Briefing Note — Where the Electricity Subsidy Really Lands

A merit-order stacking analysis of the Nigerian electricity market · calibrated to NERC Q1-2026

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What we set out to do

- The national electricity subsidy is usually quoted as one aggregate number — we set out to test whether it is real and, if so, to locate it.
- Specifically: establish the true cost of generating the power each service band (A–E) consumes, and compare it to the tariff that band pays.
- Because higher bands get far more hours of supply, we expected cost-to-serve — and the embedded subsidy — to differ sharply by band, not uniformly.

What we did

- Built a merit-order stacking model: plants ranked cheapest-first by wholesale cost — CCGTs (Afam VI, Okpai) and hydros at the base, gas at the margin.
- Available capacity from NERC Q1-2026; wholesale generation costs are current PPA tariffs in US cents/kWh, converted at ₦1,424/US$.
- Generation allocated equal-first-hours: every band draws the cheapest plants for its first hours; each extra block is met by the next, costlier tranche.
- Band E (4h) is served entirely from the cheap base; Band A (20h) has its final hours met by the costliest plants.
- Each band's generation cost is computed two ways — pure merit order, and must-run + merit order (priority dispatch); the appendix contrasts them.
- A companion Excel model holds every input — plant stack, band hours, energy split and tariffs — as editable cells.

What we found

- Cost-to-serve rises: Band E ₦57/kWh up to Band A ₦100 (actual dispatch; ₦84 on idealised merit).
- Every band except A pays below its generation cost alone; B–E under-water by ₦12–26/kWh — before network costs and ~40% ATC&C losses.
- Band A over-recovers on generation (marginal = Azura ₦155) and cross-subsidises the grid and lower bands.
- Ties to NERC's aggregate: the FGN covered ₦358bn — 52% of generation cost — in Q1-2026.
- The subsidy is real, large and regressive: deepest for the bands that pay the least.

Band	Hrs	Gen cost avg	Marginal	Tariff	vs tariff
A	20	₦100	₦155	₦225	**+₦125**
B	16	₦86	₦116	₦63	**−₦23**
C	12	₦76	₦104	₦50	**−₦26**
D	8	₦63	₦74	₦43	**−₦20**
E	4	₦52	₦52	₦40	**−₦12**

Generation = ACTUAL NISO dispatch, ₦/kWh. Idealised-merit generation shown alongside.

Caveats & next steps

- Only Band A's ~40% energy share is publicly sourced; the B/C/D/E split (24/18/12/6%) is assumed and adjustable in the Excel.
- Generation wholesale costs are current PPA tariffs in US cents/kWh (converted at ₦1,424/$).
- Comparison is generation cost vs the full retail tariff — including network costs would widen the B–E subsidy further.
- Next: a sensitivity on the B–E energy split, and a refresh as PPA tariffs and the exchange rate move.

Sources: NERC Q1-2026 Quarterly Report; generation from current PPA tariffs (USc/kWh); MYTO band service hours and 2026 retail tariffs. · Prepared by ZKJ · Analysis supported by Claude (Anthropic).

Generation Cost by Band — Idealised Merit vs Actual Dispatch

A merit-order stacking analysis of the Nigerian electricity market · calibrated to NERC Q1-2026

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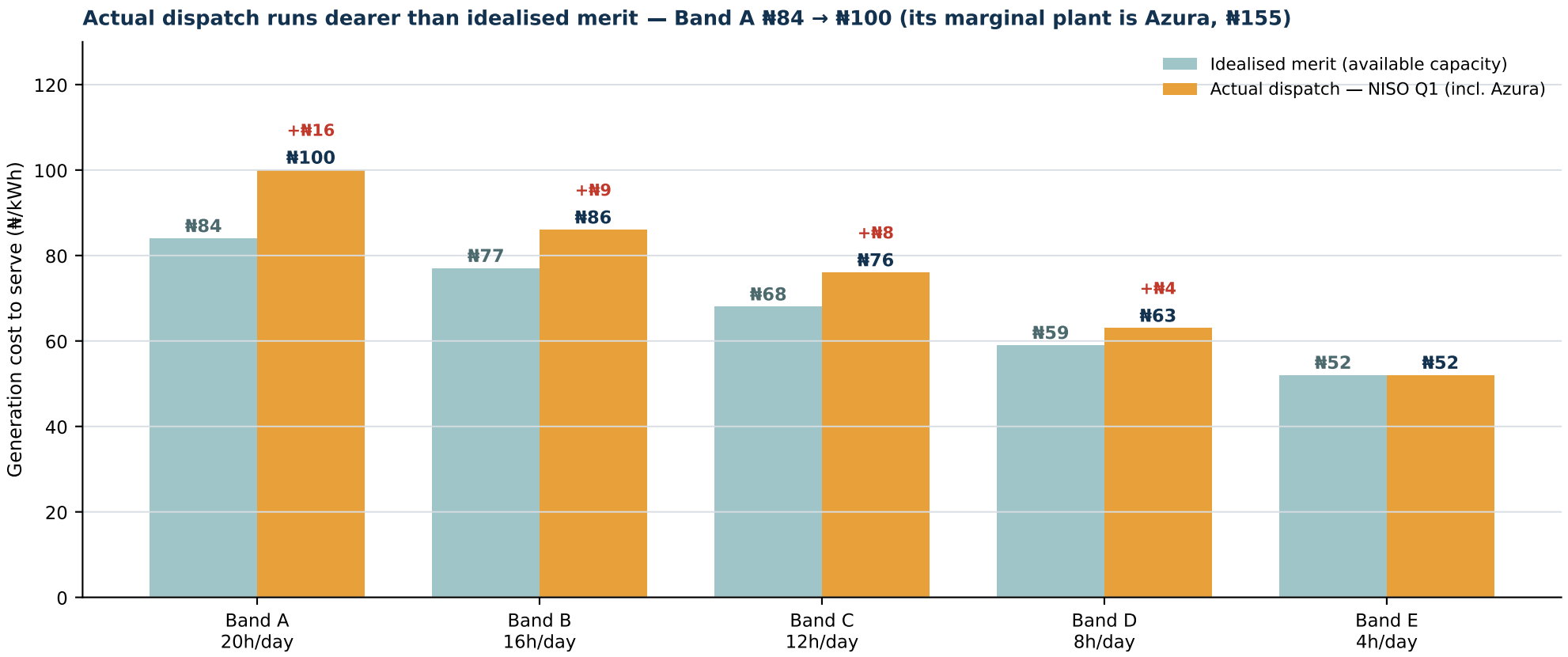
Rebased to NISO actual Q1-2026 dispatch (incl. Azura ~421 MW and the fast-power plants), shown beside the idealised available-capacity merit stack.



