MUNICIPAL INVESTMENT STUDY

A data centre for Portmore? Cash flows, local jobs and coastal risk

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Abstract

On 17 November 2026, a Jamaican member of parliament proposed Portmore as a location for AI infrastructure. The next day the government specified that any proposal under exploration must avoid drawing on the national grid or affecting Jamaica's water systems. We test a hypothetical 2 MW installation against those conditions, a resident employment target and the investor's required return. We combine census observations, local procurement records, published hazard evidence and a fifteen-year operating model. At a 10% real discount rate, the project's fixed-input net present value is minus US$27.88 million. Only 622 of 10,000 simulated cases have positive value under the specified assumptions. At mature load the dry-cooled case uses 18.73 GWh per year and 570 m^3 of direct site water. The assumed staffing plan delivers 8.45 resident full-time equivalents. No parcel, customer agreement, independent power offer or water entitlement was identified in the material reviewed. We recommend a workload trial using existing capacity and parcel screening before Portmore commits land, money or utility access.

Keywords: Portmore, Jamaica, data centre, coastal flooding, infrastructure finance, cooling, local employment

1 How Portmore entered the discussion

The public proposal came from Alando Terrelonge, MP for East Central St Catherine, during the State of the Constituency Debate. It followed the prime minister's announcement that Cabinet had approved signing an exploratory memorandum with investors. Information Minister Dana Morris Dixon subsequently said no deal had been reached. The November statements identify no customer, construction budget, site plan or installed capacity [1, 2].

A data centre requires a paying customer, a reliable electricity source and a way to reject heat. Portmore also has to ask how workers, fuel and replacement parts can reach a building when surrounding roads flood. We model a service business with 2 MW of installed IT capacity. That figure is a test size chosen by the authors. No investor or government body is known to have proposed that size for Portmore.

2 People, customers and the local comparator

Table 1. Residents and dwellings in selected named communities, 2022 census

Community	Residents	Dwellings
Greater Portmore	57,927	18,715
Waterford	13,479	3,895
Naggo Head	11,041	3,345
Passage Fort	8,438	2,568
Hellshire	3,987	1,224

Source: STATIN community counts [3]. These five communities do not cover the municipality. Dwelling counts give no measure of technical skills, spare power or demand for compute.

A parliamentary committee cited 182,153 people for Portmore in the 2011 census [4]. The 2022 rows above describe named communities with different boundaries. We do not divide the projected posts by these population counts or present them as an employment-rate forecast. STATIN put July 2026 national unemployment at 3.4%. No verified municipal unemployment or job-by-skill series was available to this study [5].

Caymanas offers a nearby commercial comparison. Contemporary reporting before the 2009 opening of Digicel's data centre cited J$500 million in development spending, ten expected jobs and at least three signed domestic customers [6]. Those planned posts and the nominal historical cost cannot establish current payroll or replacement cost. UDC later recorded that it had installed off-site backup at the facility [7]. That is evidence of a service used by a Jamaican buyer. It favours testing the terms of a new local lease before buying a parcel.

A local inference buyer might need short response times or data handling in Jamaica. A training customer might value discounted uninterrupted blocks, checkpoint storage and fast communication between accelerators. A hospital, bank or public agency considering a recovery site should run a restore test from a geographically separate failure zone. For each, obtain peak demand, service hours, acceptable interruption, location conditions, historical bills and a named budget owner. A letter of interest alone establishes none of these.

3 A staged municipal decision

Compare three actions: make no commitment, purchase a short service trial, or allow a developer to investigate named sites at its own risk. The ability to stop after a failed demand or flood test has value, but we do not monetise it. An outline political proposal gives no basis for a public guarantee, free land or a promise of permanent jobs.

4 Revenue, capital and return

The reference IT capacity serves colocation (40%), AI inference (35%), batch training (15%) and public hosting (10%). The operator buys 714 accelerator equivalents. Customers supply the servers for hosted racks. The initial US$50.64m comprises US$22.26m for the shell and electrical or cooling equipment, US$5.54m for site and protective work, and US$22.85m for accelerated computing systems. Investors pay 40% now and 60% a year later. A real discount rate of 10% places the first year's operating receipts at the end of year two.

