

BEFORE THE
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
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IN THE MATTER OF

**Introduction of Availability Based Tariff Regime at State level within
Maharashtra and other related issues**

Case Nos. 42 of 2006

**Dr. Pramod Deo, Chairman
A. Velayutham, Member
S. B. Kulkarni, Member**

ORDER

Dated: 17th May, 2007

The clause 5.7.1(b) of National Electricity Policy (NEP) notified by Central Government mandates the Appropriate Commissions to introduce Availability Based Tariff (ABT) mechanism at State level. The Forum of Indian Regulators (FOIR) upon recommendations of its sub-committee acknowledged that State Electricity Regulatory Commissions are competent to determine mechanism for introduction of Availability Based Tariff mechanism at State level, however, it needs to be ensured that Intra-State ABT mechanism is compatible with inter-State ABT mechanism.

In view of above, the Maharashtra Electricity Regulatory Commission in exercise of the powers vested under clause (zi) of sub-section (2) of Section 181 of Electricity Act 2003 (hereinafter referred to as EA 03), read alongwith clause (b) of sub-Section (1) of Section 86, Section 66 and MERC (State Grid Code) Regulations, 2006 has determined the mechanism for introduction of availability based tariff regime at State level within Maharashtra. The Section 86(1)(b) empowers the Commission to regulate electricity purchase and procurement process amongst the distribution licensees, whereas the Section 66 mandates the Commission to promote development of market (including trading). In exercise of its powers vested as per above provisions of the EA03, the Commission hereby passes the Order as under:



BACKGROUND

The enactment of the EA 2003 has paved the way for undertaking comprehensive market reforms in the electricity sector. Significant enabling provisions in the EA 2003 include promotion of electricity market, de-licensing of generation, introduction of competitive bidding, open access, etc. Accordingly, Commission had directed Utilities in Maharashtra to develop a mechanism for Intra State Availability Based Tariff (InSABT). Objectives of proposed mechanism were to introduce environment to facilitate trading in electricity, effective utilization of generation resources within the State. As per the directive of Commission, erstwhile MSEB in consultation with other licensees, constituted Committee to study and recommend a mechanism for introduction of Intra State ABT. The Committee submitted its report on February 01, 2005 titled 'Road map for introduction of Intra State ABT in the State of Maharashtra' for review of Commission. Subsequently, Government of Maharashtra (GoM) vide its GR dated January 24, 2005 has restructured the erstwhile Maharashtra State Electricity Board (MSEB) into four Companies, namely, MSEB Holding Co. Ltd, Maharashtra State Power Generation Company Ltd (MSPGCL), Maharashtra State Electricity Transmission Company Ltd (MSETCL), Maharashtra State Electricity Distribution Company Ltd. (MSEDCL), which have commenced their operation with effect from June 6, 2005. Further, GOM has notified vide its GR dated February 17, 2005 that MSETCL shall operate as State Transmission Utility (STU) for Maharashtra.

In view of above developments, the Commission reviewed the report submitted by Committee and had initiated further regulatory process for finalizing mechanism for introduction of Intra State ABT regime at State level within Maharashtra.

REGULATORY FRAMEWORK

1. The National Electricity Policy (NEP) notified on February 12, 2005 states that the ABT regime introduced by CERC at the national level has had a positive impact. It has also enabled a credible settlement mechanism for intra-day power transfers from licensees with surpluses to licensees experiencing deficits. Accordingly, NEP advised SERCs to introduce the ABT regime at the State level within one year.
2. Subsequently, the National Tariff Policy notified on January 6, 2006 stipulated that two-part tariff structure should be adopted for all long term contracts to facilitate Merit Order despatch and the Availability Based Tariff (ABT) is to be introduced at State level by April 2006. This framework would be extended to generating stations (including grid connected captive plants of capacities) as determined by the SERC.
3. The Forum of Indian Regulators (FOIR) had formulated Sub-Committees during March 2005 to get into the details of introduction of ABT mechanism at State level. The specific task assigned to the Sub-Committee was to make recommendations to FOIR on



implementation of ABT in intra-State systems. Upon several rounds of deliberations, the Sub-Committee finalized its recommendations during November 2005 on implementation of ABT mechanism at the State level. The Sub-Committee acknowledged that its recommendations are not mandatory and the SERCs are fully competent to decide on the subject matter within their respective State jurisdiction. However, it suggested that while introducing ABT mechanism at State level it needs to be ensured that intra-State ABT mechanism is compatible with the inter-State ABT system. Above recommendations were adopted by the FOIR during its 7th annual general meeting held on June 15, 2006.

4. Accordingly, while formulating the rules for development of ABT mechanism at State level, various key aspects of the power system operations as stipulated under Indian Electricity Grid Code 2005 (IEGC 2005) need to be taken into considerations such as – (a) Connection conditions for Generating Units (b) and power system security aspects. In addition, Clause 32 of MERC (State Grid Code) Regulations, 2006, provides for Commission to specify ‘Scheduling and Despatch Code’ separately upon consulting State Load Despatch Centre within six months from notification of the State Grid Code Regulations.

The Commission passed an Order on 27th June 2006 (Case 58 of 2005) in the matter of transmission pricing framework within Maharashtra, wherein the Intra-State Transmission System (InSTS) and principles for energy accounting for powerflows over InSTS have been outlined in detail. The above framework for intra-State Transmission system will have to be taken into consideration while devising Intra-State ABT mechanism. The monitoring schedules and accounting of the deviations thereof under Intra-State ABT mechanisms will have to be undertaken at the interface points identified amongst the licensees as per above arrangement.

REGULATORY PROCESS

Earlier, the Commission had directed the Utilities in Maharashtra to develop a mechanism of InSABT. As per directives from Commission, erstwhile MSEB in consultation with other licensees, constituted a committee for introduction of InSABT mechanism in Maharashtra. Annexure 1 provides list of committee members formulated by utilities. Committee engaged Power Grid Corporation of India Ltd (PGCIL) to undertake a study and recommend a mechanism for introduction of Intra-State ABT. The aforesaid Committee had submitted ‘Draft Report’ on November 30, 2004. Further to submission of draft report, discussion session was held by the Commission on December 15, 2004 to deliberate on the report. After discussion with the Commission, Committee submitted its ‘Final Report’ on February 1, 2005 titled ‘Road-map for introduction of Intra-State ABT in the State of Maharashtra’.

In this context, the Commission had appointed M/s Deloitte Touche Tohmatsu India Pvt Ltd (Deloitte) for ‘Introduction of Intra State ABT mechanism within the State of Maharashtra’ and assist the Commission in the regulatory process thereof. Deloitte submitted its Discussion



Paper on 'Introduction of Availability Based Tariff regime at State level within Maharashtra and related issues'. This Discussion Paper outlined the key considerations to be taken into account and the related issues that need to be addressed in this context, evaluate the options available, and suggested a suitable mechanism for further deliberation through the regulatory process.

PUBLIC HEARING PROCESS

Further to submission of Discussion Paper by its consultants, the Commission issued public notice on 17th November 2006 inviting comments/ suggestion from key stake holders. The Public Hearing was conducted on Monday, 21st December, 2006 at 11.00 hours at Seminar Hall, 31st floor, Centre No.1, World Trade Centre, Cuffe Parade, Mumbai 400 005.

During Public Hearing process, Maharashtra Transmission Company Ltd (MSETCL), Maharashtra Distribution Company Ltd (MSEDCL), Tata Power Company Ltd. (TPC), Reliance Energy Ltd. (REL), BrihanMumbai Electric Supply and Transport Undertaking (BEST) submitted their comments and opinion related to Introduction of InSABT in the State of Maharashtra. Power Grid Corporation of India Ltd (PGCIL) also submitted its view and comments on proposed mechanism. Based on deliberation during public hearing process, following key issues were discussed.

Issue-1: Principle of valuation of UI and settlement of deviation

Issue-2: Applicability of Intra-State ABT Mechanism and State Pool Participants

Issue-3: Time interval of Scheduling/ Trading

Issue-4: Principles of Generator scheduling and least cost despatch

Issue-5: Imbalance pool price – System Marginal Price

Issue-6: Standby arrangement for Mumbai

Issue-7: Principles for Load Curtailment

Issue-8: Allocation of Transmission loss

Issue-9: Metering and Communication requirement

Issue-10: Role of SLDC/ Market operator

Issue-11: Payment and Payment Guarantee

Issue-12: Trial run period



Issue-13: Members of MSPC

During public hearing process utilities expressed their opinion that proposed InSABT is a new concept and various new terms used, new bodies committee setup and new roles defined. Utilities requested Commission to make a detailed discussion/ presentation elaborating finer nuance of proposed mechanism.

In view of the suggestions made by some of the stakeholders during the Public Hearing to elaborate on concept of market operations under proposed ABT framework through presentation and illustration, the Commission conducted additional rounds of deliberations with all stakeholders on December 28, 2006 and January 17, 2007. A detailed presentation elaborating on proposed concept and market operations under ABT regime alongwith detailed illustration was organised to deliberate further on the issue.

Therefore, keeping in view the deliberation during Public Hearing, detailed consultation process were held with stakeholders and after considering all objections / issues raised during public hearing, submissions / comments made by licensees, consumer representative, various stakeholders, and after carrying out due analysis, the Commission hereby passes this Order as under:

ORGANISATION OF THE ORDER

This 'Order' of the Commission for Introduction of Intra State ABT regime at State level is broadly divided into following sections.

The **first Section** consists of background, the chronology of events, regulatory process, summary details of public hearing process, salient features of the Order and organisation of the Order.

The **second Section** of the 'Order' lists out the various objections raised by the Objectors/key stake-holders in writing, during the public hearing before the Commission. They have been broadly categorised into thirteen issues and, for the sake of convenience, the various points have been classified under an index, along with page numbers, where the relevant objections have been stated briefly, and the ruling of the Commission on each of these points have also been given.

The **third Section** of the 'Order' discusses detailed Order elaborating emerging market structure, various entities, their roles and responsibilities, rules for operation, and contractual framework for market operation under proposed Balancing and Settlement mechanism for Maharashtra.

The **Fourth Section** of the Order, outlines various design parameters used to establish the framework for the ABT mechanism as well as the framework for the reconciliation and settlement mechanism. The various design parameters that have been considered for the



development of the State level ABT Mechanism framework are: (a) Scheduling period (for load forecast of State Pool Participants and despatch of generating stations) (b) Trading period (c) Settlement period (d) Measurement unit for State Imbalance pool (e) Treatment of reactive energy drawal and injection (f) Premises for ex-ante and ex-post pool prices (g) Premise for least cost despatch (h) Premise for allocation of losses (i) Premise for allocation of Regional UI charges among State Pool Participants.

The **Fifth Section** of Order, outlines the premise and principles for settlement of energy exchange amongst State Pool Participants in the context of the market operations under ABT mechanism. The principles outlined under this part of the Order specifically strives to address rules pertaining to settlement of imbalance energy exchange amongst State Pool participants, rule for settlement regional UI pool account, rule for settlement of inter-state trade of energy pool account and rule for settlement of fixed cost reconciliation pool amongst State Pool Participants.

Further, the Commission has outlined specific conditions for *fail-safe* market operations under ABT regime such as payment guarantees, events of defaults by State Pool Participants, Market Operations (MSPC) and Market Service providers (MSLDC-CD, MSLDC-OD, MSETCL etc.) and remedies thereof. Specific areas covered under this part of the Order are (a) Settlement of Imbalance Pool account (b) Settlement of Regional UI Pool account (c) Settlement of FCR Pool account (d) Payment Guarantees (e) Payment Default and Remedies.

The **Sixth Section** Order, elaborates key issue of 'Governance' in the context of the market operations under State level ABT mechanism. Specific areas covered under this part of the Order are (a) Objective of Governance under state level ABT mechanism (b) Constitution of Maharashtra State Power Committee (c) Functions of Maharashtra State Power Committee (d) Powers of Maharashtra State Power Committee.

The **Seventh Section** of the Order, outlines various implementation requirements that will have to be dealt with appropriately for implementation of ABT mechanism at State level. The implementation requirement pertain to (a) Energy Accounting (b) Metering Requirements (c) Information Requirements (d) Obligations to provide information (e) Establishment of Scheduling and despatch procedures and protocol (f) development of Balancing and settlement system (BSS) software

In addition, the **Seventh Section** outlines various directives of Commission and applicability of Order

Various Annexure covered as part of this Order is as under:



Annexures

1. List of committee members constituted by Utilities for submission of report on "Road Map for Introduction of Intra State ABT in Maharashtra".
2. List of participants during public hearing process conducted on December 21st 2006
3. List of participants attending discussion session conducted on December 28th 2006
4. List of participants attending presentation conducted on January 17th 2007



ABBREVIATIONS:

ABT	:	Availability Based Tariff
BEST	:	BrihanMumbai Electric Supply and Transport Undertaking
BG	:	Bank Guarantee
CERC	:	Central Electricity Regulatory Commission
CGS	:	Central Sector Generating Station
CMD	:	Common Market Design
CTU	:	Central Transmission Utility
DOAU	:	Distribution Open Access Users
GERC	:	Gujarat Electricity Regulatory Commission
GoI	:	Government of India
GoM	:	Government of Maharashtra
InSTS	:	Intra State Transmission System
InSABT	:	Intra State Availability Based Tariff
kV	:	KiloVolt
kW	:	KiloWatt
kWh	:	Kilo Watt Hour
LC	:	Letter of Credit
MERC	:	Maharashtra Electricity Regulatory Commission
MOD	:	Merit Order Dispatch
MoP	:	Ministry of Power
MPECS	:	Mula Pravara Electric Co-operative Society Ltd.
MSEB	:	Maharashtra State Electricity Board
MSEDCL	:	Maharashtra State Electricity Distribution Company Ltd.
MSETCL	:	Maharashtra State Electricity Transmission Company Ltd.
MSLDC	:	Maharashtra State Load Despatch Centre
MSLDC-CD	:	Maharashtra State Load Despatch Centre Commercial Division
MSLDC-OD	:	Maharashtra State Load Despatch Centre Operational Division
MSPC	:	Maharashtra State Power Committee
MSPGCL	:	Maharashtra State Power Generation Company Ltd.
MU	:	Million Unit
NEP	:	National Electricity Policy
NTP	:	National Electricity Tariff Policy
MW	:	Mega Watt
PPA	:	Power Purchase Agreement



REL	:	Reliance Energy Ltd.
REL-D	:	Reliance Energy Ltd Distribution
REL-T	:	Reliance Energy Ltd Transmission
PGCIL	:	Power Grid Corporation of India Limited
Rs	:	Rupees
Rs/kWh	:	Rupees per kilo watt hours
SEM	:	Special Energy Meters
SERC	:	State Electricity Regulatory Commission
SGS	:	State Generation Station
SLDC	:	State Load Despatch Centre
SMP	:	System Marginal Price
SPP	:	State Pool Participants
STU	:	State Transmission Utility
TCR	:	Transmission Capacity Rights
TOAU	:	Transmission Open Access Users
TPC	:	Tata Power Company Ltd.
TPC-D	:	Tata Power Company Ltd Distribution
TPC-T	:	Tata Power Company Ltd Transmission
TPS	:	Thermal Power Station
TSU	:	Transmission System Users
UI	:	Unscheduled Interchange
WRPC	:	Western Region Power Committee



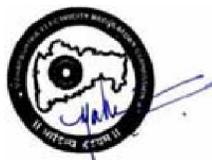
2	<i>OBJECTIONS RECEIVED AND COMMISSION'S RULING</i>	13
2.1	Valuation of UI and settlement of Deviation.....	13
2.2	Generator to be included in State Pool Participant.....	14
2.3	Inclusion of Renewable and Captive Power Generators	16
2.4	Treatment of Open Access consumers	16
2.5	Time interval of Scheduling / Trading.....	17
2.6	Principles of Generator scheduling and Least Cost Dispatch	19
2.7	Imbalance pool price – System Marginal Price	20
2.8	Standby arrangement for Mumbai	21
2.9	Load Curtailment	22
2.10	Allocation of Transmission losses.....	22
2.11	Metering and Communication Requirement.....	23
2.12	Role of SLDC.....	24
2.13	Role of Maharashtra State Power Committee (Market Operator).....	25
2.14	Payment and Payment Guarantee	25
2.15	Trial run period.....	26
2.16	Members of MSPC	27
3	<i>MARKET STRUCTURE FOR INTRODUCTION OF ABT MECHANISM AT STATE LEVEL WITHIN MAHARASHTRA</i>	28
3.1	Maharashtra State Power Pool Participants	28
3.2	Covenants for State Pool Participation	29
3.3	Contractual Framework for proposed Market Operation.....	31
3.4	Roles and Responsibilities of Various Entities.....	32
4	<i>SALIENT FEATURES OF INTRA STATE ABT MECHANISM FOR MAHARASHTRA</i>	41
4.1	Scheduling Period.....	41
4.2	Trading Period	45
4.3	Settlement Period	45



4.4	Measurement Units for Imbalance Pool	48
4.5	Basis for computation of Ex-Ante Imbalance Pool Price	48
4.6	Basis for computation of Ex-Post Imbalance Pool Price (Settlement Price).....	50
4.7	Premises for Least Cost Despatch.....	51
4.8	Basis for Allocation of Losses	52
4.9	Basis for allocation of regional UI charges amongst State Pool Participants	53
4.10	Accounting of energy during emergency conditions (market suspension).....	54
4.11	Applicability of intra-State ABT regime to Open Access Users.....	55
5	<i>PRINCIPLES FOR BALANCING AND SETTLEMENT AND SETTLEMENT PROCESS.....</i>	59
5.1	Settlement of Imbalance Pool.....	59
5.2	Settlement of Regional UI Pool account.....	60
5.3	Settlement of FCR Pool	61
5.4	Payment Guarantees	62
5.5	Payment Default and remedies	63
6	<i>GOVERNANCE STRUCTURE FOR IMPLEMENTATION OF ABT MECHANISM AT STATE LEVEL.....</i>	66
6.1	Regulatory Framework for Governance.....	66
6.2	Objective of Governance under State level ABT framework.....	66
6.3	Constitution of Maharashtra State Power Committee	67
6.4	Functions of Maharashtra State Power Committee	68
6.5	Powers of Maharashtra State Power Committee	69
6.6	Review mechanism for Balancing and Settlement Code	70
7	<i>DIRECTIVES FOR IMPLEMENTATION OF ABT REGIME AT STATE LEVEL</i>	71
7.1	Energy Accounting	71
7.2	Metering Requirements.....	73
7.3	Information Requirement	74
7.4	Development of Balancing and Settlement System (BSS) software	78



7.5 Development of Scheduling and Despatch Procedure and Protocol79
7.6 Obligations to provide information.....79
7.7 Applicability of the Order80



2 OBJECTIONS RECEIVED AND COMMISSION'S RULING

2.1 Valuation of UI and settlement of Deviation

- 2.1.1 Utilities in its report 'Road Map for Introducing Intra State ABT in Maharashtra' to MERC had recommended UI prices linked to the frequency. MSETCL, vide its affidavit had submitted that frequency based UI system, similar to one existing for central sector may be introduced, at least in the initial stage, for settlement of deviation from the schedule. MSETCL had further commented that system frequency being precise indicator of the intersection of demand and supply curves, it is important to link incentive/disincentives to frequency prevalent in the system at any point of time.
- 2.1.2 REL commented that if inter State UI is driven by frequency based ABT and Intra State ABT shall be settled at System Marginal Price (SMP), this would provide an incentive for generation located outside the State. REL further recommended that during the first phase, Inter State ABT mechanism should be extended to Intra State UI settlement.
- 2.1.3 BEST submitted that currently the State of Maharashtra is facing huge gap between demand and supply and it may not be prudent to introduce market in such a scenario. Market mechanism can be ushered in a much balanced situation when there is sufficient quantum of generation available. BEST expressed that if the market forces are allowed to take their course in such a scenario, the cost of electricity will be decided by the market irrespective of the cost of production and as a result consumer may lose.
- 2.1.4 PGCIL stated that at the regional level ABT achieved major objective of making generation available when required by the grid. PGCIL further stated that if UI is not linked to frequency, utilities within the State will not respond to frequency signal at regional level and would lose opportunity to gain from such signals.

