GUYANA

POWER DEMAND 2030

A Data-Led Assessment of Peak Demand, Electricity Consumption, Grid Readiness and Generation Requirements

~257 MW	~577 MW	1,671 MW
Recent DBIS peak September 2026	Conditional author sensitivity Public 138% statement, not an InterEnergy MW forecast	GPL + Linden potential peak demand in 2030

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Independent White Paper | Audited Revision

Data cut-off: 15 September 2026

Purpose

To establish the most defensible public-data view of Guyana electricity demand through 2030, distinguish measured demand from development-enabled planning assumptions, and identify the generation and grid conditions required to serve each demand trajectory.

Document status and evidence standard

This paper is an independent synthesis of public information available up to 15 September 2026. It is not an official GPL forecast and does not replace detailed system studies, interconnection studies, power-flow analysis, project-specific due diligence, or investment-grade engineering. The audited revision applies a source hierarchy: final regulatory orders and measured operating data take precedence for observed performance; current official plans define planning cases; public project announcements establish status only to the extent disclosed; and author calculations are identified explicitly.

The analysis uses four evidence classes. Class A is measured or operational information published by GPL, the Government of Guyana, the Bureau of Statistics, or the Public Utilities Commission. Class B is a current official planning model or procurement record. Class C is a commissioned or independent outlook whose underlying model is not public. Class D is an author planning sensitivity used to test system resilience. Class D values are not forecasts. Reproducibility rule: where a public source contains an internal inconsistency, this paper reports the inconsistency instead of choosing the value that best fits a narrative.

Central discipline

A measured peak is not the same as a planning forecast. A planning forecast is not the same as a contracted load. A generation project listed in a planning table is not the same as a commissioned asset. This paper keeps those categories separate.

Scrutiny audit status

This revision was source-tested against primary public records and checked for arithmetic, recency, scope consistency, and project maturity. Four issues required stronger qualification: the public InterEnergy disclosure does not establish a reproducible MW point forecast; GPL's published data-centre MWh values do not reproduce from its stated formula; the DSM report uses 2,508 GWh in two different ways; and final 2025 PUC performance data supersede the earlier reliability data used in the first draft. Those issues are corrected and disclosed in Appendix D.

Contents

Executive summary

Guyana has moved from a historically constrained electricity system into a period where load growth, industrial policy and grid expansion are interacting at the same time. The most recent public evidence places DBIS peak demand at about 257 MW in early September 2026, up from 221 MW in 2025. GPL reported 242.6 MW in August and projected 266 MW by the end of October 2026. The near-term surge reflects new connections, commercial and industrial growth, and hot, dry conditions that increase air-conditioning and fan use. [3] [4]

The 2030 outlook cannot be reduced to one uncontested number. GPL's July 2026 Development and Expansion Programme models a development-enabled potential peak of 1,575 MW for DBIS and 1,671 MW for all GPL systems plus Linden in 2030, with potential electricity demand of 10.44 TWh. The same document labels the forecast as potential demand and ties the rise to data centres, major infrastructure, industrial activity, housing, Linden integration and wider economic growth. [1]

An independent InterEnergy assessment, as publicly summarised by the President on 14 September 2026, states that electricity demand could rise by about 138 percent by 2029. The public disclosure does not state the exact demand metric, base period, system boundary, or large-load assumptions. Applying 138 percent to the 242.6 MW August 2026 DBIS peak produces about 577 MW, but that value is an author sensitivity only. It must not be represented as an InterEnergy point forecast. [5]

A third lens appears in GPL's May 2026 Demand Side Management Action Plan. It targets 516 GWh of savings by 2030, described as a 20 percent reduction against projected electricity generation of 2,508 GWh. Elsewhere, the same report states that total energy demand across GPL systems will grow by 2,508 GWh between 2025 and 2030, equal to 171 percent. The wording creates a scope ambiguity. The DSM document is useful for efficiency and load-shape analysis, but it should not be treated as a directly comparable 2030 peak forecast. [2]

White paper finding

The strongest current public planning position is not “Guyana will use 1.67 GW in 2030.” The stronger statement is: GPL is building a system capable of serving a development-enabled demand envelope that reaches about 1.67 GW, while present operating evidence and the disclosed independent outlook point to a lower realised trajectory unless large step-load projects reach service on the assumed schedule.

Key findings

- The DBIS load trajectory has accelerated. Peak demand rose from about 205 MW in 2024 to 221 MW in 2025, 242.6 MW in August 2026, and roughly 257 MW in early September 2026.
- GPL's 2030 upper planning envelope is driven mainly by structural step-loads rather than ordinary customer growth. Total GPL + Linden customer accounts rise from 244,598 in 2025 to 305,764 in 2030, about 25 percent. Potential peak demand rises by more than 500 percent over the same period.
- The first three data centres in GPL's forecast total 200 MW by 2028. That capacity equals about 78 percent of the recent 257 MW DBIS peak. The published annual MWh values do not reproduce from the data-centre formula stated in GPL's own appendix, so this paper uses the MW values for stress testing and flags the MWh values for clarification. [1]
- GPL tracks 77 major infrastructure developments whose exact completion dates were undisclosed or unavailable. The utility estimates 90.6 MW of additional demand by 2030 and 623.2 GWh of associated energy through a phased realisation method. Its methodology applies representative demand profiles, conservative uptime assumptions, and a demand factor of 1.0 for projects without confirmed dates. Those values are suitable as a screening envelope, not as 90.6 MW of firm contracted 2030 load. [1]
- The first 300 MW Gas-to-Energy plant is under construction. Current official implementation updates place the first 57 MW turbine at end-2026 and the full combined-cycle plant in the first half of 2027.
- Guyana's emerging utility-scale supply architecture is increasingly organised around four prospective pillars: Wales Gas-to-Energy Phase I (300 MW), Wales Phase II (300 MW), Amaila Falls Hydropower (minimum 165 MW), and a future Berbice / Palmyra gas-to-energy development modelled at 300 MW in GPL planning. Their nominal capacities total at least 1,065 MW, but this paper does not treat that sum as guaranteed 2030 firm supply. Phase I is in construction, Phase II remains in procurement and development, Amaila remains procurement-stage, and Berbice / Palmyra remains planning-stage and dependent on pipeline, plant, grid and demand milestones. [6] [7] [8] [9] [10] [21]
- Under the full DBIS demand envelope, GPL's model labelled the "committed projects" scenario produces a 223 MW firm-capacity shortfall by 2030. That model label is not treated here as proof that every included supply project is financially or construction committed. GPL's final optimal pathway adds 450 MW beyond that scenario, with 108 MW in 2026 and 342 MW in 2029. [1]
- Transmission and distribution constraints are already visible in parts of the system. GPL reported Region Four feeders at thermal limits in August 2026. Its upper demand envelope is paired with major 230 kV and 69 kV reinforcement, substations, smart-grid systems, and distribution expansion. [1] [3]
- Rooftop solar lowers daytime energy purchases. Guyana's peak occurs in the evening, so solar without storage does not remove the core 19:00 to 21:00 capacity challenge. Batteries, smart controls, efficient cooling and time-based demand management matter more for peak reduction.
- A staged planning framework is safer than one-point forecasting. This paper uses 600 MW, 1,000 MW and 1,671 MW as 2030 stress tests. The first two are analytical sensitivities, not official forecasts. The third is GPL's published potential envelope.

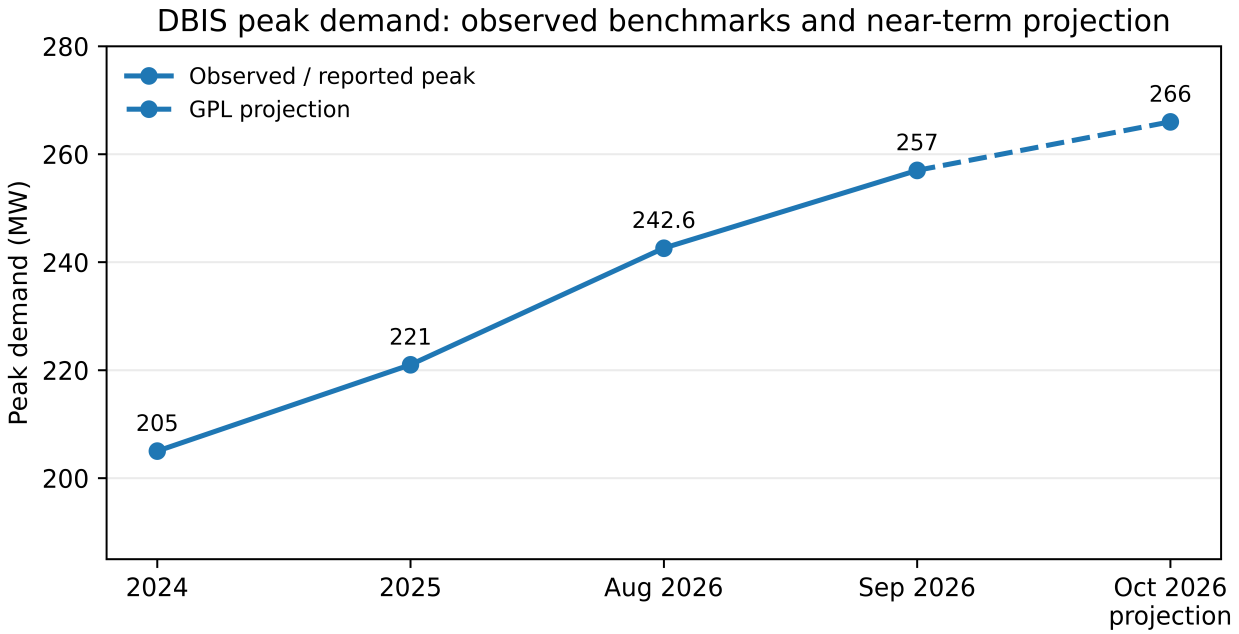

Figure 1. DBIS peak demand has risen sharply since 2024

Sources: GPL DSM Action Plan and current GPL/DPI operating disclosures. The 2024 and August 2026 benchmarks are from the 14 September government disclosure citing InterEnergy; the 2025 value is GPL reported; September 2026 is observed; October 2026 is a GPL projection. [2] [3] [4] [5]

