Report on Q&A for Nov. 2019 market dialogue concerning Thor offshore wind farm tender conditions

Center
Center for Renewables

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Contents

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Background

The DEA and Energinet held a one-day conference as part of a market dialogue on the Thor tender on 25 Nov 2019, and in addition to this conference, bilateral meetings were held with interested market players on 26-28 Nov 2019. The market dialogue was based on the dialogue material[1] (Invitation to dialogue) published before the conference was held, in order for market players to be able to inform themselves on the proposed main topics and terms of the tender conditions.
As part of the market dialogue, market players had the opportunity of submitting written questions, which, in anonymized form, the DEA and Energinet address in this Q&A-report. The structure of the report follows the themes set out in the dialogue material.

The Q&A-process and the related report serves three primary purposes: 1) the DEA and Energinet has been able to collect inputs and receive reactions to the proposed overall elements of the tender (the dialogue material), 2) the DEA and Energinet has been able to clarify a range of issues, and 3) the DEA and Energinet has been able to make certain valuable adjustments. All of this should facilitate a smoother process, a more informed way of proceeding for all parties, and ultimately, aligning expectations to a higher degree.

Disclaimer and use of inputs from the dialogue

The information, including the written Q&A's in this report, provided by the DEA and Energinet during the market dialogue in the fall of 2019 is non-binding to the DEA.

The binding information will be the tender material (draft concession agreement, draft construction license etc.). This information, including the contract notice, will be published in Q3 2020, which will formally kick-off the tender procedure.

If you have questions to the tender material when published in Q3 2020, you are encouraged to ask questions at that point in time. The Q&A's from the market dialogue, being non-binding as stated above, are therefore without any legal status during the tender procedure.

Theme 1: Time table

Q1.1: In relation to the present time table, there is need for less time for pre-qualification and more time for submission of final bids. Can the time table be

[1] https://ens.dk/sites/ens.dk/files/Vindenergi/invitation_to_dialogue_-_thor_2019_002.pdf

adjusted so that pre-qualification takes 60 days and submission of final bids 90 days?

A1.1: The DEA will adjust the time table so there will be more time for the submission of the final bids, preferably 90 days, as suggested.

Q1.2: In relation to the present time table, a vast majority of market players say that they do not expect a need for first power until by mid-2025.

A2.1 The DEA has noted that a later need for first power is the case and appropriate adjustments are being considered.

Q3.1: Could the DEA provide a more detailed tender schedule including precise dates instead of quarters?

A3.1: The full tender schedule will be published with the tender material in Q3 2020. However, as all processes and steps cannot be planned with detailed dating far ahead, the DEA will only be able to publish quarters in the long-term plan. This is to avoid having to publish more amendments to the plans than necessary. However, the DEA will publish exact dates to the extent possible ahead of key milestones in the short-term.

Q4.1: Could the DEA provide a list of all milestones/deliverables to be handled by the concession winner, for example, when must the following be provided by the concession winner: Detailed Project Plan, Proof of Grid Code Compliance, Parent Company Guarantee, etc.?

A4.1: The DEA will publish this information with the tender material, which is to be published in Q3 2020.

Theme 2: Subsidy scheme

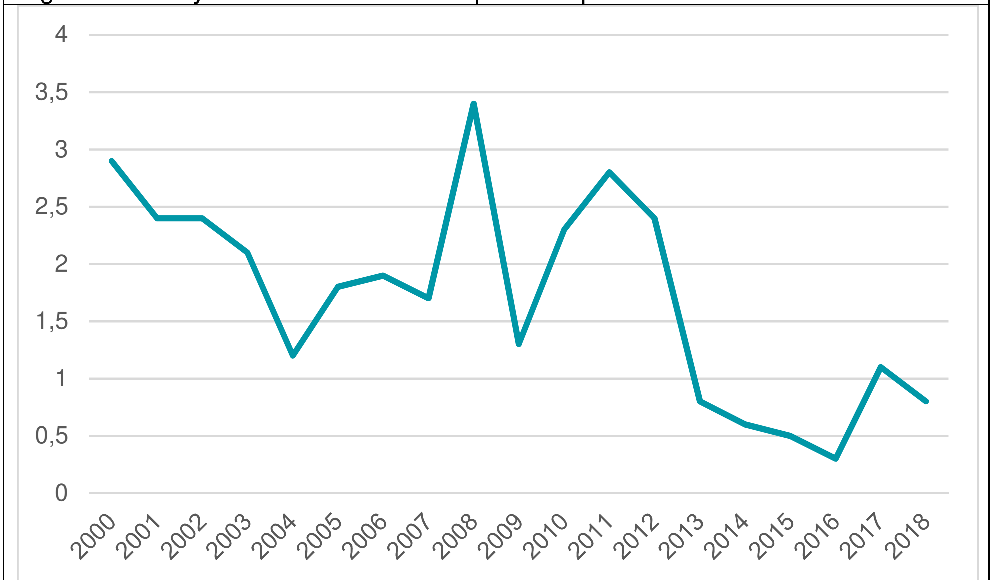
Indexation of subsidies
Q2.1: Several market players suggested that the subsidies should be indexed according to inflation, in either full or in part, to minimize the risk for the concession winner, regarding specifically the O&M costs.

A2.1: The offered bid price will not be indexed according to inflation, and the concession winner will therefore have to factor in the risk of inflation. This is in line with previous Danish tenders for offshore wind. The DEA does not index the offered bid price according to inflation in the interest of avoiding potential adverse adjustments related to a specific choice of indexing methodology.

In Denmark, the National Bank of Denmark is responsible for monetary policy. The National Bank operates independently from the Danish government and other political bodies. On its website, the National Bank mentions the following about monetary policy: *One of the main objectives of Danmarks Nationalbank is to ensure stable prices, i.e. low inflation. This is achieved through the monetary and exchange policy. Since the early 1980s, monetary policy has been aimed at keeping the exchange rate of the krone stable, initially against the German D-mark and then against the euro. As the monetary-policy target of the euro area is to keep inflation below, but close to 2 per cent in the medium term, the fixed-exchange-rate policy provides a framework for low inflation in Denmark. As the central bank of Denmark, Danmarks Nationalbank is responsible for monetary policy in Denmark.*[2]

As can be seen in Figure 1, inflation in Denmark has been low in the last 20 years. On average, inflation has been about 1.7 percent per year over the period 2000-2018.

Figure 1: Yearly increase in consumer prices in percent



Source: Statistics Denmark

Subsidy period and hours with non-positive prices

Q2.2: When does the subsidy period begin?

A2.2: As a starting point, the 20 year subsidy period begins when the first turbine has delivered it's first kWh to the collective grid. However, see the question and

[2] http://www.nationalbanken.dk/en/monetarypolicy/Pages/default.aspx

answer below.

Q2.3: Several suggestions have been made regarding the starting point and the length of the subsidy period, including suggestions on:
- beginning the subsidy period when the last turbine has delivered first kWh
- phasing in the start of the subsidy period in a way that the subsidy period will start in for instance 4 equal batches starting when the first turbine in each batch has delivered first kWh
- adding additional months to the 20 year period for the commissioning phase when only part of the wind farm is operating
- prolonging the 20 year period to pay regards to hours with no subsidies due to electricity spot market prices in DK1 being non positive

A2.3: The EU state aid regulations stipulate that no subsidies are to be given beyond the period of depreciation of the expenses. As a rule of thumb, the DEA has previously used 20 years as this milestone and this is incorporated in all recent national legislation on subsidies for renewables. This will also be applied in the Thor tender and therefore it will not be possible to add on additional months to account for the installation process or for hours with no subsidies due to electricity prices being non positive.

The DEA acknowledges that the specific choice of when the 20-year subsidy period begins will affect the business case and the installation process of the offshore wind farm. This will however be the case for any choice of when to begin the 20-year subsidy period.

The DEA has noted the different suggestions and will consider the starting point of the 20-year subsidy period.

Q2.4: Is it correct that no premium will be paid to the concession owner in each hour the electricity spot price in DK1 is below zero?

A2.4: Yes

Q2.5: We understand that there is no binding EU standard on regulation regarding negative prices. However, since regulatory bodies in all major European renewable markets have introduced the 6-consecutive negative pricing clause, we see it as well-recognized and also in line with the overarching goal of the commission to harmonize markets standards. Will Denmark use this clause?

A2.5: It is correct that the 6-hours clause is being used in several other European markets. In Denmark, however, it is not used, since it encourages electricity production even when the market value is negative. Therefor the subsidies are discontinued in every hour the market price is not positive.

Reference price

Q2.6: Are hours with negative prices included in the calculation of the simple average of the reference price for the following year?

A2.6: Yes, hours with prices of zero or below are included in the calculation of the simple average of the electricity spot prices in DK1, which constitute the reference price for the next year. This is done to ensure a reference price that reflects a measure of centrality for the full range of clearing prices in the DK1 electricity market.

