Powering the Build: Securing Energy and Grid Capacity as a Financing Precondition

A lender-ready framework for converting site-level power claims into bankable connection, procurement, resilience and decarbonisation evidence

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ABSTRACT

Background. Data-centre value depends on permanent electricity capacity, reliable network interfaces, cooling and a resilient operating system. Grid and equipment constraints can delay delivery even when land, building work and customer demand are in place.

Objective. This paper develops a lender-ready framework for treating power procurement and grid capacity as financing preconditions for Gulf data-centre projects.

Approach. The analysis connects current IEA system evidence, UAE utility requirements, official energy programmes, project-finance environmental and social guidance, sustainable-finance principles and transaction-control methods.

Findings. A bankable power case requires a reconciled phased load, documented utility status, site and corridor rights, an integrated connection schedule, complete cost allocation, defined resilience states, controlled environmental claims and financing gates tied to objective evidence.

Implications. Sponsors and capital providers can use a six-level readiness ladder, interface matrix, milestone-based draw conditions and operating dashboard to align power delivery with customer commitments, liquidity and debt service.

Highlights

• Power readiness is evidenced through dated utility, land, design, procurement, construction and testing records.
• IT load, facility maximum demand, commercial capacity and financial-model assumptions require one reconciliation.
• Connection delay, tariff, efficiency and cost-overrun sensitivities belong in the core liquidity case.

JEL Classification: G21, G23, G28, G31, G32, L94, L96, Q40, Q48

Keywords: data centres, grid connection, power procurement, project finance, energy security, resilience, renewable electricity, Gulf infrastructure

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1. INTRODUCTION

The financing case for a Gulf data centre begins with a physical question: can the site receive the required electricity, at the required reliability, on the required date? Land control, planning, fibre and tenant interest remain important. None can compensate for a power programme that has not moved beyond a headline capacity claim. A lender or infrastructure investor must understand who will supply the electricity, which network assets are required, when each asset can be energised, who pays for them, what happens if the connection is late, and how the project operates during an outage.

This question has become more important as computing demand and rack density rise. The International Energy Agency estimated that data centres consumed about 415 terawatt-hours of electricity in 2024, around 1.5 percent of global electricity consumption, and projected approximately 945 terawatt-hours in 2030 in its 2025 base case [1,2]. Its 2026 update reported 17 percent growth in data-centre electricity use during 2025 and expected total consumption to approach 950 terawatt-hours by 2030 [3]. These are global estimates. They do not determine the availability, price or delivery date of power at a Gulf site.

The local evidence is more specific. Dubai Electricity and Water Authority's July 2025 guidelines require major-project developers to submit plot-level load details, year-by-year phasing, the nature of the load, proposed substation locations and electricity-corridor information [4]. The MA'LEM Dubai process is designed to integrate realistic project requirements into DEWA's system planning [5]. The same guidelines expressly identify data-centre load among the categories that must be described. The practical implication is that power is a coordinated development workstream with utility submissions, land reservations, design information, network interfaces and delivery dependencies.

This paper treats power readiness as a financing condition. It develops a controlled evidence chain from the computing demand forecast to the utility response, connection design, procurement portfolio, resilience architecture, environmental and social review, capital budget, schedule, financing documents and operating covenants. The framework is written for Gulf data-centre developers, operators, lenders and infrastructure investors. Every project requires site-specific engineering, legal, regulatory, environmental, insurance and tax advice.

The central proposition is simple: a bankable power case is a set of dated rights, designs, responsibilities, dependencies and remedies. A megawatt number in a presentation is only the start. The financing file should show how the number was derived, how it changes by phase, where it connects, which assets must be delivered, how long they take, what security has been posted, how delay risk is allocated and which fallback operating state applies.

The paper uses six evidence classes:

1. official electricity-system and connection materials;
2. official energy-policy and generation-programme materials;
3. lender environmental, social and climate-risk frameworks;
4. project contracts and utility correspondence;
5. engineering studies and design records; and
6. sponsor modelling assumptions, clearly identified and sensitivity-tested.

The worked case is a hypothetical financing illustration. It does not describe a Matchpoint client, completed mandate, observed saving, forecast transaction or promised outcome. Amounts and schedules are modelling assumptions intended to demonstrate the framework.

Financing question	Required evidence	Decision consequence
Is capacity available?	utility response, system study, connection point and phased allocation	site and phase go/no-go
Can it arrive on time?	critical path, network-asset scope, procurement lead times and approvals	drawstop, contingency and long-stop date
Is the supply reliable?	network topology, redundancy design, outage study and operating procedures	availability case and insurance review
Is the price controllable?	tariff basis, contract indexation, demand charges and procurement options	base case, downside case and covenant headroom
Is the environmental case credible?	energy mix, emissions method, efficiency plan and lender due diligence	eligibility, disclosure and risk conditions
Who carries delay and cost overrun?	interface matrix, contracts, guarantees, liquidated damages and reserves	risk allocation and financing structure

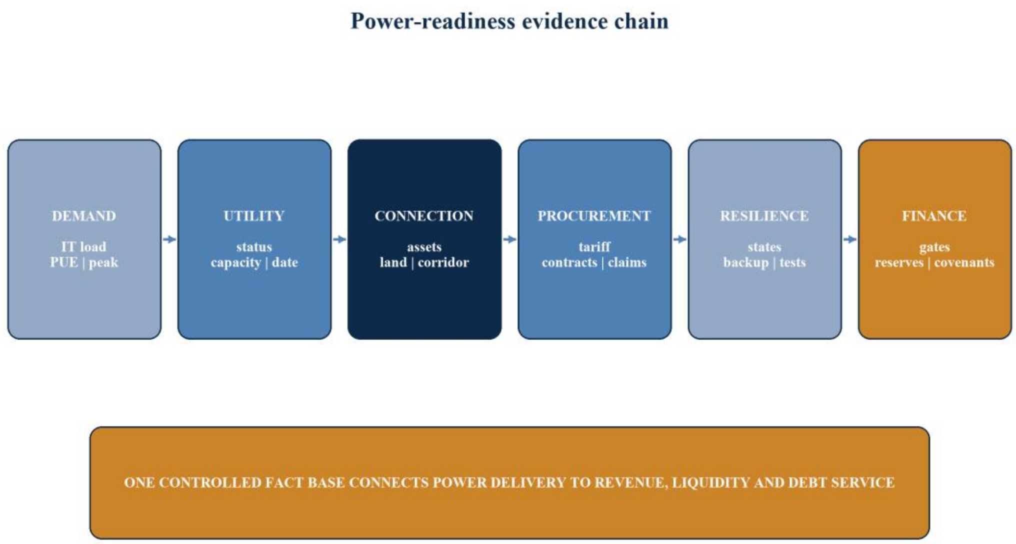

Figure 1. Power-readiness evidence chain from computing demand to financing approval

Source: Matchpoint framework based on sources [1-6,10].

2. WHY POWER IS A FINANCING PRECONDITION

2.1 Electricity is part of the revenue-enabling asset

A data centre monetises secure, connected and cooled computing capacity. Electricity is therefore part of the revenue-enabling asset rather than a routine operating input. A building can be substantially complete while contracted IT capacity remains unavailable because the permanent connection, substation, protection scheme or commissioning sequence is incomplete. The lender's completion test must connect the physical power system to the commercial definition of ready-for-service capacity.

