Power Before Processing: Financing AI Campuses across Generation, Grid and Compute

A Project Finance Framework for Construction, Dispatch, Customer and Interface Risk

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Abstract

Large artificial-intelligence campuses are becoming combined infrastructure systems. Their commercial output depends on generation, transmission and distribution capacity, substations, storage, cooling, buildings, networks, computing equipment and contracted customers reaching service at compatible dates. Sponsors may finance these elements through separate entities and instruments. The separation can bring specialised capital into each asset class, yet it also creates interface risks that can interrupt the only cash flow available to repay debt.

This paper develops a project-finance framework for AI campuses that combine dedicated generation, grid supply and compute. It maps the physical and contractual perimeter, allocates construction and operating responsibilities, separates generation dispatch from compute utilisation, and connects customer receipts to the debt service of each asset layer. The framework includes an interface matrix, integrated schedule, contract-bankability test, power-balance model, funding stack, cash waterfall, covenant package and downside transfer plan.

The analysis draws on International Energy Agency and US Department of Energy research, Federal Energy Regulatory Commission, North American Electric Reliability Corporation, PJM and ERCOT materials, public-company filings, power-purchase-agreement guidance, accounting standards, bank credit guidance and operating-resilience frameworks [1-50]. Public evidence demonstrates rising electricity requirements, concentrated large-load risk, evolving interconnection requirements and several forms of contracted power and data-centre development. It does not establish the viability, permitting status, customer demand, financing terms or valuation of a specific proposed campus.

An illustrative case applies the framework to a 480-megawatt ultimate campus developed in two phases. Management assumes a 240-megawatt first phase supported by 180 megawatts of initial customer commitments, 300 megawatts of dedicated firm generation, 250 megawatts of contracted grid import capacity and a 100-megawatt four-hour battery. Management assumes total first-phase uses of USD 5.40 billion, funded by USD 850 million of generation debt, USD 750 million of campus-infrastructure debt, USD 1.50 billion of compute-equipment debt, USD 500 million of customer cash and USD 1.80 billion of sponsor equity. Under management's central assumptions, minimum consolidated debt-service coverage is 1.43 times after operations stabilise. A nine-month grid delay combined with partial customer acceptance lowers minimum coverage to 0.82 times before reserves, sponsor support and draw controls. Every amount, rate, date and outcome in the case is a management assumption used only to demonstrate the method.

The central conclusion is that an AI campus should be financed as an integrated delivery system even when ownership and debt are divided among asset-specific entities. Debt should follow completed and transferable assets, enforceable contracts and controlled cash. Interface obligations, delay support, *dispatch economics, customer remedies, reserves, direct agreements, step-in rights and refinancing dates should be reconciled before each tranche becomes available.*

JEL Classification: G21, G23, G31, G32, L86, L94, Q40, Q48

Keywords: AI campus, data centre, project finance, generation, grid interconnection, compute, power purchase agreement, debt sizing, dispatch, covenants

Introduction

An AI campus can resemble a power project, a regulated-load interconnection, a data-centre development, an equipment-finance portfolio and a cloud-service business at the same time. Generation produces energy and capacity. The grid supplies, balances or receives power. The campus converts electricity into cooled, networked and secure computing capacity. Compute equipment delivers the customer workload. The customer contract converts available service into invoices and cash. Failure at any layer can prevent the other layers from earning their expected return.

The scale and speed of demand make the financing question material. The International Energy Agency estimated that data centres consumed approximately 415 TWh globally in 2024 and projected approximately 945 TWh in 2030 in its 2025 base case [1-4]. The US Department of Energy reported approximately 176 TWh of US data-centre electricity use in 2023 and estimated a range of 325 TWh to 580 TWh in 2028 [5-7]. The IEA also estimated that about one fifth of planned data-centre projects could face delay if grid risks are not addressed [2]. These figures describe system-level conditions. They do not prove that an individual site can obtain power, permits, equipment, customers or finance.

Reliability authorities have responded to the concentration and operating characteristics of large computational loads. NERC's 2025 reliability materials identify rapid large-load growth, planning uncertainty and the need for better models and operating requirements [11-13]. ERCOT has implemented a dedicated large-load interconnection process for loads of 25 MW or more and has developed modelling and ride-through requirements [17-20]. PJM has strengthened the evidence used to include data centres and other large loads in its forecasts [14-16]. A financing model should reflect the actual interconnection and operating obligations applicable to the chosen market.

This paper is intended for sponsors, utilities, generation developers, data-centre operators, AI-cloud providers, infrastructure funds, banks, private-credit funds, equipment financiers, customers and advisers. It provides a transaction and credit framework. It is not legal, tax, accounting, regulatory, engineering, environmental or investment advice. Each project requires current specialist analysis of its contracts, jurisdiction, assets and counterparties.

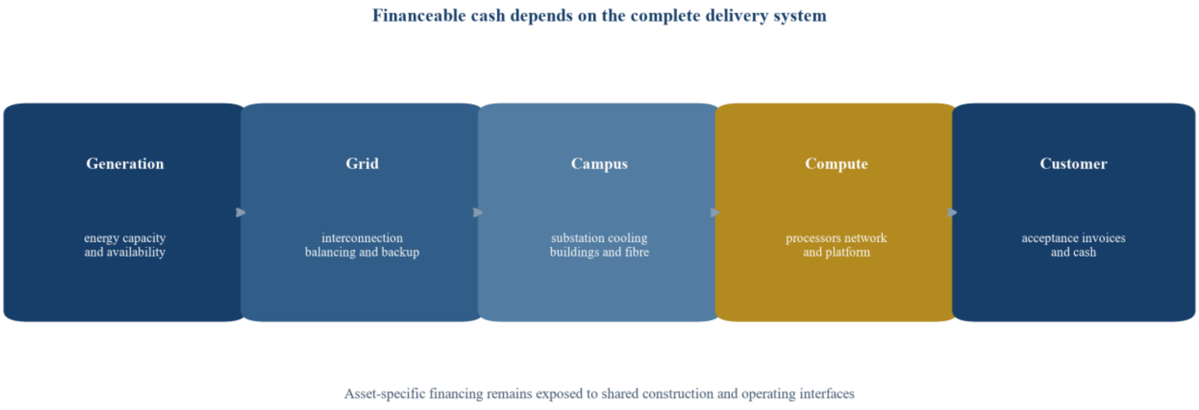
1 Define the campus as one delivery system

The financing process should begin with a physical map rather than an entity chart. The map should identify fuel or primary energy, generation, grid connection, substations, storage, backup, cooling, water, buildings, fibre, computing equipment, software and customer service. It should show capacity, owner, operator, construction status, interface, dependency and transfer route for each component.

