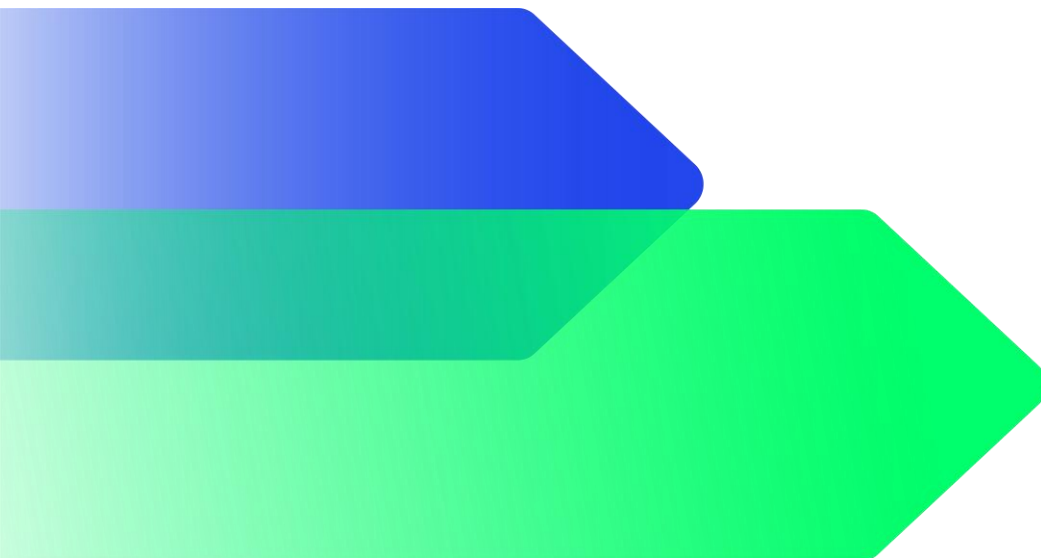


OFFSHORE WIND ACCELERATOR S4Y7

Clarification Question Responses

TWG-E – Grid Forming at System Level

17 July 2026



#	Type	Question	Response
1.1	Project specific	Section 5.2 states that the GridForm deliverables (WP1 to WP4) and the GridForm WP3 PSCAD models can be made available to the successful Contractor. To allow WP2 and WP3 to be scoped accurately, could the Carbon Trust confirm the nature of these PSCAD models (for example OEM-specific validated models or generic / black-box GFM and GFL representations), the device types and control families they cover, and their validation status? Would it be possible to share an index or summary of this coverage with shortlisted or interviewed bidders before contract award?	The WP3 PSCAD models are generic representative models, not OEM-specific or manufacturer-validated. They cover four hardware types (BESS, GFM STATCOM, E-STATCOM, and synchronous condenser, plus a grid-following STATCOM base case) and three grid forming control families (VSM in three variants, GFM droop, and DC matching), alongside a grid-following baseline; grid forming wind turbines and grid forming HVDC were considered only qualitatively and were not modelled. The models were built for comparative simulation studies using standard PSCAD library components and generic ratings, and have not been validated against physical hardware or OEM test data. Bidders should note that although grid forming wind turbines were not modelled as part of GridForm, given their central relevance to this project, GFM WTG is expected to be modelled to the extent possible here, using a generic representation given the absence of OEM-validated models.
1.2	Project specific	WP2 asks the Contractor to identify or develop black-box or generic device models where OEM models are unavailable. Beyond the GridForm models, will the OWA Partners facilitate access to any OEM-specific validated device models (for example WTG, BESS or HVDC converter models) under NDA during delivery, or should the Contractor assume generic or black-box representations throughout for planning and pricing purposes?	Bidders should assume generic or black-box representations throughout for planning and pricing purposes. The OWA Partners are not committing to facilitate access to OEM-specific validated models (WTG, BESS, or HVDC converter) under NDA during delivery. That said, should a Contractor already have access to, or be able to independently secure, OEM-validated models or data through their own industry relationships, this would be viewed positively and can be highlighted in the bid.