The debt sizing model commonly depends on contracted megawatts, occupancy, price per kilowatt, availability, operating cost and capital expenditure. Each variable interacts with power. A slower energisation profile delays rent commencement. A higher tariff or lower power-usage efficiency increases the customer's or operator's cost. A weaker redundancy design can constrain the service level. A larger backup system changes capital cost, fuel logistics, emissions, permits and maintenance. Power due diligence therefore belongs in the same credit file as tenant quality, construction, technology and cash flow.

2.2 Connection risk is observable before financial close

The IEA estimates that grid constraints could delay around 20 percent of global data-centre capacity planned for construction by 2030 [6]. That figure is a global scenario result. A Gulf financing decision requires local evidence. The useful credit questions concern the chosen site's connection application, the utility's stated works, the expected capacity by date, the developer's obligations, the network programme's dependencies and the legal status of any allocation.

Connection risk often appears in stages. A utility may acknowledge an application, request information, provide an indicative response, define a connection point, approve a master plan, issue a cost estimate, enter an agreement, construct network assets and authorise energisation. The names and legal effects vary by jurisdiction. Due diligence should map the exact local process and identify what has actually been achieved. A meeting note or non-binding email should not be represented as an executed capacity right.

2.3 The credit committee needs a dated evidence ladder

A useful readiness ladder has six levels:

1. **screened**: the sponsor has identified plausible supply options and preliminary load;
2. **submitted**: the competent utility or authority has received a complete application;
3. **studied**: the connection point, network scope and capacity constraints have been assessed;
4. **allocated**: the project has a documented capacity position, subject to stated conditions;
5. **contracted**: binding documents allocate works, cost, schedule, security and remedies; and
6. **energised**: the permanent system has passed testing and can support the relevant phase.

Each level should be tied to documents, dates, conditions and expiry. The financing model should use the level achieved at signing and define the level required before each construction draw, equipment order, tenant commitment and revenue forecast.

Readiness level	Typical evidence	Lender treatment
screened	consultant note and preliminary utility discussion	early site-screening assumption
submitted	application receipt and submission pack	diligence workstream open
studied	system-study response and connection concept	conditional base-case input
allocated	formal capacity communication with conditions	assess enforceability and conditions
contracted	executed connection and works documents	completion covenant and cost allocation
energised	test certificates and operational acceptance	completion and revenue gate

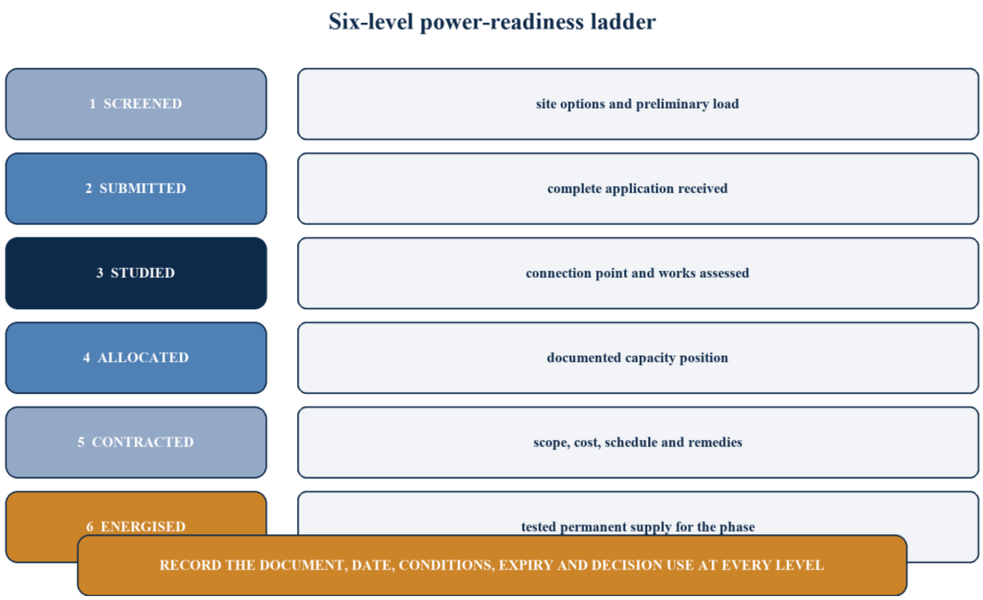

Figure 2. Six-level power-readiness ladder

Source: Matchpoint financing-readiness framework.

3. DEFINE THE DEMAND BEFORE REQUESTING THE SUPPLY

3.1 Start with IT load and service design

The requested utility capacity should be derived from the operating design. The model begins with critical IT load by phase, rack density, utilisation, cooling system, electrical losses, mechanical loads, common areas, security, offices and future expansion. It then applies a power-usage-efficiency assumption and a coincident peak method. The result must distinguish average energy consumption from maximum demand.

Power usage effectiveness is the ratio of total facility energy to IT equipment energy. It is useful when its measurement boundary and period are consistent. A design value, annual operating value and peak-demand conversion serve different purposes. The financing model should state which is being used and test deterioration during high ambient temperature, partial occupancy and equipment degradation. A low headline PUE unsupported by design conditions should not reduce the connection request or operating reserve.

3.2 Build a phased load schedule

DEWA's major-project guidance asks for the expected maximum demand, realistic power requirement date, phasing and, where the ultimate requirement is unavailable, a five-year demand plan [4]. That approach is also a sound financing discipline. A campus should have a phase schedule linking building completion, electrical and mechanical commissioning, IT installation, customer ramp and utility capacity.

The schedule should identify:

1. ultimate IT capacity;
2. facility demand at design conditions;
3. demand at initial energisation;
4. year-by-year ramp;
5. temporary construction supply;
6. commissioning loads;
7. reserve margin;
8. cooling and district-cooling interfaces;
9. on-site generation or storage; and
10. flexible or interruptible demand, if permitted.

A lender should reconcile four versions of the number: the utility application, the electrical single-line design, the tenant or sales plan and the financial model. Differences require an explanation. An application for 120 megavolt-amperes, a design for 100 megawatts of facility load and a model that assumes 100 megawatts of saleable IT load cannot all be correct without conversion, redundancy and efficiency adjustments.

3.3 Record load quality

Large electronic loads can affect power quality. Harmonics, power factor, rapid changes in demand and unbalanced loads may influence equipment and network design. DEWA's guidance requires power-factor correction to maintain at least 0.95 and includes distributed renewable resources in the submission [4]. Project engineers should define the applicable local requirements, mitigation equipment and testing protocol.

The credit file does not need to reproduce an engineering calculation. It needs the approved design basis, engineer's conclusion, responsibility for mitigation, allowance in the capital budget and impact on programme. Any study still outstanding should appear in the conditions register.

Demand input	Base-case record	Downside test
IT load	committed and forecast capacity by phase	slower or faster customer ramp
PUE	design and operating assumption with boundary	heat and partial-load degradation
peak demand	coincident maximum method	extreme operating condition
redundancy	normal and contingency topology	one component unavailable
cooling	system type and ambient assumptions	loss of district cooling or reduced efficiency
power quality	study conclusion and mitigation	additional filters or reinforcement

4. SITE AND GRID FEASIBILITY

4.1 Place the connection point on the site plan

Power availability is spatial. The due-diligence pack should place the proposed connection point, substation plots, cable corridors, access, easements, drainage, hazardous areas, fibre routes and future buildings on one controlled drawing. DEWA requires proposed 132/11 kilovolt and 400/132 kilovolt substation locations and the relevant corridor details for major projects [4]. The developer should confirm whether the required land is owned, leased, reserved or subject to third-party rights.

