



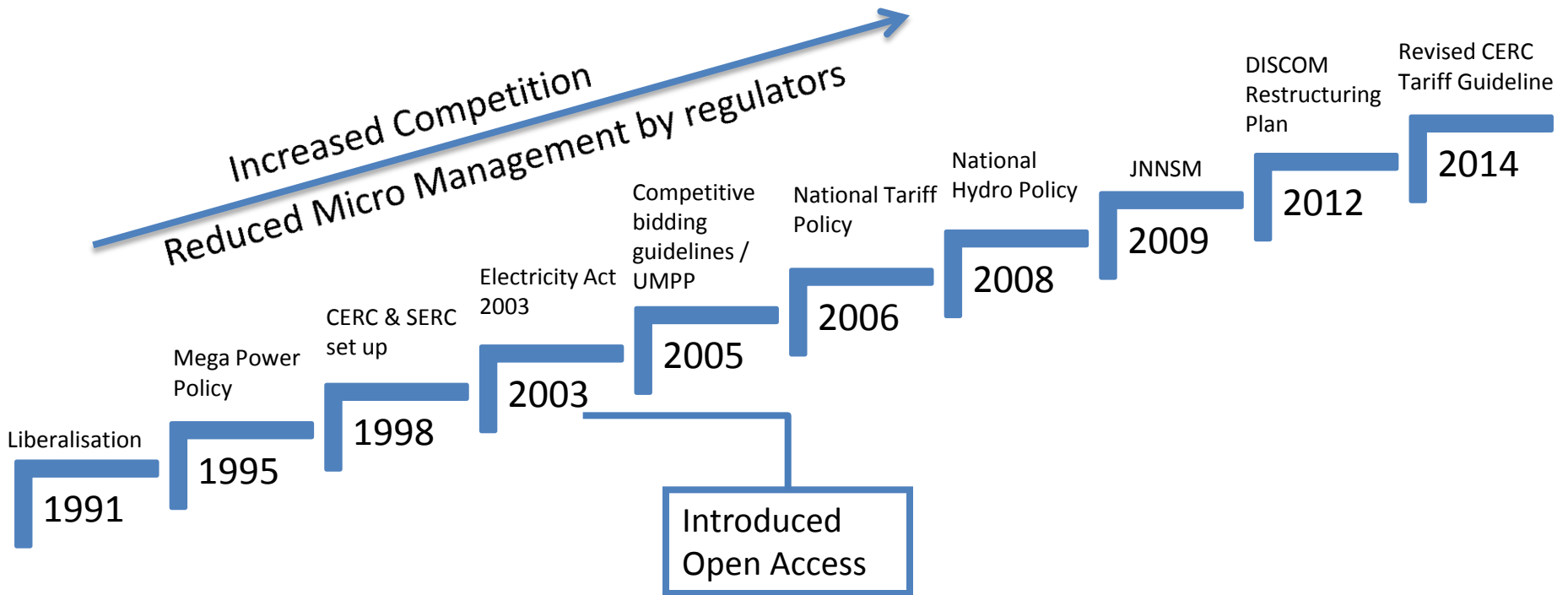
Competitive Bidding in Power Sector: Experience and Development

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India's Premier Investment Bank

Evolution in Indian Power Sector



Pre Liberalization (Pre-1991)

- Monopolized by Centre and State Utilities
- Minimal Participation by Private Sector

Post Liberalization (Post-1991)

- Private Participation in Generation, Transmission and Distribution
- 100% FDI allowed
- National Tariff Policy announced

Background

- Sec - 63 of the Electricity Act states that –
“Notwithstanding anything contained in section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the Central Government”
- The Competitive Bidding Guidelines (CBG) have been framed under the above provisions of Section 63 of EA 2003
- On January 19, 2005, Ministry of Power (MoP) issued CBG for medium term (1-7 years) and long term (>7 years) procurement of power
- Post January 2011, it is mandatory for generating companies including Central PSUs & State PSUs to follow competitive bidding route for sale of power

Objectives

- Encourage competition amongst developers and procure reliable power at minimum price
- Facilitate transparency and fairness in procurement processes -
 - Transparency ensured by Guidelines & Standard Bid Documents for tariff based bidding
- Enhance standardization and reduce ambiguity and time for materialization of projects -
 - Standardization of Bid documents, Bid submission and evaluation process
 - Provide flexibility to suppliers on internal operations while ensuring certainty on availability of power and tariffs for buyers line for bidding process, tariff structure etc.
 - Tariff to be quoted upfront for life of plant and regulator to adopt tariff arrived through transparent bidding process as specified by Guidelines
 - Developer has flexibility to choose optimum unit configuration
 - Incentive to developer to adopt innovative financial modeling and tax planning methods to ensure competitive tariff & return on investment

National Tariff Policy 2006

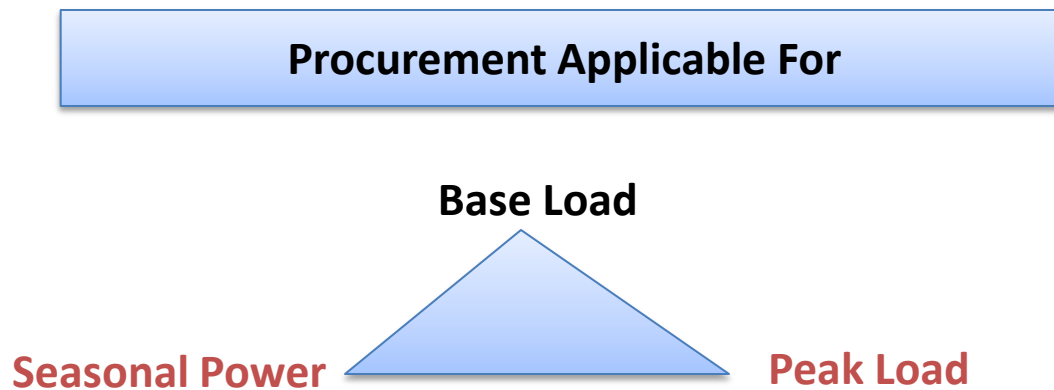
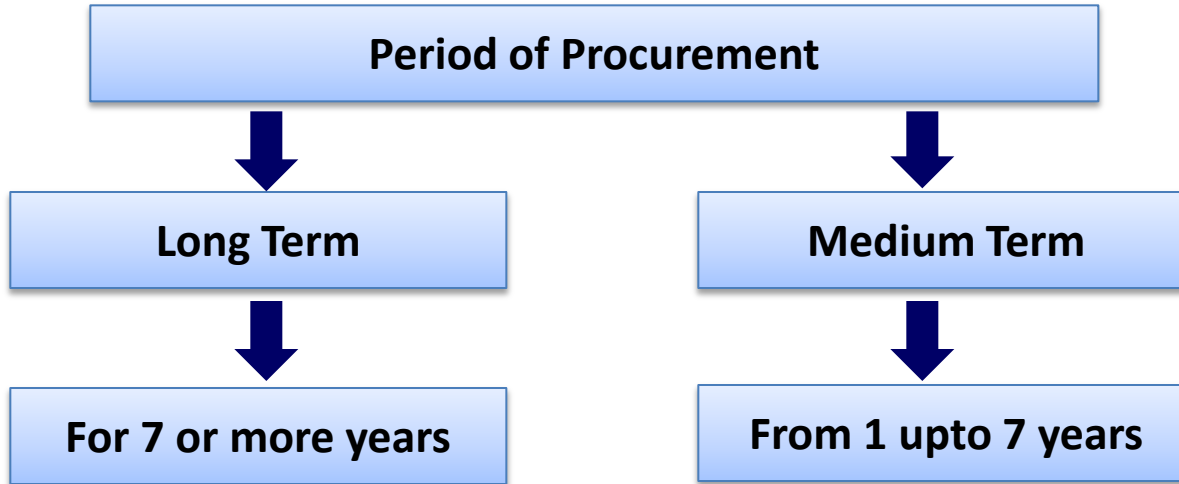
- Objective - Addition of 100,000 MW during 10th and 11th Plan Periods to provide per capita availability of over 1000 KWh per annum
- Balance needs to be maintained between the interests of consumers and investors in the determination of the rate of return
- The Central Commission determines the rate of return on equity parameters for generation & transmission projects keeping in view the assessment of overall risk and the prevalent cost of capital which shall be followed by the SERCs also
- Suitable performance norms of operations together with incentives & dis-incentives with appropriate arrangement for sharing gains with consumers
- MYT framework is to be adopted for any tariffs to be determined from April 1, 2006
- Uncontrollable costs should be recovered speedily to ensure that future consumers are not burdened with past costs
- Power procurement should be through a transparent competitive bidding mechanism

It became essential to provide thrust to private participation (along with Lenders for providing required funding) for a healthy growth of the sector.

As per CRISIL, the share of the private sector in installed capacity has increased to 30% in 2014-15 from 11% in 2009-10.

Generation

Competitive Bidding - Scope



Competitive Bidding - Scope

Bidding Mechanisms

Case 1

Case 2

- Location/ technology/ fuel – not specified
- Bidder responsible for clearances/ approvals etc.
- More relevant for States with limited fuel sources
- Higher risk for developer
- Lower risk for state

- Land/ Fuel provided by Procurer
- More applicable for States where fuel sources are available or having coastal areas
- Higher risk for State
- Lower risk for developer

- Procurement by more than one distribution licensee through a combined bid process permitted through authorized representative
- In case distribution licensees are located in more than one State, CERC shall be the Appropriate Commission

Bidding Process

- Two stage process for Long term procurement:
 - Request for Qualification (RFQ)
 - Request for Proposal (RFP)
- For Medium term the procurer has an option to adopt a single stage tender process combining the RFP & RFQ process
- The bidding shall be necessarily by way of International Competitive Bidding (ICB)

Bidding Process



Preparation of bid documents and technical analysis done by procurer



RFQ invited and qualified bidders selected



Creates a common platform and removes conditionality. Doubt clearance and feedback



Technical and financial bids evaluated



LOI issued
PPA signed

UMPP – Mundra (Case 2)