Commission's Ruling



- 2.1.5 As commented by BEST, allowing free reign to market forces may result in higher cost of electricity irrespective of cost of production. However, the Commission would like to clarify that the Approach Paper did not suggest market price for entire power exchanges within the States. The Paper suggested settlement of deviations using System Marginal Prices. Further, it should be noted that currently SLDC carries out real time load management using fixed CGS and variable SGS. Implementation of frequency linked UI at State level would take away this flexibility available to SLDC as SGS will vary their generation only if economics work in their favour which will result in increase in cost. Generators self dispatch based on commercial signals may make it more difficult to maintain system parameters like frequency, voltage, line loading etc.
- 2.1.6 Further, frequency based UI rate relates frequency to value of shortage which is not linked with the System Marginal Price at that point of time. In order to ensure that proper economic signal is given it is necessary that compensation for deviations takes place at System Marginal Price. Hence the Commission has decided that settlement of deviations shall be done on weighted average system marginal price in the Maharashtra system.

2.2 Generator to be included in State Pool Participant

- 2.2.1 MSEDCL has commented that excluding SGS from UI mechanism does not provide any incentive to maximize generation or to be within schedule. Similarly, SGS should be penalized for generation lower than their declared schedule. MSEDCL submitted that generators in range of 25 to 50 MW may disturb grid security. MSEDCL recommended that all generators (> 25 MW and excluding RE) should be brought under ABT regime.
- 2.2.2 MSETCL commented that Generators are designed to be most efficient while at full load. MSETCL further submitted that excluding SGS from InSABT will not provide any incentive/ disincentive to SGS for purpose of maintaining grid discipline and forecasted scheduling.
- 2.2.3 REL has commented that exclusion of SGS from InSABT defies the objective of encouraging additional generation and optimizing resources within the State. REL submitted that unless well defined incentive scheme is available for generators to participate in ABT mechanism the generators will not be encouraged to generate more than what is required to recover fixed cost. REL also submitted that if Generators are not part of State Pool as far as UI settlement is concerned, SGS would be at disadvantage viz a viz generator located outside the State.
- 2.2.4 TPC submitted that if SGS is excluded from ABT, it has no incentive or disincentive to reduce or increase the generation. TPC recommended that all generators should be made the participants of InSABT and suitable mechanism may be developed for implementation of ABT to generators.



- 2.2.5 BEST commented that UI is a result of imbalance between supply and demand within the State. Making only DISCOMs accountable for the same is inappropriate.
- 2.2.6 PGCIL stated that several difficulties were experienced at regional level during 1992 - 2002 when frequency linked mechanism was applicable to only SEB's. The scheme could not work satisfactorily as generators were not covered.

Commission's Ruling

- 2.2.7 While the Commission agrees 'in principle' that all participants including generators need to be made party to the intra-State ABT mechanism, the Commission cannot ignore the capability of various participants to manage the risk of deviations. It should be noted that generators have very few metering points to monitor and therefore they have significantly greater control over their output and thereby over deviations.
- 2.2.8 Given that generators have significantly more capability to manage their output and deviations, it is likely that such capabilities would be used by the generators to maximize their income. This will obviously increase the costs being borne by the distribution companies.
- 2.2.9 Further, the argument that participation in intra-State ABT will provide incentive to generators to make more generation available may not be appropriate. Turning this argument on its head, it may be construed that some of the generators are not making available all possible generation. The Commission feels, that if such is the case, it is criminal waste of State resources especially when the State is reeling under severe load shedding. The Commission would like the objectors to bring such instances to the notice of the Commission. The Commission also hereby directs SLDC to keep close watch on generators and look for instances when generators may be holding back the capacity.
- 2.2.10 The Commission would like to reiterate that Generators will have to ensure availability of contracted power to the maximum extent feasible; particularly under severe shortage situation. As per Regulation 40.1 of the MERC (Terms and Conditions of Tariff) Regulations, 2005, the Generating Company shall be required to demonstrate the declared capacity of its generating station as and when required by the MSLDC. In case of mis-declaration, relevant penalty provisions as per Tariff Regulations shall be applicable. Further, as per Regulation 40.4 of Tariff Regulations, the operating log books of the generating station shall be available for review by the Commission.
- 2.2.11 The Commission has not considered generators as part of imbalance pool settlement to begin with. However, the Commission clarifies that proposed market structure for introduction of InSABT regime *per se* does not prohibit any Generator from becoming member of 'State Imbalance Pool' arrangement, if it wishes to sell its entire generation as 'Merchant Generator', provided it meets the qualification criteria and the membership conditions/norms to be laid down by MSPC in line with Balancing and Settlement



Conditions as approved by Commission under this Order. Further, as the energy input to the imbalance pool from all the generators is the primary input to the imbalance pool accounting, their role in the effective operation of the market, and therefore, implementation of the Balancing and Settlement Code, cannot be ignored.

2.3 Inclusion of Renewable and Captive Power Generators

- 2.3.1 MSETCL has commented that Biomass based generating stations can be used as peaking station in case if availability of the biomass is scarce. If biomass is feared to be wasted, it can be utilized as base load and hence can be considered for UI mechanism.
- 2.3.2 REL has recommended that all generators including RE Generators (Except Wind), CPP should be included as State Pool Participant.
- 2.3.3 TPC commented that all grid connected CPP above a particular capacity should be part of ABT mechanism. This will encourage the CPPs to inject surplus energy into system thereby contributing toward reduction in shortage.
- 2.3.4 PGCIL stated that one objective of any ABT scheme should be that generation should be maximized during peak load condition. PGCIL recommended that all generators including CPP should be covered under UI. PGCIL also stated that ABT model should also encourage CPP/ NUG's (Non Utility Generators) located near load centre to inject surplus power into the grid and any generation whose cost at place of consumption is less than UI rates prevailing at particular time should be encouraged.

Commission's Ruling

- 2.3.5 Since the Commission has not considered generators as part of imbalance pool settlement to begin with, the question of including RE generators in such mechanism does not arise at this stage.
- 2.3.6 With regard to CPP using conventional power sources, deviations on such transactions will be accounted at the consumer end as in case of distribution licensees.
- 2.3.7 Further, the Commission would like to clarify that the captive power generators and renewable energy generators shall comply with applicable metering code and CEA's Regulations for installation of meters.

2.4 Treatment of Open Access consumers

- 2.4.1 MSETCL requested that rules and regulations regarding TOAU to be made available before being subjected to ABT mechanism. MSETCL further submitted that TOAU/ DOAU should be subjected to UI mechanism.
- 2.4.2 TPC commented that OA consumers with load above certain threshold (say 20 MW) may be included in pool as participants.



- 2.4.3 REL proposed that in case of partial TOAU, the tariff rate applicable to default supply should be equal to applicable temporary tariff rates.

Commission's Ruling

- 2.4.4 OA consumers especially partial TOAU and DOAU are likely to pose significant challenges for operation of 'Balancing and Settlement' mechanism as sophisticated interface between Energy Accounting Centre of SLDC and billing centre of Distribution Company would be required. The matter may get further complicated if such users have multiple contracting arrangement. However, the Commission is of the opinion that it is possible to define necessary rules and necessary system interfaces. The Commission also notes that provisions of IEGC 2005 and State Grid Code Regulation are sufficient for monitoring and dispatch of these transactions.
- 2.4.5 Under clause 4.11 of this Order, the Commission has elaborated proposed treatment of open access transactions under intra-State ABT regime.

2.5 Time interval of Scheduling / Trading

- 2.5.1 Regarding time interval of 30 minutes for scheduling and trading, MSETCL submits that ISGS would issue schedules to MSLDC on 15 minutes basis. However, it would be complex for SLDC to match DISCOM's schedule on 30 minute basis. Further, MSETCL stated that they have already procured meters with capability for measurements in 15 minutes interval. Also, due to different time block of Inter State and Intra State, transaction cost of SLDC would increase.
- 2.5.2 MSEDCL commented that it would be difficult for SLDC to settle accounts based on two different scheduling periods and hence suggested that trading period be fixed as 15 minutes in line with the regional level.
- 2.5.3 REL commented that since frequency based UI settlement for Inter State is also part of the proposed settlement model; it is recommended that 15 minutes trading period should be considered right from the beginning of the regime. Further, balancing and settlement within and outside would be easier and less complicated. REL also opined that two shorter time zones would reduce possibility of gaming to some extent.
- 2.5.4 TPC pointed that Inter State ABT regime and distribution open access regulation envisage meter with 15 minutes recording and hence recommended that InSABT transactions and calculation be carried out on 15 minutes period



2.5.5 PGCIL stated that time period selected for settlement system of 30 minutes is not justified especially when 15 minutes settlement is in vogue at regional level. The data processing, scheduling and accounting can be done on computers and as such handling 48 reading or 96 reading will not make difference. PGCIL recommended reviewing the time interval.

Commission's Ruling

2.5.6 For effective and immediate implementation of ABT mechanism at State level, it is necessary to take into account existing metering and communication infrastructure. The Commission had suggested time frame of 30 minutes as the Commission was given to understand that the existing metering between between MSETCL and MSEDCL (approximately 3000 metering points) have 30 minutes data recording capacity. However, since all utilities have now confirmed that it is preferable to use 15 minute interval for settlement, the Commission hereby decides to use 15 min time block for the purpose of settlement. Here, the Commission would like to clarify that it is the responsibility of respective utilities to ensure that necessary metering and communication facilities are available in time for implementation of intra-State ABT in the State.



2.6 Principles of Generator scheduling and Least Cost Dispatch

- 2.6.1 MSETCL submitted that DISCOM's should look after their own power purchase and should prepare their respective Merit Order Dispatch (MOD); SLDC should not be made responsible for the same. Further, MSETCL stated that for State level MOD; trades of energy between various state pool participants will be priced at Ex – Post SMP. Also, in case of change of schedule due to various reasons, SLDC would be required to prepare new MOD and again SMP will differ, thus predictability of SMP would be difficult for MSLDC. MSETCL further requested that flexibility to revise schedule should be provided to DISCOMs and Generators during the day.
- 2.6.2 REL submitted that sanctity of PPA should be maintained in case of “Tight Power Pool” where all SGS are subjected to MOD. Utilities will not have freedom to use their own resources and their share in other Generating Stations as scheduling will be done by SLDC. Regarding revision of schedule, REL commented that such arrangement exists in Inter State ABT mechanism, if the same should be extended to InSABT. REL further stated EX – Ante marginal pool price may be significantly different from Ex – Pool price, unless DISCOMs have access to real time price at which actual settlement is likely to take place.
- 2.6.3 TPC requested clarification whether State-wise MOD would be run on surplus capacity or capacity available to pool.
- 2.6.4 PGCIL submitted that DISCOMs should have full autonomy to select the generator for meeting their demand. The CGS schedule can be varied within 1½ hour notice and similar time gap has to be provided in any mechanism adopted so as to give time to generators and beneficiaries to adjust their requirement for different plants as per their merit order stack.

Commission's Ruling

- 2.6.5 As per the provisions of EA 03, SLDC shall be responsible for optimal scheduling and dispatch within the State. Section 32 and 33 of EA 03 states,

32 (2) The State Load Dispatch Centre shall

(a) be responsible for optimum scheduling and despatch of electricity within a State, in accordance with the contracts entered into with the licensees or the generating companies operating in that State;

.....

*33 (1) 'The State Load Dispatch Centre in a State may give such directions and exercise such supervision and control as may be required for ensuring the integrated grid operations and for achieving the **maximum economy and efficiency** in the operation of power system **in that State**'*



In view of the above, it is very clear that the SLDC is responsible for ensuring merit order dispatch within the State. It shall be the responsibility of MSLDC to prepare 'Merit Order Stack' for the entire generation in the State and attempt to meet the load within the State in most optimal manner.

- 2.6.6 With regard to the price signals being given by the ex-ante pricing and relation with ex-post pricing, the Commission is aware of the issues involved. However, the Commission is of the opinion that these issues could be refined during implementation process. Further, it should be noted that in any market, pricing issues evolve over a period of time. The Commission will take appropriate action as and when necessary.
- 2.6.7 As regards premise for least cost despatch, the clause 4.7 under this Order further elaborates on this aspect.

2.7 Imbalance pool price – System Marginal Price

- 2.7.1 MSETCL has commented that SMP and DISCOM marginal price will be different, under such scenario particular DISCOM might go for load shedding and obtain higher price equal to SMP and its marginal power price.
- 2.7.2 REL commented that electricity price for each time block will be determined Ex-Ante on previous day; this price will be indicative and actual UI settlement will be done at Ex – Post pool price. The feature of real time price should be available as is the case of frequency based UI mechanism.
- 2.7.3 MSEDCL recommended that proposed system may include a penal levy as multiple of SMP (say 1.25 times) as incentive/ disincentive for deviation. Alternatively, different UI rates suitable for Maharashtra may be proposed. MSEDCL further recommended that proposed system should recognize influence of larger deviation and accordingly devise penalty mechanism. Graded penalty over and above SMP can also be considered.

Commission's Ruling

- 2.7.4 The Clause 4.6 under this Order deals extensively with Ex-Post Imbalance Pool Price which shall be the basis for settlement purposes. As suggested by MSETCL, it is possible that a distribution company may decide to shed the load while earning money by way of supply of power to other pool participants at weighted average system marginal price. In this regard, the Commission expects SLDC to maintain strict vigil over system operation and report any instance of load shedding to earn money through pool transactions.
- 2.7.5 Further, the Commission would like to state in 'no ambiguous terms' that load shedding is an exception and should not be considered as a right by any distribution company. It is the responsibility of each distribution company to supply power to all consumers during all 24 hours and 365 days of the year. The Commission has decided to take strong action



in cases of failure to procure power and resorting to higher level of load shedding. The Commission will not entertain any instance of load shedding to earn money through pool transactions.

2.7.6 With regard to REL contention that ex-ante price could be significantly different than ex-post price, the Commission notes that it is possible to have difference in the two prices. However, the Commission is of the opinion that REL's suggestion that frequency linked prices provide more certainty is not correct. It should be noted that frequency linked prices for any particular trading block are not known on day ahead basis. On the other hand, proposed methodology attempts to identify the costs of imbalances on day ahead basis, which is a huge improvement over the frequency-linked pricing mechanism which does not even attempt to identify the costs of imbalances on day ahead basis. Further, on the necessity to have understanding of the prices on real time basis, the Commission believes it is not too difficult to write programmes which will calculate real time prices by using SLDC data. However, it would be necessary to develop protocol for sharing of such information.

2.7.7 With regard to the suggestion of MSEDCL of developing graded penalty structure, the Commission would like to clarify that it is keen to implement intra-State ABT with basic features. In new system, SLDC will have to undertake functions such as state wide merit order dispatch, energy accounting, implementation of open access, etc. The Commission welcomes any measures which will help in enhancing discipline in the system; however, those measures would be implemented on successful implementation of intra-State ABT as envisaged in this Order.

2.8 Standby arrangement for Mumbai

2.8.1 REL commented that separate standby arrangement would not be required in case Mumbai DISCOMs are required to pay energy charges at UI rates. REL further suggested that till such time Mumbai DISCOMs have separate contract for standby supply with MSEDCL, all deviations during standby period should be priced at weighted average variable cost of MSEDCL and not weighted average system marginal prices.

2.8.2 MSEDCL was of the opinion that current standby supply agreement between TPC and MSEDCL will have to be continued under InSABT regime as well.

Commission's Ruling

2.8.3 The Commission is aware of the fact that arrangements such as 'standby supply arrangement between MSEDCL and Mumbai distribution licensees' are not in line with the market mechanism being mandated by the Commission under this Order. Further, the Commission is of the opinion that once appropriate mechanism is put in place, there will



not be any need for separate compensation to MSEDCL through standby arrangement as MSEDCL will be able to recover all costs associated with the 'standby arrangement'. However, the Commission is of the opinion that till such time suitable mechanism is put in place, the present 'standby arrangement' will have to continue.

2.9 Load Curtailment

- 2.9.1 Regarding load curtailment REL recommended load curtailment should be to the extent of shortfall and not on the contracted capacity.
- 2.9.2 TPC illustrated that load curtailment should be on the basis of percentage shortfall.

Commission's Ruling

- 2.9.3 The Commission opines that the issues of demand management, load curtailment and role and responsibility of each constituent including MSLDC will have to be governed by provisions stipulated under the Electricity Act, 2003 (EA 2003), the Indian Electricity Grid Code (IEGC) notified by the CERC and the MERC (State Grid Code) Regulations, 2006, notified by the Commission.
- 2.9.4 The Commission would like to highlight the following provisions of the EA 2003 and the abovementioned Regulations for reference and appropriate action by SLDC in this case:
- (a) Section 33 of EA 2003: Compliance of directions issued by SLDC (including provision for penalty)
 - (b) Regulations 5.2 and 5.4 of the IEGC: System security aspects and Demand management
 - (c) Regulations 21, 22, 23 and 24 of the State Grid Code: Operating Conditions, System security aspects, Demand forecast, and Manual demand disconnection.
- 2.9.5 In addition, the Commission has addressed the issue of load curtailment under clause 4.1.1 (g) of this Order for day-ahead scheduling and under clause 4.7 (c) of this Order during real time operations.

2.10 Allocation of Transmission losses

- 2.10.1 REL commented that applying equal transmission losses for generating stations located near the load centre and generating stations located far away from load centre does not send commercial signal for siting of generating stations. Location of generating stations near load centre has several technical advantages but has commercial weakness that it involves extra fuel transportation cost. REL recommended that allocation of transmission loss should be on actual instead of normative allocation.
- 2.10.2 TPC commented that Ex – Post calculation would be performed with actual loss calculation. However Ex – Ante computation would involve transmission loss for



previous 52 weeks. TPC recommended that the same loss be used for ex – ante and ex – post computation as it would assist to optimize the Ex bus shortfall with reference to contracted capacity

Commission's Ruling

- 2.10.3 The mechanism for energy accounting and treatment of intra-State transmission losses has already been elaborated under the Commission's Transmission Pricing Framework Order (Case 58 of 2005) as well as under subsequent Transmission Tariff Orders for FY2006-07 (Case 31 of 2006) and for FY 2007-08 (Case 86 of 2006) under MYT regime. The issue raised by REL falls under the purview of above Orders and not this Order. However, since REL has raised the issue, the Commission would like to clarify that it is aware of the issue and will be developing philosophy for computation and levy of incremental transmission loss for each transaction.
- 2.10.4 Further, the Commission opines that under integrated system operations, every transmission system user benefits from the interconnected network of intra-State transmission system. Therefore, the Commission has decided to continue with the average transmission loss methodology as prescribed under its Order dated in the matter of Case 58 of 2005.
- 2.10.5 With regard to the issue raised by TPC, it appears that TPC is concerned with the likely difference between ex-ante transmission loss and actual ex-post transmission loss. While this is likely during initial period when the metering and energy accounting systems are being put in place, during longer term operation, difference between the two can not be high. Further, the basic principle involved here is compensation of actual losses incurred in the system and therefore settlement using ex-ante estimated transmission loss will not serve the purpose, Also, it should be noted that actual transmission loss (ex-post loss for that week) is expected to get reflected in calculation of ex-ante transmission losses in forthcoming weeks so that estimated transmission losses (ex-ante transmission loss) is as close to reality as possible.

2.11 Metering and Communication Requirement

- 2.11.1 MSETCL commented that in order to ensure visibility to SLDC, installation of communication link with SLDC should be made mandatory for all OA consumers/generators. MSETCL further suggested that RE generators should also provide communication link with SLDC. However it should be left to the discretion of SLDC whether communication link is required.
- 2.11.2 REL requested clarity and responsibility of installation of Special Energy Meters (SEM). REL further suggested that since meters would be required to work within a predefined protocol for communicating with SLDC, a common specification should be adopted by



transmission licensees. Alternately, responsibility of installation of these meters should be entrusted with STU.