In operating year four, the model sells 3.15m inference GPU-hours, 1.35m training GPU-hours, and average occupied capacity of 575 kW in commercial colocation and 144 kW in public hosting. The resulting US$13.41m revenue less US$7.15m operating costs gives US$6.27m before hardware replacement. Two refresh cycles cost US$15.99m apiece. Across 15 operating years the project returns minus 7.95% on total undiscounted initial and replacement investment. The real project internal rate of return is minus 1.54%; cumulative cash does not recover the investment within the horizon.

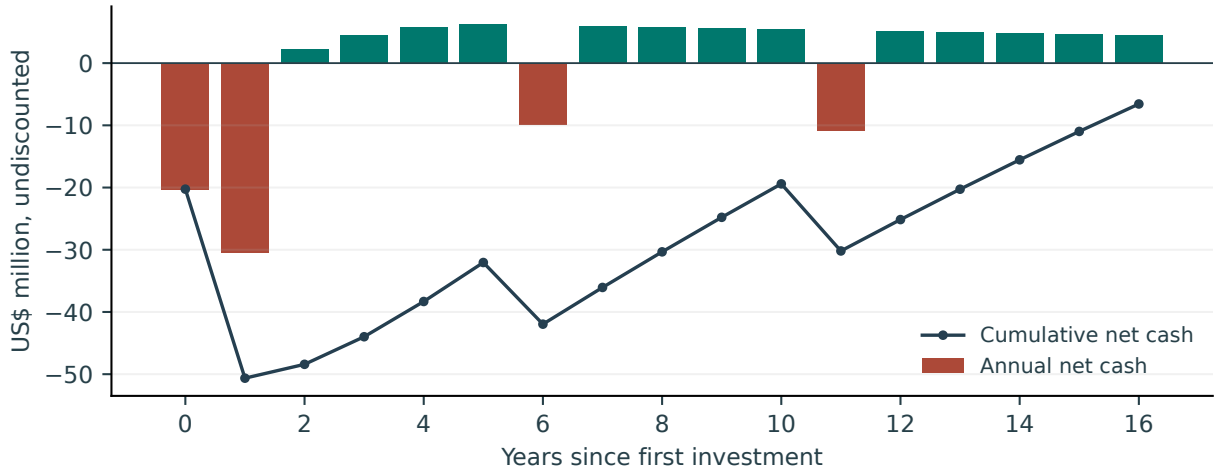


Figure 1. Cash flows for the 2 MW mixed-use dry-cooled case, in constant 2026 US dollars. Operating revenues begin after two capital draws. Accelerator replacements create further outflows in operating years 5 and 10.

5 What would change the answer?

Under the same demand pattern and rack contracts, the starting inference price would have to rise from US$2.65 to US$3.85 per GPU-hour to reach zero NPV; the training price stays at 82% of that rate and both decline 1.8% a year in real terms. Raising all service prices together by 35.5% also achieves break-even. At the reference prices, even 100% mature use leaves NPV at minus US$5.24m. With all starting prices 25% above base, 79.65% paid use would reach break-even. Cutting only the power price would require it to fall from US$0.23/kWh to about US$0.00008/kWh. This arithmetic makes a search for additional contracted revenue more informative than assuming that a modest tariff discount can save the project. If an applicant quotes revenue by token or request, require an agreed application and an independently witnessed benchmark. Record time to first response, throughput at the target latency and accepted quality. Then convert the benchmark to customer invoices. This protects Portmore from assigning a single model's output rate to every future workload [8].

6 Could an independent power system serve it?

Mature electricity consumption of 18.73 GWh implies a 2.14 MW mean load. The nameplate proxy of 2 MW IT times the dry-cooling PUE of 1.38 is 2.76 MW. A 72-hour lull at that demand requires 198.72 MWh delivered; with only 85% of nameplate available, storage alone would need about 233.79 MWh before further sizing for redundancy and changing weather. Applying the assumed 0.45 kg CO_2/kWh supplier factor to annual consumption gives 8,427 tonnes of operational CO_2. At 0.08 and 0.70 kg/kWh, alternative supply cases give 1,498 and 13,108 tonnes/year. No supplier has bid these intensities. The calculation omits embodied carbon, fuel logistics and separate emergency consumption.

