NSW Legislative Council

Public Accountability and Works Committee

INQUIRY INTO DATA CENTRES

Supplementary Questions — Hearing 8 May 2026

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Overview

The following responses are provided to the supplementary questions issued by the Committee following the hearing of 8 May 2026. References to specific legislation, corporate structures and international comparators are provided where available. The authors note that some matters remain under active policy development in New South Wales, and further evidence may be submitted if the Committee considers it useful.

Question 1: Norwegian and Scottish Community Benefit Models

Can you provide specific examples and references to the Norwegian and Scottish community benefit models you mentioned, including the relevant legislation or corporate structures?

In the hearing, we described how a data centre operator seeking social licence could designate its on-site battery infrastructure as a 'community battery' and use it to reduce the energy bills of nearby residents. For example, by approximately 10 per cent for households within a kilometre radius. We referenced Norway and Scotland as jurisdictions where the relevant corporate and regulatory structures already exist to formalise such arrangements. The following elaborates on those references.

The Scottish model is the more directly applicable. In Scotland, community benefit arrangements associated with energy infrastructure are structured through Community Benefit Societies (BenComs) incorporated under the *Co-operative and Community Benefit Societies Act 2014* (Scotland). This Act, which operates under Scots law (distinct from English and Welsh law), permits the creation of a legal entity that operates for the benefit of the community rather than for private profit. In the renewable energy context, BenComs have been used to give host communities a form of collective ownership or benefit-sharing stake in wind farms and other generation assets.

The Scottish Government's Good Practice Principles for community benefits from onshore wind set an industry norm of approximately £5,000 per installed megawatt per year contributed to community benefit funds. These are published under the *Onshore Wind Policy Statement 2022* and administered through Local Energy Scotland and the Community and Renewable Energy Scheme (CARES). An example is the Beinn an Tuirc 3 wind farm on the Kintyre Peninsula (50 MW). The entire output is purchased by Amazon to power its data centres. The wind farm development included negotiated community benefit provisions. The structure we described in our evidence is analogous. The data centre would make its battery capacity available to the community through a BenCom-type entity, with the benefits flowing to residents rather than to the operator as profit. These benefits include reduced electricity costs or local energy credits.

The Norwegian model operates somewhat differently. Norway's *Energy Act 1990* (Energiloven), administered by the Norwegian Water Resources and Energy Directorate (NVE), governs how energy infrastructure may be owned and operated, including the emerging concept of local energy communities. Norwegian municipalities have historically had significant equity interests in regional energy distribution companies (nettselskap), which creates a structural pathway for community energy benefit.

More recently, the NVE has been consulting on models for sharing surplus renewable energy production at the community level. A documented example is a local energy community in Porsgrunn, comprising 400 residential and commercial users, a small wind plant, distributed solar, and battery storage, operating as an integrated community energy system. The relevant legislative constraint in Norway is instructive for NSW, because it illustrates the kind of specific barrier that would need to be addressed. That current law limits solar energy customer arrangements to a single person, thereby hindering housing cooperatives (borettslag) from sharing generation. The Norwegian Government has been developing modifications to accommodate cooperative prosumer arrangements, but implementation has been delayed pending detailed rule-making.

The key point for the Committee is that both models share a common feature. That is a corporate structure that is not currently available in Australia. As we noted in the hearing, the Scottish BenCom structure is 'a sort of version of a B corp, but community-based'. That is, an entity whose constitutionally locked purpose is to benefit the local community rather than generate private returns. Australia has no direct equivalent. The closest analogues are incorporated cooperatives under the Cooperatives National Law and charitable structures, but neither provides the same combination of commercial flexibility and community benefit lock-in. Creating an equivalent structure in Australia would likely require either a new class of entity under corporations legislation or amendments to existing cooperative law, and is a prerequisite for formalising the arrangement we described.

Question 2: Legislative Changes Required in New South Wales

What legislative changes would be required in New South Wales to enable a similar community benefit structure for data centres?

Enabling a community benefit structure in New South Wales analogous to the Scottish BenCom or Norwegian energy community model would require reforms across at least three legislative domains: corporate and entity law, energy regulation, and planning law.

The foundational gap is the absence of a community benefit entity structure. As noted above, neither the *Corporations Act 2001* (Cth) nor the Cooperatives National Law (more formally, the *Co-operatives (Adoption of National Law) Act 2012*(NSW)) provides for an entity whose surplus must, by law, be applied to community benefit. Neither lock assets against private distribution. The closest Commonwealth mechanism is a charity registered under the *Australian Charities and Not-for-profits Commission Act 2012* (Cth), but this imposes constraints on commercial activity that are incompatible with operating energy infrastructure. A purpose-built 'Community Energy Benefit Corporation' class, modelled on the BenCom, would require either Commonwealth action (amending the Corporations Act) or NSW action (creating a new class of incorporated association or cooperative with a statutory community benefit object). The latter would most likely require amendments to the *Associations Incorporation Act 2009* (NSW) or the Cooperatives National Law.