- Mundra Ultra Mega Power Project is a 4,150 MW coal based thermal power plant developed by Coastal Gujarat Power Limited (CGPL)
- The project was awarded by Ministry of Power following a two stage ICB process
- The Project attracted considerable interest from various established developers in the infrastructure sector, of national and international repute –
 - 36 EoIs were received
 - Based on the RfQ, 12 bidders met the qualification criteria
 - Final Bids were submitted by six bidders
 - Tata Power was declared as the short listed bidder amongst six bids
- For UMPP Bids for Mundra, Tata Power and Reliance had different bid strategies
 - TPL bid numbers were broken into escalable and non-escalable components - Reflects clear direction of owning mine and ships (or equivalent long term contracts) while retaining limited risk
 - Reliance had bid all numbers as escalable - Reflects strategy of procurement on spot basis for coal and transport; No upsides possible unless captive mines/long term contract on different terms

UMPP – Mundra (Case 2)

Comparison of Original Bid parameters & Current Parameters for Mundra UMPP

CERC- Parameter	Value for Original Bid	Revised Values
Annual Escalation for Capacity Charge	5.37%	5.21%
Annual Escalation for Variable Charge	3.46%	14.02%
Annual Escalation for Fuel Transportation	9.08%	15.99%
Annual Escalation for Fuel Handling	5.37%	5.21%
Discount Rate	10.60%	10.74%
Variability of Exchange Rate	1.07%	0.64%
Levelized Tariff	2.26449	4.75490

If we consider the price of imported coal at \$101 /tonne (for international coal of similar GCV):

- Escalable and non-escalable in the same ratio as the original bid: Rs 3.74/kWh
- All escalable component: Rs. 4.36/kWh

UMPP – Mundra (Case 2)

- Tata Power had quoted a levelised tariff of Rs2.26/kWh for the supply of 3800MW to various state DISCOMs
- The project was envisaged to be operated on imported coal for which the company also purchased a 30% stake in an Indonesian mining company
- However, due to unanticipated change in the Indonesian law in September, 2011, the increase in the cost of coal was far greater than assumed at the time of bidding which threatened the project viability
- Company had requested relief by way of tariff revision is premised on 3 independent foundations -
 - Change in law (Art 13 of PPA)
 - Force majeure (Art 12 of PPA)
 - Power of commission to regulate tariff under sec 79(1)(b) of the Electricity Act

UMPP – Mundra (Case 2)

- Consequently, CERC has devised a formula for calculating the gross compensatory tariff, which will be linked to the Indonesian coal reference index for the relevant calorific value

{(GCV adjusted Indonesian coal reference index) x (Normative quantity of coal imported)/Unit supplied under the PPA during the time period} – (quoted non-escalable fuel cost + (escalable fuel cost x CERC escalation index))

- The fuel under-recovery has been quantified by the CERC at Rs 3.3 bn or 29 paise/kWh for FY13
- For FY14, tariff arrears to be recovered from DISCOMs, have to be calculated within 2 months from the end of financial year
- From FY15 onwards provisional gross compensatory tariff will be calculated using the Indonesian coal reference index at the beginning of each financial year
- The company shall then submit quarterly statements of actual costs within 30 days and reconcile the costs at the end of each quarter

Developer had to assume responsibility for long-term fuel cost, foreign exchange rate, macro economic conditions and change in law (for country where imported coal mine located) – Viability of Project affected in long term

DB Power Limited (Case 1)

- DBPL has set up a coal based subcritical Thermal Power Plant (TPP) of capacity 1200 MW (in two phases of 600 MW) at Chhattisgarh.
- The Company has tied up 78% of the capacity of the project through long term PPAs with CSP Trade Co. for 30 MW (Gross), TANGEDCO for 220 MW (Gross) and Rajasthan State Discoms (through PTC India Ltd.) for 434 MW (Gross).
- Rajasthan Rajya Vidyut Prasaran Nigam Limited (RVPN) issued Request for Proposal (RFP) on May 28, 2012 for long term procurement of 1000 MW power ($\pm 10\%$) under Case-1 bidding procedure through tariff based competitive bidding process
- The Rajasthan government terminated power purchase obligations for all but two of the nine PPAs signed by it in 2013 (allotted under Case 1 bidding mechanism). Rajasthan Electricity Regulatory Commission has ordered to reduce the PPA quantum from DBPL to 250 MW (from 410 MW signed in PPA) .

Developer are tackling with lack of assured buyers for electricity under power purchase agreements (PPAs). Adding to this, even the limited number of PPAs signed in recent years could also be cancelled.

Bidding : **Developers' Perspective**

Bidding Considerations

All technical and commercial assumptions to be questioned

- Determine the Hurdle Rate for IRR
 - Criteria shifts to IRR from RoE
 - Hurdle Rate usually determined by Cost of Equity and risk profile
 - Typical IRR for cost-plus is 11-12%
- Extremely important to have pre-bid tie-ups in place
 - Commitment on major costs and escalation
 - Time period for which commitments would hold
- EPC:
 - Costs
 - Performance guarantee on heat rate, auxiliary consumption, degradation etc.
 - Construction schedule
 - Currency, payment terms
 - Availability of ECA financing

Bidding Considerations

- O&M:
 - Recurring Capex requirement
 - O&M arrangement – Price, escalation, warranties and experience
- Domestic coal as fuel:
 - Mine development expense
 - Calorific value estimates
 - Cost of ash disposal and transportation
 - Operations cost
 - Mix of Indexed and non-indexed costs
- Imported Coal as Fuel:
 - Mine development expense
 - Calorific value estimates
 - Cost of transportation
 - Operations cost
 - Mix of Indexed and non-indexed costs

Bidding Considerations

➤ Financial Assumptions

- Financing Mix and sources to be decided - Large projects like UMPP have to source mix of RTL and external financing
- Limited availability of ECB for sector and such tenures
- ECA are a viable option but are time consuming
- Equator Principles to be followed for ECB/ECA funding

Developers' & Lenders' Concerns

Concerns

- **Enforceability**- Competitive Bidding being an optional route for procurement of power by a distribution company. The same can be seen from the case of Maithon Power -
 - Maithon Power (generator) & NDPL (distribution licensee) signed a negotiated PPA
 - BSES Rajdhani & BSES Yamuna filed an objection petition contending the approval of the said PPA
 - DERC however granted approval to the PPA as the Electricity Act provides alternative routes (Sec 62 & 63) to distribution licensee for procuring power
 - DERC's order was challenged in the ATE by the appellants and there too the PPA was upheld
 - The order of ATE was challenged in the Supreme Court
- **Power Cutting** - The DISCOMs are not penalised for not supplying power to the consumers. The DISCOMs are not inviting bids for power procurement and are cutting power for consumers.

Capacity utilization in the power sector is in an uninviting situation. Therefore, a lot of capacity is stranded and stressed

Concerns

- **Fuel Security** – Fuel security is to be ensured in terms of supply, quality and price.
 - PLFs have declined due to low fuel availability as growth in fuel supply have lagged capacity additions

As per Energy Statistics 2015, Compound Annual Growth Rate of Installed Thermal Generating Capacity of Electricity in Utilities and Non-Utilities in India was 9.46% from 2005-06 to 2013-14. Whereas, the coal production in India was about 407.04 MTs during 2005-06, which increased to 565.77 MTs during 2013-14 with a CAGR of 3.73%.

- Further, CIL to enter into FSA for fuel supply for projects with PPAs only. The terms and conditions of PPA and FSA should be synchronised so as to support development of projects
- The cost of fuel should be passed through based on actual cost and “as

The Cabinet Committee on Economic Affairs (CCEA) on April 22, 2013, had approved cost-plus mechanism for FSA signed between Coal India Limited and power projects commissioned post 2009. Thus, CIL will supply 65% of annual contracted quantity through domestic sources while the balance 15% will be imported and sold on a cost-plus basis. Subsequently on June 21, 2013, the CCEA approved that the higher cost of imported coal would be allowed as a pass through to the end consumers.

Concerns

- **Evacuation Arrangement** – Evacuation arrangement has been a roadblock in supply from installed capacity.
- **Open Access** – A level-playing field for competition is not provided due to non implementation of full scale open access
- **Macro Economic factors** - Unforeseen and material adverse changes in macro economic factors such as inflation, currency depreciation, interest rate etc. adversely affect the project economics. These risks should be adequately addressed during the bidding stage.
- **Change in Law** – Change in Law for India and country from where fuel is being supplied is to be covered. Otherwise quoted tariffs would become non cost-reflective
- **Separation of Carriage and Content** – Clarity on the role of existing and future PPAs after implementation of carriage and content
- **Health of Discoms and Payment Security** – The developers and lenders have concerns about the health of DISCOM and consequently the surety of the payments.
- **Role of Short Term Market** – A clear role of Short term market has to be developed with increased participation from buyers and sellers.

Concerns

➤ **Regulatory lead time adversely impacting other stakeholders**

- Most private power generators (~39,038 MW, Rs ~1,57,730 Cr) have petitioned in CERC and SERCs for compensatory tariffs due to adverse reasons beyond the control of the developers.
- As many as 17 projects have approached the Regulatory authorities for Compensatory tariff petition
- Time taken for release of order on the recent petitions of Tata Power and Adani Power regarding compensatory tariff = ~20 months – orders have been challenged

➤ **Retrospective nature of regulations** for e.g. the Supreme Court ruling on the methodology followed for captive coal block allocations adversely effect the investments made by players in both coal block and linked projects

Due to the above concerns no new capacity is coming up. Private investment and financing of power projects especially thermal projects is not forthcoming as the projects would not be able to generate adequate cash flows to cover operating costs and service debt.

New Standard Bidding Documents

- In 2013, the Ministry of Power has notified revised standard bid documents on DBFOT (September 20, 2013) and DBFOO (November 08, 2013) model after extensive inter-Ministerial consultations.
- For the purposes of UMPPs sourcing coal from allocated domestic captive coal blocks, new Guidelines (under discussion) shall replace the earlier Guidelines notified in September 2013.
- Evolution of Tariff determination can be represented as below –



Standard Power Purchase Agreement (UMPP)

- The Power Ministry in August 2015, has released draft standard bidding documents and guidelines for UMPPs based on allocated Domestic Coal Blocks.

