MAHATRANSCO
Maharashtra State Electricity Transmission Co. Ltd.

Implementation of DSM in Maharashtra

MSLDC Role and Road map

State Load Despatch Centre, Airoli
12.02.2019

Agenda

1) Maharashtra Power system Overview
2) Identification state pool participants
3) Role of MSLDC
4) Task to be performed by MSLDC
5) Tentative Time Line

Maharashtra Power System Operations at a glance

- Installed Generating Stations – Capacity in MW (by fuel type) as on 01st Jan 2019

	Thermal	Gas	Hydro	Wind	Solar	Biomass	Bagasse	Small Hydro	Total
Maharashtra	21061	1240	2941	4786	1378	215	2284	367	34272
Central sector	5323	1903	445	-	-	-	-	-	7671
Total	26384	3143	3386	4786	1378	215	2284	367	41943

- For FY 2017-18 : -
- Peak Demand – 22994 MW
- Energy Met – 154214.7 Mus
- For FY 2018-19 (Up to Jan'19) : -
- Peak Demand – 24962 MW (22/10/2018)
- Energy Met – 136817 Mus

- Transmission Capacity
- Total No. of Substations:- 708 ;
- Total Length of EHV lines : - 50233 km;
- Total MVA Capacity : -140276 MVA

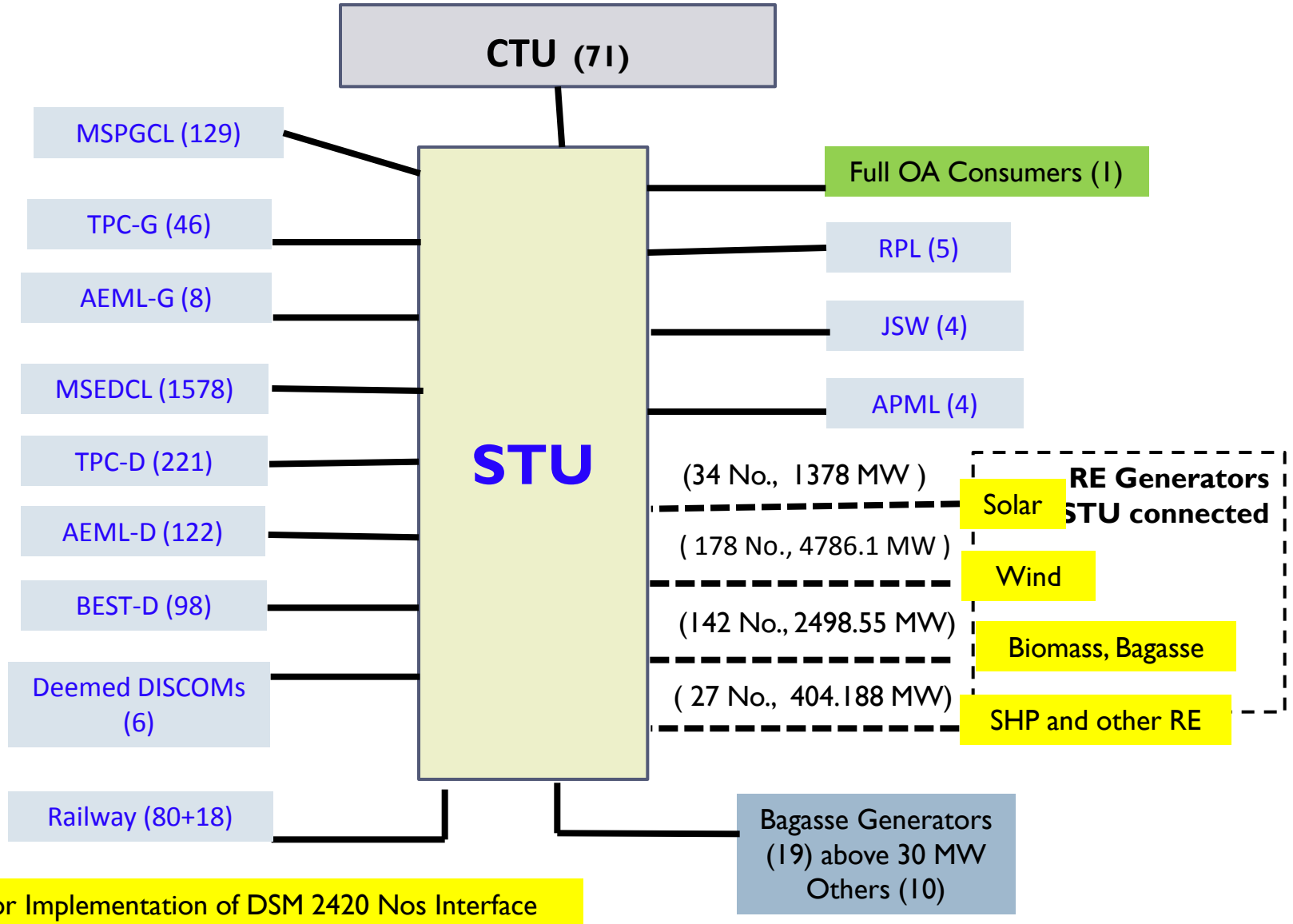
Maharashtra Power System Operations at a glance