1. The 2026 starting point

1.1 Demand has moved ahead of legacy planning assumptions

GPL reported a DBIS peak of 242.6 MW on 14 August 2026 and forecast 266 MW by the end of October. Less than one month later, GPL stated that peak demand had reached about 257 MW. The timing matters because Guyana's highest demand normally occurs in the dry-season period and in the evening. [3] [4]

The move from 221.5 MW in 2025 to about 257 MW in September 2026 is a rise of roughly 16 percent in less than one year. From the 205 MW level cited for 2024 to 242.6 MW in August 2026, the rise is about 18.3 percent. These changes are too large to treat demand as a slow-moving extrapolation of pre-oil historical growth. [2] [5]

1.2 Grid constraints are visible before 2030

The August 2026 GPL briefing showed that the immediate problem is not generation alone. Region Three demand rose from 26 MW to 41 MW while the Vreed-en-Hoop plant has 26.1 MW of installed generation. GPL plans a 180 MW horizontal directional drilling cable under the Demerara River to strengthen transfer between Regions Three and Four. In Region Four, some feeders designed for 8 to 9 MW had reached their thermal limits. [3]

GPL also reported 256 MW of reliable generation capacity in mid-August and expected 280 MW by the end of that month after additional units and maintenance returns. The utility linked some interruptions directly to overloaded distribution sections rather than generation shortages. This distinction matters for 2030 planning. Additional megawatts at a power station do not serve load if transmission, substations and feeders are not ready. [3]

1.3 Customer growth is strong, but it does not explain the upper forecast

GPL's customer base grew from about 204,000 in 2020 to 250,000 in August 2026. GPL added 5,000 customers in the first seven months of 2026. The Development and Expansion Programme projects 305,764 GPL + Linden accounts by 2030, including 277,037 residential, 25,338 commercial and 3,389 industrial customers. [1] [3]

From the current 250,000 customer base to the 2030 plan, account growth is about 22.3 percent. By contrast, the 1,671 MW potential peak is about 550 percent above the recent 257 MW peak. The difference shows why large industrial and digital loads dominate the upper envelope.

Metric	Latest / base position	2030 planning value	Interpretation
DBIS peak demand	~257 MW, Sep 2026	1,575 MW, GPL potential	Large development-enabled increase
GPL + Linden potential peak	318 MW, 2026 plan	1,671 MW	Includes Linden and development drivers

Metric	Latest / base position	2030 planning value	Interpretation
GPL customer base	250,000, Aug 2026	305,764	~22% increase from current base
Total system losses	25.43% actual for 2025	12.4% target	PUC actual establishes a harder starting point for loss reduction
Smart meters	Partial deployment	~284,000	Enables interval data and active demand management

Sources: GPL Development and Expansion Programme 2026-2030 and GPL 14 August 2026 system briefing. [1] [3]

2. Why 2030 demand is difficult to state as one number

Electricity demand in Guyana is becoming endogenous to infrastructure. New generation, lower expected electricity costs, stronger transmission, housing expansion and industrial policy all create conditions for demand that would not exist under the old constrained system. A supply-constrained historical trend therefore understates latent demand. At the same time, treating every announced project as fully realised overstates near-term load.

The result is a two-sided forecasting problem. If planners wait for large loads to appear before building generation and transmission, grid shortages delay investment and economic projects. If planners build the complete upper envelope before customers reach financial close, interconnection agreements and construction, the system risks excess capacity and higher capital carrying costs.

2.1 Four different quantities are often mixed together

Quantity	Meaning	Best use
Measured peak	Highest observed system load in a defined period	Operational capacity, reliability and weather analysis
Econometric forecast	Load expected from macro, customer and historical relationships	Base planning and budgeting
Development-enabled potential	Load if named projects and policy-led developments reach service	Network sizing and strategic capacity reservation
Contracted / committed load	Load supported by executed agreements, financing, site works or firm interconnection milestones	Generation commitment and project sequencing

The GPL 1.67 GW figure belongs mainly to the third category. The recent 257 MW figure belongs to the first. The disclosed InterEnergy outlook appears closer to an independent forecast category, but the public announcement does not provide its assumptions. A rigorous white paper should not place all three on the same footing.

2.2 The 2026 GPL forecast is an envelope, not a simple trend line

GPL states that its five-year forecast is anchored in a Base Case and includes major demand drivers. The 2030 GPL + Linden table reports 10,440.6 GWh of new potential electricity demand and a potential peak of 1,671.2 MW. DBIS alone reaches about 9,848 GWh and 1,575 MW. [1]

The same report presents low and high scenario averages over 2026-2030 rather than clean 2030 point values. That presentation is easy to misread. The low-case average peak is 259 MW and the high-case average peak is 985 MW across the planning horizon. Those figures should not be described as 2030 low and high forecasts. [1]

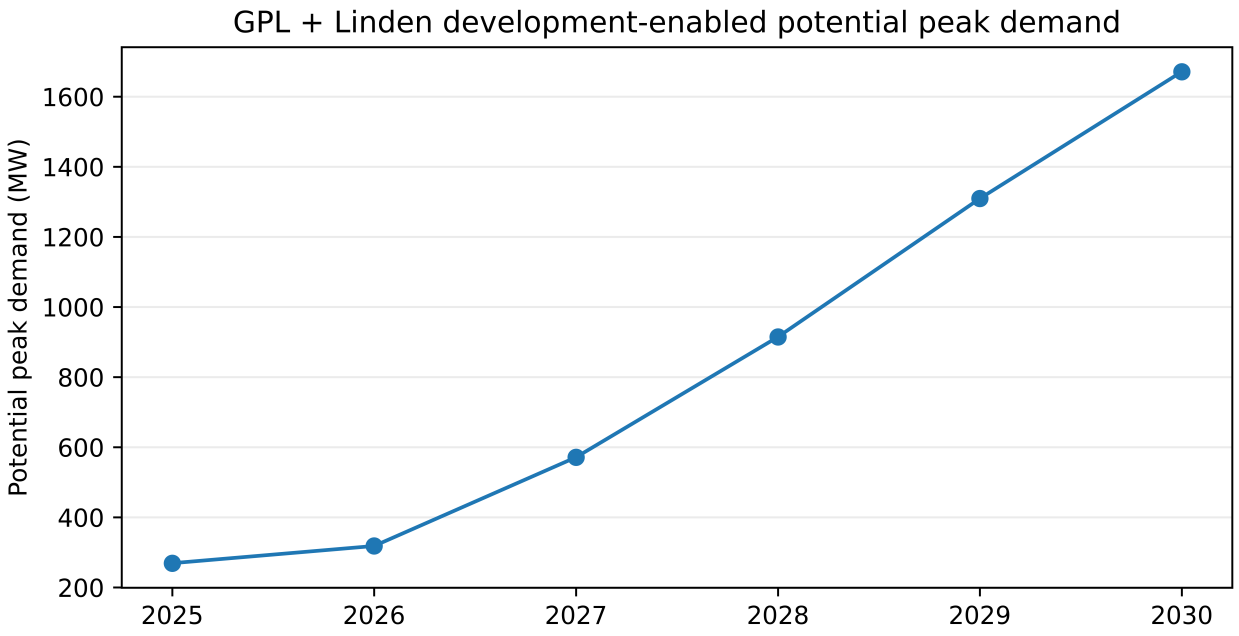

Figure 2. GPL + Linden potential peak demand rises to 1.67 GW by 2030

Source: GPL Development and Expansion Programme 2026-2030, Table 6. [1]

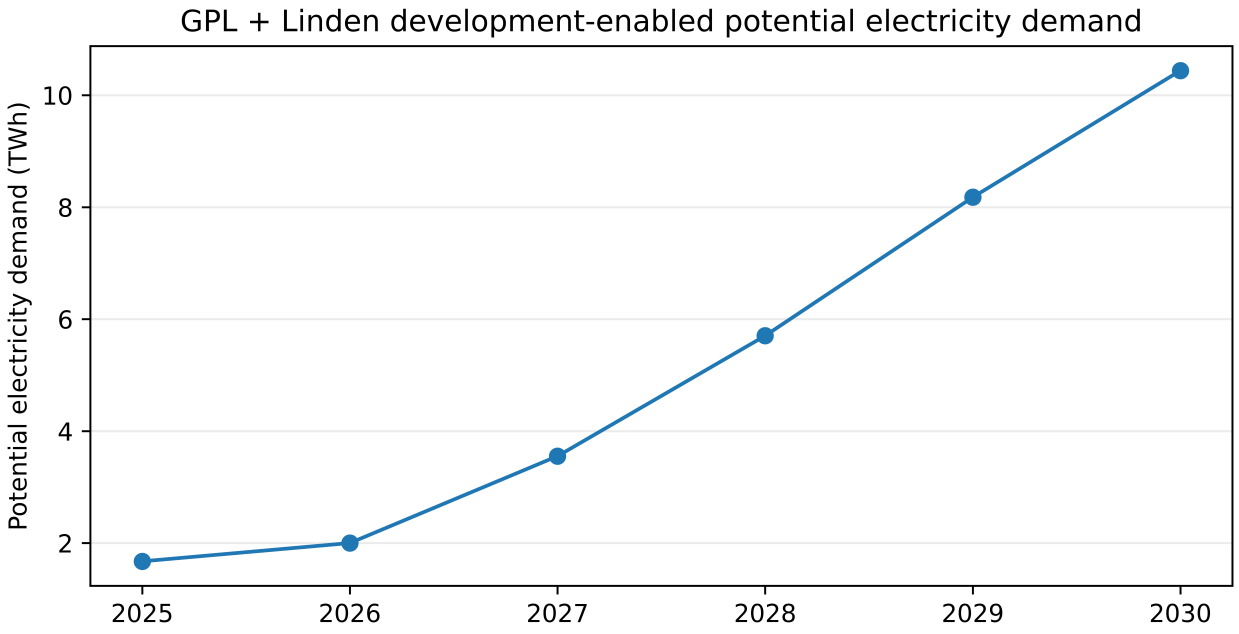

Figure 3. GPL + Linden potential electricity demand reaches 10.44 TWh in 2030

Source: GPL Development and Expansion Programme 2026-2030, Table 6. [1]

3. Reconciliation of the three main demand lenses

Three current public sources shape the 2030 debate. They describe different scopes and should be used for different decisions.

