Host Utilities

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BSES Rajdhani Power Limited

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India Smart Grid Forum

India SMART UTILITY Week 2025

Supporting Ministries

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MINISTRY OF POWER
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CENTRAL ELECTRICITY AUTHORITY

Session : JOINT INDONESIA-INDIA SMART ENERGY WORKSHOP

RE Digitalization & E-Mobility

Presented By

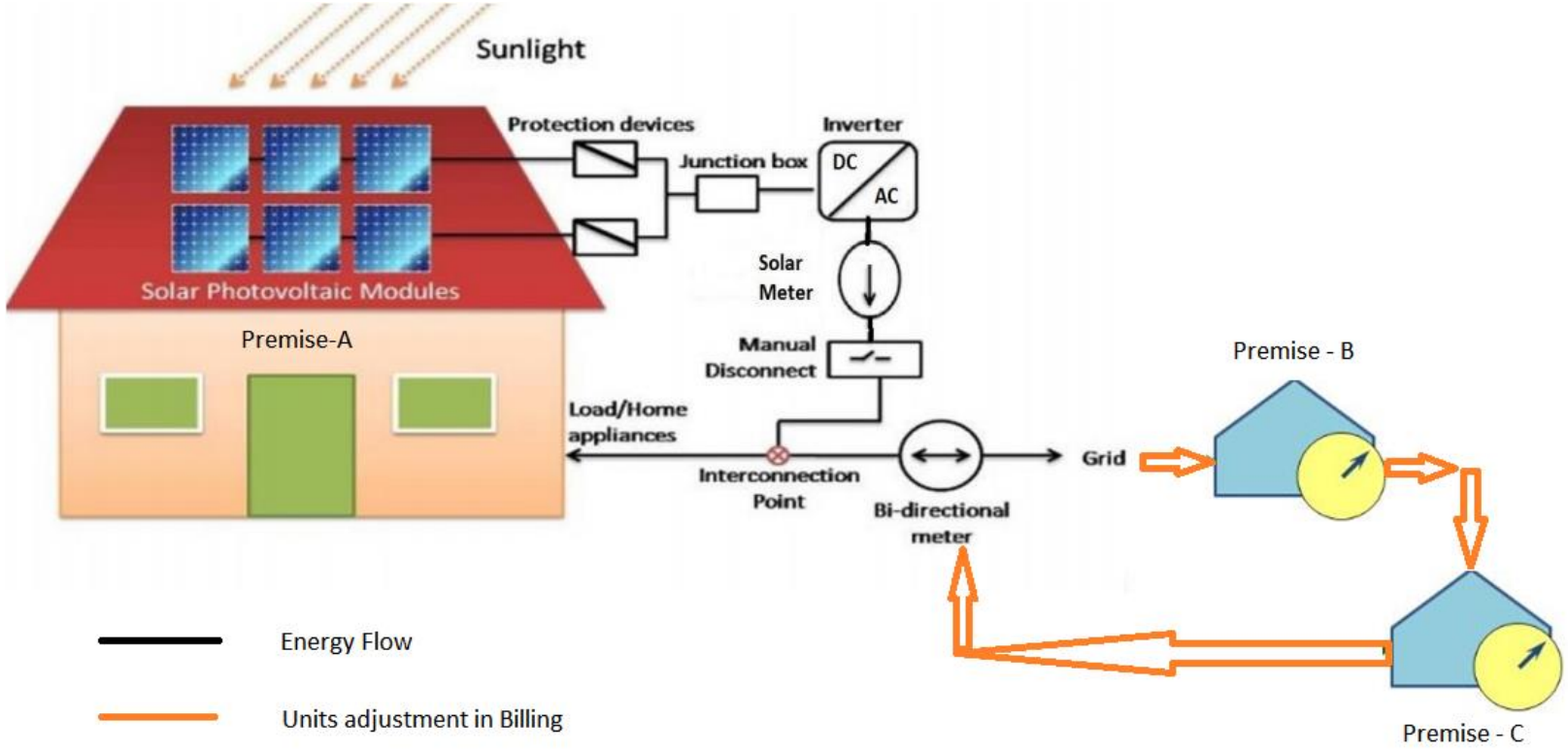
Pramod Kumar Mishra, Head Distribution Planning, BSES Rajdhani Power Ltd.

RE and DER

- India is breaking all records on RE addition and poised to achieve the set target
- Increasing RE / DER penetration – Discoms are now looking it as an opportunity so solve network congestion during peak
- NM, GNM, VNM are paving way for faster adoption
- Reducing LF - Peakier peaks
- Customised DERs are getting economical, gives flexibility for modular upgradation