What it shows

- On actual NISO dispatch every band costs more except E: Band A ₦84→₦100 (marginal plant Azura ₦155, which really runs ~421 MW baseload), B ₦77→₦86, C ₦68→₦76, D ₦59→₦63; Band E unchanged at ₦52 (still the cheap hydro base).
- Blended generation cost ₦74.6/kWh (idealised merit) → ₦85/kWh actual, ~+14% — the cost of running must-run Azura and fast-power plants ahead of, or instead of, idle cheaper capacity. Roughly ₦410bn/yr of the subsidy is attributable to this dearer-than-merit dispatch.
- NISO Q1 grid total 4,498 MW vs NERC's 4,112 MW: NERC's per-plant table omitted Azura and several small plants. NISO is the actual-dispatch source.
- The idealised-merit view (available capacity) is retained as the efficiency benchmark; the merit staircase follows on the next page.

Sources: NISO GenCo Performance (actual generation, Q1-2026, incl. Azura); plant wholesale costs USc/kWh at ₦1,424/$; NERC Q1-2026 (available capacity). Prepared by ZKJ · Analysis supported by Claude (Anthropic).

Who Really Pays for Power? Generation Cost-to-Serve by Tariff Band

A merit-order stacking analysis of the Nigerian electricity market · calibrated to NERC Q1-2026

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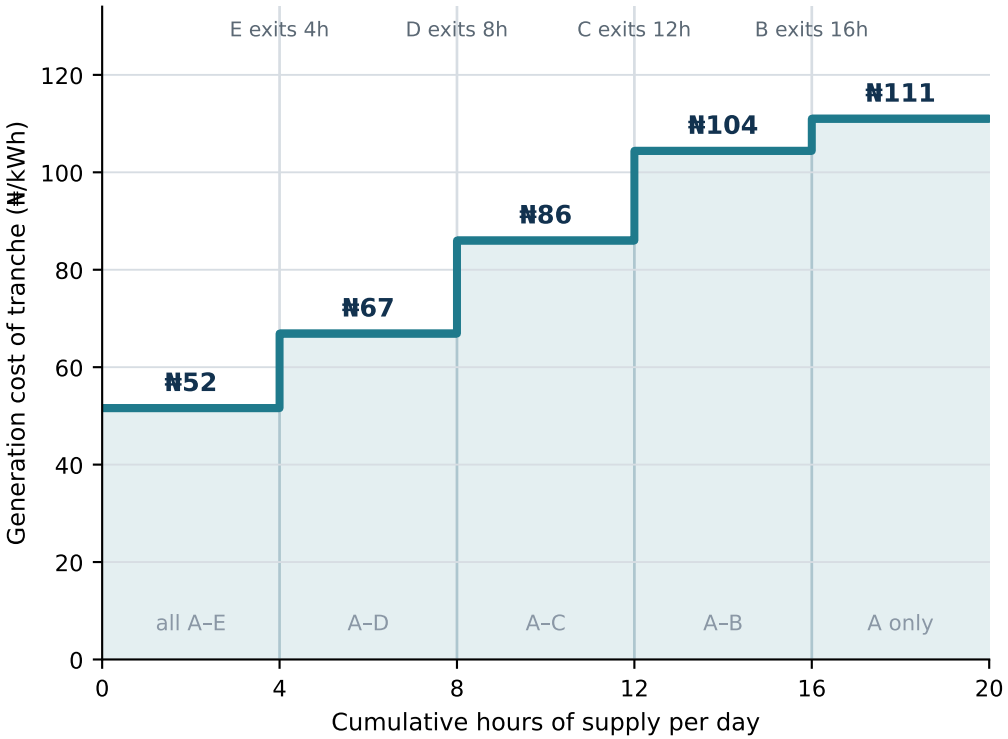
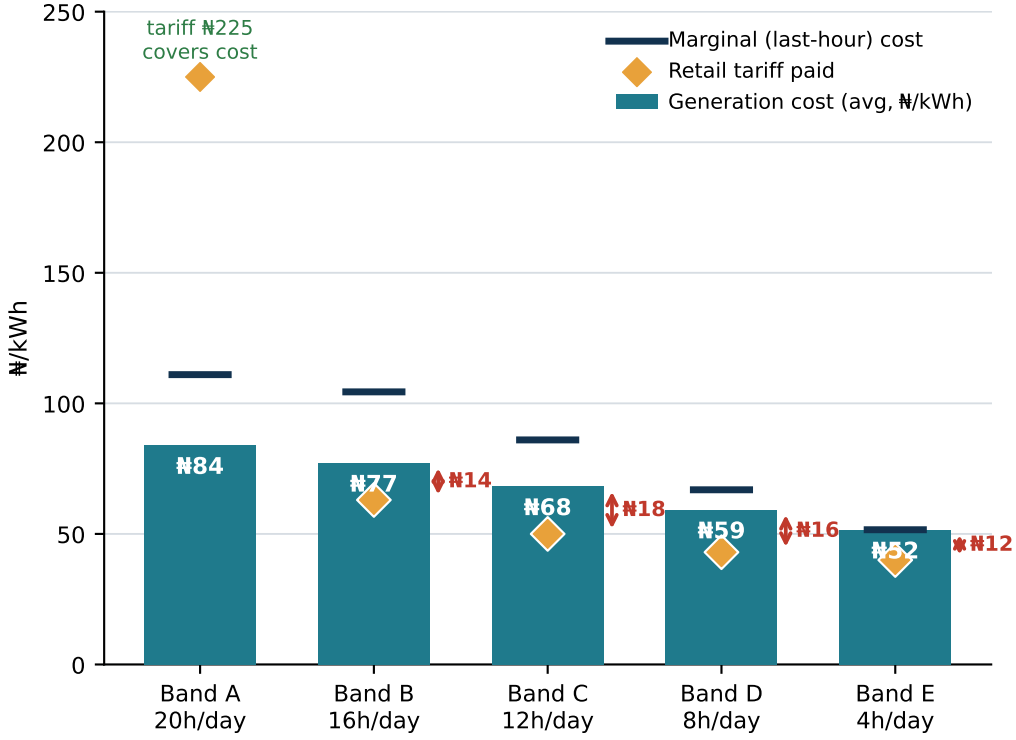
The method

Rank all generation cheapest-first (the efficient CCGTs (Afam VI, Okpai) and hydros at the base, older gas at the margin). Every consumer shares the cheapest national generation for their first hours; each higher band's extra hours are met by progressively costlier plants. Supply is delivered in 4-hour rounds:
Round 1 gives every band its first 4h (Band E is then satisfied); later rounds extend hours for Bands D, C, B and finally A.

1 Each block of hours costs more to generate



2 Bands B–E pay below their generation cost



Bottom line

- Yes — the subsidy is real and regressive by design: cost-to-serve rises A > B > C > D > E, yet tariffs fall in the same direction.
- Bands B–E each pay ₦16–22/kWh below their generation cost alone — before transmission, distribution and ~40% ATC&C losses widen the gap further.
- Band A (₦225/kWh) over-recovers on generation (₦84 average, ₦111 marginal); its surplus helps fund the grid and cross-subsidise the lower bands.
- NERC's own Q1-2026 aggregate confirms the scale: the FGN covered ₦358.32bn — 51.95% of total generation cost — as an explicit tariff subsidy.

