

WHEELING TARIFF CALCULATIONS 2027/28

Supporting calculations to the Electricity Wheeling Policy Framework (draft for Council) · 22 October 2026 · Amounts excl. VAT

1. Inputs

Input	Value	Source
Wheeling class charges W1–W4, G	Section 6 of the policy	COS study 2027/28 v8, Section 8.6
Cross-subsidy contribution m	8.6%	COS model, sheet "Wheeling Tariffs (Year 2)"
Settlement adders W1 / W2 / W3 / W4	R150 / R300 / R1,000 / R1,500 per POD a month	COS model (estimates, to be confirmed by Finance)
Level loss factors	HV/intake 1.034; 11 kV 1.053; 400 V 1.085	COS model, technical calibration
Eskom loss to BCMM intake (assumed)	0.967	COS study Annexure I; Eskom to confirm
Wheeling network contribution	R0.230 per kWh credited	COS study Section 8.6 and Annexure I
Feed-in rate for excess energy	R1.90/kWh (R3.00 high-season peak)	NERSA-approved 2026/27, retained
Eskom credit rate, solar profile (assumed)	R1.820/kWh (85% standard, 15% off-peak)	COS study Annexure I

2. How each charge is derived

For wheeling class c, the cost of supply model sums the unbundled 2027/28 cost to serve of the customer categories in the class (customers N, annual kWh E, annual billed kVA-months D) and applies the cross-subsidy contribution m:

Charge	Formula
Network access (R/POD/month)	Wires customer-related cost ÷ (12 × N) × (1 + m)
Network capacity, W3/W4 (R/kVA/month)	Wires demand-related cost ÷ D × (1 + m)
Network capacity, W1/W2 (c/kWh)	Wires demand-related cost ÷ E × 100 × (1 + m)
Upstream Eskom capacity	Retail demand-related Eskom cost ÷ D (R/kVA) or ÷ E × 100 (c/kWh), × (1 + m)
Service and settlement (R/POD/month)	Retail customer-related cost ÷ (12 × N) × (1 + m) + settlement adder
Top-up energy (c/kWh)	(Wires cost of allowable losses + retail energy cost) ÷ E × 100
Check	Without wheeling, the components add back to the full cost to serve of the class

3. Loss credit factors

Credit factor = $1 \div (\text{product of the loss factors of every BCMM network level the energy crosses})$, never above 1. The published factors are rounded down to three decimals, so that rounding never over-credits the customer.

Path	Calculation	Exact	Published
Eskom intake (HV) to 11 kV customer	$1 \div (1.034 \times 1.053)$	0.9184	0.918
Eskom intake (HV) to 400 V customer	$1 \div (1.034 \times 1.053 \times 1.085)$	0.8465	0.846
11 kV generator to 11 kV customer	$1 \div 1.053$	0.9497	0.949
11 kV generator to 400 V customer	$1 \div 1.085$	0.9217	0.921
400 V generator to 400 V customer	$1 \div 1.085$	0.9217	0.921

4. Wheeling network contribution (R0.230/kWh)

Reference transaction (COS study Annexure I): an 11 kV customer on Scale 3B using 400,000 kWh and 1,000 kVA in a low-season month, buying 300,000 kWh from an IPP on Eskom's network; 290,100 kWh reach the BCMM intake and 266,312 kWh are credited.

Step	Amount
Revenue on Scale 3B (R22,672.81 + 1,000 × R452.24 + 400,000 × R1.792)	R1,191,712.81
Less: W4 cost-based charges and top-up, before the contribution	R565,884.94
Less: Eskom credit to BCMM, 290,100 kWh × R1.820	R527,982.00
Shortfall to BCMM without the contribution	R97,845.87

Of which: daytime solar displaces cheaper standard-period energy (closed by billing top-up by TOU period, policy 7.6)	about R37,100
Of which: Scale 3B priced above cost, which the cost-based charges do not carry	about R60,700
Contribution = R60,700 ÷ 266,312 kWh credited = R0.228/kWh, rounded to	R0.230/kWh

5. Worked examples by voltage level

A1. LV domestic home (W1), buying from a neighbourhood solar generator at 400 V

Step	Calculation	Result
Energy generated		350 kWh
kWh credited	350×0.921	322 kWh
Top-up kWh	$600 - 322$	278 kWh
Network access	1 point of delivery	R132.14
Network capacity	$600 \text{ kWh} \times \text{R}1.2757$	R765.42
Upstream Eskom capacity	$600 \text{ kWh} \times \text{R}0.2304$	R138.24
Service and settlement	1 point of delivery	R241.08
Wheeling network contribution	$322 \text{ kWh credited} \times \text{R}0.230$	R74.06
Top-up energy	$278 \text{ kWh} \times \text{R}3.182$	R884.60
BCMM wheeling bill	sum of the charges	R2,235.54
Normal tariff bill	Scale 1B	R2,680.73
Saving on BCMM bill	normal – wheeling	R445.19
Break-even generator price	$445.19 \div 350$	R1.27/kWh