In the energy regulatory domain, the most significant barrier is that network licencing and distribution functions are governed by the National Electricity Law (NEL) and the National Electricity Rules (NER). The "National" here is confusing in that the implication is that these are federal instruments. However, the law and regulations are "nationally" agreed in the National Energy Market (NEM) area, which excludes Western Australia and the Northern Territory. The NEL is a South Australian statute and the NER are made under it.

The NER does not currently facilitate a data centre operating as a local network service provider or community energy aggregator to share stored battery capacity with residential neighbours across the boundary of its site. The 'behind-the-meter fence' rule limits what can be done without a retail licence. The AEMC's December 2024 final determination on 'Integrating Price-Responsive Resources into the NEM' represents a partial step in the right direction, but does not address local sharing arrangements.

At the NSW level, the *Electricity Infrastructure Investment Act 2020* (NSW) could potentially be amended so that the Consumer Trustee's Long-Term Energy Service Agreement (LTESA) framework includes the capacity for community benefit obligations. For example, requiring that data centre operators with battery capacity above a threshold make a defined proportion of that capacity available to local residential demand response at cost.

In the planning domain, the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) could be amended to add 'community energy benefit sharing' as a mandatory consideration for State Significant Development (SSD) approvals involving large energy consumers.

A more structural amendment would be to introduce a 'community infrastructure contribution' mechanism specifically for energy-related benefits, by analogy with the Section 7.11 developer contributions framework for physical infrastructure, providing a clear legal basis that does not depend entirely on voluntary negotiation through Voluntary Planning Agreements. The *State Environmental Planning Policy (Transport and Infrastructure) 2021* could also be amended to require that SSD data centre applications include a community energy benefit plan as a mandatory component.

Question 3: Existing Mechanisms Under the NSW Planning System

In the absence of such legislative change, what mechanisms are currently available under the NSW planning system that could be used to secure community benefits from data centre developments?

Even without legislative reform, the existing NSW planning framework contains several instruments that could, with appropriate government will and negotiating discipline, be used to secure meaningful community benefits from data centre approvals.

The most immediately available mechanism is the Voluntary Planning Agreement (VPA) under sections 7.4–7.5 of the EP&A Act. A VPA is a legally binding agreement between a developer and a planning authority (either the Minister for Planning or a council) in which the developer agrees to fund or provide public infrastructure, services, or amenities. VPAs are enforceable as a deed and may be registered on title. There is no legislative constraint preventing a VPA from including energy-related community benefits. For example, a commitment to designate on-site battery storage as a ‘community battery,’ provide bill reduction credits to residents within a defined radius, fund local renewable energy assets, or contribute to a community energy fund. The Department of Planning, Housing and Infrastructure administers State Voluntary Planning Agreements (SVPAs) for SSD projects, and this process provides an existing pathway for these negotiations. The NSW Government’s Investment Delivery Authority (IDA), which fast-tracks approvals for data centre projects above $1 billion, provides a natural forum in which community benefit commitments could be secured as part of the facilitation agreement, even without statutory compulsion.

Conditions of development consent under section 4.17 of the EP&A Act provide a second lever, though their scope is more constrained. Conditions must be reasonably connected to the impacts of the development. Conditions relating to demand response participation, waste heat availability to adjacent land uses, minimum water recycling standards, or noise management for surrounding communities are well within existing practice. For larger facilities, a condition requiring the developer to prepare and publicly report annually on a Community and Environmental Performance Report would improve accountability without requiring legislative change. This is analogous to the Environmental Management Plans required for mining approvals.

A third mechanism is the Secretary’s Environmental Assessment Requirements (SEARs) process, through which the Department sets out what matters an Environmental Impact Statement (EIS) must address. SEARs could be administratively updated to require data centre proponents to prepare a ‘Community Infrastructure Impact and Benefit Assessment’ as a standard EIS component, addressing energy grid impacts on local residents, water infrastructure, and proposed community benefit measures. The March 2026 NSW Government Consultation Paper on Data Centres has signalled willingness to review SSD thresholds and assessment requirements, providing an immediate policy opening for this kind of administrative reform.

Question 4: Examples of Carbon-Aware Scheduling and Emissions Data

Can you provide any examples of data centre operators, in Australia or internationally, that have implemented carbon-aware scheduling, and any data on the emissions reductions achieved?