Parameter	Guideline

Standard Power Purchase Agreement (UMPP)

Parameter	Guideline

Risks and Concerns in PPA (UMPP)

Risk / Concern	Description
Land Acquisition	<p>The process has been split up between the procurers and the successful bidder – Seller. Procurers will decide on quantity of land required and its site, but will procure critical (to be decided by them) land up to provisions of Section 23 of LARR and lease it to Op SPV prior to signing of PPA/ transfer of Op SPV. Seller will have to complete the balance procurement activities, if any, for Land-1 (e.g. actual payment of compensation & possession), as also procure Land-2 within the identified site/ land size likely through direct negotiations with the land holders to implement the project.</p> <ul style="list-style-type: none">• Such an arrangement will lead to higher land cost, implementation delays and impact bankability of the PPA/ viability of such projects.
Site Selection	<p>Procurers will decide on the site. Such large single site projects if set up as inland projects will have added challenges like inland transport logistics, transportation & handling cost, transportation leakages, water availability for operations, water arrangement etc.</p> <ul style="list-style-type: none">• It is suggested that such projects may be taken up as coastal projects with proximity to port having capacity to handle the required quantity of imported coal; coal could be transported through conveyor system.

Risks and Concerns in PPA (UMPP)

Risk / Concern	Description
Blending	<p>Procurers may, at their discretion, at any time and as many times during the Operations Period, require the Seller to blend up to 30% domestic coal with Imported Coal. Prior to issuance of notice to blend, Procurers should finalise source of domestic coal and corresponding revision of Variable Charge with Seller and obtain approval of the Commission.</p> <ul style="list-style-type: none">• The proposed process could result in different coal source/specifications every time switch over is sought; bidding process does not visualise any domestic coal specifications for the bidders
Change in Law	<p>The plant is to largely use imported coal; change in law in country of origin of coal is not included in the 'Change of Law' meaning clause.</p> <ul style="list-style-type: none">• While it is expected that the escalation rate notified by the Commission will be broad based to address coal cost changes in major coal exporting geographies, the risk is that it may not fully address/ neutralise steep changes in individual country from which coal is being imported, which may impact project viability significantly.

Risks and Concerns in PPA (UMPP)

Risk / Concern	Description
Defaults and their consequences	<p>Lenders' have been given the right to substitute, time provided for which can be extended by agreement between lenders & Procurers. In case substitution fails, Procurers can acquire the plant at miniscule cost which also will be paid as received from the Central/ State government or terminate the PPA, in which case land will no longer remain available to the Seller/lenders –the equipment etc. will have to be moved/ disposed off.</p> <ul style="list-style-type: none">• Time lines may be extended, with a reference to the Regulator and not Procurers, who are interested parties.• In case Procurers decide not to acquire the plant but terminate the PPA, land should be allowed to be retained by the project company, if considered necessary, after reference to the regulator. The rationale is that the lenders/ Seller will require time to shift/ dispose off the movable assets and the residual heavy civil structures etc. will not render the land usable for any other purpose or return to the original land owners.• In case the Procurers acquire the plant, Termination Payment should cover debt outstanding of the lenders.• Lenders should also be allowed the option to change management to restore viability.

Risks and Concerns in PPA (UMPP)

Risk / Concern	Description
Power Evacuation	<p>Power evacuation is the obligation of the Procurers. Transmission System should become available 6 months prior to Scheduled COD. Further deferment is allowed on day for day basis for period up to 2 years. LDs for delay include damages paid by Transmission Licensee as per TSA and sharing of IDC with Seller. Post consultation period etc., Seller can issue Termination notice for PPA and Termination Payment shall be paid by the Procurers to the Lenders, as and when the Procurers receive the cost of Power Station Land from Central/ State Government (amount is also limited to amount received from Government).</p> <ul style="list-style-type: none">• TSAs typically provide for very little LDs for delay. As most of the loans would have been disbursed, interest burden would almost be at peak – even 50% IDC will be a big additional burden on the Seller.• Termination should not be an option – while additional time may be permitted, tariff should be adjusted to restore Sellers' original financial position as per lenders' financial model by reference to the regulator

Risks and Concerns in PPA (UMPP)

Risk / Concern	Description
Debt Due	<p>Debt Due shall mean the aggregate of the following, expressed in Indian Rupees, outstanding on the relevant date: (a) the principal amount under the Financing Agreements excluding the principal amount that had fallen due for repayment 2 (two) years prior to the issuance of the Termination Notice by the Procurers and (b) Interest on Debt.</p> <ul style="list-style-type: none">• Debt due to the lenders should be the amount actually outstanding on the Termination Notice date plus any interest/incidentals till settlement takes place.

Model Power Supply Agreement (DBFOO)

- The Power Ministry in September 2013, released the Model Power Supply Agreement (MPSA) for projects based on Design, Build, Finance, Own, and Operate (DBFOO) model
- The MPSA framework addresses the complexities of the Public Private Partnerships (PPP), while attempting to balance interests / risks of all stakeholders

Parameter	Guideline
Fixed Charge	The Utility shall pay the supplier a Fixed Charge, determined through competitive bidding, for availability of the Power Station. The Fixed Charge determined for each accounting year shall be revised annually to reflect 30% of the variation in a composite index comprising WPI and CPI. An annual reduction of 2% in Fixed Charge has been stipulated to pass the benefit of the depreciated asset to the consumers
Fuel Charge	<p>The framework contained in the MPSA provides alternative formulations for determination of fuel costs depending on the source and pricing of fuel supplies</p> <p>Pass through in fuel costs including the cost of freight and inland transportation. The foreign exchange risk would be borne by distribution utility</p>

Model Power Supply Agreement (DBFOO)

Parameter	Guideline
Station Heat Rate	Efficiency attained by power producers shall be computed through Station Heat Rate (SHR), which needs to meet prescribed specifications in order to safeguard interests of the Utility. Achieving greater SHR shall be incentivized in the form of an enhanced fixed charge
Increase / Decrease in Fixed Charges with Heat Rate (during Testing)	<p>For every 1% decrease in Heat Rate during Testing, Fixed Charge increases by 1.5%</p> <ul data-bbox="606 725 1881 972" style="list-style-type: none">• If source of fuel is within 100km, Fixed Charge will only increase by 1%• If source of Fuel is imported or open market, Fixed Charge will increase by 2.5% <p>For every 1% increase in Heat Rate during Testing, Fixed Charge decreases by 2%</p> <ul data-bbox="606 1162 1881 1405" style="list-style-type: none">• If source of fuel is within 100km, Fixed Charge will only decrease by 1.5%• If source of Fuel is imported or open market, Fixed Charge will decrease by 3%

Model Power Supply Agreement (DBFOO)

Parameter	Guideline
Fuel Supply Agreement	Power producers shall enter into a Fuel Supply Agreement (FSA) in order to ensure generation of a pre-determined quantum of electricity, backed by sufficient supply of fuel. Prior to achievement of the financial closure, supplier will have to execute FSA for the project
Additional Fuel Supply	In the event of inadequate fuel supply under a Fuel Supply Agreement (FSA), the supplier shall make best efforts to identify additional sources of fuel supply to meet such fuel shortage. The supplier shall notify the Utility of the landed cost of such additional fuel and shall demonstrate that it will be procured at the best prices available. If the proposed landed cost is acceptable to the Utility and the Appropriate Commission, the supplier shall procure such additional fuel for the agreed price and quantity
Minimum Fuel Stock	Power producers need to stock sufficient fuel to generate sufficient supply for a period of 7 days. In case of fuel shortage only 70% of the fixed charge shall be payable by the utility
Change in Law	Any change in law or taxes occurring in jurisdiction where captive mines are located shall be deemed as Change in law for developer and its associate.

Model Power Supply Agreement (DBFOO)

Parameter	Guideline
Concessional Fuel	<p>Fuel attained by the supplier through preferential treatment or captive allocation or sale by a Government instrumentality will be categorized as concessional fuel. The supplier shall have to pay the utility a revenue share equal to the higher of -</p> <ul style="list-style-type: none">• fixed charge, and• 30% of gross sale revenue arising from such a sale
Availability of Power Station	<p>Normative plant availability factor (PAF), a metrics used for complete fixed cost recovery, should be maintained at 90%</p>
Committed Capacity	<p>A definite proportion of the installed capacity shall be utilized for production and sale of electricity to utilities with which the supplier has entered into an agreement with. In case of this capacity not being utilized owing to fuel shortage, the supplier can purchase fuel from the open market and sell the electricity to third parties</p>
Open Capacity	<p>The supplier can utilize 20% of the installed capacity to generate electricity and supply it to any third party buyer at unregulated prices on mutually agreed terms. This provision will facilitate the development of a power market that will aid power production and enhance competition in the supply of electricity</p>

Model Power Supply Agreement (DBFOO)

Parameter	Guideline (Domestic Linkage)
Cost of Fuel	Base Price Lower of: <ul style="list-style-type: none"> • Indicative price of Fuel which shall be computed from the Fuel Charge, as specified in the Bid; and • 101% of the price payable by the Supplier to CIL Variation permitted <ul style="list-style-type: none"> • In proportion to the revision in CIL price as compared to the rate specified hereinabove
Additional FSA	Base Price Lower of: <ul style="list-style-type: none"> • Current price of similar Fuel sold by CIL through e-auction or any substitute thereof; and • Actual cost of procurement
Cost of transportation of fuel	Lower of: <ul style="list-style-type: none"> • 110% of freight payable to Indian Railways • Actual cost of transportation • Escalation: Revised in proportion to revision in rail freight price as on Bid Date
Cost of Washing	Lower of: <ul style="list-style-type: none"> • Average cost of washing incurred by CIL for similar washing • Actual cost of washing • Escalation: Revised in proportion to revision in average CIL cost as on Bid Date

Model Power Supply Agreement (DBFOO)

Parameter	Guideline (Domestic Captive Mine)
Cost of Fuel	<p>Base Price Lower of:</p> <ul style="list-style-type: none">• Indicative price of Fuel computed from the Fuel Charge as specified in the Bid• 95% of the price of similar Fuel (unwashed) as charged by CIL for supply from mines in the region on the day immediately preceding the Bid Date• Price of Fuel as determined by the Appropriate Commission with reference to the Bid Date <p>Variation permitted</p> <ul style="list-style-type: none">• Escalated at a compounded annual rate of 2%; and• Revised annually to reflect 60% of the variation in WPI occurring between Bid Date and current tariff year
Cost of transportation of fuel	<p>Lower of:</p> <ul style="list-style-type: none">• 110% of freight payable to Indian Railways• Actual cost of transportation• Escalation: Revised in proportion to revision in rail freight price as on Bid Date

Model Power Supply Agreement (DBFOO)

