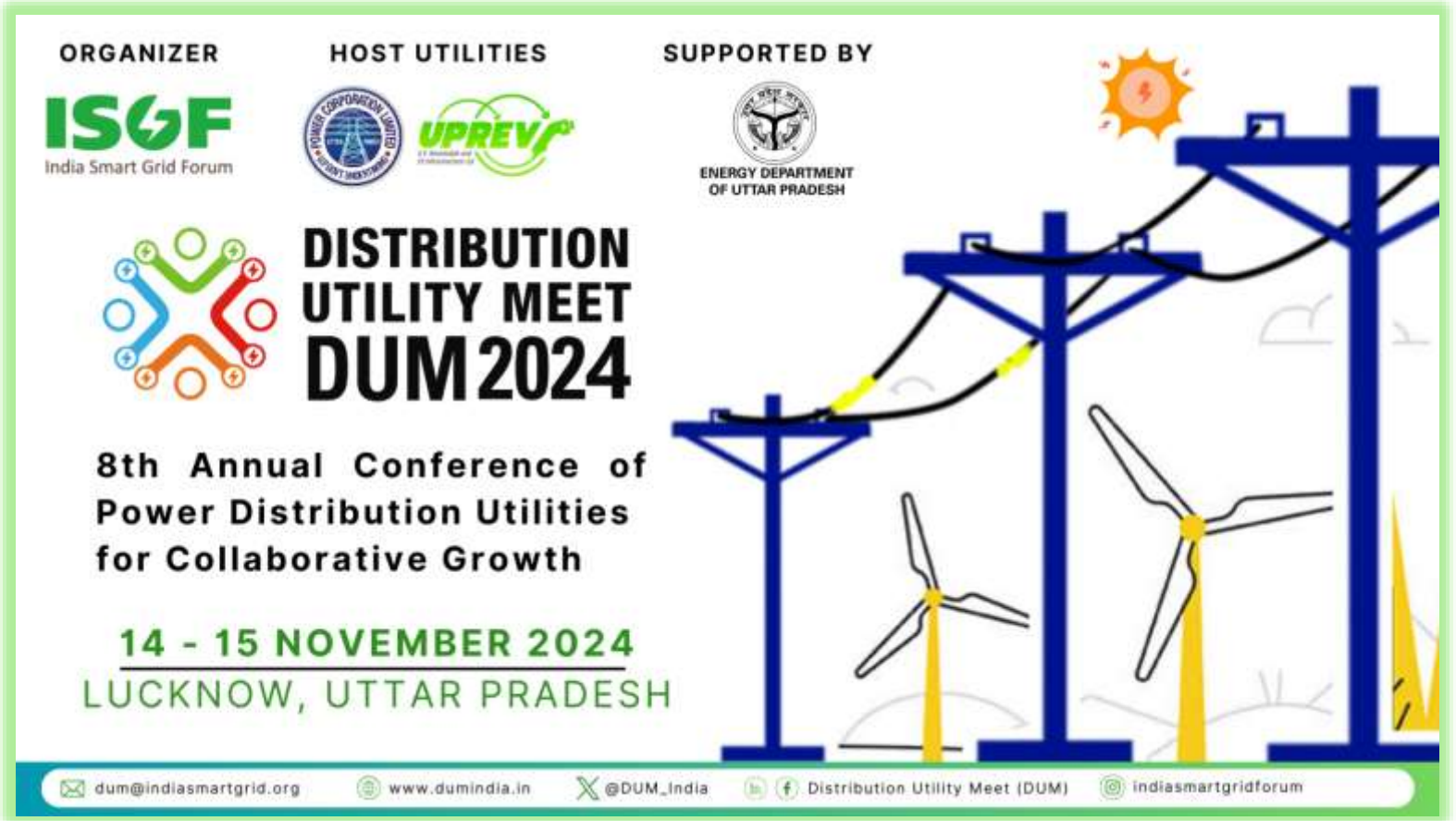

DISTRIBUTION UTILITY MEET 2024
CONFERENCE AGENDA
VENUE: CENTRUM HOTEL, LUCKNOW

14 NOVEMBER 2024 (THURSDAY) INAUGURATION OF CONFERENCE AND EXHIBITION VENUE: CENTRUM HOTEL, LUCKNOW	
10:00 ~ 11:45 IST	
09:00 ~ 09:45 **10:00 ~ 11:25**	**Registration and Badge Collection** **Brief Film on ISGF Contributions and New Initiatives** **Brief Film on Innovative Projects that Won ISGF Innovation Awards in 2024** **Lighting of the Lamp** **Welcome Address: ISGF** **Special Addresses: Invited Dignitaries** **Inaugural Address: Chief Guest** **Vote of Thanks: UPPCL**
11:25 ~ 11:35 1. **LAUNCH OF NEW INITIATIVES** ○ **UPREV** ○ **Association of DISCOMs** ○ **National Registry of Rooftop Solar** 2. **SIGNING OF MOUs** 3. **RELEASE OF WHITEPAPERS**	
11:35 ~ 11:45	**INAUGURATION OF DUM 2024 EXHIBITION**

11:35 ~ 12:00

TEA BREAK + TOUR OF DUM 2024 EXHIBITION

14 NOVEMBER 2024 (THURSDAY)

SESSION – 1: LEVERAGING 250 MILLION SMART METERS TO DRIVE DIGITALIZATION OF DISCOMS

Time (IST) 12:00~13:30

Session Background

The electric utility sector is undergoing a significant transformation through digitalization of its operations. This entails the integration of digital technologies like smart metering, automation systems, and IoT devices to enhance efficiency, reliability, and customer service. The adoption of these technologies should be guided by strategic digitalization roadmaps, which lay out the path for transformation, detailing the suitable technologies, timelines, investments, and expected outcomes. Digital twins are a critical aspect of this digital shift, offering virtual replicas of physical systems that allow for real-time monitoring, simulation, and predictive analytics. These tools are invaluable in managing complex utility networks with increasing share of renewable energy resources, forecasting demand and disruptions, and optimizing assets, operations and responses. The digital transformation of Distribution Companies (DISCOMs) is pivotal in modernizing India's power sector. This transformation, centered on the integration of digital technologies into all aspects of business operations. Most