Lens	Published figure	Scope / timing	Evidence treatment
GPL D&E 2026-2030	1,575 MW DBIS and 1,671 MW GPL + Linden peak in 2030. 10.44 TWh potential electricity demand.	Development-enabled planning envelope with named project assumptions.	Primary official planning model. Use for upper-network sizing and capacity stress testing.
InterEnergy assessment	~138% demand growth by 2029, publicly disclosed 14 Sep 2026. No public MW point forecast.	Independent assessment commissioned by government. Underlying report and metric definition are not public.	Use as an external growth signal only. The ~577 MW value in this paper is a conditional author sensitivity, not an InterEnergy forecast.

Lens	Published figure	Scope / timing	Evidence treatment
DSM Action Plan	516 GWh savings; described as 20% of 2,508 GWh by 2030. 516/2,508 = 20.6%.	Efficiency programme and load research, not a clean peak-demand forecast.	Useful for efficiency and load shape. The report uses 2,508 GWh in two different ways, so scope requires reconciliation.

3.1 The public InterEnergy disclosure does not support a reproducible MW point forecast

The 14 September 2026 government briefing states that DBIS peak demand rose from about 205 MW in 2024 to 242.6 MW in August 2026 and that the InterEnergy assessment projects electricity demand could rise by approximately 138 percent by 2029. The disclosure does not specify whether the 138 percent applies to instantaneous peak MW, annual energy, a different base year, or a wider system boundary. If, and only if, the percentage is applied to the 242.6 MW August 2026 peak cited in the same briefing, the arithmetic produces about 577 MW. This is an author sensitivity, not an InterEnergy point forecast. [5]

GPL's DBIS development-enabled potential is 1,231 MW in 2029. A numerical comparison with the 577 MW author sensitivity is useful only as a scale check. Without the InterEnergy methodology, the difference cannot be attributed quantitatively to project realisation, latent demand, system boundaries, or any other specific driver. The two values should not be presented as directly comparable forecasts.

3.2 The DSM document is internally ambiguous on its 2,508 GWh basis

The DSM executive summary states that 516 GWh of savings represent a 20 percent reduction by 2030 based on projected electricity generation of 2,508 GWh. A later section says GPL projects total energy demand across all systems to grow by 2,508 GWh between 2025 and 2030, equal to 171 percent. Those statements use the same number in different ways. This paper therefore uses the DSM document for efficiency potential and load-profile evidence, not as a substitute for the D&E demand table. [2]

For scale, 516 GWh equals about 4.9 percent of the 10.44 TWh 2030 GPL + Linden potential demand envelope. It also equals 20.6 percent of 2,508 GWh, while the DSM report describes the target as 20 percent, consistent with a rounded programme target. The more important issue is scope: the DSM report uses 2,508 GWh both as projected generation in its executive summary and as growth in total demand in a later section. The D&E and DSM baselines therefore should not be merged without reconciliation. [1] [2]

Decision rule

Use measured demand for operations. Use a weather-normalised forecast for near-term generation. Use contracted load milestones for investment timing. Use the GPL development envelope to reserve corridors, land, substations and long-lead grid capacity.

4. Demand drivers through 2030

The upper demand envelope rests on several drivers that behave differently. Some rise gradually. Others arrive as large blocks. Grid planning must therefore track both annual energy and coincident peak demand.

Driver	Published 2030 / timing signal	Load characteristic	White paper confidence
Existing customer intensification	Higher appliance ownership and cooling. Peak already rising rapidly.	Broad, weather-sensitive, evening-heavy	High
Housing and new connections	40,000 new houses targeted during current term. GPL projects 305,764 total accounts by 2030.	Distributed residential load	High for direction, medium for exact timing
Data centres	50 MW Q1 2027, 100 MW Q3 2027, 50 MW Q3 2028 in GPL plan.	Large, high-load-factor step loads	Medium. One separate up-to-100 MW Cerebras MOU is public; mapping to GPL generic projects and firm energisation status are not public.
77 major infrastructure developments	90.6 MW and 623.2 GWh by 2030 in GPL forecast.	Mixed commercial, public and industrial	Medium-low for timing. GPL uses conservative screening assumptions for projects without confirmed dates.
Fertiliser / ammonia-urea	10 MW in GPL plan, GAUP procurement targets 2027/28 readiness.	Continuous industrial process	Medium

Driver	Published 2030 / timing signal	Load characteristic	White paper confidence
Linden integration	GPL assumes DBIS integration by 2029/2030 period.	System-boundary change plus growth	Medium-high
Electric vehicles	~2,276 vehicles, 7 MW coincident load, 20.4 GWh annual energy by 2030.	Flexible load if managed	Medium
Distributed solar	Growing rooftop and utility-scale solar.	Reduces daytime net load	High for direction
Cooling and weather	Dry, hot periods already lift evening demand.	Strong peak effect	High

4.1 Structural demand is larger than demographic demand

Guyana's population reached 878,674 in the 2022 Census and the Bureau of Statistics estimates 956,044 people at end-2024. About 87 percent of the 2022 population lived in coastal regions. Population and housing growth increase electricity use, but the scale of the GPL upper envelope requires much more than household formation. [11]

The strongest evidence is the divergence between customer count and peak demand in GPL's own plan. Customer accounts increase about 25 percent from 2025 to 2030. Potential peak demand increases more than 500 percent. A forecast with that shape is a large-load industrialisation scenario.

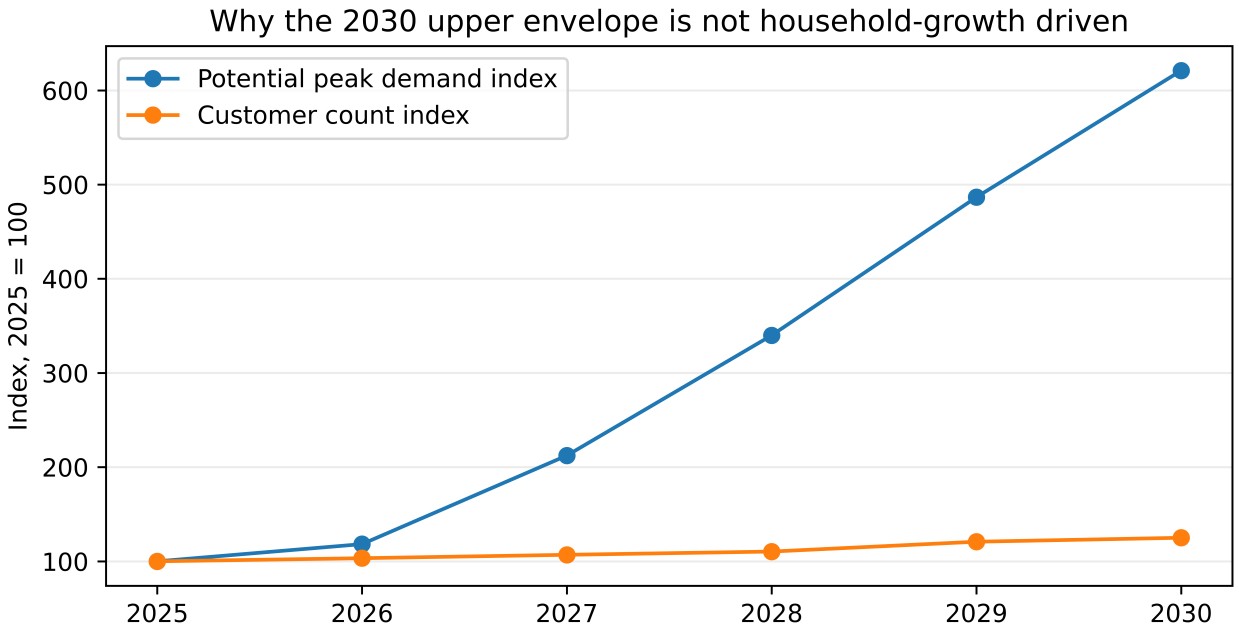

Figure 4. Potential peak demand grows far faster than customer count

Source: Author calculation from GPL Development and Expansion Programme 2026-2030. [1]

4.2 Non-oil growth remains a strong baseline driver

Guyana's Mid-Year Report 2026 recorded 33.3 percent real GDP growth in the first half and 10.1 percent non-oil growth. The full-year projections were 20.8 percent total and 10.2 percent non-oil. The electricity supply sector itself grew 16.5 percent in the first half and was projected to grow 12.5 percent for the year. [6]

The IMF's 2025 Article IV provides an independent medium-term baseline. It projected real non-oil GDP growth of 7.8 percent in 2026, 7.4 percent in 2027, 6.2 percent in 2028, 6.1 percent in 2029 and 6.1 percent in 2030. Actual 2026 non-oil activity was running above that older baseline at mid-year, which supports sustained underlying load growth even before major step-load projects are counted. [15]

5. Data centres and industrial step-loads

5.1 Data centres are the most consequential named demand assumption

GPL includes five data-centre developments in its demand methodology. Three fall within the 2030 horizon: 50 MW in Q1 2027, 100 MW in Q3 2027, and 50 MW in Q3 2028. GPL publishes annual energy values totalling 1,815,804 MWh for those three

projects. Its forecasting appendix states a formula of capacity x 8,760 hours x PUE 1.25 x load factor 0.75. Applied to the published 200 MW aggregate, that formula produces 1,642,500 MWh, about 10.6 percent below the published total. This paper therefore retains the published MW assumptions for capacity stress testing but treats the MWh values as source values requiring clarification rather than independently reproduced estimates. [1]

The first three facilities total 200 MW, equal to about 78 percent of the recent 257 MW DBIS peak. A delay of one large data centre therefore changes the national forecast materially. This is the clearest reason to separate “potential load” from “firm load commitment.”