Land rights can become a financing dependency. A dedicated substation may require a plot that satisfies dimensions, access, safety and utility ownership requirements. Cable routes may cross public roads or third-party land. A late corridor change can trigger redesign, permits and procurement changes. The title and permitting review should therefore include the power assets and corridors, not only the data-centre plot.

4.2 Separate shared and dedicated works

The connection concept should identify:

1. upstream generation and transmission assumptions;
2. utility network reinforcement;
3. shared substations or feeders;
4. dedicated high-voltage works;
5. developer-owned medium-voltage and low-voltage systems;
6. metering and protection boundaries;
7. communications and control interfaces;
8. backup generation and fuel systems; and
9. battery or renewable-energy assets.

DEWA's guidance provides for dedicated or shared 132/11 kilovolt substations in major developments and describes developer obligations for plots, corridors and certain delivery arrangements [4]. The exact allocation for the project must be confirmed through current utility documents. The financing budget should include every asset that the project must fund, including design, land, taxes, connection charges, utility supervision, testing, security and escalation.

4.3 Test the upstream programme

A formal project response may still depend on a future bulk-supply point, substation, cable circuit, transformer, permit or long-lead component. The sponsor should obtain the dependency list, current programme, responsible party and evidence of progress. The IEA's 2026 update identified tightening supply chains for transformers and gas turbines among the physical bottlenecks affecting data-centre expansion [3]. A local schedule should therefore include procurement evidence for critical network and project components.

Where disclosure by the utility is limited, the financing documents can use objective conditions: execution of the connection agreement, notice to proceed for specified works, delivery of the relevant transformer, completion of civil works, successful protection testing and energisation certificate. The independent engineer can monitor these milestones without requiring access to commercially sensitive system data.

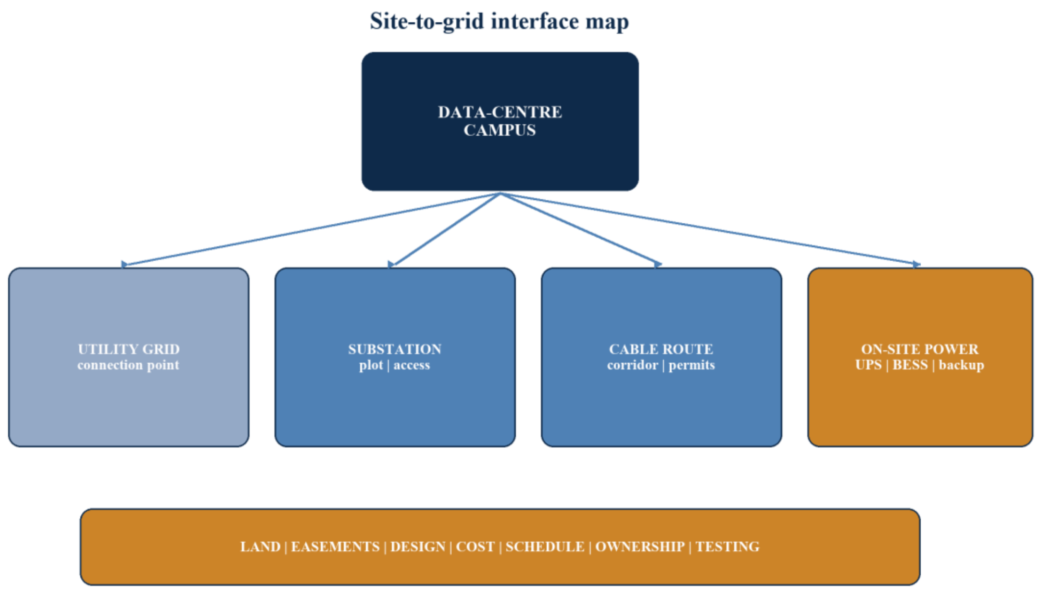

Figure 3. Site-to-grid interface map

Source: Matchpoint framework based on DEWA major-project requirements [4,5].

5. THE CONNECTION PROCESS AS A CRITICAL PATH

5.1 Convert the utility process into a financing schedule

The MA'LEM Dubai service enables enrolled developers and consultants to submit a power-supply master plan for major developments for DEWA review [5]. Its stated purpose is to integrate realistic requirements into system planning. The service description and major-project guidelines illustrate the information intensity of the process. The submission list includes key plans, plot load details, annual phasing, nature of load, district-cooling details, proposed substation locations and corridor information [4,5].

A lender-ready schedule should track the local process from application preparation to energisation. It should identify the party responsible for each submission, the authority response, design approval, land reservation, contractor appointment, procurement, civil works, equipment installation, testing and acceptance. Contractual tenant dates should be compared with the power critical path every month.

5.2 Define schedule confidence

Dates should be classified by evidence:

1. **contracted**: stated in an executed agreement with defined conditions;
2. **utility programme**: stated in formal utility correspondence or programme;
3. **supplier committed**: supported by a binding order and accepted delivery schedule;
4. **engineer forecast**: supported by a critical-path analysis;
5. **sponsor target**: an internal objective; and
6. **model assumption**: used for sensitivity analysis only.

This classification makes the schedule auditable. It also exposes a common problem: the financial model may use a sponsor target as though it were a contracted utility date. The credit committee can decide whether that risk is acceptable, require contingency or delay funding until stronger evidence exists.

5.3 Use independent schedule monitoring

The independent engineer should review the power schedule alongside the building programme. Monthly reporting can cover utility submissions, design comments, land and corridor status, long-lead procurement, factory acceptance testing, civil works, cable installation, protection and control, commissioning and energisation. Variance should be measured against the approved baseline and connected to a quantified liquidity effect.

Milestone	Evidence owner	Financing linkage
complete utility submission	sponsor and electrical consultant	early development expenditure
connection concept accepted	utility and engineer	site and phase approval
capacity and works documented	utility, counsel and engineer	financial close condition
long-lead orders placed	sponsor and suppliers	draw condition and contingency use
substation and corridor ready	sponsor, contractor and utility	construction progress test
testing complete	utility, engineer and operator	completion test
permanent energisation	utility	revenue and term-loan conversion gate

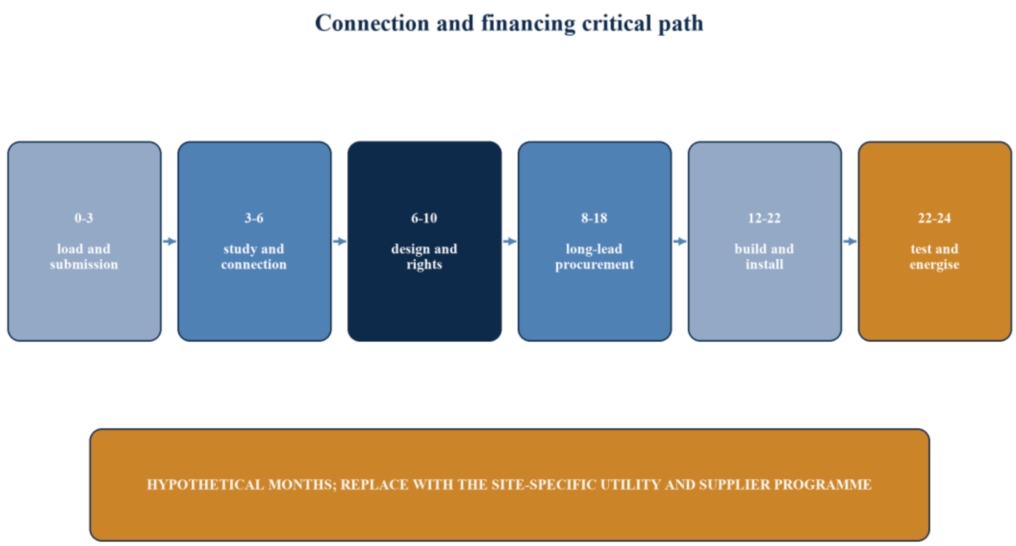

Figure 4. Indicative connection and financing critical path

Source: Matchpoint framework; timing is hypothetical and requires site-specific confirmation.

