



No. REC/PMD/AMISP/2022-23/270

Date: 28.09.2022

Subject: Addendum of option for usage of SMC meter boxes and guidance on inclusion of additional scope of Smart System Metering in non-contiguous areas – in the latest version of AMI Service Provider (AMISP) SBD

Sir / Ma'am,

This is in continuation to the last version of SBD for appointment of AMISP under RDSS, issued vide our letter ref REC/RDSS/2021-22/236 dtd. 20th August, 2022.

Subsequently, REC has been in receipt of a number of inputs and suggestions from DISCOMs and Industry Stakeholders for addressal of a few additional provisions in the SBD.

Accordingly, Annexure-I is enclosed herewith, highlighting the addendum to the SBD, for providing the option for usage of SMC meter boxes along-with the guidance on inclusion of additional scope of Smart System Metering in non-contiguous areas (*in case the DISCOM opts to undertake these works under the same RFP, along-with the works in contiguous areas*). The same is also uploaded on REC website (<http://recindia.nic.in/SBD-AMISP>).

This for your kind information and necessary action please.

With regards,

Yours Sincerely,


(R. Lakshmanan) 28.9.22.

Enclosed: As Above.

To,
The Chairman / Managing Director (s)
All DISCOMs

Copy to:

1. The Addl. Chef Secretary/Principal Secretary / Secretary (Power/Energy), All States
2. The Joint Secretary, Ministry of Power, Government of India
3. The CMD, PFC Ltd
4. All Sr. CPMs / CPMs of REC Regional Offices.

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A. Addendum to SBD - Inclusion of additional option of SMC meter boxes:

Annexure O under Section 6 of the SBD mentions that the meter boxes of 1-Ph and 3-Ph consumer meters to be of polycarbonate material. In respect of the 1-Ph and 3-Ph consumer meters, wherever the SBD mentions the type of meter boxes to be installed, the same shall include the option of using SMC meter boxes as well and the appropriate choice may be made by the DISCOMs based on their assessment and contextual requirements.

B. Guidance note for inclusion of additional scope of smart system metering (DTs/ Feeders) in balance areas (non-Phase-I areas), from the areas proposed for the end-to-end smart metering RFP (SBD) for appointment of Advanced Metering Infrastructure (AMI) Service Provider in Phase-I contiguous electrical locations – in case the DISCOM opts to undertake both these works under the same RFP

In reference to the Guidance circulated to Discoms vide letter no. REC/RDSS/22-23/204 dated 11th July 2022, point 2 (iii) stated that Utilities may also choose to include additional scope of smart metering of remaining DTs/ Feeders in the AMISP tenders to be rolled out for smart prepaid metering of Phase-I consumers. This would help utilities streamline the implementation schedule as well as help them expedite the smart meter deployment of 100% DTs and Feeders of Phase-II areas in-line with their REF and RDSS scheme guidelines.

If the utility decides to leverage the above-mentioned option, following changes may be required in the Model Standard Bidding Document (SBD) released for appointment of Advanced Metering Infrastructure (“AMI”) Service Provider (“AMISP”) for Smart Prepaid Metering in India on Design Build Finance Own Operate Transfer (DBFOOT) basis (*<Key changes are highlighted in red for easy reference>*):

1. Section 6 Clause 1.2 of the SBD shall be modified as follows:

“1.2 The AMI Project area

The AMI Project shall be implemented in the Project Area comprising of:

- (A) Contiguous electrical locations (which will be ring fenced with boundary meters) where all consumers, DTs, feeders shall be smart metered to enable complete energy accounting with zero manual intervention*
- (B) Non-contiguous electrical locations where dispersed metering for certain Industrial, Commercial and Government consumers and*
- (C) Non-contiguous electrical locations where smart metering of remaining DTs, Feeders and Boundary meters, i.e., those not covered under (A) above.*

<The Utility to provide information on contiguous electrical locations (which will be ring fenced with boundary meters) for end-to-end smart metering and non-contiguous electrical locations for dispersed metering within the selected AMI Project Area along with relevant network and consumer details. Utility to enter brief details on the above areas in this section with details added as an annexure to this document as required. Utility to ensure that area selected for end-to-end metering

is ring-fenced with boundary meters. This would include a pictorial representation of the Project boundary w.r.t Utility's and AMISP's roles and responsibilities for physical installation of Smart Meters>

[Profile of Project area. The key details include following:

A) Contiguous Electrical Locations:

- I. Geographical Boundary;*
- II. Number of single phase whole current Smart Meters (with/without net-metering), three phase whole current Smart Meters (with/without net-metering), LT-CT operated three phase Smart Meters (with/without net-metering), and CT/PT operated three phase Smart meters to be installed*