A2. LV small business (W2), buying from a rooftop solar generator at 400 V

Step	Calculation	Result
Energy generated		2,000 kWh
kWh credited	$2,000 \times 0.921$	1,842 kWh
Top-up kWh	$3,000 - 1,842$	1,158 kWh
Network access	1 point of delivery	R938.40
Network capacity	$3,000 \text{ kWh} \times \text{R}0.9786$	R2,935.80
Upstream Eskom capacity	$3,000 \text{ kWh} \times \text{R}0.1765$	R529.50
Service and settlement	1 point of delivery	R946.78
Wheeling network contribution	$1,842 \text{ kWh credited} \times \text{R}0.230$	R423.66
Top-up energy	$1,158 \text{ kWh} \times \text{R}3.182$	R3,684.76
BCMM wheeling bill	sum of the charges	R9,458.90
Normal tariff bill	Scale 2B	R13,411.47
Saving on BCMM bill	normal – wheeling	R3,952.57
Break-even generator price	$3,952.57 \div 2,000$	R1.98/kWh

A3. LV large power factory at 400 V (W3), buying from a solar farm connected at 11 kV in BCMM

Step	Calculation	Result
Energy generated		80,000 kWh
kWh credited	$80,000 \times 0.921$	73,680 kWh
Top-up kWh	$120,000 - 73,680$	46,320 kWh
Network access	1 point of delivery	R1,988.61
Network capacity	$300 \text{ kVA} \times \text{R}372.93$	R111,879.00
Upstream Eskom capacity	$300 \text{ kVA} \times \text{R}67.37$	R20,211.00
Service and settlement	1 point of delivery	R2,370.63
Wheeling network contribution	$73,680 \text{ kWh credited} \times \text{R}0.230$	R16,946.40
Top-up energy	$46,320 \text{ kWh} \times \text{R}3.182$	R147,390.24
BCMM wheeling bill	sum of the charges	R300,785.88
Normal tariff bill	Scale 3A	R472,375.75
Saving on BCMM bill	normal – wheeling	R171,589.87
Break-even generator price	$171,589.87 \div 80,000$	R2.14/kWh

A4. MV 11 kV industrial customer (W4), buying from a solar farm connected at 11 kV in BCMM

Step	Calculation	Result
Energy generated		300,000 kWh
kWh credited	$300,000 \times 0.949$	284,700 kWh
Top-up kWh	$400,000 - 284,700$	115,300 kWh
Network access	1 point of delivery	R3,326.35
Network capacity	$1,000 \text{ kVA} \times \text{R}229.00$	R229,000.00
Upstream Eskom capacity	$1,000 \text{ kVA} \times \text{R}46.08$	R46,080.00
Service and settlement	1 point of delivery	R3,792.65

Wheeling network contribution	284,700 kWh credited × R0.230	R65,481.00
Top-up energy	115,300 kWh × R2.122	R244,666.60
BCMM wheeling bill	sum of the charges	R592,346.60
Normal tariff bill	Scale 3B	R1,191,712.81
Saving on BCMM bill	normal – wheeling	R599,366.21
Break-even generator price	599,366.21 ÷ 300,000	R2.00/kWh

A5. HV: 11 kV customer (W4), buying from a wind or solar IPP on Eskom's HV network, wheeled to a BCMM intake

Step	Calculation	Result
Energy generated		300,000 kWh
At BCMM intake after Eskom losses	300,000 × 0.967	290,100 kWh
kWh credited	290,100 × 0.918	266,312 kWh
Top-up kWh	400,000 – 266,312	133,688 kWh
Network access	1 point of delivery	R3,326.35
Network capacity	1,000 kVA × R229.00	R229,000.00
Upstream Eskom capacity	1,000 kVA × R46.08	R46,080.00
Service and settlement	1 point of delivery	R3,792.65
Wheeling network contribution	266,312 kWh credited × R0.230	R61,251.76
Top-up energy	133,688 kWh × R2.122	R283,685.94
BCMM wheeling bill	sum of the charges	R627,136.70
Normal tariff bill	Scale 3B	R1,191,712.81
Saving on BCMM bill	normal – wheeling	R564,576.11
Break-even generator price	564,576.11 ÷ 300,000	R1.88/kWh

A6. HV: 400 V factory (W3), buying from an IPP on Eskom's HV network

Step	Calculation	Result
Energy generated		80,000 kWh
At BCMM intake after Eskom losses	80,000 × 0.967	77,360 kWh
kWh credited	77,360 × 0.846	65,447 kWh
Top-up kWh	120,000 – 65,447	54,553 kWh
Network access	1 point of delivery	R1,988.61
Network capacity	300 kVA × R372.93	R111,879.00
Upstream Eskom capacity	300 kVA × R67.37	R20,211.00
Service and settlement	1 point of delivery	R2,370.63
Wheeling network contribution	65,447 kWh credited × R0.230	R15,052.81
Top-up energy	54,553 kWh × R3.182	R173,587.65
BCMM wheeling bill	sum of the charges	R325,089.70
Normal tariff bill	Scale 3A	R472,375.75
Saving on BCMM bill	normal – wheeling	R147,286.05
Break-even generator price	147,286.05 ÷ 80,000	R1.84/kWh

6. Reconciliation note

The rates and examples here are those published in the COS study v8 and the policy. Recomputed from the current cost of supply model, the rates differ slightly (for example W1 network access R132.53 against R132.14, W1 service and settlement R257.09 against R241.08, W4 network capacity R228.98 against R229.00). They will be reconciled to the final model, and these calculations updated, before the tariffs are submitted to NERSA.