MINUTES OF THE 19TH MEETING OF THE CENTRAL ADVISORY COMMITTEE (CAC) OF CERC HELD ON 12TH MAY, 2014 AT NEW DELHI.

VENUE : "MAGNOLIA" HALL, INDIA HABITAT CENTRE, LODHI ROAD, NEW DELHI – 110 003.

The meeting was chaired by Shri Gireesh B. Pradhan, Chairperson, Central Electricity Regulatory Commission (CERC). A list of participants is **enclosed** at ***Annexure-I***. Shri Pradhan welcomed the members of the Central Advisory Committee of CERC and stated that this was the first meeting he was chairing since taking over as Chairperson of CERC.

2.0 In his opening remarks, Chairperson, CERC expressed his appreciation for the advice and valuable suggestions given by the Central Advisory Committee on several important issues facing the sector and the Central Commission in particular. The Commission benefitted immensely from the advice of the CAC in the past. He highlighted the fact that the Indian power sector faces a lot of challenges today. Environmental clearances, land acquisition, fuel shortage, slackness in economic growth are some of the external factors affecting the growth of the power sector. Poor financial health of the Distribution Companies, not so encouraging performance of the Utilities on efficiency front, inadequate transmission infrastructure and congestion in transmission system are some of the internal factors stymieing the growth of the sector. It was in this context that these two critical issues had been brought before the Central Advisory Committee for discussion. Transmission congestion and stranded capacity are major areas demanding policy and regulatory intervention in the power sector.

3.0 Shri Pradhan said that the objective was to brainstorm the issues around these critical subjects and the Commission looked forward to the considered views of the Members of the Central Advisory Committee.

4.0 The address of Shri Pradhan was followed by a presentation made by Shri A.K. Saxena, Chief (Engg.), CERC on **"Transmission Congestion"** and by Shri Sushanta K. Chatterjee, Joint Chief (Regulatory Affairs), CERC on **"Stranded Capacity"**.

4.1 Agenda Item No. 1 was taken up with a presentation by Shri A.K. Saxena, Chief (Engg.), CERC. A copy of the presentation is **enclosed** at ***Annexure-II***. The presentation highlighted the issues relating to the need for optimum utilization of resources, transmission planning and operation, growth of transmission lines and transformation capacity, operational issues of transmission congestion etc.

4.2 Subsequently, Agenda Item No. 2 was taken up with a presentation by Shri Sushanta K. Chatterjee, Joint Chief (RA), CERC. A copy of the presentation is **enclosed** at ***Annexure-III***. The presentation highlighted installed capacity vis-à-vis stranded capacity, factors responsible for stranded capacity, a brief analysis of behaviour of surplus and deficit states and suggested way forward.

5.0 The presentations summed up the following issues for discussion (i) Inadequacies in Intra-state transmission system, (ii) Advance declaration of TTC and ATC by CTU along with an assessment of improvement – difficulties and way forward, (iii) TTC and ATC computation by POSOCO - existing methodology and way forward, (iv) Consistency in

approach of CTU and POSOCO in computation of TTC and ATC, (v) Adoption of (n-1) or (n-1-1) criteria due to multiple tripping incidents, (vi) Whether the SPS is to be considered or not, (vii) Loop flows and transit flows, (viii) Generation and load uncertainties, (ix) Transmission and generation mismatch, etc., (x) Need and way forward for removing transmission congestion, (xi) Measures to reduce fuel shortage for power sector, (xii) Need for correct estimation of demand/load forecasting, (xiii) Enforcement of power procurement adequacy, (xiv) Measures to improve financial health of the distribution companies, (xv) Measures to revive the growth in demand, (xvi) Measures to address the issues arising out of non-continuous and periodic short-term open access, (xvii) Need and measures for addressing the fixed fuel linkage/contracting, (xviii) Need for a comprehensive market design to address all these issues (indicating the encouragement of open access, reduction of cross subsidy etc.), (xix) Any other suggestion.

5.1 As part of the deliberations, a presentation was made by Shri S.K. Soonee, CEO, POSOCO. A copy of the presentation is **enclosed** at ***Annexure-IV***. The presentation highlighted the issues around Transmission Congestion, reasons for less transfer capability than transmission capacity and measures for mitigating transmission congestion in different time horizons. etc.

6.0 **Discussion**

The issues highlighted were discussed in detail and the following views were expressed by the members of the CAC.

Transmission Congestion :

- The country has added substantially on generation capacity addition. But still we are able to meet the demand only to the extent of 1,40,000 MW. Consumers are forced to resort to use of diesel gensets. It is estimated that currently 90,000 MW power is generated through diesel gensets, which is further estimated to increase by 5000 to 8000 MW every year. In order to mitigate the risk of energy security and for protection of environment, SERCs be advised to impose restrictions on use of diesel gensets.

- The contention of POSOCO that inter-regional transfer capacity cannot be allowed more than 36% of the total of such capacity, needs to be debated further. If need be, external experts may be hired to examine the issue.

- Reliability Council constituted in pursuance of the CERC's Order for addressing issues relating to TTC/ATC etc. should have representatives from private sector as well.

- There is a need for greater transparency on declaration of TTC/ATC/Margin allocation. TTC assessment should be done more on real time basis.

- Part of transmission capacity should be reserved for day-ahead market/power exchanges.

- SERCs should issue directions to STUs to augment intra-state transmission / sub-transmission network by creating appropriate

transmission corridors. In case of non-adherence to such directions, SERCs should resort to suspension / cancellation of transmission licenses.

- As power production through renewable sources is increasing every year, the same should be given due weightage in transmission planning.

- Some members argued that long term PPAs (i.e for 25 years etc.) appear to be faulty due to demand uncertainties. Therefore, tenure of PPAs may be revisited.

- Generation uncertainty is also a major reason for transmission congestion.

- PGCIL, CEA & POSOCO should carry out detailed exercise for transmission forecasting while accommodating suitable margins for growth and make every effort for accurate planning on small scale and large scale (instead of short term and long term) while taking all cost elements into account and without compromising on safety of grid. SERCs may also consider constituting a planning body to take up the activity on regular basis.

- General Network Access (GNA) framework should be implemented at the earliest.

- A few Members argued that the restriction of 12% or 150 MW under Deviation Settlement Mechanism was difficult to implement for smaller States.

- Time of Day (ToD) tariff in transmission may be considered, to encourage more judicious use of the transmission system.

- CTU insists on PPA for granting long term access. This is difficult for the generator due to a variety of reasons. NEP also provides that prior agreement with the beneficiary should not be a pre-condition for network expansion. In this regard, CTU argued that accurate transmission planning was possible only under generation and demand certainty. The percentage share of short-term transactions should be stipulated in advance and transmission planning should factor in this margin.

Stranded Capacity :

- More than 48,000 MW capacity is stranded in the absence of coal linkages, non closure of PPAs or due to lack of flexibility for diversion of coal. These projects should be brought on stream by allocating coal and through regulatory intervention under section 62 of the Act. Coal sector needs revamping. Coal mines should be de-nationalized. Economy is paying a huge cost due to coal shortage. This should be addressed.

- Further, the gas based generating stations are likely to get if the gas price is increased. Gas based generation may be utilized for ancillary services.

- Peak demand should be calculated based on "sustained demand" for specified duration as against the present method of one time "instantaneous demand" during a year.

- Demand / load forecasting is a critical element for effective power system operation. This is at present not being done at the State level properly. SERCs may issue directions to state utilities to carry out necessary studies in consultation with CEA, POSOCO, PGCIL etc. for accurate demand / load / resource forecasting.

- The State utilities should mandatorily procure power through Case-I bidding. Discipline in compliance of regulatory orders is missing. PoC charges are not being paid by many utilities. At times it is seen that PPAs are also not honoured. This scenario is leading to litigation which is proving expensive for individuals / public and private sector as well.

- Industry is suffering due to non-availability of power. Industry is willing to pay additional charge, such as reliability charge for assured supply of electricity. It was, however, pointed out that in Andhra Pradesh, such a scheme was floated but without much success as industrial consumers preferred to procure power through Open Access as against the option of payment of reliability charges to the utility. Another view point on this issue was that the concept of reliability charges should be pursued as an alternative to open access. Consumers with less than 1 MW load and the consumers who do not intend to procure power through Open Access might choose this option.

- Day ahead market/intra-day market should be strengthened further, for better utilization of stranded capacity.

- Representatives of SERCs may be invited to the meetings of CAC, so that they could be sensitized about the issues being discussed in the CAC. Regulatory effectiveness should be measured on parameters involving interventions on reduction in load shedding, use of diesel generation, facilitating use of stranded capacity and such other related parameters.

- FOR should deliberate critical issues like this, evolve consensus and help implement measures to address the problems facing the sector. For this, FOR should be further strengthened.

7.0 **Consensus**:

After discussion, consensus was evolved on the following:

- The issue of Available Transfer Capacity vis-à-vis Total Transfer Capacity needs urgent attention of the Regulators.

- There is a need for enhanced transparency and information dissemination on TTC/ATC.

- The concept of General Network Access (GNA) to be taken up immediately.

- Transmission planning should also take RE capacity addition into consideration.

- Day ahead/intra-day market should be further strengthened. Market design for Ancillary Services should be created at the earliest.

- ❖ Gas based generating stations should be utilized for ancillary services.

- ❖ ToD tariff for transmission should be examined. The economic cost of transmission should be captured in policy/regulation making in the context.

- ❖ Interaction of CAC and FOR should be facilitated. SERCs should be impressed upon to insist on adequacy of power procurement by discoms so as to fulfill their mandate of universal service/supply obligation.

- ❖ Reliability Council constituted in pursuance of CERC Order should co-opt representatives from private sector as well, as Members.

- ❖ A small committee may be constituted from amongst the members of CAC to examine issues connected with transmission congestion.

- ❖ CAC should meet more often.

8.0 Shri Pradhan summed up the discussion by reiterating that regulatory framework should be designed to address the urgent need for mitigating transmission congestion and to bring stranded capacity into use. He expressed gratitude for the suggestions given by the members of the Central Advisory Committee.

The meeting ended with a vote of thanks to the Chair.

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/ ANNEXURE – I /

LIST OF PARTICIPANTS ATTENDED THE 19TH MEETING OF CENTRAL ADVISORY COMMITTEE (CAC)

HELD AT INDIA HABITAT CENTRE, NEW DELHI ON 12TH MAY, 2014

S. No.	NAME	
01.	Shri Gireesh B. Pradhan Ex-Officio, Chairperson, CAC	Chairperson, CERC
02.	Shri M. Deena Dalayan Ex-Officio Member, CAC	Member, CERC
03.	Shri A.K. Singhal Ex-Officio Member, CAC	Member, CERC
04.	Ms. Neerja Mathur Ex-Officio Member, CAC	Chairperson, CEA
05.	Shri T.L. Sankar Advisor	Administrative Staff College of India (ASCI)
06.	Shri Vinod Dhall	Former Member, Competition Commission of India
07.	Shri R.V. Shahi	Former Secretary, MOP
08.	Shri Pradeep S. Mehta Secretary General	Consumer Unity & Trust Society (CUTS)
09.	Shri Suresh Chanda Chairman & Managing Director	APTRANSCO
10.	Shri R.N. Nayak Chairman & Managing Director	Power Grid Corporation of India Limited
11.	Shri Deepak Amitabh Chairman & Managing Director	PTC India Limited
12.	Shri Anil Sardana Managing Director	Tata Power Company Limited
13.	Shri Ashok Khurana Director General	Association of Power Producers (APP)
14.	Shri K. Ramanathan Distinguished Fellow	The Energy & Resources Institute (TERI)
15.	Shri Vneet S. Jaain CEO (Power)	Adani Power Limited
16.	Shri Satish Jindal Chief Executive Officer	JSW Power Trading Company Limited

17.	Shri Bhasker U. Mete President, GEA	Maharashtra State Electricity Power Gen. Corpn. Limited
18.	Shri Manoj Kumar Parida Joint Secretary	Representative of Dept. of Consumer Affairs
19.	Shri A.B.L. Srivastava Director (Fin.)	Representative of NHPC Limited
20.	Shri S.G. Kelkar Executive Director	Representative of Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL)
21.	Shri R.S. Sharma Managing Director	Representative of Jindal Power Limited
22.	Shri Vivek Pandit Senior Director	Representative of FICCI
23.	Shri Sambit Basu Director	Representative of IDFC
24.	Ms. Rasika Chandihok Director (Energy)	Representative of Confederation of Indian Industry (CII)
25.	Shri V.K. Kalra Chief Engineer	Representative of PSTCL
26.	Shri C.V. Anand General Manager (Comml.)	Representative of NTPC
27.	Shri Alok Rai Head (Transmission)	Representative of Reliance Infrastructure Limited
28.	Ms. Varsha Raut	Representative of Mumbai Grahak Panchayat
29.	Shri H.M. Sharma Resident Engineer	ASEB & Assam Power Distribution Corporation Limited
	SPECIAL INVITEES	
30.	Ms. Jyoti Arora Joint Secretary (R&R)	Ministry of Power
31.	Shri S.K. Soonee CEO	POSOCO
32.	Shri S.N. Goel CEO & MD	Indian Energy Exchange (IEX)
33.	Shri Chandrashekhar Bhatt Vice-President	Power Exchange India Limited (PXIL)

CENTRAL ADVISORY COMMITTEE MEETING

12th May, 2014

CENTRAL ELECTRICITY REGULATORY COMMISSION

AGENDA ITEM - 1

TRANSMISSION CONGESTION

Presentation Overview

I. **Background –** Optimum Utilisation of Resources

II. **Transmission Planning and Operation**

III. **Growth of Transmission Lines and Transformation Capacity**

IV. **Congestion**

- ATC-TTC
- WR-NR Corridor
- Power Exchange

V. **Commission's Order**

VI. **Operational feedback by POSOCO**

VII. **ATC-TTC Declaration**

VIII. **Points for Discussion**

Optimum Utilisation of Resources

- Open access in transmission introduced
  - to promote competition amongst the generating companies for sale of electricity across the country.

- Open Access essential for
  - signalling efficient choice in locating generation capacity and for encouraging trading in electricity for optimum utilization of generation resources and consequently for reducing the cost of supply.

- Robust transmission network is a pre-requisite for open access
  - thereby enabling competitive market

- National Electricity Policy envisions
  - network expansion should be planned and implemented keeping in view the anticipated transmission needs that would be incident on the system in the open access regime.

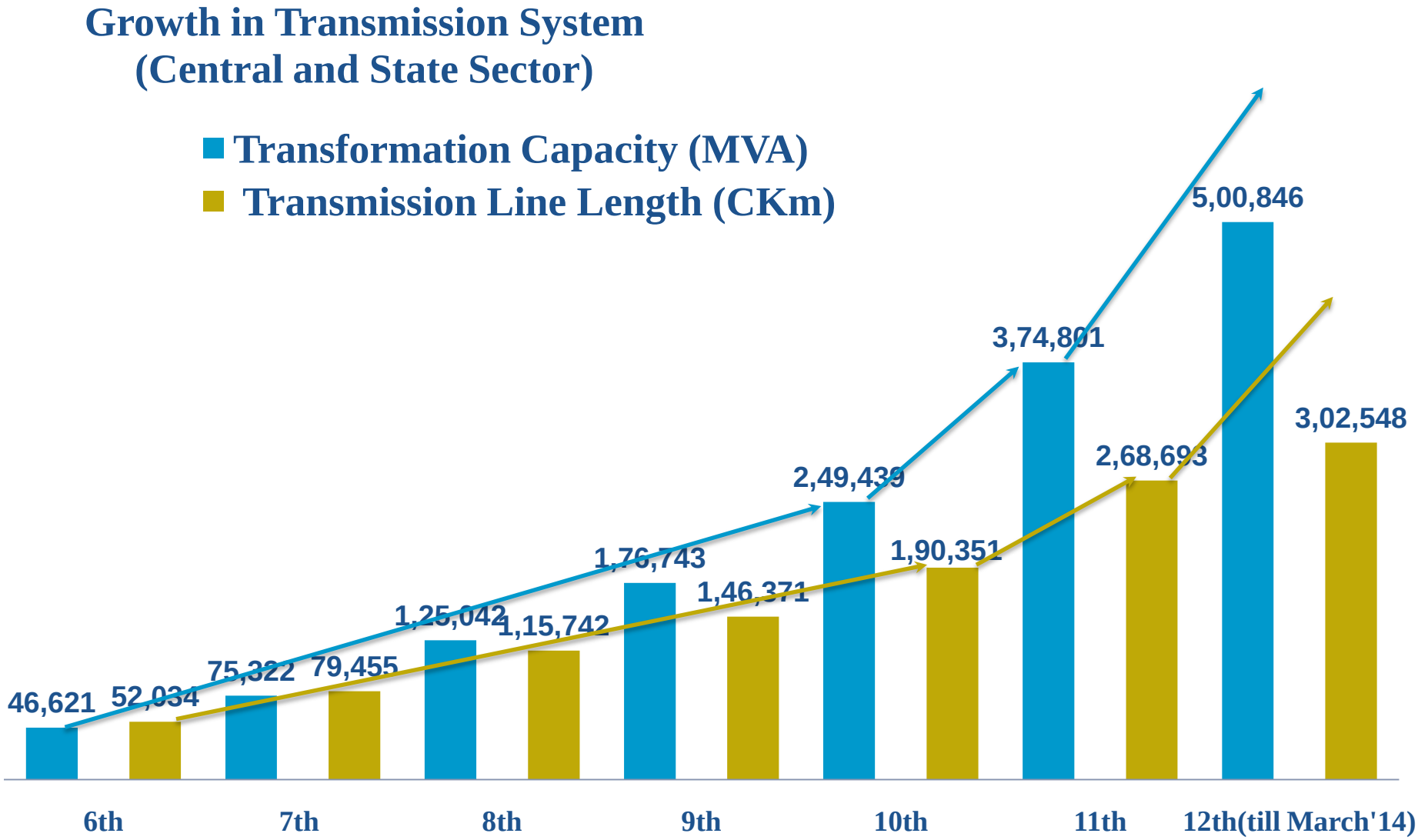
Transmission Planning and Operation

- Transmission planning philosophy as per Regulation 3.4 (a) of Grid Code:

  "*CEA would formulate perspective transmission plan for inter-State transmission system as well as intra-State transmission system. These perspective transmission plans would be continuously updated to take care of the revisions in load projections and generation scenarios considering the seasonal and the time of the day variations. In formulating perspective transmission plan the transmission requirement for evacuating power from renewable energy sources shall also be taken care of. The transmission system required for open access shall also be taken into account in accordance with National Electricity Policy so that congestion in system operation is minimized".*

- Efficient operation of transmission system is inter-alia helpful in removing congestion.