<The total number of smart meters to be installed should be based upon As-Is consumer database as well as projected load growth in the selected AMI Project Area during the Contract Period. Accordingly, the Utility should provide the appropriate quantity of smart meters to be installed for the AMI project based on the above consideration in Form 1 (Financial Bid) given in Section 5 of the RfP. AMISP shall provide meter LTCTs for LTCT meters as per the specifications provided by the Utility. Utility shall provide CTPTs to AMISP for HT-CTPT meters. In case Utility require AMISP to procure meter HT-CTPTs, the number and specifications for the same need to be provided by the Utility>

- III. Total number of consumer by category (Domestic/ Industrial/ Commercial/ Government);*
- IV. Substation information;*
- V. Feeder information;*
- VI. DT information;*
- VII. AT&C loss information (including billing and collection efficiency)*
- VIII. Historical load growth in project area;*
- IX. Manpower deployed in the selected area(s) of operations;*

B) Non-Contiguous Electrical Locations (Consumers):

- I. Geographical Boundary,*
- II. Number of single phase whole current Smart Meters (with/without net-metering), three phase whole current Smart Meters (with/without net-metering), LT-CT operated three phase Smart Meters (with/without net-metering), and CT/PT operated three phase Smart meters to be installed;*

<The total number of smart meters to be installed should be based upon As-Is consumer database as well as projected load growth in the selected AMI Project Area during the Contract Period. Accordingly, the Utility should provide the appropriate quantity of smart meters to be installed for the AMI project based on the above consideration in Form 1 (Financial Bid) given in Section 5 of the RfP. AMISP shall provide meter LTCTs for LTCT meters as per the specifications provided by the Utility. Utility shall provide CTPTs to

AMISP for HT-CTPT meters. In case Utility require AMISP to procure meter HT-CTPTs, the number and specifications for the same need to be provided by the Utility>

- III. *Total number of consumer by category (Industrial/ Commercial/ Government);*
- IV. *Substation information;*
- V. *Feeder information;*
- VI. *DT information;*
- VII. *Historical load growth in project area;*
- VIII. *Manpower deployed in the selected area(s) of operations;*

C) Non-Contiguous Electrical Locations (DTs/ Feeders/ Boundary meters):

- I. *Geographical location (Electrical division etc.)*
- II. *LT-CT operated three phase Smart Meters (with/without net-metering), and CT/PT operated three phase Smart meters to be installed;*

<The total number of smart meters to be installed should be based upon As-Is consumer database as well as projected load growth in the selected AMI Project Area during the Contract Period. Accordingly, the Utility should provide the appropriate quantity of smart meters to be installed for the AMI project based on the above consideration in Form 1 (Financial Bid) given in Section 5 of the RfP. AMISP shall provide meter LTCTs for LTCT meters as per the specifications provided by the Utility. Utility shall provide CTPTs to AMISP for HT-CTPT meters. In case Utility require AMISP to procure meter HT-CTPTs, the number and specifications for the same need to be provided by the Utility>

- III. *Total number of meters by category (DTs/ Feeders/ Boundary meters) and existing number of tagged consumers by category;*
- IV. *Substation information;*
- V. *Feeder information;*
- VI. *DT information;*
- VII. *AT&C loss information (including billing and collection efficiency), if available (at Feeder level etc.)*
- VIII. *Historical load growth in project area;*
- IX. *Manpower deployed in the selected area(s) of operations (Nodal officer/ single point of contact at Electrical division level etc.);*

D) Other Details:

- I. *Details regarding periodicity/ frequency of the integration, data parameters including feeder energy data/ formats to be sent and received, protocol(s) to identify and address exceptions, and concurrency requirements;*
- II. *Details on requirement of infrastructure for recharge through feature phones/ offline channels required by the Utility.*

<Assumption based on one kiosk per existing bill pay centre for a period of 3(three) years>]”

2. Section 6 Clause 1.4 (C) of the SBD shall be modified as follows:

(C) Consumer indexing on de-novo basis for

- i. *Contiguous electrical locations as mentioned in Clause 1.2 (A) in the selected AMI Project Area along with its regular updates during contract period as per Clause 4 of this Section.*
 - ii. *Non-contiguous electrical locations as mentioned in Clause 1.2 (C), i.e., Consumer indexing with DTs on de-novo basis along with its regular updates during contract period as per Clause 4 of this Section; and feeder to DT indexing on de-novo basis for all DTs in along with its regular updates during contract period as per Clause 4 of this Section.”*
3. Section 6 Clause 2.4 of the SBD: A new table on key use cases to be enabled by the AMISP for Non-contiguous electrical locations as mentioned in Clause 1.2 (C) shall be added below the existing use cases table:

“The key use cases to be enabled by AMISP for contiguous electrical locations as mentioned in 1.2 (A) and non-contiguous electrical locations as mentioned in 1.2 (B) are provided below. Please note that these are illustrative list of use cases only and is not an exhaustive list. Further please note that all IS Standards shall be applicable.

