GMS ETTF: Energy Efficiency Workstream

3rd GMS Energy Transition Task Force Meeting
4–7 June 2024
Mandaluyong City, Philippines

Energy Efficiency workstreams, 2nd ETTF meeting, 2023: key discussion points

- **GMS countries discussed the proposed capacity building programs as below**.
  - Trainings/Support energy efficiency in both supply and demand side Power sector
  - Trainings on developing Energy Service Performance Contract Market Development
  - Work towards supporting implementation of Energy Management Systems (EnMS)
  - Supporting Financing for Energy Efficiency in GMS and ASEAN

- **In particular, the following areas were highlighted where alignments are identified**
  - the need for EE in supply (power) sector such as motors and meters and DSM (Laos, Thailand, Myanmar)
  - top-down policy and regulations for EE enforcement especially in building and industry, and
  - financing mechanism.

Focus for 2024 and the workplan for EE workstream

Focus on Energy Efficiency in Power sector: DSM

- The GMS ETTF is evolved from RPTCC rooted in power sector
- Regular participants and audiences of the program are utilities
- DSM can effectively manage surge in energy demand (due to rapid economic development) by mitigating strain on existing infrastructure and promoting sustainable energy practices.
- DSM can facilitate integration of RE by optimizing consumption patterns to align with RE generation peaks and complement power trade amongst GMS countries.
- For utilities it is a growing area of concern as power demand is rising at a fast pace, DSM provides an opportunity for load balancing, reduced infrastructure costs (avoid urgency of power network expansion), integration of RE, etc.
- Enabling consumers to make informed decisions about their electricity consumption.
- Facilitate greater integration of energy systems, promote cross-border energy trading, and foster cooperation in addressing common energy challenges among GMS countries.

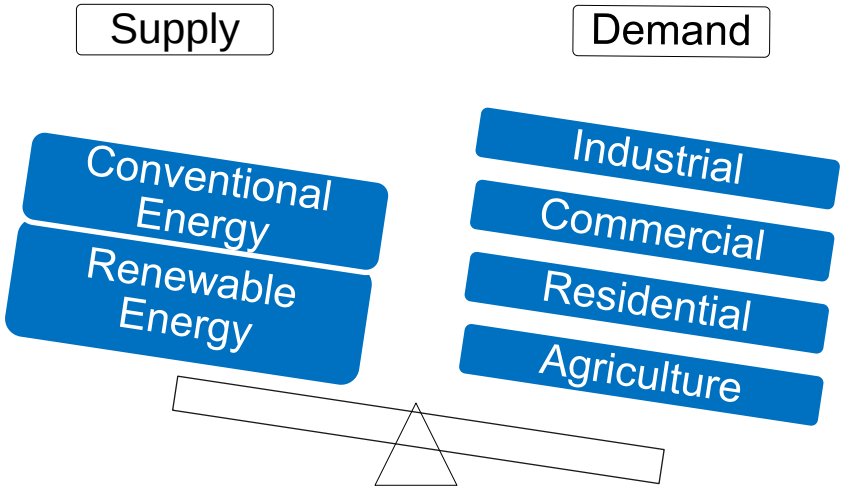
Conventional Utility Services

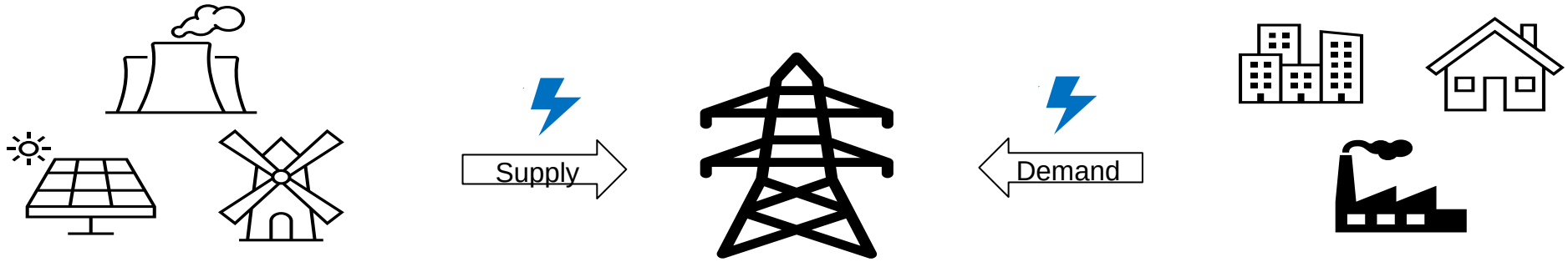
Meet the energy demand with efficiency and reliability

Efficiency - Low energy cost, Low operation cost and minimum losses

Reliability - Energy availability

Balance demand and supply on grid





- The demand for electricity is increasing year-on-year basis therefore establishing a balance between demand and supply is crucial.
- Varying consumption pattern, increase in renewable energy integration and changing seasonal patterns makes it is difficult to balance the demand and supply.