6. POWER-PROCUREMENT ARCHITECTURE

6.1 Begin with the regulated supply position

The procurement review should start with the legal and regulatory position for the site. It should confirm the authorised supplier, tariff class, connection charge, metering, demand charge, deposits, taxes, indexation, renewable-energy options, export rights, on-site generation limits and treatment of backup systems. Rules can differ between emirates and free zones. Current advice from the competent authority is required.

The base case should use the contract or applicable tariff, with a clear distinction between energy charges, capacity or demand charges, fuel or adjustment mechanisms, connection charges and one-off system costs. Where a tariff is published, the model should retain a dated copy and state the customer category assumed.

6.2 Layer the available instruments

A Gulf project may combine several instruments:

1. regulated grid supply;
2. renewable-energy certificates;
3. an on-site or captive solar arrangement where permitted;
4. a direct or sleeved power-purchase structure where permitted;
5. battery energy storage for resilience or load management;
6. backup generation;
7. demand-response participation; and
8. a dedicated generation arrangement for very large campuses, subject to licensing and system approval.

DEWA's D33 Industry Friendly Power Policy allows eligible manufacturers, data centres and agri-tech entities to install captive solar PV up to their total required load, subject to the policy's conditions and technical oversight [7]. DEWA reported in June 2025 that the policy included priority access to I-REC purchases, a 25 percent discount on new connection charges and an interest-free credit facility for qualifying participants [7]. These terms are programme-specific and require current eligibility confirmation.

Abu Dhabi's Department of Energy launched a second phase of a demand-response pilot targeting more than 250 megawatts of flexible demand across more than 30 industrial and commercial participants [8]. Demand response can add system flexibility where technical and contractual conditions permit. A data-centre operator must protect customer service levels, resilience and equipment integrity before committing flexible load.

6.3 Distinguish physical, contractual and environmental claims

A certificate or contractual renewable allocation does not change the electrons physically delivered to the site. The financing file should distinguish:

1. physical grid supply and its system mix;
2. contracted renewable attributes;
3. on-site or dedicated generation;
4. avoided or reported emissions under the chosen accounting method; and
5. residual reliability supplied by the grid and backup system.

The IEA notes that contractual procurement and the physical fuel mix are different measures [9]. Marketing, lender reporting and tenant contracts should use defined methods and avoid combining them. The sponsor should retain certificate ownership, retirement evidence, meter data, generation data and calculation methodology.

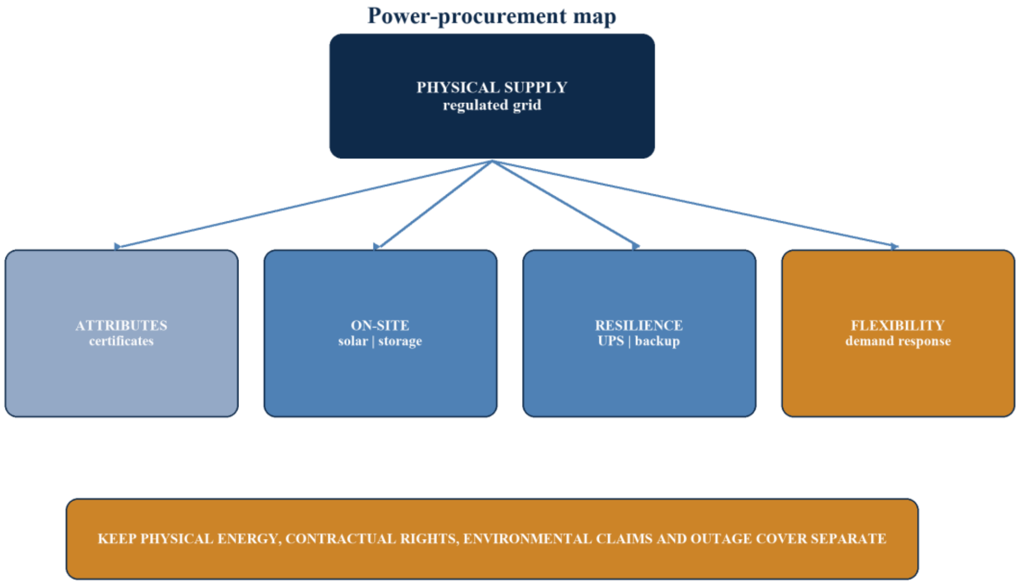

Figure 5. Power-procurement map and evidence boundaries
Source: Matchpoint framework based on sources [7-12].

7. RELIABILITY, REDUNDANCY AND OPERATIONAL RESILIENCE

7.1 Translate design language into operating states

Electrical resilience is often described through topology labels. Credit analysis benefits from explicit operating states. The design should show how the facility behaves during loss of one utility feed, one transformer, one bus section, one generator, one uninterruptible-power-supply module, one battery string, one cooling component and a wider utility outage. Maintenance states should be included because equipment is deliberately taken out of service.

The operating-state matrix should state the load served, duration, automatic actions, manual actions, fuel requirement, customer impact and recovery procedure. The independent engineer should confirm that the single-line diagram, protection philosophy, commissioning plan, spare-parts policy and operating procedures support the stated service level.

7.2 Treat backup generation as an integrated system

Backup generation creates interfaces with fuel storage, air emissions, noise, fire safety, maintenance, testing, permits and logistics. The Equator Principles' 2026 data-centre guidance states that reliable power is fundamental and that off-site power, substations, dedicated feeders, power-purchase arrangements, on-site generation, backup and storage may be associated facilities for environmental and social review [10]. The scope of due diligence should follow the material project dependencies.

The sponsor should document autonomy at different load levels, replenishment time, simultaneous-start assumptions, black-start procedure, fuel quality, supplier concentration and emergency access. An assumption of continuous fuel delivery during a regional disruption should be sensitivity-tested.

7.3 Use batteries for defined services

Battery storage can provide ride-through, uninterruptible supply, peak management, renewable firming or grid services. Each service has a different duty cycle, degradation profile, control regime and revenue or cost basis. A single battery capacity figure is insufficient. The model should include usable energy, power rating, duration, depth of discharge, degradation, augmentation, replacement and end-of-life treatment.

Masdar and EWEC announced a 5.2-gigawatt solar PV and 19-gigawatt-hour battery project designed to deliver 1 gigawatt of continuous clean power [11]. Masdar reported financial close in July 2026 on a US dollar 6.1 billion project with US dollar 5.1 billion of financing from 13 lenders [12]. That utility-scale project demonstrates the scale at which solar and storage can be combined in the UAE. Its economics and contracts should not be assumed for an individual data centre.

Operating state	Evidence required	Credit issue
normal grid	utility supply and network configuration	tariff and availability
single-component outage	redundancy study and tested switching	service continuity
maintenance	maintenance-state analysis	reduced reserve and scheduling
grid outage	UPS, battery and generator sequence	autonomy and restart
fuel disruption	stored fuel and replenishment plan	outage-duration sensitivity
black start	tested procedure and control power	recovery capability

8. COOLING, WATER AND CLIMATE CONDITIONS

8.1 Couple the power model to cooling

Cooling is usually the largest non-IT load. The model should state system type, design ambient conditions, water dependence, heat-rejection method, partial-load performance, redundancy and control sequence. High ambient temperatures can increase cooling demand and reduce generator or chiller performance. The peak connection calculation should reflect coincident conditions rather than annual averages.

