

NERSA'S REGULATORY RULES ON NETWORK CHARGES FOR THIRD-PARTY TRANSPORTATION OF ENERGY- LOSS FACTORS

1. Introduction

The NERSA Advisory forum was mandated by the Energy Regulator to revise the Third Party Rules for the Transportation of Energy (Wheeling Rules). SAIPPA and other Stakeholder Groups (including Eskom, EIUG, SAREC and other IPP Stakeholders) have provided input to the NERSA Advisory Forum on what was required to be revised. At a meeting held in March 2015 there were four areas identified requiring more investigation and research. Included in these was the matter of Loss Factors. This document presents SAIPPA's position on this matter as per NERSA's request on the 5th of September.

2. SAIPPA'S Position as Submitted in March 2015

It is contended that the current wheeling rules result in network charges that bear little alignment with the costs imposed on the networks by the wheeling generator and load.

- 2.1. Loss factors for loads that are based on an antiquated 4 -zone differentiation designed for an integrated monopolistic environment and not suitable for competitive bidding and that do not reflect the level of losses actually incurred (again this issue prevents South Africa from cost-reflectivity of electricity).
- 2.2. The network charges do not recognise the location of the generator adequately. Depending on its location a generator may qualify for a losses rebate for reducing losses on the network. Presently the losses rebate is lost due to an arbitrary cap. This cap needs to be removed.
- 2.3. It appears that the network cost splitting between loads and generators at distribution level is desirable or practical given that the current pricing arrangement assumes that loads pay 100% of the network costs. This means that any charges to generators will result in additional revenues.
- 2.4. The 4 load zones are not cost reflective and therefore impact adversely on investment in new generation capability and their locations.
- 2.5. Generators are to pay a R/MW which will be based on the installed MW sent out capacity. The charges are differentiated on the basis of six geographic zones. It is not clear why a six zone structure is used and why this is not aligned to the load loss factors.
- 2.6. If the charges in six transmission tariffs zones are based on cost reflectivity then it is unclear why generators should not receive a rebate for connecting to the network at a favourable point. To ensure optimum generator investment decisions from a location perspective it is essential that the generator receives the full rebate.
- 2.7. The link between network charges and network losses is not self-evident. These are two completely separate concepts that should not be confused. The purpose of network charges is to recover the cost of the network infrastructure while losses charges are intended to recover the cost of electrical line losses. NERSA should de-couple network charges from network losses.

- 2.8. Loss factors for loads should be based on a proper economic Cost of Supply studies and an enabling environment created and implemented for new generators while such studies are completed.
- 2.9. Assuming that transmission zones and loss factors for loads are not subject to change then it is recommended that NERSA review the loss factors for the six transmission generator zones to ensure it accurately reflect losses.
- 2.10. As an interim solution until cost reflective loss factors can be determined it is recommended that transmission zones for generators be aligned with the transmission zones for loads.
- 2.11. NERSA to work with licensees to develop cost reflective loss factors for distributed connected generators.
- 2.12. Until cost reflective Dx loss factors have been calculated NERSA should set the loss factor for the generator to be the inverse of the loss factor for a load at the same point, voltage and time of use period. This recommended approach will prevent a situation where there is difference (or distortion) between load and generator loss factors.
- 2.13. There is no technical or economic justification to place a cap on the losses rebate to the generator. Remove the cap (#removethecap!).
- 2.14. The DUOS loss factor for embedded generators must take into account the generator's impact on the distribution losses.

3. Other Stakeholders Position as per NERSA

The summary below is as per the summary of comments from the Third Party Wheeling Advisory Forum document. The clauses which losses factors are involved are the following:

*4.3 : A six (6) zone geographical differentiation outlined in **Figure 1** shall be used for Transmission connected generators.*

Eskom's Position :

- Changes will have implications, therefore must be informed by a study. –*Saippa agrees with this approach*
- There should be two different loss factors for load and generators because loads increase losses and generators decrease losses. –*Saippa does not agree that there should be two different loss factors for generators and loads. There should be a single loss factor: load pay for losses and generators get paid for avoidance of loss. We suggest that proper cost of supply studies will resolve this.*
- There is an assumption that generators connected to the distribution network automatically reduce losses - this is incorrect. *Saippa believes that all generation should be incentivised and therefore all generators should be treated as if they reduce losses.*
- Any effort to review the current methodology is supported –*Saippa supports this approach but realises that proper cost of supply studies to determine load loss factors may take some effort and time. We suggest that in the interim; for wheeling loads that the current generator loss factors be used. This will incentivise wheeling.*

EIUG Position

- Changing loss factors to be cost reflective will lead to losing the effect of locational pricing : *Saippa disagrees as this will be resolved in proper cost of supply studies.*
- Propose that the same route be followed as the grid code. *Referring to the Grid code may result in a long drawn out process. Use the Generator loss factors in the interim for wheeling loads.*
- Develop a set of rules necessary to get power onto the bus bars and refine the rules as time goes-by. *SAIPPA supports the use the Generator loss factors in the interim for wheeling loads while the rules are refined.*