- 2.11.3 MSEDCL submitted that as metering of interface points is a responsibility of the STU under the Grid Code, the same should be implemented by the STU

Commission's Ruling

- 2.11.4 As mentioned above, RE generators are excluded from ambit of ABT mechanism. Same is in line with generation tariff orders approved by the Commission for various renewable energy sources. Regarding metering of interface points, MSETCL has submitted phase wise plan for installation of meters at interface points. Further, subsequent to hearing in this case, several meetings have taken place between the Commission's staff and utilities on this issue and several issues have been sorted out. The Commission understands that requisite metering covering all interface points (G<>T and T<>D over intra-State transmission system) would be completed by the utilities by September 2007 and trial runs for intra-State ABT would begin in October 2007.

2.12 Role of SLDC

- 2.12.1 MSETCL commented that MSLDC is presently conversant with regional UI mechanism and scheduling based on 15 minutes. Implementation of hybrid system would require time and training of SLDC staff. Currently, MSLDC is not getting any data from other utilities (excluding MSEDCL). System for information gathering from all licensees is needed to be put in place. Existing infrastructure is insufficient to handle increased requirement of information collection and report generation. MSETCL also requested that role of MSLDC may be restricted to system operator and in furnishing energy accounts for energy transaction within the State. All commercial arrangement should be responsibility of market operator. MSETCL requested clarification whether MSETCL shall furnish meter data or MSLDC-CD in its role as Reconciliation and Settlement Manager (RSM) takes up this task of data collection from the meters.
- 2.12.2 PGCIL commented that it is better that the market operate on the basis of signal from mechanism and the system operator intervention is required very rarely and only to the extent to ensure security of the grid. The task of balancing load and generation can be easily left to market participants through UI mechanism. Frequency management is taken care by balancing mechanism.

Commission's Ruling

- 2.12.3 The Commission has elaborated under clause 3.4.4 of this Order the role of operating division of SLDC (MSLDC-OD) and commercial division of SLDC (MSLDC-CD). In



addition, the Commission has also directed MSLDC to put in place various mechanisms for implementation of ABT regime at State level i.e. energy accounting (clause 7.1), development of balancing and settlement mechanism (clause 7.4), development of scheduling and despatch procedure and protocol (clause 7.5). In addition, the Commission had issued several directives to MSLDC from time to time and under its Order (Case 77 of 2006) to ensure independence in operations of MSLDC and enable it perform its statutory obligations as envisaged under EA 2003. The Commission is of the view that the grid operation and the role of MSLDC thereof, cannot be guided by commercial signals alone. The Commission would like to reiterate that role of MSLDC in Grid Operations and ensuring security and safety of the Grid cannot be undermined at any cost.

2.13 Role of Maharashtra State Power Committee (Market Operator)

- 2.13.1 MSEDCL commented that entrusting the responsibility of managing actual cash transaction would unnecessarily burden MSPC with function of overseeing day to day functioning of utilities. MSEDCL recommended MSPC should undertake functioning of certification of energy accounts and settlement of UI. Payments between involved parties should be based on statement certified by MSPC.
- 2.13.2 MSETCL recommended that all commercial arrangement under proposed framework should be responsibility of MSPC.

Commission's Ruling

- 2.13.3 The Commission has extensively dealt with these issues in its Approach Paper. However, at the cost of repetition, the Commission clarifies that MSPC will not be required to oversee 'day to day' functioning of the distribution utilities. The role and responsibility of MSPC has been extensively dealt with under Chapter 6 of this Order.

2.14 Payment and Payment Guarantee

- 2.14.1 MSEDCL submitted that the credit period for payment given by MSEDCL to its consumers is 30 days and hence payment to MSPC within 7 days is too short period to adjust the cash flow. MSEDCL further submitted that since MSPC shall not be responsible for FC and EC settlements, there is no need for such payment periods and the existing payment terms as per the existing PPAs with generators and traders may be retained. MSEDCL also submitted that provision of payment securities like Letter of Credit and Bank Guarantee will increase burden on consumers of MSEDCL. Regarding



penal interest MSEDCL proposed that those should be in line with the interest rate charged at regional UI level.

Commission's Ruling

- 2.14.2 It appears that MSEDCL has misunderstood the issue. The Commission would like to clarify that all commercial arrangements between the utility and generating company and /or trader would remain intact. Further, all payments would be made by the utilities to generator and/or trader as per the contracts entered into by the respective entities. Only payments for deviations would be routed through MSPC. Even in extreme conditions these payments are not expected to be more than 5%-7% of the power purchase cost of the utilities.
- 2.14.3 The Commission also clarifies that, on implementation of intra-State ABT, settlement of inter-state (regional) UI will be the responsibility of the MSPC. Since, inter-State UI settlement is on weekly basis, necessary cash flow has to be maintained with MSPC, else penal charges will be levied by the RPC on MSPC which may have to be borne by all utilities. The Commission can not allow such situation to arise. Therefore, the Commission can not waive payment security mechanisms suggested in the Approach Paper.

2.15 Trial run period

- 2.15.1 BEST commented that ABT is a new concept and it would be necessary that all stakeholders are well acquainted before full fledged implementation. BEST requested trial run period of one year to make all the stake holders acquainted with day to day functioning and its financial implication.
- 2.15.2 MSEDCL recommended trial period of six month starting May 2008 with implementation beginning December 2008.

Commissions Ruling

- 2.15.3** As mentioned in section 2.12.4, all utilities have committed to put in place basic minimum metering and communication infrastructure in place by September 2007. Further, SLDC has been directed time and again to develop capability to undertake energy accounting for the State. Managing Director, MSETCL has committed to take necessary actions to ensure that necessary capacity is available with MSETCL. In view of this, the Commission orders that trial runs of intra-State ABT be started with effect from October 2007 and should be continued till March 2008. The Commission hereby orders that intra-State ABT shall be implemented in the State of Maharashtra with effect from 1st April 2008. This would mean settlement for energy exchanged in the month of April



2008 shall be done as per principles enshrined under this Order. Further, as elaborated under Clause 7.1 (m) and Clause 7.4 of this Order, the Commission hereby directs MSLDC to develop two pronged strategy and to submit Action Plan within three weeks from date of issuance of this Order.

2.16 Members of MSPC

- 2.16.1 MSEDCL submitted that involvement of MD in committee's day to day function is not recommended. MSEDCL suggested that the Chief Executive of the Company should have the right to nominate person of appropriate authority to represent the company on MSPC.
- 2.16.2 TPC commented that the role of MSPC is elaborate and multifold and would require considerable amount of time and attention. MSPC should include high ranking officer which may meet intended objective.
- 2.16.3 MSETCL recommended adequate representation of all stakeholders in MSPC and recommended inclusion of members from TOAU, DOAU, CGS, CPP and other stakeholders (100 MW and above). MSETCL further recommended that MSPC be registered as an independent company owned by stakeholders with legal authority to enforce UI based payment and other matters of common interest to various stake holders in the system.

Commission's Ruling

- 2.16.4** As mentioned above, organization structure of MSPC is in line with organizational structure of WRPC. The Commission has decided that the Chief Executive of MSLDC shall be ex-officio Member Secretary of the MSPC and the MSLDC shall provide secretarial and administrative assistance to MSPC to undertake its various activities. Further MSPC may at its discretion, constitute such functional committees or sub committees consisting of such members of the MSPC as the MSPC may deem appropriate. The MSPC may invite/ appoint any other person, expert or agency to help guide such functional committee or sub committees.
- 2.16.5 It is not the intention of the Commission to involve Chief Executives of various utilities in day to day functioning of MSPC. Further, Chief Executives may nominate appropriate person to attend MSPC. However, it is clarified that prime responsibility towards functioning of the MSPC shall be that of Chief Executive of the Company.
- 2.16.6 As regards participation of other stakeholders such TOAU, DOAU, captive consumers on MSPC, the Commission is of the opinion that such participation would require wide discussions as well as procedures for admission and governance of MSPC.



3 MARKET STRUCTURE FOR INTRODUCTION OF ABT MECHANISM AT STATE LEVEL WITHIN MAHARASHTRA

In view of the suggestions made by some of the stakeholders during the Public Hearing to elaborate on concept of market operations under proposed ABT framework through presentation and illustration, the Commission conducted additional rounds of deliberations with all stakeholders on December 28, 2006 and January 17, 2007. A detailed presentation elaborating on proposed concept and market operations under ABT regime alongwith detailed illustration was organised to deliberate further on the issue.

The Commission observes that for successful implementation of intra-State ABT mechanism, it is important that the role of various state participants is clearly defined and contractual relationship amongst them is clearly established. Further, the Commission observes that emerging market structure would necessitate emergence of various new entities such as market service providers, market participants and market operator. An enabling mechanism for their operations including role and responsibility of each entity needs to be put in place. With restructuring of State power sector, three distinct state sector entities for generation, transmission and distribution have been operational since June 2005, however, independence in their market operations is crucial for effective operations of Intra-State ABT mechanism. Besides, there exist few private sector licensees which continue to undertake generation, transmission and distribution activities, although each function is subjected to regulatory scrutiny separately.

Accordingly, the Commission considers it appropriate to elaborate on emerging market structure, various entities, their roles and responsibility, rules for their operation, and contractual framework for the market operation under proposed Intra-State ABT regime for Maharashtra.

3.1 Maharashtra State Power Pool Participants

The Maharashtra State Power Pool shall comprise tiered structure for market operations comprising various entities such as Market Participants, State Pool Participants, Market Service Providers and Market Operator as elaborated in the following paragraphs.

§ **Market Participants** – The Market Participant shall mean the generating companies, power trading companies, distribution licensees and the open access users and consumers operating within electricity market within Maharashtra. (i.e. Generators, DISCOMs, traders, OA Users)

§ **State Pool Participants** - This shall refer to the Market Participants of Maharashtra Electricity Market who meet the conditions for membership of Pool, subject to fulfilment



of qualification criteria or covenants for Pool participation as set out under this Order. Currently, it is envisaged that the distribution licensees and the Transmission open access users (subject to fulfilment of certain qualification criteria or covenants for Pool participation) operating within electricity market of Maharashtra in accordance with the terms and conditions outlined under this Order shall be the State Pool Participants.

§ **Market Service Providers** – Transmission Licensees such as MSETCL, TPC-T and REL-T in their role as intra-State transmission system service providers, MSLDC-OD (Operations Division of Maharashtra State Load Despatch Centre) in its role as State Load Despatch Centre responsible for scheduling and despatch across State, MSLDC-CD (Commercial Division of Maharashtra State Load Despatch Centre) to undertake state-wide energy accounting of energy flows and reconciliation of various energy transactions amongst various State Pool Participants.

§ **Market Operator** – Maharashtra State Power Committee (MSPC).

During the initial phases of market operation, the Transmission Open Access Users (TOAUs) will only be considered to be eligible for membership of the State Pool subject to the acceptance of the following conditions by the TOAUs:

- (i) The TOAUs shall share the imbalance costs and the UI costs.
- (ii) The TOAUs availing supply from captive sources have to demonstrate that they have contracted for the necessary capacity (MW) and energy with the generators.
- (iii) The TOAUs shall inform the MSLDC-OD regarding their contracts so as to enable the MSLDC-OD draw the appropriate despatch schedule.

3.2 Covenants for State Pool Participation

The primary objective of the Maharashtra Balancing and Settlement Code is to govern the functioning of the various State Pool Participants in a way that discipline is maintained with regard to the supply and drawal of energy by the State Pool Participants and the reliability and integrity of power system is maintained.

However, in order to fulfil such an objective, necessary preconditions need to be specified and agreed to by the State Pool Participants for an effective operationalisation of the market. The following is a list of such covenants:

- (a) All State Pool Participants have equal and non-discriminatory access to the proposed 'Balancing and Settlement' mechanism.

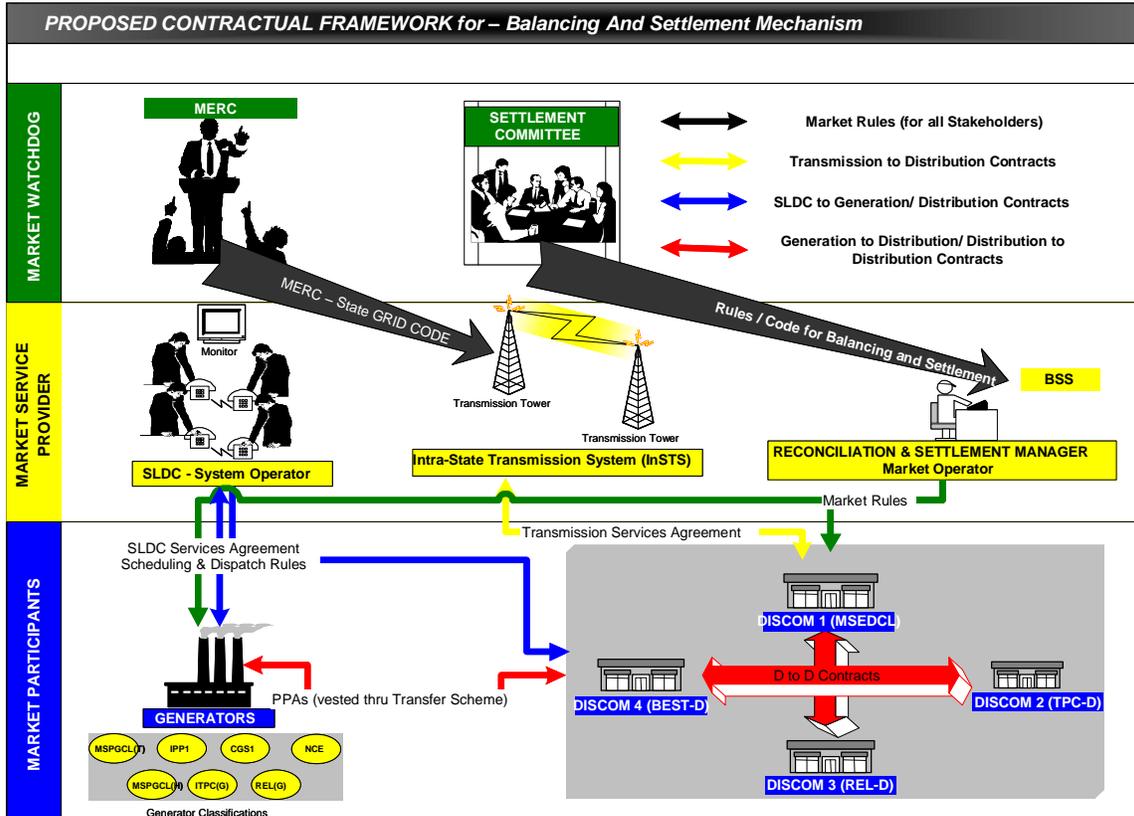


- (b) The State Pool Participants will have to inform the MSPC of all contracts they have entered / will enter into for exchange of energy.
- (c) The MSLDC-OD will have to take all decisions with regard to the despatching of stations after evaluating all possible network parameters / constraints / congestions in the transmission network and in the eventuality of any such network aberration, the instructions by the MSLDC-OD with regard to despatch and drawal shall be binding on all State Pool Participants.
- (d) The State Pool Participants shall operate their equipments / loads in a manner that is consistent with the provisions of the Indian Electricity Grid Code and the State Grid Code.
- (e) The State Pool Participants shall enter into BPTA (Bulk Power transmission agreement) and Connection Agreement with the concerned transmission licensee (MSETCL or TPC-T or REL-T, as case may be), which shall specify the physical and operational requirements for a reliable operation and gain physical access and connection to the intra-State transmission system (InSTS).
- (f) The MSLDC-OD shall publish all such information as required for all other State Pool participants to be aware of the energy exchanges taking place within the pool as well as exigency conditions, if any.
- (g) All State Pool Participants will have to make necessary arrangements for putting up suitable meters, capable of recording energy flows at 15-minute intervals, at the points of injection / drawal.



3.3 Contractual Framework for proposed Market Operation

Figure below illustrates the schematic of the contractual framework among the various constituents of the proposed Balancing and Settlement Mechanism amongst Maharashtra State Pool Participants.



The various regulatory and contractual agreements that would govern the operations of the Maharashtra Electricity Market are:

1. *Maharashtra Balancing and Settlement Code*: This will govern the operations and behaviour of the Market Participants and State Pool Participants. The principles and conditions as outlined under Section-4 and Section-5 of this Order, shall be implemented, administered and enforced by the Maharashtra State Power Committee (MSPC).
2. *Power Purchase Agreements*: Following the un-bundling of MSEB and in the proposed industry structuring, the contractual arrangement through PPAs will have to be put in place amongst generating companies and distribution licensees. The commercial



arrangement amongst the distribution licensees and Generators shall be settled bilaterally as per the PPA terms.

3. *Bulk Power Transmission Agreement:* The Transmission Licensees comprising MSETCL, TPC-T and REL-T are required to provide transmission service to various transmission system users (TSUs) for use of intra-State Transmission system in accordance with provisions of MERC (Transmission Open Access) Regulations 2005 and Commission's Order dated 27th June 2006 (Case 58 of 2005) in the matter of development of transmission pricing framework for the transmission system within Maharashtra. In this regard, the State Pool Participants will have to necessarily enter into a Bulk Power Transmission Agreement (BPTA) and Connection Agreement (CA) with the concerned transmission licensee. The BPTA and CA will describe the terms and conditions to be made binding upon the TSUs of the intra-State transmission system.
4. *State Grid Code:* The Code of Technical Interface or the State Grid Code shall be binding upon all constituents of the Maharashtra Electricity Market – the Market Participants and the Market Service Providers. The operationalisation of the State Power Pool will require certain modifications in the operations/existing practices followed by Market Participants and the Market Service Providers, as stipulated under the State Grid Code, to be in line with requirements of proposed market framework. To this effect, Grid Co-ordination Committee (GCC) shall recommend certain modifications to the State Grid Code for due approval by the MERC.
5. *Commission's Tariff Order:* The Market Participants and the State pool participants shall be responsible for payment of transmission charges and losses in accordance with the Transmission Pricing Framework Order (Case 58 of 2005) and Transmission Tariff Order for FY2006-07 (Case 31 of 2006), Transmission Tariff Order for MYT control period (Case 86 of 2006) and other orders, as directed by Commission. However, for the purpose of 'energy balance' under proposed market operations and determination of 'imbalance pool computations' thereof, the energy losses shall be determined for each trading period, separately based on actual injections into system and actual drawal from the system corresponding to each trading period, as elaborated under the Transmission Tariff Order (Case 31 of 2006 and Case 86 of 2006).

3.4 Roles and Responsibilities of Various Entities

3.4.1 Role of Generating Companies

Under the proposed industry structure, it is envisaged that the generating companies shall enter into long term contractual arrangement (PPAs) with the distribution companies. Further, it is



envisaged that the generators may prefer to enter into bilateral agreements with the distribution licensees and/or OA users, if any, to sell their generation, as also licensees may wish to procure their entire energy requirement by way of 'bilateral contractual arrangements' until Balancing and Settlement mechanism evolves and parties gain experience of operating in a availability based tariff environment.

Accordingly, generators have not been considered to be members of the State imbalance pool. However, the Commission clarifies that proposed market structure for introduction of ABT regime *per se* does not prohibit any Generator from becoming member of 'State Imbalance Pool' arrangement, if it wishes to sell its entire generation as 'Merchant Generator', provided it meets the qualification criteria and the membership conditions/norms to be laid down by MSPC in line with Balancing and Settlement Conditions as approved by Commission under this Order. Further, as the energy input to the imbalance pool from all the generators is the primary input to the imbalance pool accounting, their role in the effective operation of the market, and therefore, implementation of the Balancing and Settlement Code, cannot be ignored /overlooked.

As a seller to the distribution licensee and/or OA Users, a generator is supposed to undertake the following activities:

- (a) Provide capacity offers (availability) on day-ahead basis for each 15-minute duration of trading period on the following day
- (b) Receive an "unconstrained despatch schedule" from MSLDC, detailing how much a generator will produce and when (based on the State-wide Merit Order drawn upon by the MSLDC)
- (c) Provide revised availability, if any, based on the actual generation available, before the finalization of the despatch schedule.
- (d) Despatch generation as per the "constrained schedule", received from the SLDC; the constrained schedule will be on real-time basis and will be prepared after considering transmission constraints, revised availabilities of generators and revised demands by DISCOMs / other distribution licensees / OA customers, if any.
- (e) Back-down or ramp-up the generation, within the available capacity, as per the despatch instruction from the MSLDC depending on system conditions including high frequency.
- (f) Abide by terms and conditions outlined under State Grid Code and conform to the instructions issued by MSLDC from time to time.