The legal structure can then be placed over the physical system. One special-purpose company may own generation. Another may own land and powered shells. A third may own processors and network equipment. An operating company may contract with customers. Separate ownership can match debt tenor and security to asset life. It can also leave each lender dependent on assets outside its collateral package.

The credit committee should identify the minimum operating system that can produce billable service. A generator without an interconnection or customer has a different revenue model from a generator supplying a dedicated campus. A completed data hall without power cannot satisfy customer acceptance. Computing equipment delivered before cooling and energisation can consume warranty life without earning revenue. The perimeter should therefore include every upstream dependency required for the contracted service and every downstream right required to collect cash.

Figure 1 Integrated AI campus delivery system



Proposed physical and contractual map; each connection requires project-specific evidence.

The map should be controlled as the transaction develops. A change in generation technology, grid route, campus phasing, equipment density or customer specification can alter multiple contracts and facilities. The change-control process should show its effect on capacity, schedule, cost, cash, security and lender conditions.

Table 1 Campus perimeter and asset allocation

Layer	Core evidence	Primary risk	Financing implication
generation	site, permits, fuel, equipment, EPC and operating rights	completion, availability and input cost	debt follows dependable capacity and contracted revenue
grid	interconnection study, service agreement and network upgrades	timing, curtailment, cost allocation and operating limits	recognise capacity only after binding milestones and funded upgrades
campus	land, permits, substation, cooling, water, shell and fibre	construction interface and performance	construction debt converts after integrated commissioning
compute	purchase orders, title, serial records, warranty and software	delivery, obsolescence and workload compatibility	amortise within conservative useful life and contract term
customer	executed service, capacity, acceptance and payment terms	demand, credit, remedies and concentration	size debt from eligible collected cash after haircuts
shared services	operator, cyber, insurance, staffing and licences	continuity and transfer	require direct agreements and replacement capability

Proposed diligence structure; ownership and risk allocation require executed evidence.

2 Establish the power entitlement before sizing compute

The project should distinguish every stage of power access. Requested megawatts are not studied megawatts. Studied capacity is not reserved capacity. Reserved capacity is not a binding service obligation. A signed interconnection or service agreement can still depend on network upgrades, deposits, construction milestones, commissioning and operating conditions. Energised capacity can be interruptible, curtailable or limited by ramp and ride-through requirements.

The power register should record the measurement point, voltage, maximum import, export, ramp, power factor, reliability class, curtailment priority, commissioning sequence, network-upgrade responsibility, security deposit, recurring charges and long-stop date. It should identify which party owns each substation and line, who operates protective equipment, and how outages or grid instructions affect customer service.

Large-load processes are changing. ERCOT's approved revisions created specific study, modelling, verification and commissioning requirements for large loads [17-20]. PJM's 2026 materials show both significant long-term load growth and greater scrutiny of proposed data-centre additions [14-16]. NERC's work highlights the need to model collective behaviour, including rapid disconnection during transmission disturbances [11-13]. These developments support a conservative distinction between a project pipeline and power that can support debt.

The project should also identify the firm-power objective. A customer may require a stated service availability while the campus relies on grid power, dedicated generation, storage and backup with different failure modes. Firmness should be demonstrated through an operating study that covers normal dispatch, planned maintenance, forced outage, grid interruption, fuel constraint, extreme weather and black start. The study should state how much compute remains available in each condition and whether the customer contract permits curtailment.

Compute procurement should follow the evidence curve. Long-lead components for a first phase may need early commitment, but major equipment debt should not be drawn solely against a future power expectation. Draw conditions can link purchase orders to achieved interconnection, generation and campus milestones. A warehouse facility can carry refundable or secured deposits, while term equipment debt waits for title, delivery, installation and energisation.

3 Design generation and grid supply as complementary products

Dedicated generation and grid service should be modelled as complementary sources with explicit operating priorities. A campus can use generation as baseload, backup, peaking or a contracted hedge. The grid can provide primary supply, balancing, reserve, maintenance support or export access. Storage can manage short-duration ramps, backup transition, power quality and selected market services. Each role has different revenue, cost and reliability effects.

The generation contract should define dependable capacity, commissioning, availability, heat rate or efficiency, fuel, variable operating cost, planned maintenance, forced outages, environmental attributes, dispatch instructions, metering and performance damages. A two-part tariff can separate fixed capacity recovery from variable energy cost. World Bank guidance identifies clear capacity and energy payments, cost recovery and lender coverage as core PPA bankability questions [26-29]. The actual market and transaction may require a different structure.

Grid supply should be modelled using tariff and contractual evidence. Demand charges, transmission charges, loss factors, balancing, reactive power, congestion, taxes and upgrade contributions can be material. A customer pass-through can protect margin while creating working-capital and formula risk. The model should calculate cost at the campus meter and reconcile it to customer billing.

The operating protocol should specify who dispatches dedicated generation and storage, who receives grid instructions, how customer load is forecast, and which source absorbs deviations. If the generation company and campus company are separate, their dispatch agreement should align with the customer service promise. A generation lender should understand whether campus curtailment reduces capacity payments. A campus lender should understand whether generator underperformance produces enforceable compensation.

Table 2 Contract bankability across the power chain

Contract term	Generation question	Grid question	Compute and customer consequence
capacity	what dependable output is committed	what import and export rights exist	what critical IT load can be promised
commencement	which tests start payment	which milestones allow energisation	when customer acceptance can occur
availability	how outages are measured and excused	what interruptions and curtailment apply	which service credits or termination rights arise
price	fixed capacity, energy, fuel and escalation	tariff, network, balancing and taxes	which costs are fixed, passed through or exposed
dispatch	who controls output and minimum run	who can constrain import or export	which workloads must be reduced or shifted
remedies	delay damages, performance damages and termination	upgrade refund, service relief and dispute	cash support available when service fails
transfer	assignment, security and lender cure	consent and continued service	whether a replacement operator can preserve revenue

Proposed review matrix; enforceability and market rules require qualified advice.