utilities in Europe and the Americas have implemented smart metering and have valuable lessons to share. Presently, India is deploying 250 million smart meters as part of the Revamped Distribution Sector Scheme (RDSS) which is a revolutionary initiative towards modernization of the DISCOMs in the country. This session aims to provide a comprehensive overview of the state-of-the-art digitalization initiatives in power utilities; and review the progress and challenges associated with the rollout of 250 million smart meters; and how to build these digital assets as the foundation for digitalization of DISCOMs.

Discussion Points:

1. **Digitalization of Utilities** to improve operational efficiency, reliability, and customer interaction – specific technologies and their impacts
2. **Digitalization Roadmaps** - the importance of a well-structured digitalization roadmap in guiding the transition and integration of new systems with existing IT systems
3. **Digital twins** – the role and benefits of digital twins in managing complex utility networks, enhancing predictive maintenance, and improving decision-making
4. **Managing the Transformation** – challenges of managing the transformation such as realignment of business processes, re-skilling the workforce, cybersecurity, investment costs, and regulatory compliances
5. **Future Trends in Digitalization of Utilities** – evolving new technologies, changes in customer expectations, and the role of AI/ML and advanced analytics in utility management
6. **Smart Meter Rollout under RDSS**
   - progress of smart meter rollouts in different states and the key challenges
   - SLA/KPI calculation metrics and its monitoring framework
   - Recommendations for addressing challenges and accelerating the smart meter rollout
   - Policy adjustments, regulatory support, and incentives for stakeholders
7. **New Services for Smart Meter Customers** - new services enabled by smart meters such as implementation of Time of Day (ToD) and Time of Use (ToU) or real-time tariff schemes, customized billing, customer empowerment and savings in monthly bills; demand response (DR), and enhancement of grid efficiency

