



सत्यमेव जयते

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

वितरण आयोजन एवं विकास प्रभाग

Distribution Policy & Regulations Division

No. CEA-GO-17(11)/1/2018/DP&R Div/408-530

Dated 08.08.2018

सेवा में,

1. सभी राज्यों/केंद्र शासित प्रदेशों के प्रधान सचिव/ सचिव (ऊर्जा/पावर) Principal Secretaries/ Secretaries (Energy/ Power) of all States/UTs
2. सभी डिस्कॉम के सीएमडी / एमडी CMD/MDs of all Discoms
3. सचिव, फोरम ऑफ रेगुलेटर Secretary, Forum of Regulators

विषय: ए टी एंड सी हानि और एसीएस-एआरआर गैप की गणना के लिए पद्धति में
अनुपूरक।

Subject: Addendum to methodology for calculation AT&C losses and ACS – ARR Gap.

Ref.: i) This office letter No. CEA/DPD/AT&C losses/2017/758-818 dated 02.06.2017

ii) This office letter No. CEA/DPD/AT&C losses/2017/1169-1291 dated 02.08.2017

Sir/Madam,

CEA had circulated the Revised methodology for calculation of AT&C losses and for calculation of ACS – ARR Gap vide letters referred to above.

In order to address treatment of various sub-parameters used for calculation of AT&C losses and ACS – ARR Gap, a workshop was organized by PFC on 16th May, 2018, so as to ensure uniformity in calculation across the utilities. On the basis of feedback received from various Discoms during the workshop and further discussions held at Ministry of Power under the Chairmanship of Secretary(Power), addendums to the revised methodologies have been finalized.

The Revised methodology for calculation of AT&C losses and ACS – ARR Gap along with the proposed addendums are placed below at **Annexure-A** and **Annexure-B** respectively. This is for your kind information and necessary action.

संलग्नक: यथोपरि

भवदीया,

वन्दना

(वन्दना सिंघल)

मुख्य अभियंता

प्रतिलिपि:

1. Joint Secretary (Distribution), Ministry of Power, Shram Shakti Bhawan, Rafi marg, New Delhi-110001
2. CMD, Power Finance Corporation Ltd., 'Urjanidhi', 1, Barakhamba Lane, Connaught Place, New Delhi-110 001
3. CMD, Rural Electrification Corporation, Corporate Office, Core- 4, SCOPE Complex, 7, Lodhi Road, New Delhi - 110003

Revised methodology for AT&C losses circulated by CEA in June, 2017:

A	Input Energy (MU)	Energy Generated – Auxiliary Consumption + Energy Purchased (Gross) – Energy Traded/ Inter State Sales
B	Transmission Losses (MU)	
C	Net Input Energy (MU)	A-B
D	Energy Sold (MU)	Energy Sold to all categories of consumers excluding units of Energy Traded/Inter-State Sales
E	Revenue from Sale of Energy (Rs crore)	Revenue from Sale of Energy to all categories of consumers (including Subsidy Booked) but excluding Revenue from Energy Traded /Inter-State Sales
F	Adjusted Revenue from Sale of Energy on Subsidy Received basis (Rs crore)	Revenue from Sale of Energy (same as E above) minus Subsidy Booked plus Subsidy Received against subsidy booked during the year
G	Opening Debtors for Sale of Energy (Rs crore)	Opening debtors for sale of Energy as shown in Receivable Schedule (Without deducting provisions for doubtful debtors). Unbilled Revenue shall not be considered as Debtors.
H	Closing Debtors for Sale of Energy (Rs crore)	i) Closing debtors for Sale of Energy as shown in Receivable Schedule (Without deducting provisions for doubtful debts). Unbilled Revenue shall not be considered as Debtors. ii) Any amount written off during the year directly from (i)
I	Adjusted Closing Debtors for sale of Energy (Rs crore)	H (i+ii)
J	Collection Efficiency (%)	$(F+G-I)/E \times 100$
K	Units Realized (MU) = [Energy Sold*Collection Efficiency]	$D \times J / 100$
L	Units Unrealized (MU) = [Net Input Energy - Units Realized]	C-K
M	AT&C Loss (%) = [{Units Unrealized/Net Input Energy}*100]	$L/C \times 100$