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
1.	Collection of Daily Meter Profile			
1.1	<i>At scheduled frequency HES should pull the Daily Meter Data from Smart Meter over communication Channel</i>	<i>HES</i>	<i>Meter</i>	<i>Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date</i>
1.2	<i>Meter should send the data to HES. Provision for retrieval should be there if Meter data is not collected within time. Consumption details including non-critical events will be in 15 min/30 min block data, and data could be incremental to what was sent by meter in preceding instance</i>	<i>Meter</i>	<i>HES</i>	<i>Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date</i>
1.3	<i>HES should send the data to MDM</i>	<i>HES</i>	<i>MDM</i>	<i>Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF</i>
1.4	<i>MDM should send the required parameter to Prepaid system for daily charge calculation at least once on daily basis</i>	<i>MDM</i>	<i>Prepaid Engine</i>	<i>Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date</i>
2.	Monthly Billing profile collection			
2.1	<i>Command from Billing system triggered and send to MDM / HES for collection of Monthly billing Data</i>	<i>Billing System</i>	<i>MDM / HES</i>	<i>Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date</i>

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
2.2	At scheduled frequency HES should pull the monthly meter data from Smart Meter over the communication channel	HES	Meter	Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date
2.3	Meter should send the data to HES. Provision for retrieval should be there if Meter data is not collected within time.	Meter	HES	Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date
2.4	HES should decrypt and validate the data collected and send to MDM	HES	MDM	Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date
2.5	MDM should send the required parameter to Billing system for Monthly Bill calculation	MDM	Billing Engine	Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date
3.	Remote Meter disconnection			
3.1	Meter disconnect operation command after wallet balance calculation	Prepaid Engine/ Billing system	MDM	Meter Number, group of meters, instruction to close switch
3.2	Disconnection alert sent to consumer	MDM	Billing System	Meter Number, group of meters, instruction to close switch
3.3	Meter disconnection operator command	MDM	HES	Meter number, action (disconnect)
3.4	Consumer meter disconnection	HES	Meter	Meter Number, switch status
3.5	Disconnection Status Update	Meter	HES	Meter Number, switch status
3.6	Disconnection Status Update	HES	MDM	Meter Number, switch status
4.	Remote Meter Reconnection			
4.1	Meter reconnect operation command after wallet recharge Billing	Billing system/ Prepaid Engine	MDM	Meter Number, group of meters, instruction to close switch
4.2	Meter reconnect operation command	MDM	HES	Meter Number, group of meters, instruction to close switch
4.3	Consumer meter reconnection	HES	Meter	Meter number, action (reconnect)
4.4	Reconnection Status Update	Meter	HES	Meter number, action (reconnect)

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
4.5	Reconnection Status Update	HES	MDM	Meter number, action (reconnect)
5.	Utility detects tampering at consumer site			
5.1	High priority events captured by Meter sent to HES as and when occurred	Meter	HES	Meter Number, event date & time, event Code /description
5.2	High priority events reach MDM for further action.	HES	MDM	Meter Number, event date & time, event Code /description
5.3	Share with WFM to Notify utility personnel for site inspection	MDM	WFM	Consumer number, Meter Number, Tamper code, address
5.4	On analysis and detection of valid tamper event or malfunction, the tamper event must be sent / pushed by the meter to the HES /MDM	Meter	HES/ MDM	Consumer number, meter number, action to be triggered (disconnect), action date & time
5.5	HES sends disconnect command to meter	HES	Meter	Meter Number, action (disconnect)
5.6	Tamper event shared with CIS/CRM. Billing determinants are updated for tamper invoicing	MDM	CIS / CRM	Meter Number, event date & time, event Code /description
5.7	Meter re-connection order once tamper issue is resolved	MDM	HES	Meter number, action (re-connect)
5.8	HES sends re-connect command to meter	HES	Meter	Meter Number, action (re-connect)
6.	Missed interval readings			
6.1	On identifying missed interval, HES will re-acquire data for the missing period from meter	HES	Meter	Meter Number, from date & time, to date & time (for which data is missing)
6.2	On receiving data request command, meter will send data to HES	Meter	HES	Meter Number, reading date & time, kW, kVA, kWh, kVAh
6.3	Missed Interval and Reads Data acquired by MDM	HES	MDM	Meter Number, readings with date & time
7.	Consumer connection outage/restoration event			
7.1	Outage/restore event recorded by meter is sent to HES as and when event occurs	Meter	HES	Meter Number, Outage / restoration Date / Time, Power On or Off count
7.2	Outage / Restoration Notification	HES	MDM	Meter Number, Outage / restoration Date / Time, Power On or Off count