Growth of Transmission Lines and Transformation Capacity



Congestion

- 'Congestion' is a situation
  - where the demand for transmission capacity exceeds the Available Transmission Capability (ATC) as per Grid Code, 2010.
- Incidences of congestion continuing to be high
  - despite substantial increase in transmission network and transformation capacity over the years, particularly the higher growth rate since end of 10th Plan,
- Congestion during last 2 years substantially high
  - Incidences of market splitting witnessing increasing trend

Transmission Congestion Instances

- Market Split - Out of number of time blocks in a month (2688/2880/2976 time blocks)

Month	N			Y		
	2012	2013	2014	2012	2013	2014
January		108	15		2,868	2,961
February		4	19		2,684	2,669
March			63		2,976	2,913
April				2,880	2,880	
May	1	22		2,975	2,954	
June	673	124		2,207	2,756	
July	602	11		2,374	2,965	
August	30	116		2,850	2,860	
September	36	633		2,844	2,247	
October	129	197		2,847	2,779	
November		131		2,880	2,749	
December	21	633		2,955	2,343	

- N: No. of blocks during the month in which there was no congestion/market splitting
- Y: No. of blocks during the month in which there was congestion/market splitting

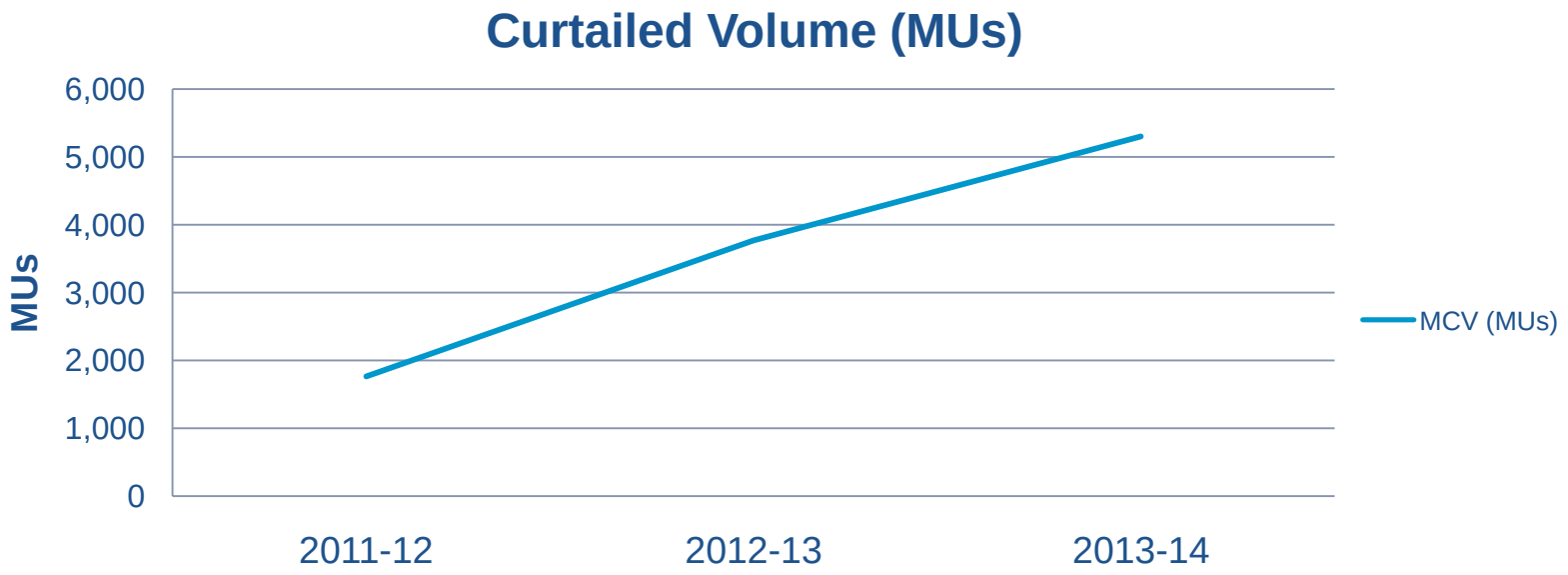
No. of Price areas in Day Ahead Market

Year	Month	Splits					
		2	3	4	5	6	7
2012	April	2,515	365				
	May	1,897	1,078				
	June	2,200	7				
	July	2,343	31				
	August	1,598	1,230	22			
	September	1,843	898	75	28		
	October	2,070	660	108	9		
	November	701	1,683	463	28	5	
	December	591	1,158	920	273	13	
2013	January	938	1,133	658	108	27	4
	February	311	771	1,040	534	28	
	March	144	858	1,084	845	45	
	April	1,673	929	230	48		
	May	2,531	423				
	June	1,501	1,041	204	10		
	July	1,539	1,336	84	6		
	August	1,355	1,427	76	2		
	September	1,079	837	111	199	21	
	October	1,632	877	228	38	4	
	November	727	1,114	732	167	9	
	December	1,300	945	98			
2014	January	1,085	1,241	583	52		
	February	458	1,327	738	146		
	March	1,262	1,288	340	19	4	

Energy Loss due to Congestion

•The loss of energy due to Congestion during last 3 years in IEX:

FY	Market Clearance volume (MUs)	Cleared Volume (MUs)	Curtailed Volume (MUs)
2011-12	15,561	13,798	1,762
2012-13	26,143	22,339	3,768
2013-14	34,230	28,962	5,304
Total	**75,935**	**65,099**	**10,836**



Inter-Regional Trade

Year	Month	Provisional		Final		Provisional %	Final %	%Diff
		Total Trade(MUs)	Inter Regional Trade(MUs)	Total Trade(MUs)	Inter Regional Trade(MUs)			
2012	January	1250	830	1032	508	66%	49%	26%
	February	1336	973	970	431	73%	44%	39%
	March	1655	1079	1164	392	65%	34%	48%
	April	1594	781	1284	314	49%	24%	50%
	May	1445	618	1388	353	43%	25%	40%
	June	1610	631	1535	407	39%	27%	32%
	July	1596	521	1519	341	33%	22%	31%
	August	2002	925	1821	479	46%	26%	43%
	September	2218	1031	1879	262	46%	14%	70%
	October	2452	1019	2278	643	42%	28%	32%
	November	2480	1074	2119	454	43%	21%	50%
	December	2633	1179	2243	412	45%	18%	59%
2013	January	2588	1254	2045	584	48%	29%	41%
	February	2514	995	1975	204	40%	10%	74%
	March	3020	1438	2260	318	48%	14%	70%
	April	3037	1397	2516	349	46%	14%	70%
	May	2862	1027	2499	444	36%	18%	51%
	June	2420	887	2115	491	37%	23%	37%
	July	2720	889	2264	539	33%	24%	27%
	August	2727	958	2343	683	35%	29%	17%
	September	3061	1208	2853	893	39%	31%	21%
	October	3087	1307	2645	751	42%	28%	33%
	November	2982	1298	2481	732	44%	30%	32%
	December	2868	992	2409	538	35%	22%	35%
2014	January	2892	1034	2347	353	36%	15%	58%
	February	2753	1087	2172	416	40%	19%	51%
	March	2828	1048	2282	422	37%	18%	50%
	April	992	503	724	147	51%	20%	60%

Transfer Capability Framework

- Total Transfer Capability (TTC) :

  Amount of electric power that can be transferred reliably over the inter-control area transmission system under a given set of operating conditions considering the effect of worst credible contingency.

- Available Transfer Capability (ATC) :

  Transfer capability of the inter-control area transmission system available for scheduling commercial transactions (through LTA, MTOA and STOA) in a specific direction, taking into account network security.

  ATC = TTC – TRM

- Transfer Reliability Margin (TRM) :

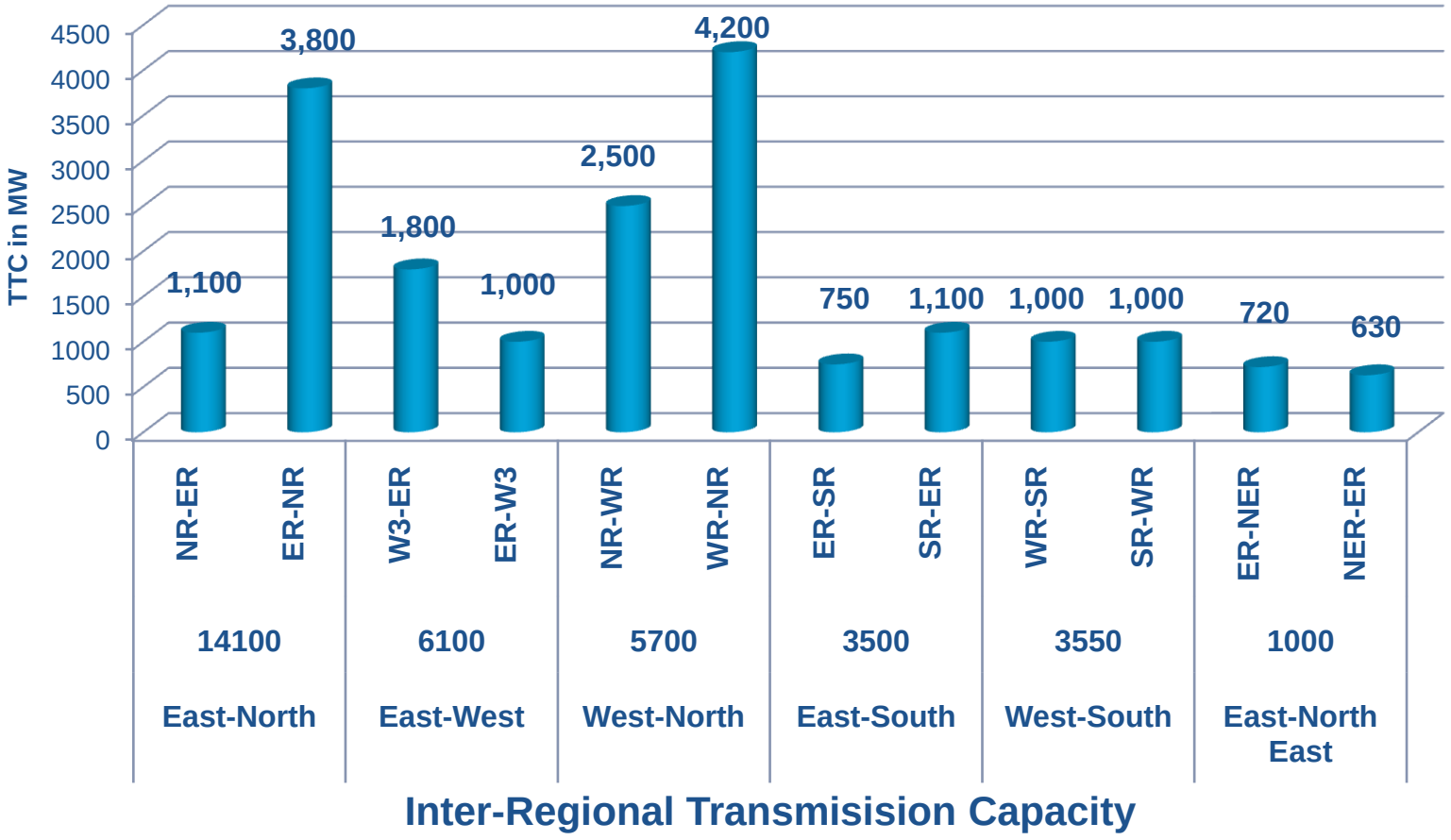
  Amount of margin kept in TTC necessary to ensure that the inter-connected transmission network is secure under a reasonable range of uncertainties in system conditions.

- Credible Contingency :

  Likely-to-happen contingency, which would affect TTC of inter-control area transmission system

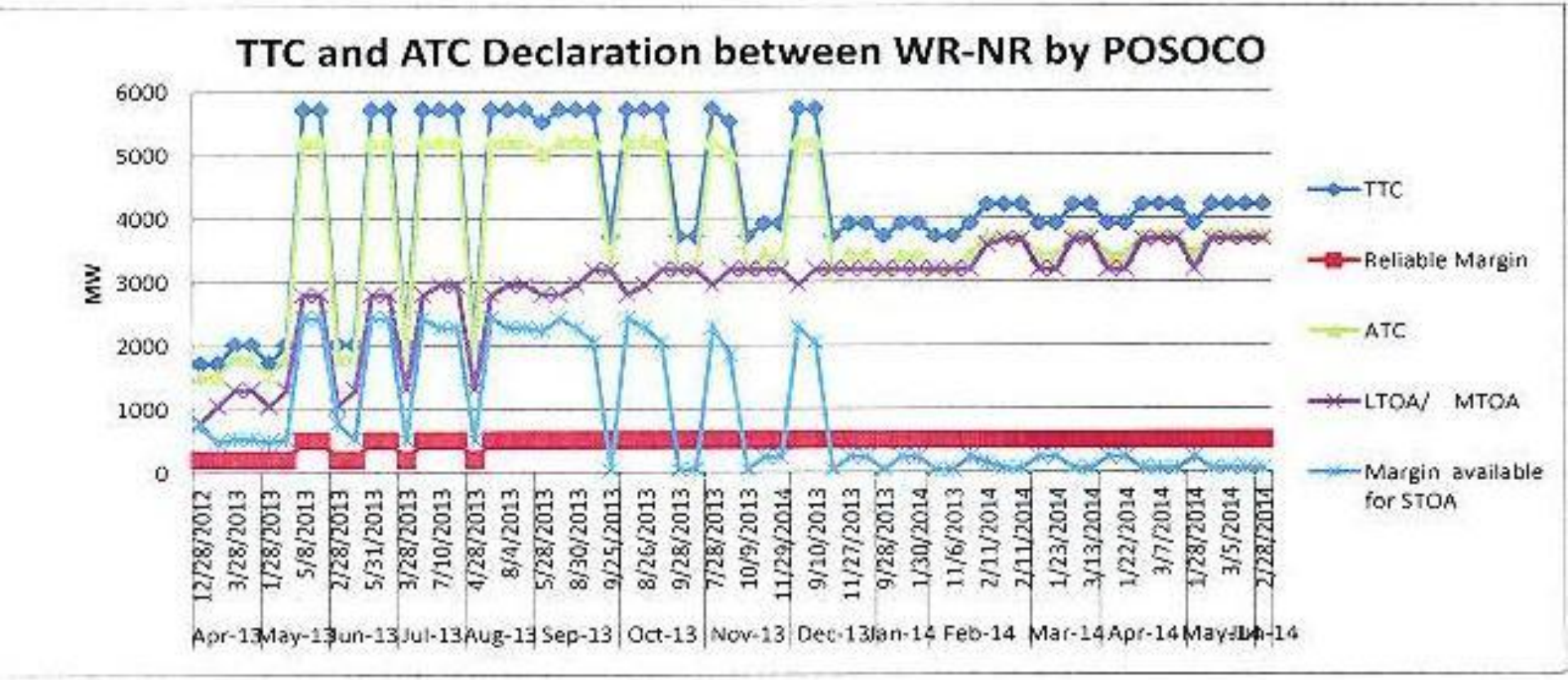
Transmission Capacity and TTC

Inter-Regional Transmission Capacity and TTC (MW)
March, 2014



WR-NR Corridor : TTC - ATC

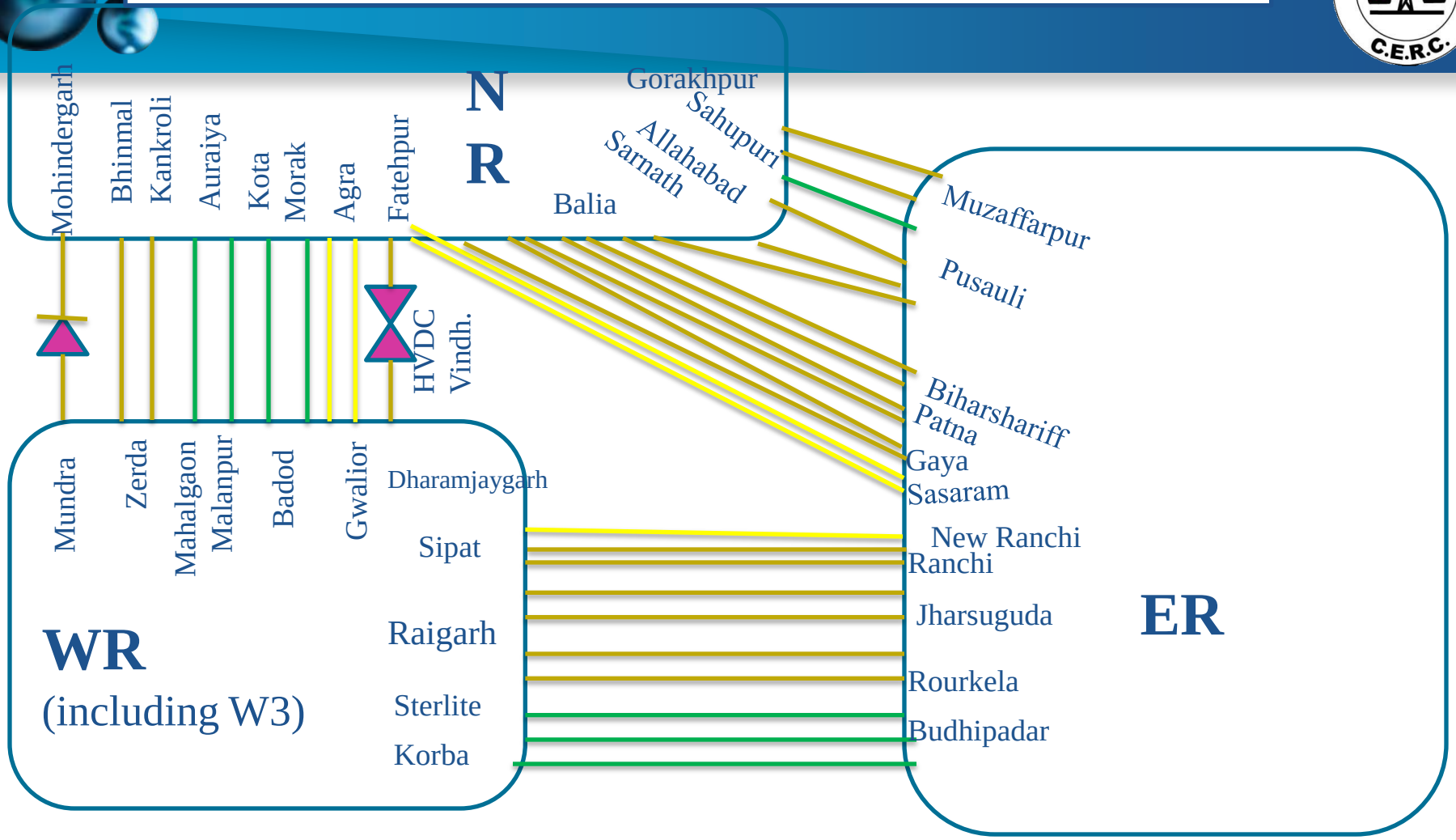
TTC, ATC and capacity available for STOA between WR and NR, as declared by POSOCO since April, 2013:



(Source : APP)

•Considering the LTA and MTOA, the capacity available for short term power transfer on WR-NR corridor for the month of May, 2014 is only **44 MW**

WR-NR and W3-ER Corridor Transmission lines



WR-NR Corridor : Agra-Gwalior Line Issues

- **Agra-Gwalior D/C line was upgraded from 400 kV to 765 kV in March, 2013,**
  - But the benefits are not accruing to Northern Region constituents due to one reason or the other.

- **Recently POSOCO informed in its TTC/ATC declaration that**
  - due to low impedance of Gwalior-Agra 765 kV lines, even power scheduled on WR-ER is flowing on Gwalior-Agra lines, resulting in low power flow on WR-ER-NR route.

- **This is happening due to**
  - mismatch between assumed scenario at the time of long-term planning and real time operational conditions.

- **POSOCO informed that schedule of collective transactions on W3-ER-NR corridor is not possible because:**
  - Predominant direction of power flow is from West to North Corridor.
  - Real time Operations: Scheduled flow on W3-ER corridor is converging on WR-NR Corridor

WR-NR Corridor Augmentation

Links under Implementation and Expected Relief

- Gwalior-Jaipur 765 kV D/C line was expected to be commissioned by March, 2014
  - involves wild life sanctuary, clearance awaited .
  - Anticipated **:** September, ‘14 and December, ‘14.