- Interface points
  - MSETCL :- G<>T (670) and T<>D (1578)
  - TPC :- G<>T (46) and T<>D (221)
  - AEML :- G<>T (8) and T<>D (122)
  - BEST :- G<>T (0) and T<>D (98)
  - Railway :- T<> D (98)
  - Deemed Discom :- T<>D (7)
  - CTU <>STU:-71
- Metering Infrastructure:-

Total No. Interface Location
2919

  - The AMR data for above meters will be required for implementation of DSM.
  - DPR for all T<>D and G<>T AMR Interface location system is submitted to Hon'ble Commission.

Maharashtra Power System Operations at a glance



*For Implementation of DSM 2420 Nos Interface location ABT meter with AMR are required

Role of MSLDC as System Operator

MSLDC shall have to play two fold role for successful implementation of DSM

- MSLDC shall continue to play role of 'System Operator' under DSM Framework.
- MSLDC shall have to play role of 'Market Operator' as representative of MSPC.

As system operator SLDC needs to prepare

1) Load generation balance for Day ahead scheduling.
2) Load generation balance during real time operation depending on drawl at state periphery
3) State drawl schedule in co-ordination beneficiary.
4) Managing transmission congestion and curtailment priorities if required.
5) Managing voltage profile and reactive power management.
6) Development/Modification of Scheduling and Despatch Code
7) Development/Modification Monitoring and Standard Operating Procedures (SOP).

Role of MSLDC as Market Operator

As Market Operator MSLDC needs to prepare

1) Formulation of Operating Procedures for Deviation Accounting
2) Formulation of Operating Procedures State Energy Accounting procedures.
3) Detail procedure for co-ordination between SLDC and State Pool Participants
1) Co-ordination with WRLDC for ISGS and all inter-state transactions, Regional Deviation accounting.
4) Acquisition of Metering data from all G<>T & T<>D interface points
5) Verifying, Processing & storing the collected data
6) Obtaining required data from other sources that is required to run DSM like:
7) Detail Weekly UI charges bill and CGS scheduled generation
8) Bilateral inter-state purchase/sales.
9) Collective Transaction details and Area Clearing Price for Day ahead Market operations
10) Variable Costs for MoD stack Operation
11) Accuracy check and completeness of data before the DSM in run
12) Issue Deviation Settlement Bills on Weekly basis and Energy Account on monthly basis.
13) Co-ordination and support for MSPC

Stages in formulation procedures and tentative time lines

1. **Modification to Scheduling and Despatch Procedures and inputs for Amendment to State Grid Code**

   Drafting > Stakeholder Consultation > Considerations of stakeholders Comments/ suggestions > Submission to MERC > Approval of Hon'ble MERC > Finalisation

   Time line > Three months from date of notification of Regulation

2. **Formulation of Operating Procedure for Deviation Accounting**

   Drafting > Stakeholder Consultation > Considerations of stakeholders Comments/ suggestions > Submission to MERC > Approval of Hon'ble MERC > Finalisation

   Time Line > From 2nd months to 5th month from date of notification of regulation.

3. **IT Software for State Deviation Accounting and Energy Accounting**

   - Preparation of Business Requirement Definition (BRD) document in accordance with approved procedure > consultation > finalisation
   - Approval of BoD and submission of DPR to MERC
   - Selection of software vendor > tender process → award finalisation and contract with AMC support
   - Development of Software Requirement Specification (SRS)
   - Scheduling / Meter Data Processing / Energy Accounting / Open Access / Deviation Accounting / Billing & Settlement
   - Time Line > From 3rd month to 11th month of date of notification of Regulation

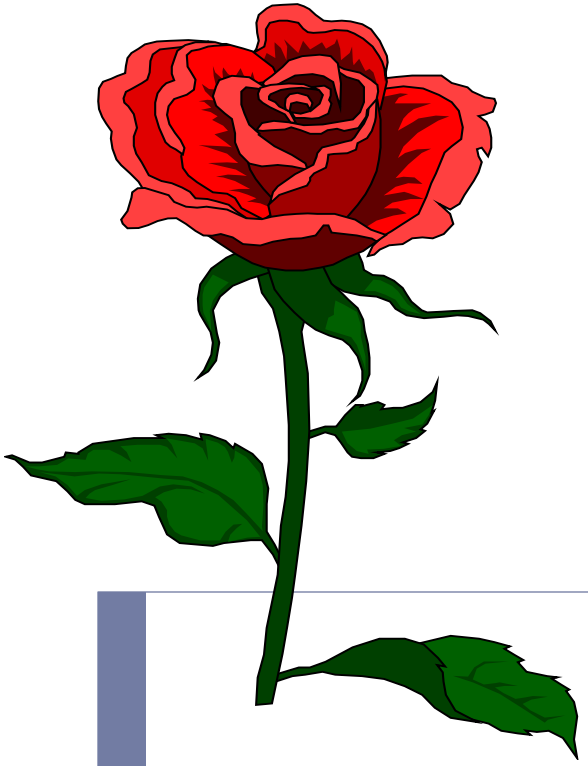
Stages in formulation procedures and tentative time lines