Where district cooling is used, the connection agreement, capacity, supply temperature, reliability, programme and backup design should be part of the power and completion review. DEWA's major-project guidelines request details of district-cooling loads, location, capacity and required date [4]. A delay to a district-cooling interface can affect both electrical demand and commissioning.

8.2 Define the water boundary

Water use depends on cooling architecture and climate. The environmental review should cover source, entitlement, quality, treatment, storage, discharge and drought or restriction scenarios. The IFC Environmental, Health and Safety Guidelines provide general good international industry practice and infrastructure-sector guidance for due diligence [13,14]. Project-specific requirements remain governed by local law, permits and lender standards.

8.3 Stress physical climate risk

The UAE Central Bank's climate-related financial-risk framework requires relevant financial institutions to integrate climate risk into governance, strategy, risk management and scenario analysis [15,16]. For a data-centre financing, physical risk can include extreme heat, flooding, sand and dust, water stress and supply-chain interruption. Transition risk can include energy price, emissions requirements, customer procurement standards and technology change.

The engineering and financial cases should share the same scenarios. A higher ambient temperature may affect cooling efficiency, peak load, backup rating and operating cost. A flood scenario may affect substation elevation, cable routes, fuel systems and access. The cost and schedule implications should be visible in the base case or a stated contingency.

9. ENVIRONMENTAL, SOCIAL AND SUSTAINABLE-FINANCE REVIEW

9.1 Map associated facilities

The Equator Principles are a financial-industry benchmark for identifying, assessing and managing environmental and social risk in project finance [17]. Their 2026 data-centre guidance addresses the sector's power, water, location, supply-chain and community interfaces [10]. The review should identify associated facilities whose viability and existence depend substantially on the data centre, including substations, feeders, generation, storage, water supply and access.

This mapping affects the due-diligence scope, environmental and social action plan, stakeholder engagement, permits, monitoring and covenants. The lender should understand whether a dedicated power asset carries impacts or approvals outside the data-centre site.

9.2 Separate use-of-proceeds and performance-linked finance

The 2025 Green Loan Principles set out four core components: use of proceeds, project evaluation and selection, management of proceeds and reporting [18]. A data-centre loan should be labelled green only when the eligible category, environmental objective, process, proceeds management and reporting meet the applicable framework and lender requirements. Energy efficiency or renewable procurement needs measurable criteria and evidence.

A sustainability-linked loan uses performance targets rather than restricted proceeds. The applicable principles require material key performance indicators and ambitious sustainability performance targets [19]. Targets could address energy efficiency, renewable procurement or emissions, subject to reliable baselines, calculation methods, verification and adjustment rules. A target should not be selected solely because it is easy to meet.

9.3 Build a controlled reporting chain

The reporting chain should connect meters, operating systems, utility invoices, certificate registries and verified calculations. IFRS S2 requires disclosure of climate-related risks and opportunities that could reasonably be expected to affect an entity's prospects, subject to its scope and adoption [20]. Even where IFRS S2 is not directly applicable, its focus on governance, strategy, risk management, metrics and targets is a useful disclosure architecture.

Claim	Primary record	Control
facility energy	revenue-grade meters and invoices	boundary and reconciliation
IT energy	defined sub-metering	complete equipment coverage
PUE	total facility energy divided by IT energy	period, boundary and assurance
renewable electricity	contract, certificate and retirement record	ownership and no double counting
emissions	activity data, factors and method	dated factors and methodology
target performance	approved baseline and calculation	independent verification where required

10. CONTRACT AND INTERFACE ARCHITECTURE

10.1 Create one responsibility matrix

The power programme can involve the utility, sponsor, landowner, electrical consultant, engineering-procurement-construction contractor, substation contractor, equipment suppliers, operator, cooling provider, tenant, fuel supplier, renewable provider and lenders. One interface matrix should allocate design, approval, land, permits, procurement, construction, energisation, operation, maintenance, cost and delay.

The matrix should identify the contract containing each obligation and the remedy if it is missed. An obligation in a programme presentation has limited value if no contract party is bound to perform it. The lender's counsel and technical adviser should test whether the contracts align at their boundaries.

10.2 Align the utility and construction definitions

Terms such as available capacity, connection ready, energised, tested, commissioned and ready for service can differ. The financing documents should define objective milestones and required evidence. The utility may energise to a point of connection while the project switchgear remains incomplete. The EPC contractor may achieve mechanical completion before integrated systems testing. A tenant acceptance test may impose additional conditions.

The completion definition should state:

1. permanent utility capacity available for the phase;

2. relevant substations, feeders and project systems commissioned;
3. redundancy and integrated-system tests passed;
4. cooling and control systems operational;
5. permits and operating procedures in place;
6. insurance requirements satisfied;
7. tenant or independent certification completed where required; and
8. remaining defects bounded and funded.

10.3 Allocate change risk

The contracts should address changes in utility requirements, connection point, route, protection, equipment specification, grid code, programme and cost. The sponsor should know whether the EPC price includes utility-driven changes, whether allowances are provisional, and who controls design submissions. A change log should connect the technical decision to capital budget, schedule and financing contingency.

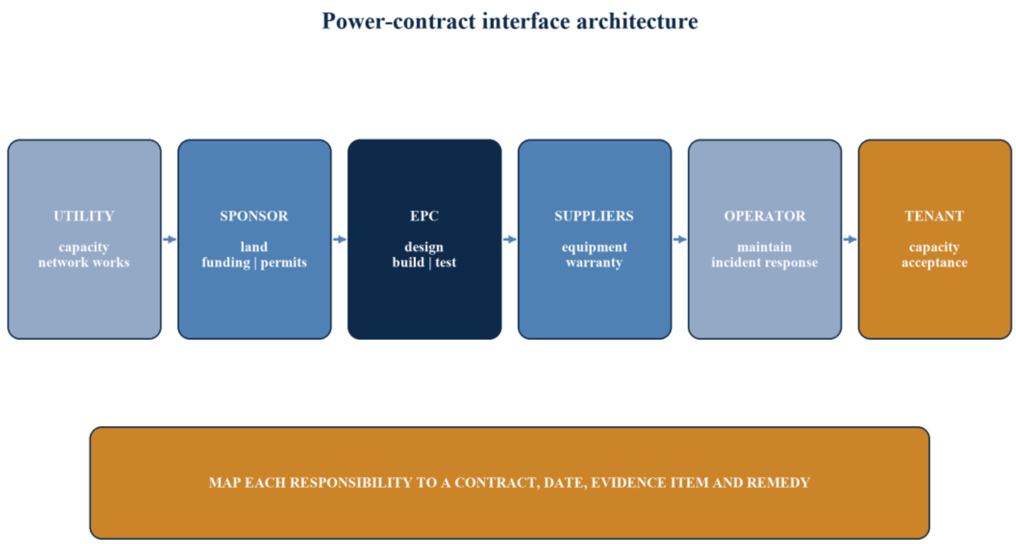

Figure 6. Power-contract and interface architecture

Source: Matchpoint transaction-control framework.