Challenges - RE

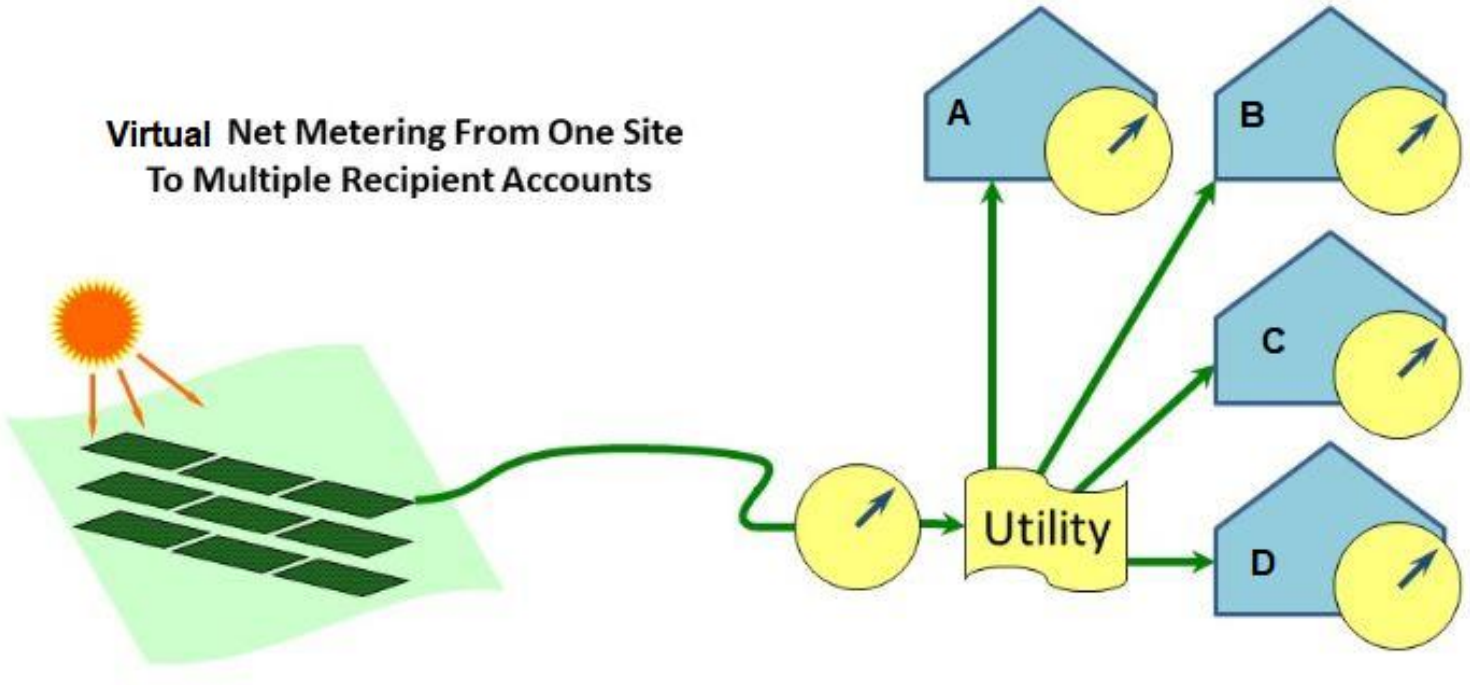
Group Net-Metering (GNM)



✓ **To encourage solar plants on rooftops of buildings that cannot consume all of the energy generated locally.**

Challenges - RE

Virtual Net-Metering (GNM)



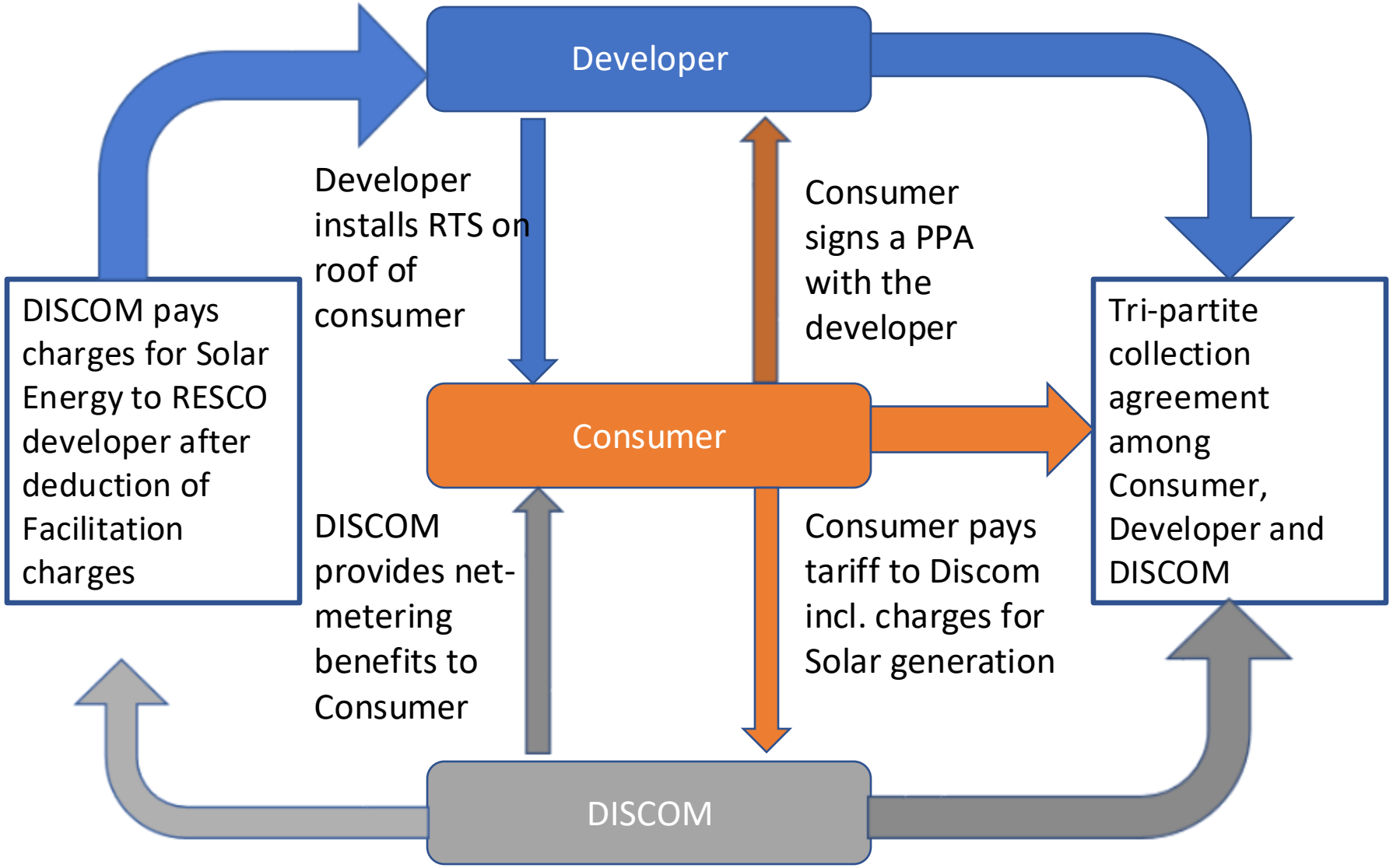
✓ an arrangement to give access to the Solar Net Metering facility for consumers who do not have a suitable roof for installing a solar system.
✓consumers can be beneficial owners of a part of a collectively owned solar system.