1. **IT Hardware for DSM Implementation**
   - Finalisation of IT architecture and hardware requirement > Specifications for Application Servers / Database Servers / Communication Servers / Back-up & Contingency Plans > Approval of BoD > submission of DPR > DPR approval
   - Tender process > award finalisation and contract with AMC

   Time line > 3rd month to 7th month from date of notification of Regulation

2. **Modifications to Business Rules / Governance Structure of MSPC**
   - Drafting / Stakeholder Consultation / Regulatory Approval / Finalisation
   - Time line > 6th month to 10th month from date of notification of Regulation

3. **Undertaking Pilot Runs and Testing**
   - Testing of Independent Modules > tests with historical data > Integrated Testing of all Modules > Security Audit > Go Live for Pilot Runs > issue of first bill.
   - Time line > 11th month to 14th month from date of notification of Regulation



Thank You.

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Detailed Activity-wise implementation plan (tentative) -1/4

S. No.	Modules for DSM Implementation	Mth-1	Mth-2	Mth-3	Mth-4	Mth-5	Mth-6	Mth-7	Mth-8	Mth-9	Mth-10	Mth-11	Mth-12	Mth-13	Mth-14	Mth-1
1	Modification to Scheduling and Despatch Procedures															
	preparation of draft procedure															
	stakeholder consulation process															
	regulatory approval															
	publication of final procedure															
	Inputs for draft amendments to scheduling and despatch code															
	working group deliberations for finalisation															
2	Formulation of Operating Procedure for Deviation Accounting															
	preparation of draft procedure															
	stakeholder consulation process															
	regulatory approval															
	publication of final procedure															
	Establishing Account Operating (Internal Procedures and Rules)															
	Powers / role/ functions for operating authorities															

Detailed Activity-wise implementation plan (tentative) – 2/4

S. No.	Modules for DSM Implementation	Mth-1	Mth-2	Mth-3	Mth-4	Mth-5	Mth-6	Mth-7	Mth-8	Mth-9	Mth-10	Mth-11	Mth-12	Mth-13	Mth-14	Mth-1
3	IT Hardware for DSM Implementation															
	As-Is Analysis and Gap Assessment for IT Hardware															
	Finalisation of IT architecture and hardware requirement															
	Preparation of Specifications for Application Servers															
	Preparation of Specifications for Database Servers															
	Preparation of Specifications for Communication Servers															
	Consultation with vendors and finalisation of Hardware Specifications															
	Internal Budget approval															
	Preparation of Back-up & Contingency Plans															
	Vendor selection process - preparation of EOI/RFP and tenders															
	Award and finalisation of contract with AMC															

Detailed Activity-wise implementation plan (tentative) – 3/4

S. No.	Modules for DSM Implementation	Mth-1	Mth-2	Mth-3	Mth-4	Mth-5	Mth-6	Mth-7	Mth-8	Mth-9	Mth-10	Mth-11	Mth-12	Mth-13	Mth-14	Mth-1
4	IT Software for State Deviation Accounting and Energy Accounting															
	Preparation of draft Business Requirement Definition (BRD) document															
	Consultation on draft BRD document															
	Finalisation of BRD in consultation with approval of Working Group															
	Preparation of Tender/RFP for selection of IT Software development Partner															
	Tender process for selection of IT partner															
	Award finalisation and contract with AMC support															
	Development of Software Specification document (SRS) for modules															
	Development of scheduling software module															
	Development of open access and registry module															
	Development of meter data processing module															
	Development of energy accounting module															
	Development of deviation accounting module															
	Development of Billing and settlement module															

Detailed Activity-wise implementation plan (tentative) – 4/4

S. No.	Modules for DSM Implementation	Mth-1	Mth-2	Mth-3	Mth-4	Mth-5	Mth-6	Mth-7	Mth-8	Mth-9	Mth-10	Mth-11	Mth-12	Mth-13	Mth-14	Mth-1
5	**Undertaking Pilot Runs and Testing**															
	Testing of independent software modules															
	Dry runs of the modules with test data															
	integrated testing of all modules															
	Security audit and hosting															
	Go live for pilot testing and pilot tests															
	addressing errors and modifications															
	sample bill generation and verifications															
6	**Modification of business rules and Governance structure for MSPC**															
	preparation of draft modifications to business rules for composition of MSPC															
	stakeholder consulation process															
	regulatory approval															
	publication of final Business Rules															