4 Build one integrated completion schedule

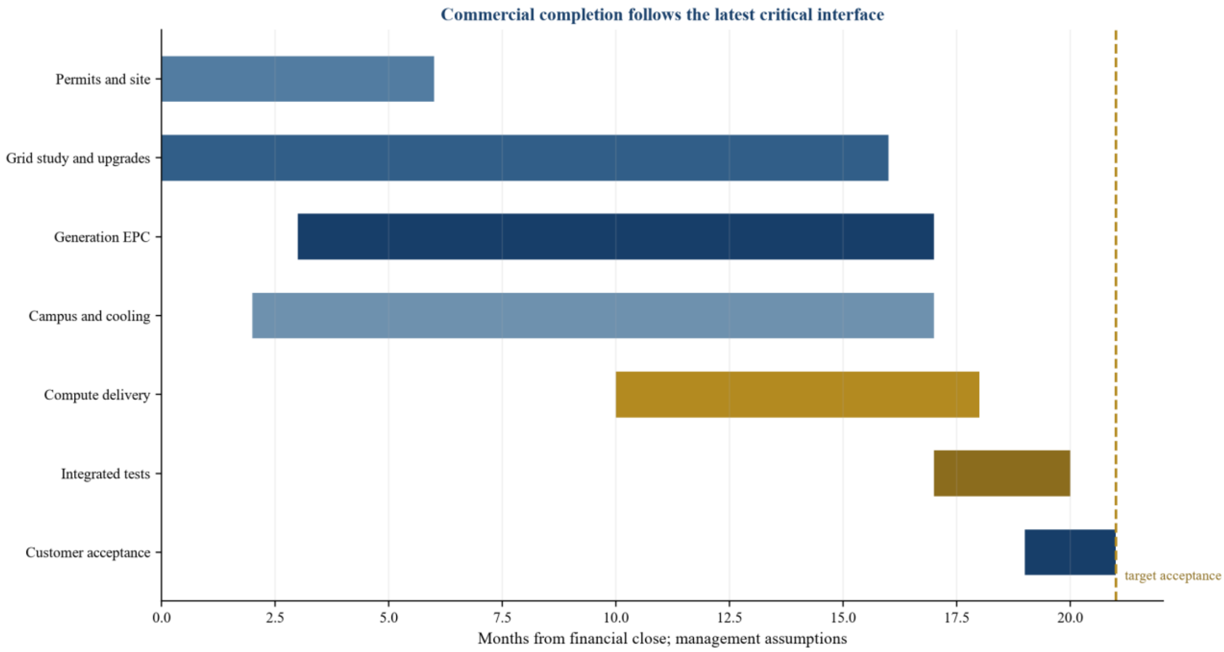
The critical path crosses corporate boundaries. Generation needs site, permits, fuel, equipment, construction and interconnection. Grid upgrades need studies, land rights, procurement and utility work. The campus needs earthworks, buildings, substations, cooling, water, fibre and safety approvals. Compute needs vendor slots, shipment, installation, software and testing. Customer acceptance begins only after the relevant service can be demonstrated.

Each schedule line should identify owner, predecessor, contractual date, expected date, remaining duration, available float, evidence, remedy and latest safe date. The integrated schedule should identify shared milestones such as substation energisation, cooling-loop completion, generation synchronization, network availability, compute installation and customer acceptance. A monthly board schedule can hide daily or weekly interfaces near commissioning. The construction team should maintain the detail needed to manage them.

Completion should be defined at three levels. Asset completion confirms that a component meets its own technical and legal tests. Interface completion confirms that the component operates with adjacent systems. Commercial completion confirms that the system can deliver customer service and generate the cash assumed in the debt model. Term conversion should require commercial completion for the revenue used to size that term debt.

Delay responsibility should follow controllable obligations. The generation EPC contractor should address generation scope. The utility should address its contractual network work. The campus contractor should address site and building scope. The sponsor should retain residual interface risk that cannot be transferred effectively. Liquidated damages, performance bonds, parent guarantees, standby facilities and contingency should be sized against the cash effect of delay rather than a generic percentage of contract price.

Figure 2 Integrated schedule and latest safe dates



Illustrative sequencing; dates and durations are management assumptions.

The schedule should drive financing availability. Land and early works can use equity. Generation debt can draw against its EPC and interconnection evidence. Campus debt can draw against certified construction. Equipment debt can draw when the building and power milestones can receive the equipment without excessive idle time. Customer cash should follow its agreed use and refund protections.

5 Separate dispatch risk from compute utilisation

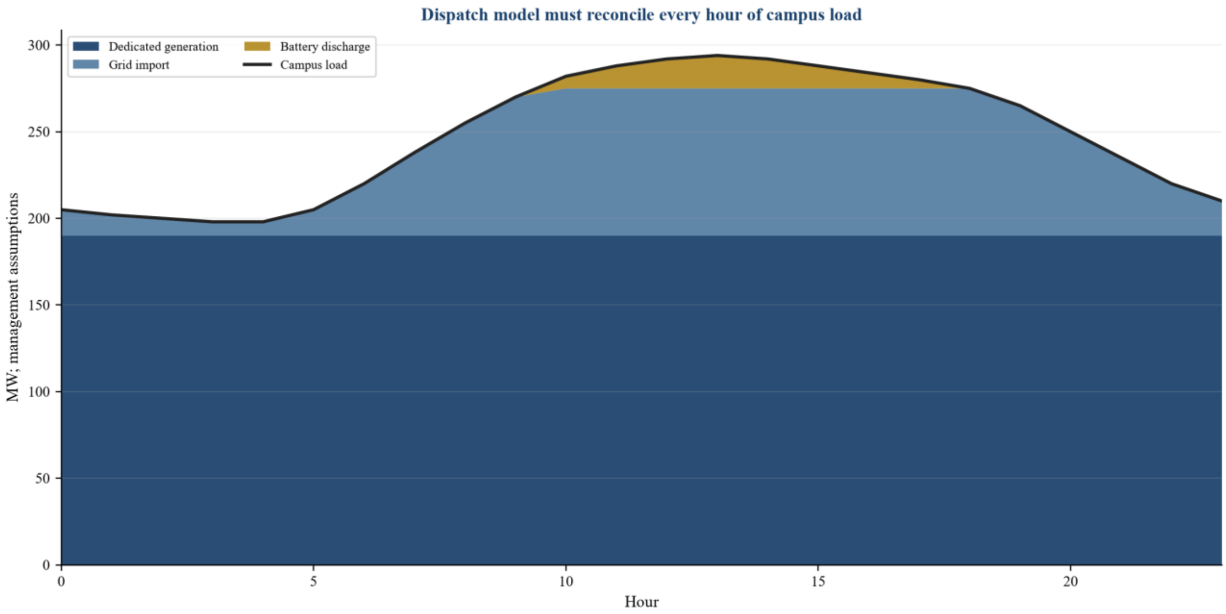
Dispatch and utilisation are related, but they are not the same exposure. Generation dispatch describes how often and at what cost the plant operates. Compute utilisation describes how much contracted or available processing capacity customers use. A customer can pay for reserved compute without using it fully. Dedicated generation can still need to run or remain available. Conversely, high compute utilisation can require sustained power while grid or fuel conditions make dispatch expensive.