- Rihand III- Vindhayachal Pooling Station 765 kV D/C line was expected to be commissioned by April, 2014
  - Completion affected due to land acquisition and encroachment for Vindhyachal Pooling Station
  - Line being planned for completion by-passing Vindhyachal Pooling Station

(*Source*: *CEA Report - March, 2014)*

Congestion in Power Exchanges

- Price discovery mechanism in Power Exchanges
  - Aggregate demand and supply are matched to arrive at an unconstrained market price and volume assuming no congestion in the inter-state transmission system

- However, power flow in real time is restricted by system operator
  - due to congestion in inter-state transmission system.
  - In such a situation, Power Exchanges adopt a mechanism called "**Market Splitting**"

- Congestion in power exchanges during February, 2014
  - Volume of electricity that could not be cleared in IEX and PXIL :

    21.11% and **15.49%** of the unconstrained cleared volume, respectively.
  - In terms of time, congestion in IEX : 100.00% ; PXIL : 73.85%.

Congestion affecting economic operation of power sector - merit order operation getting disturbed

Commission's Order in 167/2010

- Congestion in ISTS affecting operation of Power Exchanges.
  - All transactions of Power Exchanges not fructifying
- Congestion adversely affecting
  - volumes of transactions through Power Exchanges, and also
  - price of power in downstream system due to market splitting.
- Frequent congestion
  - Hampering development of power market
  - Induces grid indiscipline.
- Transmission system of the STUs, CTU and other transmission licensees being inter connected
  - coordinated approach by the CTU, STUs and other Transmission Licensees needed

    for ensuring unhindered flow of electricity from surplus to deficit areas of the country.
- NLDC directed to regularly monitor the congestion points

  and submit a quarterly report to the Commission and CTU.

Operational Feedback by POSOCO

- Inter-State Transmission Systems which
  - need to be expedited to relieve congestion and to facilitate smooth evacuation of power

  have been identified in each region with inter-se priority.

- Generating Stations already commissioned and leading to constraints in ISTS due to delay in construction of associated transmission system.

- Congestion in Inter-regional corridors due to
  - delay in commissioning of Generating Stations

- New generation in Chhattisgarh and adjoining areas with inadequate transmission systems for evacuation
  - likely to accentuate congestion

Action being taken by CTU and CEA to mitigate congestion……..

Prioritisation of Transmission System

POSOCO has indicated inter-se priority of lines in various categories; some of them are

- Evacuation of Power from Generation complexes of Chhattisgarh and Odhisa
  - 765 kV S/C Raigarh PS – Champa PS
  - 765 kV D/C Raipur PS – Champa PS
  - 765 kV S/C Champa PS – Dharamjaygarh PS
  - 765 kV D/C Jharsuguda PS –Dharamjaygarh PS
- Generating Stations already commissioned and leading to constraints in ISTS due to delay in construction of associated transmission system
  - IEPL : LILO of 400 kV Koradi-II-Wardha Line
  - APL, Mundra : 400 KV APL-Zerda
  - Vemagiri (GMR), Konaseema, Gautami : 400 kV D/C Vemagiri-Vijayawada, 400 kV Sub-station at Narsaropeta
  - Kawai : 400 kV D/C Kawai- Anta
  - Chuzachen HEP : LILO of Teesta-V –Binaguri 400 kV D/C at Rangpo
- Congestion in Inter-regional corridors due to delay in commissioning of Generating Stations
  - Barh Stage-I and II, Tripura CCPP, Kudankulam, Neyveli TS-II, North Chennai TPS-II, Vallur TPP, etc.

ATC-TTC Declaration

- NLDC/RLDCs has been assessing TTC/ATC
  - right since September, 2006 when the Northern Grid was synchronized to the Central Grid to form the NEW grid.

- NLDC is declaring TTC & ATC for inter-regional transmission corridors
  - in accordance with the procedure framed under CERC (Measures to relieve congestion in real time operation) Regulations, 2009.

- Stakeholders have raised issue of transparency in TTC and ATC computation.

- Commission decided in Petition No. 188/SM/2012 and 67/SM/2012
  - a **Reliability Council** under **CEA may examine the TTC/ATC declared by NLDC** and suggest any procedural or computation correction.

- In TTC assessment NLDC/RLDCs facing various issues like
  - adoption of (n-1) or (n-1-1) criteria due to multiple tripping incidents
  - whether the SPS is to be considered or not,
  - loop flows and transit flows,
  - generation and load uncertainties
  - transmission and generation mismatch, etc.

Points for Discussion

Short-term, medium-term and long-term plan for addressing congestion including prioritisation of inter-state transmission lines

Short-Term:

- Re-configuration of load in Western Rajasthan
- Measures to be taken for meeting demand in NR and WR in view of expected weakness of Monsoon
- SPS setting of Gwalior-Agra Line and consideration of SPS while declaring TTC.
- Scheduling of some Transactions over WR-ER-NR corridor based on sensitivity analysis of flow

Medium Term:

- Matching the associated transmission system and system strengthening with generation and load
- Dynamic line rating

Long-Term:

- Use of FACT devices, phase shifting Transformers, SVC and HVDC system

Points for Discussion

- Advance declaration of TTC and ATC by CTU along with an assessment of likely improvement – difficulties and way forward
- TTC and ATC computation by POSOCO - existing methodology and way forward
- Consistency in approach of CTU and POSOCO in computation of TTC and ATC
- Adoption of (n-1) or (n-1-1) criteria due to multiple tripping incidents
- SPS is to be considered or not,
- Loop flows and transit flows,
- Generation and load uncertainties
- Transmission and generation mismatch, etc

AGENDA ITEM - 2

MEASURES TO ADRESS STRANDED GENERATION CAPACITY

Presentation Overview

I. **Background –** Installed Generation Capacities in India

II. **Stranded Capacity in the country**

III. **Factors responsible for stranded capacity**

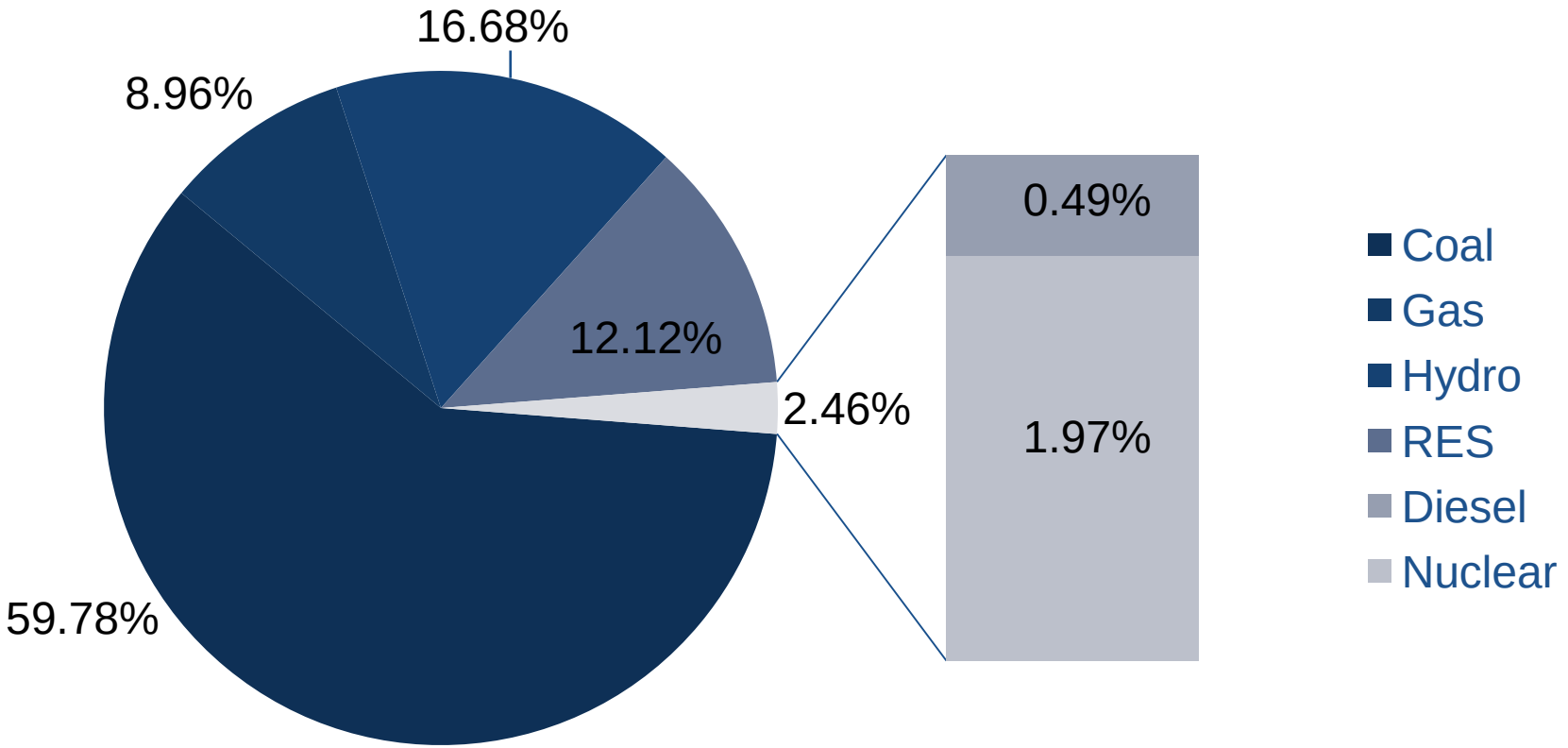
IV. **Analysis of behavior of Surplus and Deficit States**

- Behaviour of Surplus States
- Behaviour of deficit States

V. **Way Forward**

Installed Generation Capacity of India

Fuel source-wise breakup of Installed Capacity (as on 31.0314)



Coal	Gas	Hydro	RES	Diesel	Nuclear	Total
145,273	21,781	40,531	29,462	1199.00	4,780	2,43,028

Source: CEA

Background

- Against installed capacity of 2,43,000 MW
  - peak demand is in the range of 1,30,000 MW

Does this imply huge surpluses or sufficiency of power supply?

Let us understand…….

Statewise Excess/ Shortage in Capacity (MW)

S.N	State	Contracted Capacity*	Peak Demand*	Peak Met*	Surplus/ Deficit (-)*		Capacity Excess/ Shortage
		MW	MW	MW	MW	%	MW
1	Delhi	7,790	6,035	5,653	-382	-6.3	1,755
2	Haryana	8,263	8,114	8,114	0	0	149
3	Himachal Pradesh	3,865	1,561	1,392	-169	-10.8	2,304
4	Punjab	8,331	10,089	8,733	-1,356	-13.4	-1,758
5	Uttar Pradesh	14,339	13,089	12,327	-762	-5.8	1,250
6	Uttarakhand	2,601	1,826	1,826	0	0	775
7	Chhattisgarh	7,949	3,543	3,320	-223	-6	4,406
8	Maharashtra	33,045	19,276	18,000	-1,276	-6.6	13,769
9	Madhya Pradesh	12,902	9,716	9,716	0	0	3,186
10	Gujarat	27,020	12,201	12,201	0	0	14,819
11	Andhra Pradesh	17,495	14,072	13,162	-910	-7	3,423
12	Karnataka	13,977	10,005	9,223	-782	-7.8	3,972
13	Kerala	3,891	3,670	3,573	-97	-2.6	221
14	Tamil Nadu	21,063	13,489	12,492	-997	-7.4	7,574
15	Bihar	2,198	2,465	2,312	-153	-6	-267
16	Jharkhand	2,579	1,111	1,069	-42	-3.8	1,468
17	West Bengal	8,708	7,325	7,290	-35	-0.5	1,383
18	Odisha	7,371	3,727	3,722	-5	-0.1	3,644
All States		203,387	141,314	134,125	-7189		62,073

*Source: CEA

•Capacity Excess/Shortage (-) is calculated as difference between total installed capacity and Peak Demand

•Installed Capacity data as on 28/02/14

•Peak Demand/Met & Surplus/Deficit is for period Apr'13-Mar'14

Background (contd.)

- Shortage or surplus in one or the other State
  - due to diversity of power procurement pattern of different utilities
- Most states (except Bihar and Punjab)
  - have contracted capacities (in absolute terms) more than their peak demand.
- But only a few states (viz. Haryana, Uttarakhand, Madhya Pradesh, and Gujarat)
  - are able to meet peak demand with their contracted power.
- There are off-peak surpluses in several States

<u>A paradox</u>

that needs to be addressed for

optimum utilization of assets and for avoiding economic loss to society.

Stranded Capacity in the country

Coal Based Stranded Capacity

Region/State	Installed capacity (MW)	Stranded capacity (MW)
Northern Region	**10553**	**3262**
Haryana	6700	2545
Rajasthan	500	217
Uttar Pradesh	3353	500
Eastern Region	**12840**	**5344.72**
West Bengal	4510	1725
Bihar	2770	1255
Jharkhand	770	539
DVC	2390	1183
Orissa	2400	642.72
Southern Region	**600**	**306**
Andhra Pradesh	150	0
Tamil Nadu	450	306
Western Region	**13249**	**3445.6**
Maharashtra	3736	572
MP	2830	1798.8
Gujarat	4730	392
Chhatisgarh	1953	682.8
Total	**37242**	**12358.32**

Gas Based Stranded Capacity

REGION/STATE	INSTALLED CAPACITY (MW)	STRANDED CAPACITY (MW)
North Eastern region	**129**	**56.84**
Arunachal Pradesh	24	9.84
Assam	15	13
Tripra	90	34
Northern region	**2823.92**	**1447.09**
Delhi	355	302
Haryana	40.25	194
Rajasthan	516.2	228.56
Uttar pradesh	1912.47	722.53
Southern region	**3172.7**	**2151.17**
Andhra Pradesh	2660	1869.7
Kerala	174	80.47
Pudduchery	32.5	12.44
Tamil Nadu	306.2	188.56
Western region	**6343.32**	**4228.86**
Chattisgarh	35	30
Gujarat	4828.32	3319.96
Maharastra	1480	878.9
Total	**12468.94**	**7883.96**

Source:CEA

- In addition to this stranded capacity, about 8000 MW of gas based generating capacity is under construction in the 12thPlan.

Stranded Capacity in the country

- Total stranded generation capacity based on coal is about 12,358 MW,

- Total stranded generation capacity based on gas is of the order of 7,952 MW.

Region-wise stranded capacity of generation based on coal/lignite and gas

S.No	Region	Coal/Lignite based capacity (MW)	Gas based capacity (MW)	Total stranded capacity (MW)
1.	Western Region	3445	4229	7674
2.	Eastern Region	5345	68	5413
3.	Northern Region	3262	1447	4709
4.	Southern Region	306	2151	2457
5.	North-Eastern Region	0	57	57
6.	**All India**	**12358**	**7952**	**20310**

***Source: CEA**

Factors responsible for stranded capacity

Factors responsible for stranded capacity

Possible Reasons for stranded capacity :-

- Fuel shortage
- Transmission congestion
- Absence of actual demand estimation/load forecasting
- Absence of long-term power procurement planning (adequacy statement)
- Poor financial health of the distribution companies
- Decline in demand growth
- Periodic shifting of load because of short-term open access for a limited period
- Fixed fuel allocation policy.

Fuel Shortage

- Coal shortage recognized by CCEA

- Gas Shortage:

  installed capacity of gas based power plants in the country was 18,713 MW having a total requirement of 72 MMSCMD of gas to operate at 70% to 75% PLF. Against this requirement, the actual supply to these power plants in March, 2013 was about 27 MMSCMD only, resulting in significant shortfall of gas. (Standing Committee Report 2013)

Transmission Congestion (*short term market)*

Month	Unconstraint Cleared Volume (MUs)	Cleared Volume (MUs)	Congestion (MUs)
Apr-13	3176.59	2576.54	600.05
May-13	2976.04	2572.52	403.52
Jun-13	2483.69	2167.76	315.93
Jul-13	2821.54	2357.71	463.83
Aug-13	2824.56	2428.13	396.43
Sep-13	3162.81	2939.84	222.96
Oct-13	3211.51	2754.64	456.87
Nov-13	3189.09	2653.76	535.33
Dec-13	3028.90	2543.14	485.76
Jan-14	3007.51	2441.82	565.68
Feb-14	2829.93	2236.98	592.95
Mar-14	2908.87	2356.78	552.09
Total	35621.03	30029.63	5591.40

1. IEX data

2. Considering 365 days in an year and 24 hours per day the affected generation capacity = 5591 x 1000 /(24 x 365) = 638 MW

3. The average price of power traded on exchanges is about Rs 2.89/unit. Rs 1616 crores (Rs 2.89 x 5591) is the first order approximation of loss in economic activity due to congestion.

This is only a minuscule percentage of the total capacity stranded due to the transmission congestion.

Financial Health of Distribution Companies

State	Year	Revenue Gap/(Surplus) (Rs. Cr)	Energy Deficit	Peak Deficit
Andhra Pradesh	FY 2013-14	Nil	6.9%	6.5%
Bihar	FY 2013-14	354.48	4.1%	6.2%
Delhi	FY 2013-14	11,431.12	0.3%	6.3%
Himachal Pradesh	FY 2013-14	(17.53)	2.3%	10.8%
Karnataka	FY 2013-14	844.30	9.5%	7.8%
Kerala	FY 2013-14	2,787.83	2.4%	2.5%
Punjab	FY 2013-14	Nil	1.5%	13.4%
Tamil Nadu	FY 2013-14	24,611.00	5.9%	7.4%
Uttar Pradesh	FY 2013-14	1,243.97	14.0%	5.8%
Haryana	FY 2013-14	2,343.50	0.6%	0.0%

Net revenue gaps have contributed to under-contracting and consequent energy/peak deficit in States.

State Regulators in some States impose a price cap for short-term procurement by the distribution companies.

Decline in demand growth

2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Industry
5.1	4.2	5.8	0.1	0.8	8.6	5.0	1.4	Agriculture, forestry & fishing
5.5	4.1	6.3	-0.3	0.4	9.5	5.3	0.9	Agriculture
5.9	6.6	5.8	2.7	3.2	5.8	5.7	7.1	Fishing
1.3	7.5	3.7	2.1	5.9	6.5	0.1	-2.2	Mining & quarrying
10.1	**14.3**	**10.3**	**4.3**	**11.3**	**8.9**	**7.4**	**1.1**	**Manufacturing**
12.1	15.8	10.1	5.9	14.6	9.6	9.4	1.1	Registered
6.5	11.6	10.7	1.3	4.4	7.2	2.7	1.1	Unregistered
7.1	9.3	8.3	4.6	6.2	5.3	8.4	2.3	Elect. Gas & water supply
12.8	10.3	10.8	5.3	6.7	5.7	10.8	1.1	Construction
12.2	11.1	10.1	5.7	7.9	12.0	1.2	4.5	Trade, hotels & restaurant
17.4	14.4	13.0	-3.3	1.9	11.6	3.8	0.5	Hotels & restaurants
7.5	11.1	9.8	7.7	8.8	5.9	7.5	0.3	Railways
9.3	9.0	8.7	5.3	7.3	8.2	8.6	6.6	Transport by other means
23.5	24.3	24.1	25.1	31.5	21.8	11.2	6.5	Communication
15.8	20.6	16.7	14.0	11.4	14.9	12.9	11.8	Banking & insurance
4.3	1.9	7.6	19.8	17.6	-0.4	4.2	3.4	Public administration & defence
9.1	3.5	6.3	7.4	7.2	8.2	5.4	6.8	Other services
9.5	9.6	9.3	6.7	8.6	8.9	6.7	4.5	GDP at Factor cost (1 to 9)

- The manufacturing sector growth has declined from 11.3% in 2009-10 to 1.1% in 2012-13. This has resulted in decline in electricity demand for the industries
- This together with poor financial health of discoms has contributed to the generation capacities getting stranded.

Factors Responsible for Stranded Capacity (contd.)

