Key Processes in Power Exchange

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Day Ahead Market-Collective Transaction Features

A closed double-sided anonymous auction for **each 15-min time block** for the following day

The intersection between the aggregated sale and purchase curves defines the market clearing price (MCP)

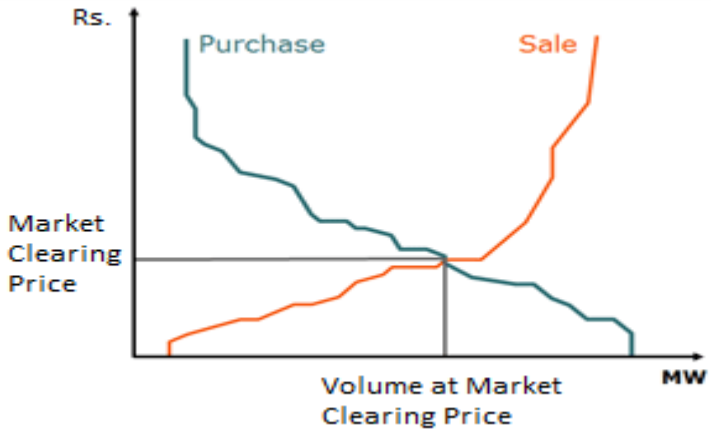
Congestion Management through market splitting and determining Area Clearing Price (ACP) specific to an area

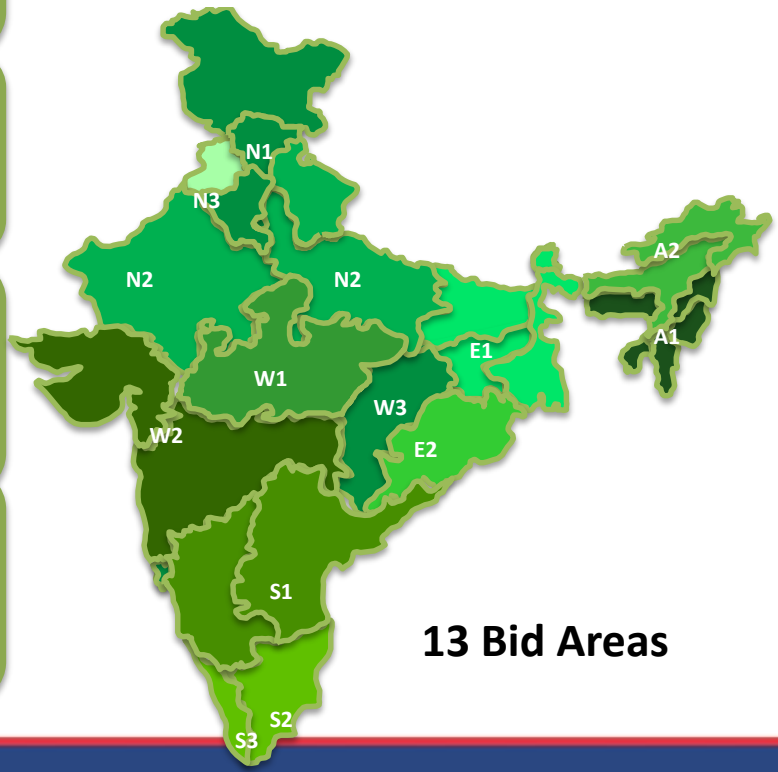
13 Bid area defined

Bid types: Single/Portfolio Orders or Block Orders

Minimum bid=Re.1 for 0.1MW

Minimum Price & Volume Step = 0.1p * 0.1 MW

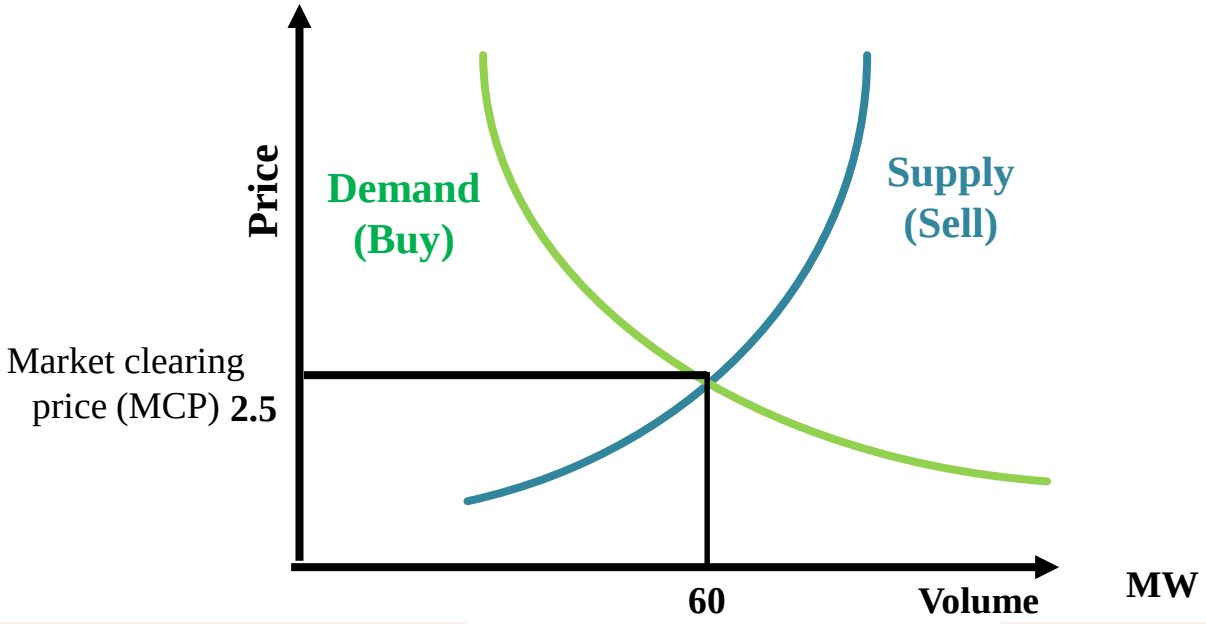




13 Bid Areas

Model Price Calculation algorithm

	Price Tick (Rs.)	0	1	1.1	2	2.1	2.5	3	3.1	4	4.1	5	---	---	----	20
Bid Quantum by different portfolios	Portfolio A, MW	20	20	20	20	20	20	20	10	0	0	0	0	0	0	0
	Portfolio B, MW	60	60	60	60	50	40	40	40	40	40	20	20	20	20	20
	Portfolio C, MW	40	20	0	0	-40	-60	-80	-81	-120	-120	-120	-120	-120	-120	-120
Total Buy Quantum received, MW		120	100	80	80	70	60	60	50	40	40	20	20	20	20	20
Total Sell Quantum received, MW		0	0	0	0	-40	-60	-80	-81	-120	-120	-120	-120	-120	-120	-120
Net Transaction, MW		120	100	80	80	30	0	-20	-31	-80	-100	-100	-100	-100	-100	-100



Market Clearing Volume (MCV)

Day Ahead Market-Collective Transaction Trading process

Bidding

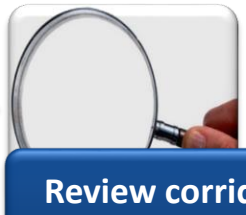
10:00 am to 12:00 pm

Bids for 15- min each or block bids can be placed

Matching

12:00 pm to 1:00 pm

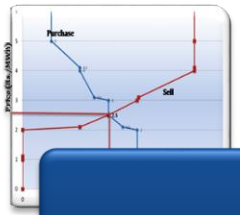
MCP &MCV calculated



Review corridor and funds availability

1:00 pm to 2:00 pm

Corridor availability and funds verified



Result

3:00 pm

Final ACV and ACP calculated. Market splitting if congestion

Confirmation

5:30 pm

Collective transaction confirmation by NLDC

Scheduling

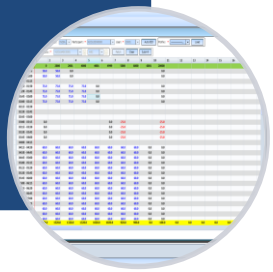
6:00 pm

Final Schedule sent to RLDC for incorporation

Day Ahead Market-Collective Transaction
Bid Types

- Bids for each 15 min can be entered
- Varying price and quantum pairs
- Allow partial execution

Single Bid



- All or None Type
- Fixed Price and Quantity Pair
- No partial execution

Block Bid

Understanding of Single Bid

	1	2	3	4	5	6	7	8	9	10	11
Period	0	2999	3000	3001	3999	4000	4001	5999	6000	6001	20000
00:00 - 00:15	100.0								100.0	0.0	0.0
00:15 - 00:30	200.0		200.0	100.0		100.0	0.0				0.0
00:30 - 00:45	100.0		100.0	0.0							0.0
00:45 - 01:00	0.0	0.0	-100.0								-100.0
01:00 - 01:15	0.0	0.0	-100.0		-100.0	-200.0					-200.0
01:15 - 01:30	0.0							0.0	-100.0		-100.0
01:30 - 01:45	200.0		200.0	0.0	0.0	-150.0					-150.0
01:45 - 02:00											
02:00 - 02:15											

Buy Bid: One or more quantity-price pairs, each specifying the maximum price at which the participant is willing to buy the corresponding quantity of electricity and are submitted independently for each delivery period i.e. 15 min block.

Sell Bid: One or more quantity-price pairs, each specifying the minimum price at which the participant is willing to sell the corresponding quantity of electricity and are submitted independently for each delivery period i.e. 15 min block.

Selection Criteria:-

Buy Bid-Bids specifying a price not higher than the Clearing Price are accepted

Accepted Bids are valued at Market/Area Clearing Price.

Hence Buyer Surplus is the Difference between the submitted price and the market price, multiplied by the quantity actually purchased

Sell Bid-Bids specifying a price not lower than the Clearing Price are accepted

Accepted Bids are valued at Market/Area Clearing Price.

Hence Seller Surplus is the Difference between the submitted price and the market price, multiplied by the quantity actually sold.

Understanding of Block Bid

A block bid is used for the procurement or sale of power which is specific to a block of hours (e.g. base load, peak or user defined). A block bid can either be a buy order or a sale order for a block of hours. Either all hours of the block order are jointly successful or all of these block hours are jointly rejected. A block bid is selected if the bid price is better than the average system price of power in respective block hours.