Sources: NERC Q1-2026 Quarterly Report (capacity, generation, ₦689.72bn genco invoice, subsidy); generation wholesale from current PPA tariffs in USc/kWh converted at ₦1,424/US$; MYTO band service hours and 2026 retail tariffs.

Assumptions: Band A energy share ~40% is publicly sourced; the B/C/D/E split (24/18/12/6%) is assumed and is an editable input in the companion Excel model. Comparison is generation cost vs full retail tariff.

Prepared by ZKJ · Analysis supported by Claude (Anthropic)

Full Cost of Service vs Retail Tariff — by DisCo

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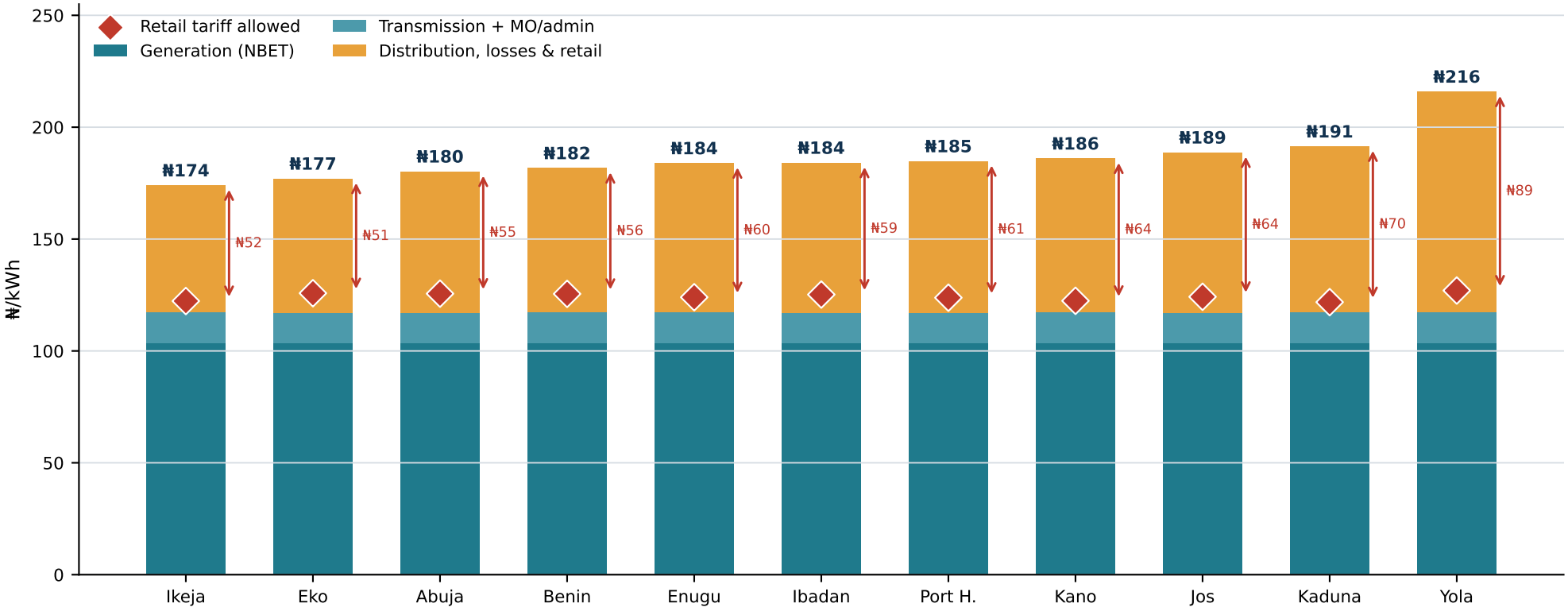
The build-up

Every DisCo's cost-reflective tariff (CRT) stacks the same market-wide pass-throughs — generation (₦104/kWh) and transmission + market/system-operator + regulatory admin + TIF (₦14/kWh) — on top of its own distribution, retail and ATC&C-loss cost. The gap between that total cost of service and the frozen retail tariff each DisCo is allowed to charge is the subsidy. Source: NERC MYTO Q1-2026 (Jan–Mar) Supplementary Orders — all 11 DisCos.

Stacked cost of service (bar) vs allowed retail tariff (diamond) — gap = subsidy



What it shows

- Generation (₦104) and transmission + admin + TIF (₦14) are identical for every DisCo — market pass-throughs. The DisCo-specific piece is distribution + ATC&C losses + retail margin, from ₦57/kWh (Ikeja) to ₦99/kWh (Yola). ATC&C loss is the single biggest swing factor.
- Energy-weighted across the eleven DisCos, the full cost of service is ₦182/kWh against an allowed retail tariff of ₦124 — a subsidy of ₦58/kWh (32%).
- Every DisCo's tariff is far below its cost of service. The gap is smallest for efficient, low-loss networks (Ikeja, Eko ~29%) and widest for high-loss networks (Kaduna 37%, Jos 34%, Yola 41%) — so the subsidy rewards the least efficient distribution most.
- This distribution-side gap sits on top of the generation subsidy: NERC reports the FGN covered ₦358bn (52% of generation cost) in Q1-2026 alone.

Sources: NERC MYTO Q1-2026 (Jan–Mar) Supplementary Orders (Table 1 per DisCo); NERC Q1-2026 Quarterly Report (energy billed, subsidy).

Notes: ₦/kWh on energy billed. "Distribution, losses & retail" = CRT − generation − transmission/admin (incl. ATC&C loss gross-up). CRT = Q1-2026 avg (Jan–Mar). Prepared by ZKJ · Analysis supported by Claude (Anthropic).