Time (IST) 13:30~14:30
LUNCH

14 NOVEMBER 2024 (THURSDAY)

SESSION – 2: STORIES FROM SOLARIZATION OF AGRICULTURAL FEEDERS & NOTABLE EXPERIENCES FROM THE FIELD

Time (IST) 14:30~16:00

Session Background

The initiative to solarize agricultural feeders represents a transformative approach in the energy sector, aimed at enhancing the efficiency and sustainability of electricity used in agriculture. The Government of India (GoI) provides 40 percent subsidy for the solarization of agricultural feeders under the PM-KUSUM program. The farmers will get day-time reliable power for irrigation free of cost or at concessional tariffs fixed by their respective state governments. This strategy has been pivotal in reducing dependency on conventional power sources and shifting towards decarbonization of the agricultural sector. The session will discuss the successful implementations of solarization of agricultural feeders across different states, models to address the challenges of land availability for solar panel installation; and improvements in power supply reliability for agricultural operations as well as the impact of agricultural feeder solarization on the distribution grid.

This session will also focus on innovative practices and new initiatives that have been successfully implemented in DISCOMs for the first time. It aims to showcase groundbreaking innovative projects and business models that have led to improved efficiency, customer satisfaction, and operational robustness in the distribution sector. Discussion points will include the adoption of advanced technologies, process optimizations, and novel approaches to consumer engagement and service delivery. The session will highlight case studies from various DISCOMs where new initiatives have resulted in measurable benefits, setting a precedent for future innovations in the electricity distribution sector.

Discussion Points:

1. **Solarization of Agricultural Feeders**
    - Successful case studies on solarizing agricultural feeders, focusing on the design and deployment strategies that led to their success
    - Maharashtra model for solarization of agricultural feeders and its efficient management
    - Land challenges for solar plant installation
    - Cost sharing amongst different stakeholders
    - Potential for Agrivoltaics in India
2. **Impact on the Grid** – impact of solarized feeders on the DISCOM grid
3. **Economic Benefits** - cost-effectiveness of solar feeders, including cost savings for DISCOMs and financial impacts on the agricultural sector
4. **Innovative Technologies in DISCOMs** - new equipment and solutions, IoT devices, AI-driven analytics and their impact on operations
5. **DISCOM's Operational Efficiency** – notable examples of process improvements that have enhanced operational efficiency, reduced losses, or streamlined service delivery
6. **Consumer Engagement by the DISCOMs** – initiatives that have significantly improved consumer engagement and satisfaction, including digital platforms for consumer interaction and feedback

14 NOVEMBER 2024 (THURSDAY)

SESSION – 3: RE, EV AND GRID STABILITY & CHALLENGES OF 10 MILLION ROOFTOP SOLAR PV SYSTEMS

Time (IST) 16:00~17:30

Session Background

The Indian energy landscape is undergoing a profound and transformative evolution, driven by the determination to achieve Net Zero by 2070. Central to this transformation being electrification of all plausible sectors, and the dynamic and interrelated trends that have garnered global attention - the unprecedented growth of renewable energy (RE) resources and the swift adoption of electric vehicles (EVs). The integration of RE and EV into the grid poses both opportunities and challenges for maintaining grid stability. This session will explore how the increasing penetration of RE and the rising adoption of EVs impact the demand and grid stability. Key discussion points will include technological advancements in grid management, the role of energy storage solutions, and strategies for balancing intermittent RE sources with the demands of the electrified transport sector. Additionally, the session will address the potential of peer–to–peer (P2P) trading of green energy amongst customers and the feasibility of scaling up distributed battery energy storage systems (BESS) amongst customers.

The newly launched PM Surya Ghar Muft Bijli Yojana with the target of 10 million rooftop solar photovoltaic (PV) systems poses serious challenges to the distribution grid. This session will delve into the technical issues faced as the share of rooftop PVs connected to the LT feeder increases. Discussion will focus on practical solutions to mitigate over-voltage and tripping of inverters; and promote power consumption during the day so that energy from rooftop PV systems is efficiently utilized.