Challenges - RE

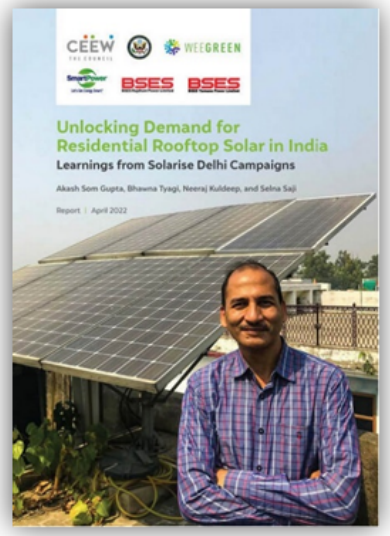
Evacuation challenge

- MW Scale Solar plants
  - High Voltage issue with large feeder length
  - High Capex
- HVDS area
  - Augmentation of existing system

Utility Anchored RESCO model



Solar Rooftop – Prosumer Enablement



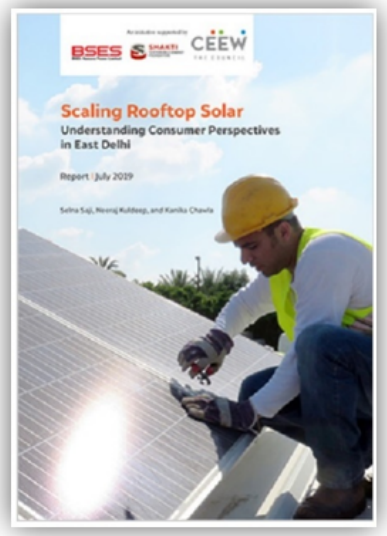
BSES Rooftop Solar Installation

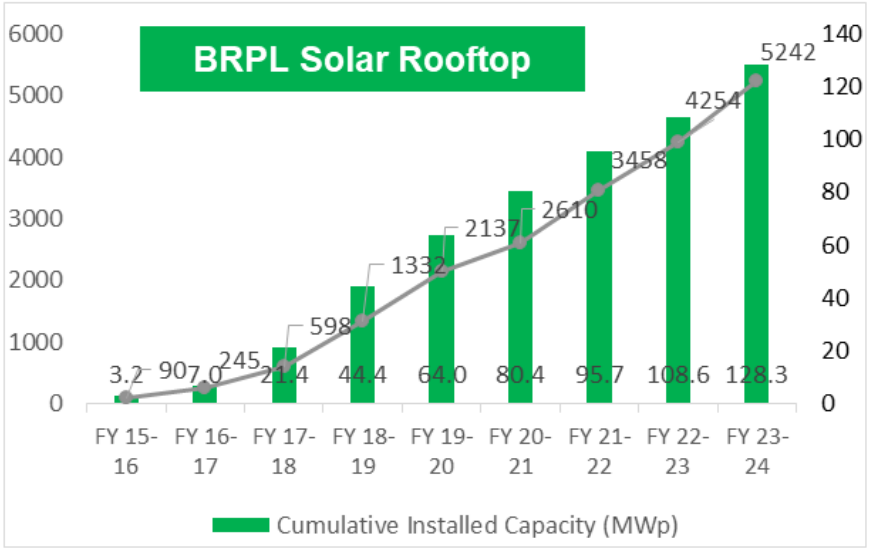
Installed Capacity

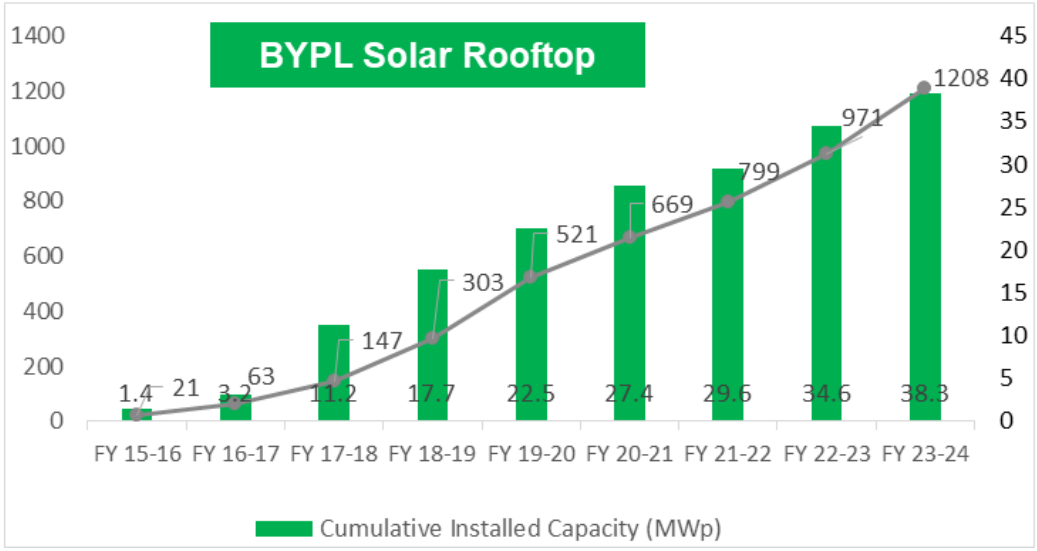
BSES ~ 166 MW (BRPL ~128 MW, BYPL ~38 MW)

No. of Solar Rooftop Connections

BSES – 6,450 (BRPL – 5,242, BYPL – 1,208)



