



RFQ No.: 4100065659

OPEN TENDER NOTIFICATION

FOR

**CREATION AND IMPLEMENTATION OF INTELLIGENT GRID
DATA HUB (GDH)**

Tender RFQ No.: 4100065659
Due Date for Bid Submission: 16.06.2026 [17:00 Hrs.]

The Tata Power Company Limited
Mumbai, Maharashtra

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1.0 Event Information

1.1 Scope of work

Open Tenders are invited in e-tender bidding process from interested Bidders for entering into Outline Agreement of 2 Years for:

S. No.	Description	EMD Amount (Rs.)	Tender Fee (Rs.)
1	Creation and Implementation of Intelligent Grid Data Hub (GDH)	1,50,000	2,000

1.2 Availability of Tender Documents

Non-transferable tender documents may be purchased by interested eligible bidders from address given below, on submission of written application to the under mentioned and upon payment of non-refundable Tender fee.

Chief (Corporate Contracts)
The Tata Power Company Limited
Smart Center of Procurement Excellence, 3rd Floor, Sahar Receiving Station
Sahar Airport Road, Andheri East, Mumbai-400059

Tender documents may be downloaded by interested eligible bidders from TPC website www.tatapower.com with effect from 25.05.2026. In the event detailed tender documents are downloaded from TPC website or are received through email from TPC, the Tender Fee shall be compulsorily submitted either online through NEFT/ RTGS in favor of "The Tata Power Company Limited". Any such bid submitted without this Fee shall be rejected.

Bidders are requested to visit TPC website www.tatapower.com regularly for any modification/ clarification to the bid documents.

1.3 Calendar of Events

(a)	Date of availability of tender documents from TPC Website	From 25.05.2026 to 16.06.2026, 17:00 Hours
(b)	Last Date of receipt of pre-bid queries, if any	02.06.2026 up to 17:00 Hours
(c)	Last Date of Posting Consolidated replies to all the pre-bid queries as received	Will be notified prior (if required)
(d)	Date & Time of Pre-Bid Meeting (If any)	Will be notified prior (if required)
(e)	Last date and time of receipt of Bids	16.06.2026, 17:00 Hours
(f)	Date & Time of opening of Price of qualified bids	Will be notified to the successful bidders through our website / e-mail.

Note:- In the event of last date specified for submission of bids and date of opening of bids is declared as a closed holiday for TPC Mumbai office, the last date of submission of bids and date of opening of bids will be the following working day at appointed times.

1.4 Mandatory documents required along with the Bid

- 1.4.1 EMD of requisite value and validity
- 1.4.2 Tender Fee in case the tender is downloaded from website
- 1.4.3 Requisite Documents for compliance to Qualification Criteria mentioned in Clause 1.7.



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- 1.4.4 Drawing, Type Test details along with a sample of each item as specified at Annexure I (as applicable)
- 1.4.5 Duly signed and stamped 'Schedule of Deviations' as per Annexure III on bidder's letter head.
- 1.4.6 Duly signed and stamped 'Schedule of Commercial Specifications' as per Annexure IV on bidder's letter head.
- 1.4.7 Proper authorization letter/ Power of Attorney to sign the tender on the behalf of bidder.
- 1.4.8 Copy of PAN, GST, PF and ESI Registration (In case any of these documents is not available with the bidder, same to be explicitly mentioned in the 'Schedule of Deviations')

Please note that in absence of any of the above documents, the bid submitted by a bidder shall be liable for rejection.

1.5 Deviation from Tender

Normally, the deviations to tender terms are not admissible and the bids with deviation are liable for rejection. Hence, the bidders are advised to refrain from taking any deviations on this Tender. Still in case of any deviations, all such deviations shall be set out by the Bidders, clause by clause in the 'Annexure III - Schedule of Deviations' and same shall be submitted as a part of the Technical Bid.

1.6 Right of Acceptance/Rejection

Bids are liable for rejection in absence of following documents:-

- 1.6.1 EMD of requisite value and validity
- 1.6.2 Tender fee of requisite value
- 1.6.3 Price Bid as per the Price Schedule mentioned in Annexure-I
- 1.6.4 Necessary documents against compliance to Qualification Requirements mentioned at Clause 1.7 of this Tender Document.
- 1.6.5 Filled in Schedule of Deviations as per Annexure III
- 1.6.6 Filled in Schedule of Commercial Specifications as per Annexure IV
- 1.6.7 Receipt of Bid within the due date and time

TPC reserves the right to accept/reject any or all the bids without assigning any reason thereof.

1.7 Qualification Criteria

Parameter	Tata Power Requirement	Documents To be submitted by Vendor to ascertain meeting of Pre-qualification requirement
Design, Engineering, Manufacturing, Supply, Supervision of Installation, Testing and Commissioning	1. The bidder should have successfully implemented data pipeline establishments for ingesting data from IT / OT systems of the power utilities, through real time and batch ingestion at least 3 projects in last 5 years using cloud-native, scalable data storage and data warehousing and analytics. Completion certificate of implementation duly signed by the Customer is to be submitted.	1) Bidder to submit List of executed Projects with all technical and Purchaser's details. 2) Necessary PO copies & commissioning reports in respect of subject tender shall be submitted along with technical bid. 3) Bidder shall submit logical architecture solutions.

	2. The bidder should have active contract of managed services of the implemented data pipelines as mentioned above for at least 2 projects in utilities industry. Purchase Order of the active contracts to be submitted.	4) Authorization letter from OEM.
Service	<p>1. The bidder must high level relationship partner of any of the major cloud hyper scalers.</p> <p>2. Bidder should have at least 50 personnel on roll of the bidding organization with the skill set of cloud native minimum 3 persons, data warehousing minimum of 3 persons, analytics solution minimum of 3 persons with power distribution domain expertise with experience of executing similar type of projects on past.</p>	<p>1. Partner to share Manufacturer Authorization Form (MAF) certificate from OEM.</p> <p>2. Bidder shall submit a self-certification for the same no. of working professionals.</p> <p>3. Bidder shall submit CV's of the personnel's to be deployed in the project</p>
Financial	Average Annual turnover of the bidder for last three years shall be minimum INR 25 Crores.	Bidder to submit Copy of Audited balance sheet and Profit and Loss Statement with UDIN No. certificates

1.8 Marketing Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the General Condition of Contracts. Bidders must agree to these rules prior to participating. In addition to other remedies available, TPC reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the General Condition of Contracts. A bidder who violates the market place rules or engages in behavior that disrupts the fair execution of the marketplace, may result in restriction of a bidder from further participation in the marketplace for a length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace
- Breach of terms as published in TENDER/ NIT

1.9 Supplier Confidentiality

All information contained in this tender is confidential and shall not be disclosed, published or advertised in any manner without written authorization from TPC. This includes all bidding information submitted to TPC. All tender documents remain the property of TPC and all suppliers are



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required to return these documents to TPC upon request. Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

2.0 Evaluation Criteria

- The bids will be evaluated technically on the compliance to tender terms and conditions.
- The bids will be evaluated commercially on the overall all-inclusive lowest cost for the complete tender BOQ as calculated in Schedule of Items [Annexure I]. TPC however, reserves right to split the order line item wise and/or quantity wise among more than one Bidder. Hence all bidders are advised to quote their most competitive rates against each line item.
- Bidder has to mandatorily quote against each item of Schedule of Items [Annexure I]. Failing to do so, TPC may reject the bids.

NOTE: In case of a new bidder not registered, factory inspection and evaluation shall be carried out to ascertain bidder's manufacturing capability and quality procedures. However TPC reserves the right to carry out factory inspection and evaluation for any bidder prior to technical qualification. In case a bidder is found as Disqualified in the factory evaluation, their bid shall not be evaluated any further and shall be summarily rejected. The decision of TPC shall be final and binding on the bidder in this regard.

2.1 Price Variation Clause:

The prices shall remain firm during the entire contract period.

3.0 Submission of Bid Documents

3.1 Bid Submission

Bidders are requested to submit their offer in line with this Tender document. TPC shall respond to the clarification raised by various bidders and the replies will be sent to all participating bidders through e-mail.

Bids shall be submitted in 3 (Three) parts:

FIRST PART: "EMD" of Rs. 1,50,000/- (Rupees One Lakhs Fifty Thousand only) shall be submitted. The EMD shall be valid for 210 days from the due date of bid submission in the form of BG / Bankers Pay Order favoring "The Tata Power Company Limited". The EMD has to be strictly in the format as mentioned in General Condition of Contract, failing which it shall not be accepted and the bid as submitted shall be liable for rejection. A separate non-refundable tender fee of stipulated amount also needs to be transferred online through NEFT/ RTGS in case the tender document is downloaded from our website.

TPC/ TPC Bank Details for transferring Tender Fee and EMD is as below:

Account Name: The Tata Power Co. Ltd.

Bank Name: HDFC Bank, Fort Branch, Mumbai

Bank Account No. : 00600110000763

IFSC Code: HDFC0000060

SECOND PART: "TECHNICAL BID" shall contain the following documents:

- a) Documentary evidence in support of qualifying criteria
- b) Technical literature/GTP/Type test report etc. *(if applicable)*
- c) Qualified manpower available
- d) Testing facilities *(if applicable)*



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- e) No Deviation Certificate as per the Annexure III – Schedule of Deviations
- f) Acceptance to Commercial Terms and Conditions viz Delivery schedule/period, payment terms etc. as per the Annexure IV – Schedule of Commercial Specifications.
- g) Quality Assurance Plan/Inspection Test Plan for supply items (*if applicable*)

The technical bid shall be properly indexed and is to be submitted in Soft Copy through Ariba Portal only. Hard Copy of Technical Bids need not be submitted.

THIRD PART: “PRICE BID” shall contain only the price details and strictly in format as mentioned in Annexure I along with explicit break up of basic prices, Taxes & duties, Freight etc. In case any discrepancy is observed between the item description stated in Schedule of Items mentioned in the tender and the price bid submitted by the bidder, the item description as mentioned in the tender document (to the extent modified through Corrigendum issued if any) shall prevail.

FOR BIDS INVITED THROUGH E-PROCUREMENT PORTAL:

The interested bidders are requested to obtain user name and password for purpose of bid submission through Ariba portal of TPC, Mumbai

Bids have to be mandatorily submitted only through Ariba portal of TPC. Bids submitted through any other form/ route shall not be admissible

The EMD in the form of BG shall be submitted in original hard copy and then placed in sealed envelope which shall be clearly marked as below:

EMD

“Creation and Implementation of Intelligent Grid Data Hub (GDH)”

Please mention our RFQ Number:- 4100065659 on the Tender and drop the same at The Tata Power Company Limited, Smart Center of Procurement Excellence, 2nd Floor, Sahar Receiving Station, Sahar Airport Road, Andheri East, Mumbai-400059.

The envelope shall be addressed to:

**Chief (Corporate Contracts)
The Tata Power Company Limited
Smart Center of Procurement Excellence, 3rd Floor, Sahar Receiving Station
Sahar Airport Road, Andheri East, Mumbai-400059**

The envelope shall also bear the Name and Address of the Bidder along with our Tender No. and subject.

SIGNING OF BID DOCUMENTS:

The bid must contain the name, residence and place of business of the person or persons making the bid and must be signed and sealed by the Bidder with his usual signature. The names of all persons signing should also be typed or printed below the signature.

The Bid being submitted must be signed by a person holding a Power of Attorney authorizing him to do so, certified copies of which shall be enclosed.

The Bid submitted on behalf of companies registered with the Indian Companies Act, for the time being in force, shall be signed by persons duly authorized to submit the Bid on behalf of the Company and shall be accompanied by certified true copies of the resolutions, extracts of Articles of Association, special or general Power of Attorney etc. to show clearly the title, authority and designation of persons signing the Bid on behalf of the Company. Satisfactory evidence of authority of the person signing on behalf of the Bidder shall be furnished with the bid.



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A bid by a person who affixes to his signature the word 'President', 'Managing Director', 'Secretary', 'Agent' or other designation without disclosing his principal will be rejected.

The Bidder's name stated on the Proposal shall be the exact legal name of the firm.

3.2 Contact Information

All the bidders are requested to send their pre-bid queries (if any) against this tender through e-mail within the stipulated timelines. The consolidated reply to all the queries received shall be shared on respective registered mail ID by the stipulated timelines as detailed in calendar of events.

Communication Details:

Lead Contracts

Name: Mr. Atharva Dhumal
Contact No: 8369593396
E-Mail ID: atharva.dhumal@tatapower.com

Group Head Contracts:

Name: Ms. Subhanjali Sanyal
Contact No.: 022-67173927
E-Mail ID: subhanjali.sanyal@tatapower.com

3.3 Bid Prices

Bidders shall quote for the entire Scope of Supply/ work with a break up of prices for individual items and Taxes & duties. The bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total price with taxes, duties & freight up to destination at various sites of TPC. The all-inclusive prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during the execution of the supply work, breakup of price constituents.

The quantity break up shown else-where other than Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any items not indicated in the price schedule but which are required to complete the job as per the Technical Specifications/ Scope of Work/ SLA mentioned in the tender, shall be deemed to be included in prices quoted.

3.4 Bid Currencies

Prices shall be quoted in Indian Rupees Only.

3.5 Period of Validity of Bids

Bids shall remain valid for 180 days from the due date of submission of the bid.

Notwithstanding clause above, the TPC may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and responses thereto shall be made in writing.

3.6 Alternative Bids

Bidders shall submit Bids, which comply with the Bidding documents. Alternative bids will not be considered. The attention of Bidders is drawn to the provisions regarding the rejection of Bids in the terms and conditions, which are not substantially responsive to the requirements of the bidding documents.

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3.7 Modifications and Withdrawal of Bids

The bidder is not allowed to modify or withdraw its bid after the Bid's submission. The EMD as submitted along with the bid shall be liable for forfeiture in such event.

3.8 Earnest Money Deposit (EMD)

The bidder shall furnish, as part of its bid, an EMD amounting as specified in the tender. The EMD is required to protect the TPC against the risk of bidder's conduct which would warrant forfeiture.

The EMD shall be denominated in any of the following form:

- Banker's Cheque/ Demand Draft/ Pay order drawn in favor of The Tata Power Company Limited, payable at Mumbai.
- Online transfer of requisite amount through NEFT/ RTGS.
- Bank Guarantee valid for 210 days after due date of submission.

The EMD shall be forfeited in case of:

- a) The bidder withdraws its bid during the period of specified bid validity.
- Or**
- b) The case of a successful bidder, if the Bidder does not
 - i) accept the purchase order, or
 - ii) furnish the required performance security BG

3.9 Type Tests (if applicable)

As per attached Annexures

4.0 Bid Opening & Evaluation process

4.1 Process to be confidential

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the TPC's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

4.2 Technical Bid Opening

Bids will be opened at TPC Office Mumbai as per the schedule mentioned in Calendar of Events. In case of limited tenders, the bids shall be opened internally by TPC. In case of Open Tenders, the bids shall be opened in the presence of accredited representatives of bidders who may choose to be present at the time of tender opening. Technical bid must not contain any cost information whatsoever.

First the envelope marked "EMD" will be opened. Bids without EMD/cost of tender (if applicable) of required amount/ validity in prescribed format, shall be rejected.

Next, the technical bid of the bidders who have furnished the requisite EMD will be opened, one by one. The salient particulars of the techno commercial bid will be read out at the sole discretion of TPC.

4.3 Preliminary Examination of Bids/Responsiveness

TPC will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order. TPC may ask for submission of original documents in order to verify the documents submitted in support of qualification criteria.



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Arithmetical errors will be rectified on the following basis: If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.

Prior to the detailed evaluation, TPC will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.

Bid determined as not substantially responsive will be rejected by the TPC and/or the TPC and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

4.4 Techno Commercial Clarifications

Bidders need to ensure that the bids submitted by them are complete in all respects. To assist in the examination, evaluation and comparison of Bids, TPC may, at its discretion, ask the Bidder for a clarification on its Bid for any deviations with respect to the TPC specifications and attempt will be made to bring all bids on a common footing. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted owing to any clarifications sought by TPC.

4.5 Price Bid Opening

Price bids will be opened at the stipulated date and time. The EMD of the bidder withdrawing or substantially altering his offer at any stage after the technical bid opening will be forfeited at the sole discretion of TPC without any further correspondence in this regard.

4.7 Reverse Auctions

TPC reserves the right to conduct the reverse auction (instead of public opening of price bids) for the products/ services being asked for in the tender. The terms and conditions for such reverse auction events shall be as per the Acceptance Form attached as Annexure VI of this document. The bidders along with the tender document shall mandatorily submit a duly signed copy of the Acceptance Form attached as Annexure VI as a token of acceptance for the same.

5.0 Award Decision

TPC will award the contract to the successful bidder whose bid has been determined to be the lowest-evaluated responsive bid as per the Evaluation Criterion mentioned at Clause 2.0. The Cost for the said calculation shall be taken as the all-inclusive cost quoted by bidder in Annexure I (Schedule of Items) subject to any corrections required in line with Clause 4.3 above. The decision to place purchase order/LOI solely depends on TPC on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that TPC may deem relevant.

TPC reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without assigning any reason thereof.

In case any supplier is found unsatisfactory during the delivery process, the award will be cancelled and TPC reserves the right to award other suppliers who are found fit.

6.0 Order of Preference/Contradiction:

In case of contradiction in any part of various documents in tender, following shall prevail in order of preference:

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1. Schedule of Items (Annexure I)
2. Post Award Contract Administration (Clause 7.0)
3. Submission of Bid Documents (Clause 3.0)
4. Scope of Work and SLA (Annexure VII)
5. Technical Specifications (Annexure II)
6. Inspection Test Plan (Annexure VIII)
7. Acceptance Form for Participation in Reverse Auction (Annexure VI)
8. General Conditions of Contract (Annexure IX)

7.0 Post Award Contract Administration

7.1 Special Conditions of Contract

- Rate shall remain FIRM till the validity of Rate Contract.
- TPC appreciates and welcomes the engagement/employment of persons from SC/ ST community or any other deprived section of society by their BAs.
- Any change in statutory taxes, duties and levies during the contract period shall be borne by TPC. However in case of delay in work execution owing to reasons not attributable to TPC, any increase in total liability shall be passed on the Bidder, whereas any benefits arising owing to such statutory variation in taxes and duties shall be passed on TPC.
- All the terms and conditions of TPC GTC shall be applicable.

7.2 Drawing Submission & Approval

As per annexure - II

7.3 Delivery Terms

Outline Agreement shall be valid for the period of 2 Years.

Delivery should be done on milestone basis as follows:

Milestone	Delivery Timeline
Blueprinting, documentation of to be process, HLD and LLD of data extraction and ETL, Canonical data model design for silver layer.	1 Month from date of PO
End to End UAT and Production roll out Completion of OT systems data pipeline of systems (ADMS, LVIoT, LOA) and relevant dashboards in the Dashboards section.	3 Months from the date of PO
End to End UAT and Production roll out Completion of Data Pipelines with all SAP ERP and ISU ² systems along with Management of Deployed Pipeline and relevant dashboards in the Dashboards section.	5 Months from the date of PO
End to End UAT and Production roll out Completion of Data Pipelines with AMI and GIS ³ systems along with Management of Deployed Pipeline and relevant dashboards in the Dashboards section.	6 Months from the date of PO
End to End UAT and Production roll out Completion of Data Pipelines with Bespoke ⁴ systems along with Management of Deployed Pipeline and relevant dashboards in the Dashboards section.	8 Months from the date of PO
Hypercare (Post Implementation & Go-Live)	4 Months
Go Live and Management of Developed Dashboards and Data Pipelines for One Year from Completion of all 4 Milestones.	One Year from the date of Go Live of Solution (Post Go Live support



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Managed services will consist of Pipelines, Cloud infra-Management for one year.

phase starts after the Hypercare duration of 4 months after Go Live of milestone 5)

7.4 Warranty Clause

Services should be provided till contract validity tenure.