3.4.2 Role of Distribution Licensees

In the State Power pool, the distribution licensees play the role of either ‘supplier’ or ‘buyer’ depending on the load-generation balance based on the forecast of load and generation already given by the DISCOMs and the generators respectively, to the MSLDC-OD.

The State Pool Participants whose loss adjusted target drawal schedule is lower than aggregate of allocated generating capacity available to that State Pool Participant in accordance with the ‘target despatch schedule’, shall be construed to be contributing (incrementing) into the Imbalance Pool to the extent of the forecasted under-drawal, whereas the State Pool Participants whose loss adjusted target drawal schedule is higher than aggregate of allocated generating capacity available to that State Pool Participant in accordance with the ‘target despatch schedule’ shall be construed to be drawing (decrementing) from the Imbalance Pool to the extent of the forecasted over-drawal for that trading period.

As a participant of the Imbalance Pool, the State Pool Participants are supposed to undertake the following activities:

- (a) Provide load requirements on day-ahead basis for each half-hour trading period on the following day.
- (b) Receive an ‘unconstrained drawal schedule’ from MSLDC-OD, detailing the quantum of drawals, along with a list of drawal points.
- (c) Receive the information on ‘system marginal price’ (ex-ante imbalance pool price) for each timeblock on day-ahead basis, as generated by the MSLDC-CD.
- (d) Provide revised load forecast, if any.
- (e) Maintain load as per the ‘constrained schedule’, received from the MSLDC-OD; the constrained schedule will be on real-time basis and will be prepared after considering transmission constraints, revised availabilities of generators and revised demands by DISCOMs.
- (f) Arrange for load relief / curtailment, as per the instruction from the MSLDC-OD.
- (g) Abide by terms and conditions outlined under State Grid Code and conform to the instructions issued by MSLDC-OD from time to time.



3.4.3 Role of State Transmission Utility / Transmission Licensees

Pursuant to Section 39(1) of the EA, 2003, the GoM by a notification dated February 17, 2005 has notified the MSETCL as the State Transmission Utility (STU). The Section 39(2) of the EA, 2003, specifies the functions of the STU as follows:

- (a) Undertaking transmission of electricity through intra-State transmission system
- (b) Discharging all functions of planning and co-ordination relating to intra-State transmission system with the Central Transmission Utility (CTU), State Governments, Generating companies, Regional Power Committees, Licensees, and, any other person notified by the State Government in this behalf
- (c) Ensuring development of an efficient, coordinated and economical system of intra-State transmission lines for smooth flow of electricity from a generating station to the load centers
- (d) Providing non-discriminatory open access to its transmission system for use by (a) any licensee or generating company on payment of the transmission charge, or (b) any consumer as and when such open access is provided by the State Commission under sub-section (2) of Section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the State Commission.

To summarize, the MSETCL, as an STU and the Transmission Service Provider, will be responsible for:

- (a) Ensuring the long-term ability of the system to meet reasonable demands for the transmission of electricity;
- (b) Contributing to security of supply through adequate transmission capacity and system reliability;
- (c) Facilitating the MSLDC-OD in managing energy flows on the system, taking into account exchanges with other interconnected systems. To that end, the MSETCL shall be responsible for ensuring a secure, reliable and efficient electricity system and, in that context, for ensuring the availability of all necessary services insofar as this availability is independent from any other transmission system with which its system is interconnected.



3.4.4 Role of MSLDC

Pursuant to Section 31(2) of the EA, 2003, MSETCL being Government Company continues to operate the State Load Despatch Centre (MSLDC). Various functions to be undertaken by the SLDC have been specified under Section 31(2) of the EA, 2003, as follows:

- (a) Being responsible for optimum scheduling and despatch of electricity within a State, in accordance with the contract entered into with the licensees or generating companies operating in that State;
- (b) Monitoring of grid operations in line with guidelines issued by WRLDC from time to time and abiding by instructions which inter-alia, includes security of the grid.
- (c) Keeping accounts of the quantity of electricity transmitted through the State Grid;
- (d) Exercising supervision and control over the intra-State transmission system, and,
- (e) Be responsible for carrying out real time operations for grid control and despatch of electricity within the State though secure and economic operation of the State grid in accordance with the Grid Standards and the State Grid Code.

In essence, the MSLDC will be responsible for:

- (a) Managing energy flows on the system, taking into account exchanges with other interconnected systems;
- (b) Providing all market constituents as well as non-market constituents with whom its system is interconnected, sufficient information to ensure the secure and efficient access, operation, coordinated development and interoperability of the interconnected system;
- (c) Ensuring non-discrimination between system users or classes of system users, in the context of the OA Regulations specified by MERC.

3.4.4.1 Role of MSLDC – CD (Commercial Division of MSLDC)

Though the Commercial Division of MSLDC does not figure as a separate entity in the proposed Maharashtra Electricity Market, yet its role in the operation of the Electricity Market cannot be underestimated since the MSLDC-CD will play an important role in facilitating the settlement of the energy imbalances among the State Pool Participants. During the initial phase of ABT regime, it is envisaged that the role of the Reconciliation and Settlement Manager (RSM) shall be undertaken by the Commercial Division of Maharashtra State Load Despatch Centre (MSLDC-CD).



MSLDC-CD shall provide a service to all stakeholders and shall be guided by requirements and instructions as received from MSPC. Though, currently MSLDC-CD activities are envisaged to be owned by MSETCL, it is envisaged that since MSETCL shall no longer be involved in trading, it is expected that it shall render the requisite services to all stakeholders in an impartial and unbiased manner. The role of the MSLDC-CD shall continue in its present form for the following activities.

- (a) Collecting metering data from all Transmission to Distribution interface points.
- (b) Verifying the collected data
- (c) Processing the collected data
- (d) Storing the collected data

In addition the MSLDC-CD shall:

- (a) Collect metering data from all Generation to Transmission interface points.
- (b) Verify process and store the G – T data.
- (c) Ensure that any data that is not collected by MRI download is substituted by profiled actual data using the interface point manual reading as a base.
- (d) Obtain the required data from other sources that is required to run the BSS, these include:
 - (i) REA data for weekly UI charges and CGS scheduled generation
 - (ii) Data recorded by MSLDC-OD relating to DISCOM day ahead load forecasts, inter-state sales and the daily least cost despatch schedule
 - (iii) Invoice data from Generators supplying details of fixed and variable costs of generation.
 - (iv) Data relating to approved PPA allocations and MERC approved Transmission Tariffs.
- (e) Ensure the accuracy and completeness of the data before the BSS is run.
- (f) Running of the BSS on a monthly retrospective basis once all data has been collected and verified.



- (g) Issue statements to each DISCOMs / TOAUs which clearly and accurately shows the overall balances attributable to each entity for the month.
- (h) Publish the ex-ante day ahead indicative pool price (system marginal price) by the stipulated time on each day and make available this information to the State Pool Participants.

All information produced by the MSLDC-OD will be confidential to the State Pool Participants. It is the role of the RSM to ensure that imbalance prices and volumes are accurately recorded and allocated on the predetermined basis to the State Pool Participant to which they are applicable.

- (a) All source data used in constructing the final statement of balances will be made available to Stakeholders.
- (b) The issued statements shall have supporting documentation that allows the stakeholders to analyse their balances on a trading period basis.

The responsibility and performance obligation of the MSLDC-CD in its capacity as 'Reconciliation and Settlement Manager' shall cover following key areas:

1. **Metering Systems:** All metering systems at the G-T and T-D interface points will be read using MRIs or through suitable remote meter reading, as the case may be. In addition, all metering points will have manual start finish readings collected as check data on a monthly retrospective basis. The procedures for maintenance, replacement and accuracy calibration are detailed in the State Grid Code, which will continue to be the point of reference for all matters relating to metering systems.
2. **Data Collection:** Data collection will, as stated above be by way of MRI backed up by manual start finish readings. The data shall be collected at the end of each calendar week and is time stamped to ensure accuracy. All collected data shall be received by the MSLDC-CD within 3 days of the end of the calendar month to which it relates.
3. **Data Storage:** The collected data shall be securely stored within the MSLDC-CD at the MSETCL and back-ups taken should be held off-site as a contingency against data catastrophe. The system holding the data shall have appropriate anti-virus and firewalls to ensure that the data cannot be accessed by unauthorised persons.
4. **Data Substitution:** Where any case of totally or partially missing data is found, the affected interface point shall have its entire month's data substituted using the Profiled Data Substitution Module.



5. **Data Processing:** The collected data once verified as accurate and complete shall form the inputs into the Balancing and Settlements System (BSS).
6. **Information Outputs:** Although the BSS will provide the outputs that are required to ascertain the accuracy and financial effect of the weekly accumulated imbalances, it is expected that the majority of outputs can be user defined over time in consultation with MSPC. As Stakeholders gain a better understanding of the implications of their operational actions, their requirements for information will become more refined. The BSS and the MSLDC-CD need to be equipped to meet these information requirements as and when they arise.
7. **Information Sharing:** All data collected from interface points shall be shared, on demand, with the stakeholders to whom it relates. The MSLDC-CD need to develop capability to store a repository of data for at least past 18 months of G-T data and T – D data. The data need to be available for each month once the final balancing and settlement statement has been prepared.

3.4.5 Role of Maharashtra State Power Committee (Market Operator)

As a part of emerging industry structure, an institutional mechanism needs to be created to address commercial issues, which would arise among the State Participants. A Maharashtra State Power Committee (MSPC) is recommended for this purpose.

The main objectives of this arrangement are:

- (a) Develop and provide a platform for a market oriented trading mechanism
 - (b) Provide a framework for efficient reconciliation and settlement of operational and accounting disputes between the DISCOMs
 - (c) Recording of commercial arrangement and accounting of energy exchange amongst parties
 - (d) Ensuring the integrity of prices produced in the imbalance pool mechanism
 - (e) Bring transparency in operation, improve upon the market system and procedures
- (i) Core functions of MSPC
- (a) The main functions of MSPC shall, inter alia, include the following:
 - (i) The MSPC shall co-ordinate and facilitate the intra-state and inter-state trading activities by optimal utilisation of resources.



- (ii) The MSPC shall review energy accounting and billing for inter-utility trading of power and ensure settlement of imbalances amongst State Pool Participants in accordance with the Balancing and Settlement Code.
- (iii) The MSPC shall represent the common interest of the State Pool Participants in the matters related to power purchase from CGS and pertaining to issues related to WRLDC at the regional level.
- (iv) The MSPC shall monitor compliance of State Balancing and Settlement Code by the State Pool Participants and resolve complaints/disputes amongst the State Pool Participants.



4 SALIENT FEATURES OF INTRA STATE ABT MECHANISM FOR MAHARASHTRA

Under this part of the Order, the Commission has outlined various design parameters used to establish the framework for the ABT mechanism as well as the framework for the reconciliation and settlement mechanism. The various design parameters that have been considered for the development of the State level ABT Mechanism framework are: (a) Scheduling period (for load forecast of State Pool Participants and despatch of generating stations) (b) Trading period (c) Settlement period (d) Measurement unit for State Imbalance pool (e) Treatment of reactive energy drawal and injection (f) Premise for ex-ante and ex-post pool prices (g) Premise for least cost despatch (h) Premise for allocation of losses (i) Premise for allocation of Regional UI charges among State Pool Participants.

4.1 Scheduling Period

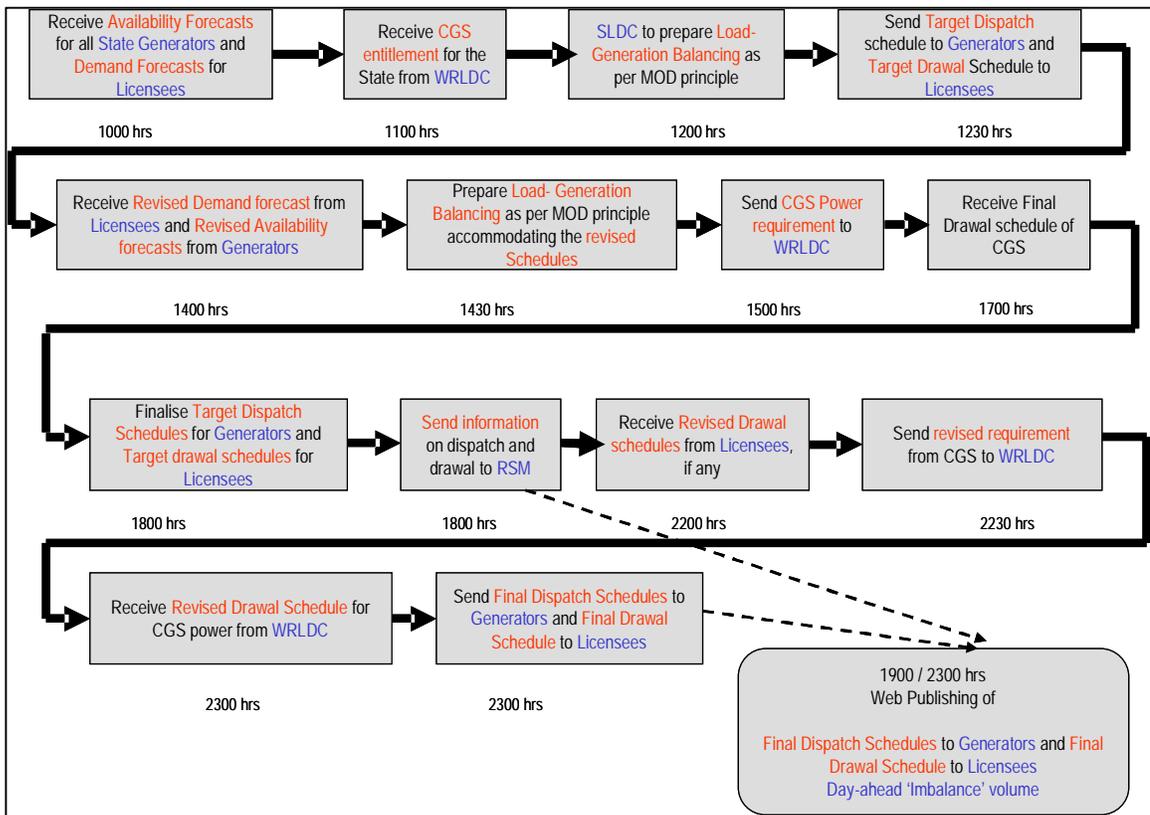
4.1.1 General

- (a) The scheduling period shall comprise of 96 time blocks, each of 15-minute duration starting from 00:00 hours (IST) ending with 24:00 hours (IST). The first time block of scheduling period shall commence from 00:00 hours (IST) to 00:15 hours (IST), second time block of scheduling period shall commence from 00:15 hours (IST) to 00:30 hours (IST) and so on.
- (b) Based on the availability schedule forecasted by generating stations and load requirement forecasted by State Pool Participants, the MSLDC-OD shall draw up the least cost despatch schedule for the State as a whole in accordance with the merit order principles approved by MERC from time to time.
- (c) Before finalizing the least cost despatch schedule for the State as a whole, the MSLDC-OD shall inform the State Pool Participants about availability of surplus power, if any, so as to enable them to decide to undertake any inter-state trade transactions.
- (d) The MSLDC-OD shall co-ordinate with WRLDC and furnish overall drawal schedule for the State as a whole in respect of each ISGS in accordance with the Scheduling and Despatch Code outlined under IEGC 2005.
- (e) Based on least cost despatch schedule, the MSLDC-OD shall notify the Target Despatch Schedule to generating stations and Target Drawal Schedule to the State Pool Participants. The target despatch schedules and target drawal schedules shall be



determined by undertaking load-generation balancing and adopting MOD principles at reference frequency of 50 Hz.

- (f) The Target Despatch Schedule and the Target Drawal Schedules shall be finalised by the MSLDC-OD by 23:00 hrs on a day-ahead basis. MSLDC-OD shall appropriately coordinate with WRLDC before finalization of the schedules.
- (g) In case of shortfall in ‘declared availability’, SLDC shall take into account the available contracted capacity to each Distribution Licensee (or State Pool Participant) before finalising ‘Target Drawal Schedule’ for respective Distribution licensee. The load curtailment, as may be necessary, shall be applicable on all distribution licensees uniformly in proportion to their ‘contracted capacity’ and shall be applicable for shortfall beyond their contracted capacity.
- (h) Schedules once finalised by SLDC may be modified during the course of operation in a day subject to following conditions and under exceptional circumstances (*to be defined as force majeure / system emergency conditions*) and shall be binding on the State Pool Participants and the generating companies. A brief outline of proposed timeframe for ‘day-ahead scheduling processes is depicted below.



- (i) In the event of bottleneck in evacuation of power due to any constraint, outage, failure or limitation in the transmission system, associated switchyard and substations forming part of intra-State Transmission system (InSTS), as certified by SLDC, necessitating reduction in generation, SLDC shall revise the schedules which shall become effective from the 4th time block, counting the time block in which the bottleneck in evacuation of power has taken place to be the first one. Also, during the first, second and third time blocks of such an event, the scheduled generation of the generating station shall be deemed to have been revised equal to actual generation, and the scheduled drawal of State Pool Participants shall also be deemed to have been revised equal to actual drawals.
- (j) Revision of declared capability by the generator(s) and requisition by State Pool Participants for the remaining period of the day shall also be permitted with advance notice. Revised schedules/declared capability in such cases shall become effective from the 6th time block, counting the time block in which the request for revision has been received by SLDC to be the first one.

4.1.2 Load Forecast Schedules from State Pool Participants

- (a) The State Pool Participants (DISCOMs and TOAU, for the time being, as the case may be) shall furnish their forecasted load requirement to MSLDC-OD on day-ahead basis for scheduling period of 15-minute duration i.e. the load forecast schedule for each DISCOM shall include the load forecast schedule for 96 time blocks each of 15-minute duration for following day.
- (b) Each DISCOM shall furnish its schedule to MSLDC-OD by 10:00 hours of each day corresponding to their forecasted load requirement for 00:00 hrs to 24:00 hours of the following day.
- (c) The schedule shall be furnished in accordance with the format devised for the purposes.
- (d) While furnishing the load forecast schedule, the DISCOMs shall take into consideration the load requirements of the ‘open access consumers’ (DOAU and partial TOAU) located within their area of DISCOMs as well. The DISCOMs, while furnishing its overall load forecast schedule to the MSLDC-OD shall include forecasted load requirement of only those ‘open access consumers’ (DOAU and partial TOAU) which are not State Pool Participants.
- (e) However, in case ‘Open Access Users’ (Full TOAU) that fulfill the qualification criteria to be ‘State Pool Participant’, such OA consumers shall also have to furnish the schedules corresponding to their forecasted load requirement to the MSLDC-OD on day-ahead basis in accordance with the format devised for the purposes.



- (f) In case DISCOM fails to furnish schedule by 10:00 hours, the MSLDC-OD shall treat actual off-take by the DISCOM for the previous day (d-1) as the schedule for the following day (d+1). Such schedule as considered by the MSLDC-OD in the event of non-availability of schedule from the DISCOM shall be construed as the schedule of the distribution licensee and the concerned distribution licensee shall be responsible for adhering to such schedule.