11. FINANCING STRUCTURE AND CONDITIONS

11.1 Match capital to readiness

Early development capital carries permitting, connection and design risk. Construction debt should enter when the project has sufficient evidence to support the schedule and cost. A staged structure can fund land and development through sponsor equity, fund long-lead deposits through equity or a controlled facility, and release senior construction debt after defined power conditions.

The capital structure may include sponsor equity, development capital, senior construction debt, equipment finance, subordinated debt, preferred equity and term debt after completion. The appropriate mix depends on the enforceability of the power rights, tenant contracts, construction allocation, sponsor strength, contingency and market conditions.

11.2 Use conditions precedent that correspond to real risk

Possible power-related conditions before first senior draw include:

1. executed connection documents in form acceptable to the lenders;
2. evidence of the phased capacity and connection point;
3. approved site plan, substation plots and corridor rights;
4. independent engineer confirmation of scope, budget and programme;
5. executed EPC and critical-equipment contracts;
6. permits required for power assets and backup systems;

7. required security, deposits and connection charges funded;
8. environmental and social review and action plan;
9. adequate contingency and liquidity; and
10. a complete interface and responsibility matrix.

Conditions should be transaction-specific. A requirement that has no relationship to the project risk adds delay without improving the credit. A material power dependency should not be hidden in a general material-adverse-change clause.

11.3 Link drawdown to evidence

Later draws can depend on milestone evidence. Equipment payments can require accepted purchase orders, performance security, insurance and independent-engineer certification. Major civil draws can require corridor access and design approval. Term conversion can require permanent energisation, integrated systems testing, contracted customer capacity and completion reserves.

A delay can trigger a drawstop, sponsor funding obligation, contingency reallocation, revised completion plan or long-stop remedy. The waterfall should be agreed before the project encounters pressure.

Financing stage	Power evidence	Typical control
development	submission and feasibility	sponsor-funded cap and reporting
long-lead procurement	accepted design and supply contract	deposit cap, security and assignment
construction	connection documents and works programme	certified draw and contingency test
commissioning	permanent supply and test plan	completion reserve and expert sign-off
operation	metering, service and maintenance	reporting, covenants and reserve accounts

12. ECONOMICS AND SENSITIVITY

12.1 Model the whole power cost

The model should separate recurring and non-recurring power costs. Non-recurring items may include connection charges, substations, cables, switchgear, transformers, generators, UPS, batteries, solar, fuel systems, land, permits, utility supervision, commissioning and spares. Recurring items may include energy, demand charges, fuel, certificates, maintenance, augmentation, testing and insurance.

The unit economics should reconcile:

Facility electricity cost = grid energy + demand charges + fuel and backup testing + certificate or procurement cost + storage and generation operating cost.

Electricity cost per unit of IT output = facility electricity cost divided by billed or utilised IT capacity over the same period.

The denominator must match the commercial model. A capacity-based contract, energy pass-through and all-in colocation price create different exposures.

12.2 Stress the variables that affect debt service

At minimum, the lender model should test:

1. energisation delay;
2. phased capacity below plan;
3. connection cost overrun;
4. tariff increase or adverse indexation;
5. PUE deterioration;
6. slower occupancy;
7. higher backup fuel use;
8. battery augmentation or replacement;
9. additional environmental or technical mitigation; and
10. combined delay and cost stress.

The model should show liquidity, interest during construction, debt-service coverage, loan life coverage, sponsor equity and covenant headroom. A delay can increase capitalised interest while deferring contracted revenue. That combination is often more important than the stand-alone connection charge.

12.3 Hypothetical cost-impact illustration

Consider a hypothetical campus with 100 megawatts of ultimate facility demand delivered in four 25-megawatt phases. The illustration assumes each phase produces AED 6.5 million of monthly revenue at stabilisation, AED 3.6 million of monthly operating cost before electricity, 0.80 monthly utilisation during the first operating year and AED 0.32 per kilowatt-hour for the relevant incremental electricity calculation. The numbers are modelling assumptions. They do not represent a quoted tariff, client project or market benchmark.

A six-month delay to the first phase defers revenue and operating margin while increasing capitalised interest and prolonging site overhead. A 10 percent increase in electricity cost affects operating cash flow in each occupied phase. A 0.10 deterioration in PUE raises facility energy required for the same IT load. The combined case should be tested because a rushed temporary arrangement can create both delay and operating-cost pressure.

Hypothetical stress	Direct mechanism	Model output to inspect
six-month energisation delay	revenue starts later; interest and overhead continue	completion liquidity and long-stop date
10% power-price increase	recurring facility cost rises	EBITDA and debt-service coverage
PUE increases by 0.10	more facility energy per IT unit	power cost and available connection headroom
AED 75m connection overrun	additional capital required	contingency and sponsor equity
first phase limited to 20MW	reduced saleable capacity	revenue ramp and contracted delivery

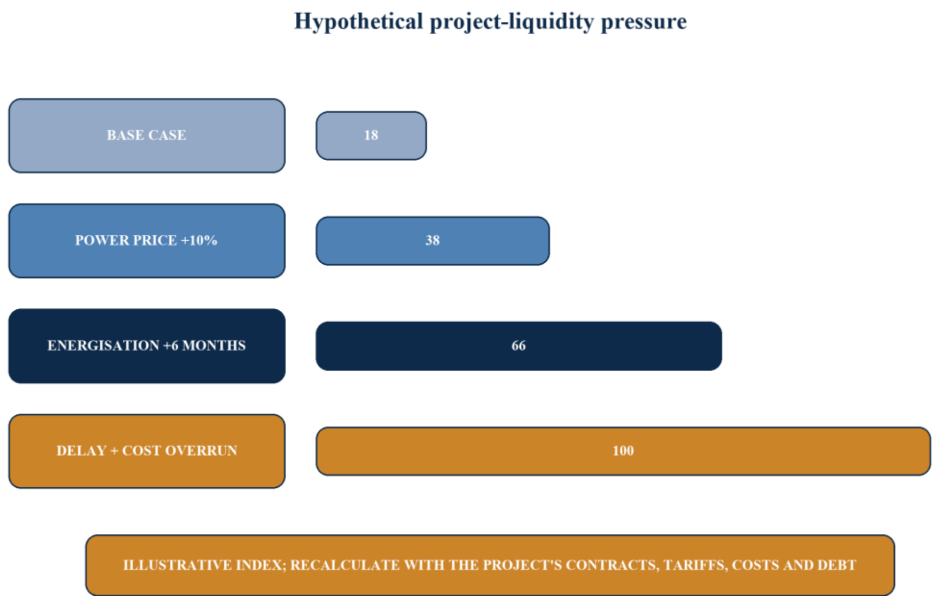

Figure 7. Hypothetical sensitivity of project liquidity to power delay and cost

Source: Matchpoint hypothetical modelling illustration; index values are not project observations.

13. HYPOTHETICAL 100-MEGAWATT CAMPUS CASE

13.1 Initial position

The hypothetical sponsor controls a site intended for four data-centre buildings. It has a preliminary load study, an electrical concept and early customer discussions. The financial model assumes the first 25-megawatt phase will be available 24 months after notice to proceed. The utility submission has been acknowledged, while the connection point, upstream reinforcement and permanent energisation date remain subject to review.

The sponsor seeks senior construction debt before ordering transformers, switchgear and generators. The credit question is whether the current evidence supports the base-case schedule. The lender's technical adviser classifies the project at the submitted level of the readiness ladder. It can review the design and application; it cannot confirm allocated or contracted capacity.

