RURAL ELECTRIFICATION CORPORATION LIMITED

GUIDELINES FOR SYSTEM IMPROVEMENT (P: SI) CATEGORY OF SCHEMES

1. The guidelines

These guidelines are to help in formulation, appraisal, financing and disbursal of loans under the P: SI category of schemes (of state and central sector borrowers and CPSUs) aimed at system improvement of transmission, sub-transmission and distribution systems, and supersedes all guidelines issued earlier in this regard.

2. Objectives of the schemes

The main stress of the schemes should be on:

i) Reduction in technical and commercial losses in the transmission, sub-transmission and distribution systems.
ii) Providing adequate system support for load development in the project area for the next five years.
(iii) Providing the required infrastructure (lines/sub stations etc.) for power evacuation, transmission, sub transmission and distribution.
iii) Improving the voltage regulation so as to bring it within the permissible limit.
iv) Improving the quality and reliability of power supply.
v) Improving the power factor in sub-transmission and distribution systems so as to optimise the utilisation of available system capacities.
vi) Introduction of innovative technology such as computerization, IT related projects, load dispatch, SCADA, communication, GIS, R&D etc.
vii) Energy Audit.

3. Scheme area

The scheme area shall normally be minimum of a district or tehsil or Electrical Division for sub transmission and distribution schemes and a circle for transmission schemes. However, in case it is not possible to follow the aforesaid stipulations, other schemes may be considered on the specific merits of the case.

4. Scope of works

The project shall cater primarily to the needs of the transmission, sub-transmission and distribution systems of the scheme area for the purpose of system

improvement as well as for meeting the needs of system inadequacies covering all or part of the following need-based works:

i. Construction of new sub-stations at all voltage levels in transmission, sub-transmission and distribution system along with its associated EHT/HT/LT lines/feeders.
ii. Augmentation of existing sub-stations and lines at all voltage levels in transmission, sub-transmission and distribution system.
iii. Conversion of LVDS to HVDS.
iv. Conversion of three phase system to single phase system.
v. Renovation & Modernisation of the existing HT and LT lines including LVDS.
vi. Regrouping of loads, bifurcation, alignment and augmentation of existing heavily loaded LT feeders and installation of energy efficient distribution transformers.
vii. Provision of reliable and tamper proof meters at Consumers' premises.
viii. Provision of metering and reliable protection on LT side of distribution transformers.
ix. Provision of inter utility meters.
x. Shunt compensation in LT system.
xi. Bifurcation, alignment and augmentation of existing heavily loaded 11 KV feeders.
xii. Provision of 11 KV automatically Switched capacitors directly on lines.
xiii. Provision of 11 KV voltage boosters, sectionalisers etc.
xiv. Shunt compensation at various substations in sub-transmission system, by installation of HT capacitor banks.
xv. Provision of metering equipment on all incoming and outgoing feeders in the existing/proposed power Sub-stations.
xvi. Provision of service connections(utility share), as also its modernization.
xvii. Provision of controlling equipment, such as, circuit breakers, isolators etc. for the existing feeders and power transformers wherever necessary.
xviii. Communication and automation equipment which includes computerization, IT related projects, load dispatch, SCADA, communication, GIS, R&D etc.
xix. Metering and other Equipment for Energy audit.
xx. Replacement of worn out sub-station equipment.
xxi. Study, evaluation and consultancy relating to aforesaid scope of works at S.No (i) to (xx), if not specifically covered under the concerned project.
xxii. Preparation of DPR (upto 2% of the cost of the scheme).

5. Format of the Scheme

The schemes will be submitted by the borrower as per the prescribed structure of the project report (enclosed as Annexure-I with Formats 1-10). The formats furnished in the Annexure may be used to the extent applicable for the particular type of scheme. Formats not applicable for a particular scheme need not be furnished. Also, for transmission schemes, where the utilities are running load flow studies, the same may be verified and accepted by the CPM, and values as derived from load flow studies may be indicated in the appraisal note and also

used for calculating the required scheme parameters, without necessarily using the furnished formats. The copies of load flow studies may be furnished.

The scheme reports as per the above may be forwarded to the CO by the ZM/CPM, along with his appraisal note as per format enclosed as Annexure-II.

6. Estimation of load demand

The load growth for the scheme area shall be considered for the next 5 years (referred to as horizon year) based on either of the following:

(i) load growth for the utility as per the latest tariff order; or
(ii) load growth for the state as per the latest available EPS report of CEA.

However, if the projections in the scheme area are substantially higher due to some special requirements, the same will be clearly spelt out and explained for consideration with proper justification by the power utility/SEB and recommended by the CPM as a part of the appraisal report.

The Annexures III & IV indicate the State wise percentage growth in the sale of energy and in peak demand respectively, as per 16th EPS Report of CEA, which is the latest available (values pertaining to 06/07 to 11/12 may be taken. As and when the CEA updates the same, the latest updated values may be followed.

The calculation of load growth as above may not be compulsory/applicable in case of certain transmission schemes where erection of sub stations and lines for power evacuation are involved and also for certain special types of distribution schemes like HVDS, feeder separation etc.