The model should include an hourly or representative-period power balance. It should cover campus load, generation output, grid import or export, storage charge and discharge, backup availability, losses and reserve. The model should then calculate energy cost, demand charges, start costs, fuel, maintenance, storage degradation and emissions-related charges where applicable.

The customer model should separately calculate reserved capacity, accepted capacity, used capacity, minimum charges, usage charges, power reimbursement, service credits and collections. The two models meet at power cost, available service and performance. This separation prevents a fixed customer payment from being treated as proof of fixed operating margin.

The illustrated first phase assumes 240 MW of critical IT load and a 1.22 power-usage-effectiveness ratio, producing approximately 293 MW of total facility load at full critical capacity. Management assumes 300 MW of dedicated firm generation, 250 MW of grid import rights and a 100 MW four-hour battery. These sources provide capacity diversity; they do not automatically provide simultaneous firm availability because maintenance, interconnection limits, state of charge and operating rules apply.

Figure 3 Illustrative power balance through a representative day



All loads and dispatch values are management assumptions; the chart demonstrates model architecture.

Downside cases should combine power and customer events. Relevant combinations include generation outage during grid constraint, higher fuel cost with fixed customer pricing, delayed customer acceptance after generation has begun capacity payments, lower compute utilisation with non-pass-through energy commitments, and a customer ramp that exceeds permitted grid commissioning.

6 Allocate construction and interface risk contractually

A single turnkey EPC contract can simplify responsibility where one capable contractor can control the scope. Large AI campuses often use multiple contractors and vendors because generation, substations, cooling, buildings and compute require different expertise. The sponsor then acts as system integrator and retains the gaps between packages.

The interface matrix should identify every handoff. It should cover design inputs, foundations, cable routes, energisation, control systems, water quality, heat rejection, rack density, network demarcation, cybersecurity, testing and documentation. For each interface, the matrix should identify deliverable, provider, receiver, acceptance evidence, required date, change process and consequence of failure.

Contract caps should be assessed against system exposure. A contractor's delay damages may cover only its contract price while the campus incurs interest, customer damages, idle equipment and generation capacity charges. Caps across contracts may overlap or leave gaps. The financial model should calculate the untransferred exposure and fund it through sponsor support, contingency, insurance or lower debt.

Table 3 Construction and interface risk register

Interface	Required evidence	Failure consequence	Financing control
utility to campus substation	approved design, protection study and energisation certificate	delayed or limited import	draw stop and funded schedule contingency
generation to grid and campus	synchronization, dispatch protocol and metering	unavailable or unbillable power	completion test and liquidated damages
building to cooling system	heat-load test and redundancy demonstration	compute cannot operate at contracted density	integrated load-bank test

Interface	Required evidence	Failure consequence	Financing control
cooling to compute equipment	temperature, flow, water quality and controls	warranty or performance failure	vendor acceptance and operating reserve
fibre to platform	diverse routes, latency and security tests	customer workload fails acceptance	route completion before customer test
platform to customer	workload benchmark, service level and evidence	payment deferral, credit or rejection	objective acceptance and cure period
shared controls	operating procedures, staff, cyber and emergency response	system-wide interruption	independent readiness review

Proposed control framework; project contracts determine actual allocation.

Change orders should be tested for system impact. A higher rack density may reduce building area and increase cooling, electrical and water requirements. A generator substitution may change emissions permits, fuel supply and grid studies. A customer specification change may affect equipment, software and schedule. The change approval should identify cost, critical path, finance, contract and performance consequences.

7 Create a bankable customer contract for the delivered service

The customer contract should define the service at the same level used by engineering and finance. Capacity can be stated in critical IT megawatts, accelerators, clusters, compute hours or another measurable unit. The contract should identify location, hardware or performance, commencement, acceptance, availability, price, escalation, power cost, term, renewal, service credits, termination, security and transfer rights.

A minimum payment supports debt only after the provider has met the conditions that make it payable. The model should identify each condition and customer defence. Acceptance can depend on objective benchmarks or customer discretion. Availability credits can reduce invoices. Chronic failure can permit termination. A delayed phase can create a refund or damages. Cybersecurity, regulatory restrictions and force majeure can affect service and payment.

Customer credit should be assessed at the legal-obligor level. A recognised corporate group may contract through a subsidiary without parent support. A customer can also provide prepayment, equity, equipment or a guarantee. Each item should be traced to its source and counted once. Reciprocal arrangements should be identified because the same group can be customer, investor, supplier and lender.

Public filings demonstrate several structures. CoreWeave states that it uses multi-year committed capacity contracts and asset-level debt, while also disclosing power, construction, customer and capital requirements [34-37]. Talen disclosed a long-term agreement to supply AWS with up to 1,920 MW from Susquehanna through 2042 under the revised arrangement [38-40]. Core Scientific and Galaxy disclosed long-term high-density-compute arrangements with phased capacity and significant construction obligations [41-43]. These examples show possible structures and risks. Their terms do not establish bankability for another transaction.

The finance documents should require a contract abstract and legal review. The abstract should connect every model input to the operative clause. Amendments, side letters, order forms and service schedules should be included. The legal review should address enforceability, assignment, set-off, termination payments, direct agreements, governing law and remedies.

8 Match each funding source to the asset and risk period

The funding stack should separate early development, generation, grid and campus infrastructure, compute equipment, working capital, reserves and contingency. Each source should identify borrower, use, availability, tenor, amortisation, security, guarantee and intercreditor position. The maturity and repayment profile should reflect the supported asset and revenue.

Development and unallocated interface risk usually require equity or deeply subordinated capital. Generation debt can be supported by an availability-based campus PPA or another bankable revenue contract. Grid and campus infrastructure can support construction debt that converts after completion and contracted occupancy. Compute equipment can support shorter-amortising debt tied to serial-level collateral and customer contracts. Customer prepayments can fund agreed capacity while creating refund and performance obligations.