13.2 Gated financing response

The financing is divided into three gates:

1. sponsor equity funds utility studies, design completion, permits and refundable long-lead reservations;
2. a limited procurement tranche becomes available after the utility confirms the connection concept, critical specifications are accepted and supplier security is documented; and
3. the senior construction tranche becomes available after executed connection arrangements, corridor rights, a complete network programme and an independent cost-to-complete certificate.

The tenant delivery date is stated as conditional until the permanent power programme achieves its contracted level. The sponsor retains a funded contingency for connection and power-package changes. The base model includes a six-month delay case and a lower initial-capacity case.

13.3 Procurement portfolio

The hypothetical operating portfolio uses regulated grid supply as the physical foundation. The sponsor evaluates I-RECs and an eligible captive-solar option for environmental attributes and energy strategy. Batteries are designed for defined ride-through and power-quality services. Backup generators support the stated outage autonomy. No saving from demand response, certificate pricing or merchant battery services is included until a permitted contract exists.

13.4 Conditions register

Open condition	Evidence required	Owner	Financing effect
connection point	formal utility response	utility and consultant	procurement-tranche gate
upstream works	programme and responsibility allocation	utility and sponsor	construction-tranche gate
corridor rights	registered or enforceable rights	sponsor and counsel	draw condition
transformer delivery	accepted order and security	EPC contractor	schedule monitoring
backup permits	approvals and environmental controls	sponsor	completion condition
phase-one energisation	test and acceptance evidence	utility and engineer	term-conversion gate

This case demonstrates how uncertainty can be funded in stages. It does not predict a utility decision or financing outcome.

14. OPERATING COVENANTS AND REPORTING

14.1 Monitor the variables that support cash flow

After energisation, reporting should cover electricity consumption, maximum demand, PUE, availability, outages, generator tests, fuel stocks, battery health, renewable instruments, emissions calculations, maintenance, capacity headroom and customer service events. Each metric needs a definition, source system, owner, frequency and exception threshold.

The operator should reconcile utility invoices to meter data and financial reporting. Material billing anomalies, demand spikes and unexplained efficiency changes should be investigated. The lender needs information that connects physical operations to operating cost and service revenue.

14.2 Use covenants with defined measurement

Possible covenants include minimum insurance, maintenance of permits and utility contracts, prohibition on material changes to the power architecture without consent, maintenance of reserves, reporting of material outages, compliance with environmental and social plans, and delivery of sustainability reports. Performance covenants require precise definitions and cure mechanisms.

An availability covenant should state the service boundary, excluded events, maintenance treatment, measurement period and data source. A PUE covenant should state the metering boundary and conditions. A renewable-energy target should state eligible instruments, ownership, retirement and verification. Ambiguity creates disputes and weakens monitoring.

14.3 Connect incidents to credit response

The incident protocol should define notification, root-cause analysis, corrective action, customer impact, insurance, reserve use and lender escalation. Repeated events can indicate design, maintenance, supplier or operating weakness. A covenant breach should lead to a defined information and remediation process rather than an improvised response.

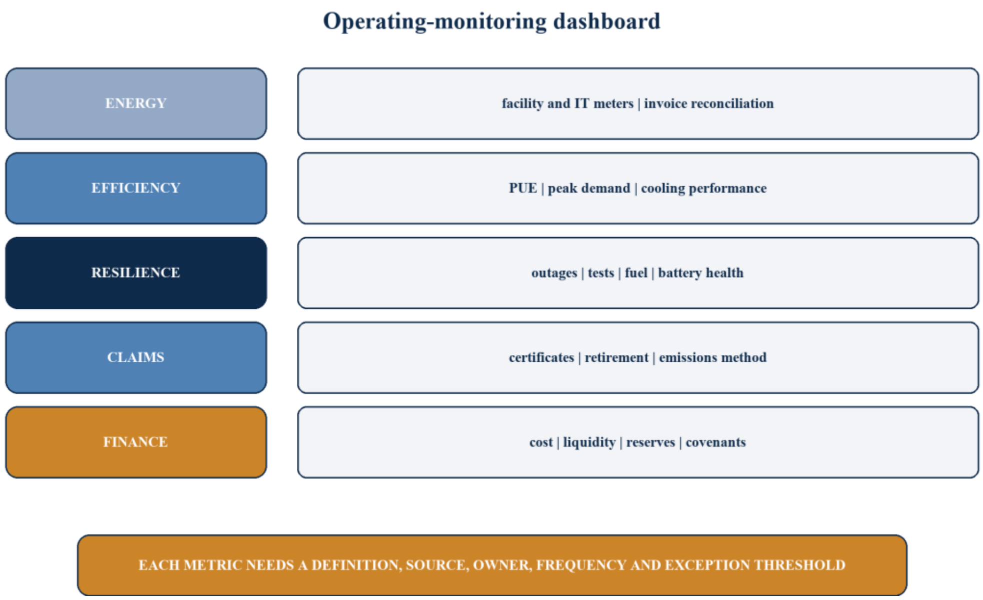

Figure 8. Operating-monitoring and covenant dashboard

Source: Matchpoint framework based on sources [15-20].

15. STAKEHOLDER AND GOVERNANCE MODEL

15.1 Establish one accountable power lead

The sponsor should appoint an accountable executive for the complete power programme. Engineering, finance, legal, development, operations, commercial and sustainability teams retain their specialist responsibilities. One programme lead owns the integrated schedule, decision register, utility interface and escalation.

The governance structure can include a monthly power committee during development and weekly critical-path sessions during construction and commissioning. Decisions should record the issue, evidence, options, authority, impact, owner and date. Changes to capacity, connection, redundancy, equipment or procurement should be reflected in the controlled design, budget, schedule and model.

15.2 Give lenders a consistent evidence pack

The lender and its advisers should receive a versioned pack rather than separate presentations. The pack should include utility correspondence, load schedule, drawings, programme, contracts, permits, budget, risk register, environmental and social materials and operating assumptions. Each update should identify changes since the previous version.

15.3 Maintain decision rights

The utility decides network matters within its authority. Engineers certify design and progress within their mandates. The sponsor approves commercial and development decisions. Lenders decide financing matters. Tenants approve acceptance where contracts require it. The governance matrix should respect those boundaries and avoid asking one party to certify another party's legal or technical conclusion.

16. COMMON FAILURE MODES

16.1 Capacity described without legal status

A presentation may describe power as available when the project has only made an enquiry or received an indicative response. The remedy is a document-based readiness ladder. Every external statement should reflect the actual level and conditions.

16.2 Utility schedule omitted from the construction critical path

The building programme may show the substation as one activity while ignoring utility design reviews, network works, corridors, equipment and testing. The remedy is an integrated critical path with named dependencies and evidence confidence.

16.3 IT capacity confused with facility demand

Commercial teams may quote IT megawatts while utility and engineers work with facility maximum demand. The remedy is a reconciled conversion table using PUE, losses, common loads, redundancy and peak conditions.

16.4 Renewable claim confused with resilience

Certificates can support contractual renewable claims. They do not provide outage continuity. The remedy is separate accounting for environmental attributes, physical supply and resilience.

16.5 Backup system designed without logistics

Generator capacity may be sufficient on paper while fuel autonomy, replenishment, permits, testing and black-start remain incomplete. The remedy is an operating-state model and end-to-end commissioning.

16.6 Connection cost treated as one line item

The model may include a utility charge while omitting plots, corridors, dedicated assets, design, escalation, supervision, testing and change. The remedy is a complete work-breakdown structure and responsibility matrix.