Utility Services and Changing Trends

Challenges

Limited infrastructure and Resource Scarcity

Faster Deployment of renewable energy

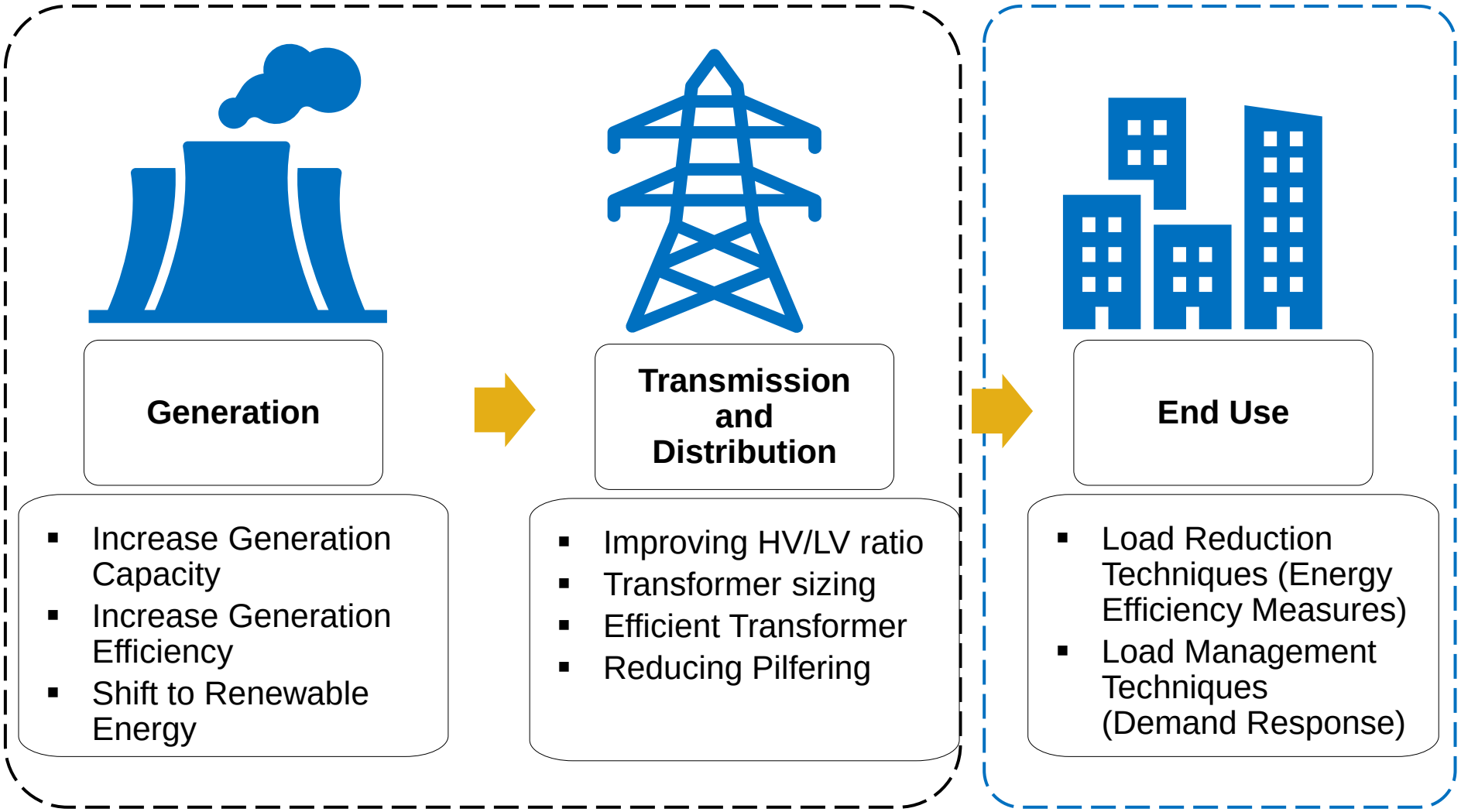
Resilience and adaptation to climate change

Several initiatives are taken by government stakeholders and utility owner in various countries to manage the electricity balance.