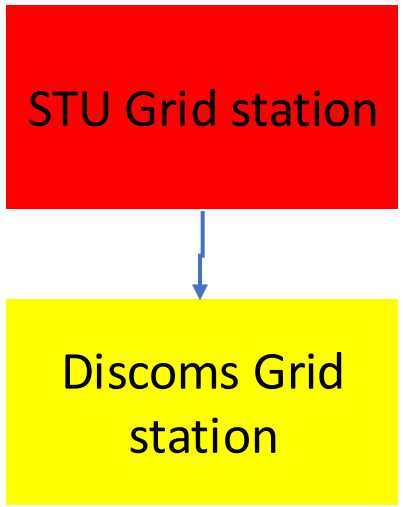


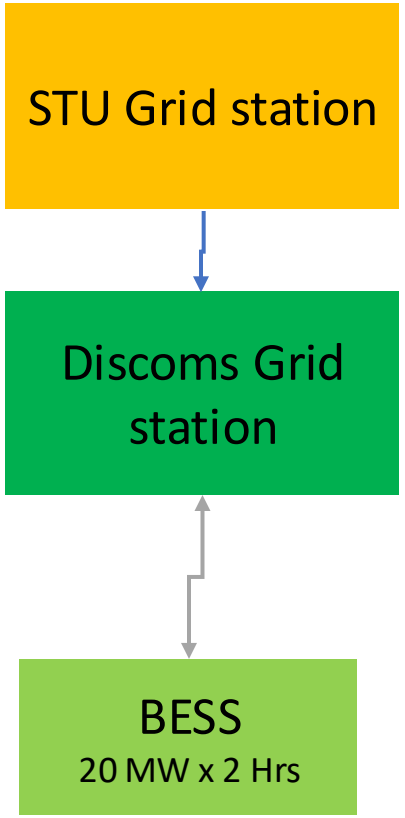


MW Scale BESS

Projected peak load during peak Summer 2025

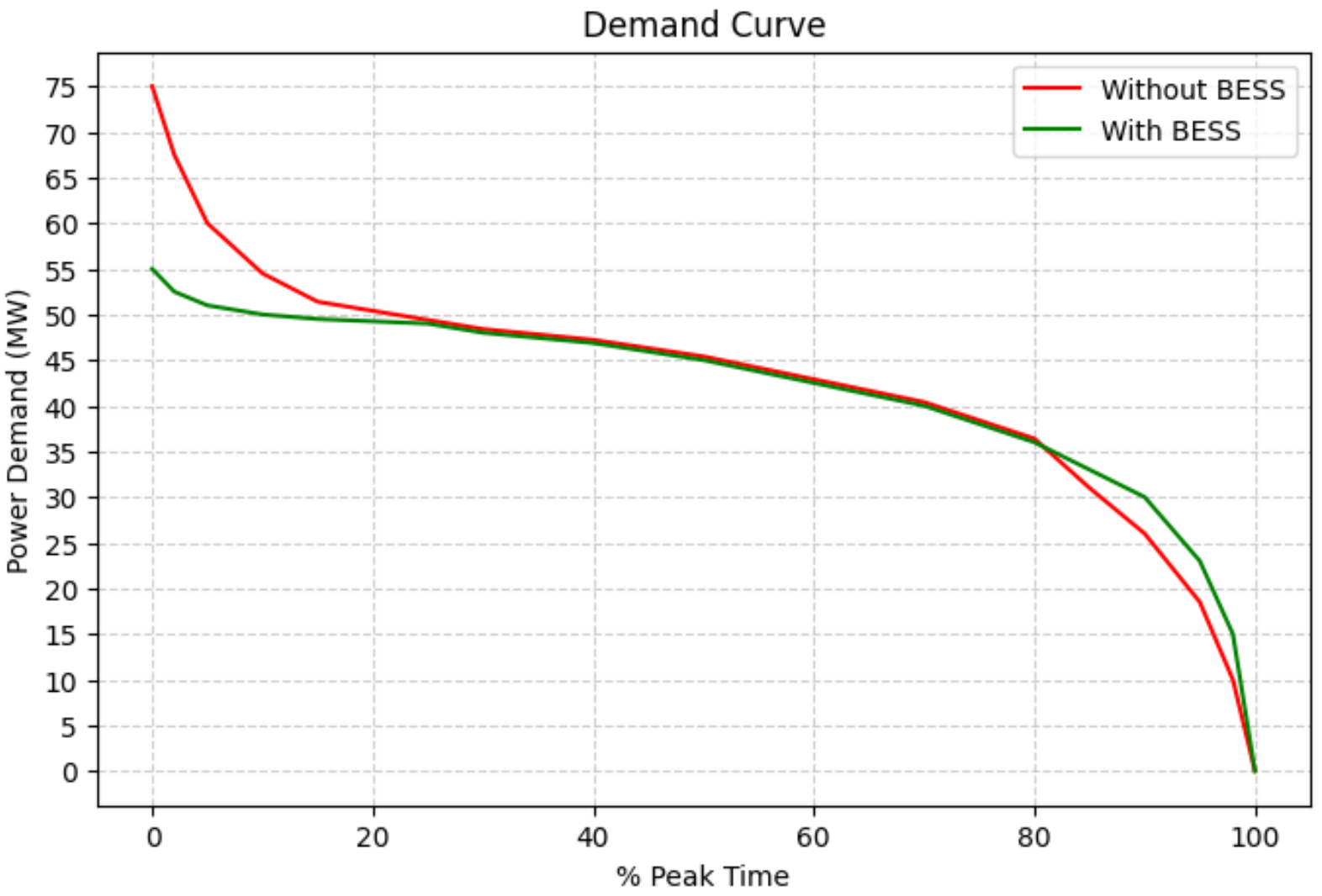
- Without BESS
  - STU Grid : 97%
  - Discom Grid: 64%
- With BESS
  - STU Grid : 89%
  - Discom Grid: 48%





- Under commissioning – March 2025
- Model - Capacity utilisation – per MW / per year