4.1.3 Availability of Schedules from Generating Stations

- (a) All Generating Stations (with unit size > 50 MW) excluding RE generating stations shall furnish their forecasted unit-wise availability schedule in respect of generating stations to MSLDC-OD on day-ahead basis for scheduling period of 15-minute duration i.e. the availability schedule for each generating station shall cover unit-wise availability forecast schedule for 96 time blocks each of 15-minute duration for following day. As regards renewable energy generators, MSLDC shall co-ordinate with such RE generators for possibility of ascertaining their day-ahead generation. In the absence of any available information, actual generation by RE generators on the previous day shall be taken into consideration for load-generation balancing purposes. MSLDC will have to ensure adequate communication arrangement with such RE generators for the purposes.
- (b) Each generating station shall furnish its availability schedule to the MSLDC-OD by 10:00 hours of each day corresponding to their unit-wise availability forecasts for 00:00 hrs to 24:00 hours of the following day.
- (c) The schedule shall be furnished in accordance with the format devised for the purposes.
- (d) While furnishing the availability forecasts, the generating companies shall take into consideration the load requirement of their 'captive consumers and open access consumers' and present these requirements separately so as to be despatched fully up to the contracted OA load i.e., the OA generators shall not be subjected to backing down instructions (subject to system emergency and transmission constraint) up to the requirement of their OA transactions. However, generation beyond the load requirement of OA transactions shall be subjected to centralized MOD principles.
- (e) In case generating company fails to furnish schedule by 10:00 hours, the MSLDC-OD shall treat the actual generation by the generating company for the previous day (d-1) as the schedule for the following day (d+1). Such schedule as considered by the MSLDC-OD in the event of non-availability of schedule from the generating company shall be construed as the schedule of the generating company and the concerned generating company shall be responsible for adhering to such schedule.



- (f) The Commission would like to reiterate that Generators will have to ensure availability of contracted power to the maximum extent feasible; particularly under severe shortage situation. As per Regulation 40.1 of the MERC (Terms and Conditions of Tariff) Regulations, 2005, the Generating Company shall be required to demonstrate the declared capacity of its generating station as and when required by the MSLDC. In case of mis-declaration, relevant penalty provisions as per Tariff Regulations shall be applicable. Further, as per Regulation 40.4 of Tariff Regulations, the operating log books of the generating station shall be available for review by the Commission.

4.2 Trading Period

- (a) The trading period denotes the period for accounting of energy exchange amongst the State Pool Participants for the purpose of commercial settlement.
- (b) As per proposed metering plan submitted by MSETCL, interface metering covering all G<>T and T<>D interface points with intra-State Transmission system shall be accomplished by September 2007. In view of proposed metering infrastructure and capability to measure energy exchange at T<>D interface points, the trading period for the purpose of market operation shall be of 15-minute duration. However, it is clarified that in case metered data for 15-minute duration at any interface point is not available, metered data based on existing metering infrastructure for 30 minute duration or as the case may be, shall be used for computation of energy exchange under imbalance pool settlement. Such metered data (30-minute duration) shall be divided into two equal components so as to undertake imbalance pool computations with 'trading period' as 15-minute duration only.
- (c) The trading period for the market operations shall be of 15-minute duration starting from 00:00 hours (IST) for a particular day ending with 24:00 hours (IST) on that day. Thus, the first time block of trading period shall commence from 00:00 hours (IST) to 00:15 hours (IST), second time block of trading period shall commence from 00:15 hours (IST) to 00:30 hours (IST) and so on. Thus, in effect, there shall be 96 trading periods in a particular day.
- (d) The price for settlement of energy exchange amongst the State Pool Participants shall be determined separately for each trading period based on weighted average 'System Marginal Price' prevalent for that time block. These prices for settlement shall be determined with the help of a 'Balancing and Settlement System' (BSS) software, to be run by the MSLDC-CD.

4.3 Settlement Period

The commercial settlement for the imbalances amongst the State Pool Participants will be of two tiers as follows.



4.3.1 Weekly Settlement

- (a) For the purposes of settlement of energy exchanges amongst State Pool Participants, the MSLDC-CD shall work out the 'Imbalance Pool Increments' and 'Imbalance Pool Decrements' by each State Pool Participant corresponding to each trading period in accordance with the principles outlined hereunder. The concept of 'imbalance pool increments / decrements' have been outlined under subsequent paragraphs.
- (b) Based on 'Imbalance Pool Increments' and 'Imbalance Pool Decrements' and the 'Ex-Post Imbalance Pool Price', the 'Imbalance Pool Amount Payable' and 'Imbalance Pool Amount Receivable' in respect of each State Pool Participant corresponding to each trading period shall be determined.
- (c) The aggregate of 'Imbalance Pool Amount Payable' and 'Imbalance Pool Amount Receivable' corresponding to each trading period over the period of one week in respect of each State Pool Participant shall form the basis for 'Net Imbalance Pool Amount Payable' or 'Net Imbalance Pool Amount Receivable' by the respective State Pool Participant for that week.
- (d) For the purposes of the weekly settlement, the 'Week' shall be referred to as calendar week and shall coincide with the weekly settlement period considered for regional UI settlement.

4.3.2 Annual Fixed Cost Settlement

- (a) For the purposes of settlement of capacity exchanges amongst State Pool Participants, the MSLDC-CD shall work out the Fixed Cost Reconciliation (FCR) Pool volume comprising 'FCR Pool Increments' and 'FCR Pool Decrements' by each State Pool Participant corresponding to each trading period in accordance with the principles outlined hereunder.
- (b) The computation of 'FCR Pool Increments' and 'FCR Pool Decrements' shall be based on Available Capacity declarations as provided by the Generating Stations. The Generating Stations shall abide by backing down instructions issued by MSLDC on account of system constraints, grid security aspects etc. For the purpose of Fixed Cost Reconciliation, the generating stations shall be deemed to be available upto its declared capacity, even though it may be backed down for the reasons not attributable to such generating station. Further, it is clarified that during real-time operations if required, SLDC may seek to verify available capacity of the generating station upto 'declared capacity' and issue despatch instructions accordingly.



- (c) 'FCR Pool volume' shall be based on excess or shortfall in 'loss adjusted drawal' by State Pool Participant corresponding to a particular trading period vis-à-vis 'overall generation capacity' declared to be available to State Pool Participant based on 'forecasted availability' furnished by the generators contracted by the concerned State Pool Participant.
- (d) The excess in 'loss adjusted drawal' shall be termed 'decrements' to 'FCR Pool volume' whereas 'shortfall' in 'loss adjusted drawal' shall be termed as 'increments' to 'FCR Pool volume'. Such 'FCR Pool Increments' and 'FCR Pool decrements' shall be tracked for each trading period over the annual settlement period.
- (e) 'FCR Pool Reconciliation' shall take place on annual basis, taking into consideration the aggregate of 12-monthly 'FCR Pools' for each trading period.
- (f) The 'Rate Basis' for determination of FCR pool price for settlement shall be 'overall average per unit fixed cost' of the contributing Pool Participant into 'FCR Pool'.
- (g) FCR Pool value shall be determined as aggregate of product of 'overall average per unit fixed cost' of the contributing FCR Pool Participant and the 'FCR Pool increments' by the contributing FCR Pool Participant into the FCR pool.
- (h) For the purpose of determining 'overall average per unit fixed cost' of contributing Pool participant, total fixed cost payable by the Pool Participant for the generating stations contracted by that FCR Pool Participant during the fiscal year under consideration shall be divided by 'total energy units' injected by generating station and to be paid for such FCR Pool Participant during the fiscal year, in accordance with the PPA conditions shall be considered.
- (i) FCR Pool Price to be paid by the FCR Pool Participants decrementing to 'FCR Pool' shall be determined as ratio of 'FCR Pool Value' to 'FCR Pool volume'.
- (j) Based on 'FCR Pool Increments' and 'FCR Pool Decrements' and the 'FCR Pool Price' (to be determined in accordance with the principles outlined above), the 'FCR Pool Amount Payable' and 'FCR Pool Amount Receivable' in respect of each State Pool Participant corresponding to each trading period shall be determined.
- (k) The aggregate of 'FCR Pool Amount Payable' and 'FCR Pool Amount Receivable' corresponding to each trading period over the period of one fiscal year in respect of each State Pool Participant shall form the basis for 'Net FCR Pool Amount Payable' or 'Net FCR Pool Amount Receivable' by the respective State Pool Participant for that fiscal year.



- (l) For the purposes of the annual fixed cost settlement amongst the State Pool Participants, the 'annual period' shall be referred to as the 'fiscal year'.

4.4 Measurement Units for Imbalance Pool

- (a) The 'Imbalance Pool Increments', the 'Imbalance Pool Decrements', and the 'FCR Pool Increments' and the 'FCR Pool Decrements' shall be accounted in terms of electrical energy units. The measurement unit for the 'Imbalance Pool' and the 'FCR Pool' shall be kilowatt hours (kWh).
- (b) The decimal component of the energy unit shall be rounded off to nearest integer value.
- (c) The 'Imbalance Pool Amount Payable', the 'Imbalance Pool Amount Receivable', and, 'FCR Pool Amount Payable' and the 'FCR Pool Amount Receivable' shall be accounted in terms of Indian Rupees (INR). The measurement unit for the 'Imbalance Pool Amount' and the 'FCR Pool Amount' shall be Indian Rupees (INR).
- (d) The decimal component of the Amount shall be rounded off to nearest integer value in Rupee terms.

4.5 Basis for computation of Ex-Ante Imbalance Pool Price

- (a) The Ex-Ante Imbalance Pool price shall be derived for each trading period separately. The Ex-Ante Imbalance Pool price shall be based on overall pool volume and pool value to be determined based on the 'target despatch schedule' for the generators and 'target drawal schedule' for the State Pool Participants to be finalised by MSLDC-OD on day-ahead basis.
- (b) The State Pool Participants whose loss adjusted target drawal schedule is lower than aggregate of allocated generating capacity available to that State Pool Participant in accordance with the 'target despatch schedule' shall be construed to be contributing (incrementing) into the Imbalance Pool to the extent of the forecasted under-drawal, whereas the State Pool Participants whose loss adjusted target drawal schedule is higher than aggregate of allocated generating capacity available to that State Pool Participant in accordance with the 'target despatch schedule' shall be construed to be drawing (decrementing) from the Imbalance Pool to the extent of the forecasted over-drawal for that trading period. The losses for the purpose of 'loss adjustment' shall be based on average intra-State transmission system losses for previous 52 week period.
- (c) The 'Ex-Ante Imbalance Pool Volume' is summation of all 'imbalance pool increments' corresponding to particular trading period which would be equal to the summation of all



‘imbalance pool decrements’ so that for any trading period the ‘imbalance pool volume’ shall always be balanced in energy terms.

- (d) The ‘Ex-Ante Imbalance Pool Value’ is aggregate of product of weighted average variable cost of the marginal stations of the contributing State Pool Participant and the ‘imbalance pool increments’ by the contributing State Pool Participant into the imbalance pool. For the purpose of determining the marginal station for a particular State Pool Participant, the ‘Merit Order Stack’ for that State Pool Participant comprising the generating stations to the extent of generation capacities contracted by that State Pool Participant based on their variable cost shall be drawn and the same shall form the basis for determining marginal station in respect of that State Pool Participant.
- (e) The variable cost of each generating station for the purpose of Merit Order Despatch stack and for computation of ‘Ex-Ante Imbalance Pool Price’ shall be the per unit energy charge outlined in the energy bill for the previous month in respect of each generating station or the latest information available in respect of such generating station, as the case may be.
- (f) The per unit energy charge in the energy bill shall be in accordance with the heat rate, auxiliary consumption factor, the formula for energy charge as approved by the Commission and the delivered cost of fuel for that month in respect of each generating station.
- (g) The ‘Ex-ante Imbalance Pool Price’ shall be determined as ratio of ‘Ex-ante Imbalance Pool Value’ and ‘Ex-ante Imbalance Pool Volume’ as derived above. The Ex-Ante Imbalance Pool price shall only provide a signal at which imbalance pool settlement amongst the ‘State Pool Participants’ shall take place if on ex-post basis, the actual energy injection and energy drawal by various market constituents take place exactly in accordance with the forecasted schedule on ex-ante basis. The ex-ante price is intended to provide economic signal however, it is to be noted that the same is dependent on several factors not limited to accuracy of load forecasts provided by market participants, availability forecast of generation stations, availability of latest variable cost information pertaining to generating stations etc.
- (h) As outlined earlier, the overall imbalance pool volume for each trading period comprises summation of ‘imbalance pool decrements’. The imbalance pool decrements include decrements on account of inter-State trade of energy and decrements on account of energy exchange amongst Pool Participants.
- (i) The Ex-Ante Imbalance Pool Prices shall be denominated in Rs per kWh with fractional numbers specified up to two decimal places. The fractional points from third decimal point would be rounded off to nearest integer for second decimal point.



4.6 Basis for computation of Ex-Post Imbalance Pool Price (Settlement Price)

- (a) The Ex-Post Imbalance Pool Price shall be derived for each trading period separately. The Ex-Post Imbalance Pool Price shall be based on overall pool volume and pool value to be determined based on the 'actual injection' by the generators and 'actual drawal' by the State Pool Participants.
- (b) State Pool Participants whose actual loss adjusted drawal during a trading period is lower than aggregate of actual injection of the generating stations contracted by the State Pool Participant in accordance with their contracted capacity shall be construed to be contributing (incrementing) into the Imbalance Pool to the extent of their under-drawal, whereas the State Pool Participants whose actual loss adjusted drawal during the trading period is higher than aggregate of actual injection of the generating stations contracted by the State Pool Participant in accordance with their contracted capacity shall be construed to be drawing (decrementing) from the Imbalance Pool to the extent of their over-drawal. The losses for the purpose of 'loss adjustment' shall be based on actual losses for the trading period computed as difference between actual injections by generating stations and actual drawal by State Pool participants.
- (c) The 'Ex-Post Imbalance Pool Volume' is summation of all 'imbalance pool increments' corresponding to particular trading period which would be equal to the summation of all 'imbalance pool decrements' so that for any trading period the 'imbalance pool volume' shall always be balanced in energy terms.
- (d) The 'Ex-Post Imbalance Pool Value' is the aggregate of product of weighted average variable cost of the marginal stations of the contributing State Pool Participant and the 'imbalance pool increments' by the contributing State Pool Participant into the imbalance pool for a particular trading period. For the purpose of determining the marginal station for a particular State Pool Participant, the 'Merit Order Stack' for that State Pool Participant comprising the generating stations to the extent of generation capacities contracted by that State Pool Participant based on their variable cost shall be drawn and the same shall form the basis for determining marginal station in respect of that State Pool Participant.
- (e) The variable cost of each generating station for the purpose of Merit Order Stack and for computation of 'Ex-Post Imbalance Pool Price' shall be the per unit energy charge outlined in the energy bill for the instant calendar month corresponding to the settlement period in respect of each generating station. In case of generating stations having billing cycle spread over two calendar months, the latest information as available pertaining to previous billing cycle shall be considered for the purposes.



- (f) The per unit energy charge in the energy bill shall be in accordance with the heat rate, auxiliary consumption factor, the formula for energy charge as approved by the Appropriate Commission and the delivered cost of fuel for that month in respect of each generating station.
- (g) The Ex-Post Imbalance Pool price shall represent the price for settlement of energy exchange amongst the 'Pool Participants' in accordance with the 'Imbalance pool Volume' determined for a particular trading period within a particular 'Settlement Period'.
- (h) The 'Ex-Post Imbalance Pool Price' shall be determined as ratio of 'Ex-post Imbalance Pool Value' and 'Ex-Post Imbalance Pool Volume' as derived above..
- (i) As outlined earlier, the overall imbalance pool volume for each trading period comprises summation of 'imbalance pool decrements'. The imbalance pool decrements include decrements on account of inter-State trade of energy and decrements on account of energy exchange amongst State Pool Participants and un-scheduled interchange (UI) energy, if negative.
- (j) The Ex-post Imbalance Pool prices shall be denominated in Rs per kWh with fractional numbers specified up to two decimal places. The fractional points from third decimal point would be rounded off to nearest integer for second decimal point.

4.7 Premises for Least Cost Despatch

- (a) The MSLDC-OD shall be responsible to prepare Least Cost Despatch Schedule after taking into account the requirement of the State as a whole. The process of scheduling and despatch and role/responsibility of the MSLDC-OD shall be in accordance with the procedure outlined under 'Scheduling and Despatch Code' of the State Grid Code, modifications / amendments thereto and any such Order issued by the MERC from time to time. Further, MSLDC-OD shall determine the target despatch schedules and target drawal schedules by undertaking load-generation balancing and adopting MOD principles at reference frequency of 50 Hz.
- (b) The least cost despatch planning shall be based on the 'Merit Order Stack' to be adopted by the MSLDC-OD on day-ahead basis based on the available capacity declaration furnished by the generating stations on a day-ahead basis corresponding to each trading period. During real-time operations, SLDC may seek to verify available capacity upto 'declared capacity' and issue despatch instructions accordingly.
- (c) During real-time operations, in case of shortfall in 'availability', SLDC shall take into account the available contracted capacity to each Distribution Licensee (or State Pool



Participant) before issuing drawal/curtailment instructions for respective Distribution licensee. The load curtailment as may be necessary, shall be applicable on all distribution licensees uniformly in proportion to their 'available contracted capacity' and shall be applicable for shortfall beyond their available contracted capacity.

- (d) The 'Merit Order Stack' shall be based on the energy charge inclusive of fuel cost adjustment charge, if any, of various generating stations. The energy charge of the generating stations shall be based on the heat rate, auxiliary consumption factor, the formula for determination of energy charge as approved by appropriate Commission and the delivered cost of fuel at respective generating stations.
- (e) The generating stations shall furnish the details of the prevalent fuel charge including, details of the delivered cost of fuel during the month to the MSLDC-OD from time to time at least once during the month and not later than fifth day of the month to enable the MSLDC-OD develop centralized 'Merit Order stack' for the State as a whole.
- (f) For the purpose of Merit Order Stack, the Must run generating stations, constrained generating stations such as hydro stations linked to irrigation shall be ranked earliest in the Merit Order Stack.
- (g) All generating stations and State Pool Participants (including distribution licensees and TOAUs) would strictly comply with provisions of MERC(State Grid Code) Regulations 2006 including amendments thereof, and shall abide by Scheduling and Despatch instructions issued by SLDC from time to time.

4.8 Basis for Allocation of Losses

- (a) For the purpose of determination of imbalance pool increments/decrements, the actual drawal by State Pool Participants need to be corrected to derive 'loss adjusted drawal' by each State Pool Participant to a common reference point (ex-bus) for comparison.
- (b) The intra-State transmission system losses for the purposes of imbalance computations shall be based on difference of actual injections by generating stations including UI energy (if positive) and actual drawal by State Pool Participants including drawal for inter-state trading purposes and UI energy (if negative).
- (c) The intra-State transmission system losses shall be allocated amongst the State Pool Participants at actual (ex-post) in proportion to the actual drawal by each State Pool Participant.



- (d) The mechanism for energy accounting and treatment of intra-State transmission system losses have already been elaborated under Commission's Transmission Tariff Order for FY2006-07 (Case 31 of 2006) and Transmission Tariff Order for FY 2007-08 (Case 86 of 2006).

4.9 Basis for allocation of regional UI charges amongst State Pool Participants

- (a) Settlement of regional UI charges shall be on **weekly** basis in accordance with Regional Energy Accounts finalised by WRLDC and the claim raised by WRLDC/WRPC for the State shall be settled by MSPC on behalf of State Pool Participants corresponding to deviations for each 15-minute duration.
- (b) However, allocation of UI charges amongst the State Pool Participants shall be in accordance with parameters and principles outlined herein below and shall be undertaken on **weekly** basis corresponding to deviations of State Pool Participants from their schedule for each 'trading period' of 15-minute duration. For the purpose of determination of 'absolute deviations', deviations of State Pool Participants including in-state generators from their schedule shall be determined on 15-minute basis and the same shall be compared against the UI energy of corresponding 15-minute block duration.
- (c) MSLDC-CD shall develop statement of reconciliation corresponding to each trading period for weekly regional UI charges against the weekly allocation of net UI charges and weekly weighted average scheduled energy charges covered as a part of 'imbalance pool settlement'.
- (d) The un-scheduled interchange (UI) charges at the regional level corresponding to Maharashtra State shall be shared/allocated amongst all the State Pool Participants on the following basis.
- (i) The weekly statement of regional UI charges as prepared by WRLDC/WRPC shall form basis for sharing of UI charges (cost or incentive) amongst the State Pool Participants.
- (ii) The Gross UI charges corresponding to UI energy for each 'trading period' shall be divided into two components viz. a) Cost corresponding to UI energy at weighted average scheduled energy rate of the contributing State Pool Participants based on the CGS stations and b) net UI charges is the difference of gross UI charge and cost associated with UI energy as considered in the 'imbalance pool' workings.
- (iii) The net UI charges shall be allocated to the State Pool Participants in proportion to their deviation from the 'target drawal schedule' or 'target despatch schedule', as the case may be, corresponding to each trading period. For this purpose, of allocation of



net UI cost/incentive, the basis for deriving proportionate share shall be ‘aggregate deviation’ of each State Pool Participant from its ‘target schedule’.