Management assumes first-phase uses of USD 5.40 billion: USD 1.35 billion for generation and storage, USD 550 million for grid and shared electrical infrastructure, USD 1.10 billion for land, buildings, cooling and fibre, USD 1.90 billion for compute hardware and platform integration, and USD 500 million for fees, interest, working capital, contingency and reserves. Management assumes funding from USD 850 million of generation debt, USD 750 million of campus-infrastructure debt, USD 1.50 billion of compute-equipment debt, USD 500 million of customer cash and USD 1.80 billion of sponsor equity. These are management assumptions.

Table 4 Illustrative first-phase funding stack

Source	Amount	Principal use	Availability control
generation facility	850	generation, storage and related interconnection	EPC progress, permits, fuel and completion support
campus-infrastructure facility	750	grid works, substation, shell, cooling and fibre	certified construction and integrated schedule
compute-equipment facility	1,500	processors, network and installation	title, serial register, power readiness and acceptance path
customer cash	500	contracted capacity construction	restricted use, milestone evidence and refund reserve
sponsor equity	1,800	development, contingency, platform and first-loss capital	funded first or proportionately with debt
total	5,400	complete first phase and reserves	controlled sources equal approved uses

All amounts are management assumptions in USD millions.

No source should receive multiple economic roles in the model. A customer prepayment can reduce future invoices or be refundable. It should not also be treated as unrestricted equity and free debt-service cash. A sponsor guarantee can support completion and remain contingent rather than funded liquidity. A tax credit or public incentive should be recognised only after eligibility, timing and transferability are evidenced.

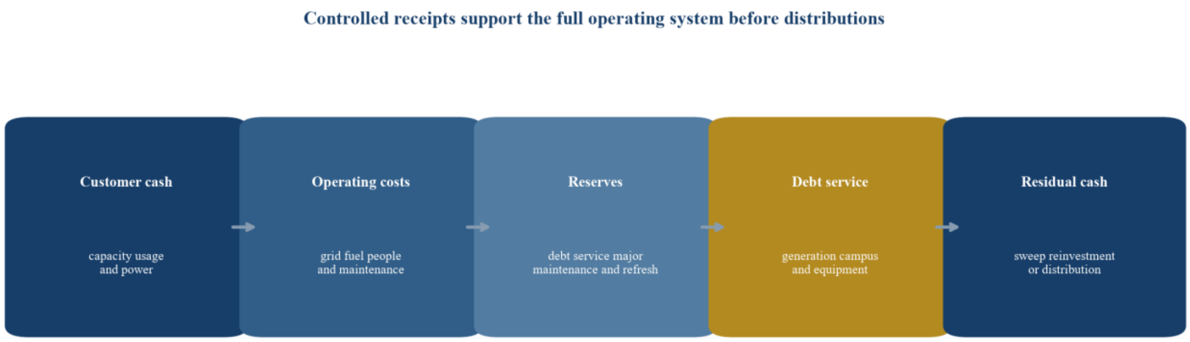
9 Size debt from completed service and controlled cash

Debt sizing should begin with eligible cash available to each borrower. The generation company may receive fixed capacity payments and variable energy payments. The campus company may receive rent or infrastructure charges. The compute company may receive capacity and usage charges. The operating company may collect a bundled customer invoice and distribute cash under intercompany agreements. The model should prevent double counting across these layers.

The cash waterfall should start with customer receipts in a controlled account. It should allocate taxes, essential operating cost, grid and fuel cost, generation payments, campus operations, reserves and debt service in an agreed order. Intercompany prices should reflect executed contracts and should remain sufficient to operate the full system. Residual cash can then fund maintenance, equipment refresh, mandatory prepayment and permitted distributions.

Debt should be sized using the lesser of supported project cash, asset value and approved leverage. Contracted customer revenue should be reduced for power cost, operating cost, service credits, taxes, working capital, concentration, remaining term and performance risk. Generation capacity payments should be tested under availability and customer-payment stress. Residual asset value should use observed or independently supported recovery routes.

Figure 4 Illustrative funding and cash waterfall



Proposed control sequence; actual priorities depend on finance and operating documents.

The illustrative central case assumes contracted capacity ramps from 90 MW at initial acceptance to 180 MW within twelve months, with additional merchant or short-term capacity outside the lender base. Management assumes minimum consolidated DSCR of 1.43 times after stabilisation. A nine-month grid delay and partial customer acceptance produce minimum coverage of 0.82 times before reserves and support. The case demonstrates sensitivity and does not describe an identified project.

10 Use reserves and covenants to address changing interfaces

The covenant package should monitor the physical and contractual variables that drive cash. Financial covenants alone can identify deterioration after the cause has emerged. Operating covenants can provide earlier warning through power, construction, acceptance, availability, customer credit and equipment measures.

Reserves should be assigned to defined risks. A debt-service reserve protects scheduled payments during temporary cash shortfalls. A major-maintenance reserve funds generation and campus work. A technology-refresh reserve supports contracted compute performance. A fuel or power-cost reserve addresses timing and pricing exposure. A refund reserve protects customer cash where delivery obligations remain outstanding. The model should prevent one reserve from being counted against several simultaneous risks.

Table 5 Covenant and reserve package

Control	Measurement	Early-warning trigger	Financing response
power readiness	contracted, completed and dependable MW	milestone slip or reduced entitlement	stop compute draw and update schedule
generation performance	availability, heat rate and outage	trend below approved case	fund reserve, cure and cash trap
customer acceptance	accepted MW versus schedule	failed test or delayed decision	defer term conversion and require support
eligible cash	collected net receipts by contract	credit, dispute, amendment or concentration	haircut borrowing base and prepay
DSCR	historical and forward cash versus debt service	ratio below lock-up	block distributions and sweep cash
liquidity	unrestricted cash and dedicated reserves	reserve below required amount	sponsor cure or draw stop
equipment condition	age, utilisation, support and maintenance	obsolescence or unsupported cohort	accelerate amortisation and refresh plan
interface risk	open critical-path items and claims	unresolved item beyond latest safe date	independent review and funded contingency

Proposed structure; thresholds require project-specific modelling and documentation.