Example of Sell Block Bid:-

BID...	Standard/User...	Block	From Period	To Period	Price	Quantity	Linked To
E5	Standard	Evening Peak	17:00	22:00	5000	-50.0	
E6	Standard	Evening Peak	17:00	22:00	7000	-50.0	

System Price:-

Time Period	17:00 - 17:15	17:15 - 17:30	17:30 - 17:45	17:45 - 18:00	18:00 - 18:15	18:15 - 18:30	18:30 - 18:45	18:45 - 19:00	19:00 - 19:15	19:15 - 19:30	19:30 - 19:45	19:45 - 20:00	20:00 - 20:15	20:15 - 20:30	20:30 - 20:45	20:45 - 21:00	21:00 - 21:15	21:15 - 21:30	21:30 - 21:45	21:45 - 22:00	Avergae Price
Price	4879	4879	4879	4879	4980	5249	5400	5369	6400	6400	6401	6401	6600	6600	6600	6600	6251	6251	6250	6250	5875.9

Selection Criteria:- A sell (respectively buy) bid is said to be selected if the submission price of the bid is below (respectively above) the average system price.

Result for 1st Block Bid-

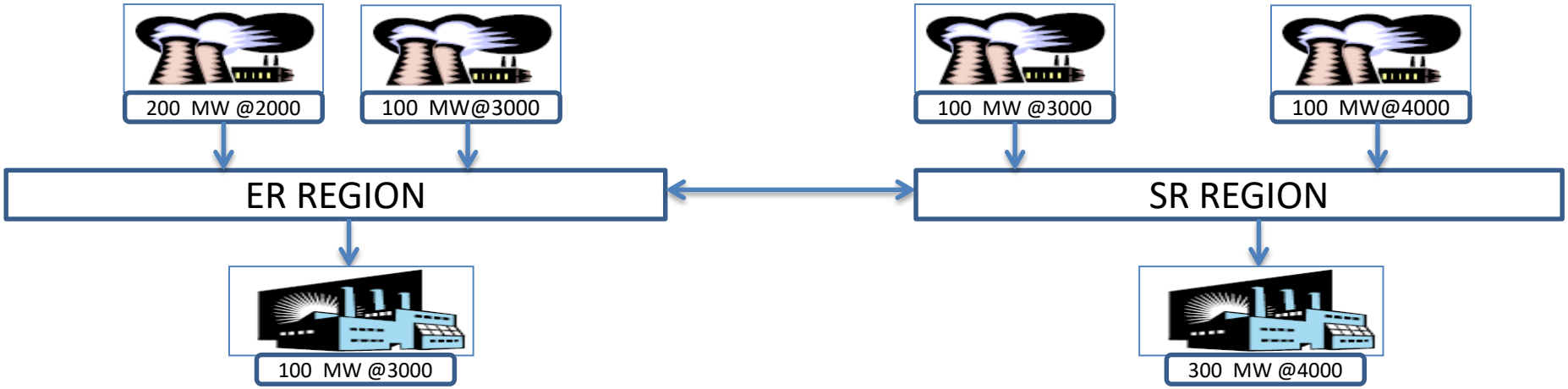
E5 at 5000 for 50 MW Sell is at below price than Average Price of Rs. 5875.90; hence will be selected.

Result for 2nd Block Bid-

E6 at 7000 for 50 MW Sell is at above price than Average Price of Rs. 5875.90; hence will be rejected.

Illustration of Price Matching and Market Splitting

- Two regions have been considered i.e. ER and SR.
- Four Sellers and Two Buyers in a 15-Min Block are taken with following Bid Scenario: -



	Quantity (MW)	Price (Rs./MWhr)
ER Seller-1	200	2000
ER Seller-2	100	3000
SR Seller-1	100	3000
SR Seller-2	100	4000
SR Buyer	300	4000
ER Buyer	100	3000

Understanding Price Matching

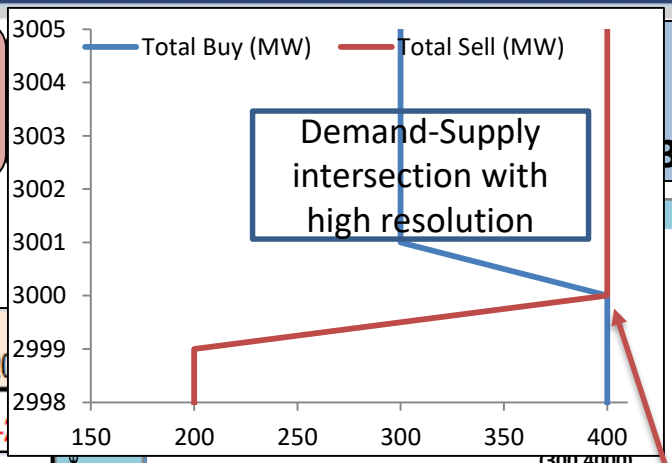
ER Seller-1
200 MW@
2000/MWhr

ER Seller-2
100 MW@
3000/MWhr

SR Seller-1
100 MW@
3000/MWhr

ER Buyer
100 MW@
3000/MWhr

Price (Rs./MWh)	0	999	1000	1999	2000	2999	3000	3001	3999	4000	4001	6000	8000	10000	20
ER Seller-1	0	0	0	0	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-
ER Seller-2	0	0	0	0	0	0	-100	-100	-100	-100	-100	-100	-100	-100	-100
SR Seller-1	0	0	0	0	0	0	-100	-100	-100	-100	-100	-100	-100	-100	-100
SR Seller-2	0	0	0	0	0	0	0	0	0	-100	-100	-100	-100	-100	-100
SR Buyer	300	300	300	300	300	300	300	300	300	300	0	0	0	0	0
ER Buyer	100	100	100	100	100	100	100	0	0	0	0	0	0	0	0
Total Buy (MW)	400	400	400	400	400	400	400	300	300	300	0	0	0	0	0
Total Sell (MW)	0	0	0	0	-200	-200	-400	-400	-400	-500	-500	-500	-500	-500	-500
Net (Buy-Sell)	400	400	400	400	200	200	0	-100	-100	-200	-500	-500	-500	-500	-500

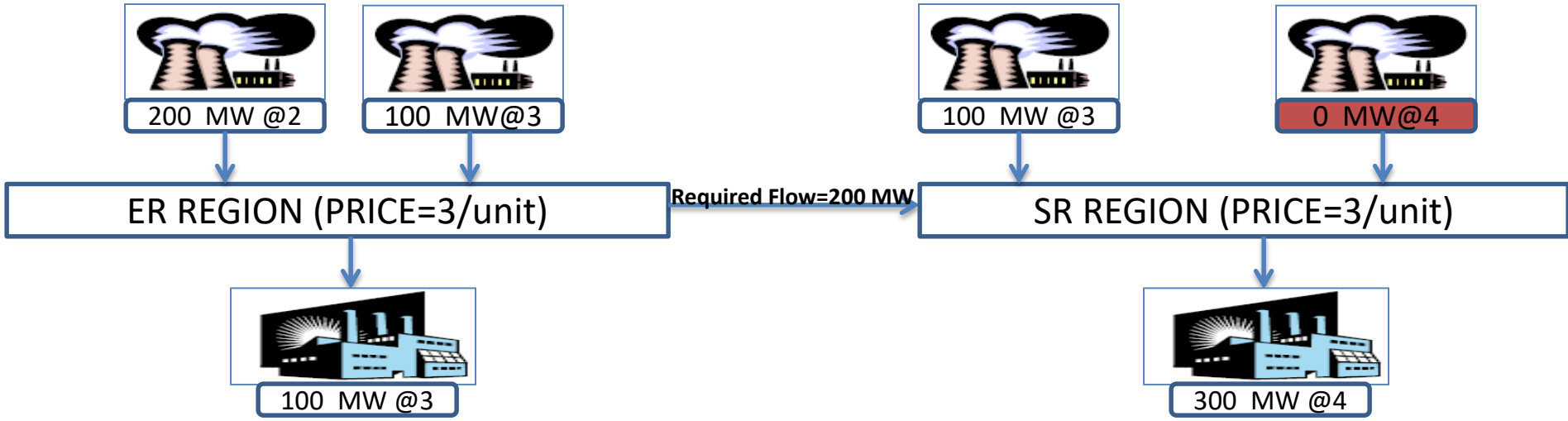


Market Clearing Price (MCP)= Rs. 3000/MWhr
Market Clearing Volume(MCV)= 400 MW

REQUIREMENT OF CORRIDOR FROM NLDC

ER		SR
Net Demand ➔100	Net Required Flow- 200 MW	Net Demand ➔300
Net Supply ➔ 300		Net Supply ➔ 100
Net ➔ 100 – 300 = -200		Net ➔ 300-100 =200

Demand and Supply gap in two regions get balanced by unconstrained flow between the two regions hence a common MCP is derived.



Constraint Solution (Market Splitting)

Congestion was reported by NLDC from ER to SR corridor and flow is constrained to 100MW. Due to flow constraint, system will "Split" the market in to two regions i.e. Deficit (SR Region) and Surplus region (ER Region),and will again run the calculation chronology for both the regions separately considering the flow constraint and will derive the ACP and ACV.