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
7.3	Sharing Outage / Restoration Notification	MDM	OMS/CIS-CRM	Meter Number, Outage / restoration Date / Time, Power On or Off count
7.4	Meter read request from OMS to identify service outage / restoration	OMS	MDM → HES	Meter Number,
7.5	Meter responds to event poll from HES	Meter	HES	Meter number, Status (live/dead)
8.	Remote firmware upgrades/ meter configuration changes			
8.1	Remote firmware upgrade	HES	Meter	Firmware
8.2	Configuration Commands: Change tariff parameters, Synchronize clock, Registers reset (status, max, tampering)	HES	Meter	Meter number, tariff parameters, registers status, event type and priority
8.3	Status update of Firmware / Configuration	Meter	HES	
9.	Load monitoring at demand side			
9.1	When there is a load violation event recorded in the meter, the information is sent to the CC	Meter	HES → MDM	Meter Number, max demand, date & time of load violation
10.	Time synchronization			
10.1	Synchronizing RTCs of meters / DCUs/ACP	HES	DCU/Meter	Time Setting
11.	Metering network changes			
11.1	Change / new installation in Meter / DCU Network Hierarchy	Meter / DCU	HES	Network identification info including DCUs
11.2	Change / new installation in Meter / DCU Network Hierarchy	HES	MDM	Network identification info including DCU
12.	New consumer connection			
12.1	Receive verified pre & post-paid new consumer requests	CIS-CRM/ Billing	MDM	Consumer name, address. Connection request etc.
12.2	Generate meter installation order	MDM	WFM	Consumer ID & details
12.3	Receive meter installation report	WFM	MDM	Meter number, DT no, Feeder & reading
12.4	Requesting instant, interval & events data from meters	MDM	HES → Meter	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
12.5	Acquire instant, interval / events data from meter by	HES	MDM	Meter Number, Reading date & time, reading

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
	<i>HES which then reaches MDM system.</i>			<i>params (kWh, kVAh, kW etc.)</i>
12.6	<i>Once new meter remote read verification is over, confirm new connection with other applications</i>	<i>MDM</i>	<i>Billing / CIS-CRM</i>	<i>Consumer ID, Consumer address, Meter Number, initial reading etc.</i>
13.	<i>Migrate post-paid consumer to prepaid mode</i>			
13.1	<i>Receive migration request</i>	<i>CIS-CRM/ Billing</i>	<i>MDM</i>	<i>Migration request for post-paid consumer with profile</i>
13.2	<i>Setup prepaid consumer profile in prepaid engine. If no change in meter is required, skip next two steps</i>	<i>MDM</i>	<i>Prepaid Engine</i>	<i>Prepaid consumer profile</i>
13.3	<i>Generate prepaid meter installation order if required</i>	<i>MDM</i>	<i>WFM</i>	<i>Consumer ID & details</i>
13.4	<i>Receive meter installation report</i>	<i>WFM</i>	<i>MDM</i>	<i>Meter number, DT no, Feeder & reading</i>
13.5	<i>Enable prepaid mode in meter</i>	<i>Prepaid engine</i>	<i>HES → Meter</i>	<i>Engineering token</i>
13.6	<i>Receive activation confirmation</i>	<i>HES</i>	<i>MDM</i>	<i>Activation status</i>
13.7	<i>Request instant, interval & events data from meter</i>	<i>MDM</i>	<i>HES → Meter</i>	<i>Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)</i>
13.8	<i>Acquire instant, interval / events data from meter by HES which then reaches MDM system.</i>	<i>HES</i>	<i>MDM</i>	<i>Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)</i>
13.9	<i>Once meter remote read verification is over, share migration request completion detail with other modules</i>	<i>MDM</i>	<i>Billing / CIS-CRM</i>	<i>Prepaid consumer profile</i>
14.	<i>Migrate prepaid consumer to post-paid mode</i>			
14.1	<i>Receive migration request</i>	<i>CIS-CRM</i>	<i>MDM</i>	<i>Migration request for prepaid consumer with profile</i>
14.2	<i>Request meter data</i>	<i>MDM</i>	<i>HES → Meter</i>	<i>Meter Number, Consumer ID</i>
14.3	<i>Acquire instant, interval / events data from meter by HES which then reaches MDM system.</i>	<i>HES</i>	<i>MDM</i>	<i>Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.) with balance credit</i>