Parameter	Guideline (Imported Coal)
Cost of Fuel	<p>Free on Board (FOB), shall be computed as the lower of:</p> <ul style="list-style-type: none">• Average of coal indices comprising<ul style="list-style-type: none">• API4 (South Africa),• Coalfax (Australia), and• Global Coal (Australia),• or any substitute thereof, or any index that the Parties may mutually agree upon, and• the actual cost <p>Indices referred to shall be reckoned on the date on which the Fuel is loaded at the port of origin</p>
Cost of transportation of fuel	<p>Lower of:</p> <ul style="list-style-type: none">• As per Bid, in US cents• 20% of the price of Fuel, as specified in the Bid plus 110% of the freight payable to the Indian Railways shall be added for inland transportation• Actual cost incurred by Supplier <p>Escalation: Revision in Freight Index computed as 40% and 60% of:</p> <ul style="list-style-type: none">• Baltic Dry Index• Singapore 380 cSt Bunker Fuel Price Index

Model Power Supply Agreement (DBFOO)

Parameter	Guideline (Captive Mines abroad)
Cost of Fuel	<p>Base Price Lower of</p> <ul style="list-style-type: none"> • the indicative US cents FOB price of the Fuel at the normative GCV applicable to the Index, as specified in the Bid; and • 80%/ 85% / 90% of the variation for a period of 6 (six) calendar months immediately preceding the Bid Date • SBI TT rate at the beginning of each quarter to be used to convert base price into INR <p>Variation permitted</p> <ul style="list-style-type: none"> • Escalation at a compounded annual rate of 4%, from Bid year
Cost of transportation of fuel	<p>Lower of:</p> <ul style="list-style-type: none"> • As per Bid, in US cents, and • 20% of the price of Fuel, as specified in the Bid plus 110% of the freight payable to the Indian Railways shall be added for inland transportation • Actual cost incurred by Supplier <p>Escalation: Revision in Freight Index computed as 40% and 60% of:</p> <ul style="list-style-type: none"> • Baltic Dry Index • Singapore 380 cSt Bunker Fuel Price Index

Risks and Concerns in MPSA (DBFOO)

Risk / Concern	Description
Financial Closure	<p>Financial closure is to be completed in 180 days followed by penalties thereafter</p> <p>FC requires 9 to 12 months depending on nature of project and kind of lenders involved</p>
Fuel supply	<p>Concessionaire gets deemed availability to the extent of 70% for non availability of fuel Supplies from CIL / Imported fuel at Market prices</p> <p>In case of supplies from captive mines, if the reserves are lower than estimated than the treatment for the same is not addressed in the bid</p> <p>The supplier should be covered for these risk or back to back coverage of the risk from the Fuel supplier</p>
Fuel Cost	<p>The proposed mechanism doesn't ensure effective pass through of fuel price risk</p> <p>The cost of fuel should be passed through based on actual cost and "as received" GCV</p>

Risks and Concerns in MPSA (DBFOO)

Risk / Concern	Description
Assignability of FSA	For successful financing of Project on non-recourse basis, Lenders would insist on assignment of Project Agreements including FSA for concessional Fuel
Fuel Stock	<p>Shortfall in Minimum Fuel Stock would lead to reduction in Deemed Availability of Project and consequently it would lead to reduction in payment of Fixed Charge by Utility to Supplier</p> <p>Minimum Fuel Stock could be delinked from Deemed Availability</p>
Substitution of Utility	<p>In the event of substitution of Utility, arrangements would be made on “best endeavour basis” and credit enhancements shall be provided by the substituted entity to bridge the gap</p> <p>Utility is the key counterparty to performance of MPSA. Further, Lenders would prefer that MPSA and its ancillary documents are in full force and effect at all times</p>

Risks and Concerns in MPSA (DBFOO)

Risk / Concern	Description
Escrow Account	<p>Revenues equal to 50% of Annual Capacity Charge should be routed through Default Escrow Account</p> <p>Default Escrow Account provides second level of payment security (LC being the first). As long as the Utility is not in default, it could freely use the receivables flowing through this account. However, in the event of default, this account should be able to service entire debt service obligation of the Utility</p>
Termination Provisions	The termination provisions for utility and supplier is un-equitable

Levelized Tariff – Cost Plus vs Competitive Bidding

- CERC had undertaken a detailed exercise to compare the tariffs being discovered through competitive bidding and cost plus tariffs. This analysis compares non UMPP bids with same plants under CERC norms under cost-plus mechanism for domestic coal
- Major assumptions used for this analysis are -
 - Capital cost is imputed cost by CERC based on unit size, technology, site, etc.
 - Interest rates taken at 7.05% p.a.
 - In spite of the fact that some assumptions like interest rate etc. are out of market for IPPs and highly volatile
 - CERC also mentions that these are conservative cost estimates; no allowance has been made for additional capitalization over the Life of the Plant.
 - Similarly coal transportation costs are also on conservative side: for example for less than 500 km, distance assumed is 100 km

Levelized Tariff – Cost Plus vs Competitive Bidding

Project	Size (MW)	State	Developer	COD Date: 1* Unit	Levelized Tariff (Rs/kWh) as per Competitive Bidding	Calculated levelized Tariff under MOU Route (Rs/kWh)	Diff.
Talwandi Sabo	3X660	Punjab, Case-2	Sterlite	Aug-12	2.8643	3.0703	0.206
Rajpura	2X660	Punjab, Case-2	L&T	Jan-14	2.89	3.4822	0.5922
Kamalanga	3X350	Haryana, Case-1	PTC/GMR	Oct. 2011	2.54 (Bus bar)#	2.6237 (Bus bar)@	0.0837
Babandh	4X660	Haryana, Case-1	LANCO	Jul-12	2.075, (Bus bar)#	2.5695@	0.4945
Jhajjar	2X660	Haryana, Case-2	CLP Power	Nov-Dec, 2012	2.996	3.3027	0.3067
Mandva	2X660	Maharashtra, Case-1	LANCO Mahanadi	Oct. 2012*	2.7	3.0062	0.3062
Tiroda Ph-I	2X660	Maharashtra, Case-1	Adani Maharashtra	Aug. 2012	2.642	2.9703	0.3283

Levelized Tariff – Cost Plus vs Competitive Bidding

Project	Size (MW)	State	Developer	COD Date: 1* Unit	Levelized Tariff (Rs/kWh) as per Competitive Bidding	Calculated levelized Tariff under MOU Route (Rs/kWh)	Diff.
Chitrangi Ph-I	3X660	MP, Case-1	Reliance	June, 2012	2.45	2.5652	0.1152
Mahan	2X600	MP, Case-1	Essar	May, 2011*	2.45	2.3119	-0.1381
Nandgaonpeth	2X660	Maharashtra, Case-1	India Bulls	Mar. 2014	3.26	3.2958	0.0358
Tiroda Ph. 2	2X660	Maharashtra, Case-1	Adani Maharashtra	Sept. 2014	3.28	2.8752	-0.4048
Mahanadi	3X600	Gujarat	KSK Energy	Mar. 2015	2.345	2.5137**	0.1687
Prayagraj	3X660	UP, Case-2	JP Associates	Jul-14	3.02	3.4673	0.4473
Sangam	2X660	UP, Case-2	JP Associates	Jan, 2014	2.97	3.3045	0.3345

* lack of clarity regarding actual COD date, assumed as obtained from CEA data.

@ No escalation in transportation cost of coal

Arrived at after subtracting Rs. 0.28/kWh of transmission charges

** Excludes transmission cost to Gujarat periphery

Levelized Tariff – Cost Plus vs Competitive Bidding

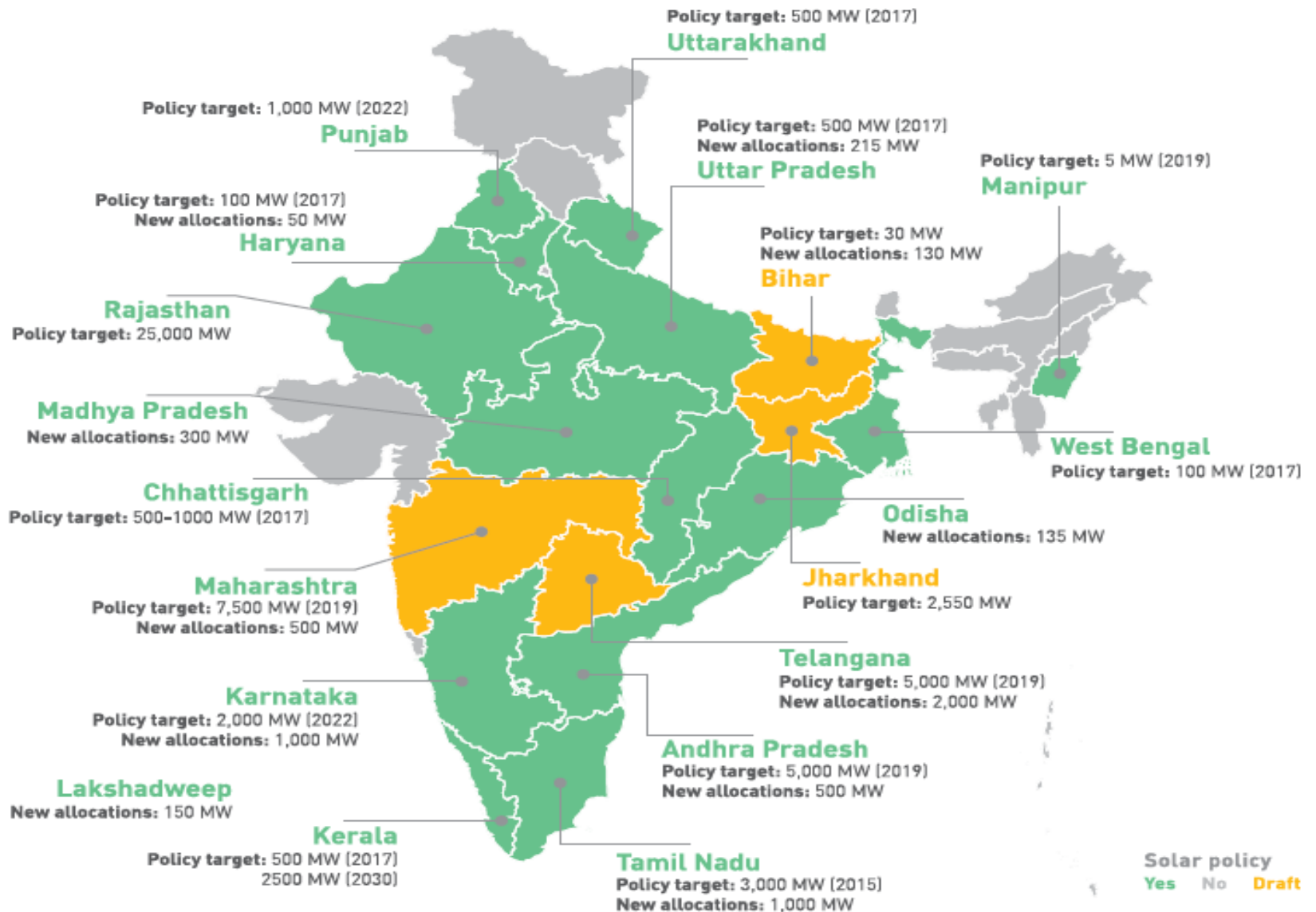
- The study has concluded that the computed prices under cost plus methodology are higher than the levelized tariffs discovered under competitive bidding in respect of 12 out of 14 projects
- It is pertinent to note that the levelized price, whether under cost plus methodology or under competitive bidding process, is not the price that consumer ultimately ends up paying. The actual price that the consumer pays depends on the actual escalations rates of coal cost, coal transportation costs, and O&M costs, etc.
- In the case of competitive bidding process, the actual price paid is also dependent on how the bid is structured in terms of escalable and non-escalable components
- Further, Bidder is under competitive pressure to quote large part of his tariff as non-escalable, which in turn reduces the amount by which tariffs can go up in future even though the actual cost escalations can be of very high order
- The risk is shared between consumer and the supplier under competitive bidding, whereas under the cost plus methodology, the risk is almost completely borne by the consumers and all escalations are generally required to be a pass through