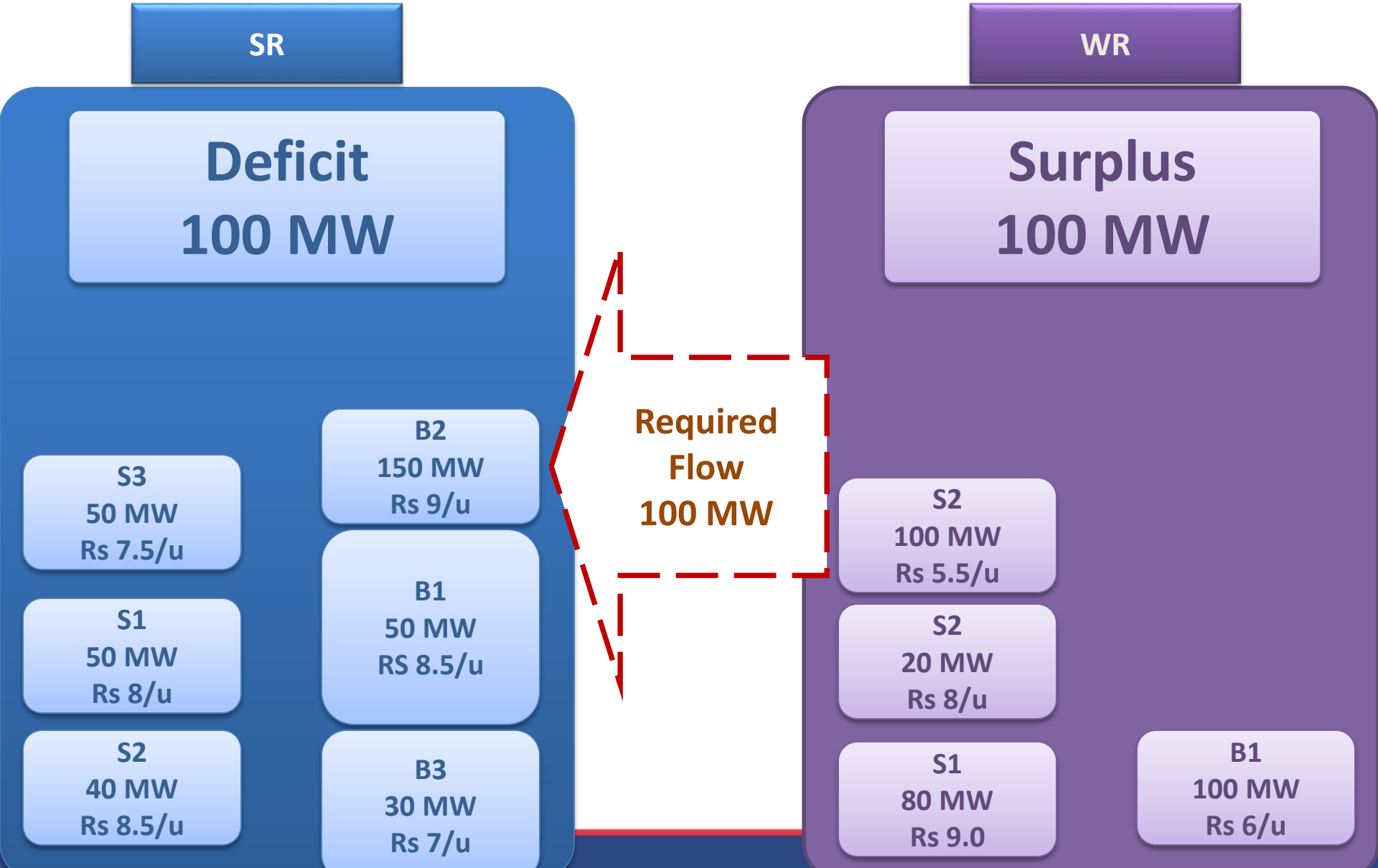
	Price (Rs./kWh)	0	999	1000	1999	2000	2999	3000	3001	3999	4000	4001	6000	8000	10000	20000
ER-Surplus Region	ER Seller-1	0	0	0	0	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200	-200
	ER Seller-2	0	0	0	0	0	0	-100	-100	-100	-100	-100	-100	-100	-100	-100
	ER Buyer	100	100	100	100	100	100	100	0	0	0	0	0	0	0	0
	Net (Buy-Sell)	100	100	100	100	-100	-100	-200	-300	-300	-300	-300	-300	-300	-300	-300

Flow Towards SR of 100 MW

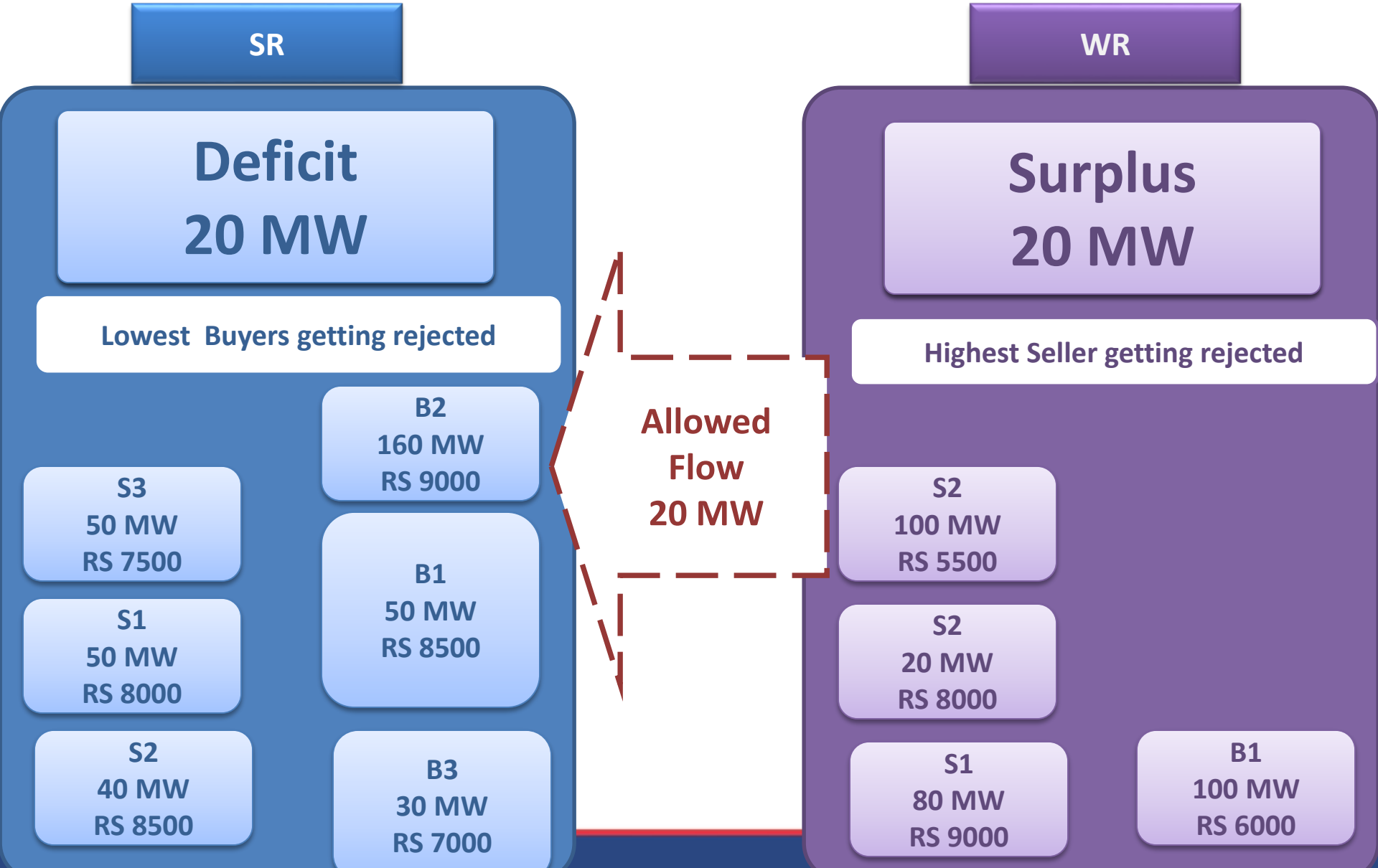
	Price (Rs./kWh)	0	999	1000	1999	2000	2999	3000	3001	3999	4000	4001	6000	8000	10000	20000
SR-Deficit Region	SR Seller-1	0	0	0	0	0	0	-100	-100	-100	-100	-100	-100	-100	-100	-100
	SR Seller-2	0	0	0	0	0	0	0	0	0	-100	-100	-100	-100	-100	-100
	SR Buyer	300	300	300	300	300	300	300	300	300	300	0	0	0	0	0
	Net (Buy-Sell)	300	300	300	300	300	300	200	200	200	100	-200	-200	-200	-200	-200