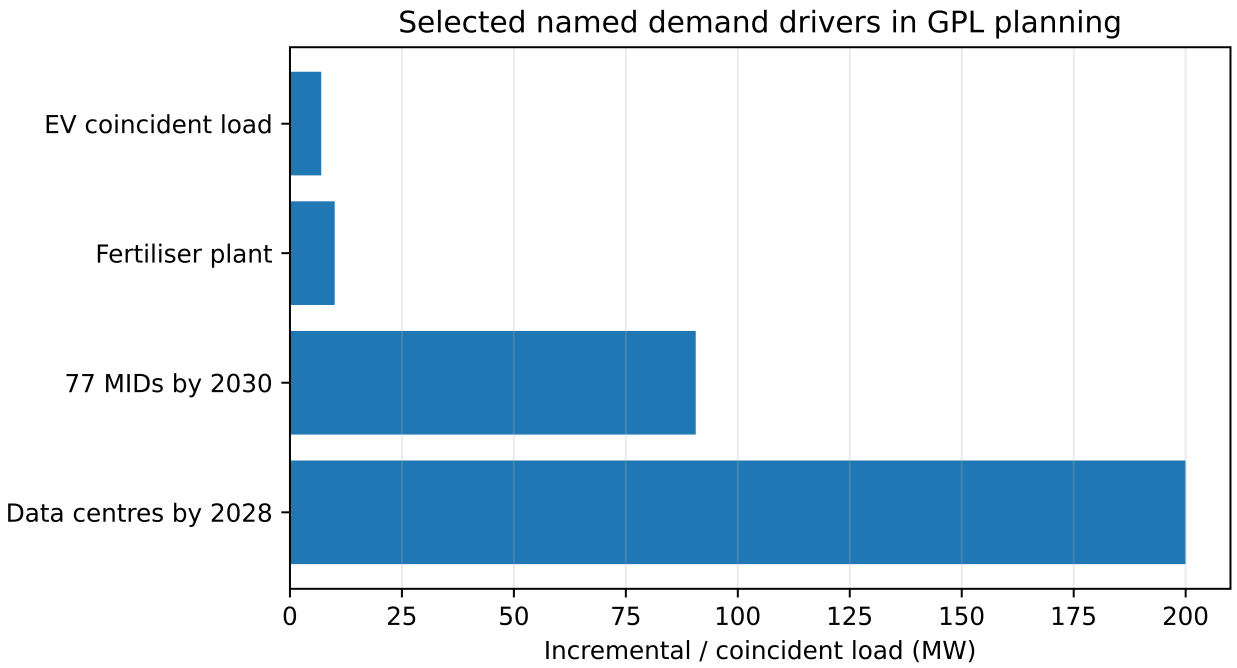

Figure 5. Selected named step-loads inside GPL planning

Source: GPL Development and Expansion Programme 2026-2030. [1]

5.2 The public record does not establish the maturity of all data-centre loads

GPL states that the five data-centre projects reflect varying degrees of definition and maturity and identifies them generically for confidentiality and timing reasons. The public D&E therefore supports the size and timing assumptions used in GPL's model, but it does not allow independent verification of land control, financing, executed power agreements, construction status or final energisation dates. [1]

A separate November 2025 Government/Cerebras memorandum of understanding identifies an AI data centre of up to 100 MW at Wales, with behind-the-meter natural-gas power. That announcement strengthens the evidence that at least one large data-centre concept is active. Public material does not establish that it is identical to GPL's generic 100 MW "Data Centre 2," nor does it disclose a binding grid-supply or energisation agreement. The projects are therefore not mapped to each other in this paper. [18]

A prudent system plan should keep transmission corridors and substation capacity ready for these loads while linking final generation commitments to defined project gates. Useful gates include executed interconnection studies, deposits or security, financing close, EPC mobilisation, substation construction, and a binding energisation schedule.

5.3 Industrial projects add high-load-factor demand

GPL assigns a 10 MW grid requirement to a natural-gas-based fertiliser plant in Q4 2028. Government procurement targets a 300,000-tonne-per-year ammonia and urea plant at Wales using up to 20 MMCFD of gas, with an expected 2027/2028 operating window and an estimated project value of about US$300 million. [1] [16]

Industrial process loads matter differently from household demand. They often operate for long hours, raise system load factor and increase annual energy sales faster than short evening peaks. They also improve the economics of baseload and combined-cycle generation if connection timing is firm.

5.4 The 77 major infrastructure developments add uncertainty as a portfolio

GPL tracks 77 major infrastructure developments whose exact completion dates were undisclosed or unavailable. The utility estimates 90.6 MW of additional demand by 2030 and 623.2 GWh of associated energy through a phased realisation method. Its methodology applies representative demand profiles, conservative uptime assumptions, and a demand factor of 1.0 for projects without confirmed dates. This is suitable for strategic network screening, but the portfolio should not be treated as 90.6 MW of firm contracted 2030 load. [1]

The best planning method is portfolio probability. Each project should move through maturity classes and receive a probability-weighted load value until its connection becomes firm. That approach preserves readiness without treating every announcement as certain.

6. Housing, population and customer growth

6.1 Housing creates persistent distributed load

The Central Housing and Planning Authority states that the Government is targeting 40,000 new houses under its 2025-2030 Strategic Housing Plan. GPL's D&E separately projects 305,764 GPL + Linden customer accounts in 2030, up from 244,598 in 2025. [12] [1]

Residential growth matters beyond the number of accounts. New homes increasingly add air conditioning, pumps, refrigeration, entertainment devices, electric cooking and home-office equipment. Rising income increases electricity intensity per household. This effect is visible in the recent demand surge, which outpaced customer growth.

6.2 Coastal concentration intensifies network requirements

The 2022 Census places 87.16 percent of the population in coastal regions. Large housing programmes and commercial development in Regions Three and Four therefore increase load on the same coastal transmission and distribution corridors already showing thermal constraints. [11]

The 180 MW Demerara River cable, new feeders, new substations and 230 kV backbone are not separate from the housing story. They are the physical condition for housing and business connections to translate into reliable electricity service. [3] [1]

6.3 Customer growth should be tracked with consumption per customer

Account count alone understates demand. A stronger monitoring dashboard tracks residential kWh per account, commercial kWh per account, industrial maximum demand, air-conditioning penetration, feeder evening peaks and new connection cohorts. If per-customer consumption continues to rise, demand will remain strong even if housing delivery slows.

7. Weather, cooling and the shape of peak demand

Guyana's electricity problem is increasingly a peak-shape problem. GPL's DSM study reports a 2025 DBIS peak of 221.5 MW in the evening. It identifies a second daily peak between 19:00 and 22:00, with the night peak more than 5 percent above the daytime peak on regular working days. It also notes higher demand during September to November and lower demand in rainy periods. [2]

GPL's August 2026 operational release and the September 2026 briefing link record demand to hot, dry conditions and increased use of air conditioning, fans and lighting. The utility asked customers to conserve power especially from 19:00 to 21:00. [3] [4]

7.1 Weather-normalisation is essential

A 2030 forecast based on one extreme dry-season peak risks overstating normal annual growth. A forecast based on annual average energy risks understating capacity needs. The correct framework separates weather-normalised base demand from a design-weather peak. For each year, GPL should publish both values and the underlying temperature or heat-index assumptions.

The distinction also affects generation reserve. A system sized only to normal weather becomes fragile during extended hot periods. A system sized to the maximum observed spike without probabilistic analysis carries excess cost. A design-weather percentile, paired with reserve criteria, gives a better planning basis.

7.2 Efficient cooling is one of the highest-value demand interventions

The DSM plan identifies air-conditioning set points and efficient appliances as direct opportunities. Because Guyana's peak is evening-heavy, efficient inverter air conditioners, building standards, thermal insulation, smart thermostats, chilled-water or

thermal storage for large facilities, and demand-response agreements with major customers reduce both energy and capacity requirements. [2]

8. Demand-side management, distributed solar and EVs

8.1 DSM offers material savings, but the baseline must be clarified

GPL's DSM Action Plan identifies ten initiatives across residential, office, commercial, industrial and community-service sectors. It targets 516 GWh of energy savings by 2030. Measures include utility programmes, awareness, government procurement, efficient appliances, audits of large consumers, building-code adoption, water-utility efficiency, efficient street lighting, distributed energy resources and EV charging infrastructure. [2]

The savings target is worth pursuing even though the reported 2,508 GWh baseline is not fully reconciled with the later D&E planning envelope. DSM provides a low-regret hedge against forecast error. It reduces fuel use and network loading under low demand, while freeing capacity under high demand.

8.2 Rooftop solar changes daytime net demand more than evening peak

The Guyana Energy Agency's 2026 grid-connected solar household programme estimates that a typical 5 kWp system generates about 7,884 kWh per year. It also estimates a G$1.2 million system cost and annual bill savings around G$342,402 at the current residential tariff. [13]

Solar generation is strongest during daylight hours, while DBIS peak demand occurs in the evening. Rooftop solar without storage therefore lowers daytime purchases and annual energy but contributes less to the 19:00 to 21:00 peak. Pairing solar with batteries, smart water heating, thermal storage or managed cooling increases its peak value.