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
14.4	Send meter disconnect command	MDM	HES → Meter	
14.5	Receive connection status	HES	MDM	Disconnect status
14.6	Enable post-paid mode in meter	MDM	HES → Meter	Engineering token
14.7	Receive activation of post-paid mode	HES	MDM	Activation Status
14.8	Request instant, interval & events data from meter	MDM	HES → Meter	Meter Number, Consumer ID
14.9	Acquire instant, interval / events data from meter by HES which then reaches MDM system.	HES	MDM	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
14.10	Once meter remote read verification is over, share migration request completion detail with other modules	MDM	Billing / CIS-CRM	Post-paid consumer profile and meter data along with credit balance
15.	Consumer Registration in Consumer Portal/ App			
15.1	Consumer clicks on new user on consumer portal/ App, provides RMN or email ID and submits data	Portal/ App	CIS/CRM	Request for registration with RMN/email ID
15.2	Utility receives request for registration and sends OTP after verification	CIS/CRM	Email/Message Gateway	OTP
15.3	Consumer submits OTP	Portal/ App	CIS/CRM	
15.4	Consumer receives registration detail	CIS/CRM	Email Gateway	Login ID and default password
15.5	Consumer submits first login request	Portal/ App	CIS/CRM	
15.6	System seeks password change	CIS/CRM	Portal/ App	
15.7	Consumer changes default password	Portal/ App	CIS/CRM	
16.	Consumer Access to Consumption, Billing & Profile Data			
16.1	Consumer logs in to Portal/ App	Portal/ App	MDM	
16.2	Consumer Profile for Portal/ App	CIS-CRM	MDM → Portal/ App	Name, Account, Address, Service Points, K Number
16.3	Consumption Data	MDM	Portal/ App → UI	Consumption profile

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
16.4	Billing (post-paid) / Credit Balance (prepaid)	Billing → MDM	Portal/ App	Post-paid Billing history/ Current Bill, Prepaid Recharge history
17.	Prepaid Consumer Recharge			
17.1	Consumer logs into Portal / Mobile App	Mob App / Portal	UI	Login
17.2	Consumer fills-in required detail in UI and requests recharge	UI→ Prepaid App	Payment Gateway	Consumer ID, Recharge amount
17.3	Consumer selects payment method	Payment Gateway	Net banking /Credit Card / Wallet etc.	
17.4	Consumer receives payment acknowledgement	Payment Gateway	Prepaid App→Portal→ UI	
17.5	Calculate credit balance for prepaid consumer & update prepaid meter	Prepaid App	HES→Meter	Consumer credit balance (virtual token)
17.6	Notify credit balance to consumer	Prepaid App	Email/SMS Gateway	Credit Balance
18.	Post-Paid Consumer Bill Payment			
18.1	Consumer logs into Portal / Mobile App	Mob App / Portal	UI	Login
18.2	Consumer is presented with Billing history and current outstanding Bill	Billing → MDM	Portal/ App→UI	Outstanding Bill
18.3	Consumer requests bill payment. Option to download bill	UI→Billing	Payment Gateway	
18.4	Consumer selects payment method	Payment Gateway	Net banking /Credit Card / Wallet etc.	
18.5	Consumer receives payment acknowledgement	Payment Gateway	Billing→ Portal/ App→UI	
18.6	Payment acknowledgement through email/SMS	Billing	Email/SMS Gateway	Payment acknowledgement
19.	Consumer Service Request			
19.1	Consumer logs in to Portal/ App	Portal/ App	CIS/CRM	
19.2	Consumer requests for service	UI	CIS/CRM	Service request
19.3	System assigns SRN & sends acknowledgement	CIS/CRM	Portal/ App→UI,	

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
			Email/SMS Gateway	
19.4	System resolves request & updates consumer records	CIS/CRM	Portal/ App→UI, CIS/CRM	
19.5	System closes SRN	CIS/CRM	Email/SMS Gateway	
20.	Consumer Complaints			
20.1	Consumer logs into Portal/ App	Portal/ App	CIS/CRM	
20.2	Consumer registers complaint	UI	CIS/CRM	Specific complaint
20.3	System assigns CRN & sends acknowledgement	CIS/CRM	Portal/ App→UI, Email/SMS Gateway	
20.4	System assigns resolution based on nature of complaint	CIS/CRM	CIS / OMS / WFM	
20.5	Target system reports completion of complaint	OMS / WFM	CIS/CRM	
20.6	System updates records and closes CRN	CIS/CRM	CIS, Email/SMS Gateway	
21.	Demand read of meters from consumer premises			
21.1	Requesting instantaneous, interval, load profile & events data from meters	MDM	HES→Meter	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
21.2	Acquire instant, interval, load profile & events data from meters by HES which then reaches MDM system.	Meter→HES	MDM	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
22.	Staff User Access to Utility Portal			
22.1	User logs in to Portal	Portal	MDM	Login with appropriate credentials
22.2	User selects available functions	MDM	Portal → UI	
22.3	User logs out	Portal → UI	MDM	

The key use cases to be enabled by AMISP for non-contiguous electrical locations as mentioned in Section 6 Clause 1.2 (C) are provided below. Please note that these are illustrative list of use cases only and is not an exhaustive list. Further please note that all IS Standards shall be applicable.

