

DISCUSSION PAPER

USER COMMITMENT CONCEPT

1. Introduction

This paper is Energinet's initial description of a user commitment concept to support the maturation of Danish Backbone West. The purpose of this paper is to give market participants an early opportunity to provide their feedback on the concept, but Energinet notes that various processes and decisions are still ongoing at the political level, and we will adjust and communicate accordingly.

Danish Backbone West was conceived in order to capitalize on Denmark's world class renewable energy resources. Denmark can generate far more energy than it expects to consume, which represents a green energy export opportunity. However, the uncertainties related to the development of Power-to-X (PtX) projects today create a chicken-and-egg problem. On one hand, producers/suppliers request that the state takes the start-up risk by providing financial risk-sharing and a flexible tariff framework for the initial phase in which the market ramps up (referred to later in this paper as the "intertemporal cost allocation mechanism"). The state, on the other hand, in order to offer financial risk-sharing, may require producers/suppliers to demonstrate that they have concrete, long-term demand and willingness to pay for the hydrogen infrastructure.

At the user commitment workshop held by Energinet on 12 October 2023, several market participants expressed a clear need for certainty regarding the hydrogen backbone prior to the Danish offshore wind tenders for which the bid submission deadline is now December 2024 for the North Sea sites. Energinet fully understands this, but the ongoing maturation project and subsequent investment decision for Danish Backbone West (by first Energinet and later the Danish state) is currently not planned to be completed before Q1 2025. In section 2, we explain the work that remains before an investment decision can be made. Energinet also understands that PtX projects are underway in Denmark using land-based electricity generation, but we need to take the large volumes potentially coming from offshore wind into account.

In order to support Energinet's investment decision and accommodate the offshore wind tender process to the best extent possible, Energinet proposes a user commitment concept performed in two steps – capacity commitments (a kind of pre-sale) in October 2024 and sale of long-term capacity contracts expected in second half of 2025. Please find details in section 3.

2. Preconditions

A successful user commitment process and investment decision on Danish Backbone West depends on the fulfillment of the following preconditions:

Aspect	Rationale	Status
Financial risk-sharing from the state.	Energinet needs assurance that costs will be covered if Danish Backbone West is not utilized as expected.	A political agreement on financing is underway.
An intertemporal cost allocation mechanism in accordance with EU's Hydrogen and decarbonised gas market package, which the Danish Utility Regulator (DUR) must approve.	First-mover producers/suppliers will not be able to fully utilize Danish Backbone West nor pay a tariff reflecting the infrastructure's full cost in its initial phase.	Energinet can prepare a design before the planned offshore wind tenders; the DUR will need at least six months to consider the method and must approve it before a final capacity sale (Step 2) can be held.
An up-to-date business case reflecting both socio-economic and asset-specific revenues and costs.	Without these figures, Energinet is unable to inform market actors about what using the infrastructure will cost.	FEED and compression studies are currently out for tender and to be completed late 2024 as key inputs to the business case.
A legally binding agreement, replacing the cooperation agreement from 2023, with Gasunie on cross-border capacity.	In order to sell capacity towards Germany, Energinet needs assurance that the hydrogen can physically cross the border to Germany.	Energinet and Gasunie signed a cooperation agreement in November 2023, stating "The parties intend to conclude subsequent agreements for the construction and operational phases in due time if applicable, which will replace this Agreement".
A final binding, long-term sale of capacity (Step 2), which satisfies the political agreement, and supports the investment decision.	Energinet needs to satisfy the requirements of the political agreement from May 2023, and facilitate a process in which the market can seek to buy enough capacity to support the investment decision.	In order to execute a capacity sale, Energinet needs information from all of the rows above, and will also take into account any information about the offshore wind tender result.

All of the above cannot be completed in time for the Danish offshore wind tender deadline in December 2024. However, Energinet proposes the model below for user commitments, such that "Step 1" can be completed in time for the offshore wind tenders, allowing Energinet – in case of a positive outcome - to deliver a statement such as:

"The offer of capacity commitments (Step 1) in the user commitment process for Danish Backbone West has demonstrated concrete, long-term market demand and willingness-to-pay from

future system users. Therefore, Energinet will proceed towards making an investment decision by Q1 2025, which will be conditional on a final capacity sale (Step 2) in second half of 2025.”

3. Description of user commitment concept

Hereby follows a description of Energinet’s proposed two-step user commitment concept for Danish Backbone West.

3.1 Step 1: Offer of capacity commitments.

Market participants will be asked to submit the following:

1. Information about their identity (company name, registration number, etc.).
2. Information about their PtX project(s).
3. Information about their demand and willingness to pay for hydrogen infrastructure:
 - a. Energinet will provide a number of price levels (transportation¹ costs in EUR/MWh for the full contract duration) in order for market participants to express how much capacity they want to commit to at each price level, for a given point (see (b)) and for a given period (see (c)).
 - b. Capacity commitments at each price level expressed in (MWh/h) for:
 - i. Entry into the Danish hydrogen transmission system from production.
 - ii. Exit from the Danish hydrogen transmission system to Danish consumption.
 - iii. Exit from the Danish hydrogen transmission system to Germany.
 - c. Start and end-date of the capacity booking (minimum duration of 10 years and maximum duration of 15 years) expressed in calendar years.