8.3 EV demand is modest nationally through 2030, but local effects matter

GPL reports 659 passenger-sized EV imports from 2020 to 2024 and projects about 2,276 vehicles by 2030. Its planning estimate is around 7 MW of coincident load and 20.4 GWh of annual energy. Against the full 2030 upper envelope, EVs are a small national driver. [1]

Local distribution effects may still be significant where vehicles cluster. Managed overnight charging, workplace charging during solar-rich hours, and time-based rates would reduce coincidence with the evening system peak.

8.4 Smart meters are a core demand resource

GPL targets roughly 284,000 smart meters by 2030. Interval data creates a path to feeder-level forecasting, time-of-use pricing, remote service, outage notification, theft detection and targeted demand-response programmes. Smart metering turns demand management from a public appeal into a measurable system resource. [1]

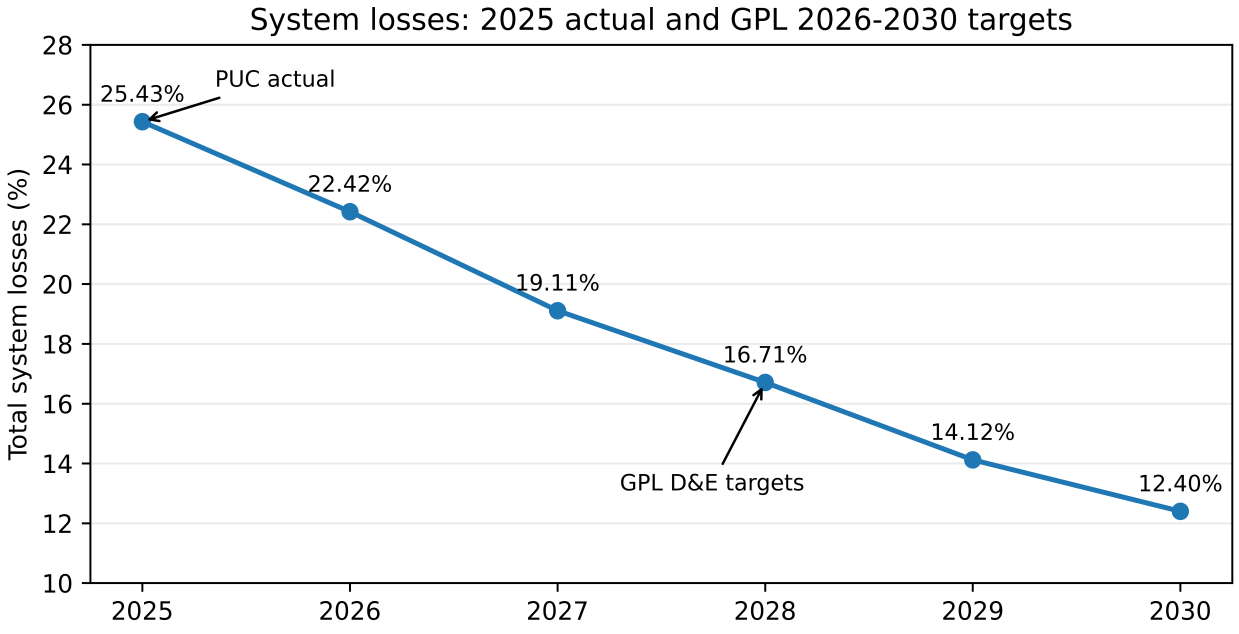

Figure 6. 2025 actual system losses were 25.43 percent; GPL targets 12.4 percent by 2030

Sources: Public Utilities Commission Order 1/2026 for 2025 actual system losses; GPL Development and Expansion Programme for 2026-2030 loss targets. [17] [1]

9. Generation adequacy and project maturity

9.1 Phase I Gas-to-Energy is the strongest near-term supply addition

The first 300 MW Wales Gas-to-Energy combined-cycle plant is under active construction. The 8 September 2026 official update places the first gas turbine at end-2026, delivering about 57 MW, with remaining units following under the implementation schedule. Siemens Energy was also selected as the power plant operations and maintenance operator and was mobilising in September 2026. These are stronger maturity signals than planning-table inclusion alone. [8]

The 2026 Mid-Year Report places the first gas turbine at end-2026 and full combined-cycle completion in the first half of 2027. This schedule is more current than planning assumptions that treat the full 300 MW as available earlier in 2026. Reserve-margin analysis should use the latest construction schedule. [6]

9.2 Phase II is advancing, but is not yet an operating asset

Budget 2026 identifies Phase II as an additional 300 MW gas-fired plant. The Mid-Year Report states that bids were received in the first half of 2026 and were under evaluation, with works slated to start by year-end. This places Phase II in a procurement and development category rather than the same certainty class as Phase I. [7] [6]

9.3 A third gas plant is a planning-stage option

Budget 2026 states that Government is examining another Gas-to-Energy project as part of the Berbice industrial development initiative, potentially placing a third modern power plant at Palmyra by 2030. The budget describes the project as being at the planning stage. GPL's D&E nevertheless includes GTE3 at 300 MW in its 2030 capacity table. For prudent planning, the 300 MW should be treated as planned rather than committed until procurement and financing advance. [7] [1]

9.4 Amaila Falls is important but schedule-sensitive

The current Amaila Falls procurement seeks at least 165 MW under a Build-Own-Operate-Transfer model. The revised RFP requires developers to provide a project schedule, financing capability and a PPA structure. Government stated in February 2026 that proposals would be evaluated on power price, overall cost, completion timelines and financing. [9] [10]

The project is not yet in construction based on the latest public procurement position used in this paper. GPL's D&E assigns 165 MW to 2030. That treatment is appropriate for a planning case, but the 2030 contribution carries greater schedule risk than Phase I Gas-to-Energy.

9.5 GPL's own adequacy analysis shows the cost of missing additions

Under the GPL model labelled the "committed projects" scenario, DBIS firm generation becomes insufficient from 2027. By 2030 the model shows a 1,575 MW peak against 1,352 MW of firm capacity, a 223 MW shortfall, and a loss-of-load probability of 64.9 percent. This is a model adequacy result under GPL's stated demand and supply schedule assumptions, not a prediction that 64.9 percent of operating periods will fail. The source table also assumes timing for some projects that differs from later public implementation updates, so the result is retained as a scenario rather than a current operational forecast. [1]

GPL's final optimal expansion plan adds 108 MW in 2026 and 342 MW in 2029 beyond the GPL-labelled committed-project scenario. In that model pathway, 2030 firm capacity reaches about 1,802 MW against 1,575 MW peak demand, giving a 14.4 percent reserve margin. These additions are model-selected capacity requirements; they should not be read as identified, financed projects unless supported separately by project evidence. [1]

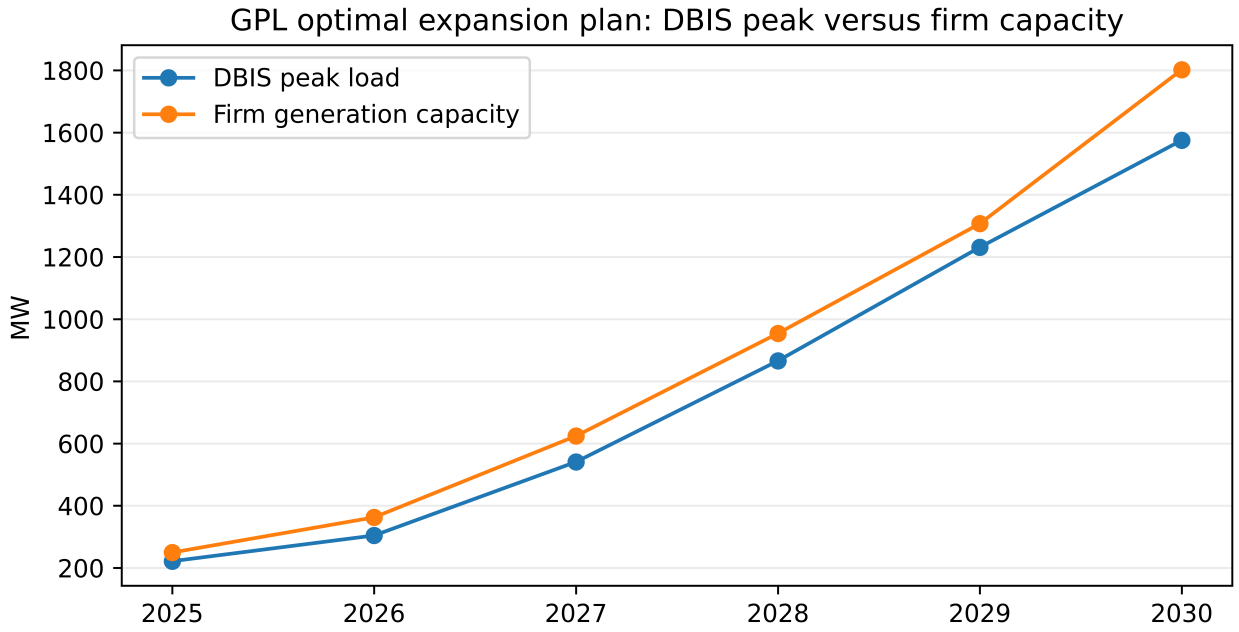

Figure 7. GPL optimal pathway keeps firm capacity above the DBIS demand envelope

Source: GPL Development and Expansion Programme 2026-2030, Table 49. [1]