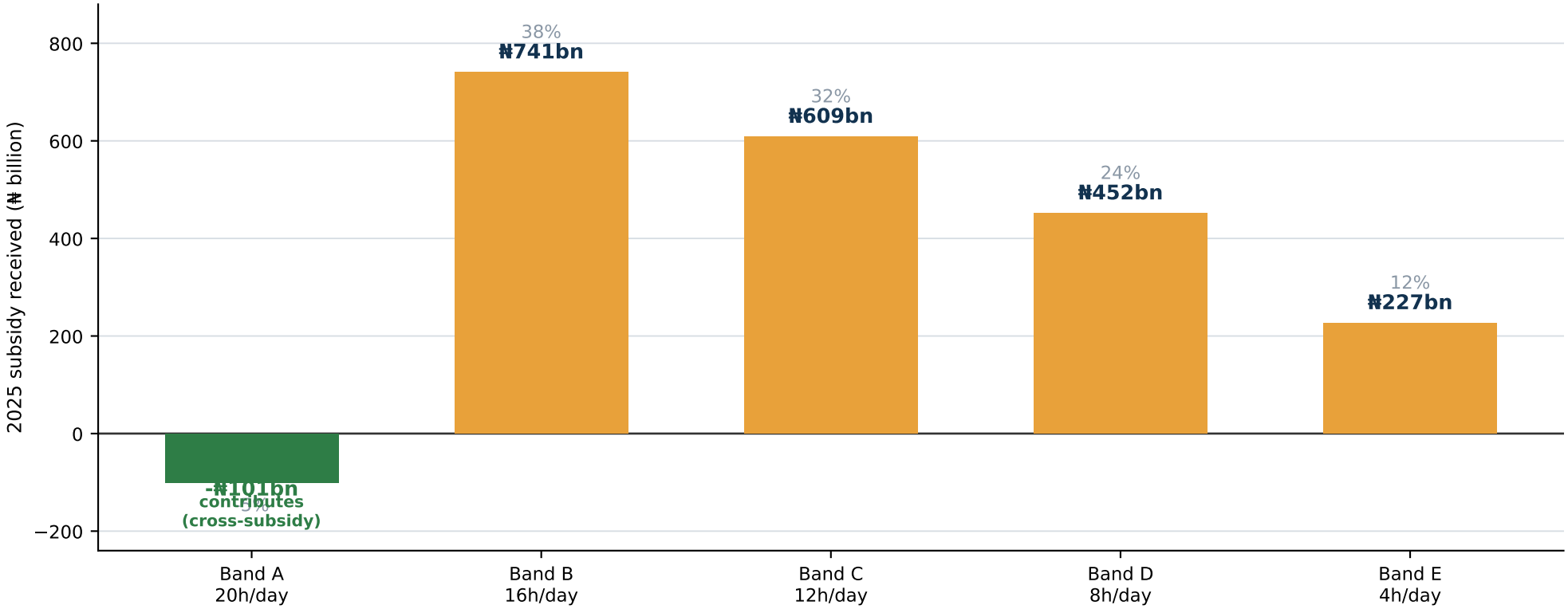
What Each Band Receives — 2025 Electricity Subsidy

A merit-order stacking analysis of the Nigerian electricity market · calibrated to NERC Q1-2026

The allocation

The FGN's 2025 electricity subsidy totalled ~₦1.93 trillion (Q1 ₦536bn · Q2 ₦514bn · Q3 ₦459bn · Q4 ₦419bn). We split it by band using each band's tariff gap below the ₦198.5/kWh cost-reflective tariff, weighted by the energy it consumes: subsidy = (CRT − band tariff) × band energy. Band A pays just above cost, so it receives no subsidy — it contributes ₦101bn that offsets the rest. The mid bands (B, C) absorb the most.

Subsidy received by band, 2025 — total ₦1.93tn (Band A is a net contributor)



What it shows

- Band B is the single largest beneficiary — ₦741bn (38% of the total) — followed by Band C at ₦609bn (32%). Together the two mid-bands take 70%.
- Bands D and E have the widest per-kWh gaps but the least energy, so in naira they receive less: ₦452bn (D) and ₦227bn (E).
- Band A receives nothing — it pays just above cost and effectively returns ₦101bn, trimming the gross ₦2.03tn subsidy to the ₦1.93tn net figure.
- Sensitivity: the split hinges on the band energy shares (A 40% sourced; B/C/D/E 24/18/12/6% assumed). More energy in B/C raises their share further.

Sources: FGN/NERC quarterly subsidy (₦1.93tn, 2025 Q1–Q4); NERC MYTO CRT & band tariffs; energy shares per the generation analysis. Allocation = (CRT − band tariff) × band energy. Prepared by ZKJ · Analysis supported by

Conclusions

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Four takeaways from the analysis — read together, they point to where reform actually pays.

1 The subsidy funds the middle bands most — Bands B and C, not the poorest

- Of the ₦1.93tn 2025 subsidy, Band B takes ₦741bn (38%) and Band C ₦609bn (32%) — together ~70%. Bands D and E receive less in naira despite wider per-kWh gaps, because they consume far less energy.
- Band A is a net contributor (~−₦101bn): it pays just above cost and cross-subsidises the pool.

2 Uniform tariffs across DisCos remove the incentive to perform — a case for decentralised regulation

- The allowed tariff is uniform and the FGN subsidy fills each DisCo's gap, so a 44%-loss DisCo (Yola, CRT ₦216) draws far more subsidy than a 14%-loss one (Ikeja, ₦174) — yet both bill their customers the same rates.
- Consumers in poor-performing franchises face no price signal to protest inefficiency, so ATC&C losses there keep rising.
- It argues for decentralised, state-level DisCo regulation that ties accountability to local performance.

3 Must-run + merit order raises generation cost for every band vs economic merit

- Forcing must-run plants (above all Azura) ahead of cheaper capacity lifts per-band generation cost across the board — Band E +₦23/kWh, D +₦16 — and puts a ~₦75/kWh floor under every band.
- System-wide generation rises ~6% (₦75 → ₦79/kWh); the distortion falls on the lower bands, not Band A.

4 But fix the network before the merit order — wheeling and ATC&C are the bigger levers

- The cheap capacity must-run displaces is itself stranded — by wheeling (physical, needs capex) more than gas (commercial, a creditworthiness fix).
- And ATC&C losses (~₦0.9–1.9tn/yr) dwarf the ~₦171bn must-run premium — merit-order pricing only pays once power can be wheeled and losses cut.

Bottom line

Priorities: (1) expand T&D wheeling (capex) and secure firm gas (commercial) so all capacity can reach load; (2) cut ATC&C losses — the biggest single waste; (3) move to loss-benchmarked, decentralised regulation so DisCo performance is rewarded — then relax must-run.
Cheap capacity that cannot be wheeled to load is not really cheap.

Sources: NERC Order on the Transition to Bilateral Trading in NESI; NERC Q1-2026 Quarterly Report (ATC&C, energy); MYTO Q1-2026 (per-DisCo CRT). Prepared by ZKJ · Analysis supported by Claude (Anthropic).

Limitations & Key Assumptions

A merit-order stacking analysis of the Nigerian electricity market · calibrated to NERC Q1-2026

The findings are directional and depend on the assumptions below. Figures should be read as well-founded estimates, not audited values.

Plant wholesale costs

- Generation costs are USc/kWh converted at the Q1-2026 average ₦1,424/US$ (Jan ₦1,468 / Feb ₦1,435 / Mar ₦1,368); naira figures move with the exchange rate.

Fast-power & unpriced plants

- Afam III, Paras, Trans Afam, GPAL, MEPP, Taopex (and Kashimbila) have no published tariff in our data and were assigned gas-peer (₦111/kWh) or hydro-peer costs. Fast/rental power is typically DEARER, so actual generation cost is likely UNDERSTATED.

Band energy split

- Only Band A's ~40% energy share is publicly sourced; the B/C/D/E split (24/18/12/6%) is assumed. It drives the subsidy-by-band allocation and is an editable input in the Excel model.

Azura & must-run attribution

- Azura is treated as must-run baseload; whether its cost is attributed to the peak (merit order) or spread across all bands (baseload) changes the per-band shape. Azura/Gbarain are absent from NERC's tables — NISO is used for actual output.

Merit-order simplification

- The stack uses an equal-first-hours round allocation, not a chronological hourly dispatch or network-constrained model. Cost of service is assumed uniform per kWh except where losses are band-allocated.