At the hearing, Professor D'Alessandro noted she was unable to confirm which operators in New South Wales are currently running carbon-aware scheduling, while observing that it represents a genuine opportunity, particularly given the State's Renewable Energy Zones. The following provides the additional detail the Committee sought.

Carbon-aware scheduling is the practice of shifting flexible, delay-tolerant computing workloads to times and locations where the electricity grid is supplied by lower-carbon sources. It is an established technique at hyperscale operators, though robust, independently verified emissions reduction data remains limited in the public domain.

The most thoroughly documented implementation is Google's Carbon-Intelligent Computing System, described in detail in a 2022 paper (Radovanović et al.). This system operates globally and shifts delay-tolerant internal workloads. It uses machine learning training, data compaction, video processing, and simulation pipelines to align with forecast periods of low carbon intensity on the local grid. It typically schedules more work in the early morning and late evening when wind generation is higher. The system operates within a 24-hour deadline window and does not affect user-facing services such as Search, Maps, or YouTube. Microsoft has similarly incorporated carbon-aware scheduling into its Azure platform through the Green Software Foundation's Carbon Aware SDK. Commercially available tools such as 'Emerald Conductor' have been deployed on high-performance computing clusters, with pilot data indicating that carbon-aware scheduling can achieve a 13.5% to 25% reduction in carbon emissions during peak grid events without hardware modifications or compromising core service quality.

Academic simulation studies using real-world cloud infrastructure and grid data (Attenni et al., 2024) suggest that spatio-temporal workload shifting can achieve carbon savings of 45–85% for appropriate workload categories such as serverless functions, and up to 45% for big data analytics workloads. Research on inter-data centre data transfer scheduling (LinTS framework) has recorded up to 15–66% reductions in transfer-related carbon emissions by timing large data movements to coincide with low-carbon windows on regional grids.

In the Australian context, there are no publicly documented cases of Australian-operated data centres having implemented carbon-aware scheduling as a formalised system. However, some hyperscale operators with Australian facilities apply their global scheduling frameworks locally. This includes Microsoft. The CEFC's December 2025 report 'Getting the Balance Right' noted that between 2.2 GW and 3.2 GW of data centre capacity is expected in Australia by 2035 and called for demand flexibility to be a design requirement. The Energy and Climate Change Ministerial Council (ECMC) has committed to developing a framework for demand flexibility for new data centre loads, which is the key policy process through which carbon-aware scheduling could be formalised nationally.

Question 4(a): Regulatory Mechanisms to Incentivise or Mandate Carbon-Aware Scheduling

What regulatory or market mechanism could be used to incentivise or mandate carbon-aware scheduling for data centres in New South Wales?

Several complementary mechanisms are available, ranging from market-based incentives to direct regulatory requirements.

At the market level, the most immediately available mechanism is integration with the NSW Electricity Infrastructure Roadmap's Long-Term Energy Service Agreement (LTESA) framework. Data centres seeking to participate in firming and demand response tenders under the *Electricity Infrastructure Investment Act 2020* (NSW) could be required to demonstrate carbon-aware scheduling capability. This could be a condition of any LTESA award. They could also be required to report annually on the carbon intensity of their flexible loads. The existing LTESA awarded to Enel X for its virtual power plant already includes data centres as participants. It demonstrates that demand response participation agreements can cover a wide range of load types. Extending this to include carbon intensity reporting and time-of-use scheduling requirements would be administratively feasible without new legislation.

A direct regulatory approach would be to use the SSD approval pathway to impose carbon-aware scheduling as a condition of consent. This would require the Department of Planning, Housing and Infrastructure to establish measurable performance standards: for example, a requirement that data centre operators demonstrate, by Year 3 of operation, that at least 20–30% of their flexible (non-real-time) workloads are scheduled with reference to a carbon intensity signal derived from AEMO's published half-hourly generation mix data. AEMO publishes real-time and forecast carbon intensity data through its API, providing a technically feasible basis for compliance measurement. A more market-oriented approach would be to adopt dynamic, real-time network tariffs (network use-of-system charges) that reflect actual grid emissions intensity, creating a strong financial incentive for operators to automate workload time-shifting. Ireland's Commission for Regulation of Utilities December 2025 decision on data centre grid connections provides an analogous international model. This requires 80% renewable energy matching and mandatory dispatchable generation or storage.