- (iv) Further, ‘aggregate deviation’ of the in-state generators shall also be captured apart from ‘aggregate deviation’ of State Pool Participants.
- (v) Net UI charges shall be divided into two parts (i) Net UI charges-1: corresponding to ‘aggregate deviation’ of State Pool Participants, and (ii) Net UI charges-2: corresponding to ‘aggregate deviations’ of in-state generators.
- (vi) Net UI charges-1 shall be allocated amongst the State Pool Participants which have been responsible for the deviations depending on the incidence of the UI cost/incentive i.e. in case, for a particular trading period, if there exists an incidence of UI cost, the same would be allocated amongst the State Pool Participants who have overdrawn compared to their drawal schedule for that trading period. Alternately, for a trading period, if there exists an incidence of UI incentive, the same would be allocated amongst the State Pool Participants who have under-drawn compared to their original drawal schedule for that trading period.
- (vii) Net UI charges-2 shall be allocated amongst all State Pool Participants in proportion to actual drawal during that trading period.
- (viii) Net UI charges-2 corresponding to in-State generator deviations shall be captured only when in-State generator deviations are in tandem (of same sign) with overall UI implications for the State. (I.e. when (i) State earns UI incentive and in-State generators deviations has facilitated earning of UI incentive AND (ii) State incurs UI cost and if in-State generators has caused UI cost). Under other scenarios, the in-state generator deviations should be netted off against the overall State deviations before allocating the UI cost/incentive amongst the State Pool Participants.

4.10 Accounting of energy during emergency conditions (market suspension)

- (a) In case due to emergency condition or any other reasons including force majeure such as islanded mode of operation, if the Market Operator (MSPC) has notified the operations of markets to be suspended for a specific duration during a particular calendar week (period of reconciliation) then, ‘accounting of energy’ corresponding to such specified period shall be considered only for the purpose of assessment of transmission losses and ‘energy accounts’ shall be maintained accordingly.



- (b) However, for the purpose of ‘imbalance pool computation’, the ‘weekly energy account’ shall exclude the specified periods of market suspension and the reconciliation of energy exchange and settlement of imbalance pool workings shall be determined excluding the energy exchange, if any, during period of Market suspension. Similarly, for the purpose of ‘FCR pool computation’, the ‘FCR Pool volume’ (or annual capacity exchange account) shall exclude the specified periods of market suspension which shall include duration of capacity exchange under standby arrangement. Accordingly, the reconciliation of capacity exchange and settlement of FCR pool workings shall be determined excluding the capacity exchange, if any, during period of Market Suspension.
- (c) For the purpose of transmission loss determination, the ‘energy accounts’ for the ‘specified period of market suspension’ shall consider the ‘profiled data substitution’ methodology, in case requisite information pertaining to metered data is not available for some interface points.
- (d) Further, the Commission clarifies that during such period of ‘market suspension’ the energy exchange amongst State participants (say, within island formed) will have to be settled by mutual agreement or at system marginal price for the islanded system prevalent at that point in time.

4.11 Applicability of intra-State ABT regime to Open Access Users

- (a) The Commission recognises that it is important to understand and address the complexities of Open Access transactions before applying ABT mechanism to OA Users. It would be worthwhile to understand the distinctive requirement of Open Access Users and their classifications mainly from the perspective of technical feasibility and constraints in subjecting the OA Users to scheduling and despatching regime as per ABT requirements, similar to any other Distribution licensee. The Commission has already classified Open Access Users such as Transmission Open Access Users (TOAU) and Distribution Open Access Users (DOAU) under two separate Regulations, namely, MERC (Transmission Open Access) Regulations 2005 and MERC (Distribution Open Access) Regulations 2005. It is worthwhile to clearly define various classifications of OA users for the purposes of ABT regime as under:
- (b) **Transmission Open Access User (TOAU):** means a person who has been allotted transmission capacity rights to access an intra-state transmission system pursuant to a Bulk Power Transmission Agreement. Further, the term ‘**Direct Consumer**’ shall mean Transmission Open Access User, who is also a consumer of a ‘Distribution Licensee’.



- (c) **Distribution Open Access User (DOAU)**: This shall refer to open access user connected to distribution network of distribution licensee (typically at 33 kV or below). The term '**Embedded Consumer**' shall mean Distribution Open Access User, who is also a consumer of a 'Distribution Licensee'.
- (d) The Commission is given to understand that currently within Maharashtra, all TOAU are consumers of a Distribution Licensee and have supply contract with concerned distribution licensee wherein its drawal point is situated and hence are '**Direct Consumers**'. However, in future it is envisaged that a TOAU may not be a 'Direct Consumer of Distribution Licensee' and shall source its entire power requirement from other sources such as Captive generation, trading licensee or other distribution licensee.
- (e) Similarly, the Commission understands that currently within Maharashtra, all DOAU are consumers of a Distribution Licensee and have supply contract with concerned distribution licensee wherein its drawal point is situated and hence are '**Embedded Consumers**'. However, in future it is envisaged that a DOAU may not be an 'Embedded Consumer of Distribution Licensee' and shall source its entire power requirement from other sources such as Captive generation, trading licensee or other distribution licensee.
- (f) The Commission recognises that for the purpose of operation of 'Balancing & Settlement' mechanism under ABT regime, this distinctive requirement of OA Users poses specific challenge in terms of tracking of imbalances vis-à-vis multiple contracting arrangements. Most importantly, technical feasibility of scheduling, despatching, monitoring of such transactions of Direct and Embedded Consumers (its inclusion or exclusion from Distribution licensees schedules and drawal etc.) needs to be explored before subjecting the concerned TOAU/DOAU to scheduling and dispatch regime as envisaged under ABT regime.
- (g) Presently, as per IEGC 2005 and State Grid Code Regulations, all generators above 50 MW need to be monitored and despatched by SLDC and subjected to despatch instructions issued by SLDC. Further, SLDC is required to monitor the drawal at 440/220/132 kV strategic substations and as per clause 4.8.4 (d), SLDC is required to monitor operations of all elements at 132 kV and above.
- (h) Thus, at present it is not possible for SLDC to monitor, schedule, and/or despatch any OA transaction involving OA generation below 50 MW and any load connected below 132 kV. Even in case of OA users connected at 132 kV, necessary communication, metering and monitoring facilities need to be installed to offer visibility at SLDC to enable them 'monitor, schedule, verify and effect appropriate adjustments to the wheeling schedules'.



- (i) Further, the Commission opines that in order to bring OA transactions under ABT regime, some of the key aspects that need to be considered are:
- Provisioning of default service to open access consumers
 - Visibility and control of open access load/consumer at SLDC level
 - Prioritisation sequence in case of curtailment
 - Requirement of energy banking facility for open access transactions
- (j) Accordingly, the Commission is of the view that open access transactions can be classified in terms of ‘full open access transactions’ and ‘partial open access transactions’. The ‘full open access transaction’ are those where in the open access user (generator/consumer) have contracted for its requirement in entirety and is not dependent on distribution licensee to provide any additional support/service (by way of default service or have any contract demand – CMD with a DISCOM). Such Open Access User is nothing but TOAU or DOAU as the case may be depending on voltage level at which drawal/injection point is connected. Thus, ‘full open access User’ can be treated on par with DISCOM for the purpose of ‘State imbalance pool’ and subjected to similar set of Balancing and Settlement Code.
- (k) Further, from system operational point of view in terms of visibility and control at SLDC (providing schedules and receiving dispatch/curtailment instructions in case of emergency) requirements of ‘full open access User’ connected at Transmission network (i.e. TOAU) are best handled within system rather than for ‘full open access User’ connected at Distribution network level (i.e. DOAU). Further, Distribution licensee would have already assumed risks and cost associated with all DOAU within its licensed area.
- (l) Further in this context, the Commission notes that the physical aspects of scheduling, dispatch, monitoring and control do not vary with mechanism that one chooses for settlement of transactions which is in the nature of financial settlement. Thus, on real time basis the generators would inject energy and consumers including distribution licensees and open access users would draw energy. The imbalances arising on account of variation in physical flows as compared to contractual position of the parties would need to be settled by way of ‘balancing pool’ mechanism. Integration of open access transactions in the ‘imbalance pool’ needs to be viewed in light of technical and financial requirements and limitations of operations of the pool.
- (m) In view of above, the Commission opines that one of the options is to allow membership of the ‘Imbalance pool’ to *full* TOAU to begin with and settlement of their transactions shall be



made in accordance with the 'Balancing and Settlement Code'. Thus, during the initial phases of ABT regime, the *full* TOAUs will only be considered to be eligible for membership of the Imbalance Pool. However, such membership will be subject to the acceptance of the following conditions by the TOAUs:

- The TOAUs shall share the imbalance costs and the UI costs.
- The TOAUs availing supply from captive sources have to demonstrate that they have contracted for the necessary capacity (MW) and energy with the generators.
- The TOAUs shall inform the MSLDC regarding their contracts so as to enable the MSLDC draw the appropriate despatch schedule.

Conclusion for Open Access Users

- (n) Accordingly, the Commission rules that during initial phase of ABT regime, only full TOAUs shall be treated on par with distribution licensees and subjected to Balancing and Settlement Code for settlement of their overdrawal and underdrawal. The overdrawal by partial TOAU and distribution open access users beyond their contract demand shall be settled at retail tariff rate of the DISCOMs for temporary supply to such category of consumers to which OA user may belong. For this purpose, settlements on a TOD basis will have to be looked into. Besides providing adequate compensation, this will keep the system simple and be equitable with other consumers of the distribution licensees.
- (o) The Commission directs SLDC and distribution licensees to devise and agree on protocol within one month of issuance of this Order for energy accounting and providing credit for wheeled energy units on TOD basis upon accounting of appropriate transmission loss and wheeling loss, as applicable for the said purpose of open access transactions. Until such mechanism is put in place, existing mechanism of providing energy credit for wheeled energy transactions shall continue.



5 PRINCIPLES FOR BALANCING AND SETTLEMENT AND SETTLEMENT PROCESS

Under this part of Order, the Commission has outlined the premise and principles for settlement of energy exchange amongst State Pool Participants in the context of the market operations under ABT mechanism. The principles outlined under this part of the Order specifically strives to address rules pertaining to settlement of imbalance energy exchange amongst State Pool participants, rule for settlement regional UI pool account, rule for settlement of inter-state trade of energy pool account and rule for settlement of fixed cost reconciliation pool amongst State Pool Participants.

Further, the Commission has outlined specific conditions for *fail-safe* market operations under ABT regime such as payment guarantees, events of defaults by State Pool Participants, MSPC (Market Operator) and Market Service providers (MSLDC-CD, MSLDC-OD, MSETCL etc.) and remedies thereof. Specific areas covered under this part of the Order are (a) Settlement of Imbalance Pool (b) Settlement of Regional UI Pool account (c) Settlement of FCR Pool account (d) Payment Guarantees (e) Payment Default and Remedies.

5.1 Settlement of Imbalance Pool

- (a) The MSLDC shall prepare weekly 'Statement of Imbalance Pool Settlement' corresponding to energy exchange amongst the State Pool Participants for each trading period over the weekly period of each fiscal year under consideration commencing from 1st April in accordance with the energy account reconciliation rules.
- (b) MSLDC shall present such weekly 'Statement of Imbalance Pool Settlement' to State Pool participants for payment within seven calendar days from the end of the week corresponding to the preceding week.
- (c) The 'Statement of Imbalance Pool Settlement' shall clearly provide for following distinct statements of settlement:
 - (i) Settlement of Imbalances (energy exchange) amongst State Pool Participants.
 - (ii) Settlement of Net UI charges amongst the State Pool Participants.
 - (iii) Aggregate net position of settlement amongst the State Pool Participants.
- (d) MSLDC shall raise Bills on the State Pool Participants which shall be due for payment and shall be binding on all State Pool Participants to settle the payment on weekly basis.



- (e) In case of any discrepancy or clarification, concerned State Pool Participant shall bring to the notice of MSLDC such discrepancy with necessary corrections/modifications. The MSLDC in turn, shall issue 'Supplementary Bill' to State Pool Participants within seven calendar days from receipt of notification from the concerned State Pool Participant with due modifications/adjustments (credit note/debit note) as may be necessary.
- (f) All bills, (whether Interim, Final or supplementary) issued by the MSLDC to State Pool Participants shall be due for payment within seven calendar days from its submission to the State Pool Participants.
- (g) MSPC shall open and maintain a bank account to receive/release payments in respect of settlement amongst State Pool Participants.
- (h) The State Pool Participants shall make all payments in favour of MSPC on or before due date and MSPC shall in turn release payments to State Pool Participants within three calendar days from receipt of payment from decrementing State Pool Participants. In case, all payment due from decrementing State Pool Participants is not available on due date of payment, MSPC shall release payment (to the extent collected against concerned monthly settlement due and as available on due date) to contributing State Pool Participants in proportion to their entitlement as per Weekly 'Statement of Imbalance Pool Settlement'.

5.2 Settlement of Regional UI Pool account

- (a) The MSLDC shall prepare Weekly 'Statement of Net UI Charge Settlement' corresponding to allocation of Net UI Charges amongst the State Pool Participants for each trading period over the weekly period of each fiscal year under consideration commencing from April in accordance with the regional UI energy account reconciliation rules.
- (b) The MSLDC shall present such Weekly 'Statement of Net UI charge Settlement' to MSPC for its records within seven calendar days from the end of the week corresponding to the preceding week.
- (c) The MSLDC shall provide to MSPC the weekly Statement of regional UI charges (cost or incentive) payable or receivable, as the case may be, based on the 'Regional Energy Account' statements furnished by WRLDC/WRPC.
- (d) MSPC shall maintain records of weekly regional UI energy and regional UI charge corresponding to each trading period. MSLDC on behalf of MSPC shall maintain records of weekly allocation of UI energy and allocation of regional UI charges (Gross and Net UI



charge) amongst State Pool Participants corresponding to each trading period of the calendar week.

- (e) The regional UI charges comprises charges corresponding to active UI energy and reactive charges; however, for the purpose of this regional UI settlement, MSPC shall consider only active UI charges since under proposed ABT Mechanism allocation of Net UI charges amongst State Pool Participants are based on active UI energy. At present, regional reactive UI charges are to be borne by MSETCL and forms part of its Annual Revenue Requirement and recovered through transmission tariff. Hence, the MSETCL shall make payment to MSPC corresponding to regional reactive UI charges on weekly basis to enable MSPC settle the regional UI bill on weekly basis.
- (f) MSPC on behalf of State Pool Participants shall collect on weekly basis and make payment towards settlement of the regional UI charges to WRLDC/WRPC on weekly basis.
- (g) State Pool Participants shall make payment to MSPC on weekly basis in accordance with the rules outlined hereinabove.
- (h) While settlement of regional UI charges as well as settlement of Imbalance pool are to be made on weekly basis, there would be a gap of approx. 2 weeks amongst two settlements on account of time period of preparing imbalance pool settlement, raising of bills and due date for payment. Accordingly, there shall be requirement for the MSPC of funds towards working capital.
- (i) State Pool Participants shall agree to provide fixed sum equivalent to one fortnightly payment (two week regional UI charges) towards funding working capital requirement of MSPC, in advance, based on past twelve weekly average UI charges for the State. The requirement of working capital of MSPC for this purpose shall be reviewed every quarter of the fiscal year and the MSPC shall direct State Pool Participants to provide fixed sum towards working capital.
- (j) The sharing of funds for working capital amongst the State Pool Participants shall be based on share in allocation of UI charges amongst the State Pool Participants in the previous quarter. The decision of MSPC in this regards shall be final and binding on all State Pool Participants.

5.3 Settlement of FCR Pool

- (a) The MSLDC shall prepare Annual 'Statement of FCR Pool Settlement' corresponding to capacity exchange amongst the FCR Pool Participants for each trading period over the



monthly period of each fiscal year under consideration commencing from April in accordance with the 'FCR energy account' reconciliation principles.

- (b) The MSLDC shall present such Annual 'Statement of Imbalance Pool Settlement' to State Pool participants for its payment within fifteen calendar days from the end of the fiscal year corresponding to the preceding fiscal year.
- (c) The 'Statement of FCR Pool Settlement' shall clearly provide for following distinct statements of settlement:
 - (i) Settlement of Imbalances (capacity exchange) amongst FCR Pool Participants in accordance with 'FCR Pool Volume', separately for each month of the Fiscal year.
 - (ii) Aggregate net position of settlement amongst the FCR Pool Participants.
- (d) MSLDC shall raise Bills on the FCR Pool Participants which shall be due for payment and shall be binding on all FCR Pool Participants to settle the payment on due date, which shall not be later than fifteen days from date of invoice or within 30 days from end of fiscal year.
- (e) In case of any discrepancy or clarification, concerned State Pool Participant shall bring to the notice of MSLDC such discrepancy with necessary corrections/modifications. MSLDC in turn, shall issue 'Supplementary Bill' to FCR Pool Participants immediately upon receipt of notification/approval from concerned State Pool Participant with due modifications/adjustments (credit note/debit note) as may be necessary.

5.4 Payment Guarantees

- (a) State Pool Participants shall make payments on or before due date by way of cheque/demand draft to be drawn in favour of MSPC.
- (b) Any delay in payment shall attract penal interest charge at the rate of short term SBI PLR+4% per annum or part thereof. In no case, delayed payment by Pool Participants shall be permitted beyond the period of three months from the due date of payment, despite any dispute as regards settlement computation. The MSPC shall have right to initiate necessary disciplinary actions against defaulting parties in case of delay beyond period of three months from due date.
- (c) Before commencement of operations under said ABT regime and not later than two months from constitution of MSPC, all State Pool Participants shall open, at their own cost, an irrevocable letter of credit (L/C) of nationalized bank in favour of MSPC. The L/C shall



cover an amount not exceeding two weeks energy and transmission charges based on average of previous twelve weekly energy bills of that State Pool Participant.

- (d) The LC shall provide un-conditional right of encashment to MSPC in case of non-payment, part-payment or delay in payment beyond the due date of payment by the State Pool Participant. The Pool Participant shall immediately reinstate the L/C for an amount to the extent that it is encashed.
- (e) Before commencement of operations under said ABT regime and not later than two months from constitution of MSPC, all Pool Participants shall submit, at their own cost, a 'Bank Guarantee' (BG) of nationalized bank in favour of MSPC. The BG shall cover an amount not exceeding twelve week energy based on average of previous twelve weekly energy bills of that State Pool Participant.
- (f) The BG shall provide un-conditional right to MSPC to invoke, in case of non-payment, part-payment or delay in payment beyond the due date of payment by the State Pool Participant. State Pool Participant shall immediately revise and reinstate the BG to an extent it is invoked.
- (g) Notwithstanding provisioning of payment guarantees as outlined above, the MSPC shall have right to modify/alter any terms and requirement of 'payment guarantee' in parts or full and/or relax such conditions upon recording reasons in writing, for modification/relaxation of such terms/conditions. However, such right to alter/modify can only be exercised upon experience of market operation for one full year and not earlier.

5.5 Payment Default and remedies

- (a) Following events shall constitute events of default by State Pool Participant:
 - (i) Delay in payment (part or full) by any State Pool Participant beyond period of twelve weeks from due date of payment as per Weekly 'Statement of settlement' shall constitute an event of default by that State Pool Participant.
 - (ii) Delay in opening/reinstating the L/C by any State Pool Participant beyond the stipulated period shall constitute an event of default by that State Pool Participant.
 - (iii) Delay in opening/reinstating the BG by any State Pool Participant beyond stipulated period shall constitute an event of default by that State Pool Participant.
 - (iv) Non-compliance of any of the terms/conditions/rules outlined under this 'Balancing and Settlement Code' by any of the State Pool Participant shall constitute an event of default by that State Pool Participant.