7.5 Payment Terms

For Implementation: Payment shall be released post completion of individual milestones. Individual Tender Milestone as follows:

Business Milestone	Deliverables	Payment Terms
Milestone 1: Blueprinting and documentation	Blueprinting, documentation of to be process, HLD and LLD of data extraction and ETL, Canonical data model design for silver layer.	10 % of Line item 1 in Price Schedule
Milestone 2: Data Pipeline Creation - Phase 1	End to End UAT and Production roll out Completion of OT systems data pipeline of systems (ADMS, LVIoT, LOA) and relevant dashboards in the Dashboards section.	20% of Line item 1 in Price Schedule
Milestone 3: Data Pipeline Creation	End to End UAT and Production roll out Completion of Data Pipelines with all SAP ERP and ISU ² systems along with Management of Deployed Pipeline and relevant dashboards in the Dashboards section.	30% of Line item 1 in Price Schedule
Milestone 4: Data Pipeline Creation	End to End UAT and Production roll out Completion of Data Pipelines with AMI and GIS ³ systems along with Management of Deployed Pipeline and relevant dashboards in the Dashboards section.	20% of Line item 1 in Price Schedule
Milestone 5: Data Pipeline Creation	End to End UAT and Production roll out Completion of Data Pipelines with Bespoke ⁴ systems along with Management of Deployed Pipeline and relevant dashboards in the Dashboards section & 4 Months of Hypercare Activity	20% of Line item 1 in Price Schedule
Milestone 6: Managed Services (Post implementation, Go live & Hypercare support period of 4 Months)	Go Live and Management of Developed Dashboards and Data Pipelines for One Year from Completion of all Milestones. Managed services will consist of Pipelines, Cloud infra-Management for one year.	Quarterly in Arrears.

For Managed Services:

Invoices shall be raised on Quarterly in arrears basis.

All the Payments shall made with a credit period of 30 days from the date of submission of error free invoices along with relevant supporting documents & as certified by Order Manager.



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7.6 Liquidated Damages Clause

LD deduction shall be applicable for delay in Project Go-Live at the rate of 1% of Total Contract value (Incl. of Taxes) per week of delay to a maximum of 10% of Total Contract value (Incl. of Taxes).

SLA Applicable as per Tender Scope of Work.

7.7 Contract Performance Bank Guarantee (CPBG) Clause

Bidder shall submit Contract Performance Bank Guarantee (CPBG) cum Performance Bank Guarantee of 10% of the Total order value (Incl. of Taxes) within 15 days of award of contract, valid till Contract period with additional claim period of 6 months.

Tata Power reserves the right to recover the Liquidated damages due to SLA non-compliance as stated under Service Level Agreement (SLA), from the contractor's invoices due and also from the other securities and BG available with owner.

7.8 Safety Retention

Safety Retention as per the Tata Power General Terms and Conditions shall be applicable and shall be released based on safety performance score after work completion.

7.9 Climate Change

Significant quantities of waste are generated during the execution of project and an integrated approach for effective handling, storage, transportation and disposal of the same shall be adopted. This would ensure the minimization of environmental and social impact in order to combat the climate change.

7.10 Ethics

TPC is an ethical organization and as a policy TPC lays emphasis on ethical practices across its entire domain. Bidder should ensure that they should abide by all the ethical norms and in no form either directly or indirectly be involved in unethical practice.

TPC work practices are governed by the Tata Code of Conduct which emphasizes on the following:

- We shall select our suppliers and service providers fairly and transparently.
- We seek to work with suppliers and service providers who can demonstrate that they share similar values. We expect them to adopt ethical standards comparable to our own.
- Our suppliers and service providers shall represent our company only with duly authorized written permission from our company. They are expected to abide by the Code in their interactions with, and on behalf of us, including respecting the confidentiality of information shared with them.
- We shall ensure that any gifts or hospitality received from, or given to, our suppliers or service providers comply with our company's gifts and hospitality policy.
- We respect our obligations on the use of third party intellectual property and data.

Bidder is advised to refer GTC attached at Annexure VIII for more information.

Any ethical concerns with respect to this tender can be reported to the following e-mail ID: mrpatel@tatapower.com.

8.0 Specification and standards

As per Annexure II.



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9.0 General Condition of Contract

Any condition not mentioned above shall be applicable as per GCC for Supply attached along with this tender at Annexure IX.

10.0 Safety

Safety related requirements as mentioned in our safety Manual put in the Company's website which can be accessed by:

<http://www.tatapower.com>

All Associates shall strictly abide by the guidelines provided in the safety manual at all relevant stages during the contract period.

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ANNEXURE I
Schedule for Items

Creation and Implementation of Intelligent Grid Data Hub (GDH).

Sr. No.	Description	Qty	UoM	Unit Price	Overall Price
1	Implementation of GDH	1	AU		
2	Managed Services	12	MON		
3	Change Requests (in Man-days)	200	AU		
Total Package Cost					
GST @ 18%					
Total Cost (Incl. of GST)					

NOTE:

- The bidders are advised to quote prices strictly in the above format and for all the line items as mentioned above. Failing to do so, bids are liable for rejection.
- The bidder must fill each and every column of the above format. ***Mentioning “extra/inclusive” in any of the column may lead for rejection of the price bid.***
- No cutting / overwriting in the prices is permissible.
- The unit price to be indicated in col. No. 5 should be exclusive of taxes & duties which are to be indicated in separate columns meant for the purpose.
- All other Terms & conditions shall be as per Technical Specifications, Tata Power – GTC – Supply & Tata Power – GTC – Services.



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ANNEXURE II
Technical Specifications

As per Annexure No.: VII

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ANNEXURE III

Schedule of Deviations

*Bidders are advised to refrain from taking any deviations on this TENDER. Still in case of any deviations, all such deviations from this tender document shall be set out by the Bidders, Clause by Clause in this schedule and submit the same as a part of the **Technical Bid**.*

Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the TPC's specifications:

S. No.	Clause No.	Tender Clause Details	Details of deviation with justifications

By signing this document we hereby withdraw all the deviations whatsoever taken anywhere in this bid document and comply to all the terms and conditions, technical specifications, scope of work etc. as mentioned in the standard document except those as mentioned above.

Seal of the Bidder:

Signature:

Name:

ANNEXURE IV

Schedule of Commercial Specifications

(The bidders shall mandatorily fill in this schedule and enclose it with the offer Part I: Technical Bid. In the absence of all these details, the offer may not be acceptable.)

S. No.	Particulars	Remarks
1.	Prices firm or subject to variation (If variable indicate the price variation clause with the ceiling if applicable)	Firm / Variable
1a.	If variable price variation on clause given	Yes / No
1b.	Ceiling	----- %
1c.	Inclusive of Excise Duty	Yes / No (If Yes, indicate % rate)
1d.	Sales tax applicable at concessional rate	Yes / No (If Yes, indicate % rate)
1e.	Octroi payable extra	Yes / No (If Yes, indicate % rate)
1f.	Inclusive of transit insurance	Yes / No
2.	Delivery clause acceptable	Yes / No
3.	Warranty clause acceptable	Yes / No
4.	Terms of payment acceptable	Yes / No
5.	Performance Bank Guarantee acceptable	Yes / No
6.	Liquidated damages & SLA clause acceptable	Yes / No
7.	Validity (180 days) (From the date of opening of technical bid)	Yes / No
8.	Rebate for increased quantity	Yes / No (If Yes, indicate value)
9.	Change in price for reduced quantity	Yes / No (If Yes, indicate value)
10.	Inspection during stage of manufacture	Yes / No
11.	Covered under Small Scale and Ancillary Industrial Undertaking Act 1992	Yes / No (If Yes, indicate, SSI Reg'n No.)

ANNEXURE V

Checklist of all the documents to be submitted with the Bid

Bidder has to mandatorily fill in the checklist mentioned below:-

S. No.	Documents attached	Yes / No / Not Applicable
1	EMD of required value	
2	Tender Fee as mentioned in this RFQ	
3	Company profile/organ gram	
4	Signed copy of this RFQ as an unconditional acceptance	
5	Duly filled schedule of commercial specifications (Annexure IV)	
6	Sheet of commercial/technical deviation if any (Annexure III)	
7	Balance sheet for the last completed three financial years; mandatorily enclosing Profit & loss account statement	
8	Acknowledgement for Testing facilities if available (duly mentioned on bidder letter head)	
9	List of Machine/tools with updated calibration certificates if applicable	
10	Details of order copy (duly mentioned on bidder letter head)	
11	Order copies as a proof of quantity executed	
12	Details of Type Tests if applicable (duly mentioned on bidder letter head)	
13	All the relevant Type test certificates as per relevant IS/IEC (CPRI/ERDA/other certified agency) if applicable	
14	Project/supply Completion certificates	
15	Performance certificates	
16	Client Testimonial/Performance Certificates	
17	Credit rating/solvency certificate	
18	Undertaking regarding non blacklisting (On company letter head)	
19	List of trained/untrained Manpower	



RFQ No.: 4100065659

ANNEXURE VI

Acceptance Form for Participation in Reverse Auction Event

(To be signed and stamped by the bidder)

In a bid to make our entire procurement process more fair and transparent, TPC intends to use the reverse auctions through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as technically qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid event:

1. TPC shall provide the user id and password to the authorized representative of the bidder. *(Authorization Letter in lieu of the same shall be submitted along with the signed and stamped Acceptance Form).*
2. TPC will make every effort to make the bid process transparent. However, the award decision by TPC would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of TPC, bid process, bid technology, bid documentation and bid details.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through Internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of TPC.
6. In case of intranet medium, TPC shall provide the infrastructure to bidders. Further, TPC has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case of an auction event is restarted, the best bid as already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder's final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be out-rightly rejected by TPC.
8. The bidder shall be prepared with competitive price quotes on the day of the bidding event.
9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR at TPC site.
10. The prices submitted by a bidder during the auction event shall be binding on the bidder.
11. No requests for time extension of the auction event shall be considered by TPC.
12. The original price bids of the bidders shall be reduced on pro-rata basis against each line item based on the final all inclusive prices offered during conclusion of the auction event for arriving at Contract amount.

Signature & Seal of the Bidder



RFQ No.: 4100065659

ANNEXURE VII


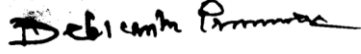



Scope of Work shall be as per attached Annexure

CONFIDENTIAL

Request for Proposal (RFP)
for
Creation and Implementation of Intelligent
Grid Data Hub (GDH)

DRAFT

Request For Proposal

	Name	Signature
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DRAFT

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1 Introduction

Background

Tata Power Intends to custom build an integrated, intelligent Data Hub that ingests, normalizes, correlates, and serves data from various OT and IT systems of TATA Power's Power distribution utility. Data hub shall act as **single, trusted data backbone** between field systems (OT) and enterprise applications (IT).

Grid Data Hub shall have features to:

- Consolidate and ingest **high-volume, high-velocity grid data**
- Convert raw data into **contextualized, time-synchronized information**
- Enable **cross-system intelligence** (GIS + SCADA + AMI + OMS+MDMS+ HES+ ERP+ Customer Billing & Customer Mobile Apps + Mobility+ bespoke Applications etc.)
- Supports **near-real-time and historical analytics**

Provides **standardized data services and advanced applications drive for** Asset Performance Monitoring System, Asset Investment Planning System, Grid Event Intelligence and Dashboarding & Reporting etc.,

Purpose of RFP The Custom build integrated Grid Data Hub shall deliver various strategic benefits to TATA Power distribution utilities as list below,

- Scalable AI/ML adoption, enabling enterprise-wide use cases such as asset lifecycle optimization, predictive modelling, forecasting, and network congestion analysis. Enhanced reliability and resilience through integrated outage, weather, sensor and asset data streams that improve SAIDI/SAIFI performance.
- Improved data quality and governance through standardized models, common taxonomies and automated validation pipelines.
- Greater interoperability with ADMS, OMS, SCADA, AMI, GIS, SAP and planning tools, enabling seamless end-to-end workflows.
- Faster decision-making as operators, planners and leadership access the same trusted, real-time data rather than relying on manual extraction or siloed reports. These reports will act as a "**Single Version of Truth**" for all users.
- Future-readiness by providing a digital foundation for DER/EV integration, grid-edge intelligence and other advanced analytics.

Tata Power intends to develop the Grid Data Hub as a Standardized Platform that can be leveraged in various distribution companies of Tata Power, Hence

- The design of the GDH data schema shall be **Canonical** for various domain entities such as electrical assets, Meters, customers etc.,
- Data extraction layer to be built for GDH shall be as per source system (the method of data extraction shall be CDC, text file, CSV file generation depending upon the compatibility of the source system) Build a common base Grid Data Hub solution that delivers standardized capabilities across all DISCOMs, while allowing incremental, configuration-driven customization to address local operational, regulatory, and network-specific needs.

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1.1 Scope of RFP

A. Deliverables

- a. Bidder shall design, build and deploy that a data hub that ingests data from various IT (ERP, Customer information system, MDMS, HES etc.,) OT (SCADA, LV-IoT, GIS etc.,) and BW systems of distribution utility for Tata Power Mumbai Operations.
- b. Bidder shall design, build and deploy a real time system to ingest, correlate and prioritize alarms received from SCADA, LV-IoT and many other systems mentioned in Section 1.3 for Tata Power Mumbai Operations.
- c. Bidder shall design, build and deploy Dashboards for Tata Power Mumbai Operations as mentioned in the Dashboards in section 1.4 of the RFP document.
- d. Bidder should consider phased delivery approach. Provide Hyper care of all systems deployed under the scope of work for 4 months from date of Go Live for individual component.
- e. Provide necessary application observability tools in terms of active pipelines, data points ingested, throughput of ingestion, throughput of ETL jobs.
- f. Provide Post Go Live Managed services for 12 months, for all systems, applications, database, data lake, PaaS components, IT infrastructure deployed as per the project scope.

1.2 Grid Data Hub

Grid Data Hub (GDH) refers to a centralized digital foundation that aggregates and harmonizes data from diverse sources such as enterprise systems (ERP), operational technology (OT), sensors, software applications, APIs and engineering systems to support analytics, visualization and decision-making.

The Grid Data Hub (GDH) shall be backbone of TATA Power's vision to create Asset Performance Management (APM) System and Asset Investment Planning (AIP) system (APM and AIP is Outside of this RFI scope) and other utilities analytics system that enhances operational efficiency. It shall be a centralized, data lake house type of foundation of the APM system that ingests, harmonizes and persistently stores diverse structured, semi-structured and unstructured data—from both Operational Technology (OT) like SCADA historian etc. and Information Technology (IT) sources like ERP etc.—through high-throughput, low-latency, batch and streaming pipelines. Also, GDH will act as single source of truth for entire APM and AIP.

The proposed architecture for common data platform is defined below:

1.3 GDH - Detailed Scope of Work

i) Data Ingestion

- GDH shall ingest 7 years of IT/OT data (4 Years of Active data and 3 years of Archival data) from data sources as mentioned in Table “Data Sources and Types” below using an enterprise grade ETL tool supporting one-time bulk and ongoing incremental loads.
- GDH shall support ingestion of time-series operational data from intermediary historian platforms (e.g., SCADA/ADMS), using industry-standard protocols such as CDC, MQTT OPC UA/DA, ICCP, IEC 60870-5-104 (IEC 104) wherever applicable.
- Implementation of Source Data extraction from ADMS will be in scope of Partner. Solution should include near real time data replication components from source databases and products (ADMS).
- GDH shall support batch ingestion from IT systems (e.g., SAP, MDMS) via secure mechanisms such as SFTP/FTPS, REST APIs (batch mode), ODBC/JDBC connectors for periodic extraction of IT data.
- GDH shall support the Real-time ingestion from the MDMS (e.g., High-Critical Events & Alarms). Solution should include near real time data replication components from source databases and products.
- GDH shall ingest electrical network model data from GIS, CYME, PSSE, and other planning/operations systems using standard model exchange formats. This data model shall include all electrical assets.
- GDH shall ingest unstructured field content including photos, videos, drawings, Civic Planning Data and documents. (e.g., SAP PM, SAP MM, SAP CRM, Wrench, Load Forecast Systems or any Object storage)
- ETL Pipeline setup for GDH shall ingest data in batch, real time, near real time (streaming data wherever applicable)
- Data ingestion shall be secure, fault tolerant with retry and recovery mechanisms. ETL tool shall transform and standardize ingested data
 - Conformance to agreed Grid Data Model / Canonical Schema
 - Data normalization, and validation
 - Time alignment and aggregation logic (e.g., meter to feeder, DT, zone)
 - Standardization of units, timestamps, asset identifiers

Details of source system

S. No	System Name	System Details
1	OT Systems ¹ (ADMS – Schneider, Transmission - SCADA)	AMDS: Schneider SCADA: OSI
2	SAP ERP ² (MM, PS, PM, FICO), SAP ISU	SAP - HANA, BW on HANA
3	AMI, GIS ³	HES / MDMS – Fluent Grid GIS - GE Electric Office
4	Bespoke Applications ⁴	Web Applications / Mobility applications - on .Net & JAVA with SQL / Oracle

Data Source and types:

Data Source	Data Type
SCADA	Structured
ADMS, DMS, OMS	Structured
PI Historian / OT Historian	Structured (Time-Series)
SAP IS-U	Structured
SAP MM	Structured
SAP PM & PS	Structured + Unstructured
SAP FICO	Structured
MDMS & Energy Audit	Structured (meter reads, events)
Weather Data	Structured + Semi-Structured (JSON/XML APIs)
GIS	Structured + Unstructured (maps, shapefiles, geospatial layers, raster images)
PSSE (Power System Simulator for Engineering)	Structured + Semi-Structured (simulation files, models)
CYME	Structured + Semi-Structured (network models, XLS/XML/MDB formats)
Lab Test Reports and Field Maintenance Forms	Structured + Unstructured (drawings, PDFs, documents)

ii) Storage

- GDH shall support open-table formats (Delta Lake, Apache Iceberg) with ACID, time-travel.
- Time-series data from OT systems using open-table formats such as Delta Lake / Apache Iceberg, enabling ACID transactions, schema evolution. GDH should support Network Topology structure, Events, Alarms, Tripping etc.
- GDH should support Event processing framework, AI ML workloads
- Ability to ensure that all unstructured files (images, documents, videos) from the IT source systems are properly linked to their operational context such as asset, feeder, customer, event, or work order — within the GDH.
- GDH shall store ingested network model data using a structured network-model schema, preserving all equipment attributes and electrical connectivity. The network topology shall be represented using graph-based or relational structures.
- GDH data storage shall have defined data curation layers such as Raw / landing zone, cleansed zone with canonical model, and curated (consumption ready) zone.