Levelized Tariff – Cost Plus vs Competitive Bidding

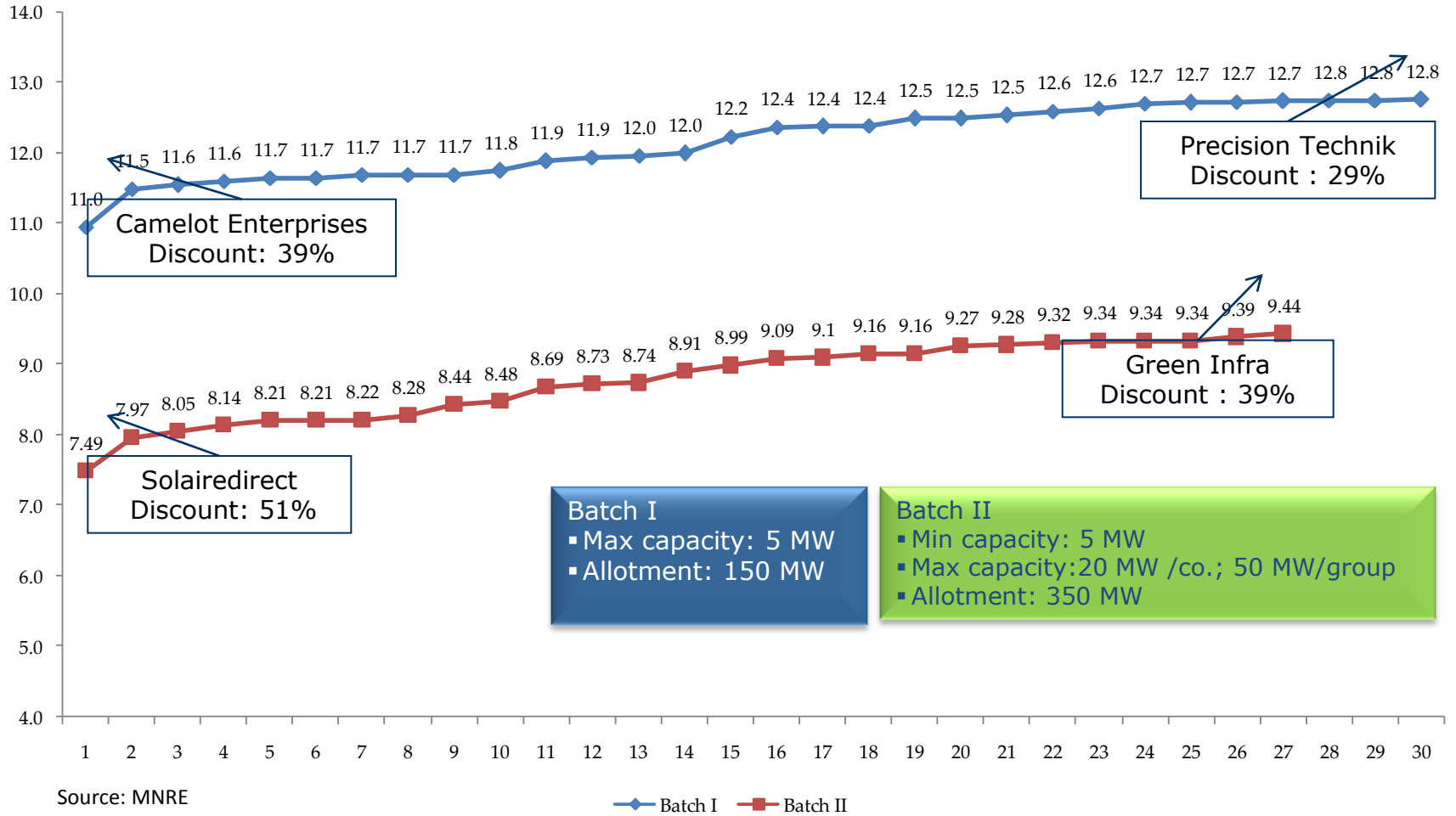
- The positive spread between bid out tariff and cost plus tariff could partly be explained on account of following:
 - Take or Pay risk associated with discoms could have led to higher fixed charges for bid out projects vs. regulated tariff projects. UDAY scheme and consequent improvement in discom finances is expected to reduce Take or Pay risk and fixed charges are expected to reduce
 - To protect RoE on account of coal availability risk, Developers may have structured the bids so as to have higher fixed charges for bid out projects vs. regulated tariff projects
 - The cost and uncertainty associated with 20% open power capacity (that is not eligible for domestic coal) and transmission/ open access charge for open capacity (approx. 50 paise per unit) is loaded on the fixed tariff. In case of regulated projects, complete power capacity is tied up and tariff is quoted at project bus bar and hence, these add-on costs are not factored in