Q2.7: Several market players commented that the current definition of the reference price as calendar-fixed annually settled, meaning that it is calculated as the simple average of the electricity spot prices in the previous calendar year running from January 1st to December 31st, poses risks for the concession owner which will result in high bid price levels. Risks including the following:
- cashflow risk
- increased risk of production losses due to negative prices
- exposure to cannibalization risk which may also effect competition
- risk due to price events in the market last year that affect the current year
- increased cash flow fluctuations/ year-by-year remuneration volatility
- exposure to risk of a larger difference (typically 10-20 %) between the hour-by-hour spot price (the wind capture price) realized by the wind farm owner and the spot market price average
- uncertainty surrounding the development in the wind capture price caused by market changes driven by policy changes such as the speed of adoption and changing use of electric vehicles, introduction of storage to the system and enhanced demand side response through smart metering, all of which may have a major impact on the wind capture price
- risk of the definition of the reference price creating an unnecessary disadvantage for the concession owner if the case is that a year with strong wind and high average price higher than the offered bid price follows a year with weak wind and high average prices lower than the offered bid price thus resulting in the concession owner in the last year having to pay a lot of money back to the state even though the market price is below the tariff and even worse, the concessionaire would have to do this for a high volume of MWh, as in the last year the wind is strong.

All of which can lead to higher offered bid prices due to risk premiums.

It was suggested to:
- shift the definition of the reference price from yearly price average to hourly prices
- shift to an intra-day or day ahead reference
- relate the reference price to the actual year where the power is delivered in an “on account” system for monthly payments with yearly settlements

- shift to a more traditional 20-year CFD without opt-out and based on an hour-by-hour spot price, which will de-risk against market price exposures to the largest extent, ensuring lower WACC levels and thus lower offered bid prices.

A2.7: The DEA acknowledges that the principle in defining the reference price as the simple average of the electricity prices of the previous year instead of the current year expose the concession owner to short-term risk regarding electricity price fluctuations, while the state carries long-term risks and thus ensures that the concession owner has security for the investment. It is therefore also acknowledged that the increased associated risk may lead to higher offered bid prices and higher overall subsidy costs.

The rationale for the reference price being based on the calendar-fixed annual average of the spot price in DK1 the previous year include the following reasons:

1. The rationale for using a calendar-fixed annual average is to give the concession owner an incentive to maximize the market value of the delivered electricity. This is in contrast to an hourly-based “traditional” CfD where the concession owner instead is incentivized to maximize the quantity of the delivered electricity.
2. The rationale for using the previous annual average of the DK1 spot price is twofold: (1) it ensures greater predictability of the annual state budget spending as the premium each year is known and subsidy payment only varies with production; and (2) it further incentivizes the concession owner to consider feasible design solutions of their offshore wind farm that can maximize the market value of the delivered electricity – especially in years of low wind and thus potentially higher average electricity prices.
3. The rationale for the reference prices being based on the spot price is to incentivize the concession owner to furthermore consider feasible design solutions of their offshore wind farm, that may help accommodate any potential long-term increases in cannibalization effects of wind energy production. For example, as wind energy may constitute larger proportions of total electricity production in countries situated in the North Sea, there could be an increased downward pressure on the electricity prices during periods where wind turbines in Denmark - and possibly neighboring countries - produce electricity. As opposed to this, if the reference price were instead based on the average wind-weighted electricity price (i.e. the average electricity price that wind turbine producers sell for, which is generally lower than the average spot price), the concession owner would not to the same extent be incentivized to accommodate potential long-term cannibalization effects. It can be argued that the concession owner is fit to carry this risk as he can best drive the technical design solutions that can reduce potential long-term cannibalization effects.

It is the DEA’s assessment that the subsidy scheme does not lead to any material impacts on the degree of competition in the auction.

Caps

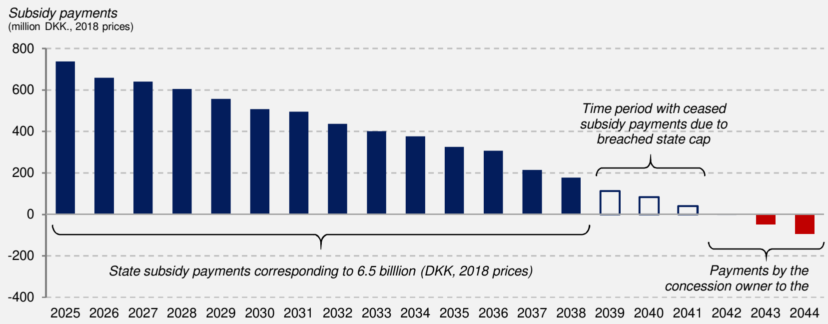
Q2.8: Please specify if there is a “banking system” for the subsidy outside the concession owner cap of 2.8bn DKK and the state cap of 6.5bn DKK – if subsidies have ceased due to the state cap, repayment to the State should not start before the subsidy not paid out above the cap of 6.5bn DKK has been re-gained by the concession owner and vice versa regarding the concession owner cap. This has significant impact on the value of the subsidy scheme.

A2.8: There is no such “banking system” as referred to in the question for the subsidy outside the Concession Owner cap of 2.8bn and the State cap of 6.5bn (DKK, 2018 prices). That is, if state subsidy payments to the concession owner has ceased due to accumulated payments exceeding the cap of 6.5 billion DKK, then the concession owner is still obligated to make payments to the state in any subsequent years where the reference price is higher than the offered bidding price (independent on the value of “avoided” subsidy payments beyond the cap, and as long as the concession owner cap has not been exceeded), and vice versa.

Figure 2 depicts an illustrative example of a subsidy payment profile where the state cap of 6.5bn DKK is exceeded. The subsidy period starts at January 1st, 2025 and ends 20 years after in December 31th, 2044. In the period from 2025 to 2041 the reference price is lower than the concession owners offered bid price; hence the CfD model warrant subsidy payments by the state to the concession owner as long as the state cap is not exceeded. However, by the end of year 2038 the accumulated subsidy payments exceeds the cap of 6.5bn DKK (2018 prices); hence, no payments will be made by the state to the concessions owner in the years 2039 through 2041, despite the reference price being lower than the offered bid price. In the years 2042 through 2044 the reference price is higher than the offered bid price and the concession owner thus make payments to the state. The timing and value of the payments are independent of what the value would have been for the ceased subsidy payments in 2039 through 2041.

Figure 2

Illustrative example of a possible subsidy payment profile and application of the State Cap



Source: Danish Energy Agency

It should however be noted, that in situations where the subsidy payments has ceased due to a breach in the state cap and the concession owner in subsequent years make payments to the state, the value of these payments will be subtracted from the accumulated subsidy payments by the state. This means that the concession owner is eligible to receive future subsidy payments from the state corresponding to that value. Suppose for example that the state cap of 6.5bn DKK (2018 prices) has been exceeded and the concession owner in subsequent years pays a total of 0.5bn DKK to the state where the reference price has been higher than the offered bid price. Then the state cap is no longer considered to be exceeded and the state is obligated to pay subsidies of a maximum of 0.5bn DKK (2018 prices) in subsequent years where the reference price is lower than the offered bid price.

Q2.9: When calculating the actual maximum subsidy of 6.5bn DKK, is this calculated in real or nominal (at the time of the binding bid) terms, or will there be an inflation correction applied to the maximum bid cap of 6.5bn DKK?

A2.9: The maximum subsidy value of 6.5bn DKK is based on real prices (i.e. 2018 prices) and the subsidy payments will therefore be adjusted for inflation every year to their 2018 value when evaluating whether the cap has been reached. The same goes for the cap on the payment from the concession owner to the state of 2.8bn DKK. An example of how this is done will be included in the tender material.

Q2.10: Please consider moving cap on support to minimize risk for the concession winner or consider if the caps are too restrictive in relation the exposure to market price when the caps are reached.

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A2.10: The cap has been installed to de-risk the project seen from the Danish state and the taxpayers' point of view and will not be removed. Also, the caps are set at a level so high, that with the current electricity price forecasts the DEA does not deem it likely that the caps will be reached.

Q2.11: The proposed system with caps on payments (including when the electricity price is below the payment from the concession owner) may under certain conditions open up for speculative bidding/gaming which could undermine the objective of a future stable framework for offshore wind.

A2.11: This is noted.

Electricity price forecast

Q2.12: Clarity on the electricity price forecast used to calculate a bid's expected subsidy costs and thus assess its adherence to the budget evaluation threshold is key for potential bidders to evaluate the competitiveness of their bid. When is the forecast expected to be published?

A2.12: The DEA will publish the relevant electricity price forecast used in the bid evaluation process with the tender material expected in Q3 2020.

Q2.13: Does the DEA forecast the level of hours with non-positive prices?

A2.13: No.

Calculating the expected subsidy costs of bids and assessing their adherence to the budget evaluation threshold

Q2.14: Is the 3.7bn DKK budget evaluation threshold in real prices or inflated?

A2.14: The budget evaluation threshold value of 3.7 billion DKK is based on real prices, i.e. 2018 prices.