Data-source vintages combined

- Generation (NISO Q1-2026 + USc costs at ₦1,424/$), the per-DisCo cost of service, and the cost-causation appendix are all aligned to Q1-2026 (MYTO Jan–Mar; blended CRT ₦182). The one intentional exception is the aggregate subsidy page, which is an actual annual 2025 figure (₦1.93tn) and uses the 2025 CRT (₦198.5) for its band split. Non-MD band tariffs are frozen, so the same rates apply across both periods. Per-DisCo loss allocation uses an illustrative voltage-severity gradient.

Subsidy allocation basis

- The 2025 subsidy-by-band split is (cost-reflective tariff − band tariff) × band energy — a modelled attribution, not a metered per-band settlement. The ~₦410bn 'dearer-than-merit' figure is an estimate, not a line item.

Contents

Subsidy by Tariff Band — Full Cost of Service vs Tariff

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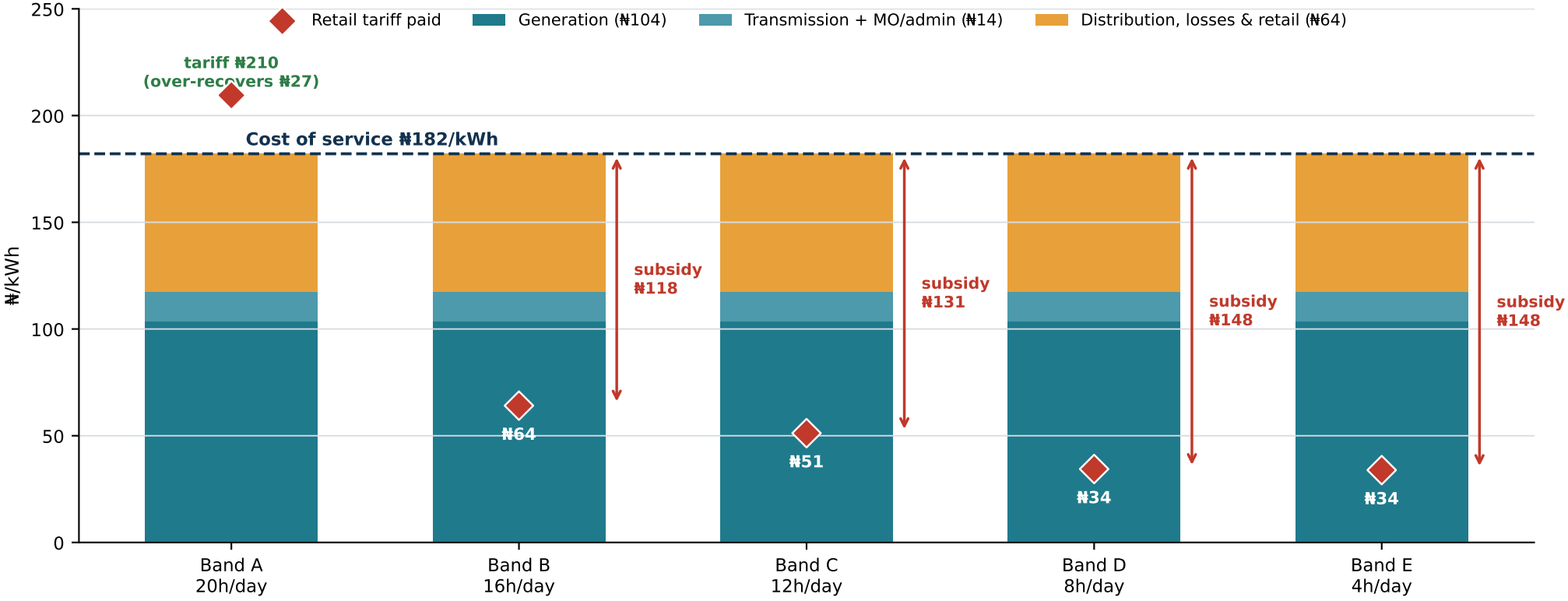
The comparison

A delivered kWh costs the same to serve whichever band consumes it, so the cost of service — generation (₦104) + transmission/admin (₦14) + distribution, losses & retail (₦64) = ₦182/kWh — is shown constant across bands. What differs is the retail tariff each band pays. The gap between the ₦182 cost line and each band's tariff is the subsidy. Energy-weighted across the ten DisCos; band tariffs are the Non-MD rates (MYTO Q1-2026).

Cost of service (stack, constant) vs retail tariff (diamond) — gap = subsidy



What it shows

- Band A (₦209.5) is the only band that fully covers its cost of service — it over-recovers (₦28/kWh) and helps carry the network.
- Bands B–E are deeply subsidised on a full-cost basis: ₦118 (B), ₦131 (C), ₦148 (D), ₦148 (E) per kWh — 65% to 81% of the cost of serving them.
- Because cost of service is essentially flat per kWh but tariffs fall steeply from A to E, the subsidy widens the lower the band — it is regressive by design.
- This is the full-cost view (generation + transmission + distribution); the generation-only attribution (generation staircase) shows why higher bands' generation costs more.

Sources: NERC MYTO Q1-2026 Orders (per-DisCo CRT); Non-MD band tariffs are the frozen Non-MD rates; NERC Q1-2026 Report (energy weights). Cost of service assumed uniform per kWh across bands. Prepared by ZKJ · Analys

