GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA
UNSTARRED QUESTION NO.156
ANSWERED ON 22.07.2024

NATIONAL SMART GRID MISSION

156 SHRI S NIRANJAN REDDY:

Will the Minister of **POWER** be pleased to state:

(a) current status of AT&C losses in the country and measures taken to reduce these losses in the past two years;

(b) number of fully functional smart grids and smart meters installed each year over the last five years;

(c) the amount of renewable energy integrated into smart grid systems and steps taken to ensure grid stability and efficiency;

(d) the benefits consumers have experienced from the National Smart Grid Mission (NSGM), particularly in terms of reliability, quality of supply and energy savings; and

(e) the details of cybersecurity measures put in place under NSGM to protect smart grid infrastructure from cyber threats?

A N S W E R

THE MINISTER OF POWER AND HOUSING & URBAN AFFAIRS

(SHRI MANOHAR LAL)

(a) : Details of Aggregate, Technical and Commercial **(**AT&C) losses are given below:

	FY 2020-21	**FY 2021-22**	**FY 2022-23**
AT&C loss %	21.91%	16.23 %	15.37 %

The AT&C losses have come down from 21.91% in FY2021 to 15.37% in FY2023. This reduction in losses is a result of a number of reforms and measures taken by the Government which include:

(i) Electricity (Second Amendment) Rules, 2023 mandating timely reconciliation and payment of subsidies declared by State Governments.

(ii) Ensuring that the tariff and true-up orders are issued in time.

(iii) Ensuring Energy Accounting and Audit.

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(v) Additional Prudential Norms for financing which provides that no DISCOM of a State Government will be eligible for loans from PFC/ REC if the DISCOM is making loss, unless the DISCOM, with the approval of the State Government, works out a plan for loss reduction and files it with the Central Government, and adheres to that loss reduction trajectory.

(vi) Incentive of additional borrowing space of 0.5% of GSDP if the DISCOM takes up loss reduction measures including performance against AT&C loss reduction trajectory.

(vii) Providing that loss making DISCOMs will not be able to draw funds under any Power Sector Scheme of GoI unless they put in place measures for loss reduction.

(b): **(i).** 11 Nos. of Smart Grid pilot projects under RAPDRP/ IPDS scheme and 2 Smart Grid projects under NSGM were deployed at various locations in the country to test Smart Grid functionalities.

(ii). Details of smart meters deployed in the country in last five years are below:

FY	Deployment	Cumulative
Till March 2019		4,15,071
2019-20	13,30,817	17,45,888
2020-21	6,23,112	23,69,000
2021-22	17,45,479	41,14,479
2022-23	15,01,850	56,16,329
2023-24	48,43,966	1,04,60,295
2024-25 (upto 26thJune 2024)	19,47,290	1,24,07,585

(c) : As on 30th June 2024, 147.74 GW of Renewable Energy has been integrated into the Grid. Steps taken to ensure grid stability and efficiency are given below:

i. Construction of Intra-State and Inter-State transmission systems for evacuation of Renewable power.

ii. Under Green Energy Corridor scheme, 12 number of Renewable Energy Management Centre (REMCs) in different parts of the country and one EMC at South Andaman were established mainly to forecast, schedule and monitor the wind and solar Variable Renewable Energy (VRE) resources. These REMCs are co-located with the existing RLDCs/ SLDCs. Two more REMCs are under implementation at UP and Ladakh.

iii. Under Resource Adequacy and Flexibility plan, Regulatory initiatives have been taken which includes specified minimum power level of 40% for thermal generating units, requirement of 1-3% ramp rate by thermal generators, CERC (Terms and Conditions of Tariff) Regulations, 2019, incentivizing generators to provide ramping capability beyond the threshold of 1% etc.

iv. Fast tracking of approvals of transmission schemes through sufficient empowerment of CTU

v. Short-term transmission plan every year on a rolling basis for the next 5 years

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vi. Perspective transmission plan every alternate year on a rolling basis for the next 10 years by CEA.

vii. Implementation plan for inter-state transmission system every year on a rolling basis for up to the next 5 years

viii. Implementation of CERC's General Network Access Regulations w.e.f. 1st Oct 2023

ix. Innovative products like solar-wind hybrid projects, RE projects with energy storage systems and supply of RE power balanced with power from non-RE sources started to reduce intermittency.

x. Implementation of Green Term Ahead Market (GTAM) and Green Day Ahead Market (GDAM) for sale of renewable energy.

xi. Flexibility in Generation and Scheduling of Thermal/Hydro Power Stations through bundling with Renewable Energy and Storage Power.

xii. As per Central Electricity Authority (Flexible operation of thermal power plants) Regulations, 2022, Load Dispatch Centers may schedule all coal based thermal power plants, upto the Minimum Power Level(MPL) of 40%, to support the operation of must run RE stations.

xiii. Regulation 43(4) of the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 specifies the centralized remote monitoring and operation of substations including the deployment of SCADA systems. To ensure Grid Stability and efficiency, the transmission system is already having SCADA at Centre & State level.

(d): National Smart Grid Mission (NSGM) was established in 2015 by Government of India, as an institutional mechanism to accelerate Smart Grid deployments and monitor the policies and programs related to Smart Grid activities in the country.

Ajmer Vidyut Vitran Nigam Ltd. (AVVNL), Rajasthan, project became the first successful pilot project to demonstrate benefits of Smart Grid functionalities viz. AMI for automatic energy audit and loss reduction analytics which includes energy theft monitoring and tamper alerts. A case study on the pilot project in AVVNL for 1,000 consumers on single feeder for the period of 6 months starting October 2016, highlighted the following benefits to the DISCOM and the consumers:

i. Improved customer satisfaction level with accurate billing, real time consumption information, outage notification (with mobile app)

ii. Real-time detection and recording of outages, reduced equipment failure- faster fault detection and restoration

iii. Outage time reduction by 20%

iv. Reduction in failure rate of meters by 50%

v. Reduction in failure rate of transformers by 30%

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vi. Automation of meter reading and meter punching with smart meter- removes cost of manual reading and punching

vii. Bill Generation Cycle Reduction from 14 Days to 5 Days

viii. Automatic DT wise energy audit identified high loss area for reducing losses.

ix. AT&C loss reduction from 20% to 13.5%

(e) : CEA published AMI functional requirements in August 2016 which outlines cyber security measures like secure access controls, authorisation controls, event logging, software hardening, network security, malicious software prevention etc. The projects sanctioned under NSGM followed CEA AMI functional requirements and deployed Smart Meters as per IS16444 standard which refers to IS 15959 for secure data exchange protocols based on DLMS/ COSEM, data encryption, authentication etc.

NSGM included a separate module on Cyber Security (Module-8) in the training course developed which has been used in training more than 450 utility professionals till date.

Further, a Standard Bidding Documents (SBD) has been prepared for implementation of Advanced Metering Infrastructure (AMI) under RDSS with the support of NSGM. The SBD incorporates adequate cyber security best practices in-line with the guidelines of Ministry of Electronics and Information Technology (MEITY) and relevant Computer Emergency Response Teams (CERTs) for implementation by all Advanced Metering Infrastructure Service Provider (AMISP).The SBD has been adopted for smart metering implementation under Revamped Distribution Sector Scheme (RDSS).

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