16.7 Sustainable-finance label selected before the evidence system

The project may pursue a green or performance-linked structure without defined eligibility, baseline, metrics or reporting. The remedy is to establish the evidence chain before agreeing the label and economics.

Failure mode	Early warning	Control response
weak capacity status	no formal utility document	readiness ladder and legal review
unreconciled demand	inconsistent megawatt figures	single approved load schedule
hidden critical path	utility milestones absent	integrated programme and engineer monitoring
missing interfaces	obligations described only in presentations	contract responsibility matrix
fragile resilience	topology label without state tests	integrated systems commissioning
weak claim governance	certificates and physical supply combined	separate accounting boundaries

17. IMPLEMENTATION ROADMAP

17.1 Days 1 to 30: establish the evidence baseline

Create the controlled document register. Reconcile the load schedule across engineering, utility, commercial and finance files. Map the readiness level, open utility questions, site rights, substation and corridor requirements. Identify long-lead components and current supplier evidence. Build the first integrated power risk register.

17.2 Days 31 to 60: align contracts, cost and schedule

Create the interface matrix and map each obligation to a contract. Update the project programme with utility and equipment milestones. Rebuild the power capital budget and operating-cost model. Define completion, energisation and ready-for-service tests. Run combined delay, cost and efficiency sensitivities.

17.3 Days 61 to 90: make the package financeable

Agree the financing gates, conditions, reserves and reporting. Complete environmental, social and climate-risk scoping. Define procurement claims and evidence boundaries. Prepare the lender data room and independent-engineer workplan. Establish the governance committee, decision log and change-control process.

17.4 Beyond day 90: maintain a live evidence chain

Update the utility, procurement, construction and commissioning evidence monthly. Reconcile every material change to budget, schedule, contracts and financing model. Before each draw, confirm the achieved readiness level and open conditions. Before customer commitment, confirm the capacity, date and acceptance evidence supporting the promise.

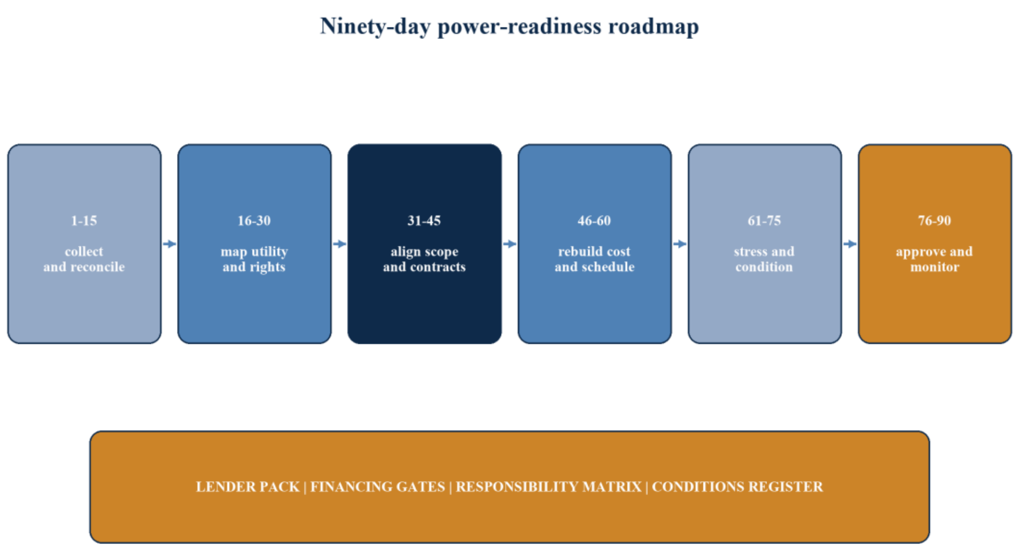

Figure 9. Ninety-day power-readiness and financing roadmap

Source: Matchpoint implementation framework; timing depends on project conditions.

18. CONCLUSION

Power procurement and grid capacity should be underwritten as an integrated development, contractual and operating system. The financing case begins with a reconciled demand forecast and moves through a dated utility process, physical connection design, site rights, network dependencies, procurement portfolio, resilience states, environmental and social scope, cost, schedule and remedies.

The most useful discipline is the readiness ladder. It prevents a preliminary conversation from being presented as contracted capacity and gives the financing parties objective gates for development capital, equipment orders, senior draws, customer commitments and completion. The second discipline is the interface matrix. It identifies which party is responsible for every power asset, approval, cost and delay. The third is the integrated model, which connects energisation, efficiency and power price to liquidity and debt service.

The Gulf provides significant clean-energy investment, high-reliability utility systems and expanding digital-infrastructure ambition. Those conditions create opportunity. Each site still requires specific evidence. A project becomes financeable when its power case can survive technical review, legal review, downside analysis and monthly monitoring using the same controlled facts.

APPENDIX A. LENDER POWER DATA-ROOM INDEX

Folder	Minimum content
1 utility	applications, receipts, responses, studies, agreements and invoices
2 demand	IT load, PUE, maximum demand, phasing and reconciliation
3 design	single-line diagrams, layouts, protection, earthing and control
4 land	substation plots, corridors, access, easements and title evidence
5 schedule	integrated critical path, supplier programmes and commissioning
6 contracts	EPC, utility, equipment, cooling, fuel, renewable and tenant interfaces
7 cost	work-breakdown structure, quotes, allowances, escalation and contingency
8 resilience	operating states, autonomy, black start, maintenance and incident plans
9 environment	permits, impact studies, action plans, climate and emissions methods
10 finance	assumptions, sensitivities, conditions, reserves and reporting definitions

APPENDIX B. POWER READINESS CERTIFICATE

The monthly certificate should state the achieved readiness level, capacity by phase, forecast energisation date, evidence confidence, utility milestones, long-lead status, land and corridor status, budget variance, contingency, principal risks, decisions required and changes since the previous certificate. It should be signed by the responsible sponsor executive and reviewed by the independent engineer within the scope of its appointment.

Certificate field	Required entry
reporting date	fixed cut-off date
capacity	facility and IT megawatts by phase
utility status	achieved level and supporting document
critical path	baseline, forecast and variance
cost	approved budget, commitments, forecast and contingency
conditions	open item, owner, due date and financing effect
change	design, scope, programme or contract change
assurance	engineer review and qualification

APPENDIX C. TERM-SHEET QUESTIONS

1. Which power evidence is required before signing, first draw, major equipment orders and completion?
2. How are connection costs, network works and utility-driven changes funded?
3. Which delay cases create a drawstop, equity cure or long-stop remedy?
4. What capacity and energisation status supports each revenue assumption?
5. Which power assets and contracts are secured, assigned or subject to direct agreements?
6. What contingency and reserve cover the power package?
7. Which independent expert certifies design, progress, testing and completion?
8. How are environmental, social, climate and sustainable-finance requirements monitored?
9. Which operating metrics and outage events are reported?
10. What approvals apply to material changes in connection, capacity, redundancy or procurement?

APPENDIX D. SOURCE-QUALITY AND ASSUMPTION REGISTER

Evidence type	Treatment
executed contract	record parties, date, term, conditions, amendments and enforceability review
official utility communication	record issuer, addressee, reference, date, status and conditions
approved engineering document	record revision, author, checker, approver and design basis
supplier commitment	record scope, price, delivery, security, exclusions and validity
engineer forecast	record method, dependencies, range and update date
sponsor assumption	identify as assumption, assign owner and run sensitivity

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The views expressed in this paper are his own. The paper is intended for research and discussion and does not constitute engineering, legal, regulatory, environmental, tax, credit or investment advice.