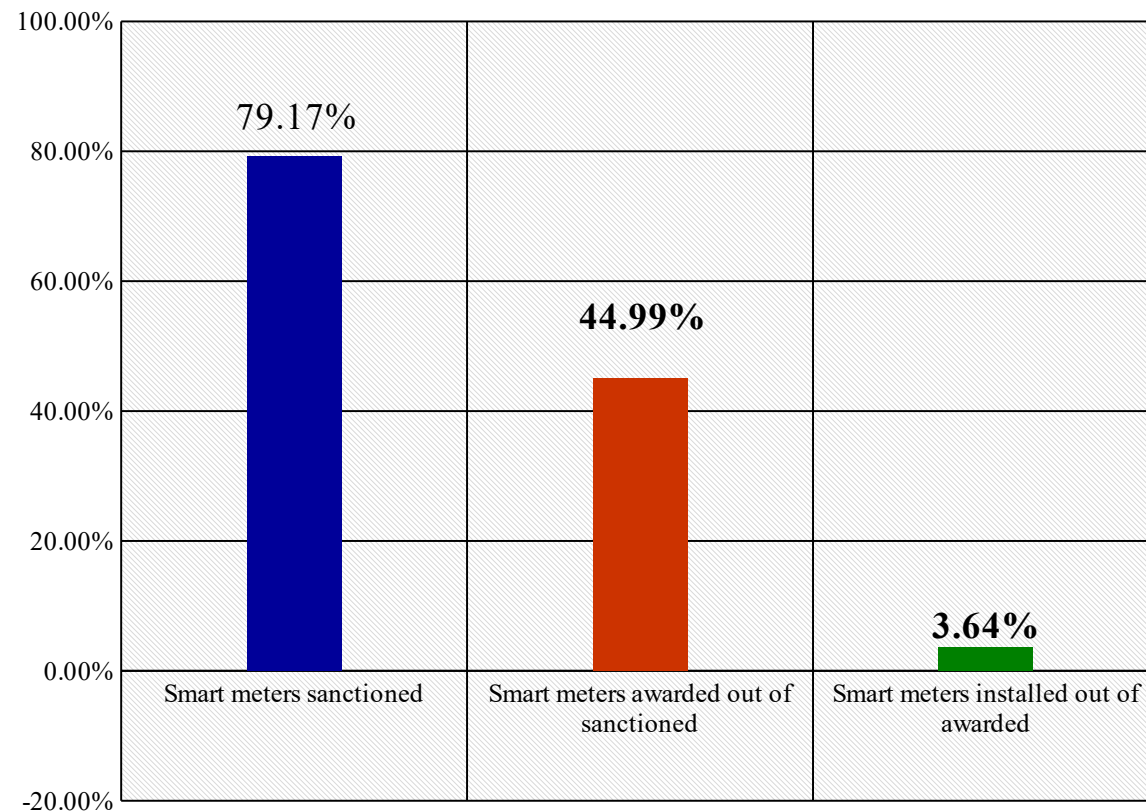




SMART METER STATUS -RDSS- 6-March 2024



Roll out of 250 million smart meters - present status



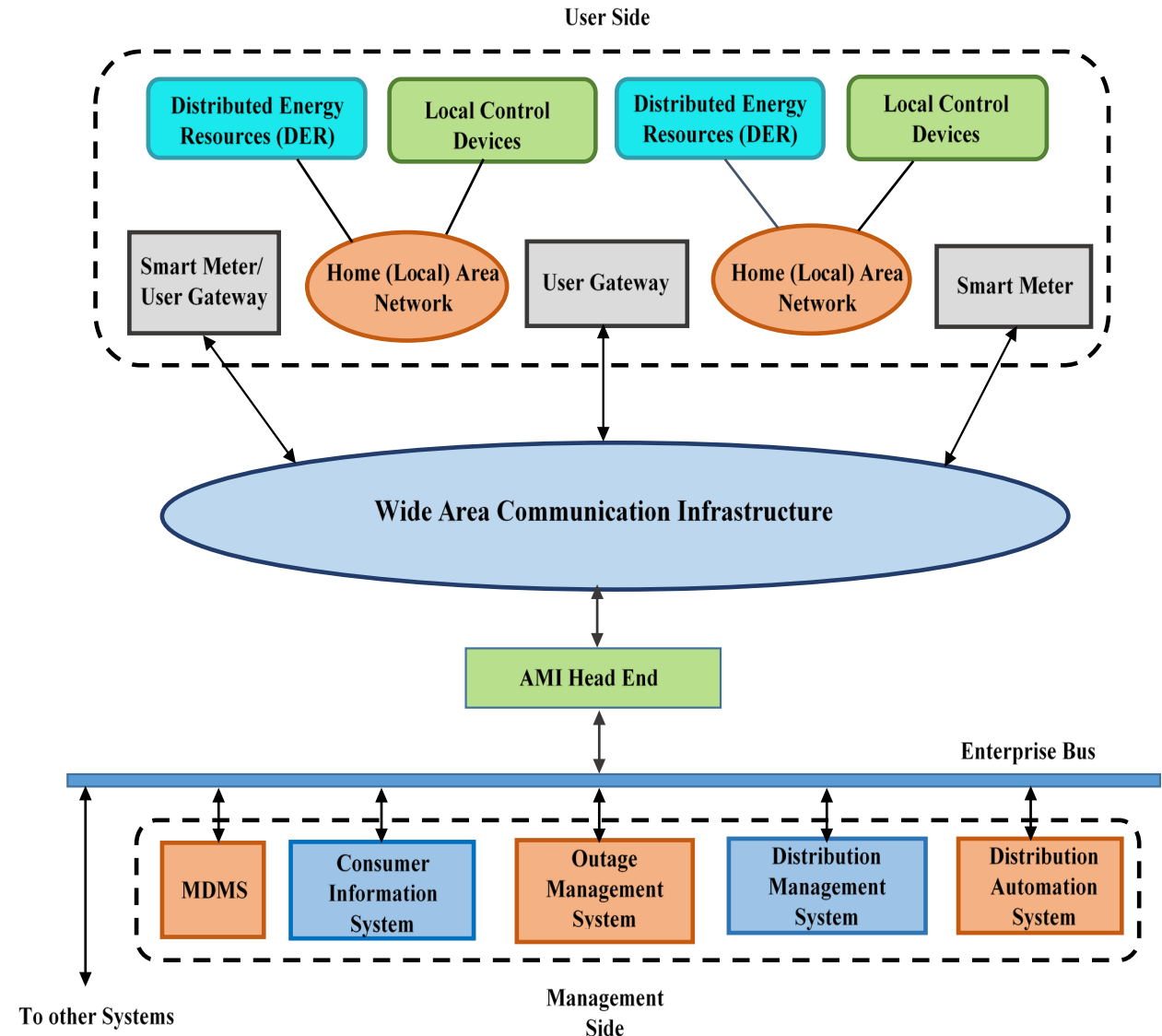
ADVANCED METERING INFRASTRUCTURE (AMI)



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- AMI –comprises of SM, AP, communication modules, support networks between consumers and service providers, HES and MDMS to monitor, collect and analyse the collected data for further processes.
- Data measured should also be accurate, reliable and timely.
- Communication network is the most important part of AMI.
- Commonly used telecommunication technologies are cellular, RF mesh, power line communication (PLC).
- MDMS is a database for long term data storage and management of events and data usage.



Courtesy : Reference 6

Challenges:

- Inertia of the utility
- Integration of the devices becomes even more complicated with an increasing number of customers.
- Maintenance, management and storage of data could be a tedious job
- Security and integrity of systems
- Infrastructure readiness
- User education and acceptance
- Financial considerations
- Regulatory and policy framework
- Recycling / disposal of old meters

Possible solutions:

- Planning for operations and maintenance ensuring reduced outages
- Incorporating appropriate security measures
- Utilities need to design and implement effective customer engagement and education strategies
- Utilities need to comply with and influence the regulatory and policy framework that can support and facilitate smart metering

Issues:

- Data privacy and integrity
- Device security and availability
- Compromise of system resilience and recovery
- Cyber-attack techniques like
 - Phishing
 - malware attacks
 - password brute-forcing