Q2.15: Could the DEA provide an example of how a bid's total expected subsidy costs are calculated and how this is used to assess the budget evaluation threshold of 3.7bn DKK?

A2.15: With the tender material published in Q3 2020, the DEA will include a detailed example on how a bid's total expected subsidy costs are calculated, and how this is used to assess the budget evaluation threshold of 3.7bn DKK (2018 prices). The example will include all the parameters used when evaluating the final bids and those will not be changed thereafter.

However, all of these parameters are not ready yet as amongst others the electricity price forecast is not available yet. Therefore, below DEA provides an *illustrative* example of how the total expected subsidy costs of a bid would be calculated. For any given bid on MW-capacity and CfD price, the DEA will calculate the bid's associated expected subsidy payments based on assumptions (all of which will be explicitly stated in the tender material) related to: (1) beginning of the 20-year subsidy period; (2) average annual full load hours, (3) electricity price forecast over the subsidy period; and (4) inflation forecast. The expected profile of subsidy payments is calculated based on the assumptions and the accumulated payments in 2018 prices is compared to the budget evaluation threshold. In the illustrative example below, an 800 MW offshore wind farm is assumed to start full-capacity production on January 1st, 2025, with average full load hours corresponding to 4,500 hours per year. With a CfD bid price of 530 DKK/MWh (nominal price) the total expected subsidy payments amounts to a value lower than the budget evaluation threshold.

Assumptions	Value	Unit
- Total MW-capacity of park	800	MW
- Average full load hours per year	4,500	Hours per year
- Average electricity production	3.600.000	MWh
- Bid price for CfD	530	DKK/MWh, nominal prices

Year	Forecast[3] of annual average DK1 spot price (DKK/MWh, nominal prices)	Inflation (GDP-deflator, index 2018=1)	Subsidy payments (million DKK, nominal prices)	Subsidy payments (million DKK, 2018 prices)
2024	376,7	1,10	-	-
2025	393,5	1,12	551,74	493,08
2026	395,3	1,14	491,50	431,90
2027	401,3	1,16	484,96	417,98
2028	411,1	1,18	463,17	391,64
2029	421,5	1,21	427,99	355,01
2030	422,2	1,23	390,48	317,93
2031	436,4	1,25	387,95	309,78
2032	444,0	1,28	336,85	263,87
2033	449,0	1,30	309,65	237,91
2034	462,6	1,33	291,59	219,79

[3] This forecast is outdated and is not the one which will be used when evaluating the bids. The forecast used for this will be published with the tender material in Q3 2020.

2035	466,1	1,35	242,62	179,42
2036	493,3	1,38	230,15	166,99
2037	503,8	1,40	132,16	94,07
2038	523,6	1,43	94,27	65,84
2039	532,4	1,46	22,95	15,73
2040	546,5	1,49	-8,75	-5,89
2041	561,3	1,51	-59,24	-39,35
2042	576,6	1,52	-112,69	-73,92
2043	592,2	1,54	-167,60	-108,55
2044	608,3	1,58	-223,99	-142,01

Budget evaluation threshold	**Million DKK (2018 prices)**
Net present value of subsidy payments	3.591
Budget evaluation threshold	3.700
Difference	109

Q2.16: May the bidders suggest or determine the parameter values used for the calculation of the total expected subsidy costs of a bid?

A2.16: The parameter values used for the calculation will be predetermined by the DEA beforehand and published with the tender material. The bidders submit bids specifying only MW-capacity of the park and the offered CfD bid price.

Q2.17: The Danish Energy Agency asks if the budget evaluation threshold will allow for tenders with a capacity of more than 800 MW within the threshold (should this threshold apply for the selection of a concession winner). We would like to ask the Danish Energy Agency if a wind farm larger than 800 MW is still politically desired if it cannot be realized within the given support budget?

A2.17: If a bid is the best bid and has total expected subsidy costs that are higher than the budget evaluation threshold, it is still possible that this would be politically accepted. Hence, the 3.7bn DKK is not a cap, but an evaluation threshold. However, if the total expected subsidy costs are higher than 3.7bn DKK, the political desire changes, which is why the award criteria changes. Within the budget, the political desire is to get as much wind energy for the money (the award criteria is lowest price per kWh), but beyond the budget evaluation threshold the political desire is to minimize the budget exceeding while still realizing the plans for offshore wind farms in Denmark (the award criteria is here lowest total subsidy costs). Also, if the bid has total expected subsidy costs higher than the budget evaluation threshold, the best bid still might not be accepted, if the political parties behind the energy agreement evaluates that the costs will be too high.

Q2.18: The Danish Energy Agency had in it's invitation to dialogue posed the question if the budget evaluation threshold will allow for tenders with a capacity of more than 800 MW. The remarks to this were as follows:
- Whether the budget evaluation threshold will allow for tenders with a capacity of more than 800 MW will depend on the electricity price projection from DEA at the time of the tender.
- This is difficult to predict in advance, as electricity market projections as well as wind farm cost projections are subject to fluctuations. However based on today's expectations (including our expectations for future wind farm component technology and cost developments), it appears feasible to realize 1000 MW within the available subsidy budget.

A2.18: This is noted.

Bidding
Q2.19: Will the DEA publish any information about bid ranges from unsuccessful bids?

A2.19: No. Besides the winning bid, the unsuccessful bids are confidential.

Q2.20: Bid award: What happens if two (or more) bidders end up with the exact same bidding price?

A2.20: If there are more than one bid with the exact same bidding price, and these are the best bids, the bid with the highest capacity (MW) will be chosen. If there are more than one bid with the exact same bidding price and the exact same capacity, and these are the best bids, the winning bidder will be chosen through lottery.

Q2.21: Can one entity bid several times, eventually with different consortiums?

A2.21: If the entity is prequalified in more than one consortium, then it is in principle allowed to bid several times, but see also A5.5 concerning same entity participating in more than one consortium. However, one would know which bid would win, and therefore bidding more than one time is irrelevant.

Other financial issues
Q2.22: Please confirm that the Concession Owner get the REC´s issued for the production throughout the period with or without CfD and that the concession holder is free to sell them in the market.

A2.22: The Concession owner can apply for issuing of REC's (Renewable Energy Certificates, in Danish "Oprindelsesgarantier") at Energinet. Issuing etc. of REC's is regulated in Executive Order no. 1323 by 30. November 2010, amended by Executive Order no. 138 by 10. February 2012.

Q2.23: Are asset owners able to optimise imbalance across their assets or should this be done on a single asset basis? Is optimisation of imbalance possible on a country level or only for the DK West region?

A2.23: The imbalance settlement is done on a portfolio basis separately for assets in Western Denmark (DK1) and Eastern Denmark (DK2), cf. market regulation C2 "The balancing market and balance settlement", section 3.4. This means that the asset owners are allowed to optimize imbalances across their assets within a bidding zone. The market regulation C2 can be downloaded here: https://en.energinet.dk/Electricity/Rules-and-Regulations/Market-Regulations

Theme 3: Environmental assessments

Q3.1: Can the DEA provide some guidelines for the concessionaire's undertaking of the EIA of the concrete project in terms of handling of turbine size, number of alternatives that can be treated in the EIA as well the timing of ultimately choosing the turbine to be established at the site.

A3.1: The DEA will provide a description of the EIA rules and process at the latest in connection with the tender material published in Q3 2020. As a starting point, the DEA can inform of the following:

The EIA process and the EIA permit are related to the concrete project. This means, that when the permit is given, the project has to be concrete, but there will still be a certain – but quite limited - room for flexibility with regard to certain kinds of details.

For example, the exact turbine type in terms of brand and nameplate capacity might not necessarily be needed for the EIA permit, as long as it is ensured that the environmental impacts caused by the concrete turbine brand are not significantly different from the ones assessed in the EIA (concrete park layout, dimensions of the turbine, etc.). During the scoping process and in the EIA-report, it is allowed to assess for example three alternatives/scenarios for the project. If the DEA can accept all alternatives in relation to environmental impacts it will be possible to conduct a public hearing with draft permits for all the alternatives. This will make it clear to the public and relevant authorities as well as the concessionaire exactly which conditions will apply for the different alternatives. If an alternative in the EIA-report cannot be accepted by the DEA due to unacceptable environmental impacts this will then be clearly stated in the public hearing and a draft permit for this alternative will not be made. After the public hearing it will be possible to issue a final EIA-permit for one of the assessed and accepted alternatives. Legislation does not set any limitation as to how many alternatives may be included in an EIA, but we would recommend around three alternatives.

In the event of project changes, the competent authority must be informed. The competent authority will assess whether the specified project changes is covered by the project assumptions in the EIA report and can be implemented without amendments to the EIA permit. If the specified project changes go beyond the project assumptions of the EIA, the assessments of the EIA may no longer be valid for the project, and the competent authority may require a supplemental EIA with a focused and often limited scope may be required, ending up with a possible amendment to the EIA permit. Only in the rare case of major project changes an entirely new EIA may be required. If the concession owner is in doubt, he should ask the DEA for a screening to assess whether a planned amendment leads to a new EIA process.