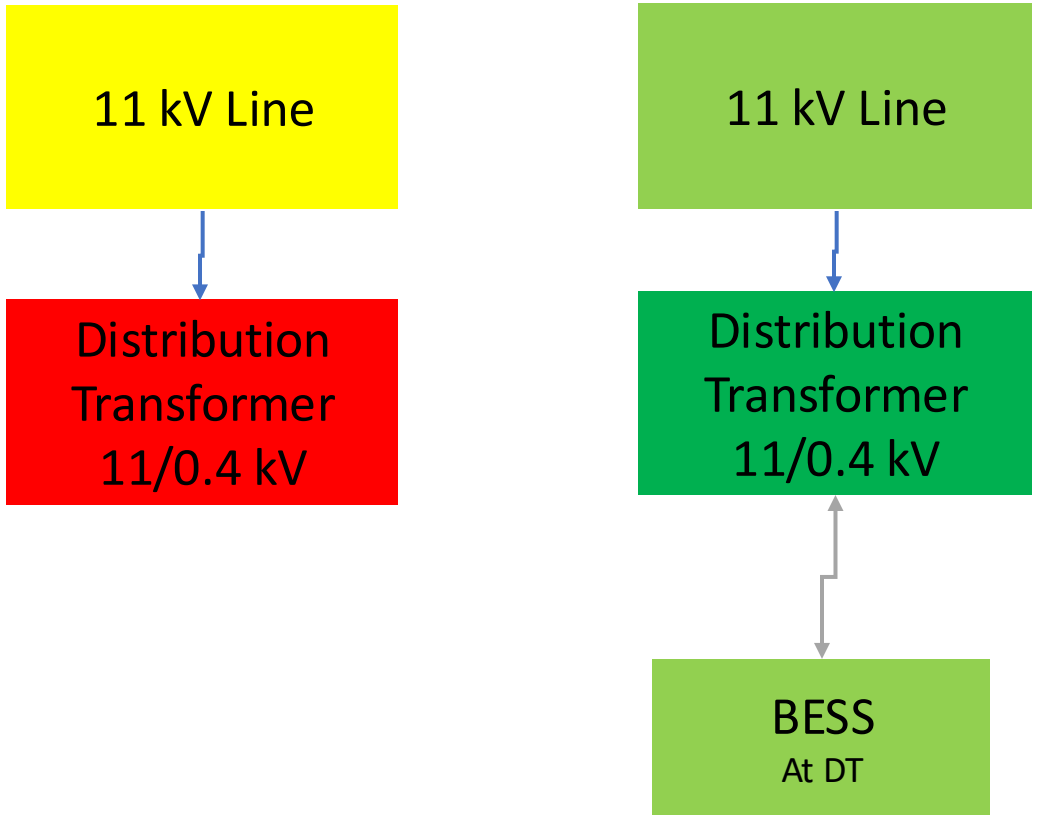
Pre and Post BESS of 20 MW x 2 hrs



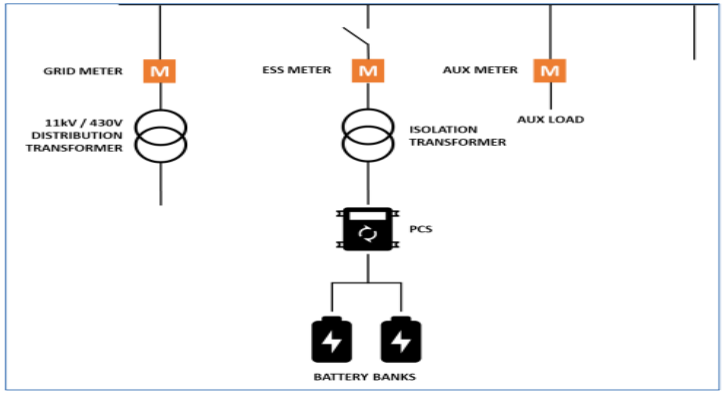
kW Scale BESS

Scalable BESS at DT station

- Provides relief to DT
- Defers 11 kV line addition



kW Scale BESS



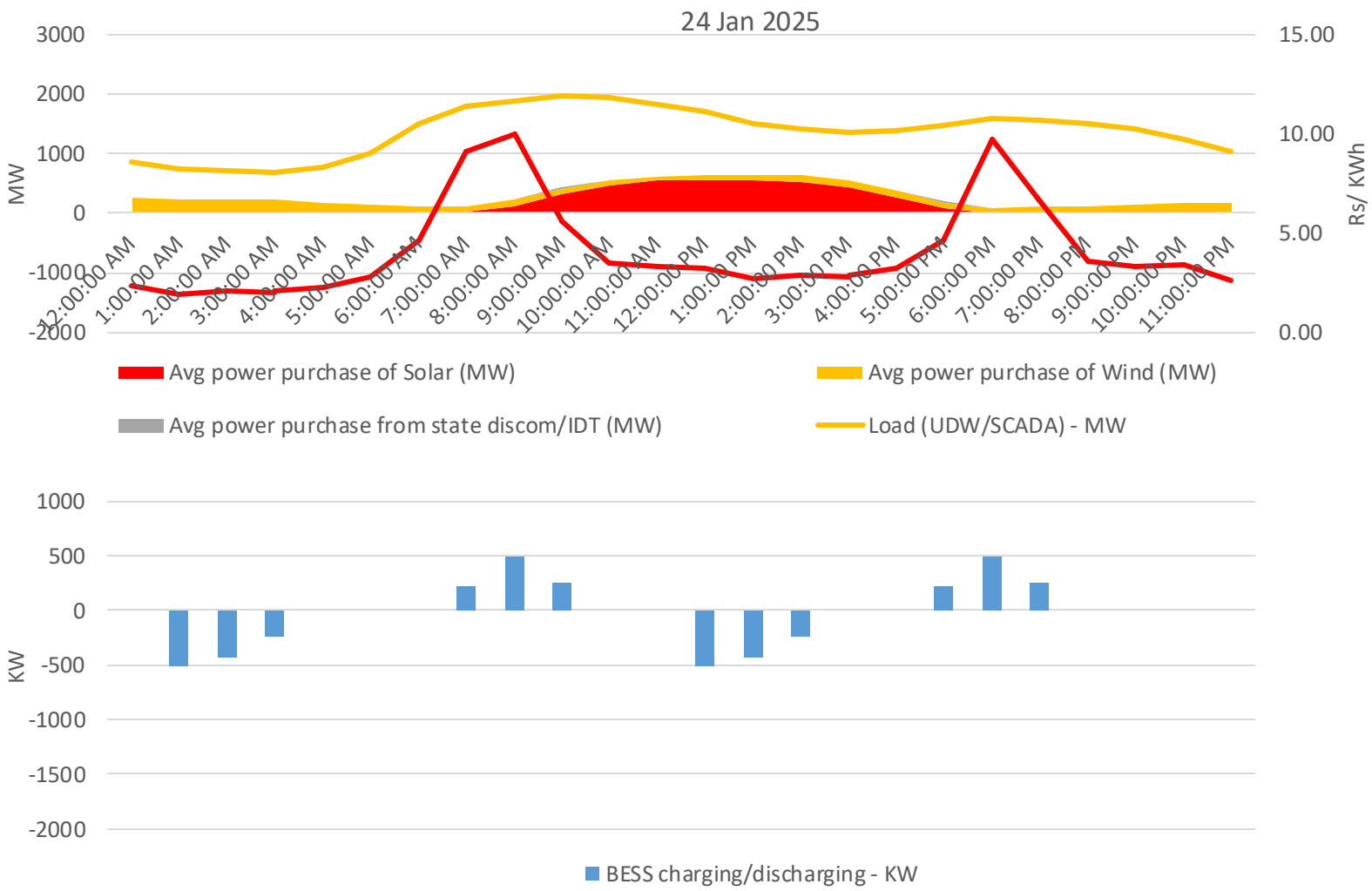
Size	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
Capacity Commitment (kWh)	160	150	103	110	74	77
Installed Capacity (kWh)	245	230	172	172	115	115
PCS Rating (kVA)	160	100	75	100	50	50