Discussion Points:

1. **Challenges in Scaling up of Rooftop PV in DISCOMs**
   - Planning and strategy for issuing new rooftop PV connections
   - Impact on the grid and managing voltage on LT feeders
2. **Smart Inverters**
   - Deployment of smart inverters conforming to IEEE-1547
   - Challenges with smart inverter implementation and management
3. **BESS in Distribution Grid**
   - BESS at distribution substations to enhance grid flexibility
   - BESS for standby power supply in large buildings and campuses
   - Business models to promote BESS amongst customers
4. **Digital Tools for DER Management**
   - National Registry of Rooftop PV
   - Digital tools for distributed RE resource management – AI/ML, IoT and advanced analytics
   - Cybersecurity and data privacy considerations
5. **Vehicle to Grid (V2G) and EVs as Virtual Power Plants (VPP)**
   - Role of Vehicle-to-Grid (V2G) services in grid balancing, peak shaving and smoothing rooftop PV generation
   - Experiences with V2G pilot projects
   - Regulatory and infrastructure challenges in scaling up V2G services
   - EVs as Virtual Power Plants (VPPs) – incentives and participation models
6. **Case Studies**
   - Sharing successful global and national case studies where RE and EV integration has been managed effectively without compromising grid stability

14 NOVEMBER 2024 (THURSDAY)

SPECIAL PLENARY SESSION: ASSOCIATION OF DISCOMs

Time (IST) India 17:30~18:30

Today India operates the third largest power system in the world and emerged as a leader in energy transition. Although we have made excellent progress in the power generation and transmission domains, there is large scope for improvements in the distribution sector. Electricity distribution in India is being undertaken by 73 licensees. Amongst them 47 are electricity distribution companies (DISCOMs) owned by state governments, 11 are government departments in various states and union territories while 15 are private sector companies or municipalities/cantonments. In the past two decades, through a set of focused programs driven by Ministry of Power (MOP), the distribution sector has improved significantly. The AT&C losses which were in the range of 36% in 2003-04 has been brought down to 15% while we completed village electrification and 99.9% households have been provided electricity connections. The electricity demand is going to double or triple in the next 25 years owing to electrification of transport, industry, agriculture, and other sectors which will place unprecedented challenges to the Discoms in meeting this fast-growing demand while they struggle to fix present challenges.

On the other hand, the increasing intensity and frequency of weather events are causing immense stress on the DISCOMs. Floods and cyclones are happening more frequently with higher intensity causing damages to distribution grid infrastructure. Every DISCOM maintaining spares and special tools and tackles to address the emergency situations is also very expensive. If the equipment specs are same and interchangeable, then one DISCOM can borrow from the nearest one with spares in stock. This will reduce the inventory carrying cost considerably.

The equipment deployed on the grid are expected to follow the BIS standards and should conform to the grid codes and other CEA rules. But the technical specifications of equipment followed by DISCOMs in each state are different which causes issues in the overall supply chain making them less efficient and costlier. There is huge potential for cost reduction through standardization and common specifications.
To address these challenges in the electricity distribution sector, it is proposed to create an Association of DISCOMs in India with the prime motto of:

- *Experience sharing and helping each other*
- *Development of strategic vision for the power sector*
- *Sharing of best practices in AT&C loss reduction and O&M*
- *Development of PPP models/programs; and outsourcing models*
- *Rate contracts*
- *Training and capacity building*
- *IT systems compatibility and cyber security*
- *Establishment/empanelment of testing labs/agencies*
- *Conduct studies of mutual interest*

The mandate could also include standardization of equipment specifications and tender terms; and sharing of the cost data. One notable example of such an agency is the **Association of State Road Transport Undertakings (ASTRU)** which was constituted by the Ministry of Road Transport.