Q3.2: As much as possible of the permitting process post bid award should be detailed in order to reduce risk. Will this be ensured?

A3.2: The DEA will provide a description of the EIA and permitting process at the latest in connection with the tender material published in Q3 2020, as mentioned under A3.1. The description will include details on the permitting process and the DEA’s expected processing time.

Q3.3: Can the DEA sort out whether the three year validity-period of the EIA permit for the onshore grid connection counts from the time of Energinet’s use of the permit or from concessionaries use of the permit, and how can it be extended if necessary?

A3.3: The 3 year validity-period of the EIA-permit is stated in § 39 of the Environmental Assessment Act (LBK nr. 1225 of 25/10/2018) and will count from the issuing of the EIA-permit. The EPA has stated that the onshore project will receive one EIA-permit covering both the part of the project to be constructed by Energinet and the part to be constructed by the concessionaire. The permit will be issued to Energinet and subsequently “handed over” to the concessionaire. The 3 year validity-period thus count from the issuing of the EIA-permit to Energinet. The benefit of one permit, which can be used by both Energinet and the concessionaire, is among other things that any complaints to the board of appeals is likely to have been settled by the time the concessionaire needs to use the permit. Furthermore § 39 of the Environmental Protection Act states that the EIA-permit will be canceled if it has not been used in a period of 3 consecutive years. If situations should arise where the EIA-permit is not used in a period of 3 consecutive years it is recommended that the concessionaire contact the EPA before the permit expires.

Q3.4: The area for the concession winner's nearshore substation should be increased to at least 40.000m2 to accommodate a flexible setup.

A3.4: Energinet has noted that there is a demand for more area for the nearshore substation and will include that in their preparations for the onshore EIA process and the application for planning consent for the nearshore sub-station.

Q3.5: For underwater noise model calculations, a series of potential options should be included to cover potential range of pile dimensions and hammer energy (in the same way as a range of turbine dimension are being considered). Will this be provided?

A3.5: The DEA does not expect that the SEA will directly cover a range of specific pile dimensions and hammer energies and calculate a range of underwater noise emissions. The SEA will contain a general assessment of the expected noise emissions from a project within the Thor site and the likely impacts on marine life in that particular area. The SEA will try to identify vulnerable populations of marine mammals and if possible make recommendations for the concrete project, e.g. should pile driving be avoided at certain months of the year. Specific noise calculations for the particular pile size and hammer energy to be used and assessment of impacts and necessary mitigation measures will have to be conducted by the concessionaire as part of the EIA.

Q3.6: It was indicated by Energinet, that the modelling of underwater noise could change scope. Please inform on scope, when this is agreed later than Q4 2019.

A3.6: The scope of modelling of underwater noise will be made public in due time before submission of final bids, most likely by Q1 2021.

Q3.7: With the new legislation implemented in Denmark, airborne noise cannot be excluded automatically. Will this be included in the SEA scoping?

A3.7: Airborne noise from wind turbines will be addressed in the SEA. The DEA is currently working on the scoping of the SEA but estimate that the assessment of airborne noise in the SEA will be a general assessment based in part on experience from current offshore wind farms and in part on general qualified estimates about expected noise emissions. The SEA is expected to clearly state that exact calculations on noise will have to be done in the EIA, when the concrete project has been specified by the concessionaire.

Q3.8: Will the DEA please confirm that the EIA can include assessments of different realistic project alternatives? Can the EIA permit include more than one project? In any case, when shall the final project-alternative be decided by the concession winner?

A3.8: Please see answer to Q3.1.

Q3.9: Shall the developer submit a detailed project plan before the construction can be initiated? How will the fulfillment of obligations be checked? Please outline a list of obligations.

A3.9: An EIA permit is a prerequisite for initiating any construction works. In order to obtain an EIA permit, the developer must describe his project to a level that allows for assessment of the project's significant environmental impacts, e.g. visualisation of the OWF, underwater noise calculations, etc. The specific process and obligations of the concession winner in this matter will be part of the tender material published in Q3 2020.

Q3.10: According to the DEA presentations on 25 Nov 2019, visualisations in the SEA are planned to be based on 8MW and 15MW turbines. It is recommended to increase the lower bound significantly. Instead, the lower bound should be increased to 12 MW, while the higher bound should be a turbine with 250 meter rotor diameter and 300 meter tip height.

A3.10: This is noted and will be considered by Energinet and DEA. However, as mentioned by the DEA at the market dialogue, these turbine dimensions are not binding or restricting the concession winners´ later choice of turbines and park layout. Moreover, the DEA and Energinet would like to cover a broad spectrum of turbines, which could be installed at the site, in order to facilitate a broad and transparent environmental process.

Q3.11: Will the developer be responsible for payment of detonation of UXO's and noise mitigation in relation to the detonation?

A3.11: Yes, expenses related to the detonation of UXO's will have to be paid the developer.

Q3.12: At the market dialogue on the 25 Nov 2019, Energinet told us that they will apply for planning consents for both alternative cable routes. When will the landing point and onshore cable route be decided at the latest?

A3.12: The landing point and onshore cable route is expected to be decided by Q2 2020, where market players will be informed.

Q3.13: It appears that the scope of site investigations is limited to the offshore areas of the windfarm and offshore export cable up to landfall. However, construction methodology for the onshore cable and onshore substation may be dependent on the geotechnical specifications of the underground, and will only be confirmed once onshore geotechnical survey results are known and invalidate the EIA after it is approved. Could DEA/Energinet reconsider their position and include geotechnical surveys onshore as part of the EIA preparation?

A3.13: The DEA assumes that the time schedule for the awarded developer allows sufficient time to carry out site investigations for onshore cables and nearshore substation. Furthermore, the DEA believes that the construction risks related to onshore cables and nearshore substation are limited and possible to manage after award of the construction license. For a preliminary assessment of ground conditions, the DEA suggests that developers consult engineering consultancies who are able to access open, Danish databases with information about soil and topography. As part of the present scope for the Thor project, geotechnical investigations will be performed by Energinet at the landfall locations, and will be reported in April 2021.

Q3.14: Which authorities are responsible for land use planning and the onshore EIA, respectively?

A3.14: The Danish Environmental Protection Agency is the competent authority for the onshore EIA of the project. The relevant municipality is the planning authority responsible for determining whether the onshore installations can be constructed on the basis of a rural zone permit or whether the onshore installations require a local development plan. In this project it has been clarified with the concerned municipalities that local development plans will be prepared as the planning consents for establishment of sub-stations. Energinet is in a dialogue with the municipalities about the planning process. Underground land-cables do not require a planning consent. The Danish Safety Technology Authority is responsible for expropriation, if the developer cannot obtain agreements with the relevant landowners.

Q3.15: Energinet informed that the EIA permit for the land cable and nearshore sub-stations (all land-based activities) will be granted to Energinet in Q2 2021. However, the EIA permit to the developer for land-based installations will be granted later in Q3 2023. What is the reason for a later granting to the developer? Can it, for example, be expected to conduct a supplementary second public hearing, if the substation project were to fall outside of the boundaries of the EIA project description?

A3.15: The EIA permit for the land-based installations for the developer will in principle be ready in Q2 2021, where it is issued to Energinet. The formal “hand-over” of the EIA-permit for the land-based part to the concession winner is thus expected in Q1 2022. If the concession owners´ concrete project for the land-based part of the project is not covered by the EIA prepared by Energinet, e.g. it out of the scope of this EIA, then a new /supplemental EIA process may be necessary (see also A3.3). The EIA permit referred to in the question, which is expected to be issued in Q3 2023, is the one for the offshore installations. This permit can be issued once the concessionaire has undertaken the EIA for the concrete offshore project and it fulfils all requirements stated by the DEA.

Q3.16: The SEA will form a legal framework for the post-award EIA process, handled by the developer of the offshore project. Can the DEA give the developer a guarantee that a detailed project that stays inside the boundaries of the SEA plan can be established? If not, will there be any financial compensation?

A3.16: The SEA will contain a *strategic* environmental assessment of the *plan* for Thor, which are the political decisions concerning the building of Thor offshore wind farm, the capacity range for the wind farm etc. However, the SEA will not provide an assessment of the *concrete project*. Even though tentative project examples willbe assessed in the SEA report, the SEA will not be able to assess all scenarios and turbine sizes etc.

Furthermore, there is no guarantee that a project can obtain an EIA permit based on the SEA, since this will also depend on the predicted environmental impacts of the concrete project, which will only be revealed and assessed in detail during the EIA process to come.

However, the SEA process is expected to give relevant information including the public’s reservations and concerns. Moreover, combined with the results from the environmental site investigations (e.g. bird surveys, surveys for sea mammals, etc.), the DEA expects that there will be a solid basis for the development of an environmentally sound project. The DEA as competent authority can assist the developer in the process, and if asked for by the developer, the DEA can conduct a public scoping process as a point of departure for the EIA.