The borrowing base can recognise eligible customer cash after delivery, acceptance, credit, performance, concentration and term haircuts. The generation advance rate can reflect dependable capacity, availability and payment rights. The campus advance rate can reflect completion, contracted occupancy and transferability. The equipment advance rate can reflect age, workload compatibility, contract coverage and supported residual value.

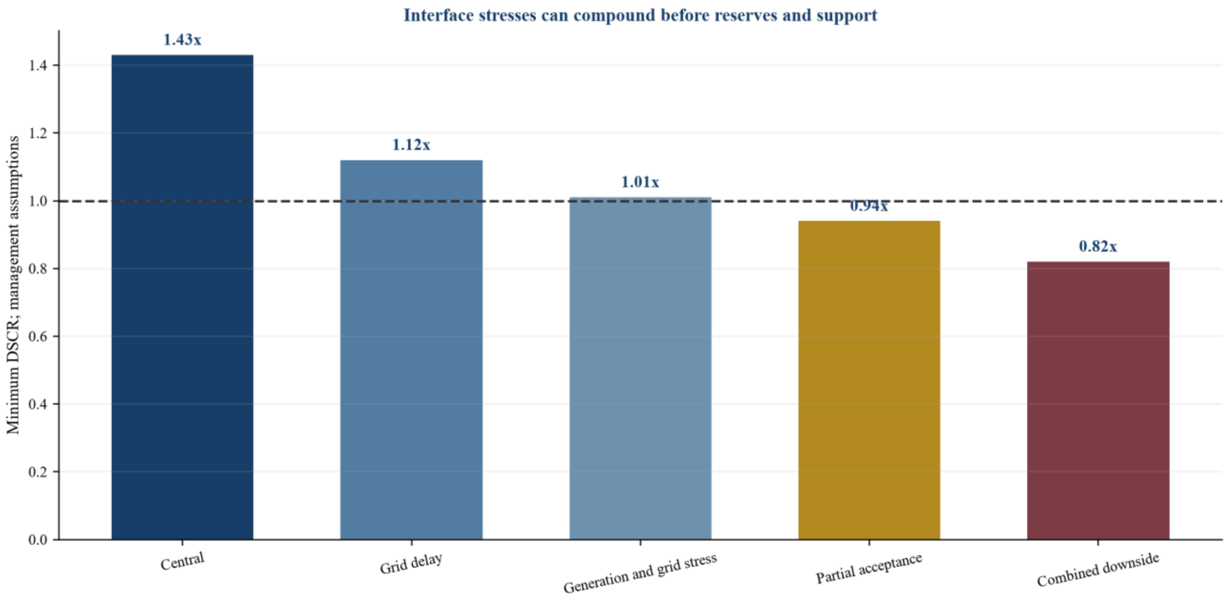
Information rights should include schedules, contracts, customer credit, invoices, collections, generation, grid events, power cost, service levels, equipment, incidents, insurance and reserves. Definitions should be consistent across operating systems and finance documents. Independent verification should apply to measurements that govern draw, conversion, distribution or default.

11 Model the principal downside combinations

Single-variable sensitivities can understate the risk of an integrated campus. Construction delay can increase interest, leave customer cash refundable, create generation capacity cost and consume equipment warranty. A generation outage can coincide with grid constraint and high market prices. A customer dispute can arise after a performance event. The downside model should combine events that share a plausible cause or timing.

The first case should delay grid and campus completion while generation reaches mechanical completion. It should calculate idle capacity payments, capitalised interest, contractor recovery, customer damages, equipment storage and remaining contingency. The second case should reduce generation availability while increasing grid cost. The third should delay customer acceptance and reduce eligible revenue. The fourth should combine customer downgrade with equipment underutilisation and weaker residual value.

Figure 5 Illustrative minimum consolidated DSCR under combined stresses



All ratios are management assumptions and do not describe an identified financing.

Each downside should state liquidity, cost to complete, covenant date, reserve use, support call, customer effect and recovery action. The model should identify the first binding constraint. A project can have positive long-term economics and fail because cash is unavailable during a delay. The liquidity bridge is therefore as important as the terminal valuation.

Stress actions should be executable. A draw stop protects uncommitted debt. Sponsor equity cures cost and delay where the sponsor has capacity and a binding obligation. Storage or grid optimisation can reduce operating cost within technical and contractual limits. Customer remedies can be negotiated only with consent. Asset sales and refinancing require time and market access. The credit case should not assume an action without authority, funding and lead time.

12 Align accounting, tax and reporting with the cash model

Accounting classifications should inform the model and remain separate from lender cash definitions. IFRS 15 requires identification of customer contracts, performance obligations, transaction price and the transfer of promised goods or services [44-45]. Variable consideration, service credits, modifications, prepayments and significant financing components can affect revenue timing. Revenue recognition does not establish cash availability under the financing waterfall.

Generation PPAs, campus leases, equipment facilities, guarantees and consolidation require review under applicable standards [44-48]. A dedicated asset or contract may create a lease or another accounting consequence. A special-purpose company can be consolidated by a sponsor or customer depending on control. The accounting conclusion should be documented without changing the underlying legal and credit analysis.

Tax can alter cash at several layers. The project should assess customs and import duties, value-added tax, withholding, property tax, fuel tax, transfer pricing, interest limitation, depreciation, incentives and loss use. Intercompany charges should be supported and consistent with the waterfall. Tax credits and incentives should enter the base case only after entitlement, timing and monetisation are supported.

Reporting should reconcile operations, contracts, accounting and cash. The project should bridge customer capacity to invoices, revenue, receivables and collections. It should bridge generation output and grid imports to power cost and customer reimbursement. It should bridge capital expenditure to assets, debt draws and remaining cost. Differences should be explained and carried into forecasts.

13 Build environmental and community obligations into financing

Power-intensive campuses can affect land, water, noise, emissions, transmission and local infrastructure. The project should identify applicable permits, assessments, consultation, mitigation, monitoring and reporting. General sustainability claims should not replace site-specific evidence.

The power strategy may combine renewables, natural gas, nuclear, storage and grid electricity. The IEA projects that renewables meet a substantial share of incremental data-centre demand while dispatchable sources remain important [1-4]. Contractual procurement and physical supply should be distinguished. Environmental attributes, grid mix, backup generation and onsite sources can produce different claims and risks.

Water and cooling should be assessed under expected and extreme conditions. The design should state source, quantity, treatment, discharge, redundancy and restrictions. Air cooling, liquid cooling and hybrid systems can change power and water profiles. Higher rack density can change both. The environmental model should use the actual design and location.