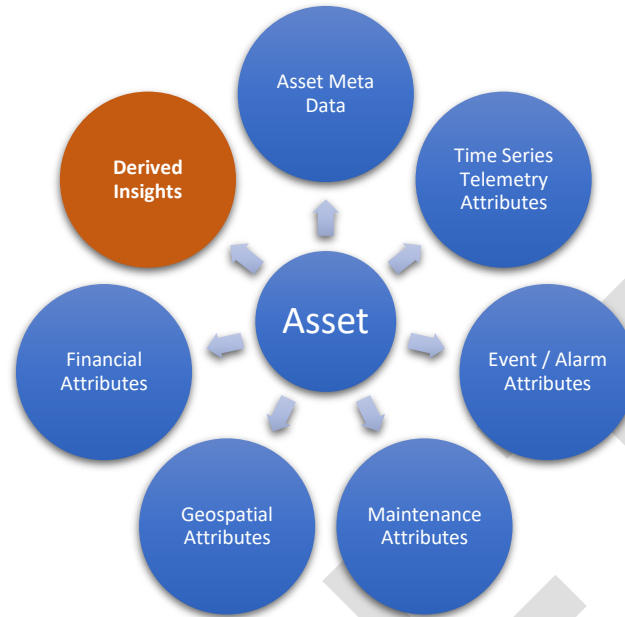


Figure 1-1 Canonical data Model Representation

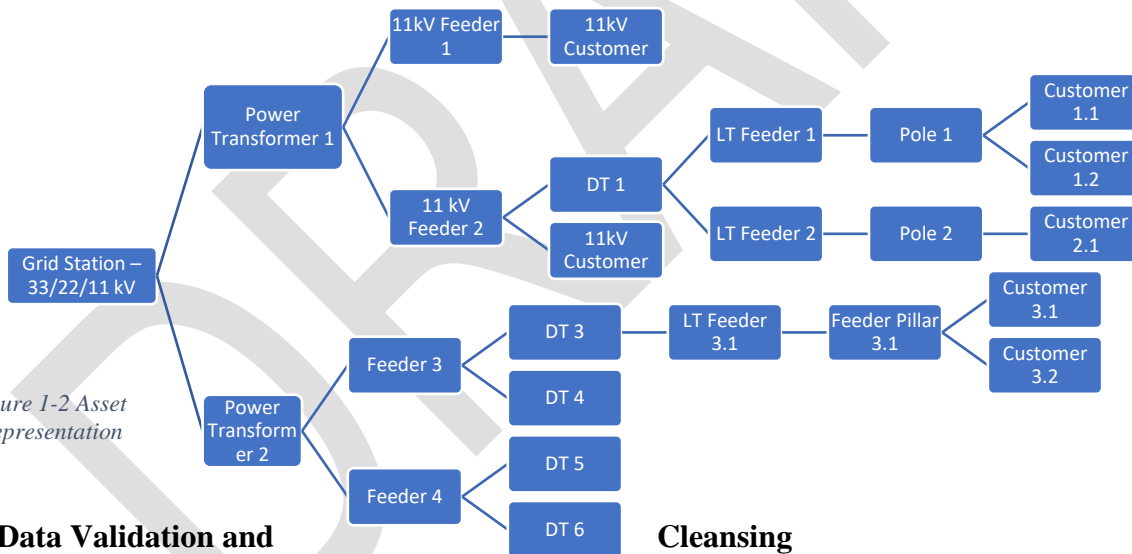


Figure 1-2 Asset Representation

Topology

iii) Data Validation and

- Rigorous checks for format,
- Validate completeness, duplicates, null values, timestamp drift (Meter RTC, Time zone mismatch) fix bad quality flags, enrich with reference data.

Cleansing

completeness, and referential integrity across

iv) ETL & Integration

- The ETL layer shall perform end-to-end data preparation and integration, including validation, cleansing, enrichment, transformation, and conversion of source IT/OT data into GDH-compatible

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standardized formats (Delta / Iceberg), and orchestrate the loading into curated tables/zones within the GDH.

- The ETL layer shall manage secure data exchange and operational reliability, including token-based access control, throttling, encryption, pipeline monitoring, message failure handling, retries, and SLA-based alerting.
- Implementation of Source Data extraction for ADMS will be in scope of Partner. Partner should include the cost of CDC/ Replication Agents if required.

v) Data Modelling

- GDH shall create curated, analytics-ready data marts to provide standardized, high-quality datasets for reporting and advanced analytics. (Example: daily/weekly/monthly consumption aggregates derived from interval meter reads — to support operational dashboards, billing analytics, and load forecasting).
- GDH should have canonical schema design for domain entity models. This will be extended to streams as well. Refer image Figure 3-1 and Figure 3-2

vi) Data Volumetrics

The following table depicts the various systems integrated with GDH and their daily data volumes in GB.

Business System	Data Source	No. of Tables / Entity / Files	Initial Data Load in GB	Daily Incremental Size in GB
SAP ERP	Flat Files / CSV	20	700	0.5
SAP ISU	Flat Files / CSV	10	1500	0.5
ADMS (Schneider)	MS SQL	20	1000	5
OSI SCADA	Mongo DB & CASSANDRA	15	1000	2
MDM	Flat Files / CSV	10	15000	6
GIS	Flat Files / CSV	2	500	0.2
Other Apps	Flat Files / CSV	10	300	0.7
		Total	20000	15

No. of Entities might change based on the requirements captured during discovery workshop.

vii) Data Governance

- GDH will support the End-to-End Lineage tracking and Metadata catalog
- GDH shall maintain centralized master and reference data definitions, ensuring consistency of key entities (assets, locations, feeders, consumers, meters, etc.) across IT & OT domains.
- GDH shall support the Audit Trails - Track all data changes, with timestamp + user ID.
- GDH shall support the Role-based access, token-based API access, encryption at rest/in-transit.

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- GDH shall support configurable data retention and automated purging policies aligned with regulatory, operational, and storage optimization requirements. (Retention of 10 years)

viii) **Data Sharing & Accessibility**

- GDH should have capability to expose REST API / Graph APIs / SFTP to External Systems (Like APM, AIP, Power Planner etc.,)
- GDH shall provide SQL query capabilities through authorized SQL engines, enabling controlled data access.
- GDH shall also have the capability to share data to external applications / downstream applications via streaming, batch files.

ix) **Observability**

- GDH shall enable users with both application and Business level observability
- Ensure proactive health checks, performance monitoring, and actionable insights across all platforms, pipelines, and applications involved in the project.

Platform & Pipeline Monitoring:

- Continuous monitoring of clusters, workspaces, jobs, endpoints, and data ingestion pipelines.
- Monitor delta tables for schedule adherence, schema drift, throughput, and performance.
- Define SLAs for job execution and pipeline availability; generate alerts for deviations.

Observability & Logging:

- Centralized logging and metrics collection for clusters, jobs, storage, and costs.
- Standardize log retention, indexing, and searchability for troubleshooting and audit purposes.
- Maintain dashboards for real-time visibility of job status, data freshness, KPIs, system health, and cost utilization.

Alerting & Incident Management:

- Define actionable alerts with clear escalation paths (L1 → L2 → on-call).
- Implement automated notification and remediation scripts for critical failures where feasible.
- Track incidents, root cause analysis (RCA), and remediation actions in a decision register or incident log.

Performance & Optimization Insights:

- Provide dashboards and reports with recommendations for cluster sizing, query optimization, job scheduling, and resource utilization.
- Identify recurring failures or performance bottlenecks and provide actionable insights to improve system reliability.

Outcome:

- Ensure complete visibility, proactive monitoring, and fast resolution of operational issues, enabling smooth project execution and adherence to SLAs.

1.4 Dashboards

Tata Power is undertaking a digital transformation initiative to establish a unified, real-time view of grid operations, assets, outages, alarms, and customer service. As part of this initiative, Tata Power seeks to implement a Custom Dashboarding and Visualization platform that will seamlessly consume data from the Grid Data Hub, deliver role-based interactive insights, and enable faster, data-driven operational and management decision-making. Tata Power Mumbai has identified sixteen critical dashboards and reports for a unified grid view and real-time insights across TPCL's operations:

Sr. No	Dashboard	Business Objective	Core Use cases	Components to be developed
1	Asset Detail Dashboard	Provide a single, trusted view of asset location, condition, utilization and financial exposure across network hierarchy (Substation → Feeder → DT).	<ul style="list-style-type: none"> • Location-wise installed asset visibility • Inventory availability by depot • PM order pendency & ageing • High-risk asset identification • New connection pendency mapping 	Visualization
2	Asset-wise Loading Dashboard (33/22/11 kV, PTR, DTR)	Ensure safe utilization of network assets and prevent overload-driven failures.	<ul style="list-style-type: none"> • Overload & underload identification • Geo-spatial visualization of transformer loading • Peak & sustained load trends 	Visualization
3	24x7 Load Curve	Enable demand forecasting, peak shaving and operational planning using granular load behavior.	<ul style="list-style-type: none"> • Demand & energy analytics • Peak detection & slicing • Supply-demand correlation 	AI/ML and Visualization
4	Power Purchase Cost, Portfolio for Power Procurement	Optimize power procurement cost while ensuring reliability and regulatory compliance.	<ul style="list-style-type: none"> • Source-wise power cost analysis • Short-term vs long-term PPA optimization 	AI/ML and Visualization
5	Consumer Dashboard	Provide a 360° view of consumers to improve revenue assurance and service quality	<ul style="list-style-type: none"> • Consumer segmentation • Unmapped active consumer identification • Consumption behavior analytics 	Visualization
6	AT&C Losses Dashboard	Measure, monitor and reduce technical & commercial losses at granular levels.	<ul style="list-style-type: none"> • Non-actual billing detection • Arrear analytics 	Visualization

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			<ul style="list-style-type: none"> • Location-wise AT&C loss mapping 	
7	Level-wise Energy Balance	Establish energy accountability across every network level.	<ul style="list-style-type: none"> • Grid → Consumer energy flow analysis • Loss point identification 	Visualization
8	Reliability Indices (SAIFI/SAIDI)	Improve network reliability and regulatory performance.	<ul style="list-style-type: none"> • Monthly SAIDI/SAIFI tracking • Critical feeder identification 	Visualization
9	Power Quality Dashboard	Proactively identify and mitigate voltage and power quality issues.	<ul style="list-style-type: none"> • Voltage & PF anomaly detection • Complaint correlation 	Visualization
10	Wheeling Cost, Tariff	Ensure tariff transparency and regulatory compliance.	<ul style="list-style-type: none"> • Tariff vs cost analysis • Consumer category impact 	Visualization
11	CAPEX, OPEX, Capitalization	Track project execution and capitalization efficiency.	<ul style="list-style-type: none"> • WIP ageing • Project-wise drilldown 	Visualization
12	Safety Dashboards	Improve workforce and public safety outcomes.	<ul style="list-style-type: none"> • Incident analytics • High-risk area identification 	Visualization
13	Day Ahead Forecast	Enable accurate load planning and scheduling.	<ul style="list-style-type: none"> • Day-ahead demand forecasting 	AI/ML and Visualization
14	Load Growth CAGR Comparison	Support long-term planning and capex decisions.	<ul style="list-style-type: none"> • CAGR computation by region/category 	Visualization
15	Green Data Dashboards		<ul style="list-style-type: none"> • Real-time visibility into operational and sustainability KPIs 	AI/ML and Visualization
16	Automated Material and Equipment Reconciliation	Update installation status of materials (such as cables) in SAP, automatically analyze issued versus installed quantities, generate reconciliation and vendor service quantity reports and provide a real-time reconciliation dashboard for continuous tracking.	<ul style="list-style-type: none"> • Improved accuracy in material and equipment tracking • Reduced manual effort and lower risk of errors • Faster and more transparent reconciliation process 	Visualization
17	Self-Service Dashboard Platform		User can build their own dashboard by choosing the data fields, drag and	Self-Service Dashboard Platform

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			drop charts, define filter criteria, drill-down, save and share dashboard	
--	--	--	---	--

In addition to above business requirements, following requirements should be considered as part of scope:

- The dashboard platform shall provide rich interactive features, including drill-down, filtering, search, and time-based slicing, to enable detailed operational and analytical insights.
- The solution shall be horizontally scalable to support increasing data volumes, concurrent users, and future functional growth without performance degradation.
- SSO must be implemented to integrate with enterprise AD
- Role-based access control (RBAC) must restrict dashboards, data sets, and actions.
- All data shall be encrypted in transit (TLS).
- It must consume data from the Grid Data Hub.
- Some of the dashboards mentioned above might require application of AI/ML algorithm to derive data

Key Deliverables:

- End-to-end high level and low-level design of entire solution.
- Design and implement gold layer for aggregated data, required in dashboard.
- Design and implement semantic layer, required in dashboard.
- Development, Implementation and deployment dashboard solution.
- AI/ML component to derive certain data elements in Dashboard.
- Monitoring and operational strategy for the solution.

1.5 Cloud Infrastructure Management

Cloud Components:

The bidder shall attach the BoM and Bo of the cloud components that are proposed in the solution and shall also provide the hyperlink from the cost calculator from the official portal of the cloud service providers.

1.6 Cyber Security Requirements

The selected bidder shall ensure that all components of the solution comply with Tata Power's cybersecurity standards, applicable legal and regulatory requirements (including but not limited to CERT-In and CEA guidelines), and industry best practices (e.g., ISO/IEC 27001).

1. Security Architecture & Access Control

- Implement defence-in-depth design, including secure network segmentation and least-privilege access.
- Enforce strict Role-Based Access Control (RBAC) and Attribute-Based Access Control (ABAC) integrated with Tata Power's central directory and Multi-Factor Authentication (MFA).

2. Data Protection

- Encrypt data at rest and in transit using approved cryptographic standards.
- Implement data masking and row/column-level security for sensitive data.

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- Ensure all data is retained for one year and securely archived or deleted thereafter as per compliance requirements.

3. Monitoring & Compliance

- Enable comprehensive logging and integrate with Tata Power's SIEM solution (Microsoft Sentinel).
- Maintain complete audit trails for user activities and data changes.
- Support periodic security assessments, vulnerability scanning, and timely patching.
-

4. Incident Response & Continuity

- Establish and document an incident response plan, including reporting and escalation procedures.
- Implement backup and disaster recovery strategies meeting defined RTO and RPO requirements.

5. Security Deliverables

Security architecture document and access control matrix.

- Data protection and encryption plan.
- Yearly vulnerability and patch compliance reports.
- Incident response and audit trail documentation.

2 Qualifying Criteria

The qualifying requirements for the bidder are mentioned below. The bidder who meets the following requirement will only be entitled for further technical & commercial evaluation.

Parameter	Tata Power Requirement	Documents To be submitted by Vendor to ascertain meeting of Pre-qualification requirement
Design, Engineering, Manufacturing, Supply, Supervision of Installation, Testing and Commissioning	<p>1. The bidder should have successfully implemented data pipeline establishments for ingesting data from IT / OT systems of the power utilities, through real time and batch ingestion at least 3 projects in last 5 years using cloud-native, scalable data storage and data warehousing and analytics. Completion certificate of implementation duly signed by the Customer is to be submitted.</p> <p>2. The bidder should have active contract of managed services of the implemented data pipelines as mentioned above for at least 2 projects in utilities industry. Purchase Order of the active contracts to be submitted.</p>	<p>1) Bidder to submit List of executed Projects with all technical and Purchaser's details.</p> <p>2) Necessary PO copies & commissioning reports in respect of subject tender shall be submitted along with technical bid.</p> <p>3) Bidder shall submit logical architecture solutions.</p> <p>4) Authorization letter from OEM.</p>
Service	<p>1. The bidder must high level relationship partner of any of the major cloud hyper scalers.</p> <p>2. Bidder should have at least 50 personnel on roll of the bidding organization with the skill set of cloud native minimum 3 persons, data warehousing minimum of 3 persons, analytics solution minimum of 3 persons with power distribution domain expertise with experience of executing similar type of projects on past.</p>	<p>1. Partner to share Manufacturer Authorization Form (MAF) certificate from OEM.</p> <p>2. Bidder shall submit a self-certification for the same no. of working professionals.</p> <p>3. Bidder shall submit CV's of the personnel's to be deployed in the project</p>
Financial	Average Annual turnover of the bidder for last three years shall be minimum INR 25 Crores.	Bidder to submit Copy of Audited balance sheet and Profit and Loss Statement with UDIN No. certificates

3 Evaluation Criteria

Technical Evaluation:

- Bids shall be evaluated based on submitted technical proposal which shall cover the justification for the parameters as given below.
- Only those bids which fulfil the prequalification requirement mentioned in “Qualifying Requirement” section above will be evaluated.

4 Milestone and Payment Terms

Business Milestone	Deliverables	Completion Timeline	Payment Terms
Milestone 1: Blueprinting and documentation	Blueprinting, documentation of to be process, HLD and LLD of data extraction and ETL, Canonical data model design for silver layer.	1 Month from date of PO	10 % of Line item 1 in Price Schedule
Milestone 2: Data Pipeline Creation - Phase 1	End to End UAT and Production roll out Completion of OT systems data pipeline of systems (ADMS, LVIoT, LOA) and relevant dashboards in the Dashboards section.	3 Months from the date of PO	20% of Line item 1 in Price Schedule
Milestone 3: Data Pipeline Creation	End to End UAT and Production roll out Completion of Data Pipelines with all SAP ERP and ISU ² systems along with Management of Deployed Pipeline and relevant dashboards in the Dashboards section.	5 Months from the date of PO	30% of Line item 1 in Price Schedule
Milestone 4: Data Pipeline Creation	End to End UAT and Production roll out Completion of Data Pipelines with AMI and GIS ³ systems along with Management of Deployed Pipeline and relevant dashboards in the Dashboards section.	6 Months from the date of PO	20% of Line item 1 in Price Schedule
Milestone 5: Data Pipeline Creation	End to End UAT and Production roll out Completion of Data Pipelines with Bespoke ⁴ systems along with Management of Deployed Pipeline and relevant dashboards in the Dashboards section & 4 Months of Hypercare Activity	8 Months from the date of PO	20% of Line item 1 in Price Schedule
Milestone 6: Managed Services (Post Go live & Hypercare support period of 4 Months)	Go Live and Management of Developed Dashboards and Data Pipelines for One Year from Completion of all 4 Milestones. Managed services will consist of	One Year from the date of Go Live of Solution (Post Go Live	Quarterly in Arrears.

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Business Milestone	Deliverables	Completion Timeline	Payment Terms
	Pipelines, Cloud infra-Management for one year.	support phase starts after the Hypercare duration of 4 months after Go Live of milestone 5)	

5 Onsite and Offshore Resource Requirements

➤ Onsite Deployment

- Selected bidder to enable deployment of dedicated resources at Tata Power Project office for face-to-face interactions.
- Onsite resources to participate in finalization of design, workshops, reviews, and critical decision-making activities.
- Bidder shall maintain a comprehensive Decision Register at each stage of the project, documenting all key decisions, approvals, and rationale for traceability and audit purposes.
- Bidder shall maintain a comprehensive Decision Register at each stage of the project, documenting all key decisions, approvals, and rationale for traceability and audit purposes.
- Expenses for Onsite resources shall be borne by the bidder.

➤ Offshore Development Centre

- Offshore development centre can be managed by the bidder/partner.
- Bidder responsible for onboarding all onshore / offshore resources with necessary laptops, software, and access provisions.

➤ Data Security & Compliance:

- All resources (onsite and offshore) must comply with Tata Power's data leakage guidelines.
- No data from Tata Power's environment is to be copied, transferred, or taken out of the environment under any circumstances.
- Laptops and devices used by bidder resources must meet Tata Power's security, access, and encryption standards.
- All laptops and devices must be installed with information security (InfoSec) provided software.

➤ Access & Environment Management:

- Ensure proper environment access, accounts, and permissions for each resource.
- Compliance with platform-specific security policies for AWS, Databricks, and related systems.