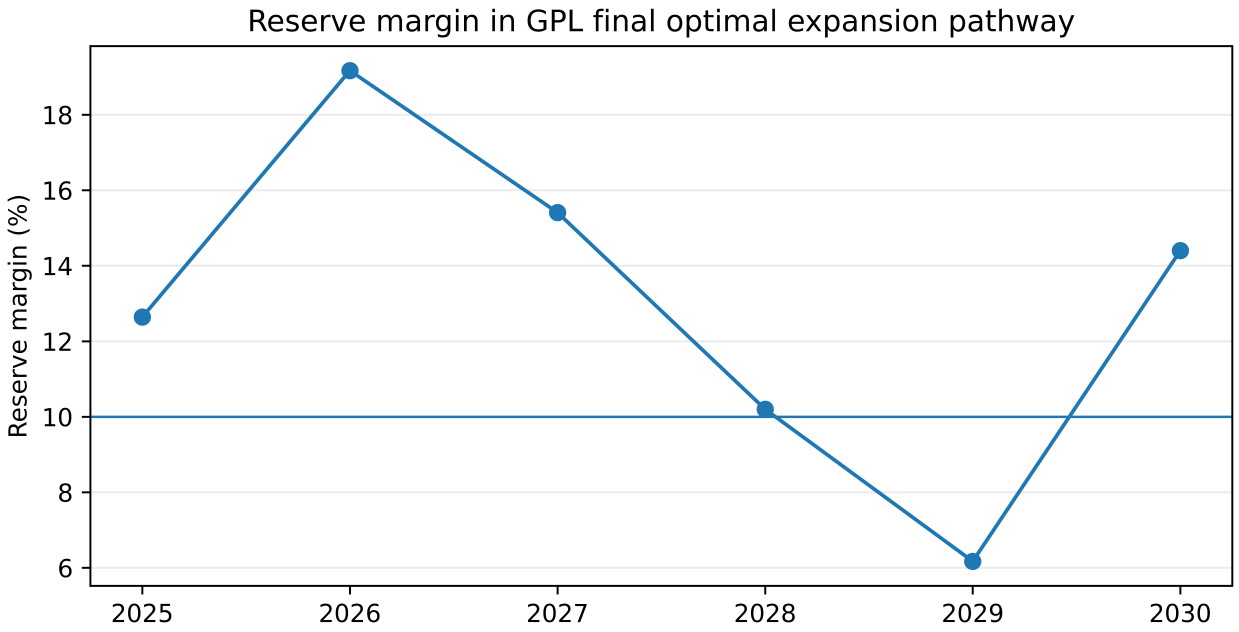

Figure 8. Reserve margin tightens to 6.17 percent in 2029 before recovering in 2030

Source: GPL Development and Expansion Programme 2026-2030, Table 49. [1]

9.6 Guyana's emerging four-pillar generation architecture to 2030

A coherent 2030 supply strategy should distinguish the national architecture from individual project schedules. Four large projects or project families now define the core utility-scale planning picture. Together they represent at least 1,065 MW of nominal nameplate capacity. That arithmetic is useful for system architecture, but it is not a forecast of firm capacity available in 2030.

The projects occupy different maturity levels, technologies and locations. Their contribution must therefore be evaluated against commissioning evidence, dependable output, fuel or hydrology, transmission readiness, reserve requirements and the maturity of the loads they are intended to serve.

Pillar	Nominal capacity	Status / earliest plausible contribution	Confidence	Critical grid dependency
Wales GtE Phase I	300 MW	Construction. First ~57 MW targeted for December 2026. Remaining gas turbines follow, then two steam turbines. Earliest full 300 MW combined-cycle contribution: H1 2027 under the latest public schedule.	High	Wales substation, bulk transmission from Region Three, Demerara transfer capability and the emerging 230 kV backbone.
Wales GtE Phase II	300 MW	Bids received in H1 2026 and under evaluation in the Mid-Year Report. Works were slated to begin by year-end. Earliest contribution: late decade, subject to award and construction. No firm public COD is assumed.	Medium	Additional Wales evacuation capacity, 230 kV reinforcement, substation headroom and system-control readiness.
Amaila Falls Hydro	Minimum 165 MW	Revised BOOT procurement requires financing, PPA structure and a detailed project schedule. Transmission is separate. Earliest contribution used here: 2030 planning case only. No firm COD or construction-stage evidence is assumed.	Medium-low	Dedicated hydro evacuation and integration into the national bulk-power network. Firm contribution also depends on hydrology and operating design.
Berbice / Palmyra GtE	300 MW in GPL plan	Budget 2026 identifies a possible Palmyra plant by 2030. Region Six is also identified for the second gas pipeline. Earliest contribution used here: 2030 policy horizon. Plant COD remains unconfirmed and demand-dependent.	Low-medium	Berbice 230 kV expansion, regional substations, pipeline landing infrastructure and industrial-zone interconnections.

Sources: GPL D&E 2026-2030; Budget Speech 2026; Mid-Year Report 2026; DPI Gas-to-Energy updates; Amaila procurement; DPI Region Six gas-pipeline update. [1] [6] [7] [8] [9] [10] [21]

Portfolio interpretation

The four pillars total at least 1,065 MW of nominal nameplate capacity, but they should not be presented as guaranteed 2030 firm supply. Wales Phase I is the only pillar in construction at the data cut-off. Phase II is in procurement and development, Amaila remains procurement-stage, and Berbice / Palmyra remains planning-stage and demand-dependent. Solar, BESS, legacy generation and GPL's model-selected 342 MW addition remain separate resources in the wider adequacy plan.

10. Transmission and distribution as the critical path

Guyana's 2030 electricity challenge is not solved by generation alone. The existing network requires substantial reinforcement to serve clustered 50 to 100 MW customers and a system that moves toward or above 1 GW. GPL's D&E therefore plans a 230 kV backbone supported by 69 kV sub-transmission, new substations, feeder expansion, protection, communications, and smart-grid control. [1]

10.1 The first 230 kV corridor is tied to Wales generation

GPL describes a 230 kV corridor from Wales toward Goedverwagting as the first segment of a national bulk-power backbone. The wider 2028-2030 plan extends 230 kV infrastructure toward Berbice and Linden, supporting Gas-to-Energy phases, industrial load and eventual hydropower integration. [1] The four-pillar architecture creates a national power-flow problem as well as a generation problem: two major plants are concentrated at Wales west of the Demerara River, Amaila introduces an interior hydro injection point, and Berbice would create a second eastern generation and industrial node. Bulk transmission must therefore be planned as the connective infrastructure linking these supply centres to coastal load growth and to one another.

The D&E states that the planned 230 kV network supports peak demand exceeding 1,500 MW. Future line tables show typical double-circuit ratings of 1,125 MW and critical Berbice segments at about 1,541 MW. Those ratings reveal the scale of system GPL is designing for, even though present peak demand is only a fraction of that level. [1]

10.2 Distribution bottlenecks already affect reliability

In August 2026, GPL reported that some East Coast and East Bank feeders in Region Four had reached thermal limits and that major transmission, feeder, and substation works were underway. By 14 September, Government also reported the Chateau Margot and Enmore substations plus the Columbia expansion at about 60 percent completion, while GPL was establishing a National Control Centre with SCADA for real-time system monitoring and control. [3] [19] [20]

This is a critical planning lesson. Generation reserve margin is not the same as customer reliability. A national system needs adequate generation, N-1 transmission security, transformer headroom, feeder capacity, protection coordination, voltage support, communications, spares and restoration capability.

10.3 Reliability remains a measurable constraint

The Public Utilities Commission's final 2025 review reported SAIFI of 86 interruptions against a target of 85 and SAIDI of 84 hours against a target of 80 hours. Total system losses were 25.43 percent against a 22.43 percent target, while average generation availability of 84 percent exceeded the 80 percent target. GPL's D&E targets SAIFI near 70, SAIDI near 43, and total losses of 12.4 percent by 2030. These indicators establish reliability and loss reduction as measurable execution tests while load grows. [17] [1]

Grid priority	Why it matters for 2030	Trigger to track
230 kV backbone	Moves hundreds of MW from Wales, future hydro and regional plants to load centres.	Energised circuit-km, substation commissioning, N-1 transfer capability
69 kV reinforcement	Connects bulk transmission to coastal regions and large customers.	MW headroom by corridor and substation
Distribution feeder expansion	Prevents local thermal overload despite adequate generation.	Feeder peak loading and overload hours
Demerara River transfer	Strengthens Region Three / Four power exchange.	180 MW HDD cable commissioning
Smart grid and AMI	Improves visibility, outage response, losses and demand control.	Smart meters, SCADA/ADMS coverage, interval-data completeness
Loss reduction	Converts generated energy into delivered sales and lowers capacity burden.	Technical and non-technical loss trajectory

11. 2030 planning stress tests

A single point forecast gives false precision. This paper therefore uses three 2030 peak-demand stress tests. Only the upper case is an official GPL published 2030 value. The 600 MW and 1,000 MW values are author-selected planning sensitivities intended to test investment robustness, not forecasts.