Congestion Management

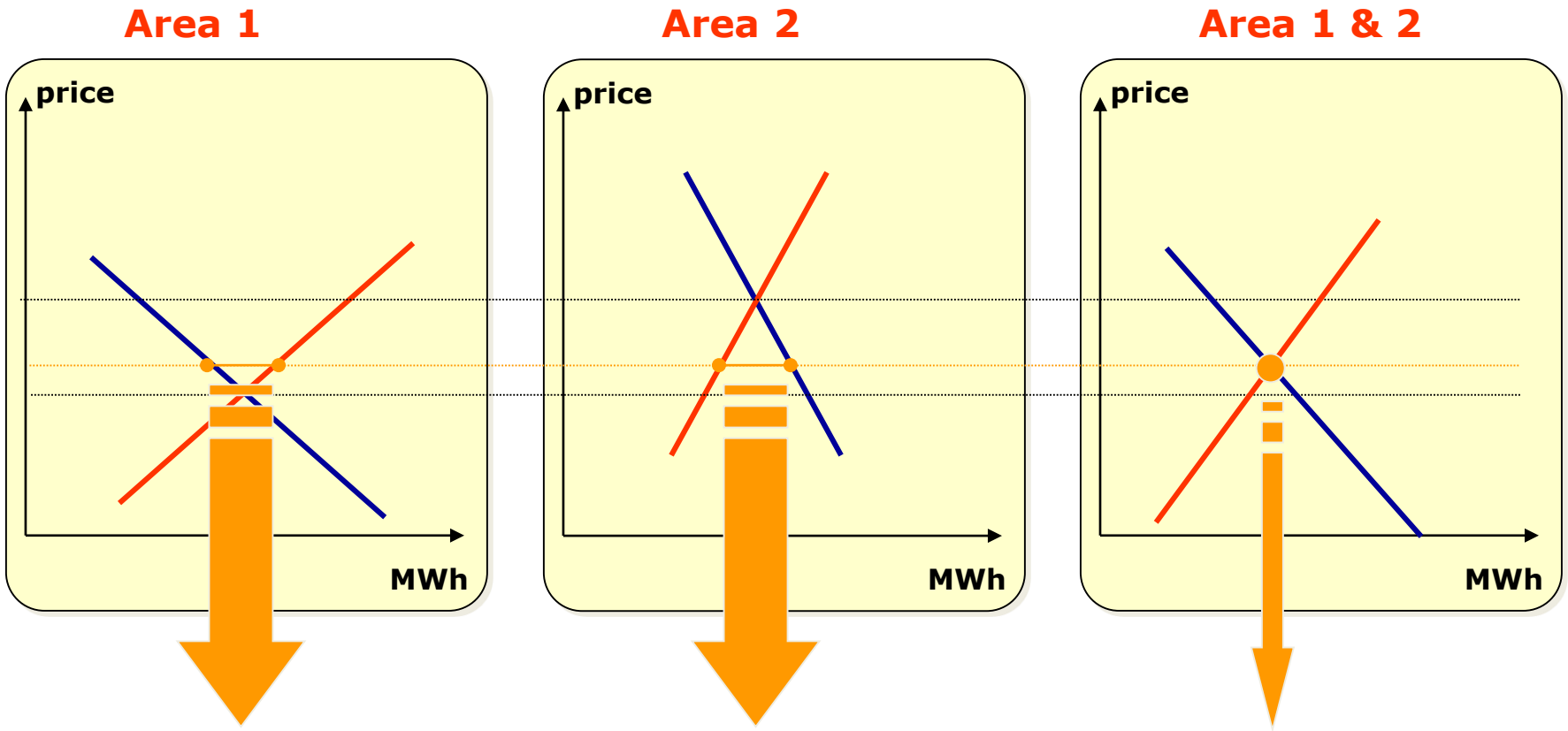
Congestion Management



Congestion Management

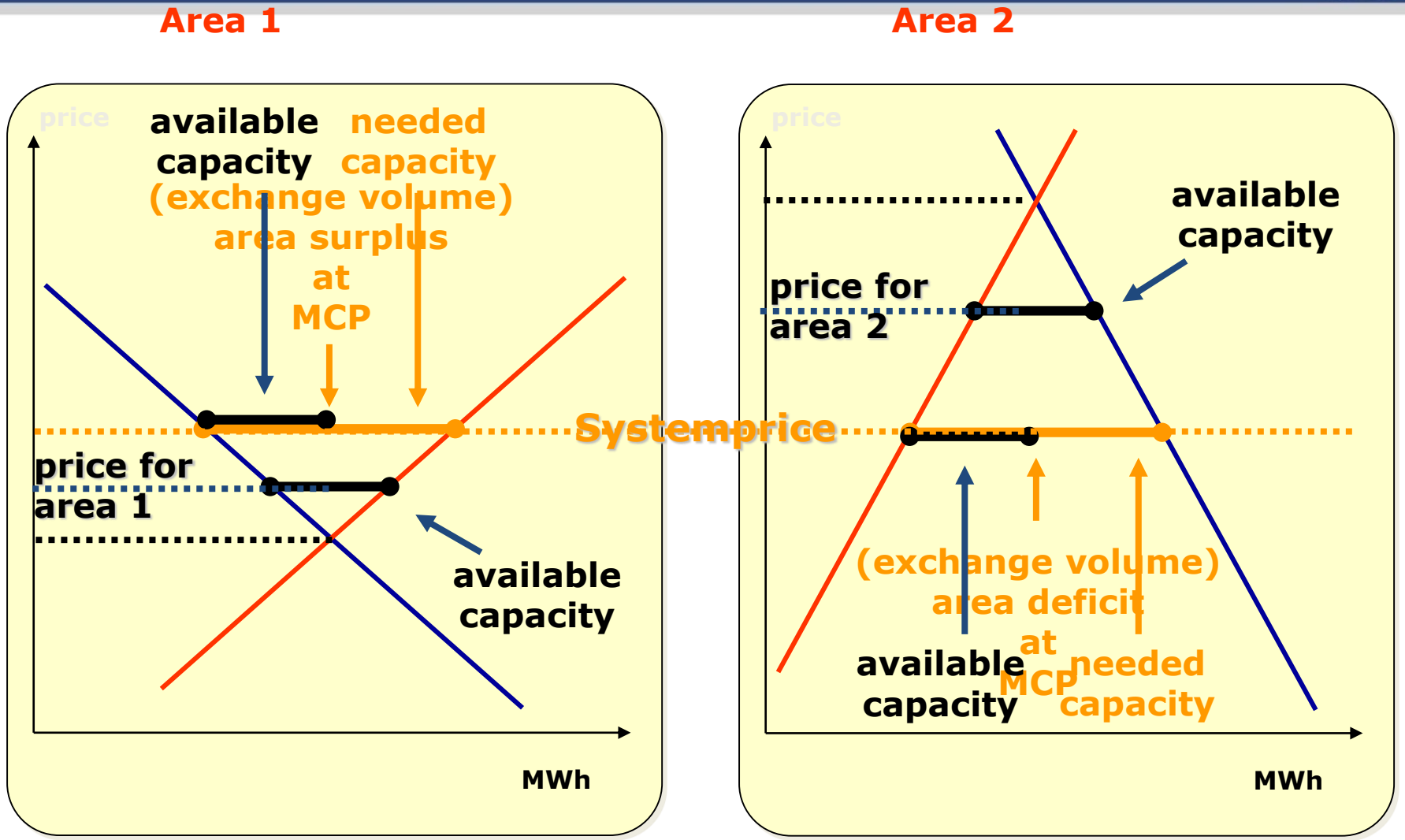


Congestion Management : Market Splitting



Needed capacity for exchange between the areas in order to achieve the same price in both areas

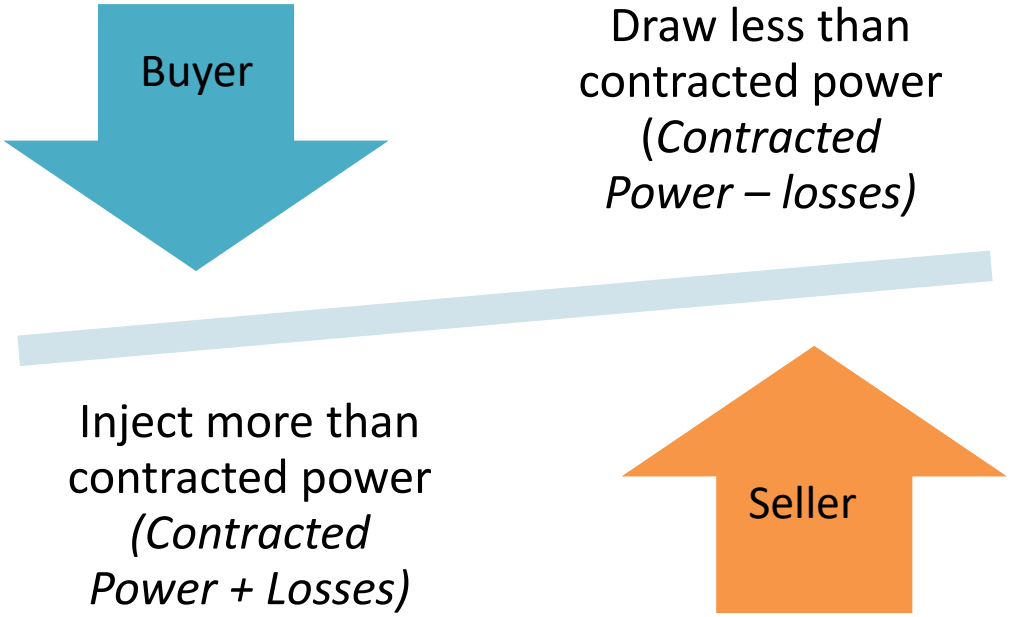
Congestion Management : Market Splitting



Delivery and Scheduling

Treatment of Losses

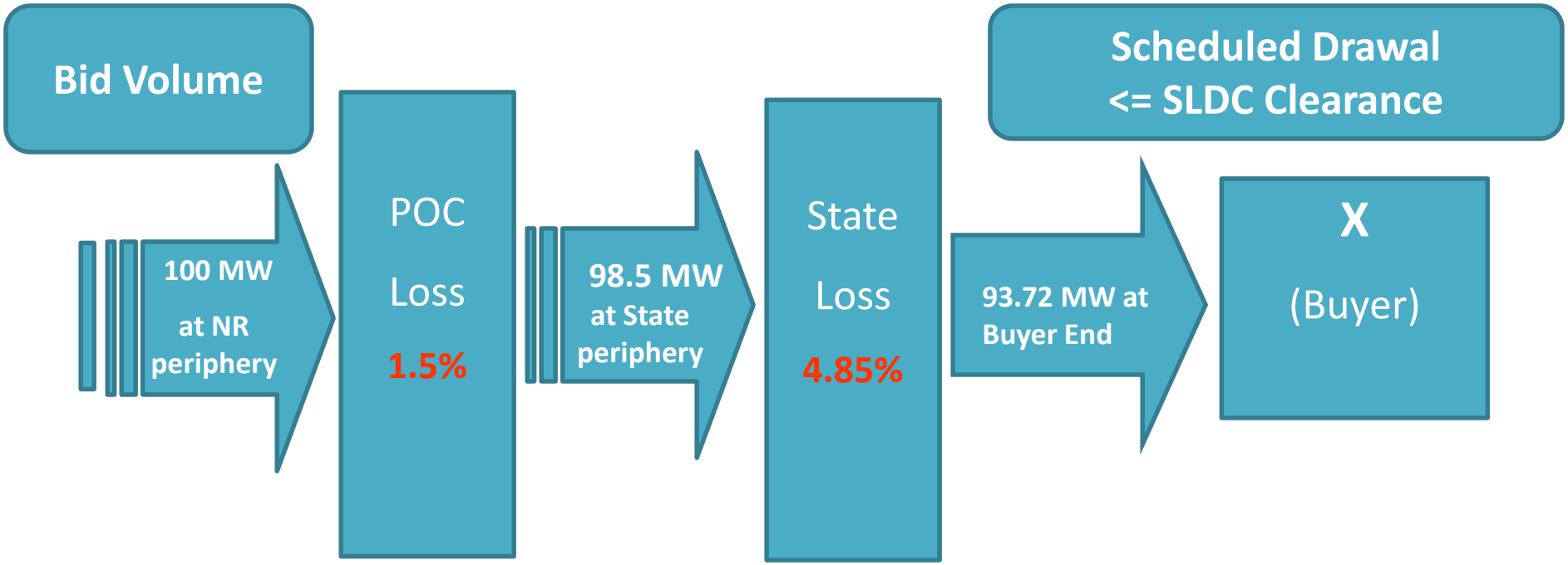
- **Both Buyers and Sellers to absorb losses**



- Average Transmission Losses of the Region where the Entity is geographically located.