6 Price Schedule

S. No	Line-Item Description	Qty	UoM	Price in Lakhs (Before Taxes)	App. Taxes	Price in Lakhs (Inclusive of Taxes)
1	Implementation of all Milestones from 1 to 6	1	EA			
2	Managed Services Cost for the entire implementation – 12 Months from End of Hypercare	12	Monthly			
Miscellaneous Price						
3	Change Request Cost	200	Man Days			

7 Documentation Requirement

During the **Delivery Phase**, the bidder shall provide the following set of documents to ensure transparency, traceability, and completeness of the implemented solution. These documents must be **version-managed**, with each iteration reflecting updates, approvals, and change history. The documents listed below cover the full lifecycle of solution delivery, including architecture, design, data pipeline, data modelling, governance, deployment, and operations.

The bidder must adhere to standard documentation practices, including:

- Maintaining a **Document Version History** (Version, Date, Author, Reviewer, Change Summary).
- Providing **Approval and Sign-off** sections for key stakeholders.
- Ensuring **consistency in terminology, formatting, and structure** across all documents.

The required documents are summarized in the table below:

Category	Document	Purpose / Content
Architecture	SAD (Solution Architecture Document)	High-level solution overview, business alignment, functional & non-functional requirements, deployment model
	TAD (Technical Architecture Document)	Detailed technical architecture – infra, network, APIs, cloud/on-prem topology, integrations
Design	HLD (High-Level Design)	Logical design of modules, components, interfaces, and major data flows
	LLD (Low-Level Design)	Detailed design – DB schema, APIs, transformations, pseudo-code, data mappings
	SLD (System/Software Level Design)	Component-level specifications, control flows, module internals
Data-Specific	Data Pipeline Design Document	Source-to-target mapping, ingestion methods, orchestration, lineage, error handling
	Data Modelling Document	Conceptual, logical, physical models; ERDs; fact & dimension tables; naming conventions

Category	Document	Purpose / Content
	Data Dictionary / Metadata Document	Business + technical definitions, field-level metadata, PII classification
	Data Governance Document	Data ownership, stewardship, masking rules, retention & archival policies
Supporting	Requirements Traceability Matrix (RTM)	Links business requirements → design → test cases
	Security & Compliance Document	IAM, RBAC, encryption, compliance standards, audit trails
	Deployment Guide	CI/CD, environment configs, release process
	Operations / Runbook	Monitoring, alerting, incident response, support procedures
	Testing Strategy Document	Unit, SIT, UAT, performance, regression test strategy
Training Modules	Video/ PDF Manual, 1. Overview of GDH 2. User Manual 3. Maintenance manual 4. Creation of new reports/dashboards	To help user for self-learning from the documents

8 Managed Services & Change Requests Requirements

After successful deployment and handover of the projects, the selected bidder shall provide **Managed Services** for the entire Data Platform. The services shall ensure **continuous availability, optimal performance, governance, and end-user support** across all systems and data lakes implemented under the scope of this RFP.

The services must align with **Tata Power's operations framework** and comply with enterprise **cloud, security, and data governance policies**, ensuring seamless operations, high data quality, and reliable access for all authorized stakeholders.

A. Platform Monitoring & Administration

- a. Databricks foundation extension and customization is part of the scope.
- b. Databricks Platform Monitoring: Continuous health check of clusters, workspaces, jobs, and endpoints.
- c. Job Monitoring & Failure Management: Proactive monitoring and troubleshooting of scheduled and ad-hoc ETL/ELT jobs.
- d. Performance Tuning: Optimization of queries, cluster configurations, and job parameters for cost-efficiency and speed.
- e. Cost Management: Monthly report on cloud / PaaS usage tagged by business unit and function. Allocation of run cost based on Tata Power's tagging schema and distribution rules. Like this Managed Support should be bifurcated business unit and function wise.
- f. Observability Dashboards: Maintenance and updates to dashboards providing real-time insights into jobs, usage, data freshness, and KPIs.

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- g. Centralized Command Centre: Continuous L1/L2 alert triage, ticket lifecycle management, and SLA tracking
- h. Automated Remediation: Execution of auto-restart and alert-driven scripts for failed jobs or pipelines
- i. Delta/Storage Maintenance: Governance of Delta tables including retention, optimize/vacuum cadence, partition repair, and stats refresh

B. Security, Access, and Compliance

- a. User Lifecycle Management:
 - i. Provisioning/de-provisioning of users.
 - ii. Management of RBAC and ABAC policies in Databricks and associated applications.
- b. Data Security and Governance:
 - i. Ongoing enforcement of data masking, row-level security, and column-level security via Unity Catalog.
 - ii. Regular audits of access logs, usage, and security compliance.
- c. Compliance & Policy Enforcement:
 - i. Ensure compliance with Tata Power's cybersecurity, legal, and regulatory policies.
 - ii. Maintain audit trails and encryption practices.
- d. Periodic Permission Reviews & Access Attestation: Quarterly review of user and role permissions to ensure least-privilege enforcement.
- e. Secret & Key Management: Rotation and auditing of KMS, Secrets Manager, and Databricks Secrets.
- f. Governance Enforcement: Maintain consistent naming, tagging, and catalogue hygiene

C. Data Operations & Maintenance

- a. ETL/ELT Pipeline Support:
 - i. Daily monitoring and resolution of pipeline failures.
 - ii. Enhancement and fine-tuning of existing pipelines.
 - iii. SLA-based resolution for business-critical data delays or data quality issues.
- b. Historical and Delta Load Management:
 - i. Periodic review of delta mechanisms and refresh strategies.
 - ii. Optimization of SCD (Slowly Changing Dimensions), CDC (Change Data Capture), and batch jobs.
 - iii. Maintain IL/DL folder structures for historical and delta loads; ensure proper lifecycle management.
- c. Data Quality Monitoring:
 - i. Implementation and maintenance of data validation rules.
 - ii. Notifications on anomalies and failures.
 - iii. Monitor for schema drift in ingestion pipelines and alert per SOP
 - iv. Update ingestion runbooks/SOPs after incidents or configuration changes

D. Data Model & KPI Store Management

- a. KPI Store Administration:
 - i. Ongoing update of KPI metadata, UOMs, mapping logic, and organization structures.
 - ii. Monitoring KPI applicability and fiscal controls.
 - iii. Performance Monitoring: Monitor KPI store query performance and recommend optimizations.
- b. Audit Trail Maintenance:
 - i. Ensure completeness and integrity of audit logs for KPI changes and data processing.

E. Change Management & Enhancements

- a. Change Request Management:
 - i. Time-bound commitment and delivery of CRs as agreed between successful bidder and Tata Power Company Ltd.
 - ii. Evaluation of impact & addressal on existing systems and processes.
 - iii. Post-CR Validation: Validate impact on SLAs, performance, and runbooks after CR implementation.
- b. **CI/CD Support:**
 - i. Maintenance of pipelines in Git repositories as per Tata Power framework
 - ii. Deployment through standardized CI/CD processes.

F. Documentation & Knowledge Management

- a. Runbook Maintenance:
 - i. Update SOPs and runbooks as systems evolve.
 - ii. Maintain version-controlled SOPs and runbooks for all operations.
- b. Knowledge Base Updates:
 - i. Document resolutions, tips, and training material in a centralized repository.
 - ii. Document dashboards, monitoring configurations, and KPIs.
- c. Training & Enablement:
 - i. Periodic knowledge transfer sessions with Tata Power's business and technical teams.

G. SLA & Reporting

- a. Service Level Agreements:
 - i. Define and adhere to incident response and resolution timelines.
 - ii. Categorize issues (P1 to P4) with associated TATs.
 - iii. Conduct Root Cause Analysis (RCA) for P0/P1 incidents and track remediation.
- b. Monthly Service Review Reports (MSR):
 - i. Performance summary.
 - ii. Incident & Change summary.
 - iii. Platform usage & cost analytics.
 - iv. Improvement recommendations.
 - v. Conduct quarterly security and cost posture reviews with actionable recommendations.

H. Scalability & Futureproofing

- a. Capacity Planning:
 - i. Forecasting and recommendation of scale-up/down for clusters, storage, and jobs.
 - ii. Prepare platform and pipelines for future cloud account consolidation and automation readiness.
- b. Advisory Services:
 - i. Recommendations for new use cases, tools, and platform enhancements.

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SLA Table for Managed Services

Priority	Description	Examples
P1 – Critical	Complete service outage or data unavailability with business impact; no workaround available; business unit/s affected.	<ul style="list-style-type: none"> • Cloud platform / Pipeline down • Data Ingestion Services down • Data Visualization Services down • Integration System down • Cyber Security Incident or Breach • Critical KPI store not accessible • Data Source sync failure causing outage • All system functionality unusable across multiple business units • Major business-critical workflows completely halted • Security/compliance breach impacting critical operations
P2 – High	Major functional impact but partial availability or viable workaround exists; major impact to a single business unit or critical operation; workaround may allow restricted processing	<ul style="list-style-type: none"> • Multiple job failures • Data quality issue in critical pipeline • Web app workflow errors • Business process partially inoperative • Partial platform outage affecting a single business unit • Major functional degradation of dashboards or reports
P3 – Medium	Moderate impact on operations; workaround available or affects non-critical business functions; affects a single workgroup/functional group; system impaired but major functionality still usable	<ul style="list-style-type: none"> • Delay in non-critical reports • User provisioning issue • Minor KPI logic mismatch • Non-critical ETL job delays • Minor data sync delays within a single team • Dashboard refresh delayed but core reporting available
P4 – Low	No operational impact; cosmetic issues, documentation updates, minor enhancements; affects only a single user	<ul style="list-style-type: none"> • UI glitch • KPI metadata update request • Dashboard formatting change • Minor visual/formatting inconsistencies • Documentation or SOP updates • Non-urgent configuration changes

8.1 Penalty Clause for Post Go Live Support

SLA will be measured on quarterly basis. Total No. of cases reported in different categories as per the scenario mentioned above will be entitled for measurement and accordingly, the following would be calculated:

- A) Total No. of Hours where resolution goes beyond the given limit as per category in a month
- B) Total No. of Hours of operations in a month (It would be 30* 24 Hours)

$$\text{SLA Compliance} = [(B-A)/B] \text{ \%age}$$

SLA compliance % age will be calculated on monthly basis (rounded off). Penalty for the achieved SLA compliance will attract penalty as per following matrix.

S. No.	SLA compliance %age	Penalty Rates
1	98% to 100%	No Penalty
2	96% to 97%	20% of Quarterly invoice amount
3	94% to 95%	50% of Quarterly invoice amount
4	Less than equal to 93%	100% of Quarterly invoice amount

9 High Level Architecture

General Architecture Principles

Name	Statement	Rationale	Implications
Domain Driven- Ownership	Stakeholders from each business domain will own and govern data products such as CAPEX Planning, Power Planner etc.	Clear accountability drives quality and value.	Need to appoint product/solution owners; define stewardship KPIs; domain catalogues.
Curated Gold as Contract	Gold layer provides versioned, business validated- datasets.	Stability for BI/ML and operational consumption.	Need to define semantic models; change logs; deprecation windows.
Privacy & Compliance by Policy	Legal, regulatory, and contractual controls are embedded in lifecycle.	Reduce regulatory risk and protect trust.	PII tagging; retention schedules; DPIA workflows.
Multimodal- Consumption	Support BI, ML, APIs, and operational exports under governed interfaces.	Maximize value realization across use cases-.	Publish data marts, APIs, feature store endpoints with SLAs.
Target Side- Data Contracts	Consumers integrate via published, versioned interfaces.	Prevents unmanaged coupling and breakage.	Semantic versioning; consumer notification; contract tests.
Service Levels (SLO/SLAs)	Each data product publishes freshness, availability, and quality SLOs.	Aligns reliability to business outcomes.	SLI dashboards; alerting; breach playbooks.
Sustainability & FinOps	Decisions consider cost, energy, and carbon impact.	Meet ESG targets and optimize spend.	Rightsized- compute; schedule nonurgent jobs off- peak-; define tier storage.
Data Ethics & Responsible AI	Fairness, explain ability, and lineage are required for AI/ML use.	Reduce bias and reputational risk.	Model cards; bias checks; human in the loop approvals.
Real-Time Business Responsiveness	Business processes must respond to material events within defined SLAs to enable timely actions (offers, fraud blocks, operational triggers).	Reducing decision latency increases conversion, reduces risk exposure, and improves customer experience in moment-of-truth interactions.	Define event SLAs per capability; instrument KPIs; fund event-first change in critical journeys.
Event as a Business Asset	Treat business events (e.g., order placed, payment failed) as first-class entities across value streams.	Events capture state changes that power automation, analytics, and auditability across domains.	Create a business event catalogue and ownership model; align policies and stewardship.
Loose Coupling of Capabilities	Business capabilities interact via events rather than tight, synchronous hand-offs.	Modularity reduces ripple effects of change and enables parallel delivery.	Refactor processes and KPIs around event choreography; decouple OKRs per domain.
Business Observability	Expose real-time metrics and traces for event-driven value streams.	Visibility improves control, compliance, and continuous improvement.	Deploy dashboards; integrate compliance/audit views; set SLOs for event lag and loss.

Data Architecture Principles

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Name	Statement	Rationale	Implications
Medallion Layering	Bronze (raw), Silver (conformed), Gold (curated) with promotion criteria.	Predictable lifecycle and quality gates.	Lineage capture; SLAs per layer; audit trails.
Unified Batch & Streaming	Both modes produce identical schemas and semantics.	Consistency and easy backfills.	Shared code/logic; schema contracts; compatibility checks.
Real-Time Data Streaming	Prefer data streaming for near Realtime- ingestion such as telemetry data against timeseries.	Faster data availability and prompt action, as needed.	evolution strategy, define rules and workflow.
Raw is Immutable	Bronze is append only and repayable.	Auditability and reproducibility.	Need to define retention policies; avoid in-place edits on raw data.
Quality at Silver	DeDup, data type normalization, referential checks, and SCD logic.	Trusted, consistent entities.	Need to define DQ rules; quarantine; scorecards and thresholds.
Cross-Platform Interoperability	Use open formats and governed sharing to avoid copies.	Reduce duplication and lock-in.	Need to use technology such as Delta; external tables; secure data sharing contracts.
Hot-Warm-Cold Tiering	Data stored by access pattern with defined move-down schedules.	Optimize cost while meeting access needs.	Lifecycle policies; auto-tiering; retrieval cost budgets.
WORM, Legal Hold & Versioning	Immutable storage and holds for regulated datasets.	Protects against tampering and supports investigations.	WORM buckets; object versioning; hold workflows and audits.
Archive Retrieval SLAs	Archived data has documented retrieval times and procedures.	Sets clear expectations for recovery and analytics.	Index catalogues; pre-warm jobs for known events; escalation paths.
Metadata Completeness	Technical, business, and operational metadata are mandatory.	Discoverability and governance.	Auto-harvest; stewardship assignment; completeness checks.
Master & Reference Conformance	Conform to enterprise master/reference data in Silver/Gold.	Consistent keys and definitions.	MDM integration; survivorship rules; reference versioning.
Event as Data Primitive	Model events with explicit schemas including state change, timestamp, and correlation metadata.	Consistent event structures enable interoperability and robust processing.	Adopt a schema standard; enforce required metadata; validate at ingress.

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Name	Statement	Rationale	Implications
Schema Governance & Evolution	Manage event schemas via registry with versioning and compatibility rules.	Prevents breaking changes and accelerates safe iteration across teams.	Stand up schema registry; define review gates; automate compatibility checks in CI/CD.
Separation of Real-Time & Analytical Flows	Stream for operations; persist to Lakehouse/warehouse for analytics and ML.	Optimizes for both low-latency decisions and rich historical analysis.	Implement dual-path ingestion; configure retention and compaction; curate replay archives.
Lineage, Quality & Stewardship	Capture end-to-end lineage and apply quality rules on ingest/enrichment.	Trustworthy, traceable data is essential for compliance and decisioning.	Integrate DQ checks; publish lineage; assign stewards per domain/event.
Retention & Replay	Durably retain events with replay capabilities for recovery and reprocessing.	Enables backfills, disaster recovery, and model re-training.	Set topic retention by class; implement reprocessing patterns; secure archives.

Application Architecture Principles

Name	Statement	Rationale	Implications
Idempotent Ingestion	Retries are safe and deduplicated.	Reliability and operational safety.	Stable keys; checkpoints; idempotent sinks.
Event-Time & Late Handling	Event-time processing with watermarks and DLQs.	Analytical correctness.	Late policies; metrics; reprocessing flows.
Schema as a Contract	Versioned, validated, backward-compatible schemas.	Prevents consumer breakage.	Schema registry; CI checks; deprecation process.
Metadata-Driven Orchestration	Pipelines are configuration-driven.	Consistency and speed to onboard.	Central configs; validation; generators/templates.
Replay & backfill	Deterministically rebuild Silver/Gold from Bronze.	Recovery from logic/data issues.	Deterministic transforms; code versioning; retention windows.
CI/CD & Testing	Automated unit, contract, and DQ tests gate releases.	Reduce defects and change risk.	Pipelines as code; environment promotion; quality gates.
Workload Isolation	Separate streaming, batch, and interactive paths.	Predictable performance and resilience.	Dedicated pools/queues; QoS classes; admission control.
Backpressure & Throttling	Control consumer rates and apply backpressure.	Prevents cascading failure.	Rate limits; buffering; retries with jitter; circuit breakers.
Canary & Progressive Delivery	Roll out changes gradually with auto-rollback.	Limit blast radius of defects.	Blue/green; health probes; rollback playbooks.
Performance Testing as Code	Codify perf tests and SLIs in CI.	Catches regressions early.	Synthetic loads; thresholds; automated gates.
EDA Patterns (CEP, CQRS, Sourcing)	Apply stream processing, complex-event processing, event sourcing and CQRS where fit-for-purpose.	Patterns align implementation to domain behaviour and audit requirements.	Provide reference implementations; standardize libraries; train teams.
Resilience & Fault Tolerance	Design for duplicates, out-of-order, and delayed events with idempotency and retries.	Real-world networks are imperfect; correctness must withstand anomalies.	Implement exactly/at-least-once semantics; use DLQs; chaos test consumers.

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Name	Statement	Rationale	Implications
Scalability & Elasticity	Scale consumers and processors based on event load; prefer stateless services.	Meets variable demand while optimizing cost and performance.	Auto scale by lag/throughput; shard by keys; externalize state where possible.
API + Event Hybrid Approach	Use APIs for commands/queries and events for asynchronous domain notifications.	Combines strong consistency where needed with scalable decoupling.	Document interaction contracts; avoid chatty sync calls; embrace eventual consistency patterns.