Images: Installed BESS sites

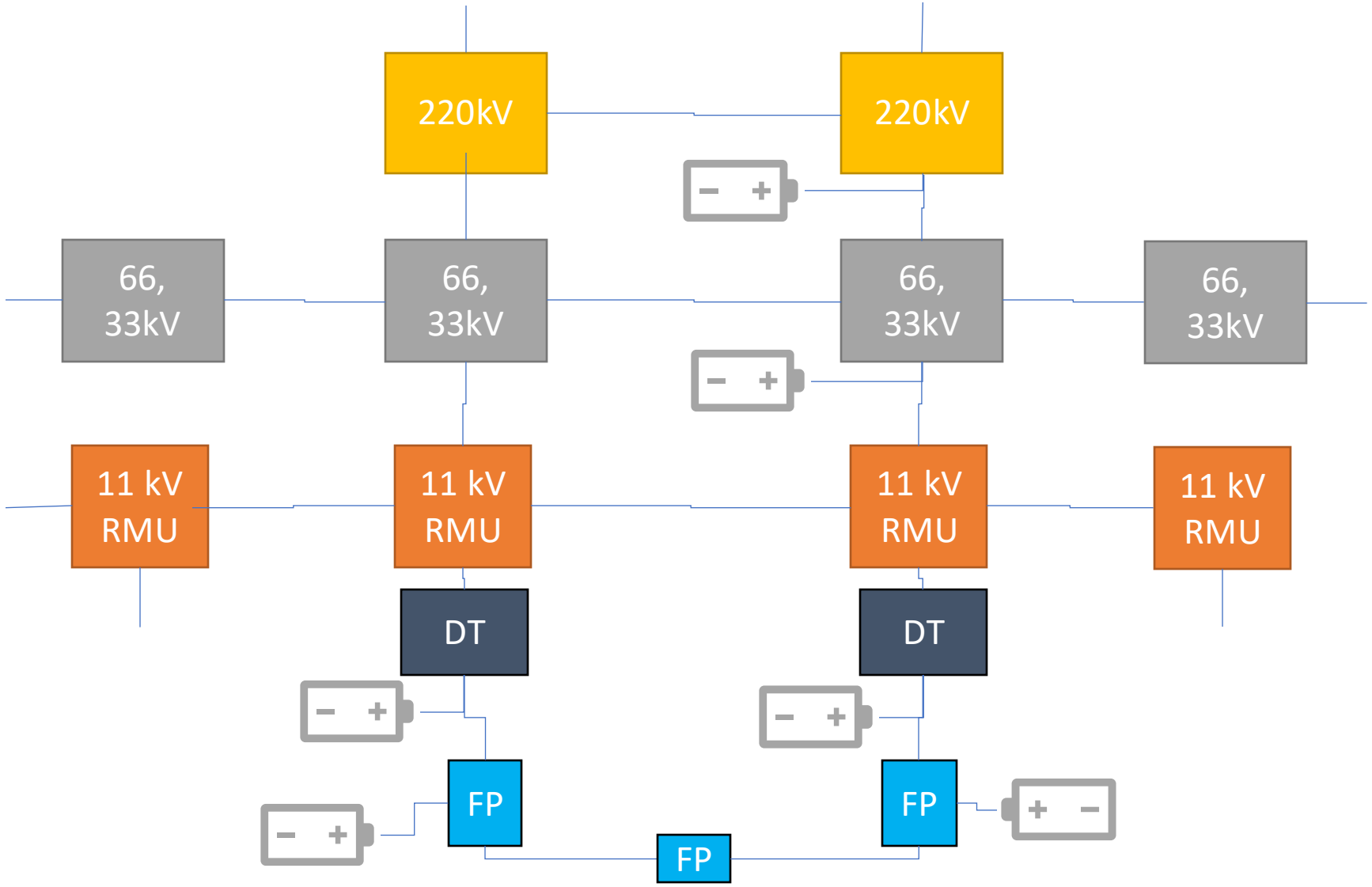
kW Scale BESS

BESS charging during off peak and discharging during peak

- Resolution of Capacity constraint
- Capex deferral
- Avoidance of costly power purchase