- (v) Non-compliance of any of the directives issued by MSPC to any of the State Pool Participant, so long as such directives are not inconsistent with any of the provisions of these Balancing and Settlement Code and in accordance with the Functions and within the Powers outlined for MSPC, shall constitute an event of default by that State Pool Participant.

(b) Remedies for Events of default by State Pool Participant:

- (i) MSPC shall have right to discontinue membership of State Pool Participant to MSPC and forfeit its BG, L/C, membership fees, security deposit, if any.
- (ii) MSPC shall have right to levy penal charges on State Pool Participant, in accordance with its rules for conduct of business.
- (iii) MSPC shall have right to direct the MSLDC to regulate power supply, issue despatch instructions to defaulting State Pool Participant.
- (iv) Defaulting State Pool Participant shall be liable for penal/disciplinary action to be initiated by the Commission in accordance with extant Rules, Regulations, Grid Codes and relevant Act provisions, as may be applicable.

(c) Following events shall constitute events of default by MSPC:

- (i) Non-compliance of any of the terms/conditions/rules outlined under this 'Balancing and Settlement Code' by MSPC shall constitute an event of default by MSPC.
- (ii) Non-compliance of any of the directives issued by the Commission to MSPC shall constitute an event of default by MSPC.
- (iii) If in the opinion of the Commission, there are sufficient reasons/developments to ascertain that in the course of its market operations, MSPC has exceeded any its powers/functions outlined under these 'Balancing and Settlement Code' then that shall be construed as event of default by MSPC.

(d) Remedies for Events of default by MSPC:

- (i) The Commission shall revoke the powers/rights granted to MSPC under these Balancing and Settlement Code.



- (ii) MSPC shall be liable for penal/disciplinary action to be initiated by the Commission in accordance with extant Rules, Regulations, Grid Codes and relevant Act provisions, as may be applicable.

(e) Following events shall constitute events of default by MSLDC:

- (i) Non-compliance of any of the terms/conditions/rules outlined under this 'Balancing and Settlement Code' by MSLDC, except due to force majeure events and for reasons solely attributable to MSLDC, shall constitute an event of default by MSLDC.
- (ii) Non-compliance of any of the directives issued by MSPC to MSLDC, so long as such directives are not inconsistent with any of the provisions of these Balancing and Settlement Code and in accordance with the Functions and within the Powers outlined for MSPC, shall constitute an event of default by MSLDC.
- (iii) In-ordinate delay (i.e. beyond period of two weeks from due dates) in furnishing 'Weekly Statements for Imbalance Pool settlement' and 'Annual Statement for FCR Pool settlement' to MSPC or any State Pool Participant, so long as delay is not on account of reasons beyond the reasonable control of MSLDC, shall constitute an event of default by MSLDC.

(f) Remedies for Events of default by MSLDC:

- (i) MSPC shall have right to levy penal charges on the MSLDC, in accordance with its conduct of business.
- (ii) The Commission shall revoke the powers/rights granted to MSLDC under these Balancing and Settlement Code.
- (iii) The MSLDC shall be liable for penal/disciplinary action to be initiated by the Commission in accordance with extant Rules, Regulations, Grid Codes and relevant Act provisions, as may be applicable.



6 GOVERNANCE STRUCTURE FOR IMPLEMENTATION OF ABT MECHANISM AT STATE LEVEL

Under this part of the Order, the Commission has elaborated key issue of ‘Governance’ in the context of the market operations under State level ABT mechanism. Specific areas covered under this part of the Order are (a) Objective of Governance under state level ABT mechanism (b) Constitution of Maharashtra State Power Committee (c) Functions of Maharashtra State Power Committee (d) Powers of Maharashtra State Power Committee.

6.1 Regulatory Framework for Governance

Within three months from issuance of this Order, the State Pool Participants shall constitute Maharashtra State Power Committee (MSPC) as elaborated hereinbelow. The **Section 97** of the EA2003 allows the Commission to delegate certain powers (excluding powers to adjudicate upon disputes and powers to frame regulations) to any of its members, secretary, officer or any other person. The Commission shall delegate certain powers to the MSPC to conduct market operations that are envisaged under proposed ABT regime at State level.

The Commission observes that in view of the wide definition of “Persons” in **Section 2(49)** of the EA2003, MSPC shall qualify to be ‘Person’, within the meaning of the EA2003 on whom certain powers and function shall be delegated by the Commission under **Section 97** of the EA2003. However, the Commission hereby clarifies that it shall not be possible for MSPC to unilaterally modify any of the Rules or Conditions outlined under this Order.

Further, the Commission clarifies that to enable MSPC to conduct day to day operations without the need to revert to the Commission on such operational issues, this Order shall provide certain freedom/flexibility to MSPC to undertake actions (that can be construed to be within its powers and in line with approved functions) and are not inconsistent with the principles of market operation envisaged under ABT regime as outlined under this Order.

6.2 Objective of Governance under State level ABT framework

As a part of the proposed ABT mechanism at State level, an institutional mechanism needs to be created to address commercial issues, which may arise between the trading partners. The Commission hereby recommends constitution of Maharashtra State Power Committee (MSPC) for this purpose.

The main objectives of this institutional arrangement shall be to:-



- (a) Develop and provide a platform for better governance of a market oriented trading mechanism
- (b) Provide a framework for efficient reconciliation and settlement of differences between the trading partners
- (c) Recording of commercial arrangement and accounting of energy exchange amongst parties
- (d) Bring transparency in operation and improve upon the system and procedures of market operation

6.3 Constitution of Maharashtra State Power Committee

- (a) The Maharashtra State Power Committee shall consist of following members
 - (i) Chief Executive of MSEDCL
 - (ii) Chief Executive of TPC-D
 - (iii) Chief Executive of REL-D
 - (iv) Chief Executive of BEST-D
 - (v) Head Executive of MSLDC
- (b) The Chairman of the Maharashtra State Power Committee can be appointed from amongst the Chief Executives of the Distribution Licensees on a rotational basis with the MD of MSEDCL may be appointed as first Chairman of MSPC.
- (c) The tenure of the Chairman shall not exceed a period of one year and the appointment shall be ex-officio.
- (d) Head Executive of MSLDC shall be Member – Secretary of the MSPC and the Administrative Division of MSLDC shall provide secretarial and administrative assistance to MSPC to undertake its various activities. MSPC shall further address institutional requirements of this arrangement suitably, as may be necessary.
- (e) The MSPC may at its discretion, constitute such functional committees or sub committees consisting of such members of the MSPC as the MSPC may deem appropriate. The MSPC may invite/appoint any other person, expert or agency to help and guide such functional committees or sub-committees. The period for such functional committee or sub-committee including its terms of reference or scope of work shall be fixed by the MSPC.



- (f) Subject to the terms of reference or scope of work determined by the MSPC, such functional committee or sub committee shall examine various technical and commercial issues and make recommendations to the MSPC for its consideration and final decision. The functional committees or sub committees in discharge of its function shall abide by any specific direction or guideline issued by the MSPC in relation to the terms of reference or scope of work of such functional or sub committee.
- (g) The MSPC shall have the power to expand and to reduce the membership of the MSPC subject to fulfillment of conditions to be developed by MSPC.
- (h) The MSPC shall, on such terms and conditions as maybe mutually agreed, utilise services of the MSLDC for energy accounting, reconciliation and settlement.
- (i) All the decisions of MSPC have to be based on consensus with at least 3/4th of its members supporting it fully.

6.4 Functions of Maharashtra State Power Committee

6.4.1 Core Functions

The main functions of MSPC shall, inter alia, include the following:

- (i) The MSPC shall co-ordinate and shall facilitate the intra-state trading activities by optimal utilisation of resources.
- (ii) The MSPC shall review energy accounting and billing for inter-utility trading of power and ensure settlement of imbalances amongst State Pool Participants in accordance with the Balancing and Settlement Code Order.
- (iii) The MSPC shall represent the common interest of the State Pool Participants in the matters related to power purchase from CGS, inter-State/inter-regional resources and pertaining to issues related to WRLDC at the regional level.
- (iv) The MSPC shall monitor compliance of Balancing and Settlement Code by the State Pool Participants and resolve complaints/disputes amongst the State Pool Participants.

6.4.2 Key Activities

Thus, the key activities that MSPC shall undertake in order to discharge its functions shall include following:

- (i) Facilitate settlement of imbalance pool transactions on weekly and FCR Pool on annual



- basis. Ensure implementation and operation of Balancing and Settlement Code as approved by the Commission. Monitor compliance of Balancing and Settlement Code by the State Pool Participants. Review the 'Balancing and Settlement Code' from time to time from operationalisation perspective and propose amendments / modifications /alterations /deletions, for approval of the Commission, as may be necessary for effective and efficient market operations.
- (ii) Review and take on record the energy accounting data and inter-utility billing related information in pursuance to Balancing and Settlement Code on weekly basis.
 - (iii) Monitor conduct of State Pool Participants and hearing of complaints of the State Pool Participants.
 - (iv) Suggest modification, alteration, deletion, and/or replacement the conduct of business rules of the MSPC as may be deemed fit from time to time.
 - (v) Reconcile differences between the State Pool Participants.
 - (vi) Provide platform to identify and resolve market participants concerns and to represent common interest of Distribution Licensees at regional level. Keep track of the commercial arrangements between the State Pool Participants.
 - (viii) Approve applicants for admission to membership of imbalance pool in accordance with Balancing and Settlement Code.
 - (ix) Receive notification of rule breaches from MSLDC and take disciplinary actions for any breach of rules and levy penal charges as per its conduct of business rules.
 - (x) Act as an agency for interaction with MSLDC, WRLDC/WRPC and CGS for all matter related to power purchase by the Distribution Licensees and Open Access consumers.
 - (xi) Provide information to the State Pool Participants on the operation of market, including information on quantum of energy exchange, energy accounting etc. and any other information required to be conveyed to the State Pool Participants for effective and efficient operation of the market.

6.5 Powers of Maharashtra State Power Committee

Following powers and the decisions of the MSPC shall be binding on the State Pool Participants. The powers of MSPC shall be to:

- (a) Constitute and designate an independent agency to attend to all aspects of payment and



receipt for UI and other payments/charges. Pending such appointment, MSLDC shall undertake this task.

- (b) Accept/approve new membership in the MSPC.
- (c) Propose modifications in Balancing and Settlement Code, if necessary, subject to and the approval of the State Pool Participants.
- (d) Formulate and modify byelaws for regulation of the business of the MSPC from time to time.
- (e) Fix (monthly/annual) contribution and/or charge fees from the constituent members to meet administrative expenses.
- (f) Appoint sub-committees for detailed scrutiny, verification, analysis and reporting the matter to MSPC for its decision or ruling.
- (g) Appoint expert agency or any other consultant to assist Functional Committee or Sub-committee of MSPC.
- (h) Hire any personnel and appoint as staff member of MSPC.
- (i) Engage services of the MSLDC, consultant or expert agencies and levy penal charges as per its conduct of business rules.
- (j) Call upon reports, information and records from the MSLDC for verification
- (k) Reconcile and settle differences amongst State Pool Participants and refer matter to experts to address concerns of Pool Participants, and,
- (l) Call upon State Pool Participants to furnish various information including copies of agreements, as may be necessary for proper functioning of the market.

6.6 Review mechanism for Balancing and Settlement Code

The Balancing and Settlement Code as approved by the Commission under this Order shall be applicable and binding on all State Pool Participants, Market Participants and Market Service Providers.

It shall continue to be in force until reviewed and revised by the Commission upon undertaking due regulatory process. The Commission may initiate the regulatory process for modification to Balancing and Settlement Code on suo-moto basis or based on recommendations of MSPC.



7 DIRECTIVES FOR IMPLEMENTATION OF ABT REGIME AT STATE LEVEL

Under this Section of the Order, the Commission has outlined various implementation requirements that will have to be dealt with appropriately for implementation of ABT mechanism at State level. The implementation requirements pertain to (a) Energy Accounting (b) Metering Requirements (c) Information Requirements (d) Obligations to provide information (e) Establishment of Scheduling and despatch procedures and protocol (f) development of Balancing and settlement system (BSS) software

7.1 Energy Accounting

- (a) For the purpose of electricity market operations under ABT regime, maintenance of information pertaining to 'energy accounts' shall be the responsibility of the Commercial Division of MSLDC (MSLDC-CD).
- (b) The 'Energy Accounting Information' shall include metered data covering all interface points between generating station to transmission network of intra-State transmission system (G<>T interface points) and metered data covering all interface points between transmission network of intra-State transmission system (InSTS) to distribution licensee (T<>D interface points). The 'Energy Accounting information' shall also include energy accounting data covering all interface points between transmission network of CTU and STU (PGCIL<>MSETCL interface points), as recorded by Western Regional Energy Account prepared by WRLDC/WRPC.
- (c) The 'Energy Accounting Information' shall also include metered energy data and scheduled energy data pertaining to inter-State generating stations contracted by State Pool Participants, un-scheduled interchange energy data pertaining to Maharashtra State (for direct and embedded customers covering State Pool Participants) as per Western Regional Energy Account maintained by WRLDC/WRPC.
- (d) In order to enable MSLDC-CD perform the task of accounting of energy, all Market Participants shall provide requisite information and access to metered data within their control.
- (e) All 'Energy Account' related information shall be maintained by the MSLDC-CD for each 'trading period' for all the Market Participants.



- (f) 'Weekly Energy Account' information as maintained by MSLDC-CD for each calendar week shall form basis for reconciliation of energy exchanges and settlement of imbalances amongst the State Pool Participants for the corresponding calendar week.
- (g) 'Weekly Energy Account' information as maintained by MSLDC-CD for each calendar week of a fiscal year shall form the basis for reconciliation of energy exchanges and settlement of 'Annual Fixed Cost Reconciliation' amongst the State Pool Participants.
- (h) The Commission under its Order (Clause 3.8.2 – Case 58 of 2005) directed MSETCL as Government Company undertaking SLDC operations to submit its Status Report and Action Plan for establishment of 'Energy Accounting Centre' within one month from date of issue of that Order.
- (i) SLDC has established Energy Accounting Cell headed by SE alongwith deployment of requisite supporting staff as on August 2006. Until December 2006, it had planned to undertake and complete various activities related to energy accounting such as defining processes, procedures for data gathering and energy accounting, manpower training etc.
- (j) Further, in this context the Commission, under its Order dated 27th September 2006 (Case 31 of 2006) had directed SLDC to expedite establishment of Energy Accounting Centre and co-ordinate with all transmission licensees and distribution licensees to establish procedures for information sharing, flow of data, including demand forecast and records energy flow at various interface points as outlined under paragraph 28. The Energy Accounting Centre should be operational not later than December 31, 2006.
- (k) Further, MSLDC has presented before Commission on November 13, 2006 its proposed arrangement for Energy Accounting and submitted interim procedure of Energy Accounting. The Commission noted that proposed arrangement is limited by the availability of metered data covering interface points (G<>T and T<>D) of intra-State transmission system and directed MSLDC to expedite its plan for implementation of energy metering for interface points. Further, Commission also observed that Energy Accounting should address requirement of development of 'centralised Pooling Mechanism' for financial settlement of energy exchange (over-drawal/under-drawal) of energy transactions amongst the distribution licensees as directed under Cl. 31 of Commission's Order dt. September 29, 2006 (Case 31 of 2006)
- (l) Subsequently, during hearing conducted on 23rd February 2007 in the matter of approval of SLDC Budget for FY2007-08, the Commission noted that MSLDC is not yet undertaking any energy accounting activities related to Mumbai licensees and it relies on data submitted by concerned licensee. The Commission observed that co-ordination with Mumbai licensees and



availability of data/information from various licensees within Mumbai is solely a statutory responsibility of SLDC. SLDC will be held responsible and accountable for energy accounting as well as scheduling and despatch related activities associated with all licensees and generating companies within the State. Accordingly, the Commission under its Order dated April 2, 2007 (Case 86 of 2006) had directed MSLDC to submit monthwise settlement statement of energy exchange (overdrawal/underdrawal) amongst distribution licensees from October 2006 to March 2007 based on 'centralised pooling mechanism' within one month from date of issuance of that Order. MSLDC is yet to submit any details in this regards.

(m) In view of above, the Commission directs MSLDC to develop two pronged strategy and submit its Action Plan within three weeks from date of issuance of this Order for development of 'Energy Accounting' and 'Centralised Pooling Mechanism' (hereinafter referred to as Balancing and Settlement Mechanism) for financial settlement of energy exchange between distribution licensees on following basis.

a. Plan-1 : Development of Interim Balancing and Settlement Mechanism (IBSM)

b. Plan-2 : Development of Final Balancing and Settlement Mechanism (FBSM)

(n) The term IBSM refers to 'centralised pooling mechanism' for settlement of energy exchange (overdrawal or underdrawal) amongst distribution licensees **on monthly basis**, which should have been in place with effect from December 31, 2006 as per Commission's earlier Order (Case 31 of 2006 – ref. cl 31), whereas the term FBSM refers to the Final Balancing and Settlement mechanism' for settlement of energy exchange amongst State pool participants for **each trading period**, based on principles outlined under this Order. The FBSM should be put in place not later than September 30, 2007 for trial operations of at least six months. Accordingly, the IBSM shall be operational with effect from October 1, 2006 till FBSM mechanism is put in place with its satisfactory completion of trial runs, which shall not be later than March 31, 2008. The Commission expects FBSM to be fully operational and implemented with effect from April 1, 2008.

7.2 Metering Requirements

(a) The procedures for installation, operation, maintenance, replacement and accuracy calibration of meters at various interface points shall be in accordance with various applicable provisions under IEGC 2005, MERC (State Grid Code) Regulations, 2006 and CEA (installation and Operation of Meters) Regulations 2006 and the Metering Code as approved by the Commission..



- (b) All metering systems at the G-T and T-D interface points will be read using MRIs or using suitable remote metering facilities. In addition, all metering points will have manual start finish readings collected as check data on a weekly retrospective basis. Further, all readings should be taken for full calendar week and should be received by the MSLDC-CD within three days from the end of the week.
- (c) MSETCL, vide its letters dated July 26, 2006 and August 11, 2006 has furnished its phasewise plan for installation of meters at interface points and establishment of Energy Accounting Cell to undertake State-wide energy accounting. During Phase-I of the proposed plan, MSETCL intends to cover inter-State and inter-Utility lines within State in following manner:
- Ø Providing 224 nos of ABT compliant meters at interface points
 - Ø Hardware and software required at sub-station level for Automatic Meter Reading of ABT compliant meters
 - Ø Time synchronisation of equipment at each sub-station
 - Ø Hardware and software required for data processing at central location i.e. SLDC-Kalwa
 - Ø Communication system through V-SAT link between various sub-stations and SLDC for on-line data transfers.
 - Ø Software and hardware for monitoring at five transmission zones.
- (d) Further, during meeting held with MSETCL on 24th January 2007 as well as during Technical Validation in respect of its MYT application, MSETCL confirmed that installation of entire interface metering programme covering G<>T and T<>D interface points of intra-State transmission system will be accomplished by September 30, 2007.
- (e) The Commission directs that STU, transmission licensees, distribution licensees and generating companies will have to adhere to the metering plan as approved by the Commission from time to time.

7.3 Information Requirement

- (a) The Commission observes that for reliable and accurate market operations, it is important that all requisite information necessary for development of 'energy account reconciliation statement' and 'financial settlement of imbalances' on weekly basis amongst the Pool Participants is available to the MSLDC-CD on timely basis.
- (b) All State Pool Participants shall be responsible for timely furnishing of the requisite information, documents, contractual information, copies of the energy bills, and access to the metered energy data available in their respective control to the MSLDC-CD from time to



time within stipulated time frame. The contractual information required to be furnished by State Pool Participants shall include -

- (i) Power Purchase Agreements amongst Licensees (State Pool Participants) and Generators/Traders (Market Participants).
- (ii) Bilateral Agreements amongst licensees, if any.
- (iii) Bilateral/Purchase Agreements amongst TOAU (OA Generators and OA Users).
- (iv) Wheeling Agreement amongst TOAU (OA generators and OA Users) and Transmission licensee.