Technology Architecture Principles

Name	Statement	Rationale	Implications
Decoupled Storage & Compute	Object storage with engine-agnostic compute.	Flexibility and scale.	Open table formats; policy-as-code access.
ACID Lakehouse Tables	Use Delta / Hudi with ACID and time travel.	Reliable batch + stream unification.	Compaction/OPTIMIZE; VACUUM; small-file control.
Observability & Lineage	End-to-end lineage and SLI/SLO telemetry.	Trust and rapid RCA.	Central lineage; alerting; runbooks.
HA & DR Tiers	Define RPO/RTO-based tiers and DR patterns per system.	Right-sized continuity.	Active-active/active-passive; failover tests; runbooks.
Graceful Degradation	Prioritize essential services under stress.	Maintain core business functions.	Feature flags; priority queues; fallback modes.
Capacity & Auto-Scaling	Forecast capacity and auto-scale for peaks.	Meet SLAs cost-effectively.	Scale policies; pre-warm; quota governance.
Query/Storage Optimization	Partitioning, clustering/Z-order, and indexing standards.	Performance and cost control.	Key selection; stats; bloom/data-skipping indexes.
Caching & Materialization	Use caches/materialized views for hot paths.	Low latency for frequent queries.	Refresh policies; invalidation; compute budgets.
Concurrency & Workload Mgmt.	Govern concurrent access to protect SLAs.	Avoid contention and hotspots.	Fair scheduling; priorities; session quotas.
Private Access by Default	Use Private Link/end points; no public exposure.	Reduce attack surface.	Private DNS zones; egress restrictions; firewall rules.
Zero Egress Architecture	Block internet egress except approved allow-lists.	Prevents data exfiltration.	NAT/NVA policies; egress proxies; monitoring.
Segmentation & Hub-Spoke	Isolate environments and domains via hub-spoke/VNET peering.	Limits blast radius and lateral movement.	Subnet/IPAM strategy; NSGs/ACLs; per-env controls.
Service Endpoints & Routing	Prefer private service endpoints and controlled routing.	Deterministic, secure paths.	Route tables; UDRs; path monitoring.
DNS & Cert Management	Centralized DNS and automated TLS cert rotation.	Reliability and security.	Private DNS; ACME/PKI; renewal alerts.
Bastion & JIT Access	Admin access only via bastion/JIT with audit.	Minimize standing privileges.	Session recording; PAM; break-glass protocols.
Document interaction contracts; avoid chatty sync calls; embrace eventual consistency patterns.	Provide a managed, durable, partitioned streaming backbone with strong delivery guarantees.	A reliable backbone is foundational to EDA scale and correctness.	Adopt Kafka/Event Hubs/Kinesis; define tenancy, quotas, and governance.

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Name	Statement	Rationale	Implications
Real-Time Processing Engines	Offer stream processing with windowing, joins, enrichment, and ML inference support.	Moves intelligence to the stream, reducing latency and batch dependencies.	Standardize on Flink/Spark/ASA; provide templates and platform SRE.
Polyglot Persistence	Use the right store for the job: event log, operational DBs, caches, Grid Network Topology, and Lakehouse.	Different access patterns require specialized storage characteristics.	Define data classes; implement connectors; manage consistency across stores.
Cloud-Native & Platform Ops	Run on containers/Kubernetes with autoscaling, Git-Ops, and golden paths.	Improves portability, repeatability, and time-to-value.	Provide paved roads; policy-as-code; cluster autoscaling; cost guardrails.
Security & Compliance by Design	Enforce auth N/Z, encryption, and audit across producers, brokers, and consumers.	Protects sensitive data and satisfies regulatory obligations.	Integrate IAM with brokers; encrypt at rest/in transit; centralize audit trails.
Observability & SRE	Collect traces, metrics (lag, throughput), and logs for proactive operations.	Accelerates incident response and capacity planning.	Adopt Open Telemetry; SLOs for lag and error budgets; alert on consumer health

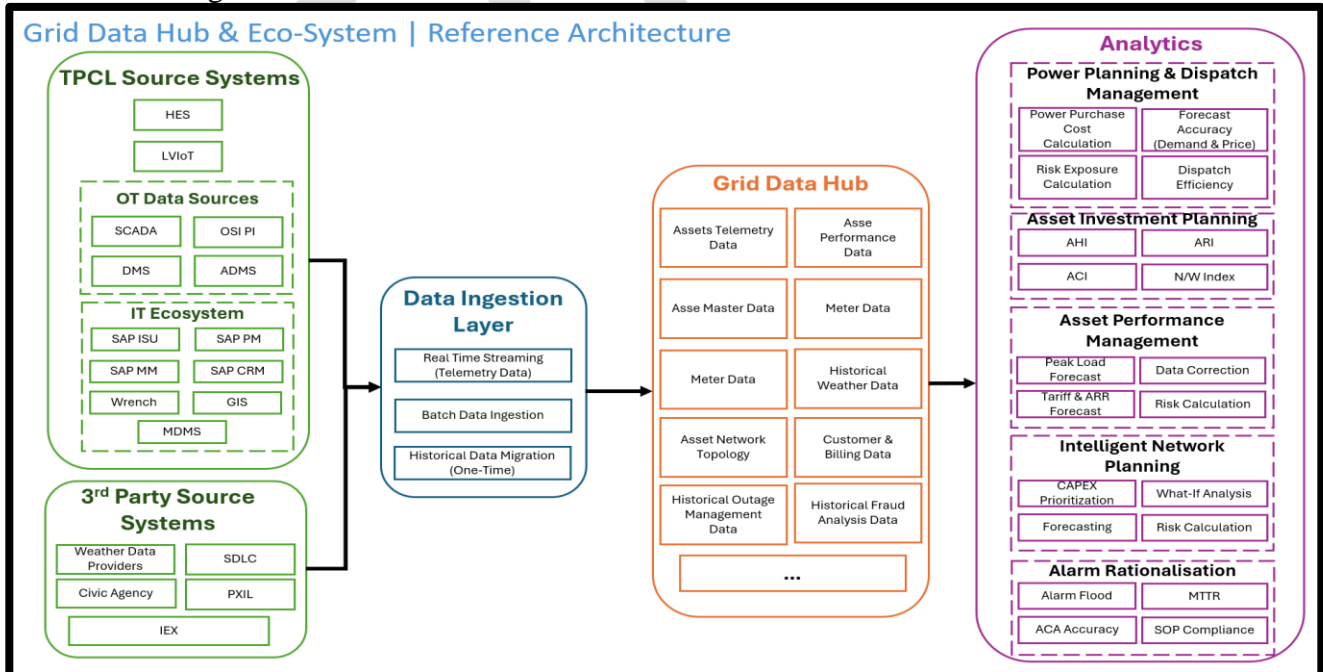
Security Architecture Principles

Name	Statement	Rationale	Implications
Zero Trust & Least Privilege	Deny by default; grant least privilege with JIT/JEA.	Minimize blast radius.	RBAC/ABAC; periodic access reviews; approvals.
Strong Identity & MFA	Central identity, MFA, and workload identities for services.	Harden authentication.	IdP integration; conditional access; managed identities.
Encryption Everywhere	Encrypt data at rest and in transit with approved ciphers.	Protect confidentiality/integrity.	KMS/HSM; TLS; key rotation policies.
Secrets & Key Management	Centralized secret storage and rotation.	Reduce compromise risk.	Vault integration; remove secrets from code; rotation cadence.
Data Loss Prevention (DLP)	Detect and block exfiltration through policies and monitoring.	Protect sensitive data.	Egress filters; content inspection; alert/response.
Posture Management & Baselines	Hardened baselines and continuous compliance checks.	Reduce misconfiguration risk.	CIS/benchmarks; policy-as-code; drift remediation.
Vulnerability & Patch Mgmt.	Scan, prioritize, and patch routinely with SLAs.	Limit exploitability.	SBOMs; patch windows; exception workflows.
Insider Risk Controls	Monitor anomalous access and copy behaviours.	Mitigate insider threats.	UEBA; least-data principles; just-enough results.
Monitoring & Forensics	Central logs, threat detection, immutable audit.	Detection and investigation readiness.	SIEM; tamper-evident logs; retention policies.
Privacy by Design	Apply minimization, consent, and DPIAs.	Compliance and trust.	DPIA templates; consent storage; aggregation techniques.

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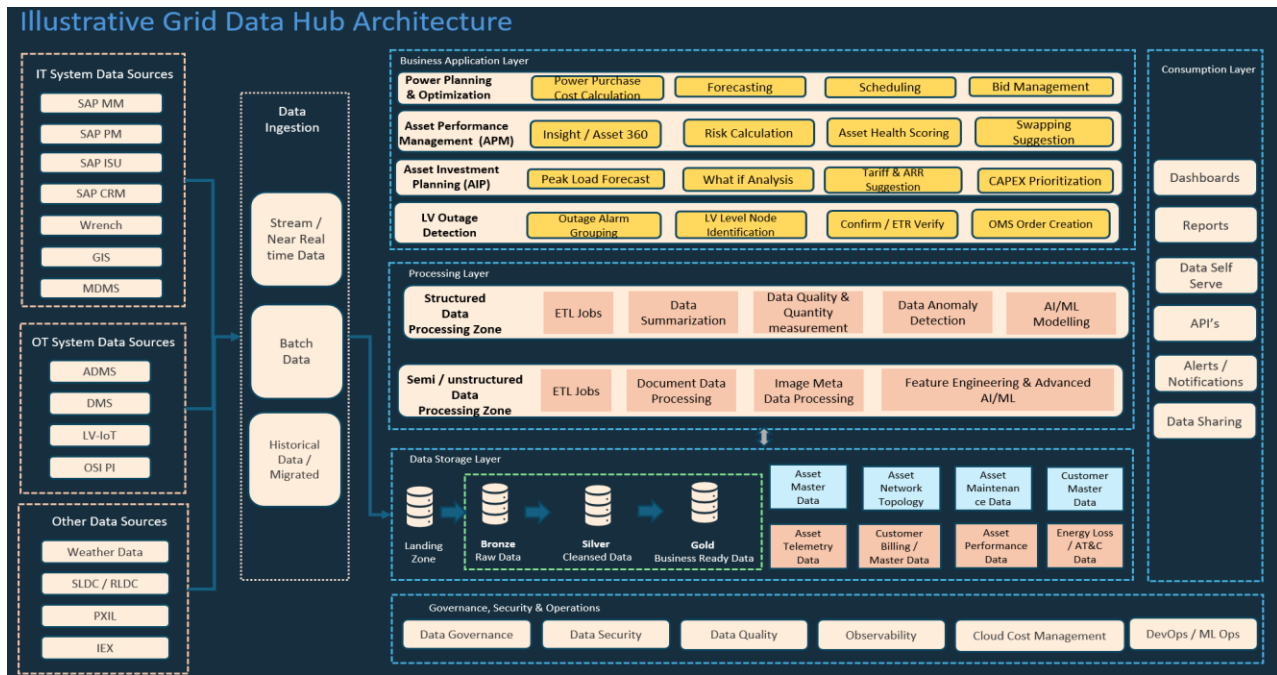
Name	Statement	Rationale	Implications
Insider Risk Controls	Monitor anomalous access and copy behaviours.	Mitigate insider threats.	UEBA; least-data principles; just-enough results.
Monitoring & Forensics	Central logs, threat detection, immutable audit.	Detection and investigation readiness.	SIEM; tamper-evident logs; retention policies.
Data Classification & Minimization	Classify data and collect only what is necessary; align handling with classification tiers.	Focuses protection on crown jewels and reduces compliance scope and breach impact.	Publish a data Catalogue; tag streams/subjects; restrict PII flows; purge unused data.
CI/CD, Secure SDLC & Dev-Sec-Ops	Embed threat modelling, SAST/DAST/SCA, and security gates into CI/CD along with infra provisioning and solution deployment by implementing IaC.	Ensures automated and seamless pipeline for infra provisioning and solution deployment. Catches vulnerabilities early and standardizes remediation.	Provide security pipelines; define severity thresholds; supply secure coding guides, IaC tech stack enablement.
Producer/Consumer Hardening	Harden microservices and functions with least privilege, input validation, and egress controls.	Reduces exploit surface and data exfiltration.	Use mutual TLS; scoped credentials; validate event payloads; restrict outbound traffic.
Broker & Topic Security	Enforce authentication, ACLs, quotas, and isolation (namespaces/tenants) on the event backbone.	Prevents unauthorized access and noisy-neighbour effects on shared platforms.	Enable per-topic ACLs; define tenant guardrails; monitor lag/anomalies; apply resource quotas.
API & Event Contract Security	Secure synchronous APIs and asynchronous event contracts equally with authZ, validation, and rate limits.	Inconsistent controls create lateral gaps and privilege escalation paths.	Standardize API gateways; schema validation; replay protection; rate limiting and quotas.

Architecture Diagram

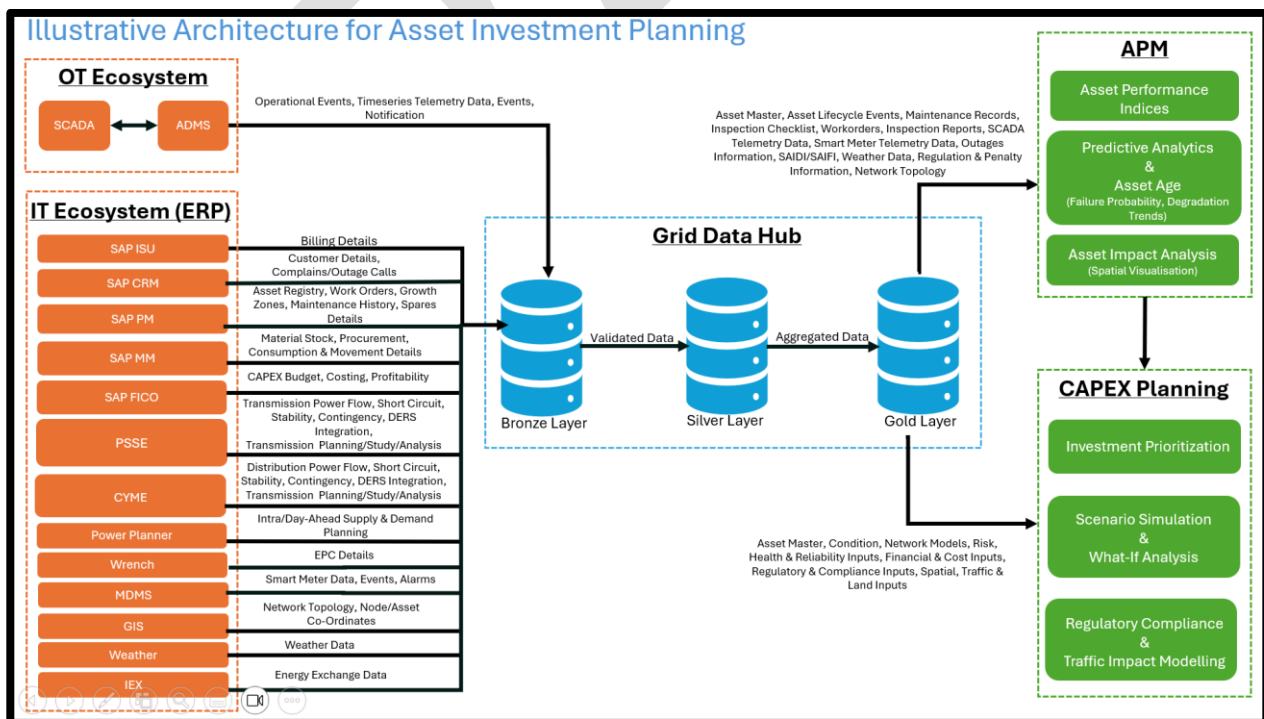


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Above diagram shows high level grid data hub data entities, which are elaborated further in next diagram. Data ingestion layer is subject to integrate with both IT & OT ecosystems of TATA Power. Right sided shows the consumers of grid data hub for various purpose described in scope section.

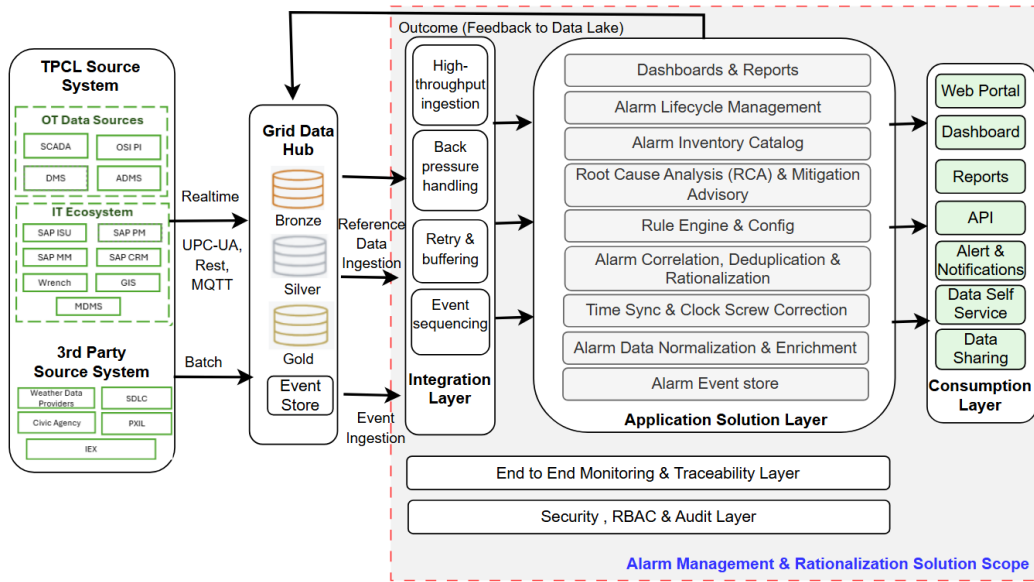


Above diagram shows Grid Data Hub reference architecture.

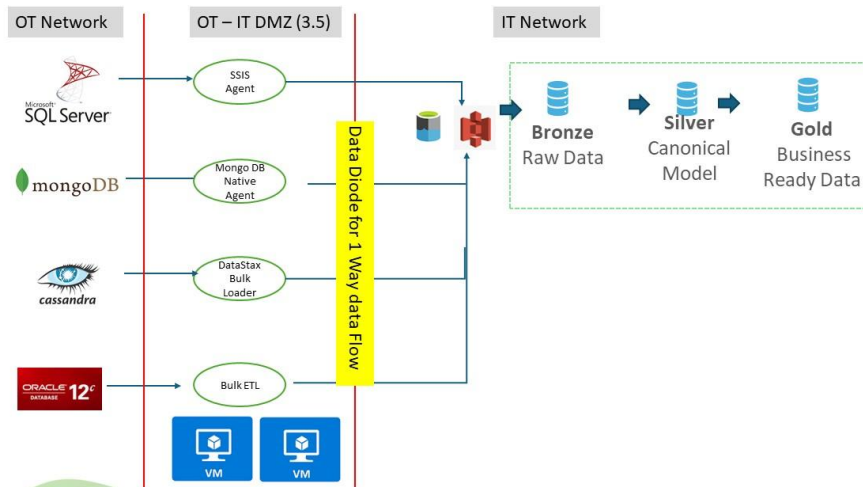


Above diagram is an indicative architecture to show a batch ETL driven analytics-based implementation.

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Batch - ADMS to Bronze



Implementation Guidelines

- The selected bidder will be responsible for delivering the end-to-end solution, including architecture, development, integration, testing, deployment, training, and support, in alignment with TATA Power's architecture guidelines, DevOps processes, Network polices, InfoSec Policies, cloud, data, and security standards. Ensure scalability & adaptability to evolving business requirements.
- The selected bidder shall be responsible for the comprehensive configuration, deployment, and management of the Data Platform, in alignment with the best practices defined by TATA Power's enterprise architecture and governance guidelines.
- The bidder is required to deliberate, discuss, decide, document, and deploy (5D) a comprehensive data platform in alignment with industry best practices and our organizational goals. The implementation

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must address the following strategic areas (not limited to) and result in a well-architected, secure, and scalable data platform for data engineering, analytics, and machine learning workloads.