Addendum to AT&C loss calculation methodology

Parameter	Sub - parameter	Treatment of parameters for computation of AT&C loss as discussed and agreed in the workshop
Net Input Energy/ Energy Sold (MU)	Open Access / Wheeling	Open access/ wheeling units shall not be included in Net Input Energy and Energy Sold while calculating Billing Efficiency.
Revenue from Sale of Energy (Rs. Crores)	Unbilled Revenue	No adjustment shall be made in revenue from sale of energy on account of unbilled revenue.
Adjusted Revenue from Sale of Energy on Subsidy Received basis (Rs crore)	Subsidy Received against subsidy booked during the year	Total Tariff Subsidy received during the year including arrears (if any) shall also be included while calculating Adjusted Revenue from Sale of Energy on Subsidy Received basis
Collection Efficiency (%)		Collection Efficiency of subsidy received and realization from sale of power together will be restricted at 100%

Annexure-B

Revised methodology for calculation of ACS-ARR gap circulated by CEA in August, 2017:

Revenue GAP (Rs/kWh)	Average Cost of supply - Average Realisable Revenue (Subsidy received basis) (ACS – ARR)
Particulars	Formula
ACS --> Average Cost of Supply (in Rs/ kWh)	Total Expenditure (Amount)/ Total Input Energy (units)*
ARR --> Average Realisable Revenue (Subsidy received basis) (in Rs/ kWh)	Revenue from Sale of Power (on Subsidy Received basis)** + Other income/ Total Input Energy (units)
Note: *Total Input Energy here means Input Energy before making any adjustments like Transmission Loss, Inter-state sale or Energy Traded **Revenue from sale of power excluding subsidy booked plus subsidy received	

Addendum to ACS-ARR Gap calculation methodology

- Average Cost of Supply (ACS) and Average Realizable Revenue (ARR) terms may be differentiated from similar terms used by Regulatory Commissions such as Aggregate Cost of Supply and Annual Revenue Requirement.
- The ACS-ARR Gap is to be calculated on the basis of the annual accounts.
- Further, ACS –ARR Gap (in case of “Gap-Subsidy Received Basis”) calculation will be based on total revenue subsidy received during the year including arrears, if any, without any restrictions.



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Distribution Planning & Development Division

No. CEA/DPD/AT&C losses/2017 / 758-818

Dated 02.06.2017

To

1. Principal Secretary(Energy) of all States
2. CMD/MDs of all Discoms

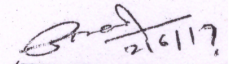
Subject: **Guidelines for computation of AT&C Losses**

Sir/Madam,

It had been observed that there are variations in the methodology for calculation of AT&C losses being adopted by various organizations. In order to finalize a single applicable methodology for calculation of AT&C losses, a committee consisting of representatives from CEA, REC and PFC was constituted by Ministry of Power in April, 2016.

Based on the deliberations held during the meetings, the revised methodology for calculation of AT&C losses has been finalized. Guidelines on the revised methodology is enclosed, which needs to be adopted by all the stakeholders from FY 2016-17 onwards.

भवदीय,



(घनश्याम प्रसाद)

मुख्य अभियंता

Guidelines for computation of AT&C Losses:

It had been observed that there are variations in the methodology for calculation of AT&C losses being adopted by various organizations. In order to finalize a single applicable methodology for calculation of AT&C losses, a committee consisting of representatives from CEA, REC and PFC was constituted by Ministry of Power in April, 2016.

Three meetings of the Committee were held and after detailed deliberations, the committee unanimously opined that:

1. Revenue/ Tariff Subsidy” should form part of ‘Revenue from sale of Power’ for calculating Collection Efficiency;
2. To reflect the true position of Collection Efficiency, **Subsidy Received** figure shall form part of ‘Revenue from Sale of Energy’ in the Numerator and **Subsidy Booked** in the denominator instead of **Subsidy Booked** in both numerator and denominator.
3. Unbilled Revenue shall not form part of Debtors.