- *Absence of Actual Demand Estimation/load Forecasting*
  - *and absence of long term contracting keeping in view*
    - *PLF/CUF and*
    - *Peak and Off Peak Requirement*
- *Periodic Open Access:*
  - High end consumers in some States have shifted to procurement of power through open access only for a short duration during the day, mostly during off-peak periods.
- *Fuel Allocation Policy:*
  - Some generating stations (in some cases with higher efficiency/availability potential) have been stranded due to inadequate fuel linkage while at the same time,
  - other generating stations with lower efficiency/availability potential have had unutilized fuel surplus in their stock.

Factors Responsible for Stranded Capacity (contd.)

- Some surplus States reluctant to sell power in the short-term market as the cost (total cost) of surplus generation/procurement is higher than short-term market rate.

	Average Gen Tariff (Rs./Unit)	Gen Tariff (Rs./ Unit) for top 10% costliest electricity
Gujarat	3.22	7.62
HP	2.33	4.27
Delhi	3.92	5.78
Orrisa	2.65	-
Maharashtra **	3.17	5.03
Chattisgarh	2.12	-
Average Day Ahead Price (IEX)(Rs/Unit) *	**2.89**	

* Minimum and Maximum Monthly Average were 2.07 and 3.74 respectively

- They would like to sell this surplus power only in the event of a prospect of recovering either partly or fully the fixed cost of such generation in addition to the energy charge.

** All States- ARR FY 2013-14; Maharashtra State ARR FY 2012-13

WAY FORWARD

Some good practices

- Andhra Pradesh, Haryana and Orissa approved in 2013 purchase of expensive power for willing consumers
  - ❖ Willing consumers either pay a higher cost, above their notified tariff, for the power short-supplied by the State Distribution Company,
  - ❖ Or, they pay an additional ***reliability charge*** for the entire consumption of power.
- This scheme is beneficial to;
  - ❖ Willing consumers: As this power is much cheaper than the stand-by diesel power that they were otherwise using.
  - ❖ Discom: As extra cost of power to be borne by the willing consumers, & the distribution utility may charge wheeling charges for wheeling this power

Diesel based standby generating capacity of about 72000 MW in operation on an all-India basis during power cuts/load shedding may need be substituted

Agenda for Discussion

Need and way forward for

- Removing transmission congestion
- Reducing fuel shortage for power sector
- Correct estimation of demand/load forecasting
- Enforcement of power procurement adequacy
- Improving financial health of the distribution companies
- Reviving the growth in demand
- Addressing the issues arising out of non-continuous and periodic short-term open access
- Addressing the fixed fuel linkage/contracting
- A comprehensive market design to address all these issues (indicating the encouragement of open access, reduction of cross subsidy etc.)
- Any other suggestion

Thank You

Promoting competition, efficiency and economy in power markets

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Points for Discussion
Agenda 1: Transmission Congestion

Short-term, medium-term and long-term plan for addressing congestion including prioritisation of inter-state transmission lines

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- Re-configuration of load in Western Rajasthan
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- Dynamic line rating

Long-Term:

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- Adoption of (n-1) or (n-1-1) criteria due to multiple tripping incidents
- SPS to be considered or not ?
- Loop flows and transit flows.
- Generation and load uncertainties.
- Transmission and generation mismatch, etc

Points for Discussion
Agenda 2: Stranded Capacity

Need and way forward for

- Removing transmission congestion
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- Enforcement of power procurement adequacy
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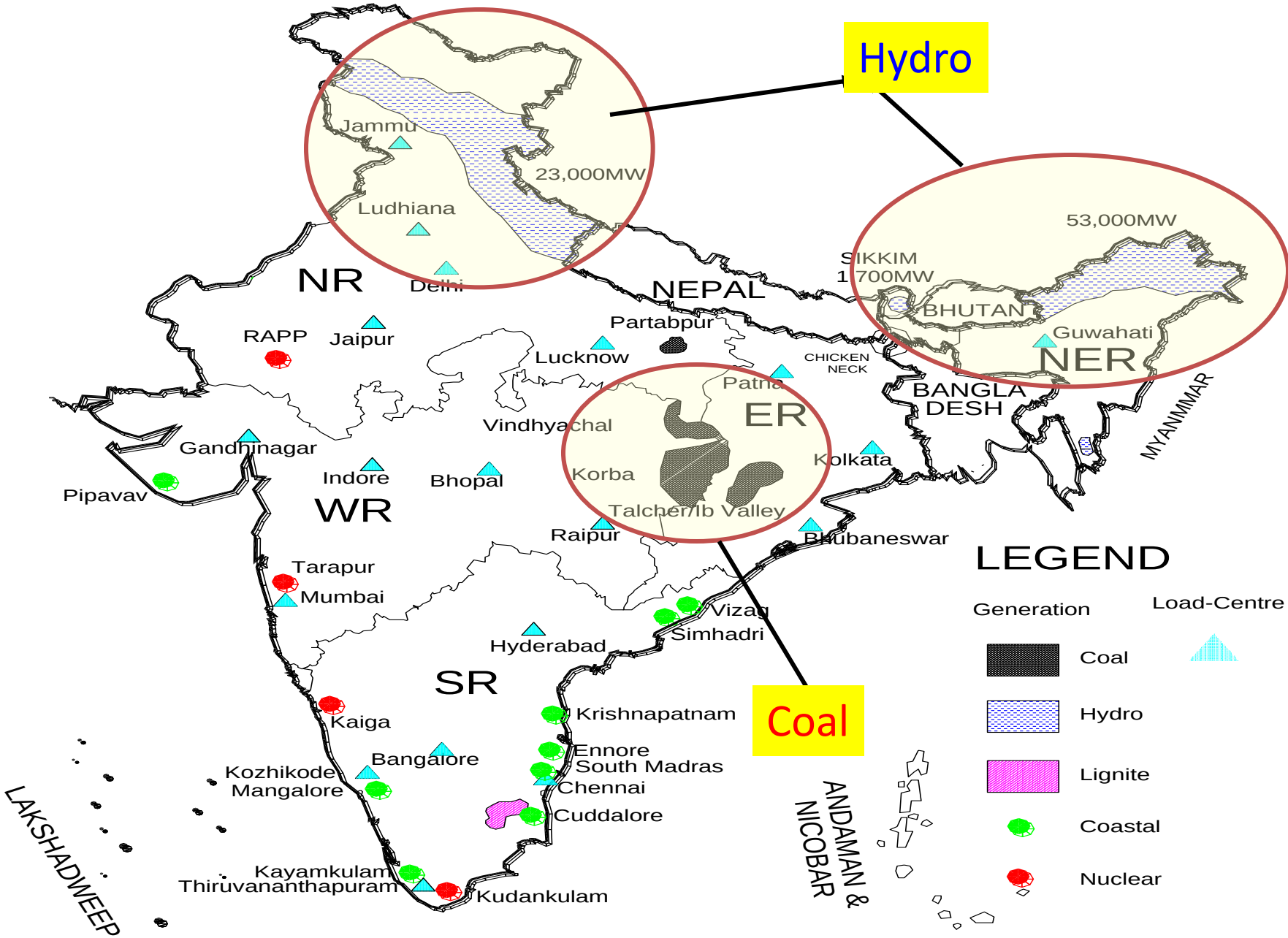
Central Advisory Committee Meeting

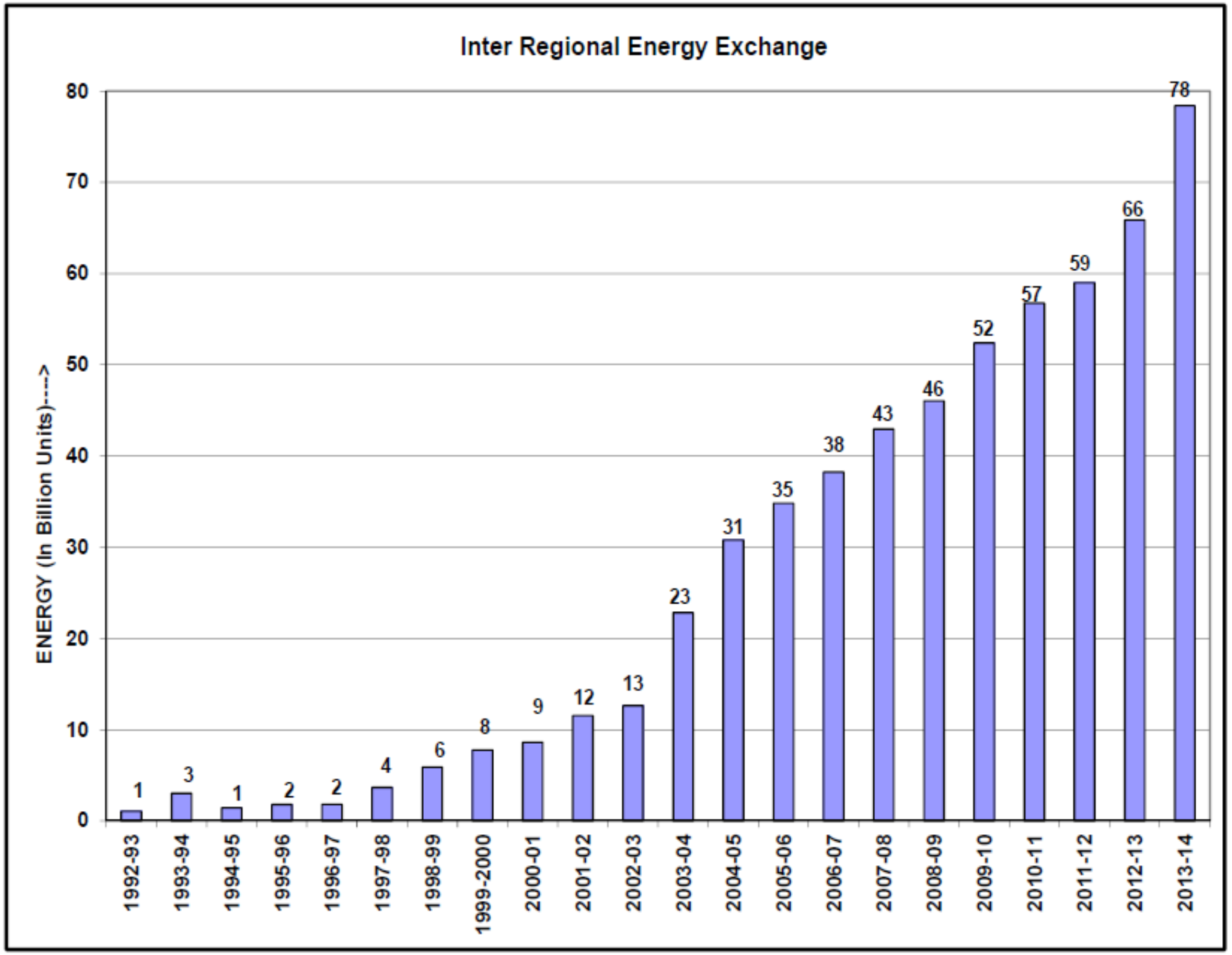
12th May, 2014

Outline

- Transmission as an enabler
  - A public service reaching the farthest corner of the country
  - A pre-requisite for open access and market
  - A vehicle for social welfare maximization
- Congestion: a reality in all walks of life
- Mitigating congestion in different time horizons
  - Long term planning
  - Medium term
  - Operational Planning
  - Scheduling
  - Real time

MAJOR ENERGY RESOURCES IN INDIA




Inter Regional Energy Exchange
ENERGY (In Billion Units)--->
0
10
20
30
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50
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70
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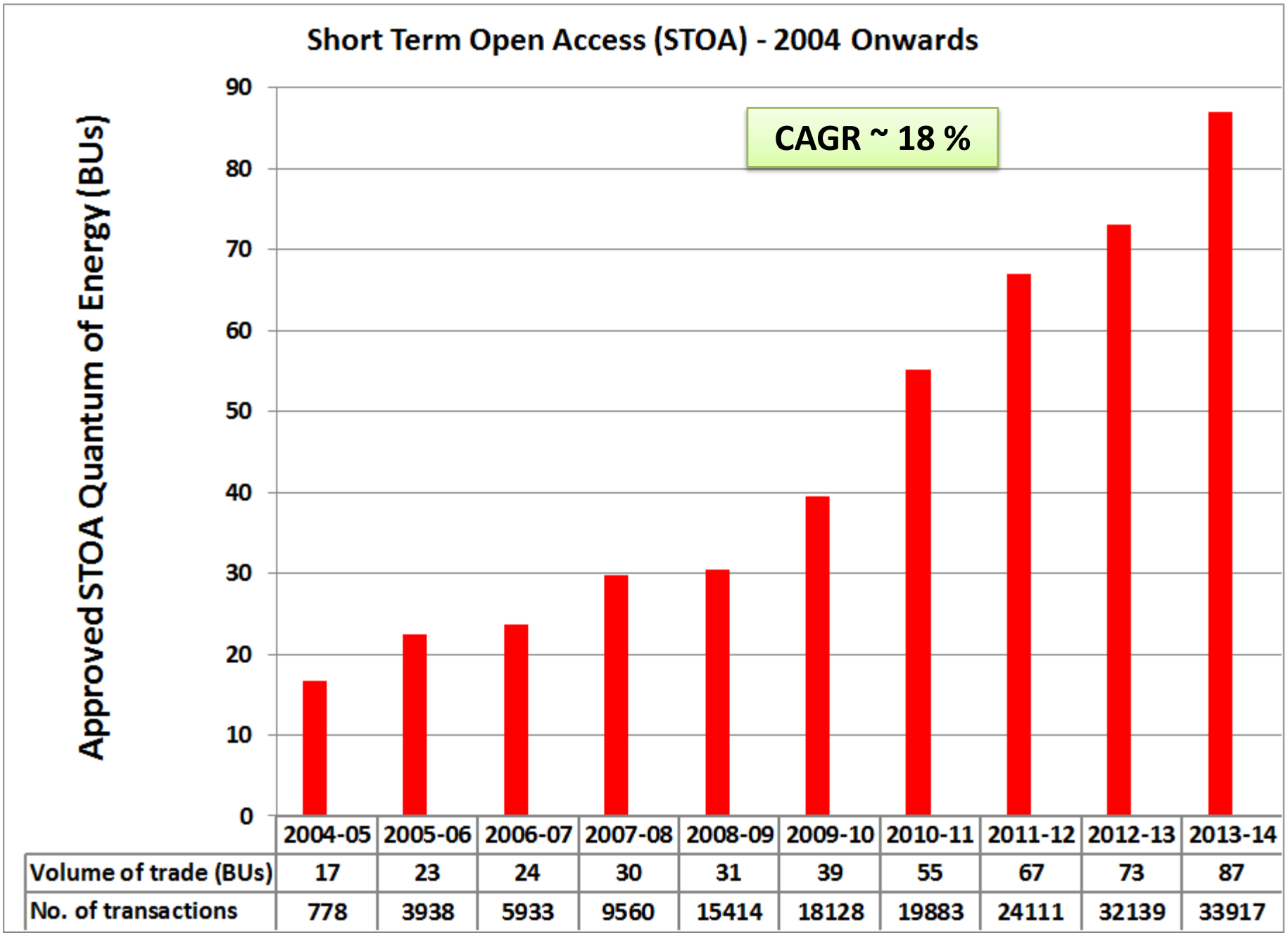
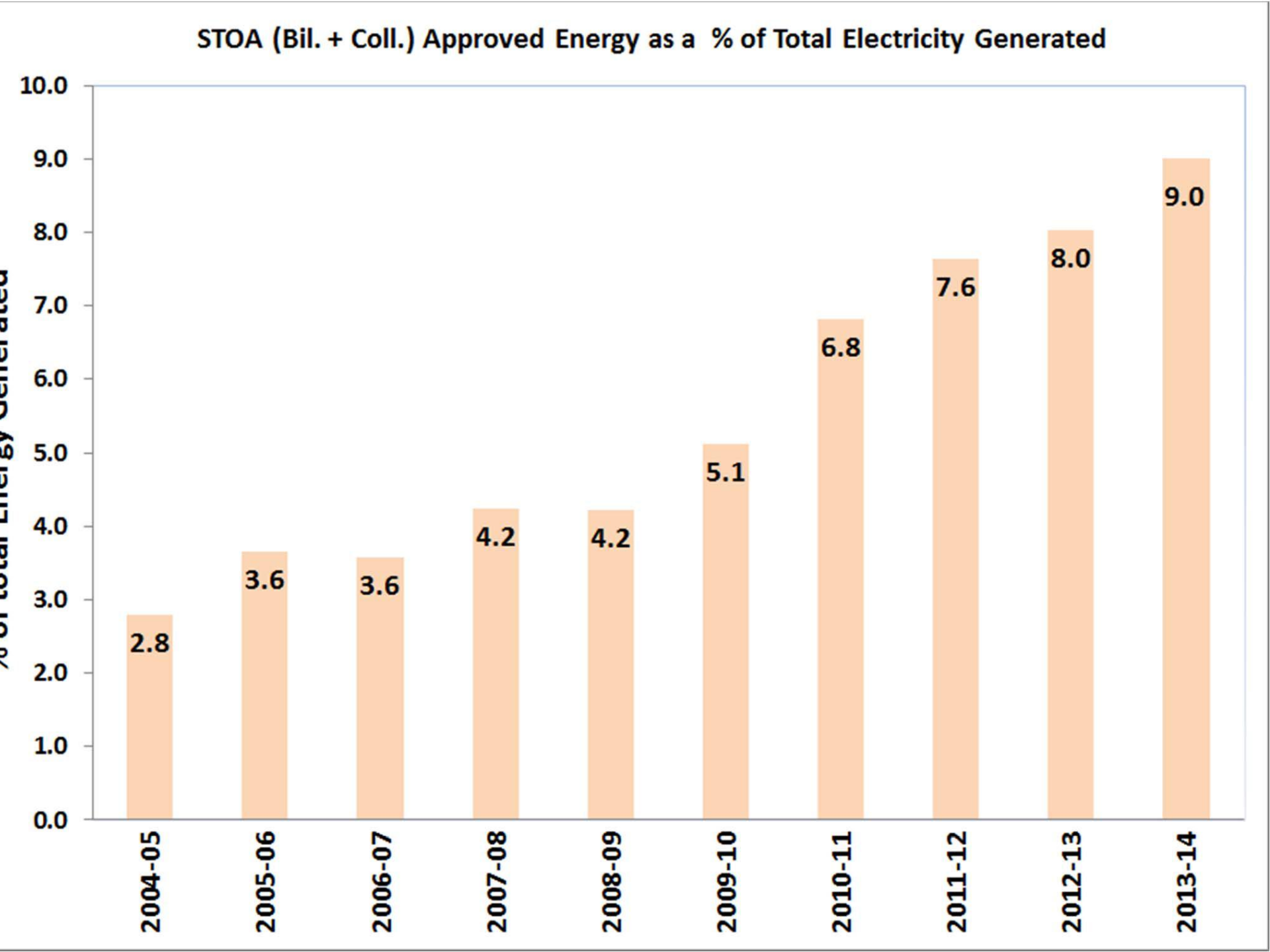
2012-13
2013-14

Short Term Open Access (STOA) - 2004 Onwards



	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Volume of trade (BUs)	17	23	24	30	31	39	55	67	73	87
No. of transactions	778	3938	5933	9560	15414	18128	19883	24111	32139	33917