- **Security and Compliance Measures:** Implement robust security measures to protect sensitive customer information. Ensure compliance with data protection regulations.
- **Automation and Monitoring:** Implement automation for data pipeline workflows. Establish monitoring mechanisms to ensure data accuracy and pipeline efficiency.
- **Necessary Documentations:** Create and maintain project-wise comprehensive documentation for system architecture, data flows, and user guides.
- **Risk Management and Data protection framework implementations:** Identify potential risks and mitigation strategies for technical challenges, data quality issues, data integrity issues, and unforeseen obstacles.
- Data retention & archival policies should be part of the solution from the bidder.
- Our Enterprise BI solution of Power BI will be leveraged for ad-hoc visualizations as necessary.

Project Closure:

- Tata Power will track, review and assess the project development milestones
- Scope closure is subject to UAT sign-off by Tata Power business stakeholders
- Hyper-care period for each project Go-Live is mandatory
- Implementation to MS handover will consist of Final documentation review, training, SOPs, and knowledge transfer to Tata Power's internal teams or designated partners.

Dev-Sec-Ops, ML-Ops, and Automation Guidelines

- **Objective:** Ensure robust, secure, and automated development and operational processes for all project deliverables.
- **Dev-Sec-Ops Implementation:**
 - Partner must implement Dev-Sec-Ops practices for all code, configurations, and deployments.
 - Security, compliance, and quality checks must be integrated into CI/CD pipelines.
 - Automated testing, vulnerability scanning, and approval gates must be implemented at each stage of deployment.
- **ML-Ops Implementation:**
 - Partner must establish ML-Ops workflows for AI/ML/DL/RL models, including version control, model training, evaluation, deployment, monitoring, and rollback.
 - Ensure reproducibility and traceability of all ML workflows.
 - Testing with synthetic data in QA.
- **Automation Requirements:**
 - Partner must automate routine operational tasks, job scheduling, monitoring, alerting, and remediation as applicable.
 - Integration of automation pipelines with the enterprise code repository (Git or equivalent) is mandatory.
 - Infrastructure as Code (IaC) must be used for deployment and configuration management wherever possible.
- **Outcome:** Ensure project delivery is secure, reproducible, auditable, and aligned with enterprise Dev-Sec-Ops and ML-Ops standards, reducing manual intervention and operational risk.

Monitoring and Observability Guidelines

- **Objective:** Ensure proactive health checks, performance monitoring, and actionable insights across all platforms, pipelines, and applications involved in the project.

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- **Platform & Pipeline Monitoring:**
 - Continuous monitoring of data platform, workspaces, jobs, endpoints, and data ingestion pipelines.
 - Monitor schedule adherence, schema drift, throughput, and performance.
 - Define SLAs for job execution and pipeline availability; generate alerts for deviations.
- **Observability & Logging:**
 - Centralized logging and metrics collection for clusters, jobs, storage, and costs
 - Standardize log retention, indexing, and searchability for troubleshooting and audit purposes.
 - Maintain dashboards for real-time visibility of job status, data freshness, KPIs, system health, and cost utilization.
- **Alerting & Incident Management:**
 - Define actionable alerts with clear escalation paths (L1 → L2 → on-call).
 - Implement automated notification and remediation scripts for critical failures where feasible.
 - Track incidents, root cause analysis (RCA), and remediation actions in a decision register or incident log.
- **Performance & Optimization Insights:**
 - Provide dashboards and reports with recommendations for cluster sizing, query optimization, job scheduling, and resource utilization.
 - Identify recurring failures or performance bottlenecks and provide actionable insights to improve system reliability.
- **Outcome**
 - Ensure complete visibility, proactive monitoring, and fast resolution of operational issues, enabling smooth project execution and adherence to SLA.

Onsite & Offshore Resource Deployment Guidelines

- **Onsite Deployment:**
 - Selected bidder to enable deployment of dedicated resources at Tata Power Mumbai office for face-to-face interactions.
 - Onsite resources to participate in finalization of design, workshops, reviews, and critical decision-making activities.
 - Bidder shall maintain a comprehensive Decision Register at each stage of the project, documenting all key decisions, approvals, and rationale for traceability and audit purposes.
 - Bidder shall maintain a comprehensive Decision Register at each stage of the project, documenting all key decisions, approvals, and rationale for traceability and audit purposes.
- **Offshore Development Centre (ODC):**
 - Offshore development centre can be managed by the bidder/partner.
 - Bidder responsible for onboarding all onshore / offshore resources with necessary laptops, software, and access provisions.
- **Data Security & Compliance:**
 - All resources (onsite and offshore) must comply with Tata Power's data leakage guidelines.

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- No data from Tata Power's environment is to be copied, transferred, or taken out of the environment under any circumstances.
- Laptops and devices used by bidder resources must meet Tata Power's security, access, and encryption standards.
- All laptops and devices must be installed with information security (InfoSec) provided software.
- **Project Resource Allocation:**
 - Bidder to onboard **separate resources for each project**.
 - All projects are expected to run **in parallel**, with dedicated teams ensuring no conflicts or dependency issues.
- **Access & Environment Management:**
 - Ensure proper environment access, accounts, and permissions for each resource.
 - Compliance with platform-specific security policies
- **Cybersecurity Requirements**

The selected bidder shall ensure that all components of the solution comply with Tata Power's cybersecurity standards, applicable legal and regulatory requirements (including but not limited to CERT-In and CEA guidelines), and industry best practices (e.g., ISO/IEC 27001).

Security Architecture & Access Control

- Implement defence-in-depth design, including secure network segmentation and least-privilege access.
- Enforce strict Role-Based Access Control (RBAC) and Attribute-Based Access Control (ABAC) integrated with Tata Power's central directory and Multi-Factor Authentication (MFA).

Data Protection

- Encrypt data at rest and in transit using approved cryptographic standards.
- Implement data masking and row/column-level security for sensitive data.
- Ensure all data is retained for one year and securely archived or deleted thereafter as per compliance requirements.

Monitoring & Compliance

- Enable comprehensive logging and integrate with Tata Power's SIEM solution.
- Maintain complete audit trails for user activities and data changes.
- Support periodic security assessments, vulnerability scanning, and timely patching.

Incident Response & Continuity

- Establish and document an incident response plan, including reporting and escalation procedures.
- Implement backup and disaster recovery strategies meeting defined RTO and RPO requirements.

Security Deliverables

Security architecture document and access control matrix.

- Data protection and encryption plan.
- Yearly vulnerability and patch compliance reports.
- Incident response and audit trail documentation.

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10 Roles and Responsibilities

The implementation partner would work in close coordination and as a Joint team along with the Tata Power IT team. The broader Roles and Responsibilities includes the activities needed to complete in all the mentioned projects together. Besides the project's milestones and activities that are in line with the mentioned scope of the entire project, below mentioned are the roles and other responsibilities

S. No	Items	Tata Power	Partner
1	Defining the technological scope in detail	Primary	Secondary
2	Availability of IT Infrastructure, software licenses on Cloud as per defined project activities by the Tata Power	Primary	Secondary
3	Configurations as per the requirements in order to set up developments in the client's environment	Secondary	Primary
4	Necessary documentations & project activities clarifications and related scope activities to Projects	Secondary	Primary
5	Overall Architecture for the Project	Secondary	Primary
6	Client feedback – modifications in the final project activities considering the ratings, reviews, recommendations, terms and conditions involved	Primary	Secondary
7	Development, Unit & applicable Testing	Secondary	Primary
8	Final inter-linkage and configuring the client's environment as per the client's requirements	Secondary	Primary
9	Integration Testing, Security Testing	Primary	Secondary

-----End of Document-----

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TATA POWER

RFQ No.: 4100065659

ANNEXURE VIII

Inspection Test Plan

NA

CONFIDENTIAL



RFQ No.: 4100065659

Annexure IX
General Conditions of Contract

Attached as Annexure to this document

CONFIDENTIAL



RFQ No.: 4100065659

Annexure X
Manufacturers Authorization Form

Date:

Tender Enquiry No.:

To,
Chief (Procurement & Stores)
Tata Power Company Limited, Mumbai

Dear Associate,

Whereas M/s. [name of OEM], who are official manufacturers of..... having factories at [Address of OEM] do hereby authorize M/s [name of bidder] to submit a Bid in relation to the Invitation for Bids indicated above, the purpose of which is to provide the following Goods, manufactured by us and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with the Special Conditions of Contract or as mentioned elsewhere in the Tender Document, with respect to the Goods offered by the above firm in reply to this Invitation for Bids.

We hereby confirm that in case, the channel partner fails to provide the necessary services as per the Tender Document referred above, M/s [name of OEM] shall provide standard warranty on the materials supplied against the contract. The warranty period and inclusion / exclusion of parts in the warranty shall remain same as defined in the contract issued to their channel partner against this tender enquiry

Yours Sincerely,

For

Authorized Signatory

The Tata Power Company Limited is hereunder referred to as the "Owner" or "Company". The person, firm or company offering the services, the subject of this order is referred to as "Contractor". The subject of this order is hereinafter referred to as the "Work".

"Sub-Contractor" means any person named in the Contract as a Sub-contractor, sub-vendor, manufacturer or supplier for a part of the Works or any person to whom a part of the Works has been subcontracted and the legal successors in title to such Person, but not any assignee of such Person.

The Contract shall mean the contract as derived from the following:

1. Work Order (with 'Commercial Notes' and Annexures to the Work Order referred thereon)
2. Scope of Work.
3. General Terms & Conditions - Service

The documents including all reference document (s) and Annexures forming the Contract are to be read together as a whole and are to be taken as mutually explanatory, provided however, in the event of any inconsistency or discrepancy between the aforementioned documents, the order of precedence in interpretation of the documents shall be as set out above. For the avoidance of doubt, it is clarified that the terms set forth in the Work Order (with 'Commercial Notes' and Annexures to the Work Order referred thereon) shall take precedence over the terms set out in the Scope of Work, which shall in turn take precedence of the terms set out in the General Terms & Conditions – Service.

1. Contractor's obligation:

- 1.1 Contractor warrants that it is a competent, qualified and experienced contractor, equipped, organised and financed to perform and complete the services in the operating area in an efficient and professional manner and capable of meeting all the requirements of the Contract.
- 1.2 The Contractor has the overall responsibility of executing the contract, conducting Planning, Job Scheduling, Maintenance Planning, Maintenance Job Scheduling, executing the Work and maintenance jobs as per the Scope of work & schedule.
- 1.3 Except to the extent that it may be legally or physically impossible or create a hazard to safety, the Contractor shall comply with the Owner's representative(s) instructions and directions on all matters relating to the Work.
- 1.4 Contractor shall at all times have full responsibility for control of the Equipment and for the direction and supervision of operations being carried out under the Contract.
- 1.5 In the performance of the Work, Contractor shall be and act as an independent Contractor fully responsible and accountable for the proper execution of its responsibilities, obligations and

liabilities under this Contract and for its own acts and the acts of its Sub-Contractors and the Personnel. Owner's supervision, examination or inspection of the (performance of the) Work or omission to carry out the same shall not be construed in any manner whatsoever as relieving Contractor from its responsibilities, obligations or liabilities under this Contract.

- 1.6 Contractor shall submit list of tools & tackles with details of make, year of manufacturing, valid certification to the Project Manager/ User for their approval.

Project Manager may during the execution of project inspect & verify that the tools & tackles are as per the qualification requirements approved by him and will have right to seek replacements in case of any discrepancies. The Contractor shall always comply with such directives.

- 1.7 Contractor shall engage Tata Power Skill Development Institute (TPSDI) certified labour force at the site for execution of the job. Requirement & fees for TPSDI certification shall be as per Company Policy.
- 1.8 Contractor shall take full responsibility for the protection and security of Owner's materials and equipment while such materials and equipment are temporarily stored in Contractor's facility or otherwise in Contractor's custody.
- 1.9 All notices, instructions, information, and other communications given by the Contractor to Owner under the Contract shall be given to the Order Manager/ Owner's representative, except as otherwise provided for in this Contract.
- 1.10 The Contractor shall make its own arrangements for movement of personnel and equipment, within and outside the sites / units / offices at the various locations covered by the Contract.
- 1.11 The Contractor shall acquire in its name all permits, approvals, and/or licenses from all local, state, or national government and other statutory authorities and/or public service undertakings that are necessary for the performance of the Contract.
- 1.12 Neither the Contractor nor its personnel shall during the term of this Contract, engage in any business or professional activities in India/abroad which would conflict with the activities assigned to them under this Contract.

2. Service Warranties:

Contractor warrants that all services performed for or on behalf of Owner will be performed in a competent,

workmanlike manner and shall be free from faults and defects. Said warranties shall be in addition to any warranties of additional scope given by Contractor to Owner. None of said warranties and no other implied or express warranties shall be deemed is claimed or excluded unless evidenced by a change notice or revision issued and signed by Owner's authorized representative.

3. Compliance of Local Laws:

Contractor shall be responsible and shall comply with the provision of all the Statutory Acts Applicable. Special attention of the Contractor is drawn towards the compliance of provision of the following statues: (along with the latest amendments/additions, as applicable):

- a) The Child Labour (Prohibition and Regulation) ACT, 1986.
- b) The Contract Labour (Regulation and Abolition) ACT, 1970.
- c) The Employee's Pension Scheme, 1995.
- d) The Employee's Provident Funds and miscellaneous provisions Act, 1952.
- e) The Employees State Insurance Act, 1948.
- f) The Equal Remuneration Act, 1976.
- g) The Industrial Disputes Act, 1947.
- h) The Maternity Benefit Act, 1961.
- i) The Minimum Wages Act, 1948.
- j) The Payment of Bonus Act, 1965
- k) The Payment of Gratuity Act, 1972.
- l) The Payment of Wages Act, 1936.
- m) The Shops & Establishment Act, 1954.
- n) The Workmen's Compensation Act, 1923.
- o) The Employer's Liability Act, 1938.
- p) and any other applicable statutory act

Site Specific requirements shall be as Annexure at I. The compliance to these Site Specific requirements shall not absolve the Contractor of its obligation to comply with the Owner's Contractor Safety Management Policy.

4. Owner's Obligation:

- 4.1 The order manager (As specified in the 'Commercial Notes') shall have the authority to represent Owner on all day-to-day matters relating to the Contract or arising from the Contract. All notices, instructions, orders, certificates, approvals, and all other communications under the Contract shall be given by the order manager, except as otherwise provided for in this Contract. The order manager may appoint the Engineer-In-Charges for different areas for monitoring the work progress, inspections and signing of bills.

- 4.2 Owner shall ensure the availability of site access, all information and/or data to be arranged/ supplied by Owner to the Contractor for execution of the Work . The terms on which the Contractor shall be allowed access to the site shall be specified by the Owner prior to commencement of the execution of the Work and thereafter shall be governed in accordance with such policies as the Owner may provide in writing to the Contractor from time to time.

5. Contractor's/ Sub-contractor's employees:

- 5.1 The Contractor shall engage appropriately qualified persons to provide the services with the prior approval of Owner. Owner may withhold such approval for any reason whatsoever.

- 5.2 The Contractor hereby represents and warrants that:

- i) the personnel are duly qualified, and are, and will remain, sufficiently qualified, careful, skilful, diligent and efficient to provide the services to Owner; and
- ii) the Services will be rendered carefully, skilfully, diligently and efficiently, and to the professional standard reasonably expected by Owner of a contractor qualified and experienced in providing services substantially the same as the Services.

- 5.3 The Contractor must ensure that the Contractor's personnel conduct themselves in a proper manner and comply with the procedures and all policies, regulations and directives of Owner including any occupational, health and safety policies and the relevant prevailing laws and regulations in the Country of operations and specifically in the area where Work is being executed.

- 5.4 Owner may inform the Contractor to immediately remove Contractor's personnel from the relevant premises in the event of misconduct or incompetence on the part of the Personnel. The Contractor shall at all times remain liable for all acts and/or omissions of its Personnel.

- 5.5 It is made clear that no relationship of Owner and employee is created between Owner and the Contractor's resident engineers, employees and no claim for employment of any such personnel shall be tenable or entertained.

6. Title of Property:

- 6.1 Unless otherwise provided in this order or agreed to in writing, property of every description including but not limited to all tooling, tools, equipment and material furnished or made available to Contractor, title to which is

in Owner, and any replacement thereof shall be and remain the property of Owner. Such property other than material shall not be modified without the written consent of Owner. Such property shall be plainly marked or otherwise adequately identified by Contractor as being owned by Owner and shall be safely stored separately and apart from Contractor's property.

6.2 Contractor shall not use such property except for performance of work hereunder or as authorized in writing by Owner. Such property while in Contractor's possession or control shall be listed in writing and kept in good condition, shall be held at Contractor's risk, and shall be kept insured by Contractor, at its expense, in an amount equal to the replacement cost with loss payable to Owner. To the extent such property is not material consumed in the performance of this order, it shall be subject to inspection and removal by Owner and Owner shall have the right of entry for such purposes without any additional liability whatsoever to Contractor. As and when directed by Owner, Contractor shall disclose the location of such property, prepare it for shipment and ship it to Owner in as good condition as originally received by Contractor, reasonable wear and tear excepted.

7. Work Completion schedule:

Contractor shall plan and execute the Work in accordance with a detailed schedule mutually agreed upon by the Parties (Owner and Contractor).

8. Contract Price and Payment:

8.1 The Contract Price shall be a firm & fixed Contract Value for the Work inclusive of all the taxes, levies & duties and shall remain firm till the validity of this contract.

8.2 Unless Specifically stated elsewhere in the contract, the Contractor is solely liable for payment of , and warrants that it will pay, or ensure the payment of all taxes imposed, assessment made in relation to the Work.

8.3 An amount as stated in the table below shall be retained towards Contractor's safety performance against every RA bill:

Contract Value	Retention Amount (%)
Upto Rs. 10 lakhs	2.5
Above Rs. 10 lakhs and below Rs. 50 lakhs	2
Above 50 lakhs and upto Rs. 10 Crores	1.5
Above Rs. 10 Crores	1

Rev. date: 25 Jul 2017

The above mentioned safety retention shall be over and above any other retentions/ deferred payments as may have been specifically agreed in the Contract.

8.4 For Contract Price Rs. 1 crores or above and Contract Completion Schedule 12 months or more, the above safety retention will be released half yearly against the Safety Performance Score (methodology for evaluation enumerated in the Safety Terms & Conditions attached as Appendix to this General Terms & Condition) which will be evaluated by the Order Manager every month. For all other contracts, the above said safety retention shall be released along with the final settlement only at the end of the contract period.

8.5 The Owner shall have the right to stop any work which in its opinion is not meeting the safety standards/ guidelines of the Owner and good engineering practice. The Contractor shall not be eligible for and shall not be granted any extension in Completion Schedule due to such stoppage of work by the Owner.

8.6 The above retention towards safety shall not absolve the Contractor of its liabilities including statutory liabilities towards safety violations, injury or death (whether by accident or otherwise). An amount between Rs. 5 to 50 lakhs as deemed appropriate by Owner's appointed Committee for incident investigation and/ or as determined by statutory authorities (whichever higher), will be payable by the Contractor in case of such severe incidents of injury leading to loss of property or partial/ permanent disablement (e.g. loss of limb/s, vision etc.) or death.

8.7 Notwithstanding anything else stated in the Contract, the Contractor shall be liable for termination without any notice and without recourse to Owner in case of three (3) or more severe safety violations. There shall be no termination fees/ compensation payable to Contractor for such termination.

8.8 In case the Contractor achieves 100% on the Safety Performance Score, the Contractor shall be awarded a discretionary bonus of 1% of invoiced value subject to a maximum of Rs. 50 lakhs towards Safety Performance.