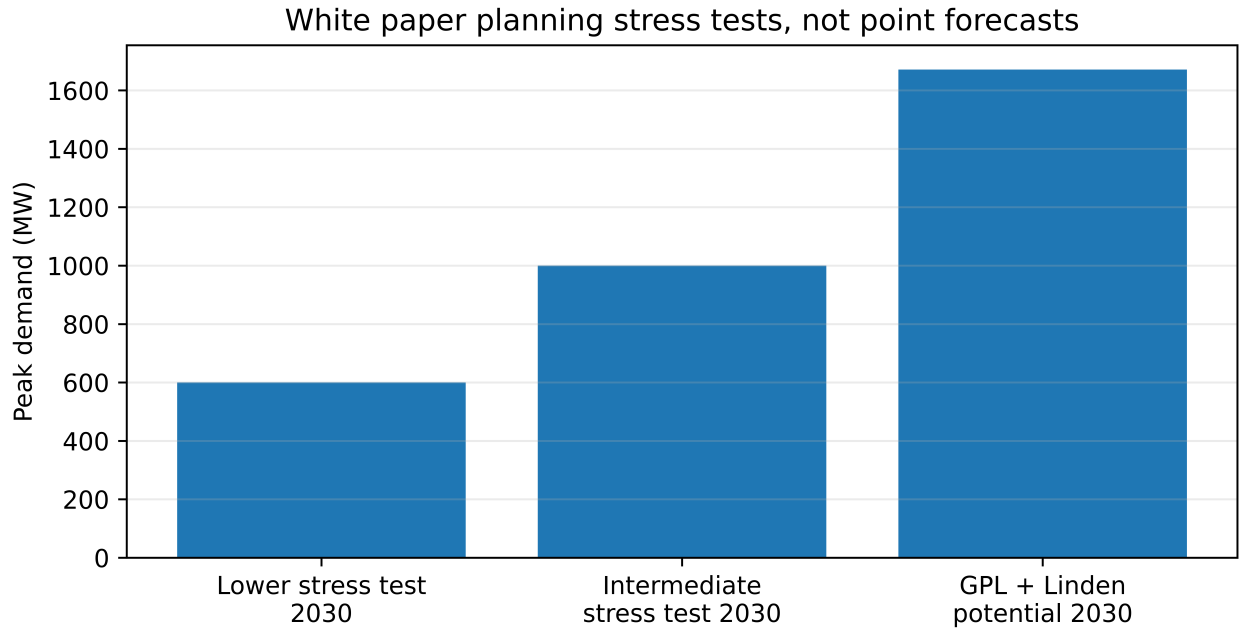

Figure 9. Three 2030 planning stress tests

Source: Author framework. The 1,671 MW value is GPL + Linden potential peak demand. The 600 MW and 1,000 MW values are analytical sensitivities. [1]

11.1 Lower stress test: 600 MW

The 600 MW stress test is an author-selected lower high-growth sensitivity. It happens to sit near the 577 MW arithmetic obtained when the public 138 percent InterEnergy statement is applied to the 242.6 MW August 2026 peak, but it is not presented as an InterEnergy forecast. It represents a future in which underlying economic and customer demand stays strong while a material share of large step-load projects is delayed beyond 2030.

Under this case, the full 300 MW Phase I Gas-to-Energy plant materially changes the supply balance, but grid reliability and distribution reinforcement remain essential. Phase II and renewable additions would provide headroom for growth, retire older units, improve reserve and support lower-cost operation.

11.2 Intermediate stress test: 1,000 MW

The 1,000 MW stress test represents partial execution of the industrial and digital pipeline. It assumes several major loads reach service, but not the entire GPL potential portfolio at the timing embedded in the D&E. At this level, Wales Phase I and Phase II become foundational, while timely contribution from Amaila, Berbice / Palmyra, or equivalent firm resources becomes increasingly important for reserve and operational flexibility.

At this scale, transmission timing becomes as important as generation timing. Large data-centre connections and industrial zones require dedicated substations, protection studies, power-quality standards and firm service arrangements.

11.3 Development-enabled stress test: 1,671 MW

The 1,671 MW case is the GPL + Linden potential peak published for 2030. It represents a transformed electricity system with data centres, industrial loads, infrastructure projects, housing, economic expansion and Linden integrated into the wider network. Even full nominal delivery of the four large pillars, at least 1,065 MW in aggregate, would not by itself settle adequacy at this demand level. The system would still require legacy and new firm capacity, solar and storage, reserve margin, and a national transmission architecture capable of transferring power securely across regions. [1]

This case is suitable for corridor reservation, long-lead transmission design, substation land and strategic capacity planning. It is too uncertain to treat every megawatt as a firm sales forecast without project-by-project maturity evidence.

2030 stress test	What it represents	Planning posture
600 MW	Strong underlying growth, slower large-project realisation.	Complete GTE Phase I, strengthen grid, progress Phase II, maintain reserve and optionality.
1,000 MW	Partial realisation of large industrial and digital loads.	Phase II becomes essential. Commit major 230 kV corridors and additional firm capacity.
1,671 MW	GPL development-enabled upper planning envelope.	Full national 230 kV build, multiple large plants, firm reserve, storage, major substations and disciplined project sequencing.

12. What must be true for the 1.67 GW envelope to materialise

The upper envelope is feasible only if a sequence of mutually reinforcing conditions occurs. The most important are listed below.

Large-load conversion: The first three GPL data-centre capacity assumptions reach their stated 2027-2028 timing. For energy analysis, published MWh values are treated cautiously until GPL reconciles them with its stated formula.

Infrastructure portfolio delivery: A meaningful share of the 77 major infrastructure developments reaches service before 2030 and draws the assigned load.

Industrialisation at Wales and beyond: Fertiliser, manufacturing, logistics, petrochemical or other large industrial projects advance from procurement and concept stages into operating facilities.

Generation timing: GTE Phase I reaches full combined-cycle operation in H1 2027, Phase II advances on schedule, and additional firm capacity is available before reserve margins become inadequate.

Transmission timing: 230 kV and 69 kV corridors, substations and distribution networks commission before the loads they are intended to serve.

Linden integration: Linden connects to the interconnected system on the planning timeline and its load is incorporated as assumed.

Affordability and latent demand: Lower-cost electricity encourages appliance uptake, business expansion and industrial electricity use rather than load remaining behind self-generation or project delays.

Utility execution: Loss reduction, smart metering, protection, operations, maintenance and system-control capability keep pace with physical expansion.

Financing: Sufficient public and private capital remains available across generation, transmission, distribution, system control, and customer interconnection infrastructure.

Project governance: Large customers provide credible energisation milestones, and utility procurement aligns supply additions with those milestones.

12.1 The 2026 near-term forecast is already a useful calibration test

GPL's D&E places DBIS potential peak at 304.18 MW in 2026. GPL's August operating release projected 266 MW by end-October, while early September demand reached about 257 MW. The D&E annual planning point is about 14 percent above the October operating projection and 18 percent above the recent peak. Because these are different forecast constructs and the year is not complete, the gap is not a closed-year forecast error. It is an early calibration signal for updating the 2027-2030 development-enabled curve against realised loads and project milestones. [1] [3] [4]

A rolling quarterly reconciliation should explain the gap between planned and realised demand by customer class, weather, project delay, self-generation, connection timing and energy-efficiency effects. That process would improve confidence in the 2027-2030 curve.

13. Strategic implications and recommendations

13.1 Adopt a two-track demand forecast

Publish two linked forecasts each quarter. The first should be a weather-normalised system forecast based on observed consumption, customer growth and macro drivers. The second should be a development pipeline that adds named large loads according to maturity. The published system plan should show both and explain their difference.

13.2 Use load commitment tiers for large projects

Tier	Definition	Planning treatment
Tier 1 - Firm	Executed interconnection / supply agreement, financing and energisation date supported by construction.	Include at full contracted MW in near-term adequacy and grid plan.
Tier 2 - Advanced	Site, design and financing substantially advanced. Interconnection work underway.	Probability-weighted load. Reserve substation and corridor capacity.
Tier 3 - Development	Publicly announced or included in planning model without firm public milestones.	Keep in strategic envelope. Do not treat as fully committed sales.

Tier	Definition	Planning treatment
Tier 4 - Concept	Early policy or investment concept.	Track separately. Protect strategic options and land only where justified.

13.3 Make 230 kV delivery a national critical-path programme

The upper demand cases fail without bulk transmission. The 230 kV programme should be governed against commissioning milestones, right-of-way, substation transformer delivery, protection systems, communications and construction interfaces. Large generation and large loads should have matched transmission readiness dates.

13.4 Treat demand-side resources as capacity resources

DSM should move beyond annual kWh savings. GPL should quantify MW reduction during 19:00 to 21:00. Programmes for air conditioning, large commercial facilities, government buildings, water pumping, cold storage, industrial motors and batteries should receive peak-reduction targets. The economic value is avoided peaking capacity plus reduced feeder and transformer loading.

13.5 Link tariffs and smart meters to peak management

GPL's published residential energy rate above 75 kWh is G$43.43 per kWh, commercial is G$56.38, and industrial rates are G$50.93 or G$48.78 depending on category. These rates have been in effect since 2021. Smart metering creates the technical basis for future time-based signals or large-customer demand charges that better reflect system cost at peak. [14]

Any tariff reform should protect affordability while rewarding flexible consumption. Large customers offer the fastest starting point because interval metering and load-management capability are easier to implement at scale.

13.6 Keep supply optional until load is firm, but keep corridors ready

Generation commitments should follow credible load milestones. Transmission corridors, substation sites, environmental approvals and long-lead system studies should move earlier because they take years to secure. This sequencing reduces both shortage risk and stranded-asset risk.

13.7 Publish a national electricity balance every quarter

A concise public balance should state measured peak, weather-normalised peak, available firm capacity, reserve margin, energy sent out, sales, losses, customer count, major-load commitments, generation construction status, transmission milestones and outage indices. A consistent data series would improve investor confidence and reduce conflicting demand narratives.

14. Monitoring dashboard for 2026-2030

The following indicators give the fastest evidence of whether Guyana is tracking toward 600 MW, 1,000 MW or the full 1.67 GW 2030 envelope.