19:00 Onwards
Welcome Dinner and Cultural Program

15 NOVEMBER 2024 (FRIDAY)

SESSION – 4: ELECTRIC VEHICLE (EV) CHARGING INFRASTRUCTURE AND GRID INTEGRATION

Time (IST) India 10:00~11:30

Session Background

The global stock of 8 million+ EV charging points is estimated to be 222 million by 2034 per IDTechEx; and over 340 million by 2050 per BNEF! The fleet of electric cars is expected to grow fast, rising to over 132 million by 2027, from 41 million EVs (cars) on the road at the end of 2023.
Presently, there are 8,102 electric buses and 12,146 **(as on February 2024)** public EV charging stations operational in India. Ministry of Road Transport and Highways (MORTH) has planned for developing **E-Highways** to provide clean and green surface transport with world class facilities for E-Highway users. The newly launched program **"Vision 2030: PM Public Transport Sewa"** is envisaging 600km of electric highways, replacement of 800,000 diesel buses with electric buses including 50,000 school buses. This would require MW-scale power connections in thousands of bus depots across the country which will be major challenge for most DISCOMs particularly in congested cities.

This session will delve into the complexities and necessities of developing robust EV charging infrastructure and its integration into the electric grid. Stakeholders including policymakers, technology providers, and utility companies will examine how the evolving demand from electric vehicles impacts the current power systems and what innovations are required to accommodate future needs. Discussions will highlight advancements in charging technology, strategies for scalable grid integration, and the economic and regulatory environments needed to promote electric mobility on fast track to meet net zero goals.

Discussion Points:

1. **EV Charging Infrastructure – Planning and Business Models**
   - Current state and future needs of EV charging infrastructure, including the types of chargers (**Level 1, 2, DC Fast Chargers, and Bi-Directional Chargers for V2G**), the geographical distribution of charging stations
   - Land allotment at strategic locations for public charging stations (PCS)
   - Sustainable business models for PCS - role of private v/s public investments, consumer services facilities
   - Funding of up-stream grid upgrades
   - Collaboration between Discoms, State Transport Undertakings (STU) and Municipal Authorities for integrated planning of EV charging infrastructure
2. **Technological Innovations - Advancements in battery chemistries and charging technologies**
   - MW-scale charging system (MCS)
   - Wireless charging
   - Battery swapping
   - Charging of drones
   - Ultra-fast charging
   - Electric highways
3. **Grid Impacts and Management**
   - Strategies for strengthening grid infrastructure to handle the increasing demand from EVs and managing peak loads
   - Vehicle Grid Integration – V1G, V2G, VPP
   - Implications of AC-DC conversions on the grid and its mitigation measures
4. **Policy and Regulatory Considerations**
   - Uniform power connection rules across India
   - State-specific EV deployment targets and special EV tariffs - one part tariff for only energy charges
   - Regulatory frameworks to support seamless integration of EV charging stations into existing urban infrastructure

15 NOVEMBER 2024 (FRIDAY)

SESSION – 5: SUSTAINABILITY OF DISCOMs

Time (IST) India 11:30~13:00

Session Background

India operates one of the largest and fastest growing power systems globally. In recent decades, the power sector in the country has undergone significant transformation. Presently, nearly every citizen has access to grid electricity, power shortages have drastically reduced, and renewable energy now constitutes one-third of the total installed capacity. But the power distribution sector faces numerous challenges that impact the entire value chain. These can be categorized into following groups: high network (AT&C) losses, asset optimization and management, technological interventions, managerial issues, financial sustainability; and regulatory, political, and manpower challenges. This session aims to address the critical issues facing DISCOMs in managing their operations efficiently while meeting the increasing demand for electricity. The session will explore various aspects of DISCOM health, including financial solvency, operational efficiency, customer satisfaction, and adoption of new technologies. The session will also highlight the role of regulatory frameworks and government initiatives in supporting DISCOMs' sustainability and efficiency enhancement.