There will be no financial compensation, if the concrete project should not obtain EIA permit or decisions by the Danish Energy Appeal Board should lead to a withdrawal of the permit. In such cases, the project would have to be amended and a new/supplemented EIA process would be necessary. The DEA is taking into account these risks when designing the conditions for penalties, access to time expansion etc., which will be part of the tender material to be published in Q3 2020.

Q3.17: The concessionaire is expected to pay for site-investigations conducted by Energinet, geoscience as well as environmental surveys and SEA. Can DEA provide an estimate of the costs involved?

A3.17: This bill has not been compiled yet as investigations are not completed. However, it is unlikely that this would amount to more than 300 mio. DKK. A more precise figure will be published in the tender material in due time before final bids. The concession winner shall not pay for the undertaking of the SEA, which is not included in the mentioned figure.

Q3.18: Can the DEA publish the scoping study for the Strategic Environmental Assessment (SEA)?

A3.18: The DEA will publish the scoping study as soon as it is finalized. This is expected to be in April/May 2020.

Theme 4: Guarantees and penalties

Q4.1: We would like an additional year before penalty for completion of wind farm kicks in (even though time table is fine).

A4.1: Having the penalty begin one year later than the latest date for completing the wind farm would reduce the incentive to build the wind farm on time. For this reason, the DEA finds it appropriate to let the penalty begin by the end of 2027 as proposed in the market dialogue.

Q4.2: The DEA should consider that a parent company guarantee lowers the bid price – therefore it is preferred to have a high share of parent guarantee if split. Can the DEA clarify?

A4.2: The split between how much of the guarantee should be provided as parent company guarantee and as bank guarantee, or whether for example only a parent company guarantee will be required, has not been decided by the DEA yet. However, the DEA believes that including a financial institution as a requirement for part of the guarantee provides extra due diligence on the bidder and diversifies the counterparty risk. It is the DEA's assessment that a parent company guarantee alone is not sufficient in a project of this size and does not provide the necessary risk mitigation for the DEA.

Q4.3: We think the penalty for defective performance should only be used if the concessionaire fails to produce the first kWh within 5 years after being granted the construction licence.

A4.3: This is noted and will be considered.

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Q4.4: Penalty for completing the wind farm should rather be that the CfD will be paid until the earlier of the two occurs: 1) the 24^{th} anniversary of the construction licence and 2) the 20^{th} anniversary of the production of the first kWh.

A4.4: This is noted and will be considered.

Q4.5: We support the double type penalty (defection and delay). A two-staged increasing delay penalty as one-off payment is often reasonable. Is it additionally considered to shorten the support duration in case of delay in start of operation? Such a shortening may be ambiguous due to the two-way payment option.

A4.5: This is noted and will be considered.

Q4.6: The proposed SEA/EIA process imposes major risks of the EIA process on the concession winner, as the EIA process (and the ruling of the EBA) only follows after concession award. Whether the EIA process and especially the EBA ruling end in favor of the project can mostly not be influenced by the concession winner. Therefor the risk of project cancellation lies partially outside the power of the concession winner. This should be reflected in the penalty scheme for defective performance, the guarantees that have to be provided by the winner after award and payments by the concession winner.

A4.6: This is noted and will be considered in preparing the tender conditions. Most probably, the DEA will use principles similar to the ones used for tender conditions for e.g. Kriegers Flak, c.f. “concession agreement” and section 4, point 4.1 on “extension of the time limit” point “f”, which specifically mentions appeal board cases:
https://ens.dk/sites/ens.dk/files/Vindenergi/concession_agreement_kriegers_flak.pdf.

Q4.7: Penalized milestones ("start of construction" or "95% commissioned" shall move automatically (i.e. without necessary application by concession winner) if license for construction and EBA ruling is delayed (Extension of Time application process).

A4.7: This is noted and will be considered.

Theme 5: Prequalification

Q5.1: Will the DEA consider to raise the number of candidates above the suggested 5-7 in order not to reduce competition?

A5.1:The DEA has taken note of a demand for a higher number of prequalified applicants in the prequalification process, even though no payments for remuneration of submission of bids will occur. The DEA is considering raising the number of candidates to 10 in line with previous Danish tenders. The DEA expects to publish the number of permitted candidates in the prior information notice, which is to be published in Q2 2020.

Q5.2: We would suggest that all applicants that meet the pre-qualification criteria are permitted to continue in the process (as in the UK system). This will ensure that competition remains high and that the best offer is made to the benefit of Denmark. Furthermore, it is reasonable to expect that during the process, potential applicants that perceive their competitive situation is poor, or due to strategic or other reasons, may withdraw from the process, hence the market will be self-regulated.

A5.2: When deciding the number of applicants, the DEA has to ensure an efficient tender process, hereunder the handling of negotiations with bidders. The DEA will thus have to strike a balance between having enough bidders to ensure sound competition on one hand, and handling negotiations with a manageable number of bidders on the other hand. See also A5.1. Relevant rules are set out in the Danish Public Procurement Act, i.e. sections 64 and 145.

Q5.3: Can the DEA clarify the criteria for shortlisting candidates if there are more candidates for prequalification than the max. number set by the DEA? The criteria for shortlisting for prequalification should allow newcomers to the Danish market a fair opportunity.

A5.3: The need for objective and non-discriminatory selection criteria is noted. The DEA will take into account this input when defining the selection criteria. The DEA expects to publish those criteria with the tender material to be published in Q3 2020.

Q5.4: Clarify how the DEA defines “management” relating to the criteria on technical capacity concerning the AC-substation.

A5.4: The question relates to the proposed criteria “*Project development, procurement and management of at least one offshore AC-substation servicing an offshore wind farm completed within the last five years*” mentioned in the dialogue material. The DEA will consider omitting the element “management” in the mentioned criteria on technical capacity for the offshore AC-substation.

Q5.5: How will the DEA handle a situation with one or few subcontractors, who will build the AC-substation, and participates in several consortia?

A5.5: In principle, participation of the same entity in several consortia is possible. However, the DEA will have to make a specific assessment whether particular applications are obstructive to sufficient competition and then decide how to handle the situation. This point will be further clarified when publishing the tender material by Q3 2020.

Q5.6: Which rules will apply for changing consortium partners/addition of another partner in the consortium after prequalification?

A5.6: As a principle, access to changes is rather limited and have to be in accordance with the procurement rules, as set out in section 147 in the Danish Procurement Act. For example, exit or replacement of members of a prequalified consortium will only be possible, if the member in question has had decisive influence on the assessments with respect to the minimum criteria for the capabilities of an entity and the shortlisting in the prequalification process. Adding new members to a consortium will not be possible. Certain changes within the corporate structure of an entity might be possible, if there is no decisive influence on the assessments with respect to the minimum requirements with regard to the capabilities of the entity and the selection between applicants. Changes can only be made with prior accept from the DEA, and permission will always depend on a specific assessment case by case.

Q5.7: Which rules will apply for changing consortium partners after having been awarded the concession?

A5.7: Replacement, exit or admission of members in a consortium will require prior written consent from the Danish Energy Agency. Changes can only be accepted within the public procurement rules after a concrete assessment. Depending on the specific situation, the accept will e.g. be dependent on that the concessionaire is still assessed to have the required financial and technical capacities after the change, that the concessionaire still fulfils the original criteria for the qualitative selection during the tendering procedure for this concession agreement, and that the change does not otherwise lead to significant changes of the concession agreement etc. More specific rules will be included in the tender material to be published in Q3 2020.

Q5.8: The technical capacity requirement (project development, procurement and management of at least one large scale offshore wind farm with the capacity of at least 150 MW completed within the last five years) could harm /reduce competition?

A5.8: This is noted. However, this criteria was used in the tender for Kriegers Flak, and the idea behind the criteria is to have as much certainty as possible for the Danish State, that the concession winner will be able to build the wind farm without default. The DEA is also interested in having enough competition, and therefore the number of pre-qualified bidders will be raised to 10 in line with A5.1.

Q5.9: For consortia, it would be better to request undertaking joint liability and not joint and several liability since joint and several liability might prevent some market players from entering into consortia, thus having also a negative impact on competition.

A5.9: This is noted. The DEA will consider those concerns when defining the liability requirements in the tender conditions to be published in Q3 2020.

Q5.10: If selecting between applicants: All offshore project management and operational experience should be accepted. The selection should not only be made on relevant technical experience, but should also give weight to financial strength, as a weak balance sheet increases the risk of projects not passing milestones, and construction of partnering arrangements that are suboptimal for the purpose of ensuring project progress.

A5.10: The DEA will consider those concerns, when defining the selection criteria. Please see also A5.3.

Q5.11: Should the applicant have performed both the project development, procurement and management of the OWF of the sufficient size (+same question for AC substation)?

A5.11: Yes, the criteria considered is still as follows: "*Project development, procurement and management of construction of at least one largescale offshore wind farms with the capacity of 150 MW or more, completed within the last five years*", as described in the dialogue material. Concerning the AC-substation, see also A5.4.