A third approach, complementary to the above, would be to expand the NSW Peak Demand Reduction Scheme (PDRS). Thios extension could include certificate-based incentives that reward data centre operators for verifiable megawatt-hours shifted away from high-carbon peak hours using automated, carbon-aware software. Disclosure requirements would create market and reputational incentives for voluntary adoption, particularly for hyperscale tenants with their own net-zero commitments. It would require large data centres to publish quarterly operational carbon intensity data alongside a breakdown of delay-tolerant versus real-time workload proportions.

Question 5: Demand Response in Co-location Data Centres

What contractual or regulatory mechanism would be needed to require tenants within co-location data centres to participate in demand response, and has any jurisdiction *implemented such a requirement? From a practical standpoint, who would the government enter into agreement with?*

The co-location demand response problem is structurally well-understood and is one of the more challenging governance questions raised by this inquiry. In a co-location facility, the operator owns and manages the physical infrastructure such as power delivery, cooling, and physical space. However, individual tenants own and operate their own servers. The tenant controls its actual IT load. The operator can only directly control the facility's mechanical and electrical systems. This creates a principal-agent problem. The operator may have agreed to provide demand response capability, but cannot guarantee tenant participation without contractual mechanisms flowing through the lease.

The mechanism needed is a combination of 'green lease' obligations and a wholesale demand response registration framework. In a green lease arrangement, the co-location operator's standard Master Service Agreement with tenants would include a clause obligating tenants to participate in grid operator-directed demand response events up to a defined number of hours per year. This would specify the compensation mechanism (bill credits or preferential pricing) and the metering and reporting obligations. The operator would then aggregate these tenant-level commitments and register the facility as a Demand Response Service Provider with the relevant market body. Academic research (Ahmed et al., 2015) has demonstrated the theoretical and simulation-based feasibility of this 'Contract-DR' model in multi-tenant facilities. The European Union's updated Energy Efficiency Directive requires all data centres over 500 kW to publicly report energy performance and demand flexibility. This creates a regulatory cascade which compels co-location providers to obtain tenant data and participation to preserve the facility's right to operate. This is the closest existing international precedent for a mandatory approach.

To answer the Committee's specific question about counterparty structure. The government should enter into a demand response agreement exclusively with the co-location operator as the registered Demand Response Service Provider. It could do this with or through the relevant market body (AEMO or the NSW Consumer Trustee). It is neither practical nor legally coherent for government to manage direct relationships with hyperscale tenants or their downstream clients. The operator acts as the single aggregator. When the grid requires a ramp-down, the signal is sent to the operator, who passes it through to tenants via pre-negotiated financial incentives or penalties, and the tenants' automated systems handle the physical workload distribution. This is precisely the model used in Enel X's virtual power plant under the NSW Electricity Infrastructure Roadmap LTESA. In this, large energy users (including data centres) participate through an aggregator rather than registering individually with AEMO. The AEMC's December 2024 rule change on integrating price-responsive resources into the NEM provides the market structure needed for this model.

This structure is realistic for scheduled load shedding events of limited frequency (typically up to 10 events per year, capped at 2 hours per event). This is the standard model in global demand response programs. It becomes less reliable for high-frequency or deep curtailment. The reason is that hyperscale tenants operating AI inference or financial transaction processing cannot interrupt those workloads on short notice. The design parameter is distinguishing between interruptible load (batch processing, ML training, archival operations) and firm load (real-time user services). Demand response agreements must specify the load categories covered, and the operator will need sub-metering capability at the tenant level to measure and report performance. No jurisdiction has yet mandated this arrangement by regulation specifically for co-location facilities, though Ireland's CRU considered but ultimately replaced mandatory flexibility requirements with the 80% renewable matching obligation noted above.

Question 6: Aligning Data Centre Approvals with Infrastructure Readiness

What specific mechanism would you recommend for aligning data centre approval timelines with the readiness of supporting energy and water infrastructure?

The absence of a formal infrastructure sequencing requirement in the current NSW planning framework is one of the most significant structural gaps identified in submissions to this inquiry. As at late 2025, SSD applications for data centres were assessed individually, with no mechanism to ensure that cumulative energy and water demand in a given area was matched to confirmed infrastructure capacity. This is not merely theoretical. Sydney Water's IPART pricing assessment for 2025–30 revealed that the extent of data centre water demand had not been fully anticipated by the utility, and more than 21 SSD applications had been submitted or were in early assessment without water consumption being stipulated as a mandatory disclosure requirement.