Discussion Points:

1. **Financial Stability -** Challenges faced by DISCOMs and measures to address following issues:
    - Losses owing to high AT&C losses
    - Unsustainable tariff structures and lack of investment for network upgradation
    - Regulatory assets and huge interest burdens
    - Large number of SAUBHAGYA customers
    - Long term PPAs with unfavorable clauses
    - Non-payment of Government subsidies on time
    - Debt recovery challenges with some categories of customers
    - Consumer rights rules and penalties on DISCOMs
    - Impact of open access, banking and green tariff on DISCOMs
2. **Operational Efficiency**- Interventions to enhance the operational efficiency such as:
    - Network automation and monitoring
    - Faster detection and restoration of outages
    - Asset optimization and improved asset management
    - Improved and efficient procurement processes
    - Optimization of spares and reduction in inventory carrying cost
    - Explore new revenue opportunities from existing assets (physical and digital) and workforce
    - Other notable examples from DISCOMs
3. **Human Resources**
    - Workforce optimization
    - Training and capacity building in new technologies and processes
    - Reskilling employees for new tasks – installation of solar panels and EV chargers, O&M of electrical systems of large buildings and campuses, new services such as district cooling systems (DCS), standby power arrangements through BESS etc
    - Gender balance
4. **Regulatory and Policy Environment**
    - Policy and regulatory support for improving financial health, operational efficiency and overall sustainability
5. **Customer Engagement and Service Quality**
    - Strategies and measures to improve customer satisfaction through better service delivery, responsive customer care, and transparent billing systems

15 NOVEMBER 2024 (FRIDAY)

SESSION – 6: ARTIFICIAL INTELLIGENCE APPLICATIONS FOR UTILITIES

Time (IST) India 14:30~16:30

Session Background

The Government of India has committed to the target of Net Zero emissions by 2070. This shall require utilities in power sector to undertake initiatives that promote an accelerated adoption of renewable energy while reducing carbon emissions in existing operations. AI, ML, Blockchain, Metaverse and Robotics technologies are increasingly being adopted in the power sector for a variety of applications. From smart grid management to renewable energy forecasting, and even nuclear power plant safety, AI is fundamentally changing the way the energy industry operates, moving it towards a more efficient, sustainable, and secure future. The session will cover AI's capability to predict demand, optimize supply, and enhance the monitoring and maintenance of the power infrastructure. Metaverse is the new addition that offers the convergence of physical and digital realities, creating immersive virtual environments for use cases such as trainings, remote guidance for repairs and maintenance jobs etc. Together, these technologies are setting the stage for transformative changes in the power sector.

Discussion Points:

1. **Grid Optimization, Demand Forecasting and Asset Management**
   - AI/ML algorithms to improve demand forecasting accuracy and enable more efficient resource management
   - AI's role in enhancing grid operations through real-time data analytics and automated decision-making processes, particularly in the integration of RE and EV
   - Advanced analytics for improved efficiency in commercial operations
2. **AI's Role in Loss Identification**
   - Consumption pattern analysis and profiling
   - Theft identification
3. **Predictive Maintenance**
   - Leveraging AI/ML and advanced analytics to predict equipment failures and schedule proactive maintenance, thereby reducing downtime and operational costs
4. **Web 3.0, Blockchain and Immersive Technologies**
   - Applications of Web 3.0, Blockchain, AR/VR/XR and Metaverse
5. **Customer Service Enhancements**
   - Highlighting AI applications in customer service, such as chatbots and voice bots for customer interactions and personalized service offerings
6. **Challenges and Ethical Considerations**
   - Challenges related to AI adoption, including data security, privacy concerns, and the ethical implications of automated decision-making in utility services
7. **Workforce Transformation**
   - Impact of AI on the utility workforce, including the need for new skills and the potential for job transformation

November 15, 2024 (FRIDAY)
16:30 ~ 18:00

Valedictory Session

CHIEF GUEST: HON'BLE MINISTER/MINISTER OF STATE - POWER, NEW & RENEWABLE ENERGY, GOVERNMENT OF INDIA*

18:30 Onwards Lucknow Ki Shyam
Free Evening to Explore the Culture, Monuments and Flavours of Lucknow

16 November 2024 (Saturday)
Optional Tour: 08:00~18:00
Visit to Shri Ram Mandir, Ayodhya