8.9 Payment shall be released within 60 days of submission of error free invoice with supporting documents duly certified by the Order Manager/ Engineer-in-Charge after deducting taxes at source as prescribed under the applicable law, income – tax or other deductions under the state value added tax laws . If such payment release

day falls on a holiday of Owner, payment will be released on the next working day. Against deduction of statutory taxes, tax deduction certificates where ever applicable shall be issued as per the applicable provisions of the statute. The Order Manager may recover any amount wrongly paid in excess in any previous bills certified by him.

8.10 *Mode of Payment:* All payments shall be made direct to the Contractor or his authorized representative in the shape of RTGS or Electronics Transfer method, on certification of the Order Manager/Engineer-in-Charge and on compliance of contractual terms & conditions.

9. **Taxes and Duties:**

9.1 The Contract Price shall be inclusive of all taxes, duties, including but not limited to Customs duty, GST or any local taxes, levies imposed by State/Central/Local governments.

9.2 Taxes as mentioned in the Contract Price or Price Schedule shall be paid to the contractor subject to the Contractor complying with all the statutory requirements and furnishing the relevant documents including error free invoices containing detailed break up of the taxes.

9.3 The tax invoices should contain the details to comply with the GST Law. The supplier shall:

- i) Furnish (electronically) and communicate to the Owner, the details of Goods or Services supplied by the 10th of the month succeeding the said tax period,
- ii) Upon discovery of any discrepancy, rectify it and shall pay the tax and interest thereof,
- iii) Furnish the returns (electronically), for the inward and outward supplies of Goods and/or Services, before the specified dates as per the GST Law,
- iv) Communicate the tax paid, credits etc. as and when credited.
- v) The Invoice should clearly state the description of the goods, quantity, sale price, tax %, and tax amount;
- vi) The Invoice should be signed by an Authorized Signatory.

Bills/Invoices in the name of The Tata Power Company Ltd. with packing lists in triplicate shall be forwarded along with the equipment.

Contractor to furnish GST Registration no. in all invoices as well as Purchaser's (Tata Power's) GST no.

9.4 However the payment of tax shall be restricted to the total amount as indicated in the price schedule.

9.5 Any statutory variation in duties, levies or taxes if applicable and specified in this Contract till the scheduled date for completion of Work and limited to direct invoices of the Contractor shall be to the account of Owner. The Contractor shall have the obligation to provide the necessary documentary evidence / supporting by way of gazetted notifications etc. to prove the change in such levies or taxes between the due date of submission of the Bid and the scheduled date of completion of work to claim the difference.

9.6 The Contractor shall pass on to the Owner all the benefits of either reduction in tax rates, exemptions, concessions, rebate, set off, credits etc. or introduction of new tax rates exemptions, concessions, rebate, set off, credits etc. pertaining to all taxes, duties, imposts, fees and levies in respect of the supplies of Goods or performance of obligations under the contract. This would specifically include reduction of tax rates as a result of statutory changes or judicial rulings.

9.7 Any other taxes, levies and duties not mentioned in Contract Price or Price Schedule but applicable as per any statute (s) or introduction (omission) of new taxes, levies and duties shall be deemed to be included in the Contract Price and shall be to the account of the Contractor.

9.8 For facilitating availment of a credit, set-off, rebate, drawback or like benefit available to the Owner, the Contractor will facilitate the Owner by providing the necessary documentary and/or procedural support. In any process of assessment or re-assessment, of taxes payable by the Owner,

9.9 The Contractor shall bear and pay all the costs, liabilities, levies, interest, penalties in respect of non-compliances of any legal requirements as per various statutory provisions. The contractor shall keep the owner indemnified at all times from any tax liability, interest, penalties or assessments that may be imposed by the statutory authorities for non-compliances or non-observation of any statutory requirements by the Contractor.

9.10 All formalities required under statutes, for availing any concessions under relevant tax laws shall be adhered to by the Contractor.

9.11 Deduction at source: Recovery at source towards income tax calculated at the rate prescribed from time to time under the Income Tax Act 1961 and other relevant sections of Income Tax Act shall be made from the bills of the Contractor and the amount so recovered shall be

deposited with the Income Tax Department. Necessary TDS certificate to this effect will be issued to the Contractor in the prescribed proforma.

- 9.12 If any other taxes / duties / cess etc are to be recovered at source as per government regulations / Legislation from time to time, the same shall be recovered from the bills payable to the Contractor. Necessary receipt to this effect will be issued to the Contractor in this regard as per the applicable legislation.

10. Contract Performance Guarantees (If applicable)

The Contractor shall within 15 days of issuance of this Order/Contract furnish an unconditional irrevocable bank guarantee duly stamped, strictly as per the prescribed format of Owner from any nationalized bank or any scheduled bank having a branch in Mumbai and approved by the Owner for a sum equivalent to 10% of the Total Contract Price valid for the Contract Period and with a claim period of not less than 6 months from the completion of Contract Period. The issuing bank should be advised to send a direct confirmation of issue of bank guarantee to Owner.

In case the Contractor fails to furnish the requisite Bank Guarantee as stipulated above, then the Owner shall have the option to cancel the Contract besides other contractual remedies.

11. Price Reduction:

- 11.1 In case the Contractor fails to deliver the service/ Complete the work as per the agreed Completion Schedule including intermediate milestones (if applicable), the Owner shall recover from Contractor, as ascertained and agreed Liquidated Damages, and not by way of penalty, a sum equivalent to 1% of the Contract Value per week of delay. The Liquidated Damages referred above may be recovered by the Owner as set off against any amounts payable by the Owner to the Contractor or in any other manner in accordance with applicable laws.
- 11.2 The overall cap on liquidated damages shall be limited to 10% of the Contract Price.

12. Insurance

- 12.1 The Contractor agrees to indemnify and protect Owner against all liability, claims or demands for injuries or damages to any person or property growing out of the performance of this order/ Contract.
- 12.2 The Contractor further agrees to furnish evidence of insurance showing that Contractor has and will maintain adequate insurance coverage during the life of this Contract/ order in the opinion of Owner, including but not

limited to comprehensive general liability insurance. Such evidence of insurance must set forth the name of the insurer, policy number, expiration date, and limits of liability. Compliance by Contractor with insurance requirements does not in any way affect Contractor's indemnification of Owner under Indemnification clause

13. Indemnification:

The Contractor shall indemnify, save harmless and defend the Owner and keep the Owner indemnified from and against any and all claims, costs, liabilities (financial), litigations, compensations, judgments, expenses or damages (including attorney's fees and other related expenses) arising out of any breach or alleged breach of any of the conditions of this Contract including compliance to statutory laws of provisioned under clause 3, performance of the obligations hereunder, or any representation or misrepresentation made by the Contractor or by any third party in respect of death or bodily injury or in respect to loss or damage to any property with regard to the subject of this Contract.

14. Indemnity against IPR:

The equipment, system, drawings, and other materials that shall be supplied against the Contract will become the Owner's property. Without limitation of any liability of whatsoever nature, the Owner shall be indemnified and kept indemnified against any claim for infringement or breach of any of the statues, rules & regulations by the use of or sale of any article or material supplied by the Contractor. The indemnity shall include any infringement of patent, trade mark, design, copyright or other property rights whether in Country of Origin, or elsewhere resulting from the Contractor's design, manufacture, use, supply or re-supply & would also cover use or sale of any article or material supplied by the Contractor to the Owner under the Contract. The Indemnity shall cover any claim/action taken by a third party either directly against the Owner or any claim/action made against the Contractor & where under the Purchaser is made liable. The Indemnity shall be for losses, damages, and costs including litigation costs, attorney fees etc incurred by the Owner in relation to the Contract.

15. Free Issue Material:

Wherever contracts envisage supply of Free Issue Material (FIM) by the Owner to the contractor for fabrication/ use in service performance, such Free Issue Material shall be safeguarded by an insurance policy to be provided by the Contractor at his own cost for the full value of such materials and the insurance policy shall cover the following risks specifically and shall be valid for six months beyond the Contract Validity date :

RISKS TO BE COVERED: Any loss or damage to the Owner's materials due to fire, theft, riot, burglary,

strike, civil commotion, terrorist act, natural calamities etc. and any loss or damage arising out of any other causes such as other materials falling on Owner's materials.

The amount for which insurance policy is to be furnished shall be indicated in the respective Contract.

Free Issue material (FIM) will be issued to the Contractor only after receipt of the Insurance Policy from the Contractor. The contractor shall arrange collection of the FIM from the Owner's premises and safe transportation of the same to his premises at his risk and cost. Notwithstanding the insurance cover taken out by the Contractor as above, the Contractor shall indemnify the Owner and keep the Owner indemnified to the extent of the value of free issue materials to be issued till such time the entire contract is executed and proper account for the free issue materials is rendered and the left over/surplus and scrap items are returned to the Owner. The contractor shall not utilize the Owner's free issue materials for any job other than the one contracted out in this case and also not indulge in any act, commission or negligence which will cause/result in any loss/damage to the Owner and in which case, the Contractor shall be liable to the Owner to pay compensation to the full extent of damage/loss. The Contractor, shall be responsible for the safety of the free issue materials after these are received by them and all through the period during which the materials remain in their possession/control/custody. The Free issue materials on receipt at the Contractor's works shall be inspected by them for ensuring safe and correct receipt of the material. The contractor shall report the discrepancies, if any, to the Owner within 5 days from the date of receipt of the material. The contractor shall take all necessary precautions against any loss, deterioration, damage or destruction of the FIMs from whatever cause arising while the said materials remain in their possession/custody or control. The free issue materials shall be inspected periodically at regular intervals by the Contractor for ensuring safe preservation and storage, the Contractor, shall also not mix up the materials in question with any other goods and shall render true and proper account of the materials actually used and return balance remaining unused material on hand and scrap along with the final product and if it is not possible within a period of one month from the date of delivery of the final product/ completion of Service covered by this Contract. The Contractor shall also indemnify the Owner to compensate the difference in cost between the actual cost of the free issue material lost/damaged and the claim settled to the Owner by the insurance company.

16. Relation between parties:

The Contract shall be entered into on a principal-to-principal basis only. The Contract shall not be construed as a partnership or an association of persons. There is no agent and principal relationship between the parties. Each party shall be responsible for its own conduct. The Contractor shall ensure at all times that all the work carried out under this contract

either by its own person or through any of its sub-Vendors shall be always done under its own direct supervision.

17. Safety:

Contractor shall comply with all legal and statutory provisions including all rules and regulations pertaining to Safety, Health and the Environment and will be responsible for all legal liabilities arising due to any of their acts or of their personnel.

The Contractor shall comply with the Owner's Contractor Safety Policy and Safety Terms and Conditions. Any misconduct and/ or violation with respect to the Owner's Contractor Safety Policy and Safety Terms and Conditions or any other legal and statutory provisions pertaining to Safety, Health and Environment shall be dealt with as per the Safety Terms and Conditions.

Prior to commencement of any work at site Contractor shall submit an undertaking in writing to adhere to and comply with all the provisions of Owner's Contractor Safety Code of Conduct.

The Contractor shall have a valid ISO 14001/ OHSAS certification. In absence of the same, the Contractor shall obtain the same within 6 months from the date of the Effective Date of Contract.

18. Suspension of Work

Owner may instruct Contractor at any time to suspend performance of the Work or any part thereof with a notice of 7 days for whatever reason. Provided Contractor is not in default under this Contract subject to Articles 1 and 5 inclusive, the Contractor shall be paid a mutually agreed fee, if any, necessarily incurred by Contractor as a direct consequence thereof of suspension and the Project Completion Schedule may be revised accordingly.

Without prejudice to any other rights Owner may have under this Contract or at law if Contractor is in default under this Contract, Owner may instruct Contractor to suspend performance of the Work or any part thereof by giving 7 days notice till such default has been corrected to the satisfaction of Owner. Also Liquidated Damages in accordance with Clause 11 shall continue to be applicable during such period until the default is cured. The costs incurred by the Contractor for such correction shall be to the Contractor's account, and furthermore no payment shall become due to the Contractor. Any cost incurred due to non - performance of the Contractor by the Owner shall be charged to the Contractor.

19. Change Management:

Owner shall have the right at any time to order any change in the Work in accordance with the following procedure. Contractor shall furnish to Owner upon request as soon as reasonably possible but no later

than five (5) days following the request, a written statement specifying:

- (a) the increase or decrease, as the case may be, in the costs of the Work which will result from a change in the Work as requested by Owner,
- (b) any effect such change in the Work may have on any other provision of this Contract originating from either parties, and
- (c) such other details as Owner may require.

Any change in costs shall be reasonably related to the proportional change in the Work and any other costs incurred by Contractor. If Owner agrees to Contractor's statement Owner shall notify Contractor thereof in writing in the form of a change order, whereupon the change in the Work shall be incorporated in the Work and immediately implemented. In the event that the change relates to a reduction in Work, the work in question shall not be undertaken pending the issue of an appropriate Change Order.

20. Governing Laws

This Contract shall be construed in accordance with and governed by the Laws of India without giving effect to any principle of conflict of law.

21. Jurisdiction

This Contract and the transaction contemplated herein shall be subject to the exclusive jurisdiction of the competent Courts in Mumbai only.

22. Dispute settlement:

Dispute or differences arising out or relating to this Order shall be resolved amicably by the parties. Failing such amicable resolution of dispute / differences either party may refer the matter to arbitration of a Sole Arbitrator to be appointed jointly by both the parties. The award of the Arbitrator shall be final, binding and conclusive on the parties. The venue for arbitration shall be Mumbai. The Arbitration proceedings will be governed and regulated by the provisions of Indian Arbitration and Conciliation Act, 1996 as amended from time to time and the rules framed there under.

23. Force majeure:

- 23.1 In the event of either party being rendered unable by force majeure to perform any obligation required to be performed by it under this Contract the relative obligation of the party affected by such force majeure shall, after notice under this articles be suspended for the period during which such cause lasts. The term 'Force Majeure' as employed herein shall mean acts of God, wars (declared or undeclared), riots or civil commotion, fire, floods, and acts and regulations of the Government of India or State Government or any of the statutory agencies. Both the party

shall pay to the other party, the amount payable upon the date of the occurrence of such force majeure.

- 23.2 Upon the occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid, thereby shall notify the other party in writing immediately but not later than twenty four (24) hours of the alleged beginning and ending thereof giving full particulars and satisfactory evidence in support of the claims.

- 23.3 During the period, the obligations of the parties are suspended by force majeure; the contractor shall not be entitled to payment of any rate.

- 23.4 In the event of the force majeure conditions continuing or reasonably expected to continue for a period more than thirty (30) days, Owner shall have the option of terminating the contract by giving seven (7) days notice thereof to the contractor.

24. Sub letting and Assignment

The contractor shall not, without prior consent in writing of the Owner, sublet, transfer or assign the contract or any part thereof or interest therein or benefit or advantage thereof in any manner whatsoever, provided nevertheless that any such consent shall not relieve the contractor from any obligation, duty or responsibility under the contract.

25. Limitation of Liability:

Notwithstanding anything contained in the Contract, the Contractor's aggregate liability under this Contract shall be limited 100% of the Total Contract value. This shall exclude liability arising pursuant to clause 3- Compliance to Local Laws, clause 9.10, clause 14- Indemnity against IPR, clause 13- Indemnity, clause 26 – Confidentiality, liability arising due to loss of or damage to the Free Issue Material (FIM) issued by Owner to Contractor for completion of the Work and liability arising due to wilful misconduct, gross negligence, third party claims and corrupt acts attributable to the Contractor.

26. Confidentiality:

The Contractor shall use the Confidential Information of the Owner only in furtherance of this Contract and shall not transfer or otherwise disclose the Confidential Information to any third party. The Contractor shall (i) give access to such Confidential Information solely to those employees with a need to have access thereto; and (ii) take the same security precautions to protect against disclosure or unauthorized use of such Confidential Information that the party takes with its own confidential information but, in no event, shall a party apply less than a reasonable standard of care to prevent such disclosure or unauthorized use.

27. Termination:

27.1 The Contract shall be deemed to be terminated on completion of the Contract period.

27.2 Termination of default by Contractor:
Owner may terminate the contract at any time if the Contractor fails to carry out any of his obligations under this Contract. Prior to termination, the Contractor shall be advised in writing of the causes of unsatisfactory performance to be improved upon 15 days of the receipt of notice. In case, if the Contractor fails to bring about the improvement to the satisfaction of the Owner, then the Contract shall be terminated.

27.3 Without prejudice to the rights and remedies available to Owner, Owner may terminate the Contract or part thereof with immediate effect with written notice to the Contractor if:

27.3.1 The Contractor becomes bankrupt or goes into liquidation.

27.3.2 The Contractor makes a general assignment for the benefit of creditors.

27.3.3 A receiver is appointed for any substantial property owned by the Contractor.

27.3.4 The Contractor is in breach of any representation or warranty made to the Owner by the Contractor.

The Contractor shall not be entitled to any further payment under the Contract if the Contract is terminated. If the order is terminated under clause 27.2 and 27.3, the Contractor shall not be entitled to any further payment, except that, if Owner completes the Work and the costs of completion are less than the Contract Price, the Owner shall pay Contractor an amount properly allocable to services fully performed by Contractor prior to termination for which payment was not made to Contractor. In case, the cost of completion of Work exceeds the Contract Price, the additional cost incurred by Owner for such completion shall be paid by the Contractor.

27.4 Owner shall be entitled to terminate the Contract at its convenience, at any time by giving thirty (30) Days prior notice to the Contractor. Such notice of termination shall specify that termination is for Companies convenience and the date upon which such termination becomes effective. Upon receipt of such notice, the Contractor shall proceed as follows:

27.4.1 cease all further work, except for such work as may be necessary and instructed by the Owner/ Owner's representative for the purpose of preserving and protecting Work already in progress and protect

materials, facilities and equipment on the Work Site or in transit;

27.4.2 stop all further sub-contracting or purchasing activity, and terminate Sub-contracts;

27.4.3 handover all Documents, equipment, materials and spares relating to the portion of Work already executed by the Contractor or procured from other sources up to the date of termination for which the Contractor has received payment equivalent to the value thereof; and

27.4.4 handover those parts of the supplies manufactured/ work executed by the Contractor up to the date of termination.

Upon termination pursuant to clause 27.4, the Contractor shall be entitled to be paid (a) all sums properly due to the Contractor under the Contract up to the date of termination; and (b) any direct and substantiated charges already incurred or committed for cancellation of the procurement of third party goods or services which were to have been supplied by the Contractor in connection with this Contract provided that the Contractor shall use its best endeavours to minimise such charges

25.5 The Contractor shall not be released from any of his obligations or liabilities accrued under the Contract on termination. For the avoidance of doubt, the termination of the Contract in accordance with this clause shall neither relieve the Contractor of his accrued obligations for Warranty or his accrued liability to pay (liquidated) damages for Delay nor shall entitle him to reduce the value of Performance Security.

28. Consequential Damages:

Unless otherwise specified, neither Party shall be responsible for and nor shall be liable to the other Party for indirect/consequential losses and damages suffered by such Party including for loss of use, loss of profit whether such liability or claims are based upon any negligence on the part of the other Party or its employees in connection with the performance of the Contract.

29. Environment / ISO 14001 Certification:

The Contractor to confirm whether their organization is ISO 14001 certified. If not, the Contractor must certify that the handling, use and disposal of their product / by-products conform to practices consistent with sound environmental management and local statutes. The Contractor shall ensure that all the wastes are disposed in environmental friendly way with strict compliance to applicable laws including adherence to MoEF guidelines with respect to disposal of batteries, lead waste, copper cables, ash, waste oil, e-waste etc which shall be disposed through MoEF approved

parties only. The Contractor shall also be responsible to collect and recycle all the e-waste generated at the end of the product life cycle at its own costs and risks as per the MoEF guidelines/orders.