1.3	Project specific	WP2 requires implementation of an EMT test grid with a mix of GFM and GFL devices (D06), with scenarios referencing existing and planned offshore cluster developments. Will the Carbon Trust or the OWA Partners provide a reference cluster topology, a partner network model, or onshore / TSO network equivalents as a starting point, or is the Contractor expected to construct a representative generic benchmark network?	The Contractor should define a representative generic benchmark network as part of WP2; the Carbon Trust and OWA Partners will not provide a pre-built reference cluster topology, partner network model, or onshore/TSO network equivalents as a starting point. The Partners are, however, available to provide feedback and suggestions on the Contractor's proposed network, either through a workshop or in written form, to help ensure it is reasonably representative of existing and planned offshore cluster developments.
1.4	Project specific	WP2 lists several device types (WTG, BESS, E-STATCOM, HVDC converters and GFL devices) on a non-exhaustive basis, with case prioritisation to be agreed with the OWA. Given the 12 to 15 month timeline and the stated budget, how many device types and control families does the TWG expect to be studied in depth in EMT versus screened at a higher level, and is there an indicative priority order?	The number of device types and control families studied in depth versus screened at a higher level is at the discretion of the Contractor, to be proposed with the stated 12-15 month timeline and budget in mind. The indicative priority order will be decided by the Technical Working Group at project start-up, informed by the number of devices and control families the Contractor proposes to take forward.
1.5	Project specific	WP2 calls for geography and market agnostic modelling, while WP1 covers grid code requirements across relevant jurisdictions and WP4 covers TSO data and interface requirements. For the WP1 grid code review and the WP4 data and interface work, which markets, jurisdictions or TSOs should the Contractor prioritise, or is the selection left to the Contractor to propose and agree with the TWG?	Previous work undertaken in the GridForm project (to be shared with the successful contractor) covered Great Britain, Australia (AEMO), the EU (via ENTSO-E's RFG framework, with specific national examples including Ireland/EirGrid-SONI's DS3 arrangements, Finland/Fingrid, and Germany/Amprion), and the USA (NERC/UNIFI, with reference to ERCOT). This is a good reference point for relevant coverage, but bidders should note that the intent of this project is not to replicate general requirements research. Instead, the WP1 grid code review and WP4 data/interface work should be targeted at information relevant to multiple device interactions and compliance boundary conventions. Beyond this, the selection of markets, jurisdictions,

		or TSOs to prioritise is left to the Contractor to propose, for agreement with the TWG at project start-up.
1.6	Project specific WP3 states that findings shall be validated against available field data or published case studies where possible. Are the OWA Partners able to provide measured field data from existing or commissioned GFM clusters to support this validation, or should the Contractor assume that validation will rely on published case studies only?	It should not be assumed that measured field data from existing or commissioned GFM clusters will be available from the OWA Partners. Where possible during delivery, the Partners will input and assist with validation, but the project should be scoped on the basis that this is not guaranteed, with published case studies as the primary validation route.
1.7	Project specific WP3 deliverable D09 is an automated screening script for application to RMS network models. Do the OWA Partners have a preferred RMS platform for compatibility (for example PSS/E or PowerFactory), or should the script be developed to be tool-agnostic?	D09 is intended as a first-pass screening step ahead of the detailed EMT investigation carried out in WP3, to identify potentially problematic device combinations or grid strength conditions before committing to more detailed EMT studies. The working assumption is that this screening is carried out using a small-signal analysis approach applied to RMS models, for example using the small-signal analysis capability already built into PowerFactory, rather than a bespoke standalone script. There is no requirement for compatibility across multiple platforms (for example PSS/E and PowerFactory); the objective is to enable this screening, not to produce a distributable, tool-agnostic product. That said, bidders should set out their own view on the most appropriate method and platform for this screening step, including whether they consider an alternative approach (for example, screening via EMT simulation) would better capture the interaction behaviours relevant to this project, with justification for their proposed approach.