Lenders using the Equator Principles, IFC Performance Standards or related policies can require defined environmental and social processes [30-33,49]. The scope, category and obligations depend on the financing and project. Compliance cost, schedule and monitoring should be included in sources and uses. A permit or stakeholder delay can become a completion and liquidity risk.

14 Prepare continuity, step-in and transfer before funding

Downside value depends on preserving the operating system. Lenders should understand whether generation contracts, grid service, land, permits, equipment, software, customer contracts, data and staff can remain available after default. Security over one entity may be insufficient when essential rights sit in another.

Direct agreements can give lenders notice, cure, step-in and transfer rights. Their terms should align across customer, generation, utility, landlord, operator and key vendors. Cure periods should allow practical action without forcing a critical counterparty to continue indefinitely. Consent requirements, licence restrictions and regulatory approvals should be identified before closing.

The replacement plan should name the capabilities required to operate generation, grid interfaces, campus systems, computing equipment, networks, cybersecurity and customer service. A replacement operator may need vendor support and customer approval. Access credentials, source code, monitoring, spares, procedures and records should remain controlled and transferable where legally permitted.

Cybersecurity and operational resilience require specific attention. A default or transfer can increase access and continuity risk. NIST and CISA frameworks can inform governance, incident response and recovery [50]. The financing package should require prompt notice of material incidents, tested recovery, access control and preservation of customer obligations.

Table 6 Downside continuity and transfer plan

Element	Evidence before funding	Downside action	Value risk if absent
controlled accounts	account agreements and waterfall	preserve operating cash and debt service	cash leakage or interruption
customer contract	assignment, notice, cure and direct agreement	maintain service or transfer provider	termination and lost revenue
generation and grid	security, consent and continued-service rights	preserve dependable power	stranded campus and compute

Element	Evidence before funding	Downside action	Value risk if absent
land and campus	mortgage or lease security and access	maintain physical control	inability to operate or sell
compute and software	title, licences, serial register and vendor rights	continue, redeploy or sell equipment	weak recovery and service failure
operator and staff	transition plan, records and key services	appoint replacement operator	prolonged outage and customer remedies
cyber and data	access, backup, incident and transfer controls	secure transition and recovery	breach, legal exposure and lost trust

Proposed enforcement record; execution depends on law, contracts and operating capability.

15 Apply a staged investment and credit decision

The board and credit committee should approve the campus through staged gates. The initial investment decision should confirm land, market, power route, customer strategy, preliminary design, development budget and sponsor risk capacity. Financial close should confirm permits, executed contracts, funded sources, cost to complete, security and support. Each draw should confirm progress and remaining sufficiency. Term conversion should confirm integrated service and cash.

The decision paper should separate verified facts, specialist opinions, management assumptions and unresolved matters. It should contain the physical map, entity structure, interconnection evidence, generation plan, customer contracts, integrated schedule, interface matrix, sources and uses, power model, cash waterfall, debt sizing, stress cases, covenants, reserves and downside transfer plan.

Six questions govern approval. What capacity is legally and physically available? Which party bears delay at each interface? How do generation dispatch and grid conditions affect service and cost? When do customer payment obligations begin and what can reduce them? Does each debt tranche amortise within supported cash and asset life? Can the system continue or transfer after default?

The approval should state maximum commitments, required equity, support, reserves, advance rates, covenants, permitted distributions and conditions precedent. It should identify unacceptable downside cases and the events that require refreshed approval. A positive strategic view of AI demand does not replace these transaction controls.

Practical execution controls

The sponsor should maintain one controlled capacity register. It should show generation dependable capacity, grid import and export, storage power and energy, facility load, critical IT capacity, accepted customer capacity and remaining headroom. Units, measurement points and losses should reconcile. The register should identify the evidence and date supporting each value.

The project should maintain a clause-level contract model. Each revenue, cost, milestone, remedy and transfer assumption should point to an executed clause or a clearly labelled management assumption. Amendments and side letters should be version controlled. The model should not use commercial summaries when the executed language differs.

The integrated schedule should be updated at least monthly during construction and more frequently during commissioning. It should identify critical path, float, latest safe date, responsible party, evidence and consequence. A delay notice should show effects across generation, grid, campus, compute, customer and financing rather than only the affected contract.

Cost reporting should distinguish committed, incurred, certified, paid, forecast and remaining amounts. Contingency should be allocated by risk. The independent monitor should state physical progress, schedule progress, cost to complete and contingency sufficiency. Delivered equipment should not inflate completion when upstream power and cooling remain unfinished.

Procurement controls should track reservation, purchase order, design approval, manufacture, shipment, title, delivery, storage, installation, commissioning and warranty. Deposits should be protected through refund rights, guarantees, letters of credit or other approved support where commercially available. Serial records should connect equipment to insurance and security.

Generation commissioning should include mechanical completion, synchronization, dependable-capacity testing, efficiency, emissions, controls, protection and operating procedures. Campus commissioning should include substations, cooling, water, fire, fibre, security and load-bank tests. Integrated testing should demonstrate the customer service under normal and relevant failure conditions.

Customer acceptance should use the contractual workload, software, measurement period, performance threshold and evidence. Internal rehearsals can identify defects and do not replace contractual acceptance. Any customer dependency should be documented, notified and linked to schedule relief or deemed acceptance if the contract provides it.

Power-cost reporting should reconcile generation output, fuel, grid imports, exports, storage, losses, demand charges, network charges and customer reimbursement. Timing differences should be included in working capital. A pass-through formula should be tested against actual invoices before commercial operation.

Dispatch governance should define the control room, forecast, nomination, outage, curtailment and emergency processes. The generation operator, campus operator and customer should understand how load is reduced when supply is constrained. The finance model should use the same priority and compensation rules.

The customer-credit file should identify obligor, parent, guarantor, security, financial capacity, strategic dependence, disputes and reciprocal relationships. It should be refreshed after material changes. The borrowing base should respond to deterioration before a payment default where the documents permit.

Collections should be monitored by invoice. The report should show amount, issue date, due date, deductions, dispute, payment and controlled-account receipt. Power reimbursements and service credits should reconcile. Late or disputed cash should receive reduced eligibility until resolved.

Service reporting should use the contractual availability method. Excluded events, maintenance, utility outages, generator outages and customer-caused events should be classified consistently. Estimated credits should enter forward cash tests before invoice adjustment.