7.3.1 PPA and commercial information

- (a) All State Pool Participants shall furnish details of capacity/energy contracted by them under power purchase agreements executed by them with generators/traders to the MSLDC-CD to enable it allocate metered injections from generators to State Pool Participants and determine the energy exchange and volume of imbalance amongst the State Pool Participants.
- (b) All State Pool Participants shall also notify to MSLDC-CD from time to time any modification in the existing capacities or any additional capacities contracted by them.
- (c) For the purpose of market operations, the contracted capacity shall be considered only after its entry into commercial operation and if despatched by the MSLDC-OD in the normal course of operations in accordance with the Merit Order Despatch principles.
- (d) The in-firm generation by the generating station prior to commercial operation shall not be considered for the purpose of determination of 'imbalance' volume.
- (e) All generators shall furnish details of their per unit variable cost of generation to the MSLDC-OD to enable it propose a Merit Order Stack of generating stations, after taking into account MUST run and constrained generating stations.
- (f) The details for determining 'per unit variable charge' for the purposes of the Merit Order Stack' shall include computation of energy charge inclusive of fuel cost adjustment charge, if any, of various generating stations as applicable for extant month. The computation of energy charge shall be based on the heat rate, auxiliary consumption factor, the formula for determination of energy charge as approved by Appropriate Commission and the delivered cost of fuel at respective generating stations.



- (g) The generating stations shall furnish the details of the prevalent fuel charge including, details of the delivered cost of fuel during the month to the MSLDC from time to time at least once during the month and not later than fifth day of the month to enable the MSLDC develop centralized Merit Order Stack' for the State as a whole.
- (h) To enable the MSLDC to determine the weighted average system marginal cost (WASMC) of contributing State Pool Participants, all State Pool Participants shall furnish details of the per unit variable cost of generating stations contracted by them as per monthly energy bills received by them from the generating companies/traders. This information shall be furnished to the MSLDC within seven days from expiry of calendar month for the month for which the information relates.

7.3.2 *Bilateral Agreements of licensees*

- (a) All licensees shall furnish details of capacity/energy contracted by them under power purchase agreements executed by them with inter-State traders to the MSLDC-CD to enable it allocate metered injections corresponding to purchase/supply by inter-State trader to State Pool Participants and to determine the energy exchange and volume of imbalance amongst the State Pool Participants.
- (b) All State Pool Participants shall also notify to MSLDC from time to time any modification in the existing capacities contracted by them or any additional capacity contracted by them with inter-State trader. The State Pool Participants shall furnish the copy of their power purchase agreement to MSLDC within seven days from date of execution of such agreement and shall notify commencement of power procurement under such agreement.
- (c) All licensees (or as applicable) shall furnish details of capacity/energy contracted by them for purpose of inter-State sale with inter-State traders to the MSLDC to enable it allocate metered injections corresponding to purchase/supply by inter-State trader to State Pool Participants and determine the energy exchange and volume of imbalance amongst the State Pool Participants.
- (d) All State Pool Participants shall also notify to MSLDC from time to time any modification in the existing capacities contracted by them or any additional capacity contracted by them with inter-State trader.

7.3.3 *Bilateral Agreements of OA Users*

- (a) All OA users (which are State Pool Participants, i.e. full TOAU) shall furnish details of capacity/energy contracted by them under bilateral power purchase agreements executed by



them with generators/traders/other licensees to MSLDC to enable it allocate metered injections from generators/traders/licensees to OA Users (which are State Pool Participants, i.e. full TOAU) and determine the energy exchange and volume of imbalance amongst the State Pool Participants.

- (b) All OA users (which are State Pool Participants, i.e. full TOAU) shall also notify to MSLDC from time to time any modification in the existing capacities contracted by them or any additional capacity contracted by them. All OA users (which are State Pool Participants, i.e. full TOAU) shall furnish the copy of their power purchase agreement to MSLDC within seven days from date of execution of such agreement and shall notify commencement of power procurement under such agreement.
- (c) For the purpose of market operations, the contracted capacity shall be considered only after its entry into commercial operation and if despatched by the MSLDC in the normal course of operations in accordance with Merit Order Despatch principles.
- (d) The in-firm generation by the generating station prior to commercial operation shall not be considered for the purpose of determination of 'imbalance' volume.

7.3.4 Metered injections and metered off-take

- (a) The collection of the metered data shall be by way of MRI backed up manual start- finish readings or suitable remote meter reading, as the case may be. The data shall be collected at the end of each calendar week and shall be time stamped to ensure accuracy. All collected data shall be received by the MSLDC within 3 days of the end of the calendar week to which it relates.
- (b) The collected data shall be securely stored within the MSLDC-CD and the back ups taken which are to be held off-site as a contingency against data catastrophe. The system holding the data shall have appropriate anti-virus and firewalls to ensure that the data cannot be accessed by un-authorized persons.
- (c) In case of totally or partially missing data is found, the affected interface point shall have its entire weeks data substituted using the Profiled Data Substitution Methodology (PDSM) as outlined in following paragraph.
- (d) The collected data once verified as accurate and complete shall form the inputs into the Balancing and Settlements System (BSS), which shall form basis for computation of 'imbalance pool' workings, reconciliation of energy exchange and settlement of 'imbalances' amongst the 'State Pool Participants'.



(ii) Data substitution methodology

- (a) The data substitution shall be required corresponding to some interface points in case MRI data for the trading periods is not available. The energy from the start – finish readings shall be allocated throughout the 15 minute trading periods in the week using ‘Profile Method’ in a manner that reflects the profile of the majority data that has been collected by MRI.
- (b) The ‘Profile Method’ for data substitution will result in the demand profile after inclusion of the Substitute Data to more closely reflect the actual profile and shall further minimise the imbalances caused by including the Substitute Data.
- (c) In case 95% of the available data is successfully collected by MRI, the resultant percentage of data attributable to each of the trading periods should be a close reflection of the profile that would have applied to the substitute data had it been collected via MRI.

7.4 Development of Balancing and Settlement System (BSS) software

- (a) The Commission directs MSLDC-CD to develop appropriate Balancing and Settlement system and software for implementation of the ABT regime based on principles enunciated under this Order.
- (b) Above BSS should be developed including its testing and pilot operations so that the same could be fully operational to undertake commercial settlement of imbalance pool amongst State Pool participants within six month period from date of issue of this Order.
- (c) As outlined under Clause 7.1 (m) of this Order, the Commission directs MSLDC to develop two pronged strategy and submit its Action Plan within three weeks from date of issuance of this Order for development of ‘Energy Accounting’ and ‘Centralised Pooling Mechanism’ (hereinafter referred to as Balancing and Settlement Mechanism) for financial settlement of energy exchange between distribution licensees on following basis.
 - a. Plan-1 : Development of Interim Balancing and Settlement Mechanism (IBSM)
 - b. Plan-2 : Development of Final Balancing and Settlement Mechanism (FBSM)
- (d) The IBSM shall be operational with effect from October 1, 2006 till FBSM mechanism is put in place with its satisfactory completion of trial runs, which shall not be later than March 31, 2008. The Commission expects FBSM to be fully operational and implemented with effect from April 1, 2008.



7.5 Development of Scheduling and Despatch Procedure and Protocol

- (a) The Regulation 21.2 of MERC (State Grid Code) Regulations, 2006 stipulates that MSLDC shall develop, document and maintain detailed operating procedure for managing the State Grid. Such procedures shall cover (i) black start procedures (ii) load shedding procedures (iii) islanding procedures etc.
- (b) Further, Regulation 30.1 of MERC (State Grid Code) Regulations, 2006 stipulates that MSLDC shall develop procedures and processes in discharge of its functions for co-ordination with **Sub-load despatch centres** covering (i) Roles and responsibilities of sub-load despatch centres (ii) Communication facilities with sub-load despatch centres (iii) information flow with sub-load despatch centre
- (c) In addition, Regulation 31.1 of MERC (State Grid Code) Regulations, 2006 stipulates that MSLDC shall develop procedures and processes in discharge of its functions for co-ordination with **transmission licensees and Users** covering (i) Roles and responsibilities of transmission licensees and users (ii) information flow with transmission licensees and users
- (d) In view of principles of Scheduling and despatch outlined under ABT regime (as per Chapter-4 - Salient features of Intra-State ABT mechanism), the Commission hereby directs MSLDC to review existing procedures relating to scheduling and despatch and develop suitable procedure and protocol within Six months from date of issue of this Order, as may be necessary for effective implementation of the ABT regime.

7.6 Obligations to provide information

- (a) The MSLDC shall publish all such information as required for all other State Pool participants to be aware of the energy exchanges taking place within the pool as well as exigency conditions, if any.
- (b) All data collected from interface points shall be shared with the stakeholders to whom it relates. The MSLDC will hold a repository of historical data (18 months T – D data). The data shall be available for each week.

Although, the BSS will provide the outputs that are required to ascertain the accuracy and financial implications of the weekly imbalances, it is expected that the majority of outputs can be finalised in consultation with MSPC. As stakeholders gain a better understanding of the implications of their operational actions, their requirements for information will become more refined. The BSS and the MSLDC need to be equipped to meet these information requirements as and when they arise.



7.7 Applicability of the Order

In view of several activities required to be undertaken by MSETCL, MSLDC and State Pool Participants, such as constitution of MSPC, development of Balancing and settlement System (BSS) software, establishing procedures and protocol for scheduling and despatch, installation meters, and establishing energy accounting pursuant to issuance of this Order, the Commission recognises need to provide adequate implementation time.

The Commission notes that MSETCL have submitted that installation of meters covering all interface points (G<>T) and (T<>D) over Intra-State transmission system as well as Energy Accounting shall be accomplished by September 30, 2007.

Accordingly, the Commission has provided additional transition time period of six months for development, implementation and trial runs of FBSM (final balancing and settlement mechanism) and the Commission directs that FBSM shall be operational with effect from April 1, 2008. However, the Commission clarifies that implementation of IBSM and all other activities related to day ahead scheduling, information exchange by generating companies and distribution licensees with SLDC etc. as envisaged under this Order shall be implemented with immediate effect. The Commission directs MSLDC to submit report of compliance of this directive within one month from issuance of this Order.

With this Order, the Commission disposes Case No. 42 of 2006.

Sd/-
(S. B. Kulkarni)
Member

Sd/-
(A. Velayutham)
Member

Sd/-
(Dr. Pramod Deo)
Chairman



(Ms Malini Shankar)
Secretary, MERC

Annexure 1:

List of Committee Members constituted
by Utilities for Introduction of Intra State
ABT mechanism in Maharashtra



Annexure 1: List of Committee members constituted by Utilities for preparing 'Road map for Introduction of Intra State ABT mechanism in Maharashtra (Case 42 of 2006)

Sr. No.	Name	Organization/ Designation	Status
1	Mr. R. D. Pophale	TD (Gen O&M), MSEB	Chairman
2	Member Secretary	WREB, Mumbai	Member
3	Mr. Anjan Roy	GM, WRLDC, Mumbai	Member
4	Mr. A. D. Palamwar	TD (EHVP-CP), MSEB	Member
5	Chief Engineer (Gen Works)	MSEB, Mumbai	Member
6	Mr. J. D. Kulkarni	AGM, Tata Power Co. Ltd.	Member
7	Mr. D. R. Sukhtankar	GM (Tech), REL Mumbai	Member
8	Mr. C. B. Bagal	CE (TEC), MSEB	Member
9	Prof. Dr. S. A. Khaparde	EED, IIT Mumbai	Member
10	Dr. Ashok Pendse	Mumbai Grahak Panchayat	Member
11	Mr. Sunil Natu	Co-Gen Association of India, Pune	Member
12	Mr. A. G. Patil	BEST	Member
13	Mr. R. V. Kulkarni	MPECS	Member
14	Mr. C. G. Barbole	C.E. (Load Despatch), MSEB, Kalwa	Secretary



Annexure 2:

List of Participants during Public
Hearing conducted on December 21st
2006
(Case 42 of 2006)



Annexure 2: List of Participants attending Public Hearing Process (Case 42 of 2006)

S. No.	Name of the Objectors	Organisation
1	Shri S. A. Puranik, DGM	BEST Undertaking
2	Shri A.G. Patil, D.C. Engineer	BEST Undertaking
3	Shri S.M. Satyal, SSGM	BEST Undertaking
4	Shri N.V. Bhandari, Supdt. (MERC Cell)	BEST Undertaking
5	Shri J.D. Kulkarni, DGM	Tata Power Company Ltd.
6	Shri V.H. Wagle, Manager	Tata Power Company Ltd.
7	Shri Manoj Gupta, Asst. Manager	Tata Power Company Ltd.
8	Shri Prashant K. Anvekar, Sr. E.E.	Tata Power Company Ltd.
9	Shri Kapil Sharma, Manager	Reliance Energy Ltd.
10	Shri P.S. Pandya, Sr. Consultant	Reliance Energy Ltd.
11	Shri P.M. Hundiware, AVP	Reliance Energy Ltd.
12	Shri G.J. Thakkar, Dy. Manager	Reliance Energy Ltd.
13	Shri Vijayanand Semsetty, Dy. Manager	Reliance Energy Ltd.
14	Shri A.D. Palamwar, Dir (Operation)	MSEDCL
15	Shri Sanjay Taksande, S.E.	MSEDCL
16	Shri G.S. Trimukhe, C.E. (PP)	MSEDCL
17	Shri R.G. Malame, Ex. Egg. (TRC)	MSEDCL
18	Shri R.N. Mundha (SLDC Centre)	MSEDCL
19	Shri C.G. Barbole (SLDC Centre)	MSETCL
20	Dr. S. S. Kulkarni, EE (CP)	MSETCL
21	Shri Amol G. Bhutad, Asst. Engg.	MSETCL
22	Shri V.S. Patil, S.E. (G)	MSPGCL
23	Shri S.V. Bedekar	MSPGCL
24	Shri S.A. Narkhede	MSPGCL
25	Shri Yogesh Salunke, Deputy Manager	Deloitte
26	Shri Aniruddha Das, Consultant	I.C. Legal
27	Shri Anil V. Kale, Manager	CRISIL
28	Shri Anil Sharma, DGM	Essar Power Ltd.
29	Shri Shailesh S. Joshi, President	Feedback Ventures



Annexure 3:

List of Participants attending discussion
session conducted on December 28th
2006
(Case 42 of 2006)



Annexure 3: List of Participants attending discussion session conducted on 28th December 2006 (Case 42 of 2006)

S. No.	Name of the Person	Organisation
1.	Shri A.V. Kane, AGMES	BEST Undertaking
2.	Shri N.V. Bhandari, Supdt. (MERC Cell)	BEST Undertaking
3.	Shri Prashant K. Anvekar, Sr. E.E.	Tata Power Company Ltd.
4.	Shri M.K. Gupta, Asst. Manager	Tata Power Company Ltd.
5.	Shri S.R. Mehendale, Asst. Manager	Tata Power Company Ltd.
6.	Shri V.H. Wagle, Manager	Tata Power Company Ltd.
7.	Shri P.L. Ganwir, Ex. Engineer	Tata Power Company Ltd.
8.	Shri V.H. Thakurani, CLD	Tata Power Company Ltd.
9.	Shri A. Sethi, GM	Tata Power Company Ltd.
10.	Shri T.P. Mohan, AGM	Tata Power Company Ltd.
11.	Shri N.B. Singh, AGM	Tata Power Company Ltd.
12.	Shri C.A. Colaco, Consultant	Tata Power Company Ltd.
13.	Shri V.R. Shrikanth, Sr. Manager	Tata Power Company Ltd.
14.	Shri J.D. Kulkarni, DGM	Tata Power Company Ltd.
15.	Shri P.S. Pandya, Sr. Consultant	Reliance Energy Ltd.
16.	Shri P.H. Aher, Dy. EE	MSEDCL
17.	Shri R.G. Malame, Ex. Egg. (TRC)	MSEDCL
18.	Shri Sandeep Dhamne, AGM	MSEDCL
19.	Shri Shishir Tamotia, Dir (Operation)	MSETCL



20.	Dr. S. S. Kulkarni, EE (CP)	MSETCL
21.	Shri Amol G. Bhutad, Asst. Engg.	MSETCL
22.	Shri C.G. Barbole (SLDC Centre)	MSETCL
23.	Shri V.T. Phirke, EE (RC)	MSETCL
24.	Shri L.N. Ambekar, Supdt. Engg.	MSPGCL
25.	Shri Ashok Pendse, Cons. Representative	Mumbai Grahak Panchayat
26.	Shri Shantanu Dixit, Cons. Representative	Prayas, Pune
27.	Shri Anil V. Kale, Manager	CRISIL
28.	Shri Yogesh Salunke, Deputy Manager	Deloitte
29.	Shri Shailesh S. Joshi, President	Feedback Ventures
30.	Shri Aniruddha Das, Consultant	I.C. Legal



**Annexure 4: List of Participants
attending presentation conducted on
January 17th 2007
(Case 42 of 2006)**



Annexure 4: List of Participants attending Presentation on ‘Introduction of State level ABT mechanism within Maharashtra’ (Case 42 of 2006)

S. No.	Name of the Person	Organisation
1	Shri S. A. Puranik, DGM	BEST Undertaking
2	Shri A.G. Patil, D.C. Engineer	BEST Undertaking
3	Shri K.N. Rajagopal, D.C. Engineer	BEST Undertaking
4	Shri S.M. Sakpal, SSCM	BEST Undertaking
5	Shri N.V. Bhandari, Supdt. (MERC Cell)	BEST Undertaking
6	Shri V.K. Phadke, CAO	BEST Undertaking
7	Shri S.B. Dhole, CAO	BEST Undertaking
8	Shri A.S. Tamboli, IA	BEST Undertaking
9	Shri G.N. Dumbre, Sr. A.O.	BEST Undertaking
10	Shri A.V. Katdare, Manager	Tata Power Company Ltd.
11	Shri V.H. Thakurani, CLD	Tata Power Company Ltd.
12	Shri A. Sethi, GM	Tata Power Company Ltd.
13	Shri M.V. Kini, Sr. Manager	Tata Power Company Ltd.
14	Shri V.R. Shrikanth, Sr. Manager	Tata Power Company Ltd.
15	Shri J.D. Kulkarni, DGM	Tata Power Company Ltd.
16	Shri T.P. Mohan, AGM	Tata Power Company Ltd.
17	Shri V.H. Wagle, Manager	Tata Power Company Ltd.
18	Shri P.S. Pandya, Sr. Consultant	Reliance Energy Ltd.
19	Shri Kapil Sharma, Manager	Reliance Energy Ltd.
20	Shri Abaji, Sr. Engineer	Reliance Energy Ltd.
21	Shri Vijayanand Semsetty, Dy. Manager	Reliance Energy Ltd.
22	Shri G.J. Thakkar, Dy. Manager	Reliance Energy Ltd.
23	Shri Swapnil Katare, Dy. Manager	Reliance Energy Ltd.
24	Shri P.S. Ranjeet, Sr. Engg.	Reliance Energy Ltd.
25	Shri B.M. Tilkekar, Sr. Engg.	Reliance Energy Ltd.
26	Shri P.M. Hundiwale, AVP	Reliance Energy Ltd.
27	Shri A.R. Wagambare	Reliance Energy Ltd.



S. No.	Name of the Person	Organisation
28	Shri D.V. Deshpande, Sr. Manager	Reliance Energy Ltd.
29	Shri V.A. Dali, Manager	Reliance Energy Ltd.
30	Shri J.W. Bhambal, Dy. Manager	Reliance Energy Ltd.
31	Shri P.H. Aher, Dy. EE	MSEDCL
32	Shri R.G. Malame, Ex. Egg. (TRC)	MSEDCL
33	Shri V.N. Fulzere, G.M. (E & A)	MSEDCL
34	Shri P.B. Hote, EE (LD)	MSEDCL
35	Shri Shishir Tamotia, Dir (Operation)	MSETCL
36	Shri B.H. Gujarathi, EE (LD0)	MSETCL
37	Shri V.D. Ponde, A.E. (LD)	MSETCL
38	Shri Amol G. Bhutad, Asst. Engg.	MSETCL
39	Shri C.G. Barbole (SLDC Centre)	MSETCL
40	Smt. Shilpa S.	Hindustan Times
41	Shri Aniruddha Das, Consultant	I.C. Legal