A synthetic hourly test illustrates the difference between annual energy and firm supply. Assume 14 MWp of solar, 34.2 MWh of usable internal storage and 90% round-trip efficiency. Solar generates 21.98 GWh in the smooth weather case, above the annual requirement, but the hourly balance still needs 70.4 MWh of backup over 71 hours. In a separate prescribed 72-hour stress at full 2.76 MW demand and 10% of ordinary solar output, backup supplies 162.52 MWh over 66 hours; full backup must reach 2.76 MW. Weather, initial state of charge and controls are specified in the supplement. This is an energy-balance counterexample, with no assigned return period. It provides neither a site design nor a separately added generator cost [9]. JPS reported 1,040.8 MW of installed generation and national peak demand of 697 MW for 2025 [10]. Subtracting those figures cannot establish available firm capacity, even at the national level. The 2024 regulator report records 2,274.9 minutes of average customer interruption and 10.2 interruptions per customer. Exceptional Beryl interruptions complicate these national indicators [11]. Neither series identifies post-fault capacity at a Portmore feeder. Under Cabinet's stated terms, even a strong feeder would not establish an acceptable power design.

Require a supplier to show continuous delivery at site load when its largest unit is unavailable. For solar and storage, examine the worst sequence of sunless hours in a multi-year weather series, seasonal variability, battery losses, initial charge, minimum reserve and end-of-life capacity. For imported fuel, document storage, supplier credit, delivery routes and emissions. Test a restart with site power down and at least one access route blocked. Reliability and emissions must be demonstrated for the same plant used in the price quote.

A domestic internet exchange can facilitate local peering. It cannot establish physical diversity in a proposed building's two fibre services [12]. Request route drawings from two carriers. Look for buried ducts, bridges, cable landings, last-mile links and backup power systems that both routes share. Measure latency, loss and failover under traffic representative of the actual customers; repeat from overseas endpoints if the service will export compute.

7 Cooling, water and the cost of heat

Dry heat rejection has the largest assumed electricity demand of the three methods and the smallest direct water bill. At the same IT load, the hybrid (PUE 1.30, 0.35 L/kWh) uses 4,912 m^3/year, and the tower (PUE 1.24, 1.50 L/kWh) uses 20,517 m^3/year. Their NPVs remain negative at minus US$26.96m and minus US$24.40m, respectively. The model's 570 m^3/year comprises 407 m^3 process make-up and 162.5 m^3 routine staff water. Hybrid and evaporative systems use the same delivered IT work but different outdoor heat rejection and building-cost factors. A 1.50 L/IT-kWh tower is a physical and financial comparison. Its water entitlement, treatment and discharge conditions would require proof under Cabinet's policy.

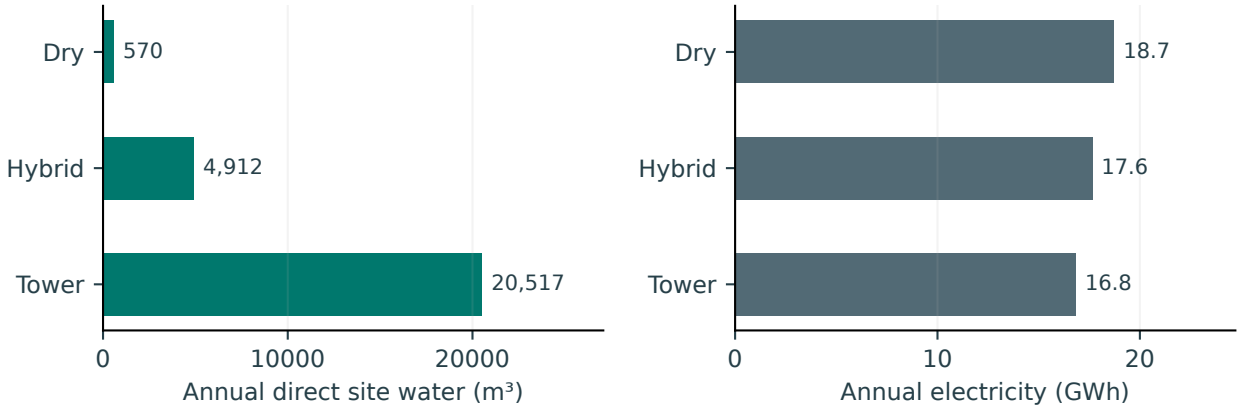


Figure 2. Annual site water and facility electricity at mature operating-year demand. Separate plots retain their physical units. Water includes routine process and staff use; the plot excludes construction, fire reserve and electricity supply-chain water.