Technology planning should identify equipment cohorts, warranty, vendor support, workload compatibility, maintenance, spares, refresh date and residual route. Debt should decline before the supported economic life. A refresh needed to maintain contracted service should have a funded source.

Insurance should be mapped to construction and operation. Builder's risk, delay in start-up, property, machinery breakdown, business interruption, cyber and liability cover can respond to different events. Limits, deductibles, exclusions, loss-payee rights and reinstatement should be tested against the modelled exposure.

Fuel supply should be modelled where dedicated generation depends on fuel. The project should assess transport, pressure, capacity, price, nomination, imbalance, interruption and storage. Dual-fuel or backup arrangements should be recognised only after technical, permitting and contractual evidence.

Grid-event reporting should capture curtailment, outage, voltage, frequency, ramp and protection behaviour. Large computational loads can create reliability concerns when they disconnect rapidly [11-

13]. The campus should meet applicable modelling and ride-through requirements and provide data required by the system operator.

The quarterly lender pack should include the capacity register, schedule, cost report, power performance, customer acceptance, invoices, collections, service levels, equipment, incidents, insurance, reserves, covenants and forecasts. Each report should name its data source and accountable owner. Prior periods should remain available for trend review.

Model governance should preserve approved versions, assumptions, formulas and audit logs. Scenario inputs should remain separate from observed results. The model should reproduce debt, reserve and distribution tests from source evidence. Material changes should require review under a defined authority matrix.

Distribution conditions should include historical and forward coverage, funded reserves, no default, current power and service performance, and a compliant borrowing base. A cash sweep can accelerate repayment when contract term, customer credit, equipment support or power rights weaken.

The refinancing calendar should show debt maturities, contract expiries, customer renewal windows, generation maintenance, grid renewal, permit dates and equipment refresh. Preparation should begin while remaining contract term and asset condition can support new credit. A maturity after customer termination or equipment obsolescence creates concentrated refinancing risk.

The sponsor should maintain a stop-funding rule. Additional debt should stop when a required power, permit, contract, schedule, cost, equipment, acceptance, credit or liquidity condition falls outside the approved limit. The rule should identify cure authority, period and capital source.

Related-party contracts require separate review. An affiliate can develop the site, supply power, operate the campus, own equipment or purchase service. Pricing, priority, termination, security, transfer and conflicts should be documented. Circular cash and guarantees should be removed from the independent credit case.

The data room should be organised around the integrated system. Core folders should cover corporate structure, land, permits, environment, generation, fuel, grid, campus engineering, construction, equipment, platform, customer contracts, cybersecurity, insurance, finance, tax, accounting, security and transfer. Every material model input should link to evidence or a named assumption.

Independent advisers should state scope, assumptions, reliance and open matters. The engineer can review design, schedule, cost, completion and performance. The model auditor can test formulas, timing, tax, reserves and covenants. Counsel can assess contracts, security, permits and transfer. Environmental, insurance, tax, accounting and cybersecurity specialists should address their respective exposures.

Table 7 Board and lender approval gates

Gate	Required evidence	Financing decision	Failure response
development	land, route, permits, preliminary design and budget	approve limited development capital	pause commitments and resolve evidence gap
customer	executed capacity, payment, credit and remedies	recognise eligible future cash	exclude, haircut or require support
power	dependable generation and grid route with funded works	open matching construction tranche	delay compute and reduce supported capacity
construction	integrated schedule, fixed scope and cost to complete	continue certified draws	stop draw and call support

Gate	Required evidence	Financing decision	Failure response
commissioning	asset and interface tests	release completion support in stages	cure, retest and retain support
acceptance	customer confirmation, invoice and collection	convert relevant debt to term	defer conversion and trap cash
operation	performance, reserves, covenants and reporting	permit distributions	sweep cash and remediate
downside	direct agreements, transfer consents and operator plan	approve residual reliance	shorten tenor and increase amortisation

Proposed approval record; each gate requires project-specific evidence.

In the illustrative case, a 1.43 times minimum consolidated DSCR supports the proposed funding only within management's central assumptions. The combined downside falls below 1.00 times before reserves and support. The structure should therefore stage debt, fund interface contingency, preserve sponsor completion support and connect customer acceptance to term conversion.

Power should precede processing in both engineering and finance. The campus earns value when dependable electricity, completed infrastructure, operating compute and enforceable customer contracts work as one system. A disciplined financing structure recognises that dependency, allocates each risk to a capable party, funds residual gaps and gives lenders control before a delay becomes a cash shortfall.

Frequently asked questions

Why should an AI campus be financed as an integrated system?

Customer cash depends on generation, grid service, campus infrastructure, compute and operations working together. Separate asset ownership does not remove those dependencies. Integrated underwriting identifies which external asset or contract each borrower needs and establishes support, direct agreements and controls for the interfaces.

When is power capacity sufficiently firm for debt sizing?

The answer depends on the market and project. The lender should identify binding service rights, completed studies, funded upgrades, construction milestones, operating limits, curtailment, backup and commissioning. Requested or studied capacity should remain separate from dependable operating capacity.

How should dedicated generation and grid supply interact?

The operating plan should define the role of each source under normal operation, maintenance, outage and emergency conditions. It should state dispatch authority, price, availability, curtailment and compensation. The financial model should calculate service and cash under the same rules.

What completion test is relevant for term debt?

Term conversion should follow integrated commercial completion for the revenue used to size debt. This normally requires power, cooling, networks, compute, platform, customer acceptance, billing, collection and funded reserves. Asset completion alone may be insufficient.

How should customer prepayments be treated?

Treatment depends on permitted use, refund obligations, invoice offsets, security and ranking. A prepayment can finance construction and create a liability if delivery fails. It should be counted once and should remain subject to the contractual restrictions.

Which downside cases matter most?

The model should combine related events. Relevant cases include grid delay with idle generation, generation outage during grid constraint, partial customer acceptance after cost is committed, higher power cost under fixed customer pricing, and customer weakness with lower equipment recovery.

What should each lender receive through direct agreements?

The required rights depend on the contract. Common subjects include notice, cure, continued performance, step-in, assignment and transfer. Rights should align across customers, utilities, generation, landlords, operators and key vendors so that the system can continue during a cure or transfer.

When can distributions begin?

Distributions should require historical and forward debt-service coverage, funded reserves, no default, current construction and operating performance, and a compliant borrowing base. The conditions should reflect the actual generation, grid, customer and equipment risks in the project.

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