1.8	Project specific	WP1 requires stakeholder engagement with WTG OEMs, TSOs, universities and test or verification laboratories. Will the OWA Partners facilitate introductions to the relevant OEMs and TSOs, or is the Contractor expected to secure this engagement independently? Approximately how many stakeholder interactions does the TWG anticipate, to support consistent budgeting across bidders?	Although the Carbon Trust may be able to facilitate introductions to certain OEMs, it is expected that the successful applicant will also possess established relationships with relevant OEMs. The Carbon Trust affirms our commitment to supporting stakeholder engagement whenever feasible. The number of stakeholder interactions is at the discretion of the Contractor to propose; however, bidders should note that stakeholder engagement has often been a sticking point in similar projects, and a higher rate of engagement is recommended to ensure an appropriate number of responses is secured.
1.9	Project specific	Condition 5.8 of the Contractors' Conditions provides for go / no-go decisions on individual work packages. Does the Carbon Trust anticipate applying go / no-go stage gates to any of WP1 to WP5 for this Project, and if so which work packages, so that resourcing and delivery risk can be reflected appropriately in the Approach to Work and Bid Price?	We do not plan on applying go/no-go decisions to WP1-WP5; all five work packages are core scope and are expected to be delivered in full. Bidders are welcome to suggest additional work packages as part of their proposal where they consider these would be beneficial, but any such optional packages would sit in addition to the core scope outlined in the ITT, rather than replacing or gating any part of it.
1.10	Generic	Section 4.5 states that, for a consortium, the Carbon Trust will contract only with the Project Coordinator, who will subcontract the other members. Are there any constraints on consortium composition, for example whether the Project Coordinator must deliver a minimum share of the work or may act primarily as a managing prime, any limit on the number of subcontractors, and whether all consortium members must be named at the time of tender?	It is the responsibility of the Project Coordinator to subcontract other members of the Project consortium, ensuring that the terms and conditions of the main agreement are enforced with those consortium members. There are no constraints on the minimum share of work the Project Coordinator must deliver directly; however, the Project Coordinator is responsible for the successful delivery of the project as a whole and must therefore manage and coordinate delivery appropriately regardless of work share. There is no limit on the number of subcontractors. Naming subcontractors at the time of tender is beneficial, as it helps tangibly demonstrate expertise during tender evaluation, but this

		is not strictly necessary, particularly where a subcontractor reflects a smaller part of the overall project scope.
1.11	Generic	The Invitation to Tender lists a Tender Certificate (Word template) among the ITT documents, and a signed Tender Certificate is required for a compliant submission. We were unable to locate this template in the tender pack. Could the Carbon Trust provide the Tender Certificate template or confirm where it can be obtained? The tender certificate can now be found on the original tender site.
1.12	Generic	The timeline indicates bidder interviews in the week commencing 17 August 2026. Will these interviews be held in person or remotely, and is a technical presentation expected? If so, could the Carbon Trust indicate the expected format and duration? These interviews shall be held remotely and will consist of a one hour session with the Technical Working Group, in which the bidder will run through their proposal. Bidders should ensure sufficient time is allowed within the session for questions from the Technical Working Group on their proposal and approach.
1.13	Generic	The behaviour of the call and its price sheets show that it is based on the consultation scope of work. We are wondering whether Higher Education Institutions, with the internal research cost formats, could participate in this call. Higher Education Institutions are eligible to participate in this call, whether as lead bidder or as part of a consortium. The price sheet should be completed using the format stated in the ITT, to allow comparability with other bids in terms of hours per work package and the seniority of individuals undertaking the work. Where the University's internal costing basis does not map directly onto this format, supplementary information may be attached to explain the conversion. Bidders from HEIs should also review the IP-related clauses in the Contractors' Conditions carefully and ensure these align with their institution's own requirements, as these clauses cannot be amended.

2.1

Existing OWA Models and Background IP Can Carbon Trust provide a detailed inventory of the GridForm WP1-WP4 deliverables and models that will be made available to the successful contractor?

The GridForm project deliverables that will be made available to the successful Contractor are as follows:

WP1 – Technology and Literature Review

A report covering the gap analysis of previous OWA work, technology overview, and literature review of grid forming capabilities, providing the definitional and conceptual foundation for the subsequent work packages.

WP2 – Markets Assessment, Codes and Standards Review

A report providing an international grid codes and standards review (covering Great Britain, Australia/AEMO, the EU via ENTSO-E's RFG framework with national examples including Ireland/EirGrid-SONI, Finland/Fingrid, and Germany/Amprion, and the USA/NERC-UNIFI with reference to ERCOT), together with a market assessment covering trends, drivers, and legislation relevant to grid-forming offshore wind farms, including analysis of the GB Stability Market and Stability Pathfinders.

WP3 – Technology Selection, Practical Design Requirements and Feasibility Assessment (including models)

A report covering PSCAD-based simulation studies comparing grid forming control philosophies and hardware technologies, plus the underlying PSCAD models. The WP3 PSCAD models are generic representative models, not OEM-specific or manufacturer-validated. They cover four hardware types (BESS, GFM STATCOM, E-STATCOM, and synchronous condenser, plus a grid-following STATCOM base case) and three grid forming control families (VSM in three variants, GFM droop, and DC matching), alongside a grid-following baseline; grid forming wind turbines and grid forming HVDC were considered only