With the above proposed changes, the **Revised Methodology of AT&C loss calculation** was finalized and is given in Table 1 of enclosed Annexure. All the Stakeholders under MoP, States/DISCOMs shall henceforth use the revised methodology for calculation of AT&C losses.

Annexure

Revised Methodology for computation of AT&C Losses:

Table 1

A	Input Energy (MkWh)	Energy Generated - Auxiliary Consumption + Energy Purchased (Gross)* – Energy Traded/ Inter State Sales.
B	Transmission Losses(MkWh)	
C	Net Input Energy (MkWh)	A-B
D	Energy Sold(MkWh)	Energy Sold to all categories of consumers excluding units of Energy Traded/Inter-State Sales.
E	Revenue from Sale of Energy (Rs. Cr.)	Revenue from Sale of Energy to all categories of consumers (including Subsidy Booked) but excluding Revenue from Energy Traded /Inter-State Sales.
F	Adjusted Revenue from Sale of Energy on Subsidy Received basis (Rs. Cr.)	Revenue from Sale of Energy (same as E above) minus Subsidy Booked plus Subsidy Received against subsidy booked during the year
G	Opening Debtors for Sale of Energy (Rs. Cr.)	Opening debtors for sale of Energy as shown in Receivable Schedule (Without deducting provisions for doubtful debtors). Unbilled Revenue shall not be considered as Debtors.
H	Closing Debtors for Sale of Energy (Rs. Cr.)	i) Closing debtors for Sale of Energy as shown in Receivable Schedule (Without deducting provisions for doubtful debts). Unbilled Revenue shall not be considered as Debtors. ii) Any amount written off during the year directly from(i)
I	Adjusted Closing Debtors for sale of Energy (Rs. Cr.)	H(i+ii)
J	Collection Efficiency (%)	$(F+G-I)/E \times 100$

K	Units Realized (Mkwh) = [Energy Sold*Collection efficiency]	D*J/100
L	Units Unrealized (Mkwh)= [Net Input Energy-Units Realized]	C-K
M	AT&C Losses (%) = [{ Units Unrealized/Net Input Energy}*100]	L/C *100

Note:

- i) *DISCOMs are required to give gross energy purchased i.e., Total Power Purchased including transmission losses.
- ii) Debtors for trading of power have not been adjusted for calculation of collection efficiency since information is generally not available in notes to accounts.
- iii) Figures in above table, wherever available, should be consistent with the information contained in Annual Report/ Accounts.
- iv) Calculation of AT&C losses in the format given in Table 1 should form a part of annual accounts of all utilities selling directly to consumers as notes to accounts or annexure.
- v) Details of subsidy booked during the year and subsidy received against current year and against previous years as given in Table 2 should form part of annual accounts as notes to accounts or annexure.

Table 2

Details of Subsidy Booked and received	Amount
1. Subsidy Booked during the year	
2. Subsidy received during the year (Rs. Cr.)	
i) Subsidy received against subsidy booked for current year (Rs. Cr.)	
ii) Subsidy received against subsidy booked for previous years (Rs. Cr.)	



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Distribution Planning & Development Division

No. CEA/DPD/AT&C losses/2017/1169-1291

Dated 02.08.2017

To

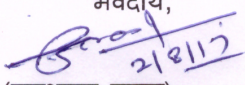
1. Principal Secretary (Energy) of all states
2. CMDs/MDs of all DISCOMs
3. Secretary, Forum of Regulators

Subject: Methodology for calculation of ACS-ARR gap.

Sir/Madam,

It had been observed that there are variations in the methodology for calculation of AT&C losses and ACS-ARR gap being adopted by various organizations. Ministry of Power (MoP) had constituted a committee for reviewing the AT&C loss calculation methodology to be followed uniformly by the stakeholders in the country and based on the recommendation of the committee, CEA vide letter No. CEA/DPD/AT&C losses/2017/758-818 dated 2nd June, 2017 circulated the guidelines for computation of AT&C losses in the country.