Renewables

State Government Initiatives

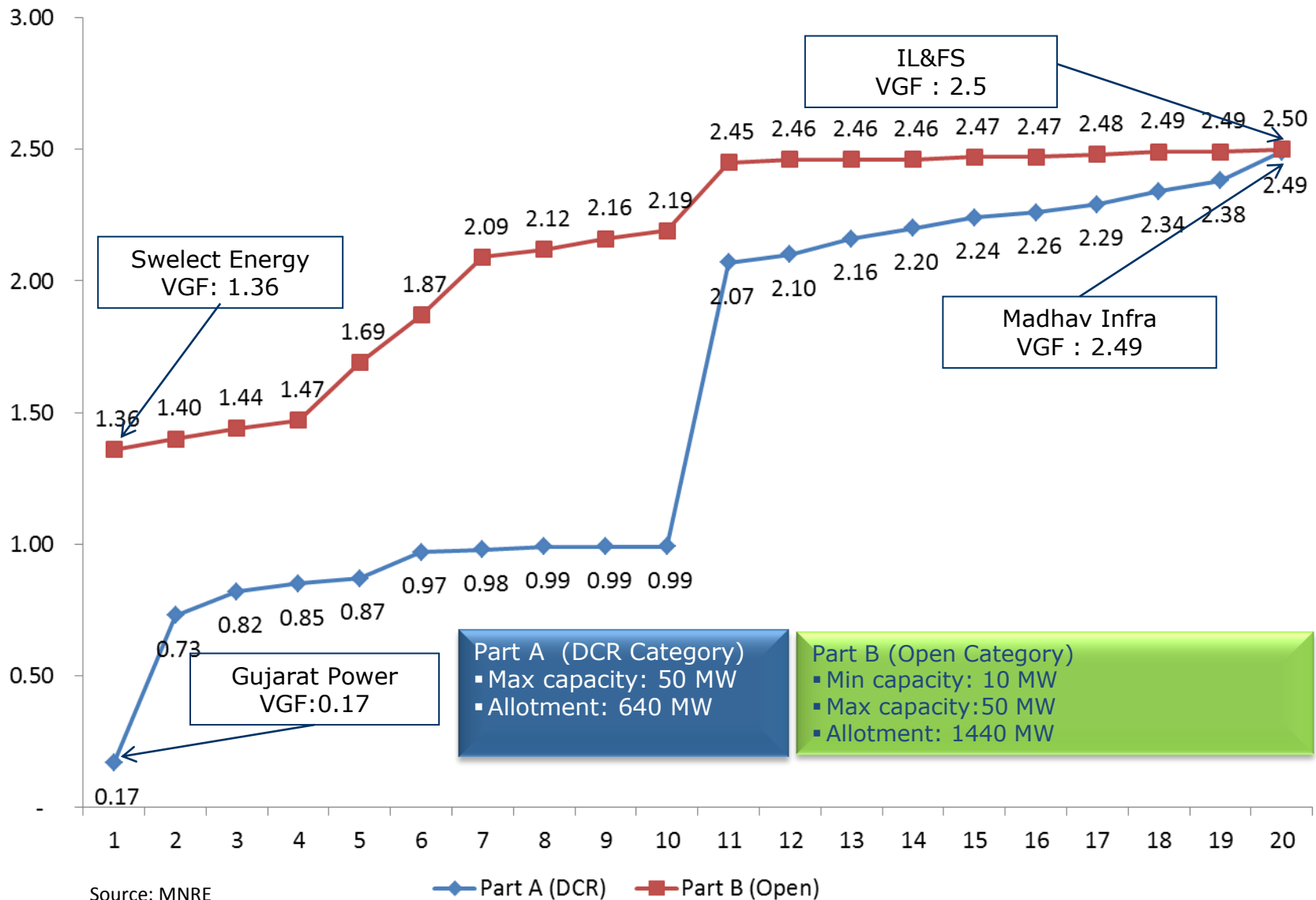


JNNSM - Trends in Solar PV Tariff Bids Phase I



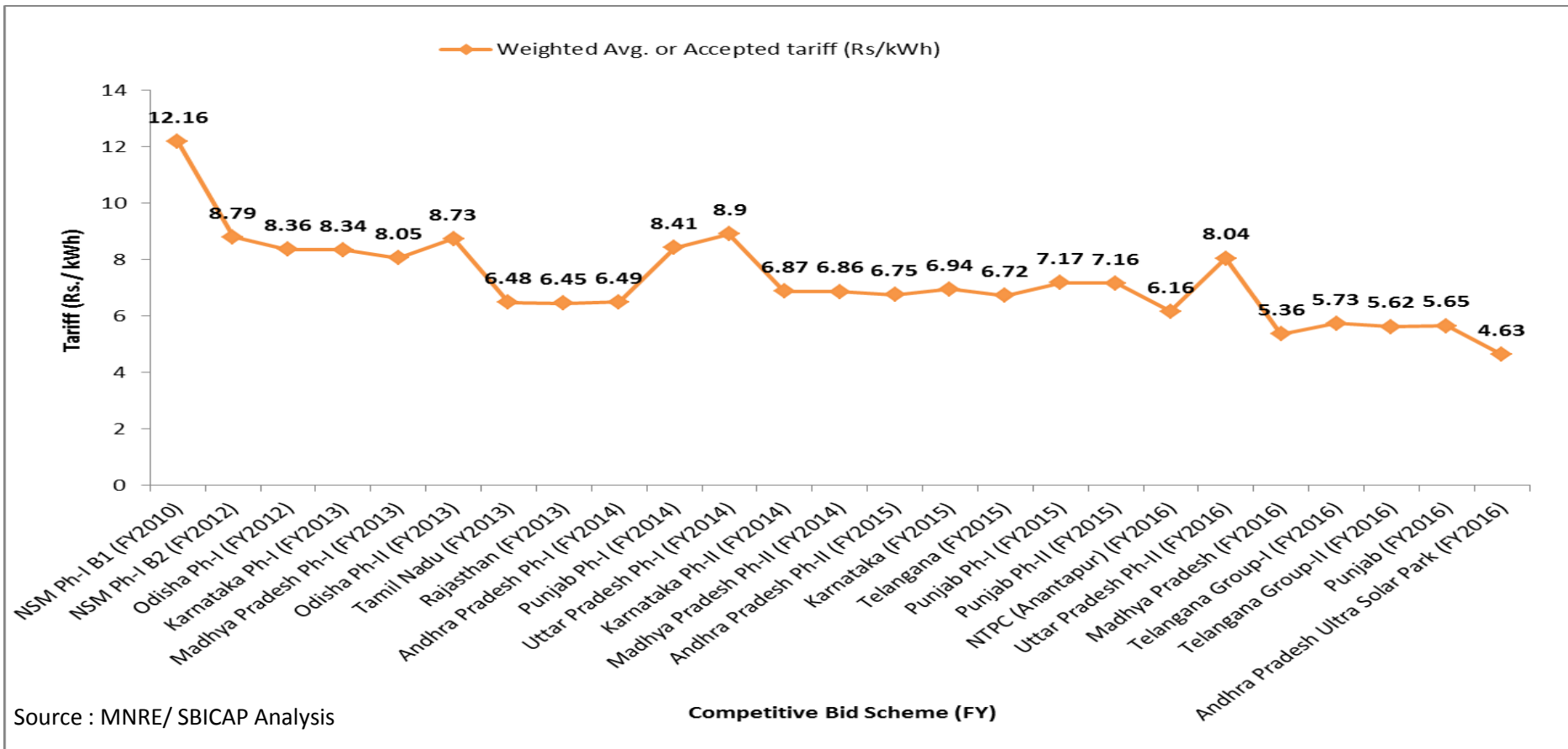
Fall in module prices have pushed down solar tariffs

JNNSM - Trends in Solar PV Tariff Bids Phase I



Top & Bottom 10 VGF Bids observed during JNNSM Phase II Batch I

Recent Trends in Solar Power Tariff



Tariffs have declined by more than 60% over last 5 years; Higher tariffs discovered in few states could partly be attributed to state specific policies and local factors like cost of land acquisition, solar radiation, available infra for project implementation etc.

Tariffs have declined from ~Rs. 7 per unit in FY 15 to ~Rs. 5.50 per unit in FY 16 mainly on account of decrease in capital & financing costs and availability of long tenor loans.

Concerns – Solar Power PPA

- Solar Power PPA - Take or Pay stipulation is a major concern
 - Model PPA for the states like Rajasthan, Tamil Nadu, UP, Telangana, Andhra Pradesh etc. doesn't have a take or pay clause in an event of default condition where the discom fails to pay to power producer. Same is the case for projects under JNSSM
 - PPPA's for these states specify that the solar power developer has the option of selling the power to third parties in case of event of default by the procurer ("Discom"). Further, non-payment by procurer for a period exceeding 90 days has been defined as one of the event of default by the procurer
 - States like MP and Gujarat, provisions like Discom's reimbursing the difference in rate between third party and PPA rate (for MP) or advance payment to tune of 3 years of tariff (for Gujarat) are available for addressing the concern
- Aggressive bids and existing PPAs – With the continuous drop in the quoted tariff, the actual viability of the projects seem uncertain. Further, due to these very low tariff the future of the legacy PPAs is at peril.

Concerns – Solar Power PPA

- Renewable power policies are not uniform across the country -
 - In certain states, PPA is executed close to COD/after project execution thus casting uncertainty over off-take resulting in discomfort to lenders
 - PPA tenors vary across the states (e.g.. 13-year tenor for wind power projects does not allow comfortable tenor for debt financing and does not leave adequate tail to accommodate any unforeseen project related challenges
 - Power banking facility benefit is not present in all states
- Frequent policy changes are causing uncertainty and affecting investment in the sector (viz. accelerated depreciation, GBI, VGF etc.)
- Resource estimation of renewable source is a challenge (solar radiation, wind, hydrology etc.) especially site specific data
- Power evacuation is a challenge as most of the renewable projects are located in remote & inaccessible locations far from evacuation infrastructure & load centres
- RPO related issues - RPO targets vary across states. In addition, enforcement of RPO targets have been lax and penalties are not being imposed for non-compliance

Transmission

Transmission Bids - Interstate

Date	SPV	BPC	Line / S/s Type	SS	Km	L1	Levelised Tariff p.a. (Rs. Cr.)
Jul-15	Maheshwaran Transmission Company Limited	REC	400KV D/C	2	254	Sterlite Tech	55.00
Jul-15	Sipat Transmission Compnay Limited	PFC	765KV D/C	1	196	Adani Power	79.00
Jul-15	Chhattisgarh Part A Transmission Limited	PFC	765KV D/C	1	273	Adani Power	132.40
Jul-15	Chhattisgarh Part B Raipur-Rajnandgaon – Warora Tranmission Limited	PFC	765KV D/C	7	297	Adani Power	178.00
Apr-15	Powergrid (Gadarwara [A] Transmission Limited)	REC	765KV D/C	2	460	PGCIL	290.15
Apr-15	Powergrid (Gadarwara [B] Transmission Limited)	REC	765KV D/C	2	460	PGCIL	256.73
Feb-15	Powergrid (Vindhyachal-Jabalpur Transmission Limited)	REC	765KV (D/C, Hexa Zebra ACSR)	0	350	PGCIL	210.99

Transmission Bids - Interstate

Date	SPV	BPC	Line / S/s Type	SS	Km	L1	Levelised Tariff p.a. (Rs. Cr.)
May-14	Instalaciones Inabensa SA (DGEN Transmission Company Limited)	PFC	400 KV (D/C, Twin moose ACSR)	2	135	Instalaciones Inabensa SA	58.40
Jan-14	NRSS XXXI-B (Kuruskshetra - Malerkotla, Malerkotla-Amritsar)	REC	400 KV (D/C, Twin moose ACSR)	0	305	Essel InfraProjects	88.7
Oct-13	ERSS Scheme VI (Darbhanga Motihari)	PFC	400 KV (D/C Quad)	2	102	Essel InfraProjects	117.4
Aug-13	RAPP 7 & 8	PFC	400 KV (D/C, Twin moose ACSR)	0	200	Sterlite Tech	36.5
Sep-13	Transmission System for Patran 400 KV s/s	PFC	400 KV	1	-	Technoelectric & Engg	27.4
Sep-13	ERSS VII (Purulia & Kharagpur Transmission)	PFC	400 KV D/C	0	273	Sterlite Tech	58.9

Transmission Bids - Interstate

Date	SPV	BPC	Line / S/s Type	SS	Km	L1	Levelised Tariff p.a. (Rs. Cr.)
Aug-13	Kudgi Transmission	REC	400 (Quad D/C)	0	497	L&T	179.6
Apr- 13	Sathpura- Astha 400 kv transmission line	REC	400 KV	0	240	KPTL	
Apr-12	Nagapattinam- Madhugiri Transmission Co. Ltd	PFC	765 (D/C , S/C)	1	250	PGCIL	98.7
Mar-12	Vemagiri Transmission System	REC	765 (D/C)	1	250	PGCIL	119.7
Feb-11	Bhopal Dhule Transmission Co.	PFC	765(975 km) & 400 (30 km) ACSR/AAAC	2	1,005	Sterlite Tech	199.5
Jan-11	Raichur Sholapur Transmission Co	REC	765 (S/C)	0	210	Patel+ Simplex+BS	29.4
Jan-11	Jabalpur Transmission Co.	PFC	765 (AAAC/ACSR)	0	635	Sterlite Tech	142.1

Transmission Bids - Intrastate

Date	SPV	Agency	Line / S/s Type	State	SS	Km	L1	Levelised Tariff p.a. (Rs. Cr.)
May '13	Jhajjar KT Transo	KPTL + Techno	400 KV	Haryana	2	100	KPTL	42
Feb' 13	Satpura – Astha	KPTL	400 KV	MP	0	240	KPTL	38
Apr '09	Western Region System Strengthening Scheme II	PGCIL	400 KV	UP	0	1031	Reliance Power	170

Point of Connection regime

➤ Features

- Central Transmission Unit (CTU / PGCIL) acts as a Counterparty for billing, collection and disbursement of Transmission Charges.
- In case of payment default, CTU to enforce recovery of payment through Letter of Credit on behalf of all the TSPs.
- Partial payment or nonpayment of transmission charges in a month by any LTTC will result in pro-rata reduction in the payouts to all the TSPs.

➤ Benefits

- For developers, the problem of dealing with multiple LTTC's for multiple projects would be eliminated
- Conducive to attracting private sector investment
- Risk of payment by DICs is borne by all ISTS Licensees on pro-rata basis
- Eliminates the risk of developer not getting tariff due to delay in COD of generator
- CTU empowered to undertake Regulation of Power Supply in event of default, thus recovering the defaulted amount.