BESS / DER at Lowest is Best



EV Adoption Policies - India and Indonesia

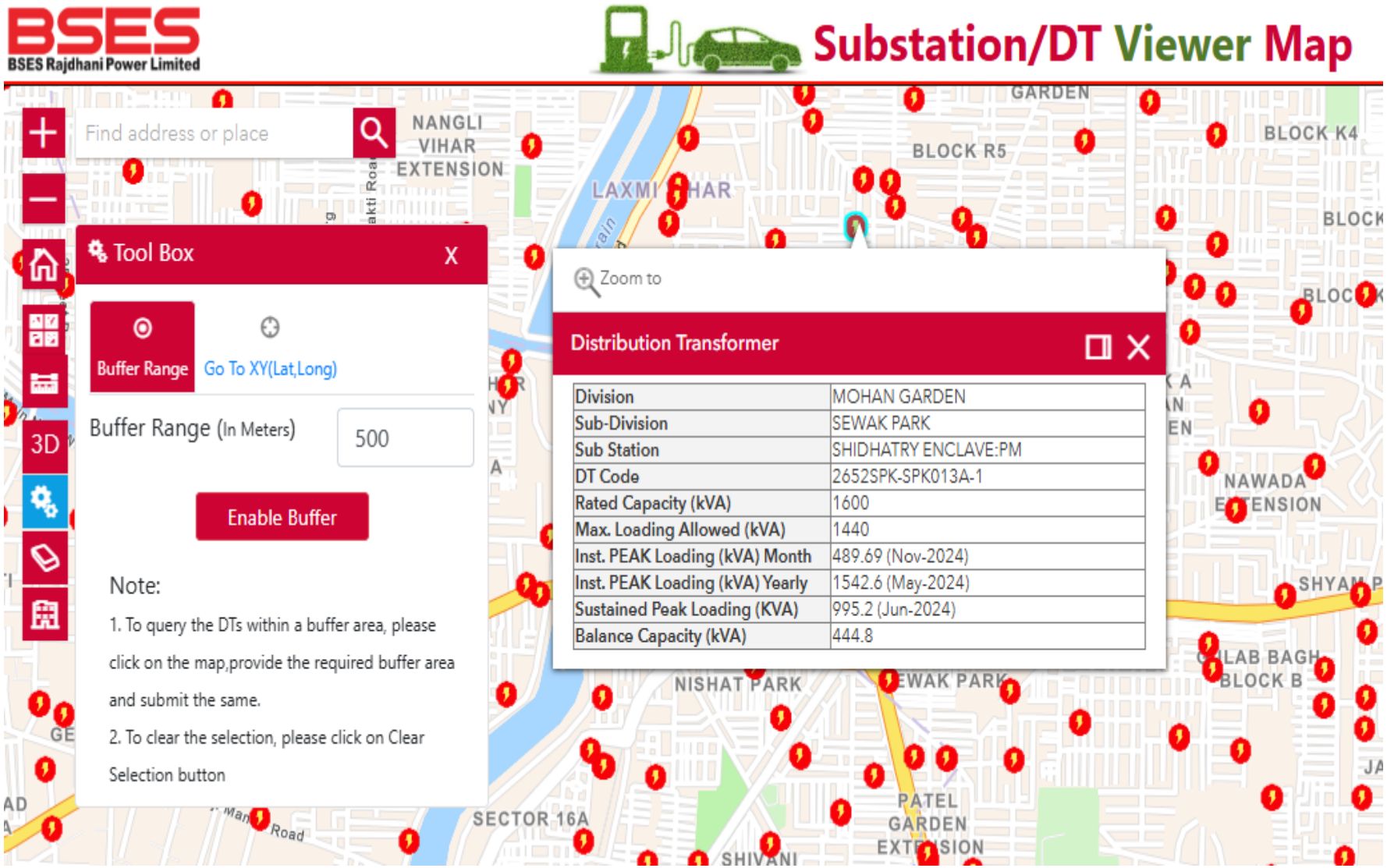
Policy Aspect	India	Indonesia
Import Incentives	Import of EVs at a reduced rate	Waives import duties until 2025
Tax Incentives	Lower GST (5%) on EVs, state-level subsidies, and tax exemptions for manufacturers.	No luxury tax on EVs in 2024, reduced VAT on EV sales, and local incentives.
Government Adoption	Incentives for private and public sector adoption.	Govt. Instruction mandates EV adoption.
Local Manufacturing Push	"Make in India" policy and Production Linked Incentive (PLI) scheme to boost local EV and battery production.	Incentives tied to local EV and battery production
Charging Infrastructure	Capped investment policy for tariff relief in charging stations to balance infrastructure growth.	High focus on Charging infrastructure.
Production and Adoption Targets	30% of vehicles to be electric by 2030.	2 million EV cars & 13 million electric motorcycles by 2030.
Primary Market Focus	Two- & three-wheelers dominate due to affordability and urban demand.	Four-wheelers & public transport prioritized for electrification.

EV Adoption in India

- Metros are embracing EV rapidly, Speedy and Cost effective electrification of EV stations are key for MW size of charging stations
- 46% of EV consumption (446 GWh) recorded in Delhi
- Delhi is leading the race and pushing hard to convert fleets into E-Bus in next 2-3 years
- Over 100 MW E-Bus load already operational and 500 MW E-Bus load in next 2 years

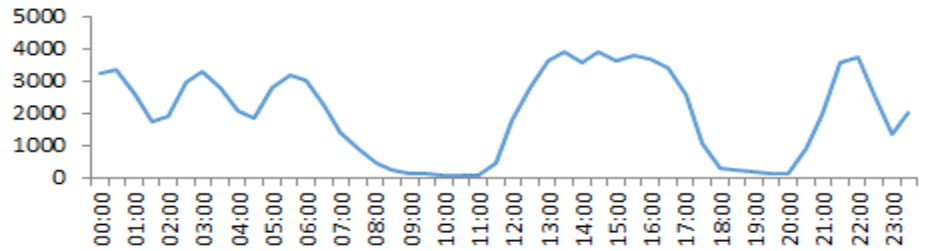
EV Charging and Battery Swapping Stations