*Includes Bilateral + Collective transactions


STOA (Bil. + Coll.) Approved Energy as a % of Total Electricity Generated
% of total Energy Generated
10.0
9.0
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7.0
6.0
5.0
4.0
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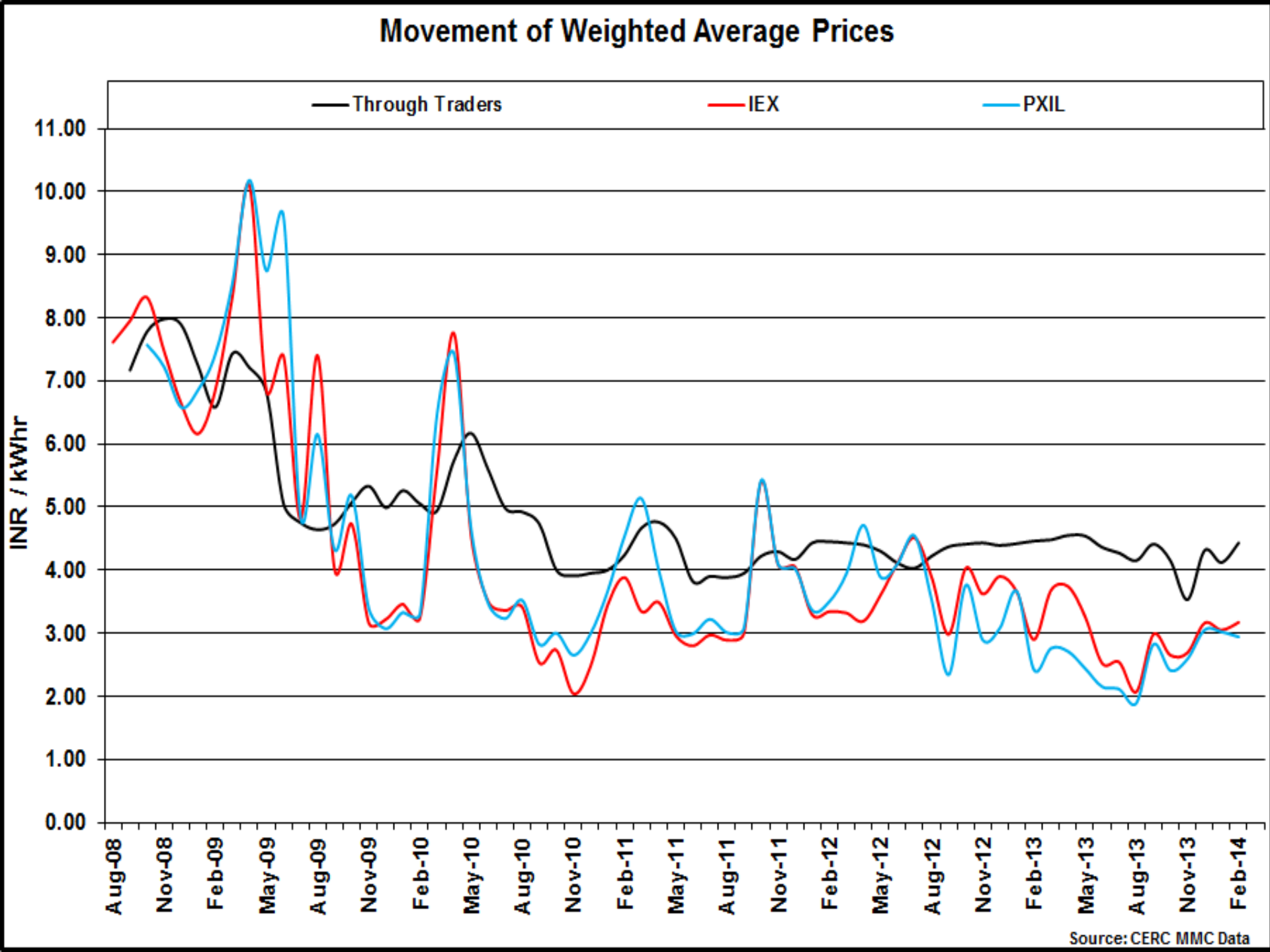
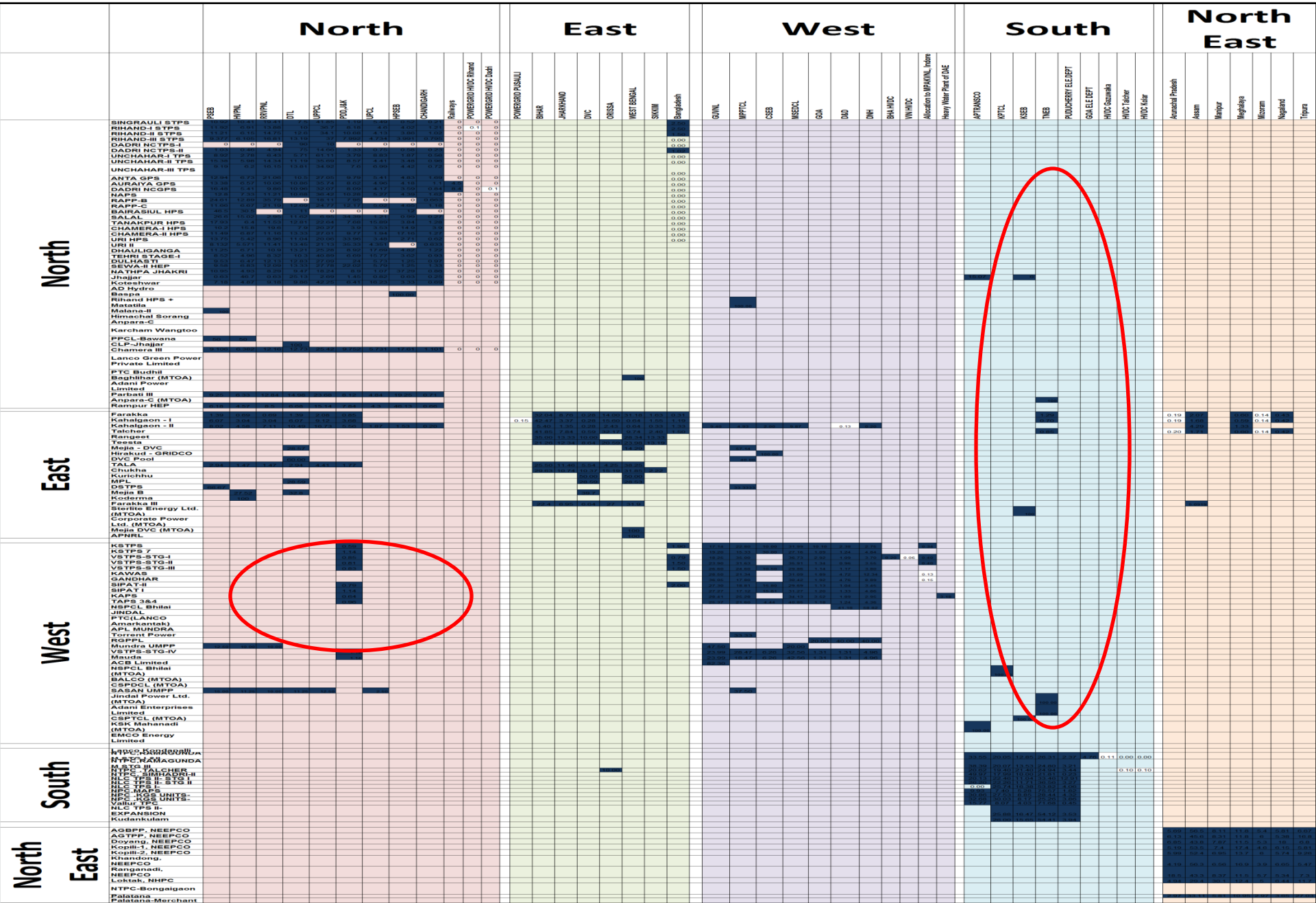
2012-13
2013-14

Movement of Weighted Average Prices



Source: CERC MMC Data

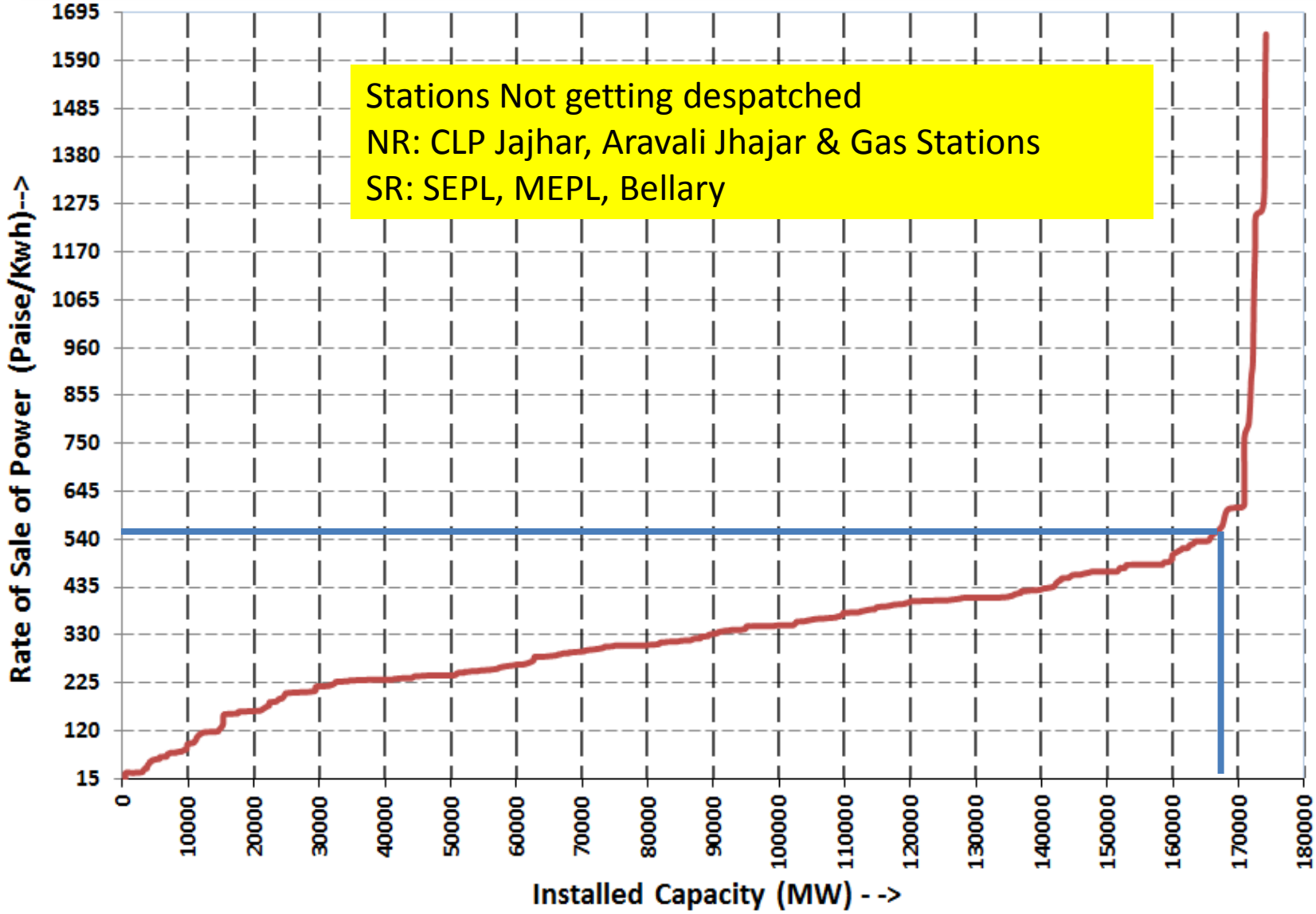
Effect of Allocation Matrix on short term volumes

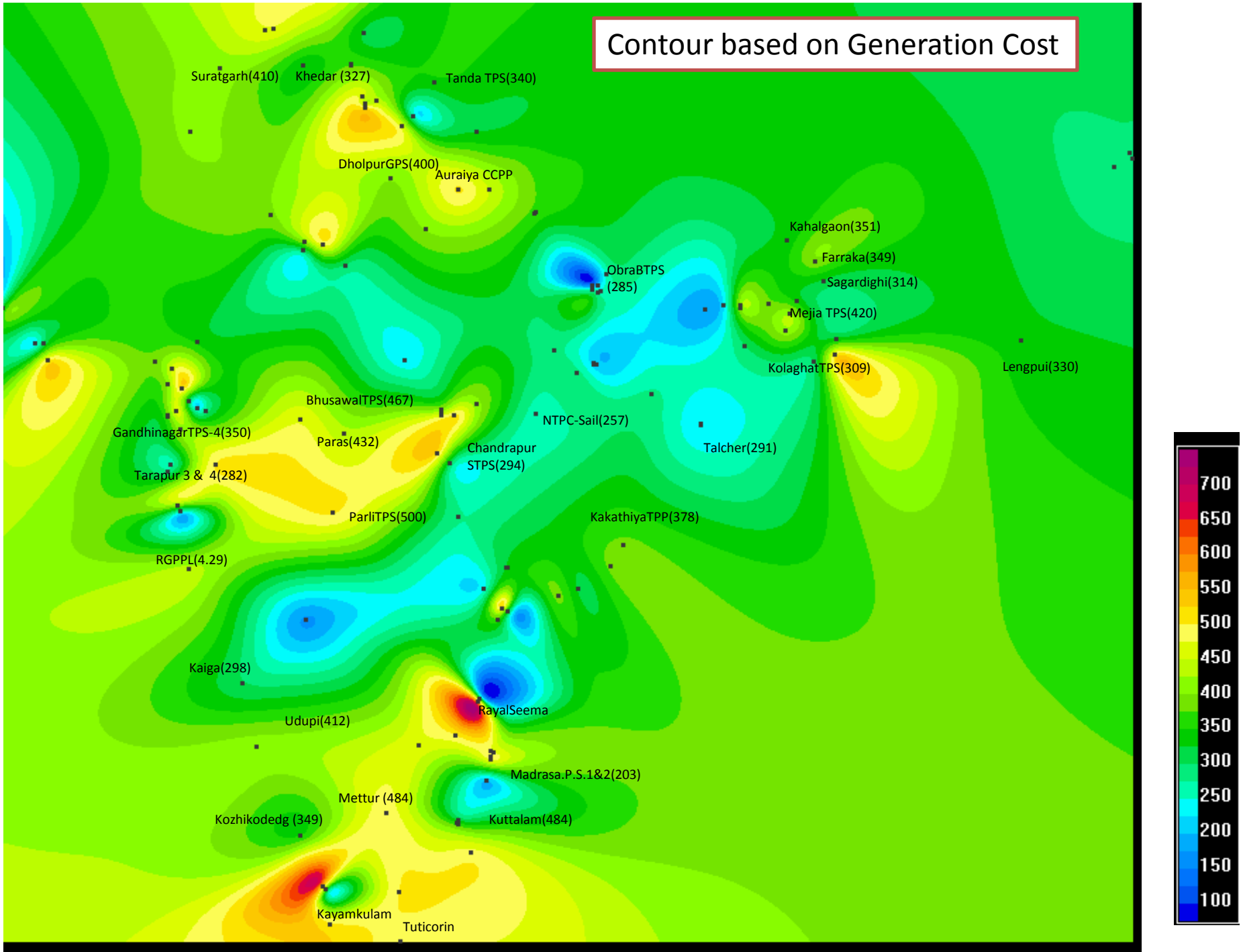


Congestion Visible to the market

- Congestion does not necessarily mean that
  - Load cannot be met
  - Generation is not being evacuated
- Congestion implies that an entity willing to pay is not able to access cheapest source of power
- Existing transmission system was not planned with short-term open access in mind
  - Connectivity without charges
  - Part LTA
  - Case – 1 Not materializing
- Congestion
  - Sign of growth and vibrant market
  - Natural corollary to Open Access
- Inter-regional Long Term/Medium Term access growing
  - Margins for STOA reducing