			qualitatively and were not modelled. The models were built for comparative simulation studies using standard PSCAD library components and generic ratings, and have not been validated against physical hardware or OEM test data. This work package also covers weak grid operation studies, with a cable length analysis section presently in draft form. WP4 – Guidance Report An industrial design and process guideline document summarising the findings of WP1-WP3 and providing insights for developers on how the conclusions can be utilised in practice. All of the above will be made available to the successful Contractor, subject to the confidentiality terms attached to the GridForm deliverables. Bidders should note that GFM WTG is expected to be of greater relevance to this project than it was to GridForm, and should be modelled to the extent possible using a generic representation, notwithstanding its absence from the prior work.
2.2	Existing OWA Models and Background IP	What software versions and licenses were used to develop the existing GridForm models?	PSCAD Version5 (64 bit) was used for the GridForm project.
2.3	Modelling Expectations	DigSILENT PowerFactory Software in the latest version will be used (with EMT and RMS modules), is this acceptable?	Yes, this is acceptable. Bidders are free to propose their preferred software platform, provided it meets the project objectives. Bidders should note, however, that the existing GridForm WP3 deliverable models are built in PSCAD; where compatibility or interoperability with these existing models is required (for

		example, to build on or validate against them), bidders proposing PowerFactory should set out how this will be achieved as part of their proposed approach.
2.4	Modelling Expectations What level of model fidelity is expected for generic GFM/GFL representations when OEM models are unavailable?	Generic GFM/GFL representations should be of sufficient fidelity to capture the control characteristics and dynamic behaviours relevant to the project's focus on multiple device interactions and compliance boundary conventions (for example, response to frequency events, phase jumps, faults, and weak grid conditions), rather than replicating manufacturer-specific internal control detail. The GridForm WP3 PSCAD models, which represent BESS, GFM STATCOM, E-STATCOM, and synchronous condenser using standard library components and generic ratings across VSM, GFM droop, and DC matching control families, provide a reasonable benchmark for the type and level of fidelity previously used, though they were not developed for the multi-device interaction focus of this project. The precise level of fidelity required for each device type and study case is left to the Contractor to propose, for agreement with the TWG at project start-up.
2.5	OEM and Technology Representation Should the study seek to benchmark specific commercial technologies, or only generic technology categories?	The study should seek to benchmark generic technology categories, not specific commercial or OEM technologies, consistent with the project's assumption that bidders should plan on generic or black-box representations throughout, as noted in our earlier response on OEM-specific device models. Should a Contractor already have access to OEM-validated models or data through their own industry relationships, this may be incorporated and would be viewed positively, but it is not a requirement of the study.

2.6	Scope Boundaries	Is market-specific analysis expected, or should all outputs remain technology- and geography-agnostic?	WP2 outputs should remain technology- and geography-agnostic, consistent with the requirement that WP2 modelling and analysis be scoped in this way. Market-specific analysis (for example, jurisdiction-specific grid codes and standards) sits within WP1 and WP4, as described in our earlier response (Question 1.5) on jurisdiction prioritisation; bidders should refer to that response regarding the scope and prioritisation of market- and jurisdiction-specific work in those work packages.
2.7	Scope Boundaries	Development of an automated screening script for application to RMS network models, enabling systematic identification of interaction risks prior to detailed EMT investigation. Shall this script be developed for the software used for modelling? Is it sufficient with a methodology rather than a script?	The intent of D09 is to enable systematic identification of interaction risks prior to detailed EMT investigation. The working assumption is to use a small-signal analysis tool applied to RMS models, for example PowerFactory's built-in small-signal analysis capability, rather than developing bespoke scripting from scratch. A methodology alone is not sufficient; a working, repeatable screening capability is expected. Bidders should propose the approach and platform they consider most appropriate for this screening step, with the underlying methodology clearly documented, and should flag if they consider RMS-based screening insufficient to capture the interaction risks in scope, with an alternative approach proposed and justified.
2.8	Deliverables and Tools	For Deliverable D09 and other deliverables, DIgSILENT will be used. Is it acceptable?	Yes, this is acceptable. As noted in our earlier response, the OWA Partners do not mandate a specific platform, and bidders proposing DIgSILENT PowerFactory for D09 and other relevant deliverables are free to do so, provided the project objectives are met. Bidders should set out their proposed approach and rationale, including how the automated screening script will be