30. Non-Exclusive Agreement

This Contract is non-exclusive and Owner reserves the right to engage other contractors to perform similar or identical work. Contractor shall accord such other contractors adequate opportunity to carry out their contracts and shall accomplish the Work in co-operation with those contractors and with Owner, in accordance with such instructions as may be issued by the Owner from time to time.

31. Severability

In the event that any of the provisions, or portions or applications thereof, of this Contract are held to be unenforceable or invalid by any court or arbitration panel of competent jurisdiction, Contractor and Owner shall negotiate an equitable adjustment to the provisions of the Contract with a view towards effecting the purpose of the Contract and the validity and enforceability of the remaining provisions, or portions or applications thereof, shall not be affected thereby.

32. Housekeeping & Removal of scrap:

The Contractor shall be responsible for keeping the areas of his work at site, neat and tidy throughout the period of his work. All excess material/ spares/ consumables taken by Contractor, as well as the scrapped items and wooden logs/ crates/ planks shall be returned, from time to time, to the Stores, and transported/ unloaded by Contractor's personnel at the place shown by Order Manager/Engineer-in charge.

The Contractor shall so arrange that all the scrap generated during the progress of his work, is separated into two categories, viz.

- i) Saleable scrap like steel, copper or other metals, etc., and,
- ii) Others, which have nil or negligible resale value, like insulation material, jute, debris, etc. (or as directed by the Order Manager/Engineer-in charge).

The saleable scrap shall be shifted to and unloaded at a central place as per directions of the Stores-in charge, while the other scraps shall be shifted to other locations as per directions from Order Manager/Engineer-in Charge, or as per terms of the order.

The Contractor shall arrange to remove the scrap on regular basis, or even on daily basis, depending upon the requirement, to keep the area around his workplace neat and tidy. In case, it is observed that the

Contractor is not carrying out regular cleaning of his areas of work, or, is not returning the excess materials/ scrap, etc., to the Stores, Owner reserves the right to arrange the same through other sources, and back-charge the Contractor the cost of doing so, along-with overheads, by deducting the amount from Contractor's bills.

Contractor's final bill will be cleared by Owner only after confirming that proper clearing of his areas of work has been completed by the Contractor, and same is certified by the Order Manager/ Engineer in-charge

33. Tata Code of Conduct

The Owner abides by the Tata Code of Conduct in all its dealing with stake holders and the same shall be binding on the Owner and the Contractor for dealings under this Order/ Contract. A copy of the Tata Code of Conduct is available at our website: <http://www.tatapower.com/aboutus/code-of-conduct.aspx>. The Contractor is requested to bring any concerns regarding this to the notice of our Chief Ethics Officer on the e-mail ID: cecounsellor@tatapower.com.

34. Responsible Supply Chain Management:

The Owner is committed for a cleaner environment and respect of Human rights through its Responsible Supply Chain Management policy. The Contractor is required to comply with all the environment & Human rights related laws, including emission norms, Labour and environmental regulations. The Owner encourages its Vendors/ Contractors/ Business partners to pay more attention to green design, green supply, green production, green logistics and green packaging in performing their business obligations.

The Contractor is required to abide by the Tata Power Corporate Environment policy, Energy Conservation and Corporate Sustainability Policy.

A copy of the Responsible Supply Chain Policy along with Environment policy, Energy Conservation policy, Sustainability policy, Health & Safety policy and Human Rights policy is available at website: <http://www.tatapower.com/sustainability/policies.aspx>.

Contractor/Bidder is required to completely fill the attached "Supplier Sustainability Questionnaire" in support of their Green Supply Chain Management initiatives and submit the same with their offer.

The Owner recognizes that diversity in the workplace positively impacts business. The Owner is committed to help people from SC/ST background either by helping them to become entrepreneurs or by engaging workforce from SC/ST community under the contracts agreed herein. To encourage engaging SC/ST community, the owner may consider on the merit to incentivize the Contractor by paying additional 1% of

the service contract portion if the number of SC/ST workforce engaged in the contract exceeds 30% of the total deployed strength and 2%, if the strength goes beyond 50%. While the Contractor will assist the workforce so engaged to become self-reliant in meeting the work expectation, the Owner may also volunteer its training resources to the extent possible to improve their employability. The Contractor shall maintain the proper documentation of such category of the workforce engaged and the owner may consider to pay the incentive after its verification.

The Owner may also consider extending price preference of 5% in the bid evaluation for an order value up to Rs.50 Lacs, provided the company is owned by a person from SC/ST community having minimum 50% holding in the company.

35. Vendor rating:

You are requested to ensure compliance to the terms of the individual orders with regards to timely delivery, provision of all applicable documents / challans / test certificate, quality of the material etc. Your performance with respect to the said factors will be taken into consideration for future business.

36. Vendor Feedback:

34.1 In this dealing Vendors feedback is important for the purchaser to improve its processes. If Contractor have to report any grievance, problem or require any clarification, information, Contractor is requested to contact purchaser at email ID:
CC_CUSTOMERFEEDBACK@tatapower.com

34.2 Contractor is requested to ensure compliance to the terms of the individual orders with regards to timely delivery, provision of all applicable documents / challans / test certificate, quality of the material etc. Contractor performance with respect to the said factors will be taken into consideration for future business.

37. Non-Waiver:

Failure of Owner or its representatives to insist upon adherence to any of the terms or conditions incorporated in the Contract or failure or delay to exercise any right or remedies herein or by law accruing, or failure to promptly notify the Contractor in the event of breach or the acceptance of or the payment of any Material(s) hereunder or approval of any design or Material(s) shall not release the Contractor and shall not be deemed a waiver of any right of Owner to insist upon the strict performance thereof or of any of its rights or remedies as to any

such Material(s) regardless of when the Material(s) are shipped, received or accepted not shall any purported oral modification or revisions of the Contract by Owner or its representative(s) act as waiver of the terms hereof.

ESG FRAMEWORK FOR BUSINESS ASSOCIATES

Tata Power's Sustainability philosophy sits at the core of its Business Strategy. Tata Power Sustainability Model has an overarching objective of 'Leadership with care' with key elements of 'Care for the Environment'; 'Care for the Community'; 'Care for our Customers / Partners' and 'Care for our People'. These sustainability objectives encompass the Environmental, Social and Governance objectives driven as integrated elements.

Tata Power, together with its stakeholders is determined to achieve sustainable growth while creating shared value for all.

As a part of future ready roadmap, Tata Power has targeted following as our Environment, Social and Governance priorities:

- Being Carbon Net Zero before 2045
- Growing Clean capacity (80% by 2030)
- Customer centricity
- Becoming water neutral before 2030
- Achieving zero waste to landfill before 2030
- No net loss of biodiversity before 2030
- Positively impacting 80 million lives by 2027

In order to create a sustainable business ecosystem, Tata Power expects that all its Business Associates (BA) which includes its suppliers, vendors, consultants and service providers to align to its ESG and sustainability commitments.

Tata Power encourages improved efficiencies and scaling up of green initiatives through technology and innovation taking us farther on the journey of reducing carbon emissions and preparing the entire eco-system towards products and services that would have net positive impact on the environment and communities that we operate in.

The Vendors/ bidders wishing to associate with Tata Power are expected to share their own sustainability and ESG journey. We at Tata Power promote all Business Associates to have a sustainable procurement policy for their supplier and service providers to contribute to our integrated approach in achieving a sustainable supply chain. The BA is encouraged to carry out the assessment of their sub-contractors and sub-vendors on sustainability readiness so that they are aware of the expectation/ business requirement.

The Vendor/ Bidder shall fill-in the 'Environment, Social and Governance Compliance Screening Questionnaire for Business Associates' attached at Annexure-I and submit the same along with the Bid in Ariba online platform.

Responsible Supply Chain Management:

Tata Power is committed for a cleaner environment and respect of Human rights through its Responsible Supply Chain Management policy.

Tata Power Business Associate (BA) shall comply with all the environment & Human rights related laws, including emission norms, Labour and environmental regulations.

Tata Power encourages its BA to focus on green design, green supply, green production, green logistics and green packaging in performing their business obligations. The BA is expected to abide by the Tata Power Corporate Environment policy, Energy Conservation and Corporate Sustainability Policy (enclosed with this document as Annexure-II).

The BA is expected to:

- Strive towards Conservation of Energy, Water, Resources and optimize transportation of Men & Materials to minimize environmental impact and reduce carbon footprint.
- Carry out the assessment of materials used for construction, operation & maintenance, consumables and accordingly phase out those materials which are environmentally hazardous.
- Be cognizant that diversity in the workplace positively impacts business.
- Promote affirmative action by supporting people from SC/ ST background by engaging workforce from SC/ ST community under the contracts agreed herein.
- Share the commitment of 'No child labour', 'No forced labour', Non-discrimination on the basis of caste, colour, religion, gender, disability, maternity or pregnancy or any other factor unrelated to the requirements of the job
- Pay the wages or remuneration to the workforce, personnel deployed in compliance to all applicable laws and regulations.
- Provide its employees/ deployed labor with an employment environment that is free of physical or psychological harassment.
- Carry out the assessment of their Sub-contractors on their Sustainability Readiness so that they are aware of the above expectation/ standards
- To ensure usage of suitable package material which is more environmentally sustainable. Further the packing material shall be recycled to the extent possible. The material used for packing is expected to suit the mode of transport and to ensure its safe receipt at point of delivery.

Waste Disposal:

The BA is expected to follow best practices for disposal of waste, few of which are listed below:

- Have a detailed project plan that includes the waste management, segregation of all designated waste material (Recyclable/ Non-Recyclable), collecting, storing, disposing and transferring the same to pre-arranged facility/ destination in timely and safe manner as per environmental legislations. The project plan shall also include the innovative construction practice to eliminate or minimize waste, protect surface/ground water, control dust and other emissions to air and control noise.
- Have purchase policy to encourage the procurement of material with recycled and minimum packaging of goods during delivery and appropriate means for site-to-site transportation of materials to avoid damage and litter generation.
- Ensure that the residents living near the site are kept informed about proposed working schedule and timings/ duration of any abnormal noise full activity that is likely to happen.
- Ensure the regular maintenance and monitoring of vehicles and equipment for efficient fuel use so that emissions and noise are within acceptable limits to avoid air pollution.

Water Management:

The BA is expected to follow best practices for water management, few of which include a management and monitoring system for water withdrawals and consumption, procedures to reduce water usage or reuse/recycle water, and pretreatment of wastewater before disposal.

Compliance to Law:

The BA shall adhere to responsible business practices and comply with the provision of all the Statutory Acts Applicable. Special attention of the BA is drawn towards the compliance of provision of the following statutes: (along with the latest amendments/additions, as applicable):

- The Child Labour (Prohibition and Regulation) ACT, 1986.
- The Contract Labour (Regulation and Abolition) ACT, 1970.
- The Employee's Pension Scheme, 1995.
- The Employee's Provident Funds and miscellaneous provisions Act, 1952.
- The Employees State Insurance Act, 1948.
- The Equal Remuneration Act, 1976.
- The Industrial Disputes Act, 1947.
- The Maternity Benefit Act, 1961.
- The Minimum Wages Act, 1948.
- The Payment of Bonus Act, 1965
- The Payment of Gratuity Act, 1972.
- The Payment of Wages Act, 1936.
- The Shops & Establishment Act, 1954.
- The Workmen's Compensation Act, 1923.
- The Employer's Liability Act, 1938.
- and any other applicable statutory act

Social Accountability (SA 8000):

Tata Power expects its BAs to follow guidelines of SA 8000:2014 on the following aspects

- Child Labour
- Forced or Compulsory Labour
- Health & Safety
- Freedom of Association & Right to Collective Bargaining
- Discrimination
- Disciplinary Practices
- Working Hours
- Remuneration
- Management System

Health and Safety

The BA is expected to ensure the health and safety of his and his Sub-contractor's staff and labour. The BA shall, in collaboration with and according to the requirements of the local health authorities, ensure that medical staff, first aid facilities, sick bay and ambulance service are available at the accommodation and on the Site at all times, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The BA shall maintain records and make reports concerning health, safety and welfare of persons deployed, and damage to property, as the Owner's Representative may reasonably require. The BA shall be responsible for the medical treatment / hospitalization of his and his Sub-contractor's staff/ labour.

The BA shall appoint a qualified Safety officer at the Site to be responsible for maintaining the safety, and protection against accidents, of all personnel on the Site. Such Safety officer shall have the authority to issue instructions and take protective measures to prevent accidents.

The BA shall comply in toto with the Tata Power's Contractor Safety Terms & Conditions, Health Safety & Environment Manual while working on Tata Power Site/ Services/ Contracts.

Grievance Mechanism

The BA is expected to have grievance procedures that allow stakeholders to anonymously bring environmental and/or work-related violations and/or concerns to the attention of management. In addition, the BA is expected to have procedures for examining reports of environmental and/or work-related violations or concerns and/or privacy complaints.

Data Protection

The BA is expected to have a formal process to address data security or privacy issues.

ANNEXURE-I



Sr. No.	Question Description	Response (Y/N)	Remarks
Organization			
1	Does your Company have Sustainability Policy at Organization Level? If Yes, Please attach		
2	Do you have sustainable procurement policy in place for your own suppliers? If Yes, Please attach		
3	Does your company do regular assessment of its suppliers on ESG parameters?		
4	Are there ESG risks, or negative impacts identified in your supply chain		
Governance			
1	Is diversity taken into consideration when appointing board members/ senior management? Do you have an independent director/s?		
2	Has your company taken initiatives to ensure ethical practices at workplace? Please share the details, Policies etc.		
3	Does your company have a formal process to address data security or privacy issues? Please share the details, Policies etc.		
4	Does your company have grievance mechanism for stakeholder issues and track resolution?		
Environment/ Planet			
1	Does your company have Environmental Policy? If Yes, Please attach		
2	Do you have a formal process for waste management including solid wastes, liquid wastes and hazardous waste?		
3	Does your company track greenhouse gas emission? Also, what percentage of own consumption comes from the renewable energy?		
4	Does your company have a formal process for water management including monitoring of water consumption and withdrawals, and if applicable, pretreatment of wastewater?		
Green Technology/ Innovation			
1	Are your facility/ Product/ Services provided by you is based on green design, green production, green packaging or green logistics considerations? Please elaborate.		
2	Do your products or services have any environmental or social features or benefits (e.g. environmental/energy certification, ecolabels, fair trade certification, etc.)?		
Social/ People			
1	Does you facility/ Company have written personnel policies in place Are you an equal opportunity employer?		
2	Please describe any formal programme / campaign in place to promote company involvement with the community (volunteering, etc.). What is the percentage of profit spend on community activities?		
3	Does your company have a written Health & Safety Policy or Program? If Yes, Please attach		
Certifications: Does your company have following certifications (valid till date-please mention validity)			
1	ISO9001 accreditation		
2	SA8000 or equivalent		
3	ISO 14001 certification		
4	ISO 18001/45001 or equivalent		
5	ISO/IEC 27001 or equivalent		
6	Any Other (Please specify)		

Signature

Business Associate Name

ANNEXURE-II

CORPORATE SUSTAINABILITY POLICY

At Tata Power, our Sustainability Policy integrates economic progress, social responsibility and environmental concerns with the objective of improving quality of life. We believe in integrating our business values and operations to meet the expectations of our customers, employees, partners, investors, communities and public at large

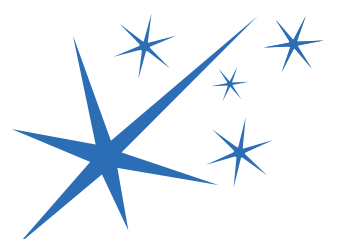
- We will uphold the values of honesty, partnership and fairness in our relationship with stakeholders
- We shall provide and maintain a clean, healthy and safe working environment for employees, customers, partners and the community
- We will strive to consistently enhance our value proposition to the customers and adhere to our promised standards of service delivery
- We will respect the universal declaration of human rights, International Labour Organization's fundamental conventions on core labour standards and operate as an equal opportunities employer
- We shall encourage and support our partners to adopt responsible business policies, Business Ethics and our Code of Conduct Standards
- We will continue to serve our communities:
 - By implementing sustainable Community Development Programmes including through public/private partnerships in and around our area of operations
 - By constantly protecting ecology, maintaining and renewing bio-diversity and wherever necessary conserving and protecting wild life, particularly endangered species
 - By encouraging our employees to serve communities by volunteering and by sharing their skills and expertise
 - By striving to deploy sustainable technologies and processes in all our operations and use scarce natural resources efficiently in our facilities
 - We will also help communities that are affected by natural calamities or untoward incidence, or that are physically challenged in line with the Tata Group's efforts

The management will commit all the necessary resources required to meet the goals of Corporate Sustainability.



(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018



Supplier Code of Conduct

Tata Power follows the Tata Code of Conduct (TCoC) and the Whistle blower Policy and expect all its Suppliers to adhere to the same principles. “Supplier” here means any business, company, corporation, person or other entity that provides, sells or seeks to sell, any kind of goods or services to Tata Power, including the Supplier’s employees, agents and other representatives.

Tata Code of Conduct- (TCoC): <https://www.tatapower.com/pdf/aboutus/Tata-Code-of-Conduct.pdf>

Whistle Blower Policy: <https://www.tatapower.com/pdf/aboutus/whistle-blower-policy-and-vigil-mechanism.pdf>

Anti-Bribery & Anti-Corruption Policy: <https://www.tatapower.com/pdf/aboutus/abac-policy.pdf>

The suppliers are expected to adhere to the following Do’s and Don’ts:

Do’s

1. The Suppliers shall be committed to supplying products and services of high quality that meet all applicable standards and laws, including product packaging, labelling and after-sales service obligations.
2. Comply with all applicable laws and regulations, both in letter and in spirit, in all the territories in which it operates.
3. Strive to provide a safe, healthy and clean working environment for its employees.
4. Strive for environmental sustainability, particularly with regard to the emission of greenhouse gases, consumption of water and energy and the management of waste and hazardous materials.
5. The Supplier shall represent our company (including Tata brand) only with duly authorised written permission from our company.
6. Safeguard the confidentiality on the use of intellectual property, information and data of the Company.
7. Gifts and hospitality given or received should be modest in value and appropriate as per Company Policy.
8. The assets of Tata Power shall be employed primarily and judiciously for the purpose of conducting the business for which they are duly authorised.
9. All actual or potential conflicts due to financial or any other relationship with a Tata Power employee shall be disclosed.

Don’ts

1. The Supplier shall not make unfair or misleading statements about the products and services of competitors.
2. Children shall not be employed at workplaces.
3. Forced labour shall not be used in any form.
4. The Suppliers shall neither receive nor offer or make, directly or indirectly, any illegal payments, remunerations, gifts, donations or comparable benefits that are intended, or perceived, to obtain uncompetitive favours for the conduct of its business with Tata Power.

Reporting Violations

The Supplier shall notify the Company regarding any known or suspected improper behaviour of other suppliers or employees relating to its dealings with Tata Power, by email to: cecounsellor@tatapower.com. The same can also be raised through our 3rd party ethics helpline facility:

Toll-free Number	1800 267 4065
Email	tatapower@tip-offs.in
Website & Chatbot	www.tatapower.tip-offs.in
Postal address	Attn to: Mr. Puneet Arora, Deloitte Touch Tohmtsu India LLP, 6 floor, AIPL Business, Sector 62, Gurugram, Haryana 122102