Q5.12: How do you take into account that applicants might have subcontracted a big part of these activities: project development, procurement and management of the OWF of the sufficient size (+same question for AC substation)?

A5.12: In previous Danish tenders, this has been assessed on the basis of the following, and something similar is likely to be applied for Thor: The applicant's role (i.e. owner, main consultant, sub-contractor, member of a consortium, constructor, or other) + The applicant's contribution to the project within the following key areas: Project planning and management, design, management of construction and quality control of offshore wind farms and, finally, procurement/contract negotiation.

Q5.13: Financial criteria: Will the financial criteria be assessed at the entity level of the bidding party or will it be assessed at a consolidated level, including the financials of the shareholder's entity?

A5.13: We refer to the dialogue material, which reads as follows: “Applicants for pre-qualification may be a single company, a consortium of several companies, a joint venture or a company established specifically for the project – a so called Special Purpose Vehicle (SPV). In order to meet the minimum requirements for financial and economic capacity and technical capacity, the applicant may rely on other economic operators, e.g. a partner, a parent company, subcontractors, founding companies/future owners or one or more affiliated companies. In this case, the applicant must prove that the applicant has at its disposal the necessary experience or resources, and to some extent the supporting entities will have to undertake joint and several liability”.

Moreover, “If the applicant consists of more than one economic operator or the applicant relies on the financial capacity of other economic operators in order to meet the financial minimum requirements, the combined sum of annual overall turnover of all of the economic operators must pass the threshold for overall turnover (on average over the last three years). Also, the combined equity ratio will have to pass the threshold (as opposed to applying it individually to each economic operator), OR each economic player must pass the threshold for the credit rating”.

Q5.14: Financial criteria: In case the bid is put as a consortium of parties, will the financial criteria be assessed pro rata the financials of all the parties involved in the consortium?

A5.14: If the applicant is a consortium, the DEA will assess the minimum requirements for financial (and technical capacity) with respects to the consortium as a whole, see also A5.13.

Q5.15: Pre-qualification: Are there other subjective criteria apart from the financial and technical ones you mention in the current tender documents, which will determine the pre-qualifying parties?

A5.15: The DEA has received different concerns and input to the prequalification criteria and the selection criteria. The criteria are not yet finalized, but the DEA does not expect to include subjective criteria. The DEA expects to publish those criteria with the tender material in Q3 2020. See also questions A5.3.

Q5.16: Can the DEA clarify the type of agreement that is needed when using a subcontractor in order to meet prequalification requirements?

A5.16: If an applicant is based on other entities, the applicant must document that the applicant can rely on the capacities of other economic operators. Also, the specific aspects of the works or services shall be performed by the entity on which the candidate or tenderer is based, please see rules in the Danish Public procurement Act, section 144. Later possibilities for exchange are limited.

Q5.17: Why does the DEA allow for documentation for technical and professional ability only 5 years back?

A5.17: This is standard according to the Danish Public Procurement Act, section 155, no. 1). The DEA will consider if documentation for more than 5 years back can be included in order to ensure sufficient competition.

Theme 6: Grid connection

Q6.1: It will enable lower cost and thus lower bid price if export voltage is 275 kV even though this requires changing standards for proposed 220 kV cables.

A6.1:.This issue is influenced by many factors and these will vary depending on the optimisation of offshore facilities or onshore facilities, bid strategy and risk assessment. To accommodate this, Energinet will incorporate the possibility for the concession winner to install transformers before connecting to POC and this will be included in the EIA process. Energinet will use 245 kV equipment in POC.

Q6.2: It is important to keep flexibility with respect to export system design. It is recommended to keep open the opportunity to select another export system voltage, and apply transformers in the onshore substation.

A6.2: Based on the market dialogue, Energinet has implemented this option in the design and thus the EIA process.

Q6.3: Please confirm that the concession winner can freely choose a higher voltage for the offshore export cable system and install transformers in the concession winner's nearshore substation to connect to Energinet's 220 kV onshore cable system?

A6.3: Based on the market dialogue, Energinet has implemented this option in the design and thus the EIA process. It will be possible for the concession winner to install, own and operate transformers.

Q6.4: It is recommend to dedicate space for two harmonic filters and two units for dynamic voltage control (STATCOMs or SVCs).

A6.4: This is noted, and this option will be incorporated in the design and thus the EIA process.

Q6.5: Is it possible to have a technical meeting with Energinet about the grid connection?

A6.5: Energinet and the DEA will consider this and work out a possible setup.

Q6.6: Has the DEA and Energinet considered to allow the developer to get direct control of the tap changer at the POC in order to allow the developer to actively manage the power quality and avoid potential additional cost and hence reduce the bid level?

A6.6: As any possible transformers installed before POC will be established, owned and operated by the concession winner, operation of the tap changer will also be the responsibility of the concession winner.

Q6.7: It needs to be clarified if the OSS-Topsite (incl. structure, electrical, HSE), OSS-Substructure, export cables and onshore substation are subject to certification and if yes, what parts are subject to certification? It is current knowledge that the TSO has so far certified the OSS-Topsite & OSS-Substructure and this is also industry best practice.

A6.7: This is noted and will be specified in the tender material to be published Q3 2020.

Q6.8: The TSO should clarify what design lifetime is assumed for his scope of work including all parts from Point of Connection (POC) until Energinet 400/220 kV substation at Idomlund.

A6.8: Standard design lifetime for AC-facilities is 40 years.

Q6.9: Why are you not considering (as for the EIA of the onshore infrastructure) to anticipate all the purchase of land by Energinet, considering then a transfer from Energinet to the concession winner?

A6.9: Energinet expect to purchase land for Energinets' facility around Q1 2022. Energinet does not want to be depended on the concession winner's readiness to decide on purchase of land at a given time as well as responsibility to handle any surplus of land from a possibly common purchase performed by Energinet. However, Energinet will consider a common purchase of land performed by Energinet with a transfer to the concession winner if this fits into the Energinet timetable, and under the agreement that the concession winner will pay the cost of this land and any related expenses. It is thus possible for Energinet and the concession winner to agree on this option soon after the concession winner has been appointed.

Q6.9: Establishment of the developer's onshore cable and substation will possibly require acquisition of land, including expropriation. This process brings some uncertainties for the developer, as expropriation and involvement of "Danish Safety Technology Authority" can cause delays. The process should be further clarified.

A6.9: Before establishing cables it is necessary to acquire legal rights to do this. The mandate for expropriation lies in the Danish Constitution §73 No. 1, where the right of property shall be inviolable, except when required in the public interest. Moreover, providing right of way shall be done only as provided by statute and against full compensation. The statutes are found for voluntary negotiations in Elsikkerhedsloven § 28 and through expropriation in Elsikkerhedsloven § 27. In case of expropriation, this will be done through application for permission to expropriate to the Danish Safety Technology Authority and the Ministry of Transportation, who authorizes the expropriation. The process normally begins after finishing the EIA process, where a local meeting is arranged, directly inviting landowners and close neighbors. Here line-suggestion are introduced, as well as field works, process of negotiations and compensation principles.

Q6.11: Will it be possible to ensure that Energinet will supervise and facilitate a potential expropriation process for the developer? Which requirements are needed to be fulfilled by a company to undertake expropriation in Denmark? How long will the expropriation take?

A6.11: The process, requirements and the competent authorities involved are described in A.6.10. The duration of an expropriation case will depend on the specific circumstances.

Q6.12: There have been references to experience from Horns Rev 3 with respect to technical capabilities and design. Since a more stretched design or new technology may be asked for in the coming process, can these experiences be shared with developers?

A6.11: Energinet is not in a position to act as an advisor and provide knowhow on the task that is the responsibility of the bidders/concession winner.

Q6.13: Energinet will not deviate from the 2 cable, 220 kV solution, and ENS assume that the same will be the optimal solution for the concession owner. Can the design assumptions behind this be shared, covering the span from 800 MW to 1000 MW?

A6.13: Energinet is not in a position to perform the role of advisor to the bidders.

Q6.14: Grid connection: How will the TSO guarantee to have the necessary grid capacity in place by the scheduled time of first power?

A6.14: The DEA intends to continue the principle that owners of concessions should be compensated for losses of production if Energinet does not meet the deadline for completion of Energinet's part of the onshore grid connection. A maximum limit could be set for the liability for compensation.

Q6.15: The southern landfall location is directly adjacent to a 250m, or more, wide land strip that is protected by Natura 2000 and will be subject to specific environmental constraints that may impose an HDD (Horizontal Directional Drilling) landfall and derouting of the export cables. Could you please clarify what is the expected methodology for the landfall and provide any constraint information that are available?