Subsidy by Band, per DisCo — Tariff vs Cost of Service

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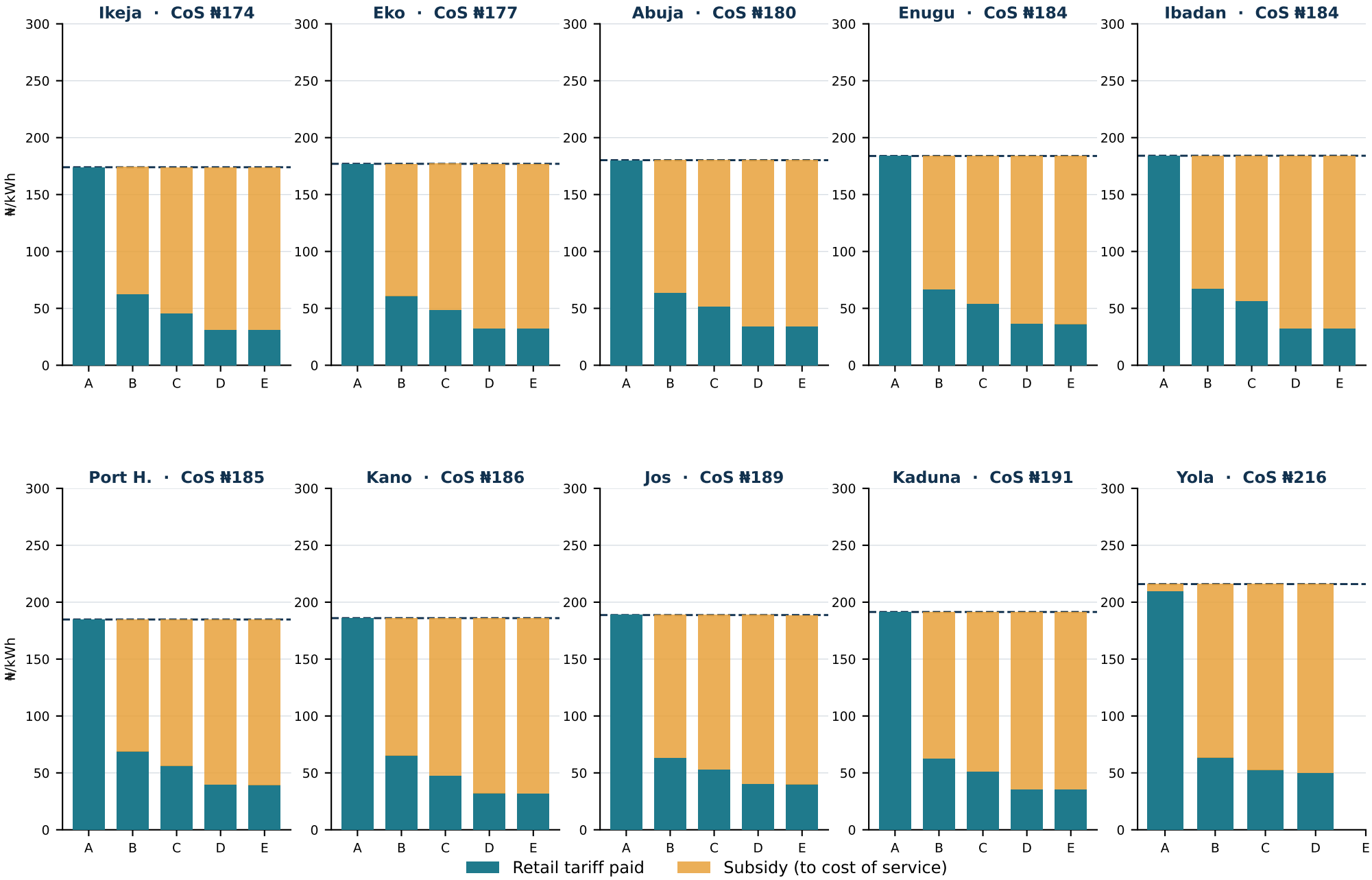
Each panel: bar = retail tariff paid by that band (teal); shaded top = subsidy up to that DisCo's cost of service (dashed line). Band A is near or above cost; B–E carry the subsidy.



Sources: NERC MYTO Q1-2026 Orders (per-DisCo CRT); frozen Non-MD band tariffs. Yola has no Band E. Cost of service uniform per kWh within each DisCo. Prepared by ZKJ · Analysis supported by Claude (Anthropic).

OPTIONAL — Cost-Causation: Generation by Stack + Losses by Band

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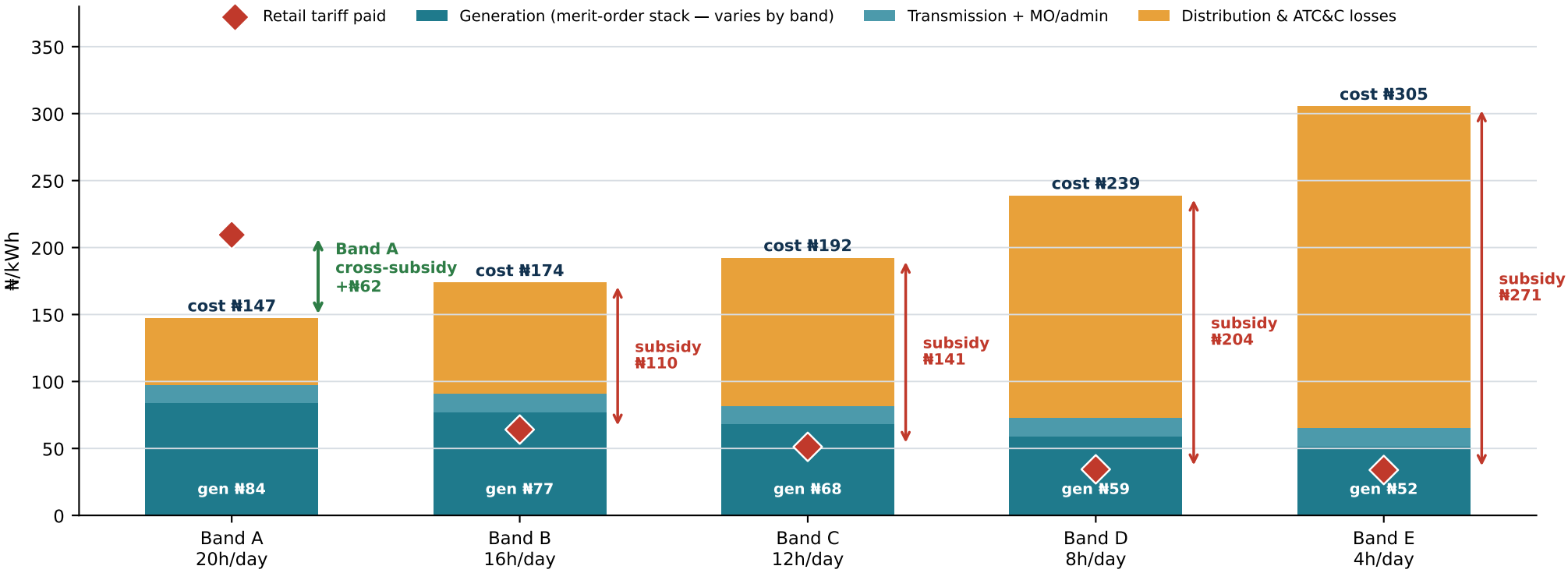
Why this differs from the uniform-cost view (read this)

This view is consistent with the merit-order generation staircase. The GENERATION input differs by band: Band A's extra hours run on the costliest peaking plants (₦84/kWh), Band E draws only cheap baseload (₦52/kWh) — the exact merit-order generation costs. Separately, ATC&C losses & distribution are allocated by voltage-severity (lightest on Band A, heaviest on Band E). The two effects OPPOSE each other — Band A: dearest to generate but lightest losses; Band E: cheapest to generate but heaviest losses — yet losses dominate, so total cost still rises A→E and Band A cross-subsidises.

Cost to serve by band: generation falls A→E, losses rise A→E — net cost rises, Band A tariff clears its cost



What changes vs the uniform-cost view

- Generation input varies by band, exactly as in the generation staircase: ₦84 (A) → ₦52 (E). Band A is costliest to generate for — its 20 hours reach the peaking plants.
- Distribution & ATC&C losses move the opposite way: ₦50 (A) → ₦240 (E), concentrated on the low-voltage lower bands.
- Net cost of service: Band A ₦147/kWh — below its ₦209.5 tariff, a ₦62/kWh cross-subsidy — rising to ₦305 for Band E. The loss slope outweighs the generation slope.
- Reconciles to the ₦182 blended CRT. The idealised stack averages ₦75/kWh vs the ₦104 MYTO generation allowance; the gap rolls into the loss wedge.