7. Entity Appraisal

For appraising the capability of the borrower, the latest ratings as specified by the entity appraisal division of REC may be followed (circular No. REC/Gen./PA/2007-08/4450 dated 16th May 2007 , as amended from time to time).

8. Extent of exposure of utility

At the time of project appraisal, the CPM shall ensure that the balance credit exposure for the utility is available. For this purpose, the format as per Annexure V shall be prepared and enclosed by the CPM along with his appraisal note.

9. Cost data

The schemes will be formulated by the utilities based on their latest approved schedule of rates, and certified by the CPMs that they are as per the latest schedule of rates. If there is a variation in the cost adopted in the scheme compared to the schedule of rates, the CPM should give justification for the same.

Where the utilities have not formulated the latest schedule of rates, the cost as per the latest purchase orders can be adopted by the CPMs. Alternatively, in such cases, the old approved schedule of rates with permitted escalation as per utility's norms may be used. In any case, the PO should invariably give its recommendations in the processing note regarding the acceptability of the cost estimates adopted by the power utility.

10. Project implementation

a) Project Period

Execution of the scheme shall be completed within the scheduled operating period agreed at the time of the sanction (normally 2 years for Distribution and 3 years for transmission schemes), with a grace period of one year (at the discretion of REC). However, the scheme implementation period may be extended beyond the scheduled operating period agreed at the time of the sanction, by the competent authority. The competent authority for extension cases shall be as per the circular No. SEC-1/195(A)/2006/205 dated 24.7.2006 (as amended from time to time).

b) Execution of the project

The power utility in its project report should clearly indicate whether the scheme would be executed departmentally or otherwise.

Normally, monitoring and quality assurance of the projects (with loan amount more than Rs.50 crores) during its implementation should form an integral part of the project and this shall be got done from a third party/independent agency. The cost of the same shall form part of the loan assistance from REC.

Evaluation of the project (as applicable) after completion shall be got done by the borrower from a third party/independent agency, the cost of which may also form part of loan assistance from REC.

11. Deviation proposals

a) In the event there are some deviations in physical activities (as compared to the sanctioned project) these will be considered on submission of a deviation proposal by the SEB, during the project period, subject to the following conditions:

(i) The deviations made shall be technically justified.
(ii) The Financial commitment of REC is limited to the original loan amount including cost escalation, if any (except for cases covered under 11b and 12 below).
(iii) The scheme continues to meet the viability criteria as per stipulated norms (with the deviations) despite changes in loss savings, sale of energy and overall cost of works, if any.

(iv) The submission of the deviation proposal shall precede the submission of the last reimbursement claim against the scheme by the SEB and approved by Competent Authority of REC before release of this amount. This deviation proposal shall be forwarded by the competent authority of the SEB, justifying the change with details of (i), (ii) and (iii) above.

The powers for approving the deviation proposals as above are as per circular No. SEC-1/195(A)/2006/233 dated 18.8.2006 (as amended from time to time).

b) However, enhancement in the loan amount due to change in scope of works may be considered up to 20% of the original sanctioned loan amount subject to the revised proposal meeting the prescribed technical and financial viability criteria.

12. Project financing

a) Provision for cost-escalation up to a maximum of 20% of the project cost (due to unexpected price rise) will be permitted if desired by the borrower. This will hold good for projects being executed departmentally or on turnkey or on partial turnkey mode. However, the viability shall be tested on the capital base including 20% cost escalation.

b) Wherever the borrowers have not sought for such cost escalation towards price rise in the original sanction, but due to unexpected price rise, the actual cost becomes higher than the sanctioned amount, the borrower will have the option to revise the project cost on the basis of actual expenditure incurred, subject to a ceiling of 20% of the original loan amount and seek the approval of the corporation to the revised project cost, giving proper financial justification.

c) Notwithstanding the above, in case of schemes to be executed on turnkey basis through competitive bidding, the overall cost of schemes eligible for financing by REC shall be the cost approved by the competent authority of the utility/Regulator after award of work. In such cases, viability as applicable, as per guidelines, would be rechecked.

13. Enhancement of loan amount

Enhancement of loan amount on account of both change in scope of works as per para 11 (b) and price rise as per para 12 (b) shall also be considered, but subject to the total ceiling of 20% of original sanctioned loan amount.

14. Interest During Construction (IDC)

The Corporation may also consider financing of interest during construction, for schemes with loan amount more than Rs. 100 crores, which are sanctioned for an implementation period of more than 2 years.