		delivered as a usable tool for the OWA Partners, as noted in our response on D09 script requirements.
2.9		
Deliverables and Tools	Is source code for D09 expected to be fully transferable to OWA members?	Where the Contractor develops bespoke code or scripting to deliver the D09 screening step, this should be transferable to the OWA Partners, along with sufficient documentation to enable them to understand and reuse the approach beyond the life of the contract. Where the Contractor instead proposes using an existing built-in capability (for example, PowerFactory's small-signal analysis tool applied to RMS models), the expectation is that the methodology, settings, and documented workflow are transferable, rather than bespoke source code, since the underlying tool itself is a licensed third-party product. Bidders should clarify which basis applies to their proposed approach and reflect this in their pricing.
2.10		
Deliverables and Tools	Are there any formatting, template or branding requirements for the final guidelines and public-facing reports?	Yes, formatting and branding requirements apply to the final guidelines and public-facing reports. The Carbon Trust report template, which will be provided, should be used for external disseminations. Bidders do not need to propose a specific format or branding approach as part of the tender; this will be confirmed and issued once the contract is awarded.
2.11		
Deliverables and Tools	Is the public summary report expected to exclude all potentially confidential technical findings, or should an agreed sanitisation process be used?	An agreed sanitisation process should be used, rather than the Contractor independently excluding all potentially confidential technical findings. The Contractor should prepare the public summary report and work with the Carbon Trust and OWA Partners to review and agree what can be disseminated externally, ensuring that genuinely sensitive or commercially confidential content is appropriately handled while retaining as

		much technical value and insight as possible for public dissemination.
2.12	Validation Requirements	If field data cannot be obtained, would validation against published case studies be considered sufficient? Yes, where field data cannot be obtained, validation against published case studies would be considered sufficient. As noted in our earlier response (Question 1.6), it should not be assumed that measured field data will be available from the OWA Partners, and the project should be scoped on the basis that published case studies will be the primary validation route, with Partner input where possible supplementing this during delivery
2.13	Project Governance	How frequently does the TWG Electricals expect formal review meetings to occur? There is no predetermined frequency for formal review meetings. Workshops should be held at a frequency at the Contractor's discretion, in order to gather feedback and input on their work as it progresses. In addition, a presentation to the Technical Working Group is required after each work package is completed, usually scheduled a couple of weeks after completion of the work package.
2.14	Project Governance	Is a formal stage-gate approval process anticipated between work packages, particularly before progressing from WP2 to WP3? There is no formal stage-gate approval process anticipated between work packages, including the transition from WP2 to WP3. Feedback should be gathered from the Technical Working Group at the end of each work package, and the Contractor's suggested approach for the next work package should be reviewed and approved by the TWG before proceeding.
2.15	Project Governance	Can Carbon Trust confirm whether the planned 12–15 months duration includes review periods by the TWG and Carbon Trust? If so, what is the expected TAR for TWG review periods? Yes, the planned 12-15 month duration includes review periods by the TWG and Carbon Trust; bidders should build these into their programme rather than assuming reviews happen outside the stated timeline. Deliverables are reviewed as a version 1 and a

		version 2 by the Technical Working Group, with a two week review period for each iteration.
2.16	Success Criteria What outcomes would OWA consider to be the most critical measures of success for this project?	The most critical measure of success is a better understanding of system behaviour as an increasing share of GFM units are connected across a range of grid strength (SCR) conditions, in particular whether these devices continue to behave as expected or begin to interact adversely with one another. Understanding the stability boundaries of multi-device GFM clusters is central to this. Where the study identifies that a high share of GFM devices could result in instability, for example because individual developers do not have visibility of the model parameters of neighbouring wind farms, this is expected to be an important and useful finding for TSOs considering ownership of this type of study going forward.
2.17	Success Criteria Is the primary objective to develop a repeatable assessment framework, generate quantitative stability limits, influence future grid code requirements, or all three equally?	The primary objective spans all three areas noted, a repeatable assessment framework, insight into stability limits, and the potential to inform future grid code and industry discussions, though the balance between these will become clearer as the project progresses and findings develop.
2.18	Success Criteria Are there specific expected outputs that OWA intends to take forward into future industry standards or regulatory discussions?	There are no specific outputs pre-committed for use in future industry standards or regulatory discussions at this stage; however, the OWA Partners would welcome outputs that could usefully feed into such discussions where the Contractor's findings support this.