Concerns

➤ **Relative Under-investment in power transmission**

- Power generation capacities grew at higher rate as against capacities in transmission

➤ **Long bidding process**

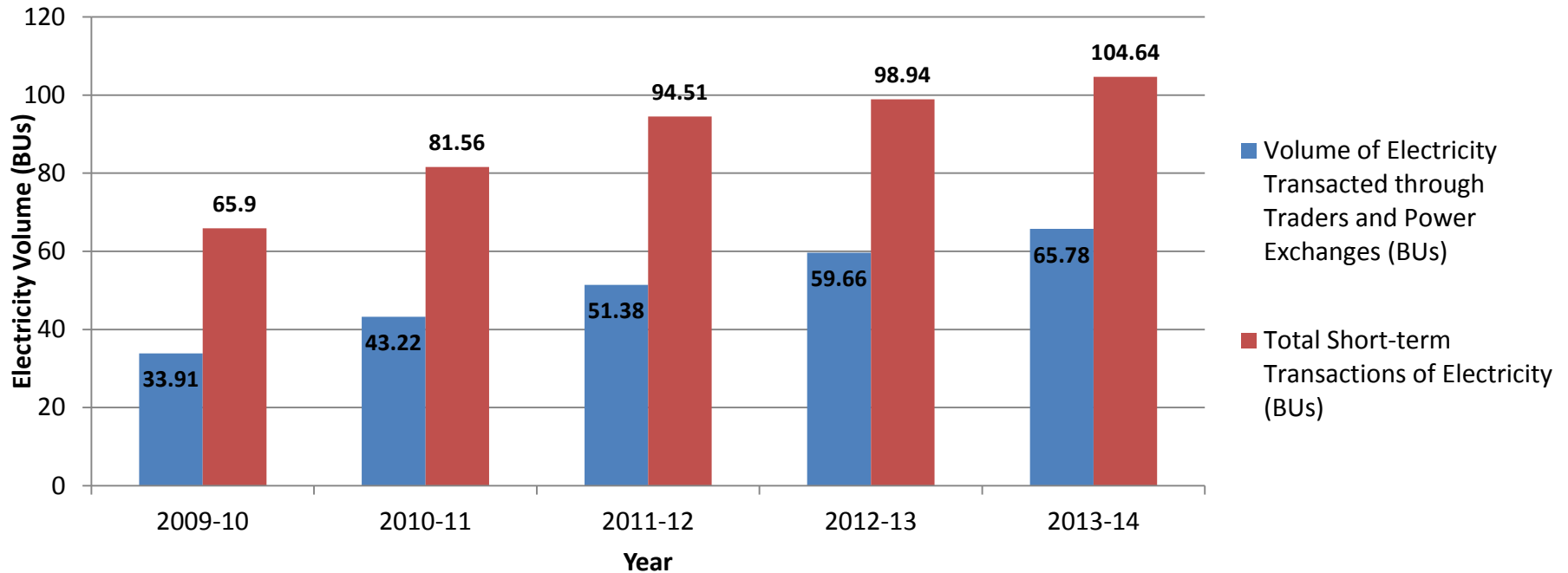
- Even with SBD, it takes 12-18 months of planning before the bid in a total 60 month from concept to commissioning for transmission projects.

➤ **Inappropriate Risk allocation and uncertain clearances**

- Uncertain and lengthy clearances and regulatory processes beyond control of developers are not provided fast redressal mechanism
- Private players wait and bear uncertainty for the authorization for 12-24 months as against PSUs which receive deemed authorization – giving clear edge in terms of time available as well as certainty

Short Term Market

Short Term Transactions - Volumes



- 2009 was 1st year for procurement of power by industrial sector consumers through power exchanges (IEX only)
- 94% increase in volume of power transacted through traders & exchanges from 2009 to 2014
- In 2014, short-term power transacted through traders & exchanges was 63 per cent of the total short term transactions

Short Term Transactions - Prices

Price of Short-Term Transactions of Electricity (Rs/Kwh)							
Period	Bilateral Through Traders				Power Exchange		UI Price in All India Grid
	RTC	Peak	Off-Peak	Wt. Avg.	IEX	PXIL	
Apr-14	4.21	3.56	3.51	4.19	3.42	3.05	2.62
May-14	4.5	3.32	3.46	4.41	3.26	3.15	2.09
Jun-14	3.93	3.12	3.54	3.91	3.71	3.63	2.97
Jul-14	4.06	4.37	3.53	4.03	3.5	3.53	2.87
Aug-14	4.15	4.82	3.98	4.15	4.33	3.68	3.14
Sep-14	4.31	4.33	3.87	4.28	4.14	3.48	2.54
Oct-14	4.61	4.77	4.15	4.56	4.33	3.45	2.22
Nov-14	4.66	5.06	3.48	4.58	2.97	2.67	1.54
Dec-14	4.37	4.32	3.45	4.33	3.2	2.85	1.84
Jan-15	4.43	4.15	3.53	4.39	2.95	2.67	1.77
Feb-15	4.38	4.57	3.6	4.33	2.87	2.7	1.62
Mar-15	4.57	4.08	3.34	4.49	2.78	2.65	1.87
Apr-15	4.29	3.05	3.64	4.20	2.68	2.57	1.81
May-15	4.07	4.13	3.55	4.00	2.49	2.37	1.96
Jun-15	3.98	3.91	3.54	3.90	2.71	2.76	1.62
Jul-15	4.07	3.60	3.57	3.99	2.47	2.70	1.86
Aug-15	4.25	3.52	3.52	4.18	2.80	2.59	2.14

Way Forward

- Indian Power Sector has come a long way in terms of liberalization
- Electricity Act 2003 combined with NEP, NTP have promoted competition / better tariff for end customer
- Regulators have to play the primary role in order to promote confidence in the sector. Apart from addressing the before-mentioned concerns, the regulators may also support by following measures -
 - A holistic approach is to be taken for development of sector wherein all the related issues including Fuel, off-take arrangement, transmission are addressed. It is essential that generation (de-licensed business) is not affected by licensing nature of other associated sector like coal, transmission etc.
 - A central registry / information sharing mechanism needs to be developed wherein developers can be provided with all the information and progress of the project.
 - Need for a robust and time-bound mechanism for disposal of petitions.
 - Further, a framework for granting interim relief to be put in place for cases where the Commission deems that bonafide grievance of the petitioner exists.

Thank You
Questions?

Annexures

Case 1 Bids

State	Quantum (in MW)	Bid Date	Developer	L1/L2- Levellized tariff (Rs. p.u.)
Rajasthan	1200	Nov 2009	Adani Power Ltd	3.24
	100	Nov 2009	GMR Kamalanga	3.81
Karnataka	150	Jan 2010	Monet Power (PTC)	3.76
	430	Jan 2010	Thermal Power Tech (PTC)	3.77
Gujarat	1000	Jan 2010	Essar Energy	2.80
Bihar	450	Mar 2010	Essar Energy	3.05
	400	Feb 2011	RKM Power Gen	4.59
Uttar Pradesh	100	Feb 2011	Vandana Vidyut Power	4.68
	300	Feb 2011	PTC- Athena	3.32
	2456	Feb 2011	Reliance Power	3.70
	580	Feb 2011	PTC-Hinduja	3.45
Andhra Pradesh	620	Feb 2011	PTC-East Coast Energy	3.48

Case 1 Bids

State	Quantum (in MW)	Bid Date	Developer	L1/L2- Levellized tariff (Rs. p.u.)
Uttar Pradesh	240	Feb 2011	Essar Power	4.09
	200	Feb 2011	Visa Power	4.19
	300	Sep 2012	NSL (Orissa)	4.48
	390	Sep 2012	PTC TRN (ACB Ltd)	4.89
Rajasthan	195	Sep 2012	PTC- MCCPL	4.517
	311	Sep 2012	PTC -DB Power	4.811
Tamil Nadu	200	Mar 2013	DB Power	4.91
	400	Mar 2013	Jindal Power Ltd	4.95
Kerala	200	Nov 2014	Jindal Power	3.6
	115	Nov 2014	Jhabua Power	4.15
	115	Nov 2014	Balco	4.29
	200	Nov 2014	Jindal India - Thermal	4.39
	150	Nov 2014	Jindal Power	4.29

Case 1 Bids

State	Quantum (in MW)	Bid Date	Developer	L1/L2- Levellized tariff (Rs. p.u.)
Andhra Pradesh	488	June 2015	East Coast Energy Ltd	4.27
	500	June 2015	NCC Power Projects	4.35
	540	June 2015	Korba West Avantha	4.49
	374	June 2015	MB Power Ltd	4.69
	400	June 2015	Jindal India Thermal Ltd	4.83
	500	June 2015	Essar Power Ltd	4.83
	200	Sept 2015	Jindal India	3.99
Tata Power Discom (Delhi)	120	Sept 2015	Balco-Chattisgarh	4.071
	374.15	Sept 2015	M B Power	4.23
	100	Sept 2015	Lanco Anpara	4.24
	400	Sept 2015	Ratan India	4.479

Approx. 6500 MW has been awarded under Case 1 bids whereas about 63000 MW thermal capacity has been added between FY13 to FY16 (till September)

Case 2 Bids

Captive Coal Based				
Project	Capacity (MW)	Bid Date	Winning Bid (Rs / Kwh)	Successful Bidder
Tilaiya (Jharkhand)	3960	Jan 2009	1.77	Reliance
Bhaiyathan (Chatts.)	1320	March 2008	0.81	Indiabulls
Sasan (MP)	3960	Dec 2006	1.19	Reliance

Imported Coal Based				
Project	Capacity (MW)	Bid Date	Winning Bid (Rs / Kwh)	Successful Bidder
Krishnapatnam (AP)	3960	Nov 2007	2.33	Reliance
Mundra (Gujarat)	4000	Dec 2006	2.26	Tata Power

Case 2 Bids

Linkage Based					
Project	Capacity (MW)	Bid Date	Winning Bid (Rs / Kwh)	Landed Coal Cost (Bid)	Successful Bidder
Rajpura (Punjab)	1320	Nov 2009	2.89	Rs 1,724/ton	L&T
Bara (UP)	1980	Nov 2008	3.02	Rs 1,351/ton	Jaypee
Karchana (UP)	1320	Sep 2008	2.97	Rs 1,305/ton	Jaypee
Jhajjar (Haryana)	1320	July 2008	2.996	-	CLP
Talwandi Sabo (Punjab)	1980	July 2008	2.864	Rs 2,018/ton	Sterlite
Anpara C (UP)	1200	June 2006	1.91	-	Lanco

The last case 2 bid was in November 2009. Since then no new project has come up.