Method: cost_band = generation_band(from stack) + transmission + distribution&losses_band, reconciled to each DisCo CRT. Illustrative gradients — not published by NERC. Prepared by ZKJ · Analysis supported by Claude (Anthropic

OPTIONAL — Cost-Causation by Band, per DisCo

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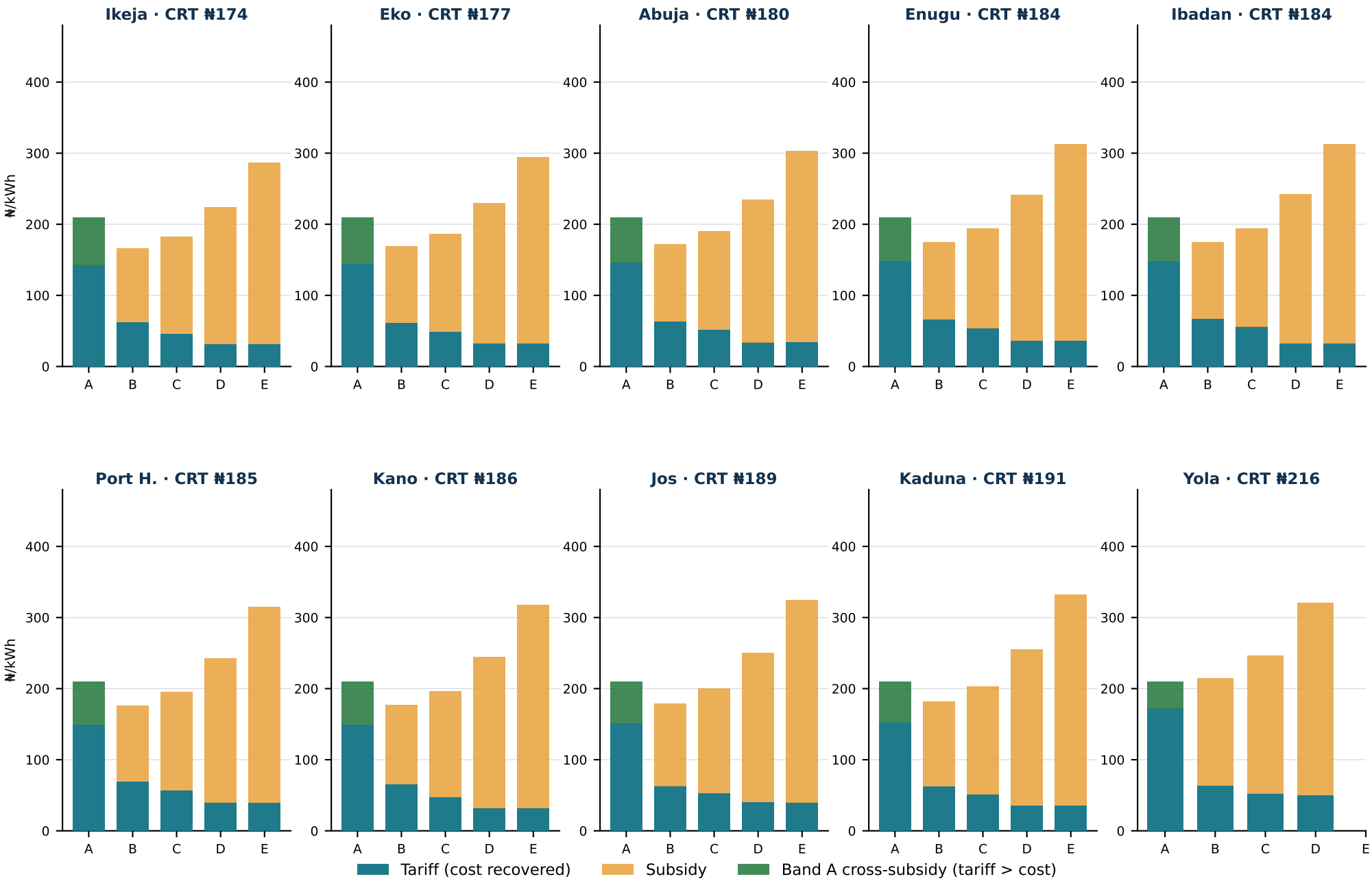
Bars = cost to serve each band (generation from the stack + band-allocated losses). Teal = covered by tariff; amber = subsidy; green = Band A tariff ABOVE cost (cross-subsidy).



Cost-causation model (see the market view): generation by band from the stack + band-allocated losses, reconciled to each DisCo CRT. Yola has no Band E. Prepared by ZKJ · Analysis supported by Claude (Anthropic).

Impact of Priority (Must-Run) Dispatch on Band Generation Cost

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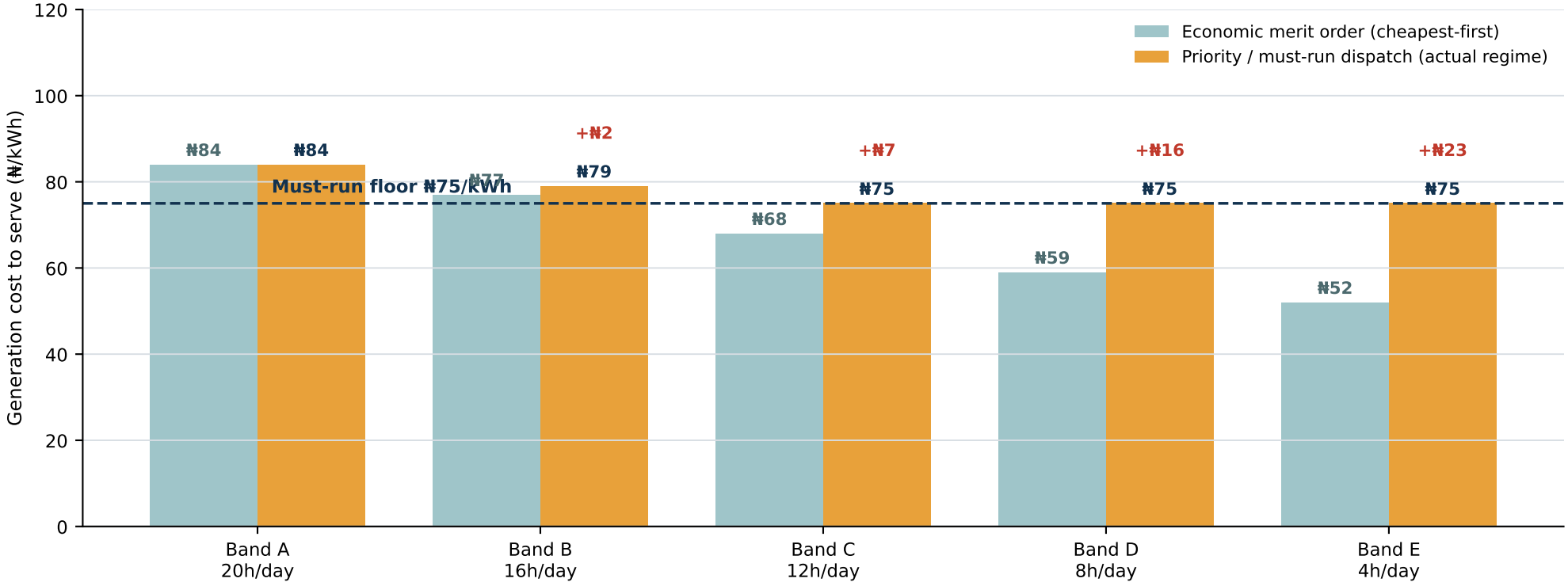
What the Bilateral-Trading Order changes