Generation Cost vs Installed Capacity




Contour based on Generation Cost
Suratgarh(410)
Khedar (327)
Tanda TPS(340)
DholpurGPS(400)
Auraiya CCPP
Kahalgaon(351)
Farraka(349)
ObraBTPS (285)
Sagardighi(314)
Mejia TPS(420)
KolaghatTPS(309)
Lengpui(330)
BhusawalTPS(467)
NTPC-Sail(257)
GandhinagarTPS-4(350)
Paras(432)
Chandrapur STPS(294)
Talcher(291)
Tarapur 3 & 4(282)
ParliTPS(500)
KakathiyaTPP(378)
RGPPL(4.29)
Kaiga(298)
RayalSeema
Udupi(412)
Madrasa.P.S.1&2(203)
Mettur (484)
Kozhikodedg (349)
Kuttalam(484)
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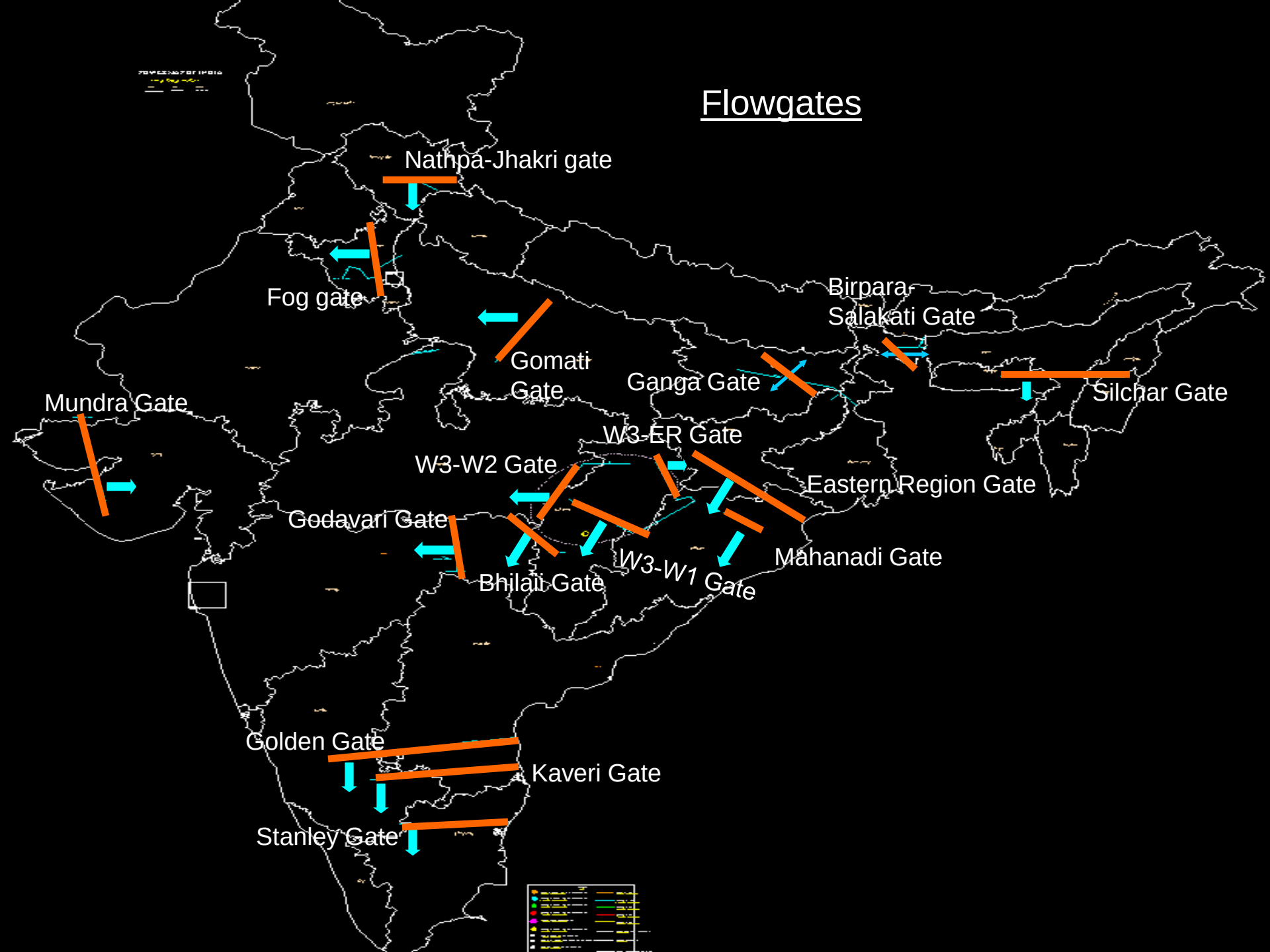
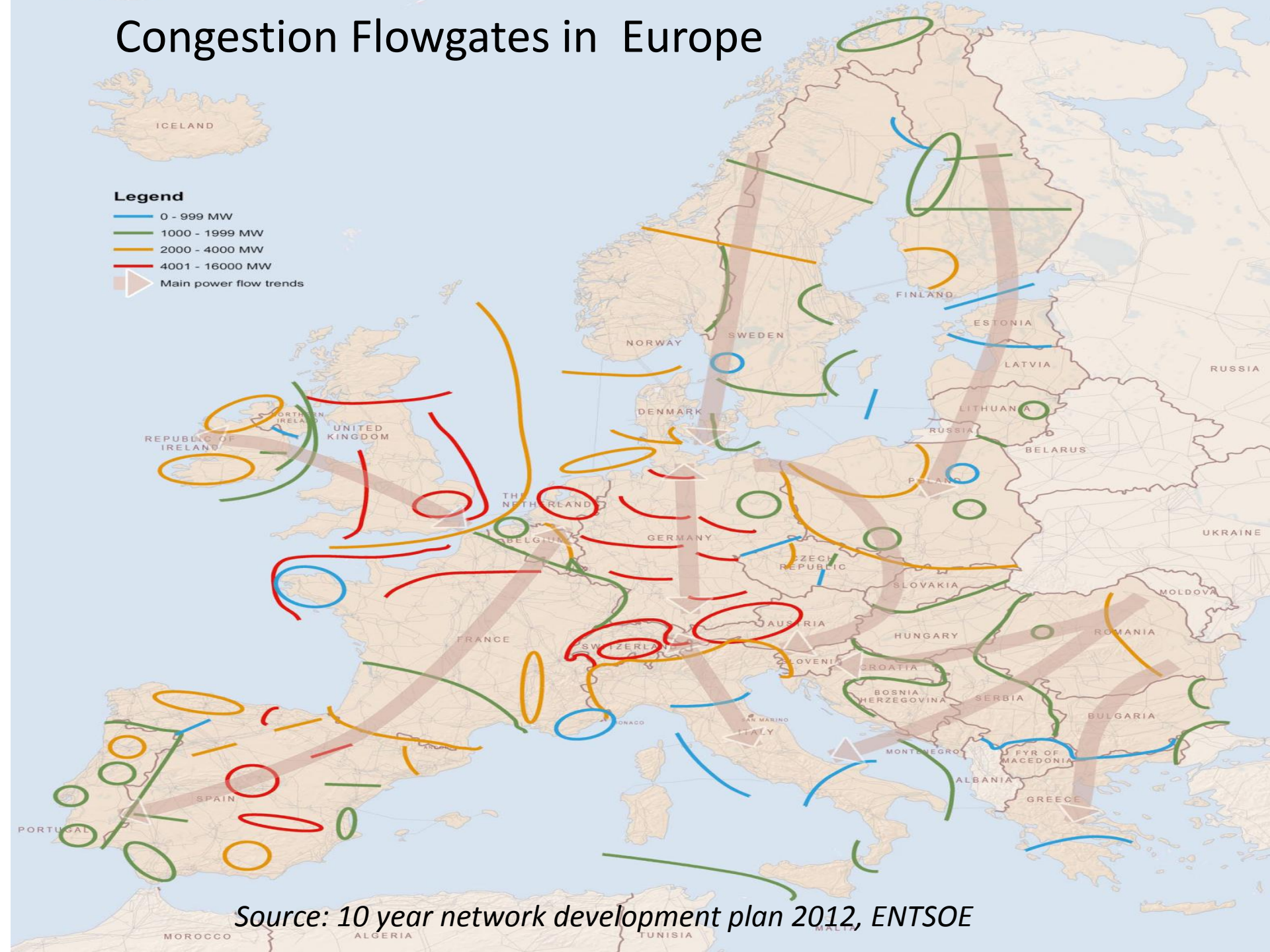
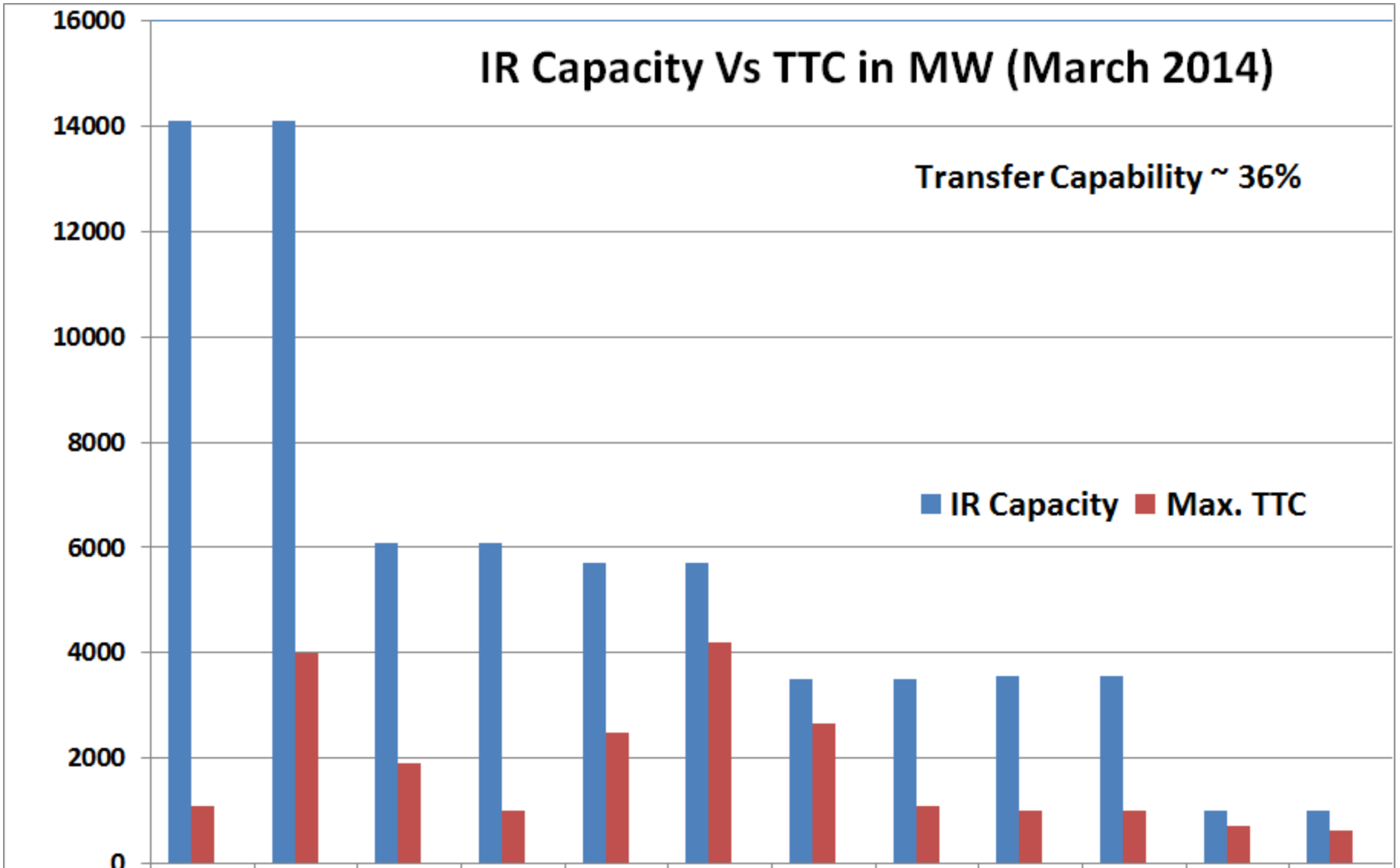

Flowgates
Nathpa-Jhakri gate
Fog gate
Gomati Gate
Birpara Salakati Gate
Ganga Gate
Silchar Gate
Mundra Gate
W3-ER Gate
W3-W2 Gate
Eastern Region Gate
Godavari Gate
Mahanadi Gate
W3-W1 Gate
Bhilai Gate
Golden Gate
Kaveri Gate
Stanley Gate

Congestion Flowgates in Europe



Source: 10 year network development plan 2012, ENTSOE



	NR-ER	ER-NR	W3-ER	ER-W3	NR-WR	WR-NR	ER-SR	SR-ER	WR-SR	SR-WR	ER-NER	NER-ER
IR Capacity	14100	14100	6100	6100	5700	5700	3500	3500	3550	3550	1000	1000
Max. TTC	1100	4000	1900	1000	2500	4200	2650	1100	1000	1000	720	630
Percentage	8%	28%	31%	16%	44%	74%	76%	31%	28%	28%	72%	63%

Why Transfer Capability is less than Transmission Capacity?

- ‘N-1’ criteria
- Stability Criteria
- Non uniform loading of parallel lines
- Loop flows
- Voltage profile
- Load generation disposition
- Intra-state network configuration
- Law of diminishing returns

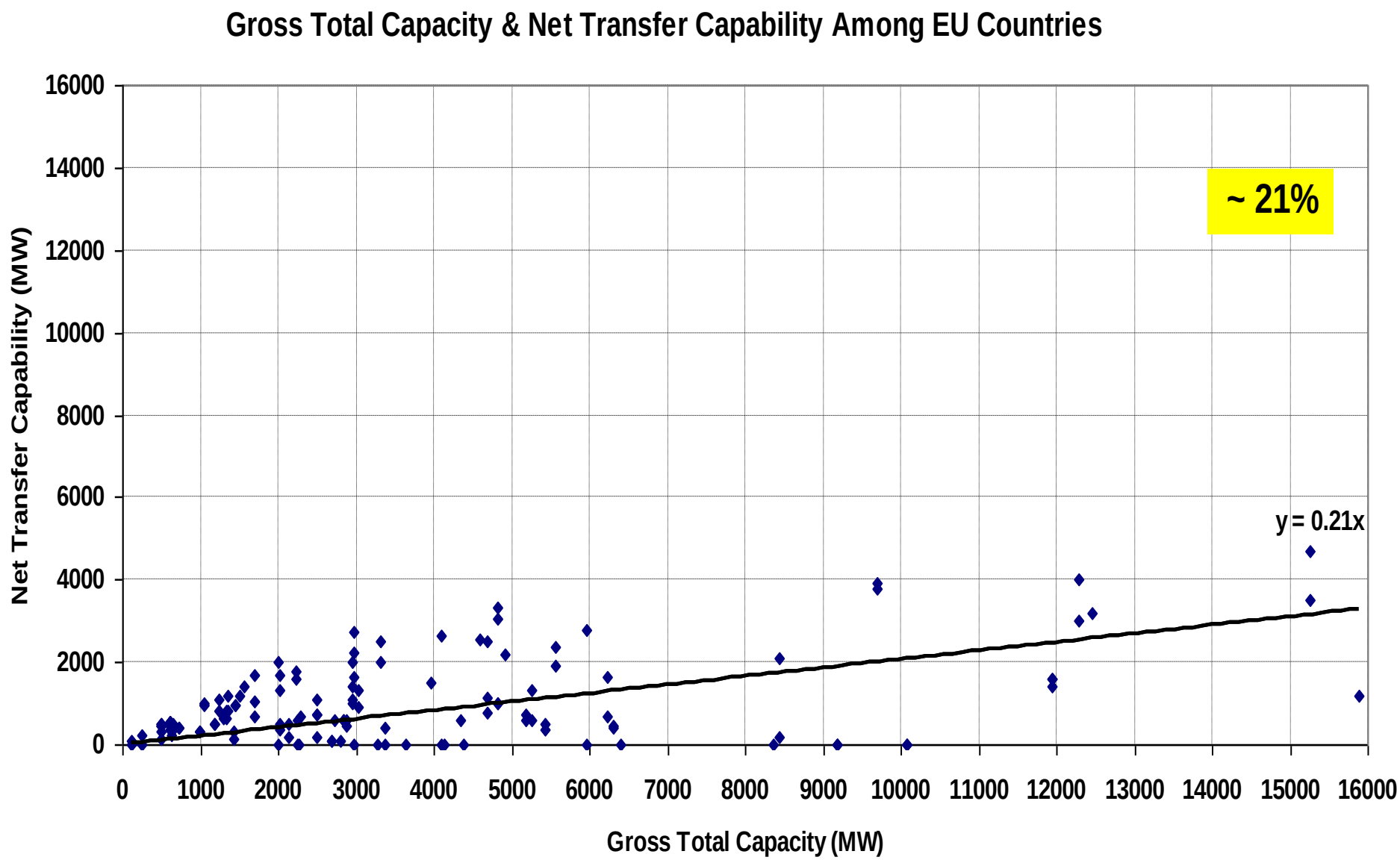
Strength of the chain is determined by the weakest link

Gross Transmission Capacity (GTC) vis a vis Net Transmission Capacity (NTC) in Europe

Corridor	GTC	NTC	Difference	NTC/GTC (%)
France to United Kingdom	2000	2000	0	100%
United Kingdom to France	2000	0	2000	0%
Denmark (East) to Sweden	2010	1700	310	85%
Sweden to Denmark (East)	2010	1300	710	65%
Italy to Slovenia	2017	480	1537	24%
Slovenia to Italy	2017	380	1637	19%
Austria to Hungary	2124	500	1624	24%
Hungary to Austria	2124	200	1924	9%
Sweden to Finland	2230	1800	430	81%
Finland to Sweden	2230	1600	630	72%
Czech Republic to Austria	2249	600	1649	27%
Austria to Czech Republic	2249	0	2249	0%
Italy to Austria + Slovenia	2274	0	2274	0%
Lituania to Kaliningrad	2287	700	1587	31%
Slovakia to Hungary	2492	1100	1392	44%
Hungary to Slovakia	2492	200	2292	8%
Poland to Slovakia	2504	750	1754	30%
Slovakia to Poland	2504	750	1754	30%

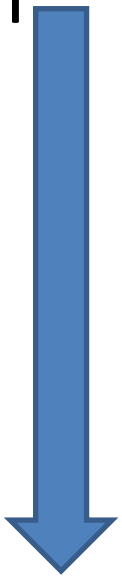
Courtesy: ENTSOE

NTC Vs GTC Among EU Countries For Corridors Up to 16000 MW



Mitigating congestion

- Economic and social costs of congestion
- Need to mitigate congestion in
  - Long term planning horizon
  - Medium Term
  - Operational planning
  - Scheduling
  - Real time



Degree of control reduces

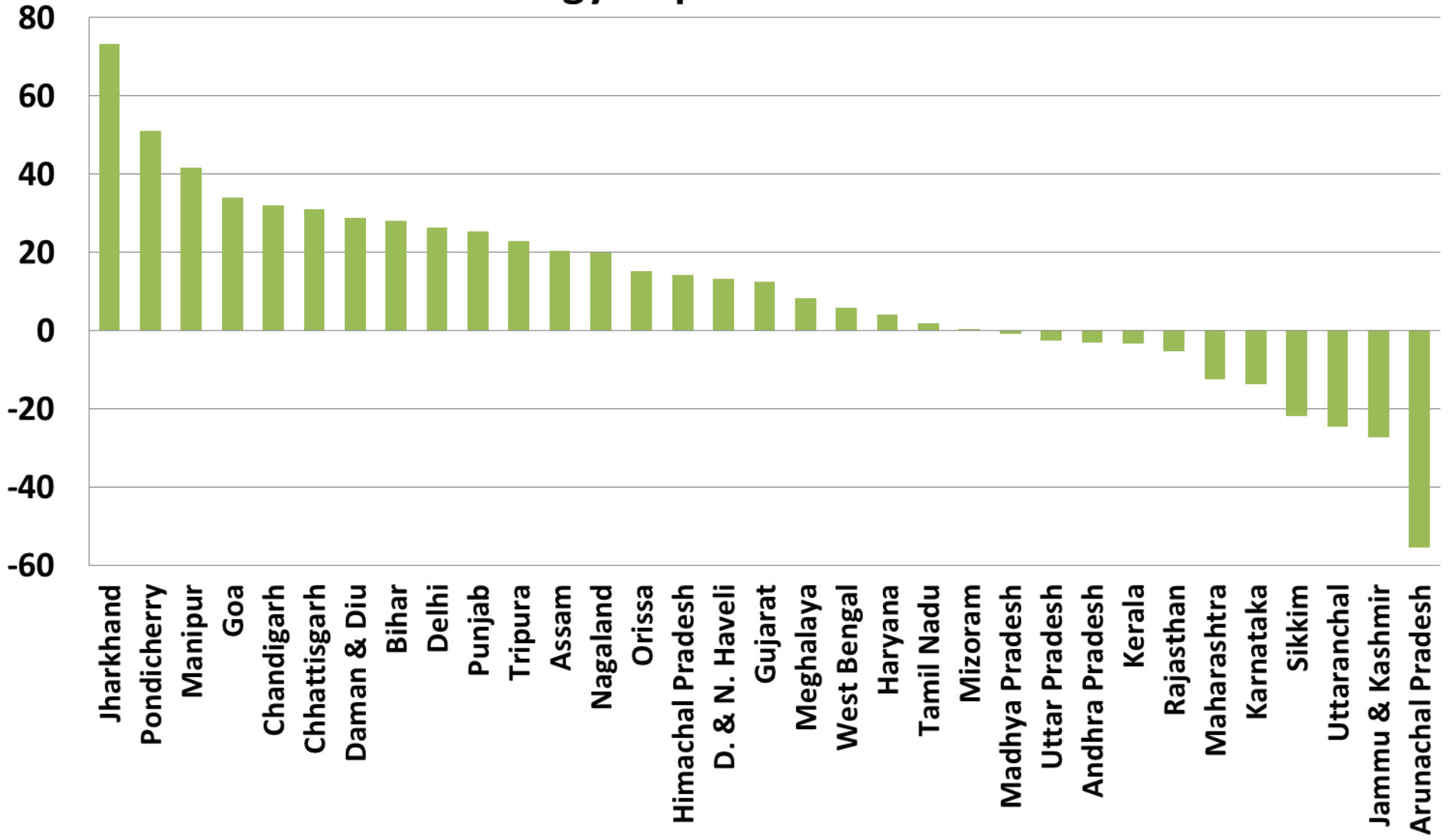
Long term planning (1 of 2)

- Regulatory framework
  - Need for detailed interconnection studies
  - No degradation of existing network
  - CEA Standards to be followed
  - Network augmentation only in case of Long Term Access (LTA)
    - Reconciling with National Electricity Policy mandate
    - Discourage free loaders on the transmission network