 - denial of service
 - man-in-the-middle
 - SQL injection attacks

Solutions:

- Encryption and secure communication
- Access control
- Authentication and authorization
- Device hardening and monitoring
- Firmware and software updates
- System backup and contingency
- Physical security
- Data privacy and secure data storage
- Security training and awareness
- Third-party vendor assessment
- Regular security audits and testing



- Widespread deployment of smart meters can accelerate new energy services like
 - Home energy management system
 - e-Mobility
 - Load forecasting
 - Demand side management
- Accelerated deployment of smart meter roll out – smarter grids - towards net zero emission target
- Reductions in meter reading cost – reduction in electricity supply costs - ability to deliver more cost- reflective tariffs
- Different tariff – for EV charging and shifting the load usage other than the peak demand period by the consumers – enhance RES usage – reduce emission
- Periodical assessment of the smart meter roll out scheme

THANK YOU

*For discussions/suggestions/queries email: isuw@isuw.in
[visit: www.isuw.in](http://www.isuw.in)*

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2. <https://energysavingtrust.org.uk/advice/smart-charging-electric-vehicles/>
3. Y. Chawla, A. Kowalska-Pyzalska and A. Skowrońska-Szmer, “Perspectives of smart meters’ roll-out in India: An empirical analysis of consumers’ awareness and preferences,” *Energy Policy*, Vol. 146, 2020.
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5. S. Agrawal, S. Mani, S. Kalra, B. Sharma, and K. Balani, “Enabling a Consumer-centric Smart Metering Transition in India” Council on Energy, Environment and Water (CEEW), March 2023.
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