NERC's Order on the Transition to Bilateral Trading makes five plants must-run/take-or-pay: Azura (360MW baseload + last resort), Afam VI (314MW), Okpai (311MW), and Olorunsogo & Omotosho (186MW each) — on top of the must-run hydros. They are dispatched ahead of cheaper residual plants, so their blended cost (₦75/kWh, lifted by Azura's dollar PPA) becomes a floor under the base hours every band shares. The clean merit-order gradient collapses: the lower bands can no longer be served from the cheapest plants first — they inherit the must-run blend.

Per-band generation cost: merit order vs priority dispatch — the gradient collapses to the must-run floor



What it shows

- Priority dispatch puts a ₦75/kWh generation floor under every band — Band E jumps ₦52 → ₦75 (+44%) and Band D ₦59 → ₦75; the A–E gradient shrinks from ₦32 to ₦9.
- System-wide generation rises ~6% (₦75 → ₦79/kWh): forcing Azura's ₦155/kWh energy into the base displaces cheaper residual plants (Ibom, Zungeru, NIPP gas).
- Band A barely moves (₦84) and its marginal plant is still Egbin (~₦104) — Azura is now baseload, not the peak. The distortion lands on the LOWER bands, not Band A.
- Implication: must-run/take-or-pay is itself a major cost driver. It raises the wholesale floor for the poorest-served customers and enlarges the subsidy at the bottom of the ladder.

Sources: NERC Order on the Transition to Bilateral Trading in NESI (priority dispatch, take-or-pay MW); NERC/182/2019 (hydro must-run); plant costs in USc/kWh; NERC Q1-2026 capacities. Prepared by ZKJ · Analysis supported by Claude

Stranded Capacity — How Must-Run Dispatch Overrides Merit Order

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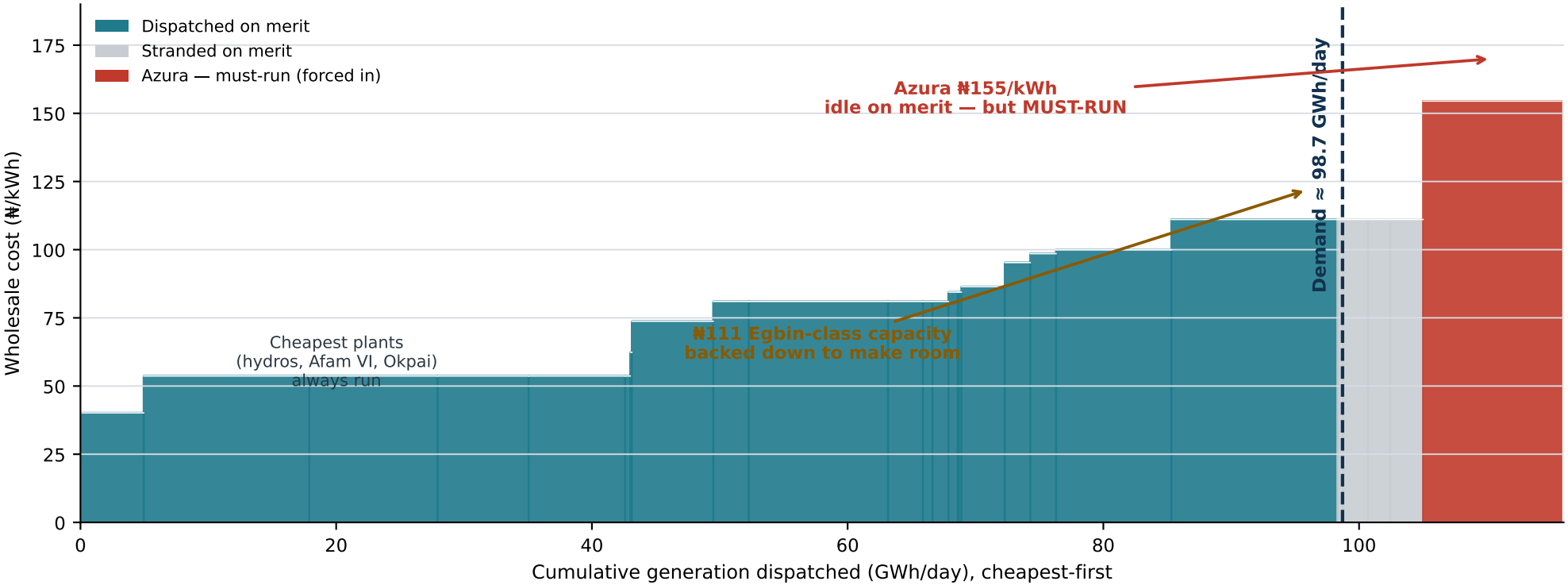
The distortion

Ranked purely on cost, Nigeria would meet its ~98.7 GWh/day by dispatching the cheapest plants and leaving Azura (₦155/kWh) idle at the far right.
But the Order makes Azura must-run — so it is forced into the base, and an equal slice of cheaper ₦111/kWh Egbin-class capacity is backed down (stranded) instead.
Consumers pay ₦155 for energy that a ₦111 plant, sitting idle, could have supplied.

Merit-order supply curve — everything right of the demand line is stranded on cost



What it costs

- Must-run forces ~10.8 GWh/day of Azura (₦155/kWh) into the stack, displacing an equal slice of ₦111/kWh Egbin-class plants that are left idle.
- Stranding premium = ₦44/kWh × 10.8 GWh/day ≈ ₦0.47 billion/day — roughly ₦171 billion/year of avoidable wholesale cost, borne by tariffs and the FGN subsidy.
- The premium is pure deadweight: the displaced Egbin capacity sits available but unpaid-for energy, while consumers pay Azura's dollar-indexed rate.
- This is why the ₦75/kWh must-run floor (priority-dispatch, appendix) sits so high. But two caveats matter (see Conclusions): the cheaper plants can only be relied on WITH firm gas,

Sources: NERC Order on the Transition to Bilateral Trading in NESI; plant wholesale costs (USc/kWh) converted at ₦1,424/$; NERC Q1-2026 available capacities. Marginal plant = Egbin. Prepared by ZKJ · Analysis supported by Claude (Anthro