Treatment of Losses… for buyer

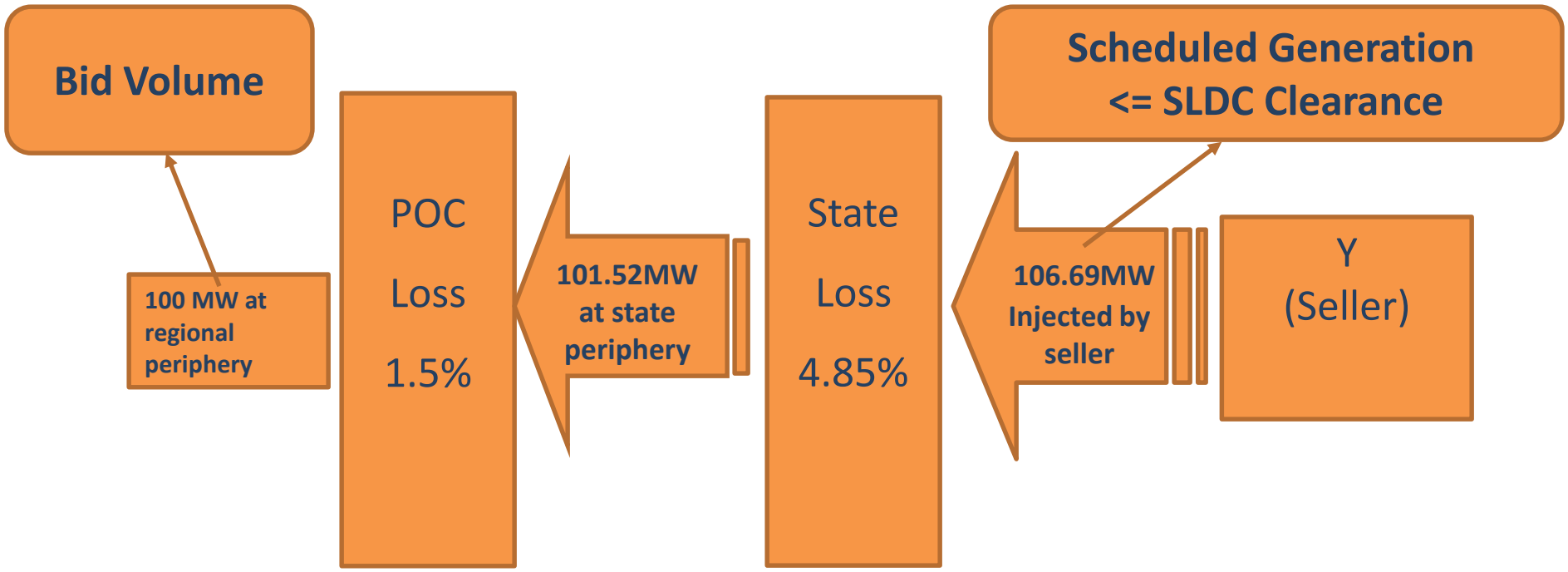
- POC Loss: 1.5 %
- S1 (State) loss: 4.85 %
- Buyer X bids for 100 MW at its respective regional periphery



Maximum Bid= Volume in standing clearance + Regional & State losses

Treatment of Losses… for seller

- POC Loss: 1.5%
- State loss: 4.85%
- Seller Y bids for 100 MW at its respective regional periphery



Maximum Bid= Volume in standing clearance – Regional & State losses

Submission of Provisional Report to NLDC

3.2 Power exchange(s) shall furnish by 13:00 Hrs, the interchange on various interfaces/control areas/regional transmission systems as intimated by NLDC. Power Exchange(s), shall also furnish the information of total drawl and injection in each of the regions.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	NR	injection	0	0	0	0	300	300	300	300	300	300	300	300	300	300	300	300	300	300
2	NR	Drawal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	SR	injection	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
4	SR	Drawal	75.2	75.2	75.2	75.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2
5	ER	injection	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
6	ER	Drawal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	WR	injection	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	WR	Drawal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	AR	injection	0	0	0	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10
10	AR	Drawal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	NR to WR	NR->WR	0	0	0	0	300	300	300	300	300	300	300	300	300	300	300	300	300	300
13	WR to NR	WR->NR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	ER to NR	ER->NR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	NR to ER	NR->ER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	SR to WR	SR->WR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	WR to SR	WR->SR	0	0	0	0	300	300	300	300	300	300	300	300	300	300	300	300	300	300
18	ER to SR	ER->SR	20	20	20	20	30	30	30	30	30	30	30	30	30	30	30	30	30	30
19	SR to ER	SR->ER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	ER to WR	ER->WR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	WR to ER	WR->ER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	AR to ER	AR->ER	0	0	0	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10
23	ER to AR	ER->AR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Submission of Final Report to NLDC

3.6 The details for Scheduling Request for Collective Transaction shall be submitted by Power Exchange (s) to the NLDC as per Format–PX-III: "Scheduling Request for Collective Transaction to NLDC".Power Exchange shall club together all Buyers within a State in one group and all Sellers within a State in another group for the purpose of Scheduling RLDCs.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	NR	injection	0	0	0	0	300	300	300	300	300	300	300	300	300	300	300	300	300	30
2	NR	Drawal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	SR	injection	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.
4	SR	Drawal	75.2	75.2	75.2	75.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.2	385.
5	ER	injection	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	2
6	ER	Drawal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	WR	injection	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	WR	Drawal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	AR	injection	0	0	0	0	10	10	10	10	10	10	10	10	10	10	10	10	10	1
10	AR	Drawal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	NR to WR	NR->WR	0	0	0	0	300	300	300	300	300	300	300	300	300	300	300	300	300	30
13	WR to NR	WR->NR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	ER to NR	ER->NR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	NR to ER	NR->ER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	SR to WR	SR->WR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	WR to SR	WR->SR	0	0	0	0	300	300	300	300	300	300	300	300	300	300	300	300	300	30
18	ER to SR	ER->SR	20	20	20	20	30	30	30	30	30	30	30	30	30	30	30	30	30	3
19	SR to ER	SR->ER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	ER to WR	ER->WR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	WR to ER	WR->ER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	AR to ER	AR->ER	0	0	0	0	10	10	10	10	10	10	10	10	10	10	10	10	10	1
23	ER to AR	ER->AR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
25	Regional Entity	90	N	32	S	15	E	12	W	16	A	15								
33	N0RRI2	Drawal	NULL																	
34	N0RRJ0	injection	0	0	0	0	300	300	300	300	300	300	300	300	300	300	300	300	300	30
35	N0RRJ0	Drawal	NULL																	
36	N0RRL0	injection	NULL																	
37	S0RAP0	Drawal	0	0	0	0	235.2	235.2	235.2	235.2	235.2	235.2	235.2	235.2	235.2	235.2	235.2	235.2	235.2	235.
38	S0RGO0	injection	NULL																	

Regional Entity Wise Details at Regional Periphery (Trade)

Application For Scheduling To NLDC

3.5 The Application for Scheduling of Collective Transaction shall be submitted by the Power Exchange(s) by 15:00 Hrs each day, to the NLDC as per Format-PX-II: "Application for Scheduling of Collective Transaction", for transactions to be

APPLICATION FOR SCHEDULING OF COLLECTIVE TRANSACTION

Application No.- 00IEX **Date:**

Name of Power Exchange:- Indian Energy Exchange

Scheduling Request for -

Region:	Sum of injection by all Sellers (MWH)	Sum of Drawal by all Buyers (MWH)	Net injection(+)/ Drawal(-) (MWH)	Number of Regional Entities Involved	
				Injection	Drawal
Northern	0.00	0.00	0.00	0	0
Western	0.00	0.00	0.00	0	0
Southern	664.80	3369.80	-2705.00	1	3
Eastern	2220.00	0.00	2220.00	2	0
North-Eastern	485.00	0.00	485.00	1	0
TOTAL	**3369.80**	**3369.80**	**0.00**	**4**	**3**

Open Access Charges

1. Application Fees : Rs. **5000.00**
2. Transmission Charges : Rs. **202188.00**
3. Operating Charges : Rs. **35000.00**

Transaction Ref. No.
TO BE PAID BY

It is hereby certified that

a) The request for scheduling submitted has been arrived at after a transparent process of bidding.

b) The request for scheduling is within the available margins on respective transmission systems.

Communication with RLDCs & Acceptance from NLDC

3.7 NLDC shall send the details (Scheduling Request of Collective Transaction) to different RLDCs by 16:00 Hrs for final checking and accommodating them in their schedules. RLDCs shall confirm its acceptance to NLDC by 17:00 Hrs.

3.8 After getting acceptance from the RLDCs, NLDC shall convey the acceptance of scheduling of Collective Transaction to Power Exchange(s) by 17:30 Hrs.

Trade-Breakup of Schedule to SLDC

4.4 The individual transactions for State Utilities/intra-State Entities shall be scheduled by the respective SLDCs. Power Exchange(s) shall send the detailed breakup of each point of injection and each point of drawal within the State to respective SLDCs by 18:00 Hrs. after receipt of acceptance from NLDC.

Trade Summary of injection/drawal for scheduling of Collective transaction through Power Exchange		
	Sum of Injection(-) by all entities within the state	Sum of Drawal(+) by all entities within the state
Time Period	Trade Schedule (MW)	Trade Schedule (MW)
00:00 - 00:15	0	0
00:15 - 00:30	0	0
00:30 - 00:45	0	0
00:45 - 01:00	0	0
01:00 - 01:15	0	0
01:15 - 01:30	0	0
01:30 - 01:45	0	0
01:45 - 02:00	0	0
07:00 - 07:15	0	75.2
07:15 - 07:30	0	75.2
07:30 - 07:45	0	75.2
07:45 - 08:00	0	75.2
08:00 - 08:15	0	75.2
08:15 - 08:30	0	75.2
08:30 - 08:45	0	75.2
08:45 - 09:00	0	75.2