3.1	Generic	In the Contractors Condition, section 19, there is a specification for the insurance, where it reads: <i>"The Contractor shall ensure that it and its sub-contractors, agents and suppliers each take out and maintain at their own expense a policy or policies of insurance with reputable insurers (such policies as a minimum to be consistent with Good Industry Practice) in respect of public liability, professional indemnity for the Services in an amount of not less than £5,000,000 for each and every claim and employer's liability insurance in an amount of not less than £5,000,000 for each and every claim together with such other insurances as are required by law to be maintained by the sub-contractor in relation to the provision of the Services"</i> I just wanted to confirm if this sum is in alignment with the indicative budget to develop the project, £145 to £155k? Our current insurance covers up to £2,000,000 per year, but we'd be looking to increase the policy if needed. However, I thought relevant confirming if the amount, and if it's applicable for every claim as stated? Given that this project may not require offshore presence, is there minimum cover that may be acceptable? I'm anticipating this being asked by the insurance company or the finance department.	The insurance requirement in Condition 19 is a standard clause applied across Carbon Trust contracts and is not scaled to the specific budget of individual projects; it is not unusual for the stated cover levels to appear high relative to a project of this size. That said, this can be flexible, and given the nature of this project (desk-based technical study, modelling, and stakeholder engagement, with no offshore presence required), your current insurance limits would likely prove adequate. Bidders with lower existing cover than the stated £5,000,000 should raise this as part of the tender and start of contracting, and the Carbon Trust will consider what level of cover is appropriate and proportionate to the actual risk profile of the work being delivered.
4.1	Available Models	Will any RMS and/or EMT models of converter-based technologies (e.g., WTG, BESS, STATCOM, HVDC converters) be provided to the contractor? If so, please confirm: a) which technologies will be available, b) whether the models are OEM-specific or generic, and c) the software platforms in which they	The models that will be made available are the WP3 PSCAD models from the GridForm project. To confirm against your specific questions: a) Which technologies will be available BESS, GFM STATCOM, E-STATCOM, and synchronous condenser, plus a grid-following STATCOM base case. Grid forming wind

are available (e.g., PSCAD, DIgSILENT PowerFactory, PSS®E etc.).

turbines and grid forming HVDC were considered only qualitatively in GridForm and were not modelled; no RMS or EMT models of these technologies will be provided.

b) OEM-specific or generic

The models are generic representative models, not OEM-specific or manufacturer-validated. They were built using standard PSCAD library components and generic ratings for comparative simulation studies, and have not been validated against physical hardware or OEM test data.

c) Software platform

The models are in PSCAD (EMT). No RMS models (e.g. in PSS®E or PowerFactory) are available from the GridForm project. The Contractor is free to propose their own preferred RMS/EMT platform(s) for this project; where the Contractor proposes a different platform (e.g. DIgSILENT PowerFactory), they should set out how compatibility or interoperability with the existing PSCAD models will be achieved, where relevant to their approach.

Notwithstanding this, GFM WTG is expected to be of greater relevance to this project and should be modelled to the extent possible using a generic representation, given the absence of OEM-validated WTG models.

4.2

OEM Model
availability and
control detail

If OEM-specific models are made available, what level of access should bidders assume regarding model visibility and control information? Please confirm:

- whether detailed grid-forming/grid-following control structures will be accessible
- whether actual controller tuning parameters will be available

Bidders should assume generic or black-box representations throughout for planning and pricing purposes; the OWA Partners are not committing to provide OEM-specific validated models during delivery. Should a Contractor be able to secure OEM models independently, this would be viewed positively in the tendering and review process.

- whether models will be fully open, partially parameterised, or encrypted/black-box
- whether OEM participation is expected to support model interpretation and study execution

If OEM models are provided, is there also a requirement to develop generic representations of the relevant technologies within the study scenarios, or are assessments expected to be performed solely using the OEM models?

4.3 EMT Model Development Requirements

WP2 requires delivery of a "Test grid model in EMT with a mix of GFM and GFL devices". Please confirm that this indeed forms an objective of WP2, and not next WPs (e.g., WP3). Also, should bidders assume that a new EMT model must be developed as part of the project, or is the intention that existing OWA/GridForm models are adapted and extended for this purpose?

Yes, the EMT test grid model with a mix of GFM and GFL devices sits within WP2, not WP3. WP3 then uses that model to run the relevant analysis and studies.

On development basis, adapting existing OWA/GridForm models is likely to be the more cost-effective route. That said, if a Contractor believes building a new EMT model from scratch would better serve the project, they're welcome to take that approach instead. Bidders should set out their proposed approach and rationale as part of the bid.

4.4

Grid Forming Control Approaches

Does OWA have any preferred or mandatory grid-forming control philosophies that must be assessed (e.g., droop-based, virtual synchronous machine, matching control), or is the selection of representative control families expected to form part of the contractor's methodology?