Ease for finding feasibility for charging stations

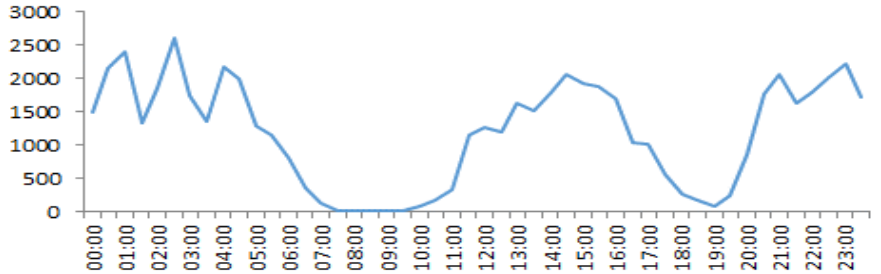


Challenges - EV

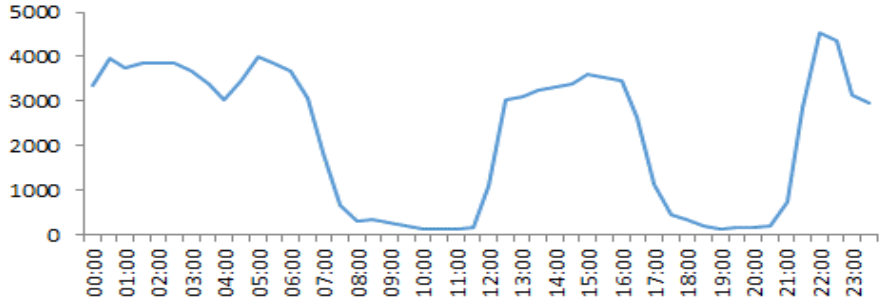
- **Mobile load**
- **Less visibility of load**
- **EV Load coincides with system peak**
- **Promotional tariff – Gap in ACOS and ABR**



Depot 1



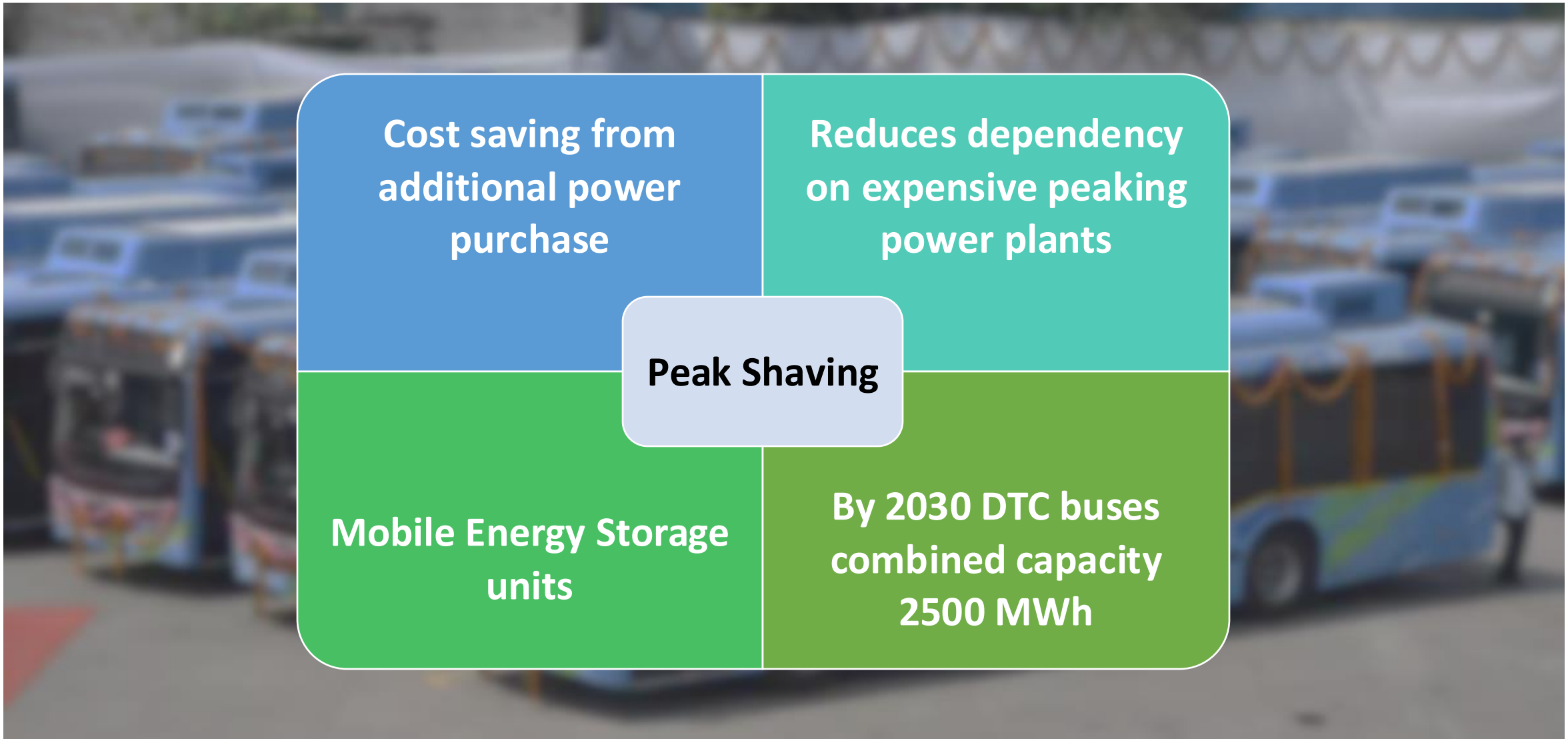
Depot 2



Depot 3

V2G Pilot

V2G can become possible solution to EV challenge



EV Electrification approach – Case study

Transport Corporation Depot, South Delhi – 3 locations with load > 4MVA, Total: 25 MVA

Normal electrification approach

- Install 66 kV Switching station at each location
  - 3 x Cost about Rs 15 Crs
  - 3 x Space 300 sqm
- Additional cost of 66/11 kV Grid
  - Cost: 3 x Rs 45 Crs
  - Space: 3 x 1500 sqm

What BRPL has conceived

- Install 66/11 kV Grid station Central location
- Extended 11 kV Feeder to other two locations
- Supply from other BRPL Grids at 11 kV to provide enhanced reliability
- Saving of about Rs 95 Crs, Space of about 3400 sqm

To sum up …

- RE and EV have come up as challenge for utility but it can be converted as opportunity
- Utility – Corporation – Operator to work in sync for ensuring Optimal cost of electrification and maintenance
- Using BESS as tool for better thermal capacity utilisation

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THANK YOU

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