The Ministry's water-project record reports over 65,000 m^3/day of sewage entering Soapberry. It also describes the Rio Cobre plant's design capacity of 15 million Imperial gallons per day. The latter was still scheduled to enter public service in May 2027 [13, 14]. Raw inflow is no measure of the volume of treated water available after existing users, discharge and environmental obligations. The National Water Commission also reported a peak drought deficit across the Kingston, St Andrew, Portmore and Spanish Town supply area [15].

Ask a dry-cooling supplier for guaranteed performance at hourly local hot and humid conditions. The Portmore climate study reports summer daytime temperatures reaching 34°C [16]. Closed-loop liquid cooling moves heat away from chips, but the outdoor equipment must still discharge it. A hybrid circuit that sprays water on hot days and a tower that evaporates water change both the power peak and water demand [17]. Publish a dry-season water budget with source, volume, existing users, treatment, storage, blowdown and discharge. Reclaimed-water use requires the same impact assessment as any other source. Establish a separate provision for sanitation, initial filling, cleaning and fire response.

8 Flood, wind and changing climate

The January 2007 municipal storm-surge sheet uses a 1:20,000 scale. Its static surge levels are 1.40, 1.55 and 1.60 m for the 50-, 100- and 150-year events [18]. Without terrain, a common vertical datum and a proposed asset position, those numbers give neither a water depth in the building nor a slab elevation. The Climate Studies Group reported a 3.3 m surge on Hellshire and Port Henderson–Fort Augusta beaches during Hurricane Ivan; the measurement refers to particular coastal locations and conditions [16]. A coastal observation and a planning-map level can differ without invalidating either.

River overflow, blocked drains and coastal water can occur together. The Caribbean Development Bank identified recurring drainage problems and cited exposure in Passage Fort, Waterford, Caymanas Gardens and other communities [19]. Reporting after Beryl in 2024 described road obstructions and downed power lines in Portmore even where severe inundation had not been reported [20]. Hurricane Melissa in 2025 illustrates the wider supply-chain risk. A multi-agency assessment reproduced rapid estimates of US$254.8 million of direct physical damage in St Catherine and about US$8.8 billion nationally. Neither is an asset loss for Portmore [21].

Jamaica's national climate assessment projects 2030s mean warming of 0.65–0.84°C and 2050s warming of 0.86–1.10°C relative to 1986–2005 across the reported model scenarios [22]. Applying those increments to today's monthly temperature would double-count part of the warming. Obtain hourly extremes and future design conditions for heat rejection. Ask engineers to model tide, changing sea level, wave effects, river flows and heavy rain together. Obtain hydraulic results for staff, fuel, fibres and drains as well as the building. Commission a geotechnical investigation and independent wind-load assessment before fixing elevations or insurance limits.

Cash impact of an outage. Relative to the base NPV of minus US$27.88m, adding 30 days without sales in operating year four and repairs equal to 12% of shell cost gives an NPV of minus US$29.98m. A 90-day interruption and repairs equal to 30% of shell give minus US$33.34m. A combined stress with delayed opening, weak demand, higher power costs, heat and storm damage gives minus US$92.96m. Durations and repair fractions are assumptions without site calibration. Climate change informs investigation and stress selection; no future hazard trend is fitted. During unavailable hours the model removes sales and IT electricity. Restart energy, emergency staff costs and generator fuel need separate engineering estimates.

9 Jobs and what the municipality receives

The assumed workforce includes seven fixed operating posts, two more per MW, and two specialist FTEs per MW allocated to operator-supplied GPUs. This gives 13 FTEs at the 2 MW mixed site. At 65% resident recruitment, 8.45 FTEs account for US$304,200/year at the assumed US$36,000 in annual compensation per FTE. The budget is a gross labour-cost proxy; actual take-home pay and employer charges require a payroll schedule. Against an illustrative municipal target of 20 continuing resident FTEs, the gap is 11.55 FTEs. Even if all 13 workers live locally, this build cannot deliver 20. A different staffed service, tenant workforce or training activity would require its own contracted posts.

Construction contributes about 128 worker-years in total; about 77 are resident worker-years at the assumed local share of 60%. If resident hires would otherwise have earned 80% of the new wage, the incremental compensation proxy is US$60,840/year. This sensitivity assumes unchanged employment hours, and excludes commuting and training costs.