SAIPPA Position

- *It is not clear why a six zone structure is used and why this is not aligned to the load loss factors.- align wheeling load to the same as generator loss factors.*
- *When wheeling in the same zone between loads and generators , different loss factors apply, there must be uniformity*
- *Make the loss factors cost reflective.*
- *The is a need for a cost of supply to look at the cost reflectivity (barrier to entry for new generation) of loss factors.*
- *This cost vs. benefit study has to be extensive, so it might take time to get to cost reflective loss factors.*
- *Capping of the loss factors for generators is also an issue – caps can be applied to generators who are intermittent suppliers and if they are not intermittent then the cap should be removed.*
- *The use of generator loss factors should be used as an interim solution.*

“6.6 The DUOS losses charge component shall signal the marginal cost of network usage through Distribution Loss Factors”

Eskom Position

- To signal the marginal cost means that loss factors could fluctuate significantly each year. It would also require that loss factors are site/feeder specific in order to signal the marginal costs (not possible to do this for the whole distribution system). This will make the loss factors extremely volatile and complex to calculate.
- The current methodology applied for distribution losses signals the average cost of network usage since it is the most practical and ensures affordability between high and low voltages.
- Propose that the current methodology of average cost of network usage be retained

SAIPPA Position

- *Saippa supports the average costing methodology as this will make loss factors less volatile.*

“10.1 All loads or generators connected directly to the Transmission network shall be charged for losses according to the Wholesale Electricity Pricing System (WEPS)energy rate.

EIUG Position

- The loss factors for the six transmission generator zones are presumably based on a cost of supply study although, on face value the loss factors appear conservative and as noted previously, may have an adverse effect on establishing new generation capacity. – *Saippa recommends that all generators be charged Transmission loss factors.*
- Also, it is noted that the loss factors are not Time-of-Use differentiated and therefore dilute the impact of losses during peak periods. Given the non-linear characteristics of electrical losses this is a significant point. – *Saippa supports non TOUS loss factors as this methodology reduces the costs to generators.*
- Loss factors that change after the conclusion of a wheeling agreement pose a risk to the project. *Saippa agrees that loss factors should not change as this makes projects bankable.*

“10.2 Cross-border energy shall be compensated for losses up to the South African border.”

SAIPPA Position:

- Cross border sales loss factors should be based on the SAPP rules:
-

“ 10.3 The cost of losses shall be charged based on calculated average loss factors for all loads and generators.

EIUG Position

- There is a fundamental difference in the way loss factors are determined for transmission connected loads and generators. This creates material variances in losses results between generators and loads. This can be clearly observed when a load and a generator are co-located. For example a TX load in the Cape will have a loss factor of 1.0413 while a TX generator (at the same point) will have a loss factor of 0.971. If they enter into a wheeling transaction the overall impact is that they will pay for losses with an effective loss factor of 1.0123. This difference widens at lower voltage levels. This result is in contrast with the reasonable assumption that a unit produced and consumed at the same point on the network will not impose losses on the system. It is acknowledged that the use of averaging techniques to calculate losses will result in some distortions; however the results from the above example is counterintuitive.
- In light of the fact that the Cape has a shortage of generation capacity, one would expect that the net impact should encourage more generation investments in the Cape

SAIPPA Supports the above position.

“10.4 The Transmission loss factors for loads shall be calculated for the 0% to 3% geographic differentiation and the loss factors for generators are calculated for the six generator zones.”

Eskom Position

- Loss factors for loads that are based on an antiquated 4 -zone differentiation designed for an integrated monopolistic environment and not suitable for competitive bidding and that do

not reflect the level of losses actually incurred (again this issue prevents South Africa from cost-reflectivity of electricity).

- The 4 load zones are not cost reflective and therefore impact adversely on investment in new generation capability and there locations.
- Generators are to pay a R/MW which will be based on the installed MW sent out capacity. The charge will be differentiated on the basis of six geographic zones. It is not clear why a six zone structure is used and why this is not aligned to the loss load loss factor.

EIUG Position

- The loss factors for the four transmission load zones are not cost reflective. This results in under-recovery of costs in tariffs and could result in sub-optimal locational decisions by loads

SAIPPA Position

- *It is not clear why a six zone structure is used and why this is not aligned to the load loss factors.- align wheeling load to the same as generator loss factors.*
- *When wheeling in the same zone between loads and generators , different loss factors apply, there must be uniformity*
- *Make the loss factors cost reflective.*
- *The is a need for a cost of supply to look at the cost reflectivity (barrier to entry for new generation) of loss factors.*
- *This cost vs. benefit study has to be extensive, so it might take time to get to cost reflective loss factors.*
- *Capping of the loss factors for generators is also an issue – caps can be applied to generators who are intermittent suppliers and if they are not intermittent then the cap should be removed.*
- *The use of generator loss factors should be used as an interim solution.*

“10.13 In the case of co-generators that are both importers and exporters of energy, the network charges applicable to loads shall apply to the net load imposed on the distribution network.”

Eskom Position

- Where generators are importers and exporters, the network service provider will still be required to reserve the network to transport the maximum capacity (import/export) required by the generator and/or load and therefore this is the reason for the alternative suggestion below.

EIUG Position

- Refer to Genflex to resolve this issue.
- Consult Eskom for Genflex related issues.

SAIPPA Position

- Genflex tariff will have a negative impact on wheeling
- Saippa requires clarity on what the impact of Genflex will be on wheeling



4. SAIPPA Recommendation

SAIPPA's recommendation is that a sensible, formula is developed and published in the wheeling rules to permit the increases relating to UOS at both the generator and load ends to be reasonably predictable and fair for the purposes of making IPP projects bankable, thereby stimulating the IPP Sector and wheeling transactions.