15. Disbursal of loan

a) The first installment of the loan amount will be released on execution of the loan documents and compliance of terms and conditions stipulated in the sanction. The release of first installment would be regulated as follows:

(i) If the loan amount is more than Rs.100 crore, the scheme may be considered as high value schemes, and the 1st installment limited to 10% of the loan amount.
(ii) In case of schemes where loan amount is more than Rs. 50 crore, but is up to Rs.100 crore, the 1st installment be limited to 15% of the loan amount.
(iii) For schemes having a loan amount of up to Rs. 50 crore, the 1st installment may be considered up to 20% of the loan amount.
(iv) Further in case of turn key projects where generally the power utilities provide advance to contractors, REC may also consider to provide equivalent advance towards 1st installment to meet this requirement, if sought by the utility, subject to ceiling of such advance up to 15% of the loan amount.
(v) The advance loan as above would be provided only where the borrower has provided adequate acceptable upfront security to REC.

b) The 2nd and subsequent installments of loan will be released on pro rata reimbursement basis depending upon the progress of works indicated in the claims preferred by the borrower after pro rata adjustment of initial advance. However, release of loan instalments beyond 50% of loan amount of the scheme shall be preceded by detailed monitoring in accordance with monitoring guidelines issued vide REC/MC/2006-07/1302 dated 28.8.2006.

c) The final 10% of the loan will be released after final field monitoring, evaluation as applicable, and other terms and conditions of sanction of the scheme.

16. Financial Viability

(i) The scheme shall be considered viable if it yields Financial Internal Rate of Return (FIRR) of at least 12% on the investment made under the scheme. The viability calculations shall normally be based on the benefits at the Horizon year on account of loss savings as well as additional sale of energy. However, other quantifiable benefits as applicable could also be considered, with suitable justifications and calculations, wherever applicable/available. The capital base for calculation is the cost of the scheme including cost escalation charges, if any.

(The above norm of 12% FIRR is as per the REC circular No. REC/T&D/F-2/2006-07/ dated 19.5.06 (as amended from time to time).

The detailed methodology for calculating the benefits due to the project and its financial viability is given in Annexure – VI.

(ii) However, for schemes for introduction of innovative technology such as computerization, IT related projects, load dispatch, SCADA, communication, GIS, R&D, inter utility meters, DT meters etc. and for schemes relating to energy audit, study, evaluation, consultancy etc. the IRR is not required to be worked out.

(iii) Further, in case of transmission schemes, the IRR is not required to be worked out, provided the schemes are approved / posed to SERC. In exceptional cases, schemes other than defined above could be considered on merits of the specific case. In such cases, the utility shall undertake that these schemes would be included in the next year's approval by SERC. At the time of sanctioning of a transmission scheme, schemes already sanctioned including by other FIs / utility's own resources would also be taken cognizance of.

17. Other guidelines to be read in conjunction with this guidelines:

(i) Guidelines for Withdrawal of sanction, cancellation and closure of REC schemes issued vide letter No. REC / T&D / Guidelines / 2006-07 / 689 dated 4.5.2006.

(ii) Loan assistance from REC for investment in Transmission Systems-Addenda to the operational guidelines for System Improvement projects under P:SI category of loan portfolio issued vide letter No. REC / T&D / P:SI-EHV Guidelines / 2006-07 / 687 dated 4th May 2006.

(iii) Monitoring guidelines issued vide REC / MC / 2006-07 / 1302 dated 28.8.2006.

Annexure - I

FORMAT FOR THE P: SI SCHEMES

(Ref. para 5 of Operation Guidelines on Format of the Scheme)

The project report will be formulated to contain the following:

(a) A preamble or an introduction to the project.

(b) Executive Summary indicating:-

i. The name of the scheme, the electrical jurisdiction of the project i.e. name of circle/ division(s)/ sub-division(s) or district, the administrative jurisdiction i.e. name of district, blocks(s), taluka(s) or tehsil(s).
ii. The objective of the project, its need and justification.
iii. In case the scheme is network based i.e. emanating from a 132 KV Substation, the details/information of the back-up grid substation and that of the downstream networks, substations and other installations.
iv. The abstracts of the major works provided under the project & their costs, as well as the likely benefits like loss savings additional sale of energy etc.
v. Status of existing and anticipated power availability in the scheme area/ district.

(c) The load growth pattern in the scheme area and the state as well as the growth rate considered in the scheme up to the horizon year (5^{th} year) and estimation of load demand.

The following information as per Formats 1-10 to the extent applicable:

(d) The system status of the project area covering location & installed capacity of all existing substations, load demand on all substations & lines (at all voltage levels), the voltage regulation/ energy inputs/ annual energy loss/sale of energy on all feeders, capacitors installed at Substations and on lines, etc. for the following system status:
i. Existing system and existing load demand
ii. Existing system (without proposed modifications) and horizon load demand.
iii. Modified system (with proposed modifications under the project) and horizon load demand.

(e) Planning of the proposed network & sizing of the substations, lines & equipment proposed in the project.

(f) Details of proposed works including location & capacity of new/augmented Substations, route & conductor size of all new/augmented/rerouted lines, capacitors and all other works proposed in the scheme.

(g) Load sharing details (substations and feeders) at modified system and horizon load conditions.

(h) Detailed cost estimate of all items of works proposed in the scheme with base year of cost estimates.

(i) Detailed viability calculations.

(j) Operation plan for implementation of the project.

(k) Maps – State Grid maps, district power maps, scheme area maps: before and after modifications under the scheme.

(l) Layout / schematic drawings of proposed substations.