We recommend a 'dual-gate' approval structure for data centres above a defined power threshold. This should be consistent with the existing SSD threshold of 10–15 MW. Under this model, a Conditional Approval (analogous to a deferred commencement consent under the EP&A Act) would be available once planning merits are established. However, a final Notice to Proceed with construction would be legally contingent on two infrastructure certificates. First, a Capacity Commitment Certificate from the relevant distribution network service provider (Ausgrid or Endeavour Energy) and/or TransGrid confirming that grid connection capacity is either available or committed under an approved augmentation plan with a confirmed delivery date. Second a Water Infrastructure Readiness Confirmation from Sydney Water (or the relevant utility) confirming that sufficient potable or recycled water capacity is available or committed at the nominated cooling demand level. This is materially different from current practice, where grid connection costs are borne by developers, but connection timeline is not a gating condition for planning approval.

For energy, 'infrastructure additionality' should also be required. Planning approval should be contingent on evidence of pre-financial-close Power Purchase Agreements (PPAs) or co-located battery or generation capacity that matches the data centre's new peak demand, ensuring that the facility does not simply add to grid carbon intensity. For water, approvals should mandate a transition pathway to recycled water or dry-cooling systems. Potable water use should be strictly capped as a condition of consent if local water storage falls below defined thresholds.

At the precinct level, a 'precinct infrastructure ledger' maintained by the Department of Planning, Housing and Infrastructure would track the cumulative water and energy demand of all data centres within a defined geographic catchment. Each new SSD approval would deduct from an available infrastructure capacity budget, with no further approvals until confirmed infrastructure augmentation is in place. Victoria's Sustainable Data Centre Action Plan (2026) provides a reference model for this kind of coordinated state-level approach.

Question 7: Precinct-Scale Pilot Locations

Can you identify one or two specific locations in New South Wales where a precinct-scale pilot could be implemented in the near term, and outline what such a pilot would involve?

Two locations present themselves as particularly suitable for a precinct-scale pilot, reflecting the two structurally different models described in our evidence: constrained urban grid management and the REZ anchor-tenant model.

The first candidate is the Western Sydney Aerotropolis precinct, encompassing the Mamre Road and surrounding areas in the Penrith-Liverpool corridor. This precinct already hosts the highest concentration of approved and proposed data centre SSD applications in NSW. It is served by the Upper South Creek Advanced Water Recycling Centre (Stage 1), which is nearing completion. It falls within the Western Sydney City Deal framework, providing a governance structure for multi-government coordination. A precinct-scale pilot here would involve:

(a) capping total approved power consumption for data centres within a defined geographic boundary at a level confirmed by the relevant DNSP as supportable from existing or committed transmission infrastructure;
(b) requiring all data centre proponents in the precinct to share peak and flexible load profile information with a precinct energy manager. This is a role the Investment Delivery Authority could support;
(c) establishing a shared recycled water network through Sydney Water, with individual data centres connecting to the network as a condition of precinct-level approval; and
(d) establishing a community energy benefit fund, resourced by per-MW contributions from each operator, to subsidise energy bills for residential areas within a defined radius. This last element directly operationalises the battery-sharing social licence model described in our hearing evidence.

The second candidate is the Hunter-Central Coast Renewable Energy Zone corridor. Specifically, the area around Tomago and Muswellbrook in the Hunter Valley. As coal-fired assets retire, this region has significant available grid thermal capacity from existing high-voltage transmission infrastructure, existing water allocations for industrial use, and a community workforce undergoing economic transition.

A precinct pilot here would follow the 'renewable anchor tenant' model: new data centres would be directly paired with adjacent grid-scale solar, wind, or pumped hydro projects within the REZ, so that the data centres act as the anchor demand that underwrites PPAs for new renewable investment. This is directly analogous to the Amazon-Beinn an Tuirc arrangement in Scotland. It is consistent with Dr Nicholls' hearing evidence that a data centre sited near a REZ could proceed on a fast-track basis while one proposed for an already-constrained urban location would face a longer approval pathway. This is effectively using the planning system to 'nudge' investment towards locations consistent with the State's emissions targets. The community benefit dimension would be structured around employment, supply chain obligations, and the district energy sharing concept raised at the hearing. For example, waste heat from data centre servers supplied to neighbouring industrial processes such as greenhouses, aquaculture, or advanced manufacturing.

In Dr Nicholls' hearing evidence, he specifically cited the example of a data centre sited near Blayney being able to sell high-pressure steam to an adjacent pet food factory. Suggesting the factory's cooled water output could be recycled back into the data centre cooling system. This is a closed-loop industrial symbiosis that would simultaneously reduce both facilities' operating costs and environmental footprints. This kind of arrangement is most feasible in a precinct-scale planning framework where the government actively identifies and facilitates co-location opportunities, rather than assessing each development in isolation. Both pilots would benefit from a formal evaluation framework measuring connection timelines, grid congestion outcomes, water consumption, community benefit fund performance, and demand response results. They could be used to generate comparative evidence to inform a statewide framework.

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