There is no mandated set of control philosophies for this project; the selection of representative control families is expected to form part of the Contractor's methodology. As a reference point, the GridForm WP3 study assessed three control families: Virtual Synchronous Machine (VSM, in three variants covering inertia only, low inertia plus droop, and high inertia plus droop), GFM droop, and DC matching, alongside a grid-following baseline. Bidders should propose their intended control families for this

		project, drawing on this prior work where relevant, for agreement with the TWG at project start-up.
4.5	What software environment is envisaged for Deliverable D09 (Automated Screening Script)? In particular, should bidders assume: a) a standalone Python-based tool, b) implementation within RMS software platforms (e.g., PowerFactory or PSS@E) or c) another preferred environment? Does the reference to “Development of an automated screening script for application to RMS network models” imply the use of scripting tools within RMS software (e.g., PowerFactory)? Also, is the deliverable intended to be a demonstrator or a reusable tool for future application by OWA partners?	D09 is a first-pass screening step used to identify potentially problematic device combinations or grid strength conditions before detailed EMT investigation, not a standalone deliverable in its own right. The working assumption is to use a small-signal analysis approach applied to RMS models, for example PowerFactory's built-in small-signal analysis tool, as a straightforward way of achieving this. The OWA Partners are, however, open to the Contractor's own view on the most appropriate methodology and environment, including whether an RMS-based approach is sufficient to capture the interaction risks in scope, or whether an EMT-based screening step would be more appropriate. The intent is for this screening methodology to be reusable by the OWA Partners going forward, whether as a transferable script or a documented, repeatable workflow using existing software. Bidders should set out their proposed approach and rationale as part of the bid.
4.6	Technology Scope and Scenario Definition Should bidders assume that all technologies referenced in WP2 (WTG, BESS, E-STATCOM, HVDC converters and GFL devices) are mandatory study components, or is it expected that the contractor proposes and justifies the technology mix, number of device types, and balance between OEM-based and generic representations within the study scenarios?	The device types listed in WP2 (WTG, BESS, E-STATCOM, HVDC converters and GFL devices) are provided on a non-exhaustive basis, with case prioritisation to be agreed with the OWA. It is expected that the Contractor proposes and justifies the technology mix, number of device types, and balance between OEM-based and generic representations within the study scenarios, with the final scope and prioritisation confirmed with the Technical Working Group at project start-up. Generic or black-box representations should be assumed throughout unless OEM models are independently secured by the Contractor.

4.7 Validation data	WP3 states that findings should be validated against available field data or published case studies where possible. Should bidders assume that any operational, commissioning or measurement data from existing projects will be made available to support validation activities?	No, bidders should not assume that operational, commissioning or measurement data from existing projects will be made available. Where possible during delivery, the Partners will input and assist with validation, but the project should be scoped on the basis that this is not guaranteed, with published case studies as the primary validation route.
4.8 Stakeholder Engagement Assumptions	For bidding purposes, what level of stakeholder engagement should be assumed throughout the project? Please indicate whether OWA expects or will facilitate engagement with OEMs, TSOs, universities, test laboratories and other stakeholders, and whether any minimum number of interviews, workshops or consultation activities should be assumed.	Although the Carbon Trust may be able to facilitate introductions to certain OEMs, it is expected that the successful applicant will also possess established relationships with relevant OEMs. The Carbon Trust affirms its commitment to supporting stakeholder engagement whenever feasible, but the Contractor is expected to lead and secure engagement with OEMs, TSOs, universities, test laboratories, and other stakeholders independently, including identifying and approaching organisations beyond those the Partners can introduce. There is no minimum number of interviews, workshops or consultation activities mandated; the number and mix is at the Contractor's discretion to propose. Bidders should note, however, that stakeholder engagement has often been a sticking point in similar projects, and a higher rate of outreach is recommended to ensure an appropriate number of responses is secured.
5.1 Project specific	Which technologies are currently represented within the model (e.g. WTGs, BESS, E-STATCOMs, HVDC converters and other GFM/GFL devices)? Is the model based on a representative UK offshore network or cluster, or is it intended as a generic test system?	This project intends to study interaction between devices, using parts of the GridForm project where relevant, and developing a generic test grid model as part of WP2. The GridForm WP3 PSCAD models cover BESS, GFM STATCOM, E-STATCOM, and synchronous condenser, plus a grid-following STATCOM base case; WTG and HVDC converter models were not developed as