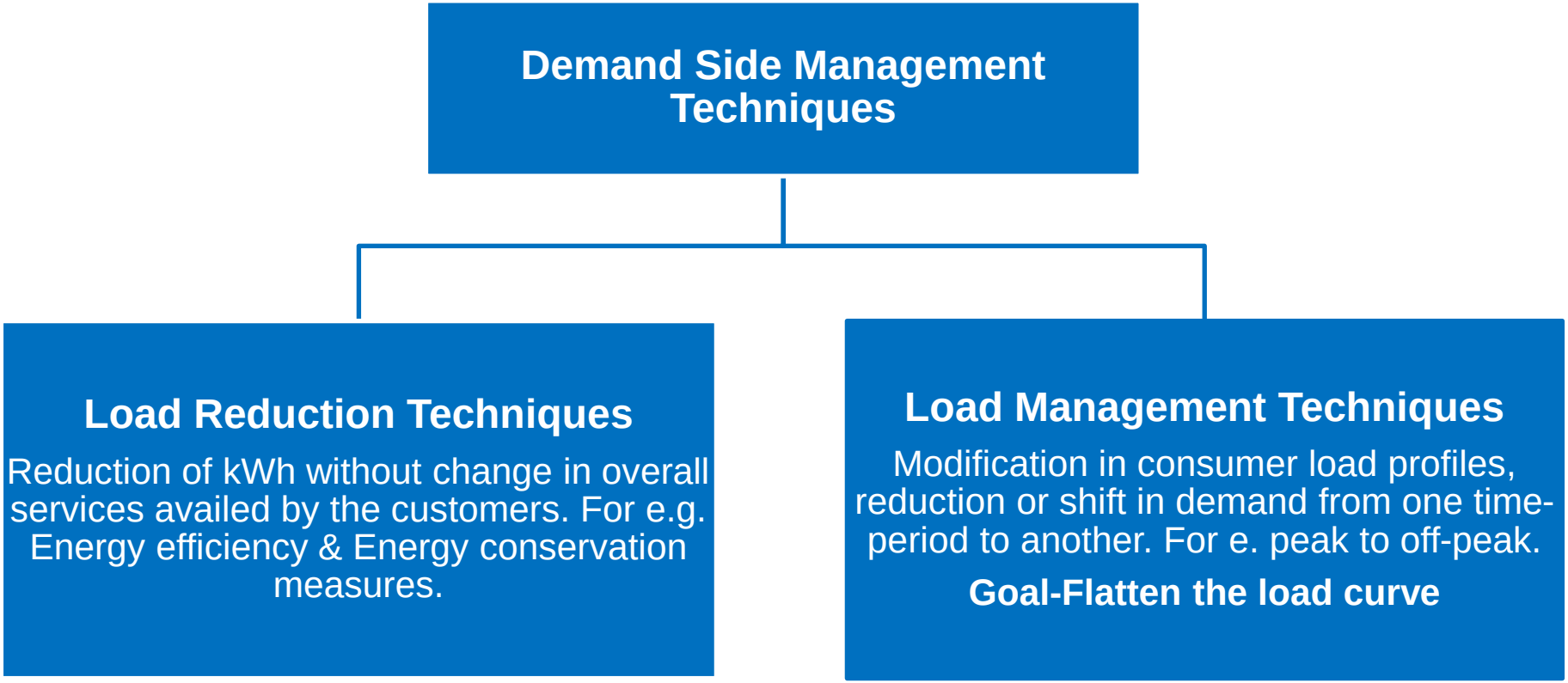
Utility Services

Conventional Services	State-of the art Services
▪ Generation, transmission, distribution of electricity. ▪ Demand side management ▪ Customer support services for billing & account management. ▪ Load management programs	▪ Smart Metering & Data Management ▪ Distributed generation (Solar, Fuel Cells, wind) ▪ Micro-grids ▪ Smart Grids & Smart Thermostats ▪ Inclusive utility investment programs ▪ On Bill Financing ▪ Demand Response Programs