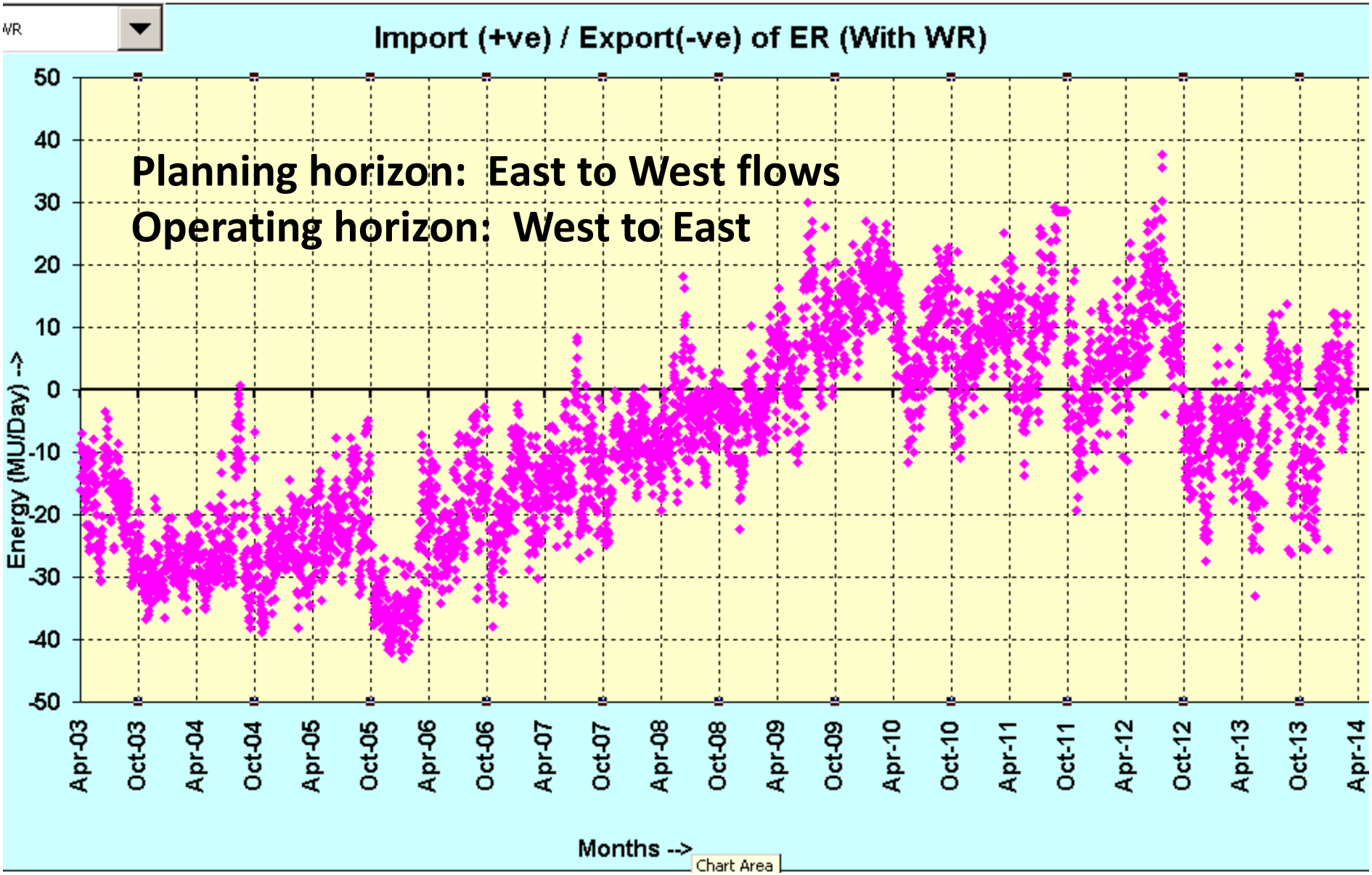
Long term planning (2 of 2)

- Technical Aspects of planning
  - Load forecasting: CEA Electric Power Survey (EPS)
  - Generation de-licensed; information flow
  - High level of uncertainty in generation
  - Limited scenarios on deterministic basis
  - N-1-1 criteria still not tested system wide
  - Testing for High Impact Low Probability events
  - Optimal Power Flow (OPF) taking cost into account
  - Mid-term Review

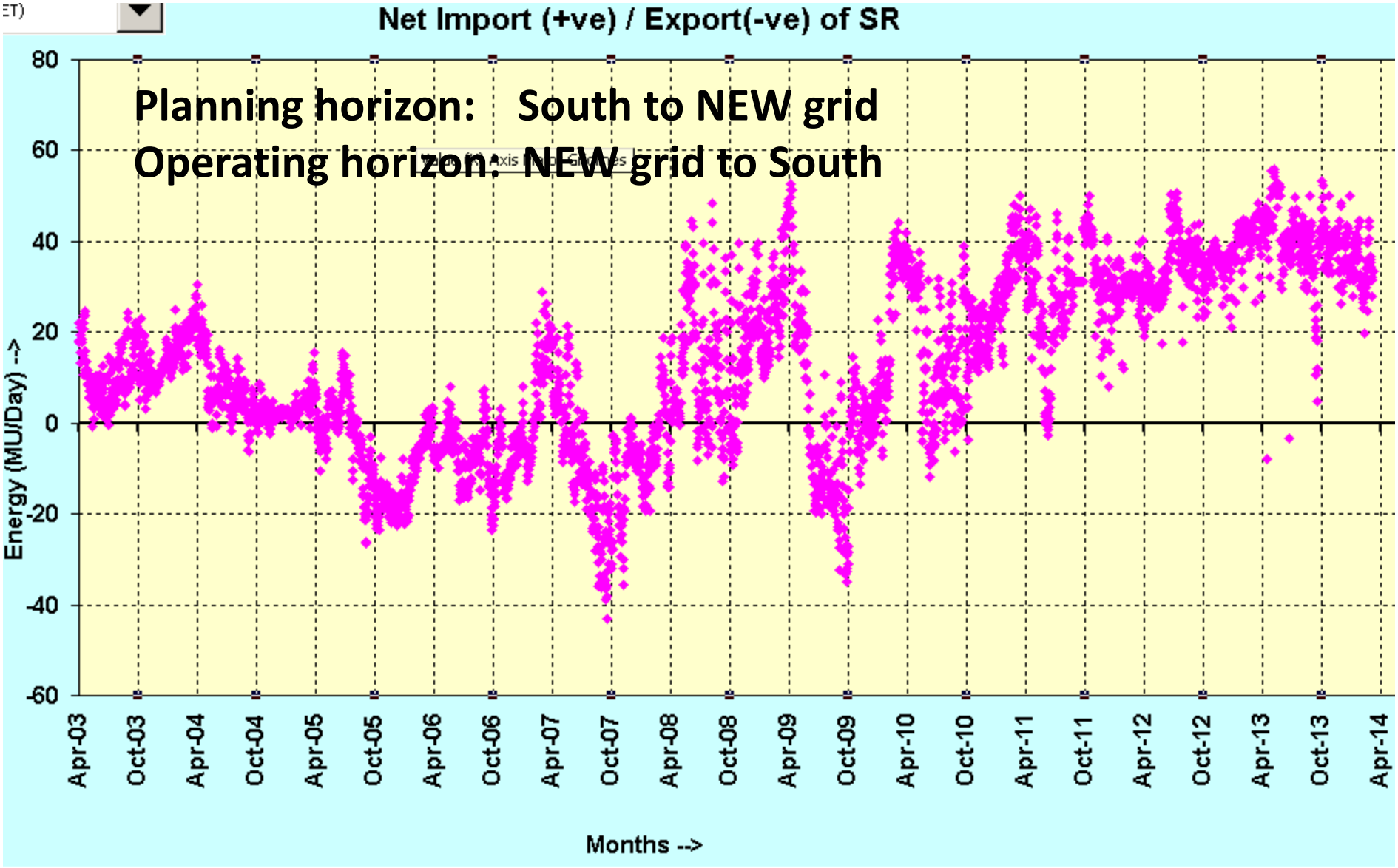
Percentage difference between 17th EPS projections and actual energy requirement for 2011-12



Import/Export of ER (With WR)