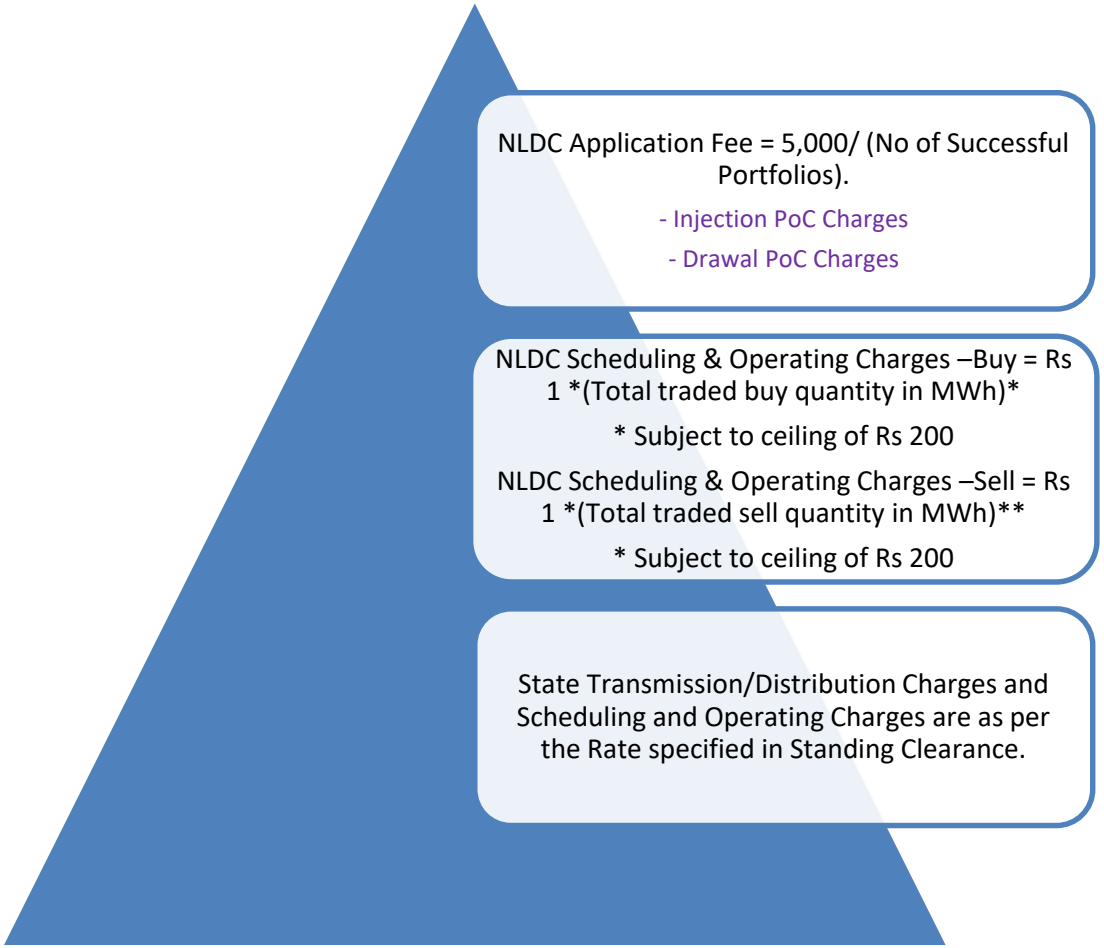
Portfoliowise Trade injection(-)/ Drawal(+) in (MW)		
	WR P9	WR P10
Time Period	Trade Schedule (MW)	Trade Schedule (MW)
00:00 - 00:15	0	0
00:15 - 00:30	0	0
00:30 - 00:45	0	0
00:45 - 01:00	0	0
01:00 - 01:15	0	0
01:15 - 01:30	0	0
01:30 - 01:45	0	0
01:45 - 02:00	0	0
07:00 - 07:15	25.07	50.13
07:15 - 07:30	25.07	50.13
07:30 - 07:45	25.07	50.13
07:45 - 08:00	25.07	50.13
08:00 - 08:15	25.07	50.13
08:15 - 08:30	25.07	50.13
08:30 - 08:45	25.07	50.13
08:45 - 09:00	25.07	50.13

Summary of injection/drawal for scheduling of Collective transaction through Power Exchange with Regional		
Time Period	Sum of Injection(-) by all entities within the state	Sum of Drawal(+) by all entities within the state
00:00 - 00:15	0	0
00:15 - 00:30	0	0
00:30 - 00:45	0	0
00:45 - 01:00	0	0
01:00 - 01:15	0	0
01:15 - 01:30	0	0
01:30 - 01:45	0	0
01:45 - 02:00	0	0
07:00 - 07:15	0	71.06
07:15 - 07:30	0	71.06
07:30 - 07:45	0	71.06
07:45 - 08:00	0	71.06
08:00 - 08:15	0	71.06
08:15 - 08:30	0	71.06
08:30 - 08:45	0	71.06
08:45 - 09:00	0	71.06

Portfoliowise Details of injection(-)/ Drawal(+) with Regional losses (At State		
Time Period	WR P9	WR P10
00:00 - 00:15	0	0
00:15 - 00:30	0	0
00:30 - 00:45	0	0
00:45 - 01:00	0	0
01:00 - 01:15	0	0
01:15 - 01:30	0	0
01:30 - 01:45	0	0
01:45 - 02:00	0	0
07:00 - 07:15	23.69	47.37
07:15 - 07:30	23.69	47.37
07:30 - 07:45	23.69	47.37
07:45 - 08:00	23.69	47.37
08:00 - 08:15	23.69	47.37
08:15 - 08:30	23.69	47.37
08:30 - 08:45	23.69	47.37
08:45 - 09:00	23.69	47.37

Portfoliowise Details of injection(-)/ Drawal(+) with Regional and State losses*		
Time Period	WR P9	WR P10
00:00 - 00:15	0	0
00:15 - 00:30	0	0
00:30 - 00:45	0	0
00:45 - 01:00	0	0
01:00 - 01:15	0	0
01:15 - 01:30	0	0
01:30 - 01:45	0	0
01:45 - 02:00	0	0
07:00 - 07:15	22.54	45.07
07:15 - 07:30	22.54	45.07
07:30 - 07:45	22.54	45.07
07:45 - 08:00	22.54	45.07
08:00 - 08:15	22.54	45.07
08:15 - 08:30	22.54	45.07
08:30 - 08:45	22.54	45.07
08:45 - 09:00	22.54	45.07

Calculation of Charges – DAM



Timelines of Charges – DAM

NLDC Charges

- Application Fees will be paid in advance = T
- NLDC Scheduling & Operational Charges = T+1
- Transmission Charges CTU = T+1

SLDC Charges

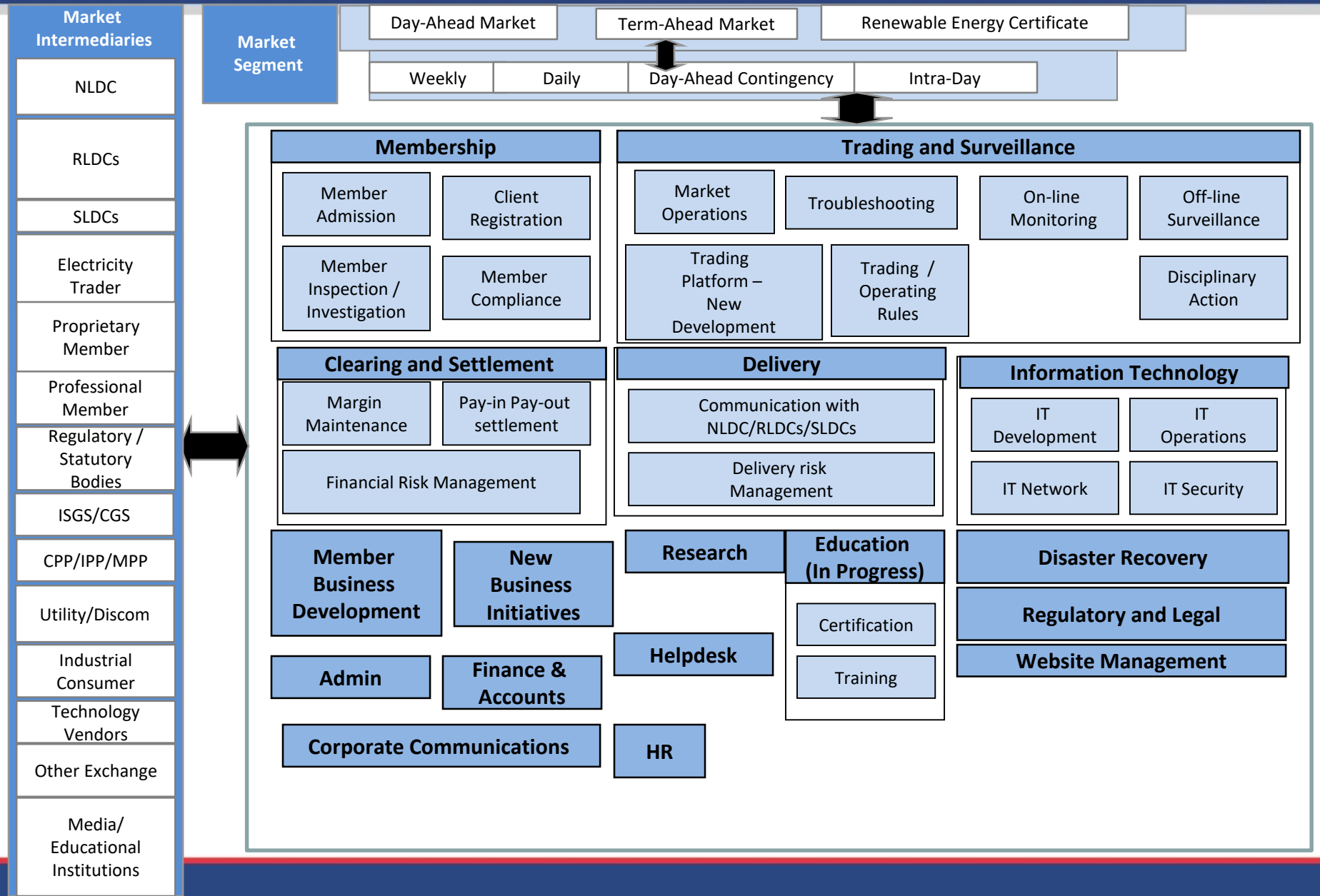
- SLDC Scheduling & Operational Charges = T+1
- Transmission Charges STU = T+1
- Area Transmission Charges (ATU) = T+1
- Area Load Dispatch Centre (ALDC) = T+1

T = Trade Date

Pay in / Pay out & Margins Processing

All these transactions are processed electronically through a interface between the exchange & banks