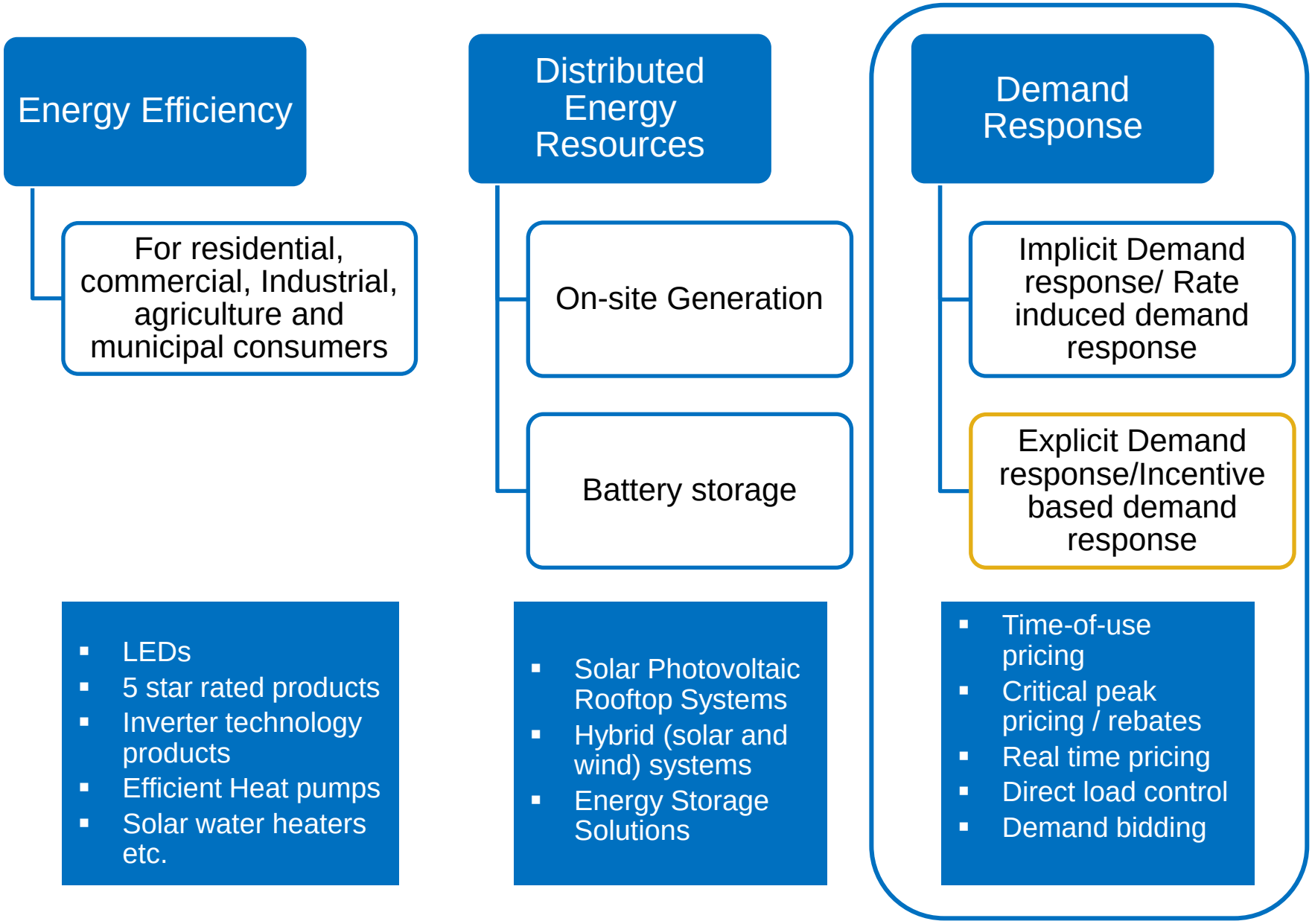
Supply Side Management vs Demand Side Management



Demand Side Management (DSM)



Types of Demand Side Management



Role of DR in Energy Transition

Consumer Empowerment

- Demand Response gives the consumers direct opportunity to be a part of grid operations.

Peak Load Management

- By peak load management potential need of additional plants and infrastructure can be avoided

Enhanced Energy Efficiency

- Real time information on the *demand* and supply side helps make informed decisions on usage of energy efficiency

Renewable Energy

- Grid operators can balance the fluctuations and can manage the supply side with integration of renewable energy

DR, Renewable Energy Integration and Digitalization

Aligning Consumption with Renewable Energy Generation:

- Benefits: Minimizing reliance on conventional backup sources reducing carbon footprint.
- Example:
  - ✓ Shifting consumption to coincide with high solar and wind energy availability

Localized Balancing with Decentralized Renewable Sources:

ions

- Benefits: Facilitating balancing at a regional level, reduced transmission losses, increased grid stability
- Example: Coordinating consumption with distributed solar and wind installations.