State Government Initiatives

Rajasthan Solar Energy Policy, 2014	
Valid up to	Next notification
Nodal Agency	Rajasthan Renewable Energy Corporation Limited
Capacity Target & Period	<p>Aim to develop 25000 MW solar capacity to achieve its energy requirement</p> <ul style="list-style-type: none">• Competitive Bidding: 550 MW• Rooftop & small solar: 50 MW• Sale to Discom: 600 MW by 2017• Captive use: unlimited
Land Allotment	<p>RREC will recommend allotment of Government land to the concerned District Collector on deposit of a refundable security deposit</p> <p>Setting up solar power projects on private Khatedar land will be permitted without requirement of land conversion</p>
Other Incentives	Industrial grant, water availability, single window clearance, special provisions for mega solar power projects of 500 MW or more capacity, grant of open access
Solar park	<p>Capacity of 500 MW or more</p> <p>The state will promote development of solar park by investing up to 50% equity in the joint venture company formed for this purpose</p>

State Government Initiatives

Andhra Pradesh Solar Power Policy, 2015

Valid up to	5 years or till new policy is issued
Nodal Agency	New and Renewable Energy Development Corporation of AP Limited
Capacity Target & Period	<p>Aim to add minimum 5000 MW solar capacity in the state in the next 5 years</p> <ul style="list-style-type: none">• Sale to Discom: 2000 MW capacity phased over 5 years• Solar Park: 2500 MW over the next 5 years• Third party sale/captive use/rooftop solar: Unlimited
Incentives	<ul style="list-style-type: none">• Deemed PPP status for plants set up for sale of power to Discoms• Deemed non-agricultural status for land for the power project• Exemption of T&D charges for wheeling of power for captive/3rd party sale within the state for 10 years from COD• Intra-state open access for whole tenure or project (max 25 years)• Exemption from electricity duty for captive consumption, discom & 3rd party sale• Exemption from cross subsidy surcharge for 5 years from COD for 3rd party sale

State Government Initiatives

Andhra Pradesh Solar Power Policy, 2015

Land	To be acquired by the developer
Power Evacuation	Developer to bear cost of construction of evacuation facilities from project up to interconnection point
Solar park	<ul style="list-style-type: none">• To be developed in clusters of 500-1000 Ha• Various zones viz. Solar Power Producers, Manufacturing Zones, R&D & Training Centres• State will help building up the initial infrastructure like power evacuation, water requirements, internal roads

State Government Initiatives

Karnataka Solar Policy 2014-2021	
Valid up to	2021
Nodal Agency	Karnataka Renewable Energy Development Limited
Capacity Target & Period	<p>Aim to add minimum 2000 MW solar capacity in the state by 2021</p> <p>Utility scale grid connected projects: 1600 MW by 2021 with project size as under</p> <ul style="list-style-type: none">• Land owning farmers – 1 to 3 MW (aggregate 300 MW)• Competitive bidding – min 3 MW for Solar PV, min 10 MW for Solar Thermal• REC mechanism & IPP - min 1 MW for Solar PV, min 10 MW for Solar Thermal• Captive/group captive – no size limit• Grid connected rooftop projects: 400 MW by 2018 <p>Third party sale/captive use/rooftop solar: Unlimited</p>
Land	To be acquired by the developer

State Government Initiatives

Karnataka Solar Policy 2014-2021

Power Evacuation	Developer to bear cost of construction of evacuation facilities from project up to interconnection point
Incentives	Tax concessions in respect of Entry tax, stamp duty and registration charges as per Karnataka Industrial Policy
Solar park	Will promote Plug and Play integrated solar parks Will promote small solar parks with area not less than 100 acres Supports deployment of grid connected projects on canal corridor by water resource department on pilot basis

State Government Initiatives

Telangana Solar Power Policy 2015	
Valid up to	5 years
Nodal Agency	Energy Department, Govt. of Telangana
Capacity Target & Period	Grid connected solar power plants for sale to state discoms and 3 rd party sale within state <ul style="list-style-type: none">• Captive/group captive plants• Solar Rooftop Projects• Off grid applications• Solar Parks
Land	To be acquired by the developer, max 5 acres/MW
Implementation Period	Within time limit specified in the PPA or 2 years from date of application, whichever is earlier
Power Evacuation	Developer to bear cost of construction of evacuation facilities from project up to interconnection point

State Government Initiatives

Telangana Solar Power Policy 2015

Incentives

Incentives under the policy will be available for 10 years from COD. For availing these benefits, power generated from the solar projects has to be consumed within the state

- Single window clearance
- Deemed conversion to non-agricultural land status
- Exemption from transmission & wheeling charges for captive use within state
- Exemption from cross subsidy surcharge for 5 years and from electricity duty
- All solar power projects will be awarded “must run” status
- 100% refund of VAT/SGST for all inputs for a period of 5 years
- 100% refund of stamp duty on land

State Government Initiatives

Tamil Nadu Solar Energy Policy 2012	
Valid up to	2015
Nodal Agency	Tamil Nadu Energy Development Agency
Capacity Target & Period	Aim to add 3000 MW solar capacity in the state by 2015 <ul style="list-style-type: none">• Utility scale projects: 1500 MW (1000 MW through Solar Purchase Obligations, 500 MW through GBI)• Through REC mechanism: 1150 MW
Land	To be acquired by the developer
Power Evacuation	Developer to bear cost of construction of evacuation facilities from project up to interconnection point
GBI for Rooftop Solar	For all solar and solar-wind hybrid rooftops installed before March 31, 2014 (target capacity 50 MW) <ul style="list-style-type: none">• Rs.2 per unit for first two years• Re.1 per unit for next two years• Re.0.5 per unit for next two years
Other Incentives	Exemption from payment of electricity tax for captive use/sale to utility for 5 years

State Government Initiatives

Tamil Nadu Solar Energy Policy 2012

Solar park

Utility scale solar parks of capacity 250 MW/600 MW/650 MW with project sizes 1-5 MW, 5-10 MW and >10 MW respectively

State Government Initiatives

Uttar Pradesh Solar Power Policy 2013	
Valid up to	2017
Nodal Agency	Uttar Pradesh New and Renewable Energy Development Agency
Capacity Target & Period	Aim to add 500 MW solar capacity in the state by 2017 <ul style="list-style-type: none">• Minimum project size – 5 MW• Projects through competitive bidding – 200 MW (UPPCL to sign PPA for 10 years)
Land	To be acquired by the developer
Implementation Period	Solar PV – 13 months from execution of PPA Solar Thermal – 28 months from execution of PPA
Power Evacuation	Developer to bear cost of construction of evacuation facilities from project up to interconnection point
State Support	State government to provide budgetary support to the Nodal Agency for paying the distribution utility difference in competitive bid tariff of conventional energy and solar energy. This subsidy will not be available to projects for 3 rd party sales

State Government Initiatives

Uttar Pradesh Solar Power Policy 2013

Other Incentives	All the incentives provided under the Uttar Pradesh State Industrial Policy,2012 will be applicable Expenditure on the construction of transmission line and substation will be borne by the State Government on all the projects in the Bundelkhand region Single window clearance
Solar farms	Special incentives on case to case basis for solar farms with total investment of more than Rs.500 cr.

State Government Initiatives

Madhya Pradesh – Policy for Implementation of Solar based projects, 2012	
Valid up to	Till next notification
Nodal Agency	Madhya Pradesh Urja Vikas Nigam Ltd
Capacity Target & Period	<p>Sale to Discoms: As per RfS</p> <p>Captive/3rd Party sale outside state: Unlimited, with project size as follows:</p> <ul style="list-style-type: none"> • Solar PV: Min 0.025 MW, Max 100 MW • Solar Thermal: Min 1 MW, Max 100 MW <p>Under REC mechanism: Unlimited</p>
Land	To be acquired by the developer
Implementation Period	<p>Solar PV – 17 months from Approval to set up the project</p> <p>Solar Thermal – 24 months from Approval to set up the project</p>
Power Evacuation	Developer to bear cost of construction of evacuation facilities from project up to interconnection point
Incentives	<p>Exemption from payment of electricity duty and cess for 10 years from COD</p> <p>Will be eligible for benefits under MP Industrial Promotion Policy</p> <p>Exemption from VAT and entry tax for all solar power plant equipment</p>

State Government Initiatives

Haryana Solar Power Policy 2014	
Valid up to	2017
Nodal Agency	Haryana Renewable Energy Development Agency
Capacity Target & Period	Aim to add 1300 MW solar capacity in the state by 2022 to meet RPO obligations <ul style="list-style-type: none">• Through reverse bidding: 100 MW by 2017 (25 yr. PPA with discoms)• Others: no limit not specified
Land	To be acquired by the developer
Implementation Period	12 months from signing of PPA
Power Evacuation	Developer to bear cost of construction of evacuation facilities from project up to interconnection point
Min. Equity Requirement	For solar power projects developed by private companies, controlling shareholding of 26% is to be maintained for 3 years from COD
Other Incentives	Exemption from land use charges, external development charges etc. Benefits under the Industrial Policy of the state will be available

State Government Initiatives

Chhattisgarh State Solar Energy Policy 2012

Valid up to	2017
Nodal Agency	Chhattisgarh Renewable Energy Development Agency
Capacity Target & Period	Aim to add 500 – 1000 MW solar capacity in the state by 2017
Land	To be acquired by the developer
Implementation Period	24 months from date of allotment
Power Evacuation	Developer to bear cost of construction of evacuation facilities from project up to interconnection point
Other Incentives	<ul style="list-style-type: none">• Exemption from payment of Electricity Duty on auxiliary consumption and captive consumption within state• Exemption from VAT for all solar power plant equipment• Benefits under the State Industrial Policy such as interest subsidy, capital investment subsidy, exemption from stamp duty, exemption/concession in land premium, project report subsidy and technical patent subsidy

State Government Initiatives

Chhattisgarh State Solar Energy Policy 2012

Other
Incentives

- Cross subsidy surcharge shall not be applicable for open access obtained for 3rd party sale within state
- Single window clearance

Solar park

State will promote implementation of solar park either on its own through PPP model on cost sharing basis