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
1.	Collection of Daily Meter Profile			
1.1	<i>At scheduled frequency HES should pull the Daily Meter Data from Smart Meter over communication Channel</i>	<i>HES</i>	<i>Meter</i>	<i>Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date</i>
1.2	<i>Meter should send the data to HES. Provision for retrial should be there if Meter data is not collected within time. Consumption details including non-critical events will be in 15 min/30 min block data, and data could be incremental to what was sent by meter in preceding instance</i>	<i>Meter</i>	<i>HES</i>	<i>Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code / Date</i>
1.3	<i>HES should send the data to MDM</i>	<i>HES</i>	<i>MDM</i>	<i>Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF</i>
2.	Utility detects tampering at meter site			
2.1	<i>High priority events captured by Meter sent to HES as and when occurred</i>	<i>Meter</i>	<i>HES</i>	<i>Meter Number, event date & time, event Code /description</i>
2.2	<i>High priority events reach MDM for further action.</i>	<i>HES</i>	<i>MDM</i>	<i>Meter Number, event date & time, event Code /description</i>
2.3	<i>Share with WFM to Notify utility personnel for site inspection</i>	<i>MDM</i>	<i>WFM</i>	<i>Meter Number, Tamper code, address</i>
2.4	<i>On analysis and detection of valid tamper event or malfunction, the tamper event must be sent / pushed by the meter to the HES /MDM</i>	<i>Meter</i>	<i>HES/ MDM</i>	<i>Meter number, action date & time</i>
3.	Missed interval readings			
3.1	<i>On identifying missed interval, HES will re-acquire data for the missing period from meter</i>	<i>HES</i>	<i>Meter</i>	<i>Meter Number, from date & time, to date & time (for which data is missing)</i>
3.2	<i>On receiving data request command, meter will send data to HES</i>	<i>Meter</i>	<i>HES</i>	<i>Meter Number, reading date & time, kW, kVA, kWh, kVAh</i>
3.3	<i>Missed Interval and Reads Data acquired by MDM</i>	<i>HES</i>	<i>MDM</i>	<i>Meter Number, readings with date & time</i>
4.	Meter connection outage/restoration event			

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
4.1	Outage/restore event recorded by meter is sent to HES as and when event occurs	Meter	HES	Meter Number, Outage / restoration Date / Time, Power On or Off count
4.2	Outage / Restoration Notification	HES	MDM	Meter Number, Outage / restoration Date / Time, Power On or Off count
4.3	Sharing Outage / Restoration Notification	MDM	OMS/CIS-CRM	Meter Number, Outage / restoration Date / Time, Power On or Off count
4.4	Meter read request from OMS to identify service outage / restoration	OMS	MDM → HES	Meter Number,
4.5	Meter responds to event poll from HES	Meter	HES	Meter number, Status (live/dead)
5.	Remote firmware upgrades/ meter configuration changes			
5.1	Remote firmware upgrade	HES	Meter	Firmware
5.2	Configuration Commands: Change tariff parameters, Synchronize clock, Registers reset (status, max, tampering)	HES	Meter	Meter number, tariff parameters, registers status, event type and priority
5.3	Status update of Firmware / Configuration	Meter	HES	
6.	Load monitoring at demand side			
6.1	When there is a load violation event recorded in the meter, the information is sent to the CC	Meter	HES → MDM	Meter Number, max demand, date & time of load violation
7.	Time synchronization			
7.1	Synchronizing RTCs of meters / DCUs/ACP	HES	DCU/Meter	Time Setting
8.	Metering network changes			
8.1	Change / new installation in Meter / DCU Network Hierarchy	Meter / DCU	HES	Network identification info including DCUs
8.2	Change / new installation in Meter / DCU Network Hierarchy	HES	MDM	Network identification info including DCU
9.	New meter connection			
9.2	Generate meter installation order	MDM	WFM	Meter Number & details
9.3	Receive meter installation report	WFM	MDM	Meter number, DT no, Feeder & reading