Enhancing Responsiveness to Real-Time Grid Conditions

- Benefits: Precise monitoring and control
- Example: Integration of smart meters, advanced communication systems, and real-time data analytics.

Virtual Power Plant & Vehicle to Grid

Virtual Power Plant

- Virtual Power Plant is a virtual aggregation of decentralized, small scale power generating units, flexible power consumers that are integrated and managed through advance software systems
- Benefits of VPP – Enhanced grid stability due to distributed energy resources, economic efficiency attributable to optimized use of distributed resources, integration of RE sources enabling transition to a more sustainable energy system
- VPPs gather data from various distributed energy resources (DERs), combining their capacities to create a virtual, larger power plant. Advanced algorithms and Machine learning optimize combined output and consumption of DERs to match the grid's demand in real-time.

Vehicle-to-Grid (V2G)

- Innovative Energy Systems that allow EVs to interact with the electricity grid in a bi-directional manner. This technology leverages the battery capacity of EVs as a distributed energy resource, providing various benefits to the grid, EV owners, and the overall energy system
- Participating in demand response programs through V2G-enabled VPPs can generate additional revenue streams for EV owners and operators in GMS countries

Training and workplan workshop on Demand Side Management for GMS

Training Objectives

Collaborators – ADB & Development Partners

Demand Side Management Training Objectives

- Addressing business case for DSM as one of the key drivers for Energy transition
- Raising awareness and deepen understanding on DSM – Learnings from the region/global
- Building consensus and facilitate discussions on DSM ideas for GMS countries
- Developing actionable workplan for GMS countries for next two years

Training Contents

SESSION 1 - Introduction to Demand Side Management (Virtual Session)

- Presentations on Introduction to Demand Side Management concepts including Demand Response technology enablers (Utility Service & DSM, DR and its benefits, Role of DR in Energy Transition, Structures of Electricity Markets and role of open market in Demand Response)
- Q&A
- Distribution of Pre-Read materials for Session-2

Possible Dates : 2nd week of July, 2024

SESSION 2 - Introduction to Demand Side Management (Virtual Session)

- Presentations on DSM Case Studies/Use cases
- Discussion with participants on the case studies
- Presentation by GMS representatives on past and ongoing DSM programs - Challenges and Opportunities
- Case Study homework (To come up with actionable ideas around DSM program initiatives needed specific to GMS countries, its roadmap and support needed from ADB

Possible Dates : 2nd week of August, 2024

Target Participants : Representative from Utilities, Regulators, Energy agencies

Training Plan: Virtual Sessions 1 and 2

Virtual Workshop Organization/Training Activities (SESSION 1&2)

- GMS country representatives to nominate stakeholders for DSM training
- Invitation email with the training concept note to be sent 15-20 days before the Virtual session
- Generation of participant registration Link (Google Forms/Microsoft Forms)
- In Person invitation to govt. stakeholders ((Utility firms in GMS & EE Regulators)
- Online Meeting Link to virtual participants
- Delivery of Virtual Training presentation

Session 3: In-Person Workshop (1/2)

Objectives & Outcomes

- Understanding the interest areas of GMS countries w.r.t DSM programs
- Co-developing ideas around DSM activities in GMS Countries
- Develop implementable workplan for two years
  - ✓ Key activities to be undertaken (Feasibility studies, Trainings/Study tours, Developing invest programs)
  - ✓ Role of different stakeholders
  - ✓ Support from ADB for DSM program implementation in GMS Countries

Possible Dates : 4th week of September 2024/Q4 2024

Target Audience

- Utilities & Energy Regulators from GMS countries

Session 3: In-Person Workshop (2/2)

Workshop Coverage

- Breakout Working Session 3.1
  - ✓ Presentations by GMS representatives on their ideas on DSM / DR initiatives to highlight the activities for ADB support in future (**continued Session-2 Case study homework**)

- Breakout Working Session 3.2
  - ✓ Discussion on GMS roadmap for DSM / DR programs
    - Countries/ADB to lay a plan for the future activities, support to GMS countries for DSM program

- Q&A Session and vote of thanks