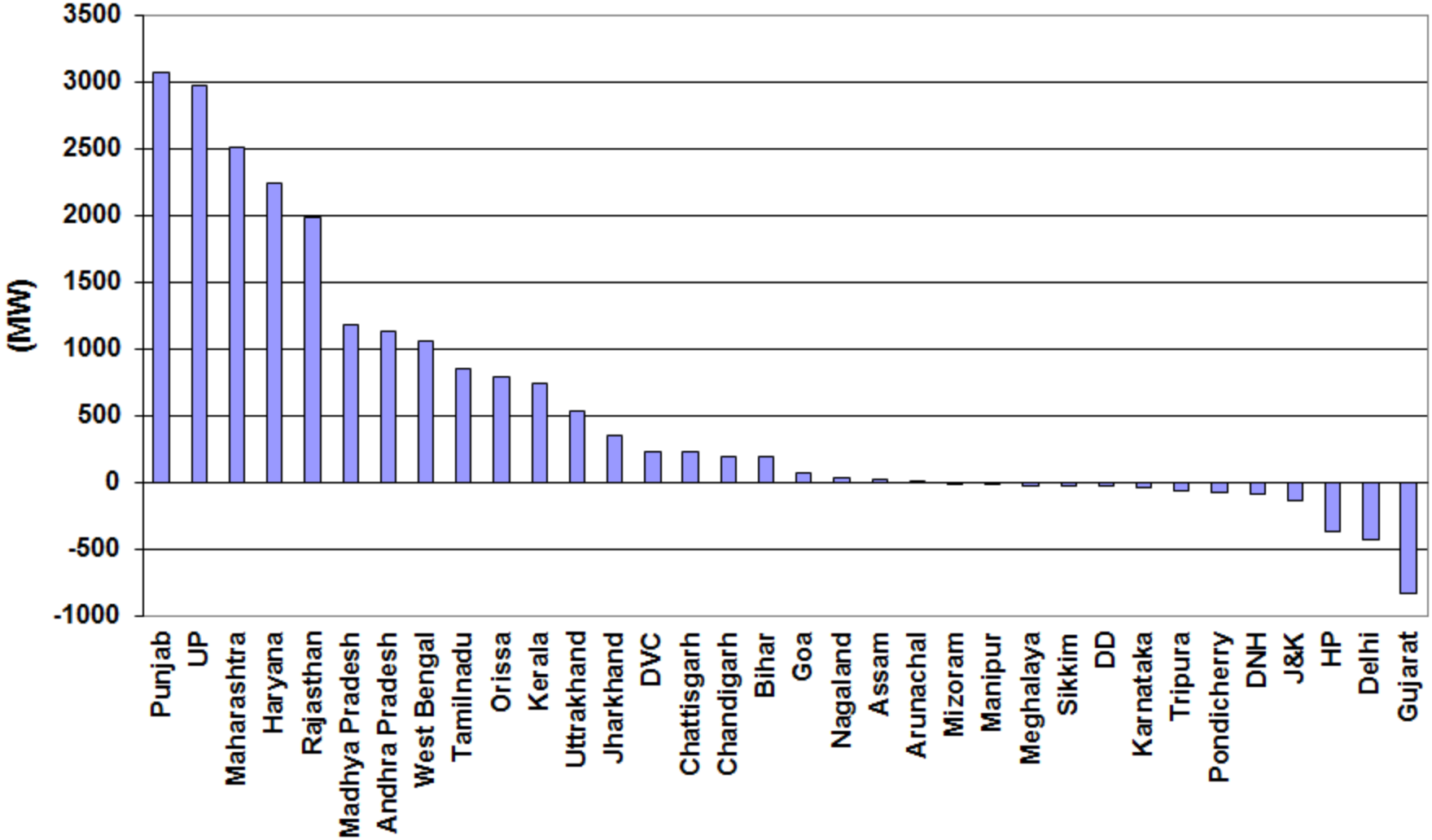


Import/Export of SR



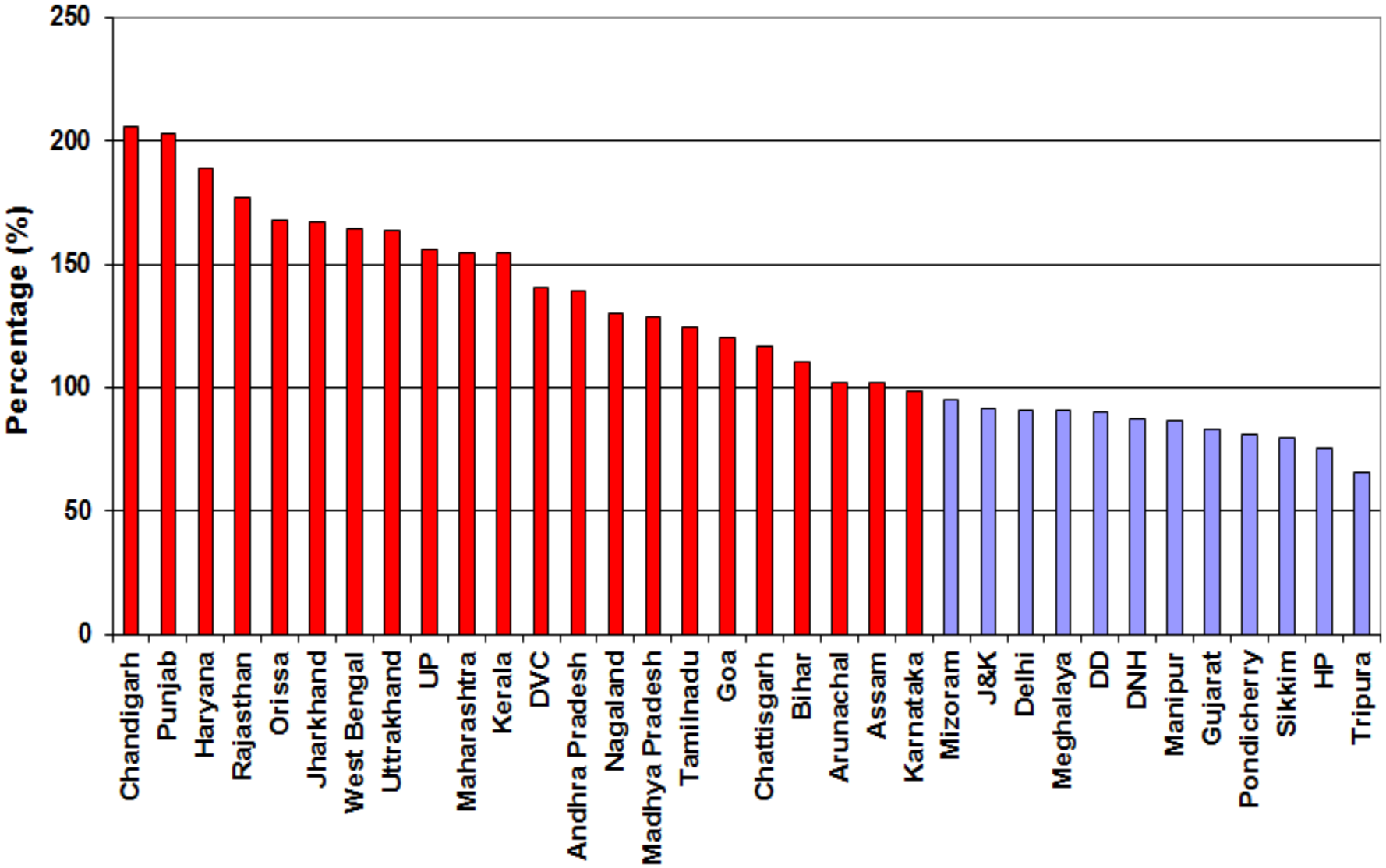
Drawal Pattern of States

Difference (MW) of Max. Drawal and LTA

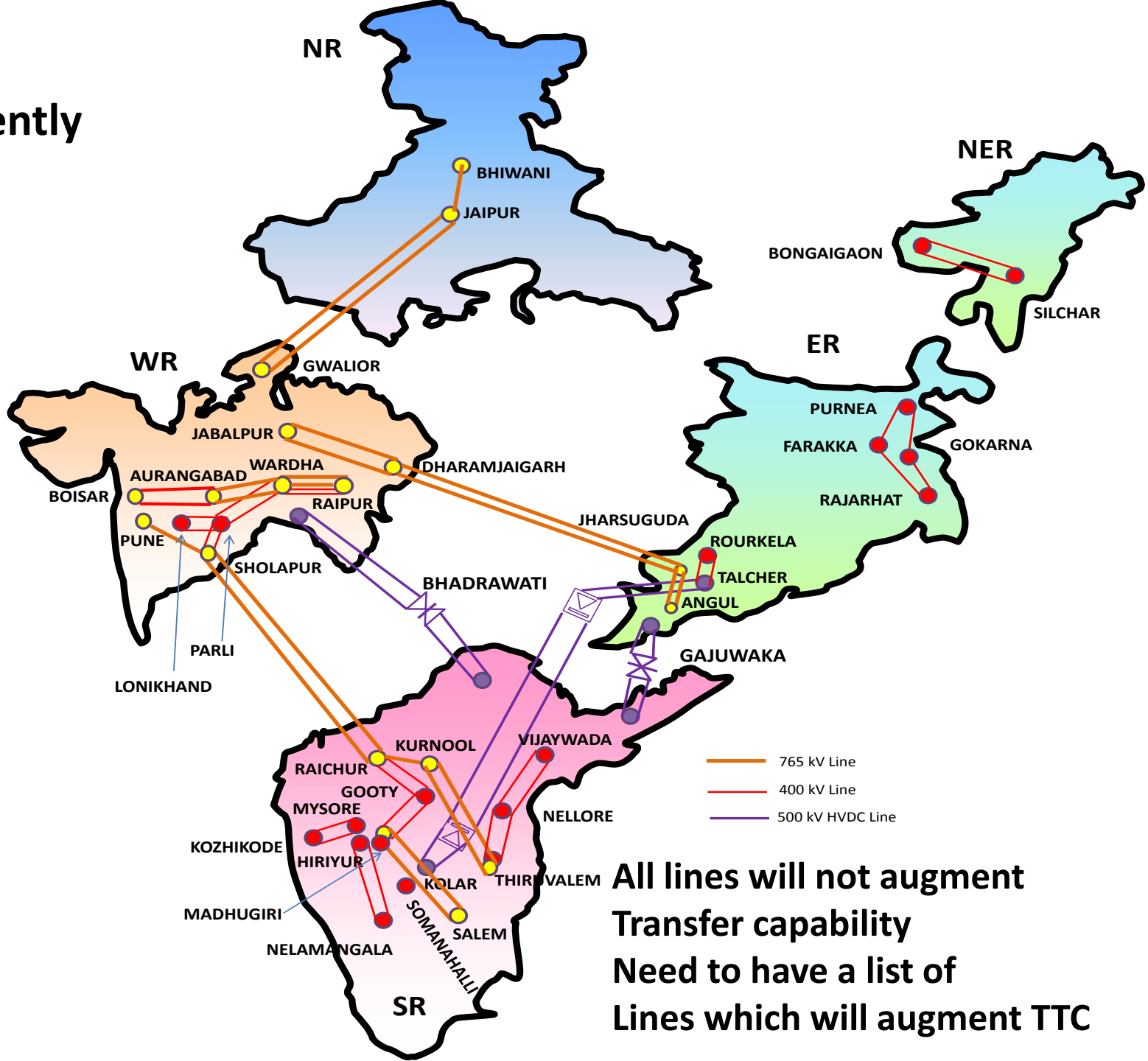


Drawal Pattern of States

% Drawal above LTA Quantum



Lines urgently required



All lines will not augment Transfer capability

Need to have a list of Lines which will augment TTC

Operational Planning

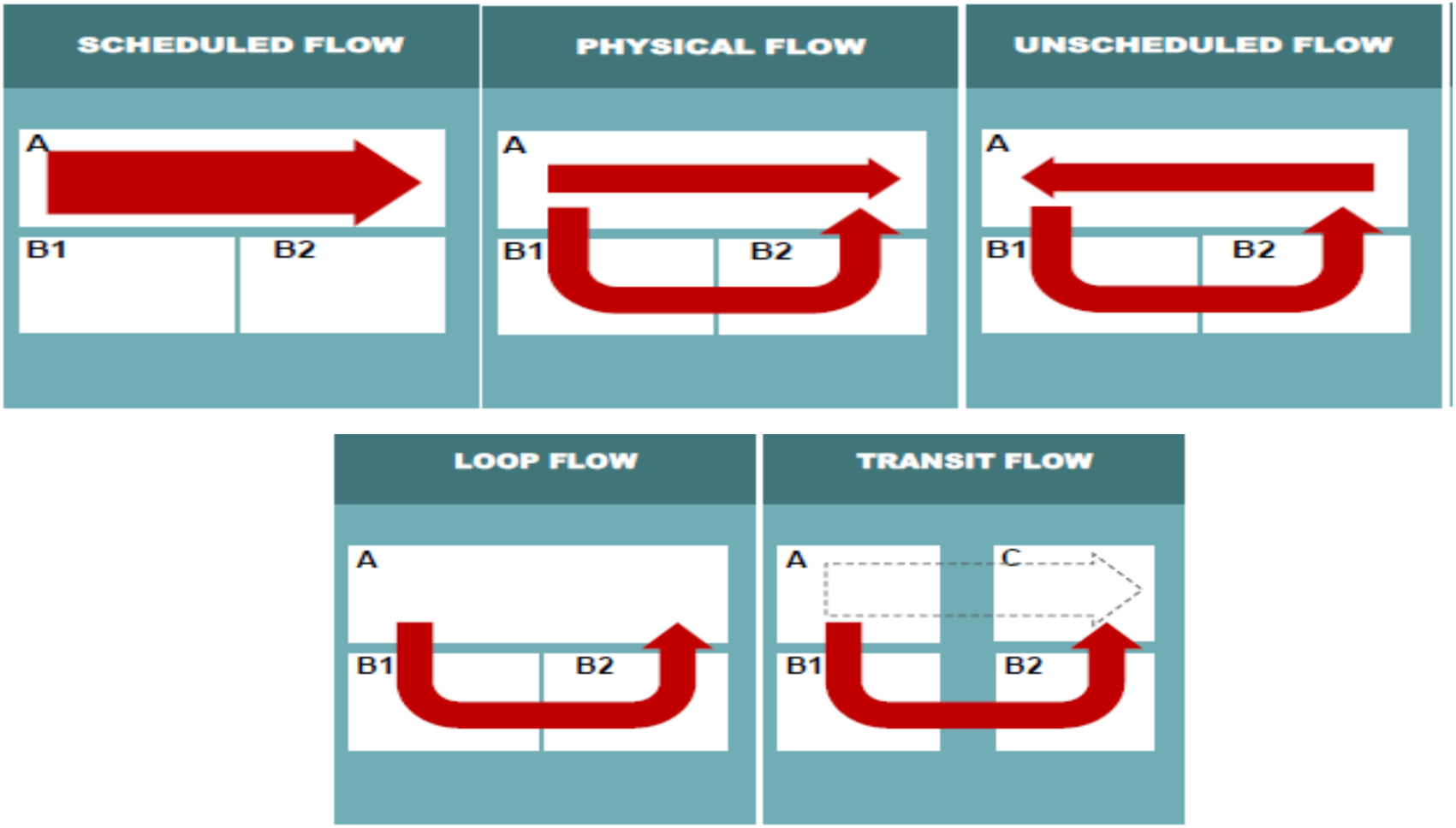
- N-1 criteria as per system planned or N-1-1 criteria as per CERC Regulations
- N-1 in real life; element or event?
- Probabilistic approach based on tripping statistics
- Large number of construction related transmission outages
- Operational philosophy
  - Need for tight control
  - Primary and secondary control
  - Ancillary Services
- SPS is not a substitute for transmission
- Assessment of TTC/ATC by SLDCs

Tripping Statistics

S. No.	Region	2013-14		
		Entire Substation outage (no.)	Entire Power Station outage (no.)	Total
1	NR	17	15	32
2	ER	15	16	31
3	WR	6	6	12
4	SR	6	3	9
5	NER	4	4	8
6	All India	48	44	92

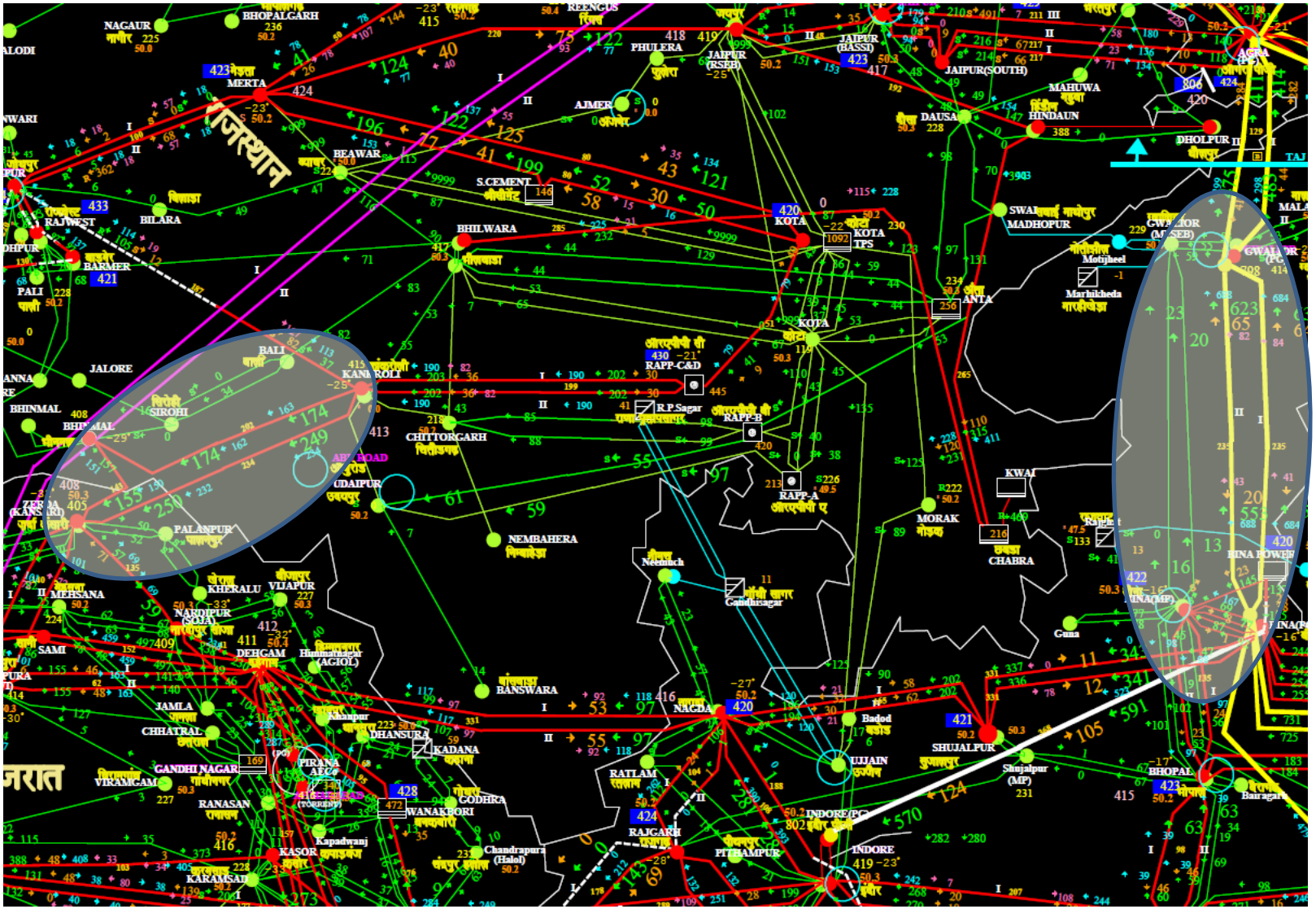
- Entire 4000 MW UMPP out; a credible contingency!
- One event in four (4) days; all near misses!!!

Loop Flows and Transit flows



Source: Loop Flows-final advice; Prepared for the European Commission, Oct 2013 By Thema Consulting Group

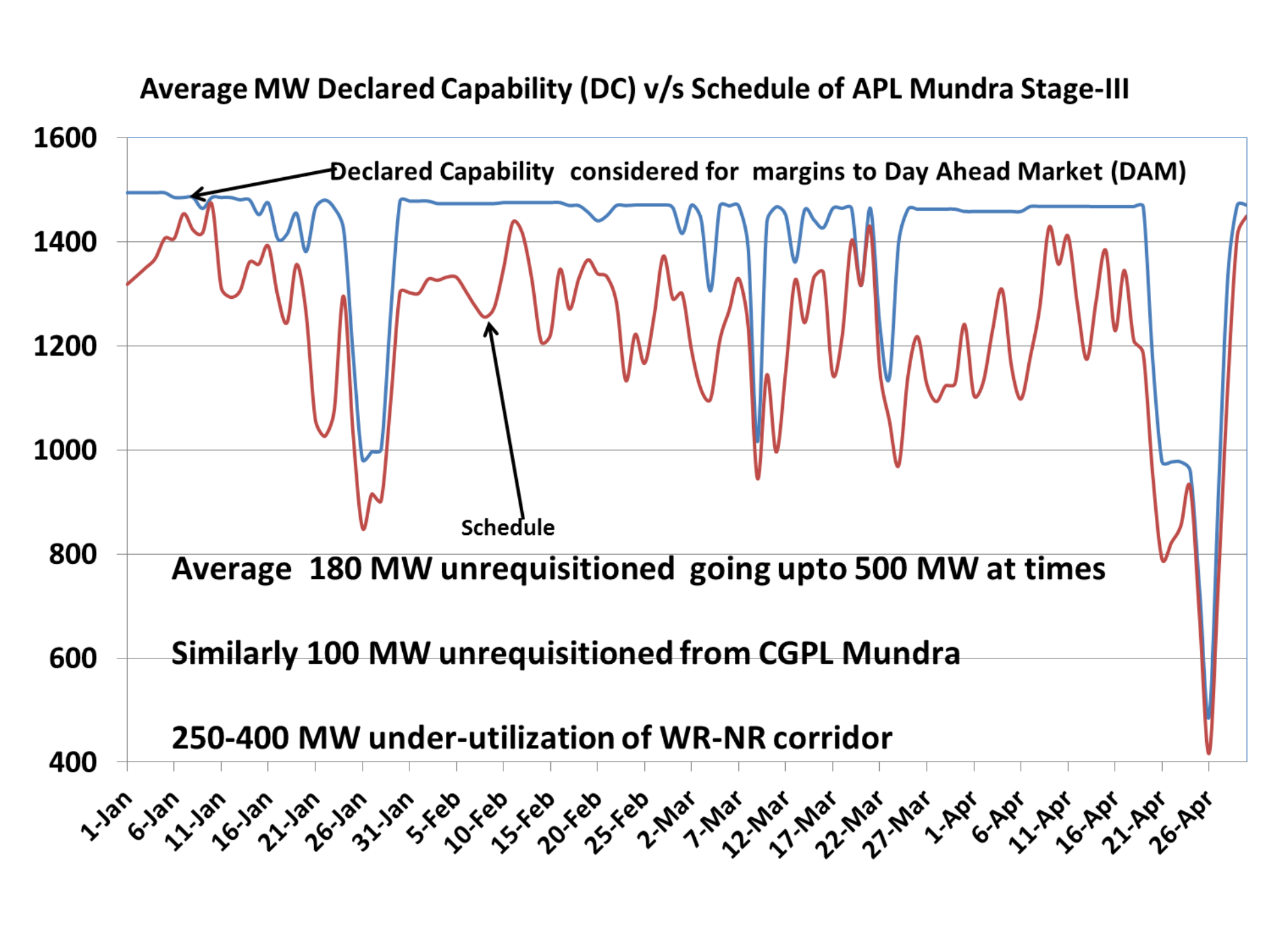
Typical Loop Flows

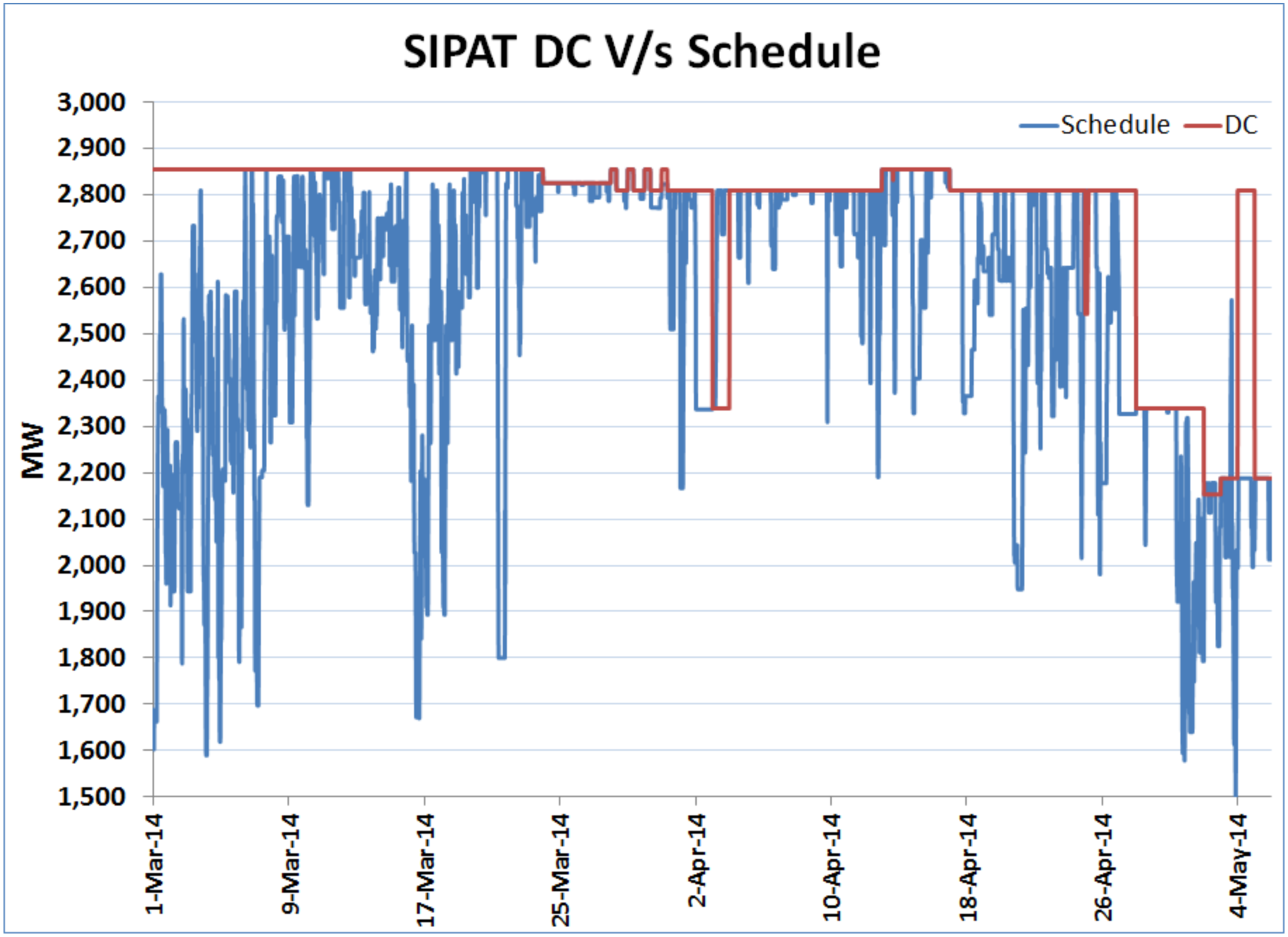


Kankroli to Zerda (NR- >WR):500 MW **Gwalior to Agra (WR -> NR):1100 MW**

Scheduling phase

- Impact of Long Term contracts on Short Term
- Need to keep margins for long term contracts based on Declared Capability (DC) of the plant
  - Under-utilization of transmission
  - ‘Use it or lose it’ for long term
  - Deviation Settlement Mechanism
- Clear week ahead outlook for fuel availability
- Assumptions regarding outage schedule
  - Slippages of shutdown beyond approved timings


Average MW Declared Capability (DC) v/s Schedule of APL Mundra Stage-III
1600
1400
1200
1000
800
600
400
Declared Capability considered for margins to Day Ahead Market (DAM)
Schedule
Average 180 MW unrequisitioned going upto 500 MW at times
Similarly 100 MW unrequisitioned from CGPL Mundra
250-400 MW under-utilization of WR-NR corridor
1-Jan
6-Jan
11-Jan
16-Jan
21-Jan
26-Jan
31-Jan
5-Feb
10-Feb
15-Feb
20-Feb
25-Feb
2-Mar
7-Mar
12-Mar
17-Mar
22-Mar
27-Mar
1-Apr
6-Apr
11-Apr
16-Apr
21-Apr
26-Apr


SIPAT DC V/s Schedule
Schedule
DC
MW
3,000
2,900
2,800
2,700
2,600
2,500
2,400
2,300
2,200
2,100
2,000
1,900
1,800
1,700
1,600
1,500
1-Mar-14
9-Mar-14
17-Mar-14
25-Mar-14
2-Apr-14
10-Apr-14
18-Apr-14
26-Apr-14
4-May-14

‘Use it or lose it’ philosophy

- In W3 Chhattisgarh zone
  - Average 650 MW under-utilization in 2013-14 due to less requisition from Sipat and Korba NTPC
  - Market split on many days
- Talcher-II declaration during monsoon
  - Highly volatile on account of coal shortage
  - No certainty provided by the plant
- Debate on ‘use it or lose it’ for long term
  - Transmission charge payment an issue
  - Flexibility lost in case of contingencies
  - Deviation Settlement Mechanism Regulations

Real time horizon

- Freedom to deviate from the schedule
  - 150 MW overdrawal by all constituents!!
- Ability to quickly curtail transactions
  - Logistics for collective transactions
  - Impact throughout the country
  - Quick dissemination of information
  - Commercial disputes

Way Forward (1)

- Congestion to be treated as
  - An inevitable fallout of growth and uncertainty
- Mitigation in all time horizons
- General Network Access(GNA)
  - Transmission Requirement Forecast
  - For both import & export
  - Revisit STOA charges (should be higher for short term)
- Stranded generation vs stranded transmission

Way Forward (2)

- Introduction of Ancillary Service Market
- More frequent clearing of market
  - Evening Market / Six Hourly Market
- Introduction of Ancillary Services
- Implement SBD Case – 1 Procurement
- Assessment of Transfer Capability by SLDCs
  - Only Punjab is assessing TTC/ATC in consultation with NRLDC
- Need to introduce ‘Use-it’ or ‘Lose-it’ in all products

Consensus in CAC Meeting on 20th March 2013

- PPA should not be a pre-condition for connectivity and long-term access.
  - But at the same long-term PPA should be encouraged through the requirement of disocom's power procurement adequacy statement by SERC.

- Redundancies should be created in the transmission system.

- State transmission planning needs to be improved.

- Need for levy of charges for connectivity. It should not be free. There should be financial incentive/disincentive for connectivity and LTA.

Congestion: a boon or evil?

"Congestion is Not All Bad

Traffic congestion can be viewed as a sign of prosperity and economic success, rather than as a wholly negative phenomena. Traffic becomes heaviest in economic booms, and notably declines in recessions, as dramatically demonstrated in the San Francisco Bay region, during the late 1990s and early 2000s. In fact, the quickest way for a region to reduce intensive congestion is to encounter a serious recession-hardly a remedy anyone desires."

Anthony Downs in 'Still Stuck in Traffic..' ; 2004 edition after the 1992 edition 'Stuck in Traffic'

Thank You !!