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
9.4	Requesting instant, interval & events data from meters	MDM	HES → Meter	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
9.5	Acquire instant, interval / events data from meter by HES which then reaches MDM system.	HES	MDM	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
9.6	Once new meter remote read verification is over, confirm new connection with other applications	MDM	Billing / CIS-CRM	Meter address, Meter Number, initial reading etc.
10.	Demand read of meters from meter premises			
10.1	Requesting instantaneous, interval, load profile & events data from meters	MDM	HES→Meter	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
10.2	Acquire instant, interval, load profile & events data from meters by HES which then reaches MDM system.	Meter→HES	MDM	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
11.	Staff User Access to Utility Portal			
11.1	User logs in to Portal	Portal	MDM	Login with appropriate credentials
11.2	User selects available functions	MDM	Portal → UI	
11.3	User logs out	Portal → UI	MDM	

4. Section 6 Clause 4 of the SBD:

“4. Consumer Indexing

Consumer indexing will be carried out/verified for the incoming population of smart meters for end-to-end metering at contiguous electrical locations in the selected AMI Project Area *and for dispersed metering of DTs/ Feeders at non-contiguous electrical locations in the selected AMI Project Area*. For this a door-to-door survey shall be required for each meter installed and tallying it with the consumer related records (physical, electrical and commercial) available with the Utility. In establishing the linkage of the consumer meter to the electric network, the asset (including the meter) codification as used by the utility GIS (or as per standards set by the utility) shall be strictly followed. If the GIS asset database is available, the verified consumer data shall be uploaded into the GIS database by the Utility for a single point of truth, presentation and secondary evaluation. If GIS is not available, then the AMISP is required to create a standalone consumer indexing database. This database of electrical indexing shall have the following broad parameters:

...”

5. Section 6 Clause 6 of the SBD: Following clause shall be included in Clause 6.2.2 (*below the table on list of reports*):

“These reports shall be generated for both contiguous as well as non-contiguous electrical locations. However, for non-contiguous electrical locations as mentioned in Clause 1.2 (C), all relevant reports shall be generated as per scope except for those that are not technically feasible for example, consumer related reports like revenue analytics, load recording of consumers etc.”

6. Section 6 Clause 9.4 of the SBD: A new table on minimum performance tests to be carried out as part of the Site Acceptance test (SAT) for Non-contiguous electrical locations as mentioned in Clause 1.2 (C) shall be added below the existing use cases table:

“9. Tests, Inspections and Management of the Quality Assurance / Quality Control Program”

9.4 Site Acceptance Test:

... The list of final tests to be carried out in the field shall be listed in the site-testing document by the AMISP. Among others, the site testing document shall include the following minimum performance tests for end-to-end metering carried out in contiguous electrical locations:

<i>Data Type</i>	<i>Performance Requirement</i>
1. Load Profile Data Read¹	
<i>One-month block load profile for installed meters</i>	<i>From 98% of the meters in 12 hours after the midnight</i>
2. Billing Profile Data Read²	
<i>Billing profile data for installed meters</i>	<i>From 98% of the meters in 12 hours after the midnight</i>
3. On-Demand Remote reads of meters	
<i>Collection of 7 days of interval energy data and the current total accumulated energy from a selected individual meter</i>	<i>Within 2 minutes</i>
4. Remote connect / disconnect	
<i>Action to response for individual meter</i>	<i>Less than 3 mins</i>
5. Updating of data on consumer portal/ app	
<i>Updating of individual consumer data on portal/ app after receiving the data in MDM</i>	<i>Action performed for active on portal consumers within 5 minutes after receiving the data in MDM</i>
6. Ping Response with acknowledgement/ response for selected meters	
<i>For installed meters</i>	<i>Action performed at 98% of meters within [5] minute; and</i>
<i>For an individual meter</i>	<i>Action performed within 3 seconds</i>

¹ This performance test shall be done during SAT, from second lot of meters onwards

² This performance test shall be done during SAT, from second lot of meters onwards