	part of GridForm. The new WP2 test grid model, which the Contractor is expected to define, should include the mix of GFM and GFL devices relevant to the multi-device interaction focus of this project, as agreed with the TWG. On representativeness, the model should not be purely UK-focused. The UK is one market that the project partners operate in, alongside others, and the generic test grid model developed in WP2 should reflect this broader international scope rather than being tied to a specific UK offshore cluster.
6.1 Project specific The scope states that the study should consider a realistic mix of GFM and GFL technologies, including (but not limited to) WTGs, BESS, E-STATCOMs, HVDC converters and GFL devices. Given the broad range of technologies, possible control philosophies, and the anticipated project budget, could Carbon Trust clarify whether there are any specific device categories, technology combinations, or use cases that should be prioritised?	Case prioritisation is to be agreed with the OWA, and the number of device types and control families studied in depth versus screened at a higher level is at the Contractor's discretion to propose, with the priority order confirmed by the Technical Working Group once the project starts, informed by the device mix the Contractor puts forward. For reference, the previous GridForm project covered the following in detail: BESS, GFM STATCOM, E-STATCOM, and synchronous condenser (plus a grid-following STATCOM base case), across three control families (Virtual Synchronous Machine in three variants, GFM droop, and DC matching), alongside a grid-following baseline. Grid forming wind turbines and grid forming HVDC were considered only qualitatively. The models from the GridForm project will be available to the successful contractor. Bidders should note, however, that GFM WTG is expected to be of greater relevance to this project than it was to GridForm, and

		modelling it to the extent possible, using a generic representation, is expected as part of the study scope.
6.2	Project specific	The tender scope requires EMT modelling and refers to previously developed OWA PSCAD models that may be provided to the successful contractor. Could Carbon Trust clarify whether the use of PSCAD is mandatory, preferred, or illustrative only? If alternative software platforms are proposed, what level of compatibility with existing OWA PSCAD models would be expected? The models from the GridForm project were developed in PSCAD Version 5 (64-bit) and will be made available to the successful Contractor, as listed in our earlier response on the GridForm deliverables. Use of PSCAD, and use of these models, is not mandatory. However, from a cost perspective, use of the existing models is likely to be beneficial compared with starting from scratch. If a Contractor proposes not to use the existing models, the proposal should clearly outline the alternative approach and the extent of the study to be performed, so that this can be compared against approaches which do make use of the existing models.
6.3	Project specific	WP3 includes small-signal stability analysis across a range of grid strength conditions using grid strength metrics appropriate to the multi-device cluster. Could Carbon Trust clarify the expected depth and extent of this analysis? A time-domain EMT-based assessment, similar to the approach used in the GridForm WP3 study, is expected to be sufficient; a more rigorous formal small-signal or eigenvalue-based method is not required. This will not cover every possible operating point, and bidders should take a realistic approach focused on a limited number of representative scenarios, for example maximum and minimum operating points, rather than attempting exhaustive coverage. On grid strength, a specific number of scenarios is not mandated, and SCR need not be the only metric used; bidders should propose a sensitivity study around the grid strength conditions relevant to the multi-device cluster, using whichever grid strength

	metric or combination of metrics they consider most appropriate, rather than a fine parametric sweep across the full range. On the number of devices interacting simultaneously, the core focus of this project is understanding interaction across multiple simultaneous grid forming and grid following devices, rather than pairwise interaction alone. Bidders should assume a representative cluster including several GFM STATCOMs, GFL STATCOMs, synchronous condensers, and GFM WTGs operating together, reflecting a realistic high-penetration offshore cluster scenario. The precise number and mix of devices is expected to be proposed by the Contractor as part of their methodology, for agreement with the TWG at project start-up. Bidders should set out their proposed method, chosen metrics, scenario selection, and device combinations as part of the bid.
6.4 Project specific Are outputs, methodologies, test systems and model developments produced under the FDSA project expected to be leveraged within this project? How does Carbon Trust intend to delineate the scope between this project and other ongoing OWA projects to avoid duplication of model development, stability assessments or interaction studies?	The Frequency Domain Stability Analysis (FDSA) toolbox project kicked off in May and will have useful findings available by the time GFM-SL commences. Should the TWG deem these relevant, they can be shared with the successful Contractor, and where a suitable FDSA output exists, it may be beneficial to run this over the GFM-SL test grid model. That said, bidders should not assume access to FDSA outputs, methodologies, test systems or model developments as a default; the two projects can proceed as separate tracks, and there is no requirement in this project to investigate all operating points for small-signal stability or to demonstrate that the system is fully stable across the entire

operating envelope, since that broader assurance role sits closer to FDSA's remit.

On scope delineation, the focus of this project is specifically on GFM device interaction, multi-device compliance boundary conventions, and understanding whether GFM units continue to behave as expected as GFM penetration increases, rather than on broader system-wide stability assessment. Bidders should scope their proposed approach accordingly.

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+44 (0) 20 7170 7000

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