Exchange Process Landscape



IEX Initiatives

Continuous communication with Users

IEX Daily SMS Service for Trade Details

IEX hourly Trade Prices displayed on its website

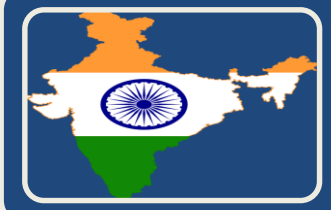
IEX Monthly Bulletin

TERM AHEAD MARKET

7 January 2017

Shalabh Shrivastava
IEX-BD

In this presentation



Introduction to Term Ahead Market Segment

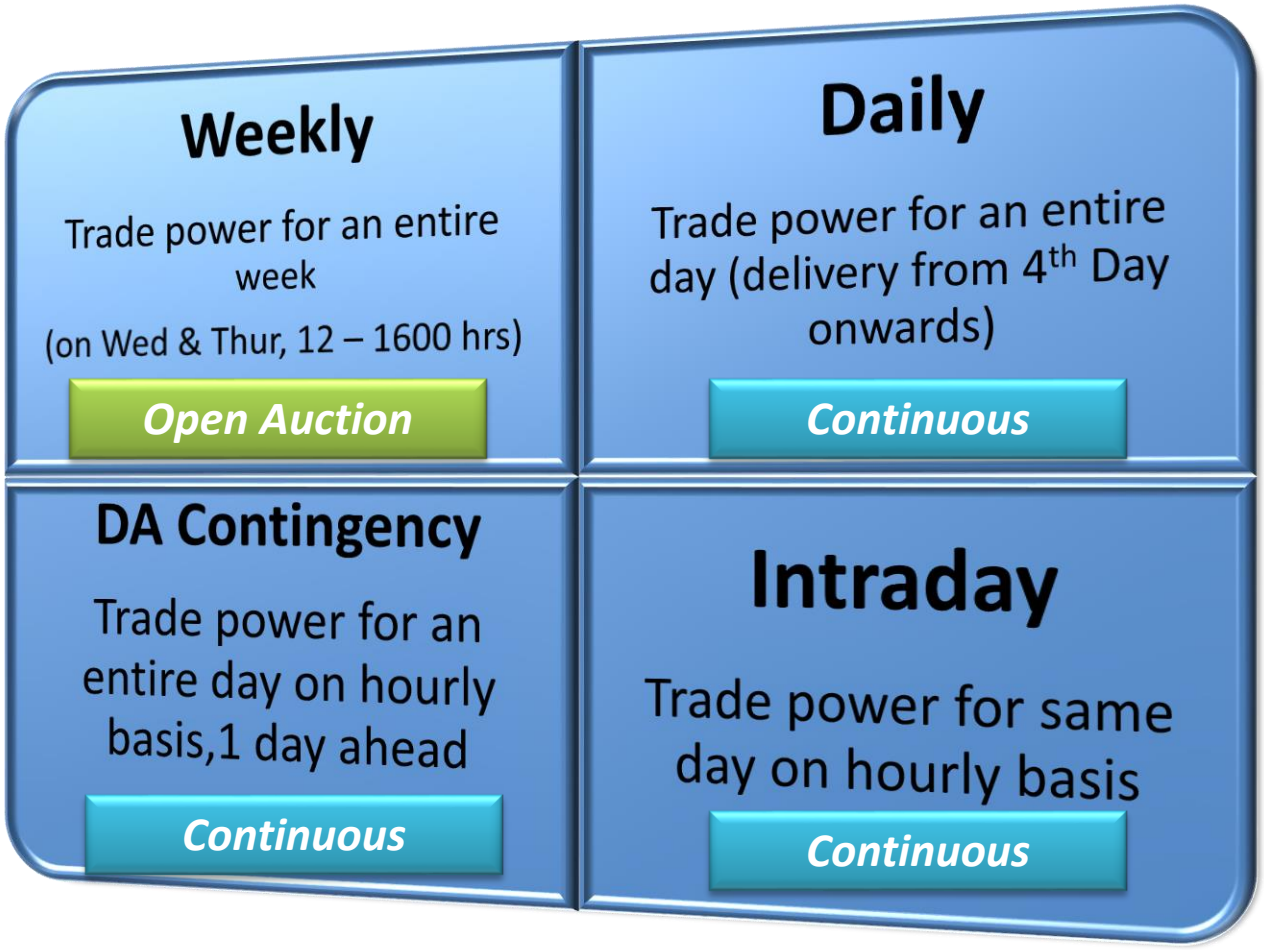
Contract Characteristics

Trading Timelines & Mechanism

- Participation
- Volume
- Price

Market snapshot

TAM Market Segments

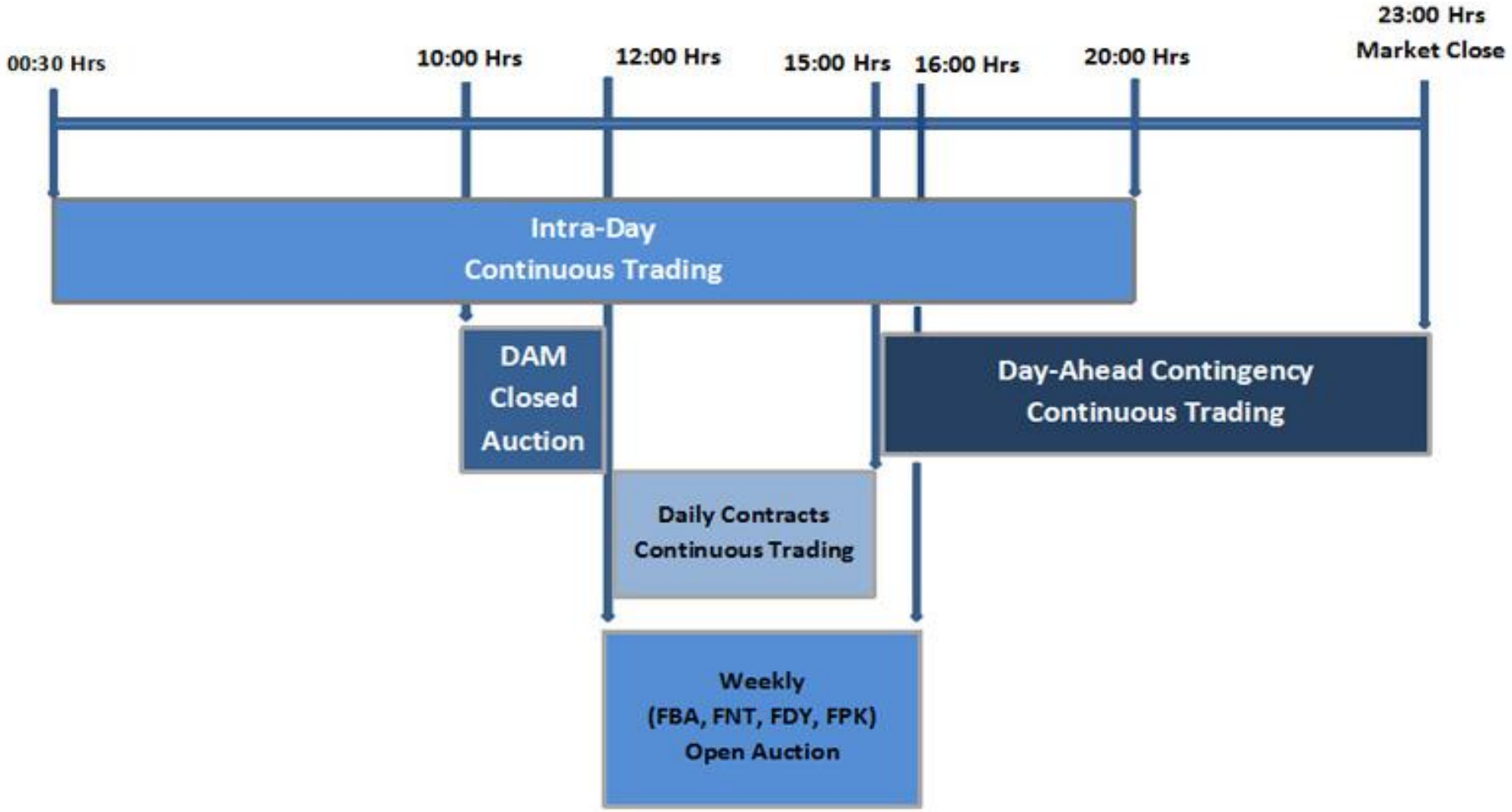


Contract Characteristics

		TERM AHEAD MARKET			
Contract Characteristic	**Day Ahead Market**	**Intraday Contracts**	**Day Ahead Contingency**	**Daily Contracts**	**Weekly Contracts**
Delivery	Next day	0400-2400 Hrs same day	For next day	From 4th day to next 7 days	For next week
Auction Type	**Closed Auction**	Continuous trading	Continuous trading	Continuous trading	Open Auction
Contracts	**15 min**	Hourly	Hourly	Block of Hours (Fixed)	Block of Hours (Fixed)
Trade Availability	All Days	All days	All Days; 1500-2300	All Days; 1200-1500	Wed & Thurs; 1200-1600
Financial Settlement	Pay-In- D-1; Pay Out – D+1	Pay in: T+1 Pay out: T+1	Pay in: T+1 Pay out: T+2	Pay-In- D-1; Pay Out – D+1	Pay-In- D-1; Pay Out – D+1

T = Trade D = Delivery

DAM and TAM Trading Timeline



Types of Contracts

- Weekly and Daily
  - FBA -- Firm Base – 24 Hrs
  - FNT -- Firm Night – 8 Hrs (0-7 & 23-24)
  - FDY -- Firm Day – 11Hrs (7-18)
  - FPK -- Firm Peak – 5 Hrs (18-23)

- Day Ahead Contingency and Intra-Day
  - Hourly (DAC-24 hrs & Intraday-04-24)

Region Specific Contracts

Trading of Intra-day Contracts

Trading Hour

Trading Hours:19.5
(00:30-20:00)

0:30-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16

16-17	17-18	18-19	19-20

Delivery
Hours:20
(04-24)

4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20

20-21	21-22	22-23	23-24

Contracts available for delivery on the same day

Trading of Weekly & Daily Contracts

Weekly

Daily

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Market Place Functionality (TAM)

Market Place Functionality(TAM)

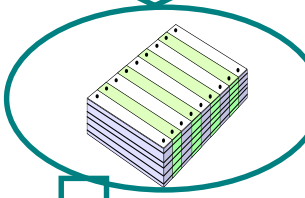
Prov. Format-1 & Format-2 generated electronically & sent to Members