A6.15: It is correct that the southern landfall is adjacent to the Natura 2000 site "SAC 197 Husby Klit". The land cables will inevitable have to cross an approx. 450 m wide dune area. The dune area contains a number of habitat types that are protected according to the EU habitats directive, including a.o. habitat types that according to the directive requires special protection attention. It is almost certain that the environmental authorities will only allow crossing of the dunes by HDD in order to protect habitat interests. The alternative to passing the Natura 2000 site by HDD would be landing the cables further to the north and cross directly through a summer-cottage area which is not considered a viable solution.

Q6.16: Please confirm if Energinet's 220 kV cable system onshore will be able to accommodate 1000 MW at the metering point, and if not able to accommodate 1000 MW continuously could the Danish Energy Agency then please inform what load profile is technically possible for the concession winners offshore wind farm at POC given other generators and consumers between POC and Idomlund.

A6.16: Energinet's cable system will be able to accommodate the load profile from installed offshore wind turbine capacity that with the specific turbine size ($Turbine_{Size}$), equals round up to nearest integer number of turbines above 1.000 MW (Bid_{Max}).

$$Installed\_Capacity_{Max} = (Bid_{Max} / Turbine_{Size})Round_{up} * Turbine_{Size}$$

Here is a non-exhaustive list of example of different turbine size and the above rule applied:
15,3 MW: 1.000 MW / 15,3 MW = 65,36 turbines. Turbine number rounded up to 66 turbines equals 1.010 MW installed capacity.
15,0 MW: 1.000 MW / 15 MW = 66,67 turbines. Turbine number rounded up to 67 turbines equals 1.005 MW installed capacity.
14,0 MW: 1.000 MW / 14 MW = 71,43 turbines. Turbine number rounded up to 72 turbines equals 1.008 MW installed capacity.
12,0 MW: 1.000 MW / 12 MW = 83,33 turbines. Turbine number rounded up to 84 turbines equals 1.008 MW installed capacity.
10,0 MW: 1.000 MW / 10 MW = 100 turbines.

8.0 MW: 1.000 MW / 8 MW = 125 turbines

Q6.17: Please confirm if Energinet will accept operating the onshore 220kV continuously at higher than nominal voltage and if so, please state what the highest normal operating voltage accepted will be.

A6.17: According to standards, the voltage range is as presented in the published market dialogue material (Invitation to dialogue):

Parameter	p.u.	Voltage kV
60 min. operation	1.118 – 1.15	253
Maximum voltage for continuous operation	1.118	246
1 p.u.	1	220
Minimum voltage for continuous operation	0.9	198
60 min. operation	0.9 – 0.85	187

Table 7.1 Voltage range for "220 kV" system in Vest Denmark (DK1)

From an Energinet point of view, it would be obvious to operate the export facility with maximum voltage for continuous operation (246 kV) at the OSS and the impedance of the export cable to the near shore substation will ideally define the target voltage at POC in a full load scenario. Energinet will consider addressing this issue together with the issue from Q6.18 in a form of dialogue with potential bidders in due time.

Q6.18: Onshore cable design and associated control philosophy for the onshore system from Idomlund to POC should be aligned with the concession winner or in corporation with the tender participants in order to enable optimal design of offshore transmission system to POC.

A6.18: Cable design of the onshore cables is a matter for Energinet to take care of. As for the control philosophy it is clear that this will have to be coordinated. Energinet will consider addressing this issue together with the issue from Q6.17 in a form of dialogue with potential bidders in due time.

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Q6.19: We understand that voltage control will be mandatory. Please confirm that ancillary services such as voltage control, reactive power, and frequency support provided to Energinet by the concession winner at the POC will be remunerated, and please inform about the conditions for the remuneration including if there's a minimum service which will not be remunerated.

A6.19: No, this cannot be confirmed. The ability to operate the generator/park in voltage control mode is a normative connection requirement. December last year Energinet started a number of stakeholder workshops where the future voltage control concept of the transmission system is discussed. In this new concept it is presumed that all transmission connected generators are operated in voltage control mode as a part of the connection agreement. The concept is still under development.

Q6.20: We understand that Energinet will require quick reconnection after disconnection and that reconnection within 15 minutes is required. Can this be confirmed by Energinet?

A6.20: Confirmed.

Q6.21: Please confirm that Energinet is liable to pay compensation to the concession owner if Energinet's grid is not available.

A6.21This is confirmed.

Q6.22: Are any DEVEX or CAPEX or decommissioning costs for assets in Energinet's scope charged to the concession winner? If the concession winner is to pay anything the price must be known before the bid is submitted and Energinet should bear the risk of budget overruns.

A6.22: The cost of the land-based facilities to be installed by Energinet, will have to be paid by the concession winner. The cost of these facilities will be defined with a capped ceiling in due time. Any budget overrun by Energinet above the capped ceiling will have to be paid over the tariff by electricity consumers.

Theme 7: Capacity of the wind farm and designated area for construction

Q7.1: Please confirm that the 800-1000 MW capacity is defined as the capacity in the metering point in the POC and that it is possible to install extra capacity as long as this threshold is not exceeded.

A7.1: The Thor offshore wind farm will be tendered out with a nominal capacity of 800-1.000 MW measured at the POC. As is the case in previous Danish offshore wind farm tenders, the DEA considers to allow establishment of a wind farm with an on-site turbine capacity, which takes into account that the aggregated number of turbines with a given name plate capacity does not match exactly 800 or 1.000 MW (or any other equal number in between submitted in the final bid).For allowed capacity to be installed, see A6.16.

Q7.2: The current material on Thor OWF focuses on the overall installed capacity offshore (800-1000MW). In our view the definition of "installed capacity" is vague and ambiguous and the calculation of such is subject to interpretation: Modern turbines come with temporary power boosts that kick in, e.g. if certain temperatures allow. Or power boosts are used to compensate for turbines that are off the grid due to technical failures.

A7.2: The capacity limit stated in A6.16 and A7.1 applies, where it is the name plate capacity which counts. Moreover, it will be the 1.000 MW limit in the POC, which applies.

Q7.3: Please elaborate on how the site area will be allocated when capacity is defined at POC, and additional turbines above the capacity at POC are installed offshore? Will a density of 4.54 MW/km2 be used and allow for using extra km2 or will the density be increased and allow more than 4.54 MW/km2 inside the allocated area?

A7.3: The area for establishing the wind farm will be calculated based on the turbine density of 4.54 MW/km2, in accordance with the description provided in the market dialogue material. The allowed on-site turbine capacity will be the one described in A.6.16 above.

Q7.4: It is understood that DEA will reduce the area of 440km² based on various criteria. The process and the criteria were not presented in the consultation.

A7.4: The area will be down-sized in a process where Energinet and the DEA analyze the results from the various site-investigations. This primarily entails analyzing results of the seabed investigations as well as the surveys concerning sea mammals and protected birds. The criteria used are first and foremost an emphasis on highest possible certainty of later EIA-approval in terms of environmental concerns. Next to this, it is the optimisation in terms of lowest cost of establishing foundations as well as ideal wind conditions in terms of the shape of the area in relation to the prevailing wind direction. Finally, other considerations related to the future extraction of raw material from a small area within the site as well as the planning for future wind farms south of the area will also be taken into account, when down-sizing the area.

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Q7.5: Based on pre-investigations, the gross offshore wind area will be reduced in size. When will this be decided and made public and what is the expected size of the area for the final bid?

A7.5: The gross area will be down-sized in Q1 2021 based on the process described above, where after the coordinates will be published by the DEA. However, the final approval of the site can only be done once the SEA has been approved (Q1/Q2 2021). The expected down-sized area will be between 234-286 km2, which includes the extra 30 % above the allowed use by the concession winner, as outlined in the market dialogue material – provided that there will be enough room at the site for the extra 30 %. This is because the concession winner is allowed to construct his wind farm within a designated area covering 176-220 km2 (matching 800-1.000 MW), but choosing his own position within a net area of 234-286 km2. Example: the tenderer bids for a 950 MW wind farm, which provides for 950 MW / 4.54 MW/km2 = 209 km2, which is the designated area ultimately to be used. However, the tenderer will be allowed to position his wind farm within an area of 209 km2 + 30 %, which provides for 272 km2, and thus some leverage to choose own location within the net area. This 30 %-rule has been applied in previous Danish offshore wind tenders, since it facilitates lower bid prices. If there will be room enough, the DEA will consider to allow even more flexibility than the 30 %.

Q7.6: It is stated that the area shall finally be 180-220km². Is this only related to WTG's or incl. cables and OSS. Or does it even include the export cable corridor?

A7.6: The designated area for the wind farm will cover the wind turbines, the offshore substation and the related inter-array cables connecting the turbines and the offshore substation. It will not include that part of the export cable corridor, which runs from the eastern border of the site and eastward to landfall on the coast. The possible cable corridors for the export cable currently being site-investigated by Energinet are described and shown in the market dialogue material.

Q7.7: The DEA should consider whether it should be the concession winner and not the DEA that reduces the area to be used for constructing the wind farm, since the concession winner has better knowledge.