<i>Data Type</i>	<i>Performance Requirement</i>
7. Meter loss and restoration of supply	
<i>Receiving of alert for all affected AMI meters</i>	<i>Alert to be received within 3 minutes for 60% of meters</i>
8. Meter Tamper Alerts	
<i>Receiving of alert for an individual meter</i>	<i>Alert to be received within 3 minutes</i>
9. Power Quality Alerts	
<i>Receiving of alert for an individual meter</i>	<i>Alert to be received within 5 minutes</i>
10. Firmware upgrade with acknowledgement/ response for selected meters	
<i>For installed AMI meters (for a batch of at least 20% of installed base)</i>	<i>Action performed at 99% of meters within [18] hours; and</i>
	<i>Action performed at 99.9% of meters within [24] hours</i>
11. Remotely altering settings in meter	
<i>For installed AMI meters (for a batch of at least 20% of installed base)</i>	<i>Action performed at 99% of meters within [8] hours; and</i>
	<i>Action performed at 99.9% of meters within [24] hours</i>
12. Remotely read events logs	
<i>For reading the full event log for installed AMI meter</i>	<i>Action performed at 90% of meters within [30] minutes; and</i>
	<i>Action performed at 99% of meters within 1 hour; and</i>
	<i>Action performed at 99.9% of meters within [6] hours.</i>
13. VEE processing	
<i>For all installed meters</i>	<i>Action performed in [15] mins</i>
14. Computation of Billing Determinants	
<i>For all installed meters</i>	<i>Action performed in [2] hours</i>
15. Prepaid Recharge	
<i>Payment success to consumer acknowledgement</i>	<i>Within 5 mins</i>
<i>Payment success to meter update (From MDM to HES to Meter)</i>	<ul style="list-style-type: none"> • <i>From 90% of meters within 30 minutes</i> • <i>From 99% of meters within 1 (one) hour</i>
16. Utility User Interface	

<i>Data Type</i>	<i>Performance Requirement</i>
<i>Manual data entry of new value appears on screen</i>	<i>Less than 6 secs</i>
<i>Acknowledgement of any action request</i>	<i>Within 3 secs</i>
<i>Display update rate</i>	<i>2 secs</i>
17. Disaster Recovery Capability (Refer to Clause 2.7.3.3.9 of this Section for details)	
<i>Recovery Time Objective (RTO)</i>	<i>[4 hours] as agreed</i>
<i>Recovery Point Objective (RPO)</i>	<i>[2 hours] as agreed</i>
18. On-Demand Remote reads of meters	
<i>Collection of 7 days interval energy data and the current total accumulated energy from a group of 10% of installed base of meters (configurable)</i>	<i>95% complete within 2 hrs 100% complete within 4 hrs</i>

Also, among others, the site testing document shall include the following minimum performance tests for DT/ Feeder metering carried out in non-contiguous electrical locations:

<i>Data Type</i>	<i>Performance Requirement</i>
1. Load Profile Data Read³	
<i>One-month block load profile for installed meters</i>	<i>From 98% of the meters in 12 hours after the midnight</i>
2. On-Demand Remote reads of meters	
<i>Collection of 7 days of interval energy data and the current total accumulated energy from a selected individual meter</i>	<i>Within 2 minutes</i>
3. Ping Response with acknowledgement/ response for selected meters	
<i>For installed meters</i>	<i>Action performed at 98% of meters within [5] minute; and</i>
<i>For an individual meter</i>	<i>Action performed within 3 seconds</i>
4. Meter loss and restoration of supply	
<i>Receiving of alert for all affected AMI meters</i>	<i>Alert to be received within 3 minutes for 60% of meters</i>
5. Meter Tamper Alerts	
<i>Receiving of alert for an individual meter</i>	<i>Alert to be received within 3 minutes</i>
6. Power Quality Alerts	
<i>Receiving of alert for an individual meter</i>	<i>Alert to be received within 5 minutes</i>
7. Firmware upgrade with acknowledgement/ response for selected meters	

³ This performance test shall be done during SAT, from second lot of meters onwards

<i>Data Type</i>	<i>Performance Requirement</i>
<i>For installed AMI meters (for a batch of at least 20% of installed base)</i>	<i>Action performed at 99% of meters within [18] hours; and</i>
	<i>Action performed at 99.9% of meters within [24] hours</i>
8. Remotely altering settings in meter	
<i>For installed AMI meters (for a batch of at least 20% of installed base)</i>	<i>Action performed at 99% of meters within [8] hours; and</i>
	<i>Action performed at 99.9% of meters within [24] hours</i>
9. Remotely read events logs	
<i>For reading the full event log for installed AMI meter</i>	<i>Action performed at 90% of meters within [30] minutes; and</i>
	<i>Action performed at 99% of meters within 1 hour; and</i>
	<i>Action performed at 99.9% of meters within [6] hours.</i>
10. VEE processing	
<i>For all installed meters</i>	<i>Action performed in [15] mins</i>
11. On-Demand Remote reads of meters	
<i>Collection of 7 days interval energy data and the current total accumulated energy from a group of 10% of installed base of meters (configurable)</i>	<i>95% complete within 2 hrs 100% complete within 4 hrs</i>

7. Other terms and conditions of the SBD shall remain unchanged and shall apply for the additional scope of work as well.

Proposal:

The above proposed addendum for allowing usage option of SMC meter boxes and key changes to be made in the existing AMISP SBD in case DISCOM opts to undertake the Smart System Metering of non-Phase-I areas alongwith AMISP RFP for Phase-I areas, may be considered for approval.