Member obtains SLDC Clearance

Member sends the SLDC Clearance to IEX

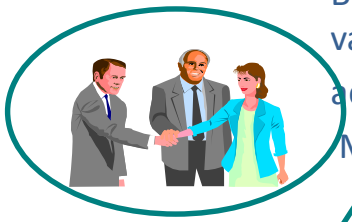
IEX applies to Nodal RLDC

Receipt of Nodal RLDC Acceptance by IEX



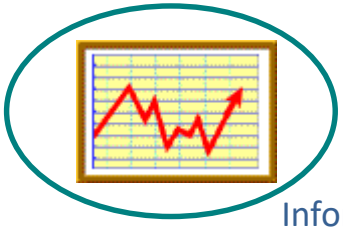
Reports are generated

Financial Settlement



Bids are validated, accepted and Matched

Margins are collected



Information dissemination

Bid entry

TWS Screen

Pending Buy Order

Buy 10 MW @ Rs 4500/MWh

Pending Sell Order

Sell 15 MW @ RS 5500/MWh

Trading Engine

Buy 10 MW @ RS 4500/MWh

Sell 15 MW @ RS 5500/MWh

Buy 10 MW @ Rs 4500/MWh

Sell 15 MW @ Rs 5500/MWh

TWS Screen

Pending Buy Order

Buy 10 MW @ RS 5000/MWh

Buy 10 MW @ RS 4500/MWh

Pending Sell Order

Sell 15 MW @ Rs 5500/MWh

Trading Engine

Buy 10 MW @ RS 5000/MWh

Buy 10 MW @ 5000/MWh

TWS Screen

Pending Buy Order

Buy 10 MW @ RS 4500/MWH

Buy 10 MW @ 4500

Pending Sell Order

Sell 5 MW @ Rs 5000/MWh

Trading Engine

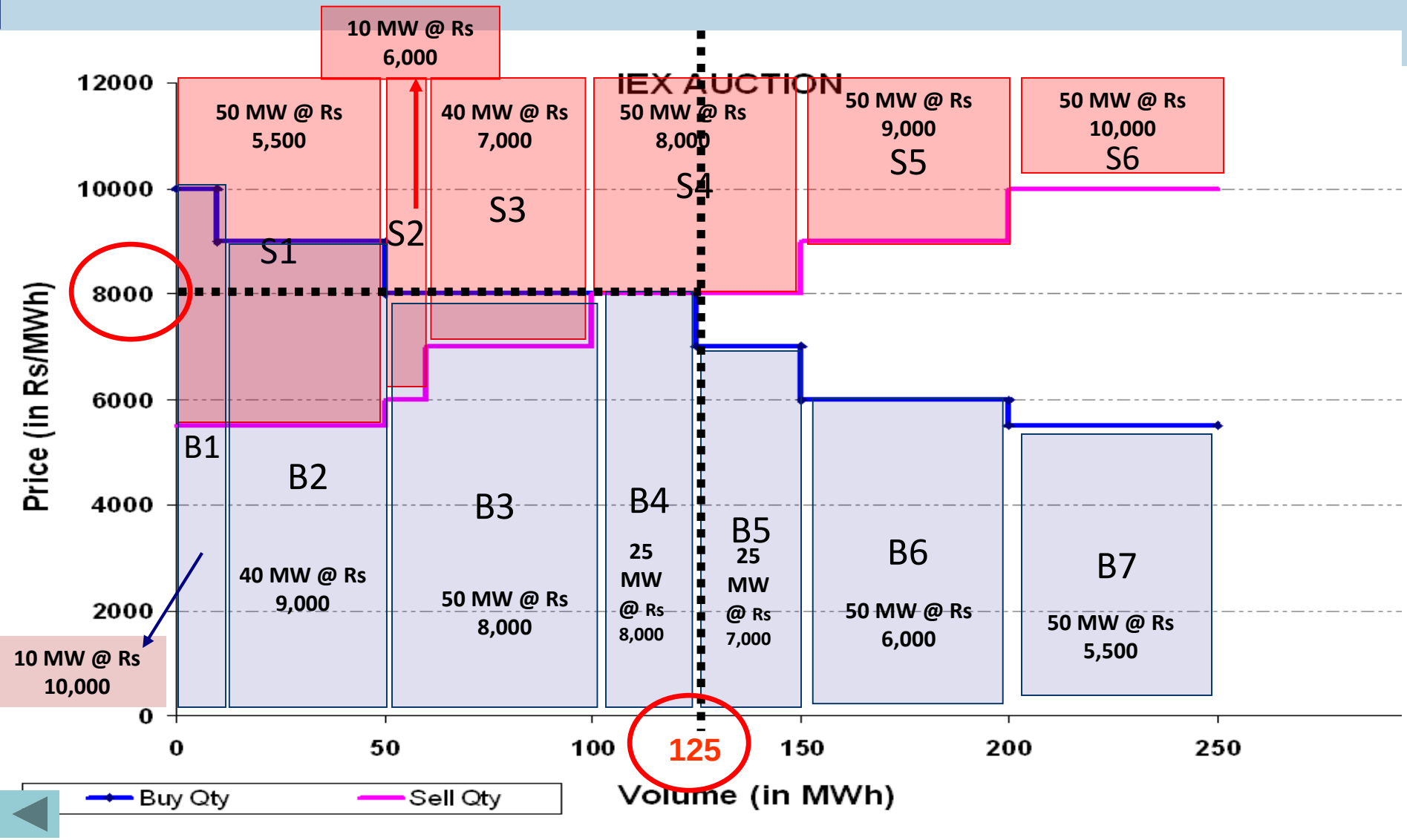
Sell 15 MW @ Rs 5000/MWh

Trade 10 MW @ RS 5000/MWh

Bid Modified

Sell 15 MW @ RS 5000/MWh

The Buyers


10 MW @ Rs 6,000
IEX AUCTION
50 MW @ Rs 5,500
40 MW @ Rs 7,000
50 MW @ Rs 8,000
50 MW @ Rs 9,000
50 MW @ Rs 10,000
S1
S2
S3
S4
S5
S6
B1
B2
B3
B4
B5
B6
B7
40 MW @ Rs 9,000
50 MW @ Rs 8,000
25 MW @ Rs 8,000
25 MW @ Rs 7,000
50 MW @ Rs 6,000
50 MW @ Rs 5,500
10 MW @ Rs 10,000
Price (in Rs/MWh)
Volume (in MWh)
12000
10000
8000
6000
4000
2000
0
0
50
100
125
150
200
250
Buy Qty
Sell Qty

TAM: Performance in 2016

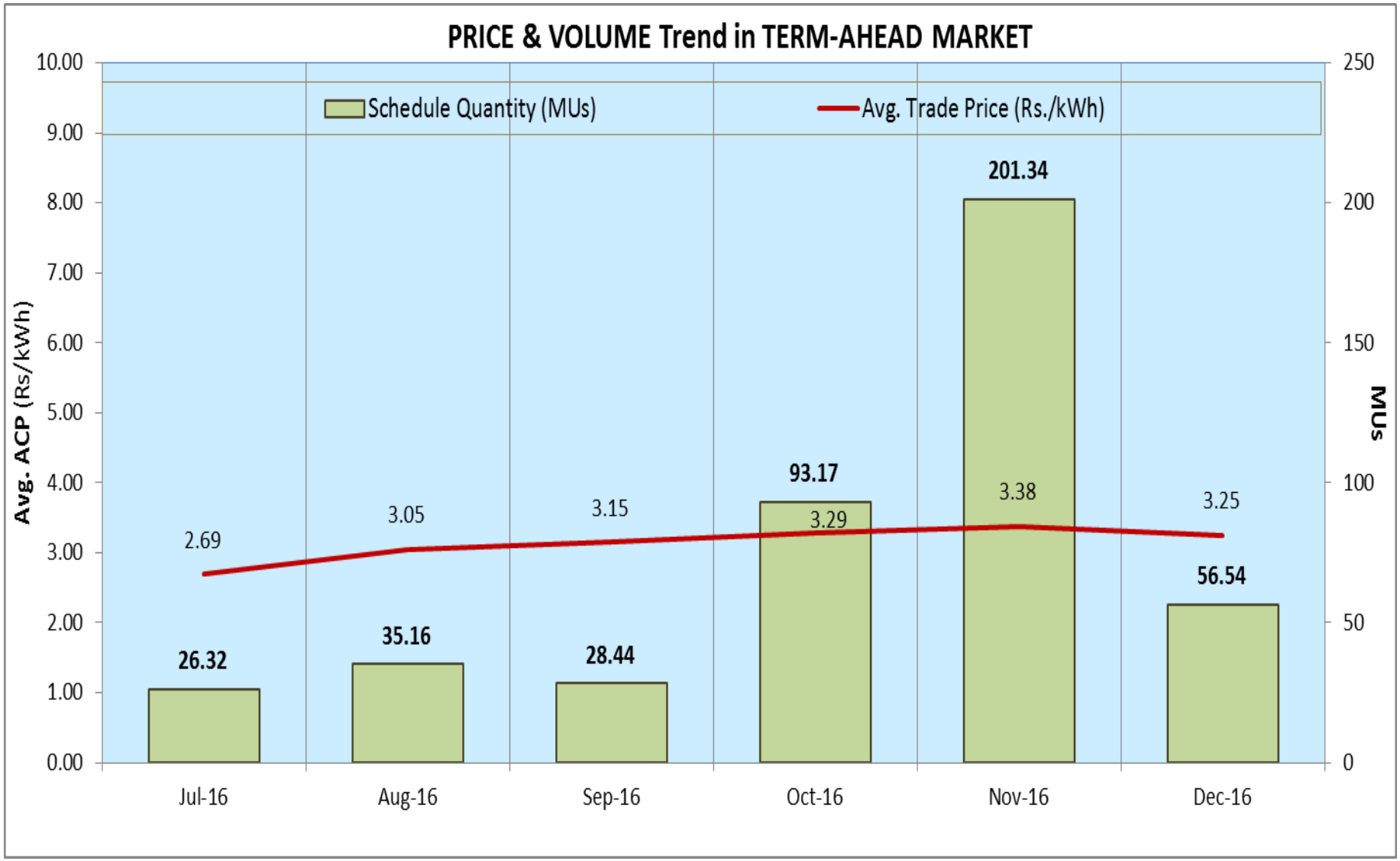
Weekly	Day-ahead Contingency
219 MU	170 MU

Total Volume traded
650 MUs

Intraday	Daily
165 MU	95.5 MU

Data for calendar year 2016

Price and Volume trend in TAM



TAM Monthly Snapshot – DEC'16

Contracts	Total Volume (MWh)	Max Price (Rs./kWh)	Min Price (Rs./kWh)
Weekly	11,718	3.80	2.65
Intraday	15,815	4.50	1.11
Day-Ahead Contingency	29,023	4.2	2.8
Daily	-	-	-

Thank You

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