The said Committee, while recommending the revised AT&C loss methodology, had also reviewed the ACS-ARR Gap calculation methodology. In this context, a meeting was held on 16th May, 2017 in MoP under the Chairmanship of Secretary (Power), wherein the methodology for calculation of ACS-ARR gap was finalized. It was also decided that CEA would circulate the finalized methodology to all stakeholders. Accordingly, the background note and the finalized methodology for calculation of ACS-ARR gap are enclosed for compliance.

भवदीय,

(घनश्याम प्रसाद)
मुख्य अभियंता

Copy to:

1. Joint Secretary (Distribution), Ministry of Power, Shram Shakti Bhawan, Rafi marg, New Delhi-110001
2. CMD, Power Finance Corporation Ltd., 'Urjanidhi', 1, Barakhamba Lane, Connaught Place, New Delhi-110 001
3. CMD, Rural Electrification Corporation, Corporate Office, Core- 4, SCOPE Complex, 7, Lodhi Road, New Delhi - 110003

Methodology for Calculation of ACS-ARR Gap

Background

1. The matter of inconsistency in calculation of AT&C loss and ACS-ARR Gap, among Power Distribution Utilities came up in UDAY workshop and in the fifth UDAY Monitoring Committee Meeting. States follow different practices. Some states are calculating ACS-ARR GAP based on **Input Energy** and other states are using **Sold Energy** as basis. However, States/DISCOMs were of opinion that to maintain uniformity, there should be a single method for calculation of these parameters.
2. Ministry of Power (MoP) had constituted a committee for reviewing the AT&C loss calculation methodology to be followed uniformly by the stakeholders in the country. The said Committee, while recommending the revised AT&C loss methodology, had also reviewed the ACS-ARR Gap calculation methodology followed by PFC/REC for preparing various reports.
3. Based on the deliberations held during the meetings of the Committee and meetings held in Ministry of Power, CEA vide letter No. CEA/DPD/AT&C losses/2017/758-818 dated 2nd June, 2017 has issued guidelines for computation of AT&C losses.
4. However, as regards the issue of ACS-ARR gap calculation methodology, the Committee recommended that ACS-ARR Gap may be calculated based on the Input Energy basis since data of Input Energy is more reliable in comparison to Energy Sold.
5. Ministry of Power had also referred the issue of ACS-ARR gap calculation methodology to the Forum of Regulators (FoR) for their comments and suggestions. FoR suggested that Gap may be calculated on Billed Energy instead of Input Energy figures since the Input Energy method will not account for the distribution losses of the utility. Calculation of ACS-ARR Gap on input energy shall give a lower Average Billing Rate (ABR) for the utility which may lead to lower tariff fixation and insufficient revenue realization.
6. This was further discussed in the meeting held on 16th May, 2017 in MoP under the Chairmanship of Secretary (Power) and following methodology was decided.

Methodology

1. In the above mentioned meeting held in MoP, it was agreed that while the concern over reliability factor of billed energy cannot be ruled out, at the same time the importance of arriving at a proper ABR for the utility in Tariff calculation is equally important. Hence, it was decided that FoR shall continue to calculate ACS-ARR Gap on Billed Energy basis for determination of distribution tariff, whereas all other stakeholders shall follow the Input Energy based methodology for calculation of ACS-ARR Gap.

2. Input Energy based methodology for calculation of ACS-ARR

Revenue GAP (Rs/kwh)	Avg. Cost of supply - Average Realisable Revenue (Subsidy received basis) (ACS – ARR)
Particulars	Formula
ACS --> Avg. Cost of Supply (in Rs/ kwh)	Total Expenditure (Amount)/ Total Input Energy* (units)
ARR --> Average Realisable Revenue (Subsidy received basis) (in Rs/ kwh)	(Revenue from Sale of Power (on Subsidy Received basis)** + Other income) / Total Input Energy (units)
Note: *Total Input Energy here means Input Energy before making any adjustments like Transmission Loss, Inter-state Sale or Energy Traded etc. **Revenue from sale of power excluding subsidy booked plus subsidy received.	