For a municipal offer of US$1m today and US$25,000 annual oversight in each of 15 operating years, a 6% real public discount rate would require US$134,141 in retained annual receipts in those years to break even. The figure rises to US$169,621 at 10%. The example assumes no receipts during construction and does not claim any tax or fee has been committed. The 2026/27 Estimates list J$134.221m of property-tax-funded support for Portmore under head 72000, activity 10005. A US$1m offer at an illustrative J$160 per US dollar exceeds that one recurrent support line [23]; other municipal revenue is outside that comparison. Determine actual legal authority, payment dates, exemptions and service costs before offering an incentive. Report shift, trade, residence, pay, training and employer for each job. Track vacancies, hires and retained posts separately. Portmore Community College lists engineering and computer servicing or electronics programmes; that makes it a possible training partner [24]. There is no agreement reported here. Invite the college and employers to identify skills gaps and training costs before counting any trainee as an employee.

Count the alternative value of public land and spending on access roads and drainage. Estimate the incremental municipal tax and fee receipts that can legally be retained, subtract service and emergency costs, and compare that cash flow with the purchase of the same service from an incumbent. Gross resident payroll measures money paid to workers. The benefit for the local economy depends on alternative jobs forgone, recruitment from outside the municipality and household spending outside Portmore [25].

10 Evidence required before a parcel advances

Demand and financing. Obtain priced capacity commitments with minimum volumes, credit terms, currency and conditions for withdrawal. Re-run operations with separately quoted insurance, import charges, land, transmission, fibre and civil works. Price an independent lease or cloud service against the same output.

Water and environment. Ask NEPA and the municipal planning authority to screen the actual activities, including generation, fuel and battery storage, sensitive habitat, discharge, construction noise and drainage changes [26, 27]. Set noise boundaries, refrigerant management and supplier take-back arrangements for retired GPUs and batteries. Publish who pays for closure and reinstatement.

Community decision. Meet nearby residents before selecting a location. Publish alternatives, infrastructure demands, direct expenses, worker residence and a complaints process. Identify which party can cancel or fund repairs after a failed test.

11 Recommendation, limits and reproducibility

Hold construction approval. The central investor case has an NPV deficit of US$27.88 million. At the same time, a conditional premium-customer case with mature paid use at 90% and service prices 25% higher yields an NPV of plus US$11.19m. An assumed loan covering half of nominal construction cost at 9% nominal over ten years would require about US$4.00m annually. With 2.5% inflation, pre-tax operating cash after replacements covers 0.58 times debt service in operating year one, and falls below zero in years five and ten. Pricing a reserve, vendor lease or further equity and including tax and working capital would be necessary for a financing decision. The missing evidence is an enforceable sale at that price. With 10,000 Monte Carlo draws, the 5th percentile, median and 95th percentile of NPV were minus US$70.38m, minus US$37.28m and plus US$2.54m respectively. The 6.22% positive share describes the chosen input distributions. It is no empirical estimate of the probability that Portmore will succeed.

Ask the project sponsor to fund a time-limited feasibility option with clear exit rights. Before advancing any site, require a legally deliverable power source, a water balance that satisfies Cabinet's condition, two independently mapped communications routes, insurance indications and an emergency-access plan that works when the main road closes. Publish a short description of alternatives rejected and the evidence for each decision. Place no project-specific load on public utilities until the competent authorities have given their written interpretation of Cabinet's conditions.

The most valuable missing observations are a measured customer workload and a second quoted price for the same workload. The most important missing engineering input is a parcel identified to survey accuracy. Without it, no study can establish flood depth, drainage effect, bearing capacity, emergency access or local ecological impact. The model prices all cash flows in real US dollars, without taxes, borrowing or working capital; an operator earning Jamaican dollars would also face currency risk. The assessment does not quantify embodied emissions, off-site generation water, net economic welfare, a municipal tax windfall, or the loss of named assets in a hurricane. Those omissions limit the interpretation of every simulated surplus as well as every simulated loss.

Model and data. All simulated values in this study use the companion financial and physical model described in the national paper, *When does it pay to build AI computing capacity in Jamaica?* The national paper reports cross-scale results and purchasing alternatives; this paper examines Portmore-specific physical and public risks using the same simulated runs. Separate agents checked sources and reproduced calculations; no external peer review is claimed. The code and recorded outputs specify portfolio fractions, prices, load ramp, hardware refresh, employment assumptions and the random seed. The article and calculator are at adriandunkley.net/portmore-data-centre/. The construction animation is illustrative. It identifies no approved site, surveyed alignment, construction period or final design.

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