A7.7: This is noted. However, the results of the site-investigations will show if this is possible. If, for example, a large part of the area has to be discarded e.g. for environmental reasons, then the area might be too small using this strategy. Moreover, there might be other considerations of the Danish State, for example the location of a neighboring future offshore wind farm to be tendered out south of Thor, which requires that the DEA decides where to locate the Thor site. The DEA will apply the above considerations when deciding if and how much flexibility can be granted to the concession winner. However, the DEA will, as a minimum, strive to apply the 30 %-rule of flexibility for the concession winner in choosing the site, as described in A7.5.

Q7.8: We propose to shift focus onto the maximum allowable energy that can be exported at point of connection (POC) and then let the bidders optimize on that. For example, if it is defined that the POC can export 1.000MW steady load, then a developer might decide for an overplanting approach.

A7.8: Overplanting at the Thor site in terms of establishing more turbine capacity than in A6.16 suggested will not be allowed.

Q7.9: Has the DEA followed EU-unbundling rules and hence ensured that the potential developer will be allowed to operate the Thor grid infrastructure above 100kV until the POC? (According to https://ec.europa.eu/energy/en/topics/markets-and-consumers

A7.9: DEA is ensuring that the grid connection is in agreement with EU-unbundling rules. Any possible provisions in that regard will be included in the tender material.

Theme 8: Other issues

Q8.1: Can the DEA state clearly in the tender if ptx or batteries are allowed to be established before the POC?

A8.1: The preparations for the Thor tendering procedures, especially SEA and environmental assessment etc. (mandates to Energinet), have been done without consideration of a solution with storage and ptx offshore or onshore.

However, batteries will be possible to integrate both offshore and onshore, since the electricity from the OWF will still be delivered to the collective electricity grid – which is required according to the Renewables Act - only with some delay and some loss. Establishment of onshore battery facilities will most likely require that the concessionaire undertakes a supplementary EIA.

On the contrary, establishment of PtX facilities would mean (partly) consumption of the produced energy.

The DEA has taken note of the demand for clarification with regard to PtX and will analyze the possibilities for inclusion in the tender and the concession agreement. The conclusions will be published in connection with the tender material in Q3 2020 at the latest.

Q8.2: Can the length of the concession be longer than the proposed 30 years + possibility of 5 years extension?

A8.2: The DEA has taken note of the interest in a longer concession period. The DEA will analyze the possibilities in that regard. The conclusions will be published in the tender material in Q3 2020 at the latest.

Q8.3: Are there any possibilities of asking questions later in the process and when?

A8.3: Yes, there will several periods, where questions can be posed. Firstly, the DEA and Energinet are currently considering handling questions after the publishing of the prior information notice in Q2 2020. Secondly, it will be possible to ask questions to the tender material after publication in Q3 2020 as well as to the pre-qualification process and criteria, when the pre-qualification period begins in Q3 2020. The DEA and Energinet are also considering a half-day information meeting after the publishing of the contract notice in Q3 2020, including a small Q&A-session at the day. Details about this event will be announced in due time. Finally, we also expect that there it will be possible to ask questions at the time of submitting preliminary bids as well as after publication of the final tender conditions after the negotiations have been completed.

Q8.4: Has the 12-mile tax zone been considered in terms of location of the site?

A8.4: No, the 12-mile tax zone has not been considered when selecting the Thor-site. The focus has primarily been environmental concerns, wind and sea-bed conditions as well as shipping lanes, defence areas, etc. , but also to identify a site which can deliver a low bid price. However, there is still time to consider the 12-mile zone when down-sizing the area to be tendered out, so this is noted.

Q8.5: What is the purpose of the negotiations and how does it work? What kind of adjustments to the tendering conditions are possible within the foreseen framework?

A8.5: Negotiations are a specific feature of the tender design for Thor, and follows the same principles as has been applied with success in previous Danish tenders. As a general rule, when applying public procurement rules, a tender design using negotiations is applied in situations where a public tender without negotiations cannot fulfill requirements for qualified bids to the same extent as when negotiations are applied. When undertaking such a tender, the contracting authority has the opportunity to negotiate directly with bidders about certain terms and conditions in the tender. The advantage of this tender design is the opportunity to bring forward a solution, which is better and less costly for the contracting authority. However, and in accordance with the public procurement rules, not all elements can be negotiated. For example, essential elements, including minimum requirements and award criteria cannot be negotiated. The DEA will publish the concrete model for the negotiation process together with the tender material, which

is to be published in Q3 2020. As an example of the results of such negotiations, the DEA can point to this example from the final tender conditions on Kriegers Flak, section 15, page 20 and 21:
https://ens.dk/sites/ens.dk/files/Vindenergi/final_tender_conditions_for_kriegers_flak_english.pdf

Q8.6: Prefer to have LIDAR measurements at both the dates proposed by the DEA

A8.6: This is noted.

Q8.7: To avoid ambiguity in the hierarchy of documents and to avoid that clarifications from Q&A are lost it is recommended that all clarifications made in the Q&A (where possible) also are reflected in the final concession agreement or construction licence. In our view it is not sufficient to clarify a topic in 2019 via Q&A list and then leave it there. The CA and CL must be amended then accordingly.

A8.7: As mentioned in the disclaimer to this report, the information (including these written Q&A's) provided by the DEA and Energinet during the market dialogue in the fall of 2019 is non-binding to the DEA.

The binding information is the tender material (draft concession agreement, draft construction license etc.). This information, including the contract notice, will be published in Q3 2020 and will kick-off the tender procedure. If you have questions to the tender material, when this is published in 2020, you are encouraged to ask questions at that point in time.

Q8.8: Security issue: is the DEA open to a direct agreement [Lenders stepping rights in case of insolvency to avoid in particular the risk of revocation of the Concession or License]

A8.8: This will be analysed and clarified in the tender conditions in Q3 2020.

Q8.9: Has the DEA considered to collect additional information from bidders through the bids (like it is done in some other countries), such as expected investment cost specified for major cost items, financing structure and type, etc.? If yes, how much of this information will be made public or at least made available in anonymised/aggregated form, e.g. for research purposes?

A8.9: No, this is not normally the case, and this is also strictly confidential information.

Q8.10: What is your requirements for the supporting documents to be submitted in other languages rather than English. Whether the full contents have to be translated into English, or only an abstract of key points would do.

A8.10 The DEA will consider if certain types of documents (partly) can be submitted in certain other languages. This will be clarified in the tender material to be published in Q3 2020.

Q8.11: For EIA related documents, what shall we do if we are not allowed to disclose full reports due to the confidentiality consideration?

A8.11: According to the EIA procedures, all relevant information for the environmental assessments have to be disclosed in the EIA report according to Danish and EU environmental law.

Q8.12: We would like to reiterate our preference to include a strong track record for offshore safety standards in the prequalification criteria

A8.12: This is noted. However, there has not previously been any requirements above what legislation requires on this issue in Danish tenders.

Q8.13: What requirements are expected to be related to the onshore decommissioning?

A8.13: This will be defined in the tender material to be published in Q3 2020.

Q8.14: Will the concessionaire have to pay for decommissioning of the offshore cables?

A8.14: In principle, all facilities including cables have to be decommissioned, and bidders have to include costs for full decommissioning of these facilities in their budget. As said at the plenary dialogue, it is being discussed, if the state should have possibility to take over the grid at no cost. Information on that will be included in the tender material to be published in Q3 2020.

Q8.15: We recommend that DEA - as part of concession agreement and tender documents - provides a definition of key terms to avoid ambiguity. This is especially important if conditions or penalties are linked to such a definition. For example:
- "the offshore wind farm": does this include the offshore substation, does it include the offshore part of the export cables, does it only include the wind turbines with foundation and inter array cable?
- "Offshore cables": is this only the inter array cabling (i.e. the cabling between turbines up unitl the offshore substation) or does it include the export cables?
- "start of construction": does this mean start of scour protection installation, or already deployment of demarcation buoys, or does it mean start foundation WTG or OSS installation
- "preliminary bid (for negotiation)": does this bid need to fulfill formal requirements,

what is expected here.
- "first power" : our understanding: first kWh produced by one of the turbines
- "grid ready": Energinet has fully commissioned their grid connection and wind farm can export

A8.15: The DEA has taken note of the interest of definition of key terms and will consider these suggestions when finalizing the tender conditions and draft concessions agreement etc.

Q8.16 Will the concessionaire have to pay for feed in tariff?

A8.16. Information on that will be included in the tender material to be published in Q3 2020.

Q8.17: What are the expectations for changes in the tender conditions late in the process?

A8.17: Supplemental information with regard to SEA and site investigations etc. and consequential amendments/clarifications in the tender material are expected. Those will be published in due time before the final bids have to be submitted. Other changes can basically only be expected on the grounds of the negotiation results. Minimum requirements cannot be negotiated about; they are still to be defined. Information on that will be included in the tender material, which will be published in Q3 2020. For example, the CfD model is a major element of the tender, thus the setup for that could not be changed – despite quite minor elements if the EU Commissions acceptance should demand that. Any changes will be published in due time before final bids.