Indicator	Frequency	Why it matters	Escalation signal
DBIS monthly peak and 95th percentile load	Monthly	Measures realised demand without relying on annual narrative.	Sustained year-on-year peak growth above 15%
Weather-normalised peak	Monthly / quarterly	Separates structural growth from extreme heat.	Base load rising almost as fast as raw peak
Energy sent out and sales by class	Monthly	Shows load factor and industrial/commercial intensity.	Industrial sales acceleration
Residential kWh per account	Quarterly	Tests income and cooling intensity.	Growth despite efficiency programmes
Firm large-load pipeline	Quarterly	Converts announcements into bankable demand.	New Tier 1 loads above 50 MW
Data-centre interconnection status	Quarterly	Largest named step-load assumption.	Civil works and energisation dates firm
GTE Phase I / II commissioning	Monthly	Largest near-term firm supply additions.	Schedule slippage relative to load growth
230 kV backbone milestones	Monthly / quarterly	Critical to move bulk power.	Load or plant ready before corridor
Substation and feeder loading	Monthly	Identifies local reliability risk.	Repeated operation above planning limits
Total and technical losses	Monthly	Determines generation required per unit sold.	Loss reduction misses annual target

Indicator	Frequency	Why it matters	Escalation signal
SAIFI / SAIDI / EENS	Quarterly	Tracks customer reliability.	Expansion without reliability improvement
Smart-meter coverage	Quarterly	Enables granular forecasting and DSM.	Deployment behind new-customer growth
DSM peak MW reduction	Quarterly	Tests whether efficiency affects system peak.	Savings reported only in GWh with no peak evidence
Rooftop PV + BESS installed capacity	Quarterly	Changes net load and feeder flows.	High solar growth without storage / hosting studies

14.1 Suggested annual decision gates

End-2026: confirm actual October-November peak, first GTE turbine status, 2027 firm-load commitments and feeder relief projects. Rebase the 2027 forecast from measured demand rather than retaining an unchanged curve.

End-2027: confirm full GTE Phase I performance, data-centre energisation, Phase II construction, 230 kV progress and reserve margin. If large-load conversion is below plan, defer non-essential firm capacity while preserving grid optionality.

End-2028: confirm whether the system has crossed from hundreds of MW into a structurally higher demand regime. Reassess Phase III, Amaila timing, additional firm capacity, solar and BESS based on contracted 2029-2031 loads.

End-2029: lock the 2030 operating plan using firm demand, not the original planning envelope alone. Verify N-1 transfer capability and reserve across the expanded grid before adding major new customer blocks.

Appendix A. Core data tables

A1. GPL + Linden potential demand

Year	Potential electricity demand (GWh)	Potential peak (MW)	Total customers
2025	1,673.7	269.1	244,598
2026	2,000.1	318.2	252,720
2027	3,553.0	571.3	261,516
2028	5,703.4	914.6	269,946
2029	8,178.1	1,309.4	295,488
2030	10,440.6	1,671.2	305,764

Source: GPL Development and Expansion Programme 2026-2030. [1]

A2. DBIS optimal expansion adequacy

Year	Peak load (MW)	Firm capacity (MW)	Reserve margin (%)	Additional capacity (MW)
2025	221.50	249.50	12.64	0
2026	304.18	362.50	19.17	108
2027	540.84	624.19	15.41	0
2028	865.89	954.19	10.20	0
2029	1,231.20	1,307.19	6.17	342
2030	1,575.31	1,802.19	14.40	0

Source: GPL Development and Expansion Programme 2026-2030, Table 49. [1]

A3. Named large-load assumptions

Project	Assumed commissioning	Grid capacity	Published annual energy / model treatment
Data Centre 1	Q1 2027	50 MW	453,330 MWh (published; formula not reconciled)

Project	Assumed commissioning	Grid capacity	Published annual energy / model treatment
Data Centre 2	Q3 2027	100 MW	909,144 MWh (published; formula not reconciled)
Data Centre 3	Q3 2028	50 MW	453,330 MWh (published; formula not reconciled)
Natural-gas-based fertiliser plant	Q4 2028	10 MW	77,263 MWh
77 MIDs, aggregate	Phased through 2030	90.6 MW	623.2 GWh by 2030 model treatment
EV fleet	2030	~7 MW coincident	~20.4 GWh

Source: GPL Development and Expansion Programme 2026-2030. [1]

Appendix B. Author calculations and interpretation notes

Calculation	Arithmetic	Interpretation
Illustrative translation of public 138% statement	242.6 MW x 2.38 = 577.4 MW	Conditional author sensitivity only. Public disclosure does not define the 138% metric or base sufficiently to call 577.4 MW an InterEnergy forecast.
Customer growth from Aug 2026 to 2030	(305,764 / 250,000 - 1) x 100 = 22.3%	Shows upper peak forecast is not explained by account growth alone.
First three data centres vs recent peak	200 MW / 257 MW = 77.8%	Shows sensitivity of national forecast to data-centre timing.
DSM savings vs GPL 2030 potential demand	516 GWh / 10,440.6 GWh = 4.9%	Illustrates scope mismatch between DSM and D&E baselines; it does not measure DSM effectiveness against a common reconciled baseline.
D&E 2026 DBIS point vs Oct projection	(304.18 / 266 - 1) x 100 = 14.4%	Early calibration signal only. 304.18 MW is an annual planning point, while 266 MW is an end-October operating projection.
Data-centre energy reproduction check	Published first-three total = 1,815,804 MWh; stated formula = 200 x 8,760 x 1.25 x 0.75 = 1,642,500 MWh; gap = +10.6%	Published MWh values do not reproduce from the stated formula and MW inputs. This paper relies on MW for capacity stress testing and flags MWh for clarification.
DSM percentage check	516 GWh / 2,508 GWh = 20.6%	The source describes a 20% target, consistent with rounding, but separately uses 2,508 GWh as demand growth. Scope ambiguity remains.

All author calculations use public numbers cited in the paper. They are analytical transformations, not additional official forecasts.

Appendix C. Definitions

DBIS: Demerara-Berbice Interconnected System.

Peak demand: Maximum electrical load observed or forecast during a defined period, expressed in MW.

Energy demand: Electricity used over time, expressed in MWh, GWh or TWh.

Firm capacity: Generation capacity expected to be reliably available after accounting for unit availability assumptions.

Reserve margin: Firm capacity above peak load, expressed as a percentage of peak load.

LOLP: Loss of Load Probability. A planning reliability metric estimating the probability that available generation is inadequate for load.

EENS: Expected Energy Not Served. A modelled quantity of energy demand expected to remain unserved under adequacy conditions.

DSM: Demand Side Management. Programmes that change the amount or timing of electricity consumption.

BESS: Battery Energy Storage System.

AMI: Advanced Metering Infrastructure.

MIDs: Major Infrastructure Developments used in GPL demand forecasting.

Development-enabled potential: Demand that becomes feasible if planned generation, networks and large economic projects reach service. It is not identical to contracted demand.

Appendix D. Scrutiny audit and source-integrity checks

D1. InterEnergy disclosure. The 138 percent figure is public, but the underlying report is not. The public statement does not disclose enough methodology to reproduce a MW point forecast. The 577.4 MW arithmetic in this paper is retained only as a conditional sensitivity and is never attributed to InterEnergy as a quoted forecast.

D2. Data-centre arithmetic. GPL Table 5 publishes 200 MW across the first three data centres and annual energy values totalling 1,815,804 MWh. GPL Appendix D states a data-centre formula of capacity x 8,760 hours x PUE 1.25 x load factor 0.75. Applied to 200 MW, the formula gives 1,642,500 MWh, a 10.6 percent difference. The audited paper therefore retains the published MW capacity assumptions, reports the MWh values as source values, and does not treat the MWh figures as independently reproduced. [1]

D3. DSM baseline. The DSM executive summary describes 2,508 GWh as projected electricity generation underpinning a 516 GWh savings target. A later section says total energy demand will grow by 2,508 GWh from 2025 to 2030. Since the same number has two stated meanings, the audited paper does not use the DSM document as a stand-alone 2030 energy-demand forecast. [2]

D4. GPL Table 6 labelling. The GPL + Linden table contains a row labelled "Actual recorded Peak" with values extending through 2030. Future-year entries cannot be observations. The audited paper does not use those future entries as measured data. [1]

D5. "Committed projects" terminology. GPL uses this label for an adequacy scenario that includes projects at different levels of public maturity. This paper preserves GPL's model label when describing its results but uses a separate project-maturity matrix for investment interpretation. Inclusion in the model is not treated as evidence of financial close, construction, or guaranteed commissioning. [1]

D6. Schedule precedence. GPL's D&E adequacy model refers to full 300 MW Gas-to-Energy commissioning in October 2026. Later September 2026 implementation updates place the first approximately 57 MW turbine at end-2026, with remaining units following. Current-status discussion therefore uses the later implementation schedule, while the D&E adequacy outputs are retained as scenario results under their original assumptions. [1] [8]

D7. Regulatory data precedence. Public Utilities Commission Order 1/2026 is the final review of GPL's 2025 performance and replaces the older reliability evidence used in the first draft. The audited paper uses 2025 actual SAIFI 86, SAIDI 84 hours, system losses 25.43 percent, and average availability 84 percent. [17]

D8. Reproducibility. All author transformations used for material conclusions are shown in Appendix B. No unpublished InterEnergy assumptions, confidential load agreements, proprietary power-flow outputs, or undisclosed project schedules are presented as facts.

D9. Four-pillar aggregation. The 1,065 MW nominal sum is a system-architecture indicator, not firm 2030 capacity. The projects differ in maturity, commissioning certainty and dependable output. Amaila also requires evaluation of hydrology and firm-energy characteristics, while Berbice / Palmyra remains dependent on pipeline, plant, transmission and demand milestones. The paper therefore avoids double-counting project announcements as assured supply.

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Source quality note

The paper prioritises primary Guyanese government, utility, and regulatory material. Final regulatory orders and later implementation updates take precedence over older performance worksheets or planning assumptions when describing current status. Planning-model outputs remain useful for scenario analysis and are labelled as such. The underlying InterEnergy report was not publicly available at the data cut-off, so only the public 138 percent statement is used. Internal source inconsistencies identified during the audit are disclosed in Appendix D rather than silently reconciled.

Bottom line

Guyana should plan land, transmission corridors and system architecture for the 1.67 GW development envelope, while committing generation in stages against measured demand and firm project milestones. The most important near-term task is to complete Gas-to-Energy Phase I and the grid works needed to move its power reliably, then rebase the 2027-2030 load path each quarter as large customers move from potential to firm demand.