A template for these submissions is shown in this document’s Appendix.

As indicated earlier, Energinet’s aim with Step 1 is to facilitate a process in which the market can demonstrate concrete, long-term demand and willingness to pay for hydrogen infrastructure to support Energinet’s investment decision as well as the Danish offshore wind tenders. To provide additional incentive to participate in Step 1, Energinet also envisions that participants in Step 1 will influence the planning of connection points and thereby potentially reduce their own grid connection costs (and the costs of the infrastructure as a whole).

Furthermore, Step 1 submissions will be binding for the participants, in terms of expressing a minimum future booking of long-term capacity in Step 2, but there will be no direct payment in Step 1. A participant can abandon (fully or partly) its Step 1 capacity commitment between submission and Step 2, but will then be met by a penalty:

- Energinet will establish a cost base for this penalty, which will be distributed across Step 1 participants in proportion to each participant’s submissions (EUR/MWh/year).
- Given that submissions into Step 1 are theoretically unlimited, the exact penalty value per participant cannot be communicated up front, but Energinet can communicate the cost base and set a cap for the penalty per participant up front.
- Further, Energinet proposes that the penalty will not be collected if a participant does not book the long-term capacity in Step 2 that they indicated in Step 1 for certain reasons outside the participant’s control (see Appendix), and/or if other participants in

¹ Transportation cost is here expressed as the simple yearly average unit cost for bringing 1 MWh of hydrogen from a-b, covering the cost for both entering and exiting the system, which was also used in Energinet’s Feasibility Study.

Step 2 buy more long-term capacity than they indicated in Step 1 such that Step 2 results in an outcome that sufficiently supports the investment decision.

- Also, participants that only partly withdraw their Step 1 commitment in Step 2, will receive a proportionate penalty based on the magnitude of their reduction.

3.2 Step 2: Sale of binding, long-term capacity contracts.

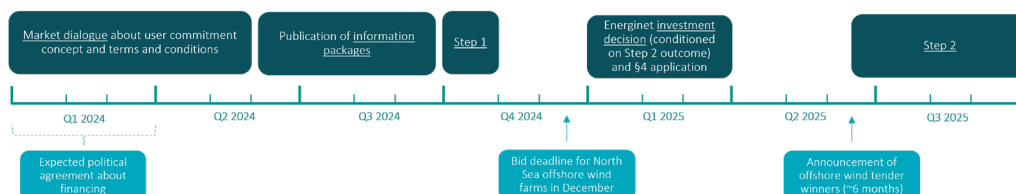
In Step 2, Energinet will offer binding, long-term capacity contracts for the same duration as in Step 1 (10-15 years). As stated earlier, Energinet's final investment decision will depend on the outcome of Step 2, and the threshold capacity required to proceed will be shared in advance of Step 2. Market participants must submit bid(s) for capacity equal to or higher than their capacity commitment(s) in Step 1 (in terms of capacity level at each relevant point and for at least the same duration or longer). If a participant fully or partly withdraws their capacity commitments from Step 1, then the participant will be met by a penalty, as described in point 3.1 above. The capacity offer for exit capacity towards Germany is planned to include a corresponding offer of entry capacity from Gasunie in order to ensure that hydrogen can be transported from Denmark into the German market area.

4. Expected timeline and activities.

Based on our current knowledge and expectations, Energinet proposes the following timeline and actions for the user commitment process and the maturation project in general:

- **End-January 2024 (now):** The draft concept design for user commitments is shared with the market (i.e., this discussion paper).
- **February and March 2024:** Bilateral meetings with market participants about the concept design and possible adjustments.
- **April and May 2024:** Consultation on legal terms and conditions for user commitments and possible adjustments.
- **June – September 2025:** Publication of various information packages that the market will need to participate in the user commitment process.
- **October 2024:** Execution of Step 1 and official communication of the result before the offshore wind tender deadline.
- **Q1 2025:** Energinet takes an investment decision (conditioned on a sufficient result from Step 2) and submits a §4 application to the Danish Energy Agency.
- **Q2 2025:** Expected approval §4 application by the Danish Energy Agency.
- **Q3/Q4 2025:** Expected execution of Step 2 after the Danish offshore wind tender winners have been announced, and official communication of the results.

ILLUSTRATIVE TIMELINE:



5. Market feedback

Energinet invites market participants to submit written feedback to and/or complete bilateral meetings with cru@energinet.dk and kkn@energinet.dk by 8 March 2024. In particular, Energinet is interested in feedback on the overall logic and timing of Step 1 and Step 2, the statement that Energinet proposes after Step 1 and the penalty conditions described in section 3.1 and in the Appendix.

Appendix: Template for Step 1 submission form

1. Introduction:

- a. Purpose: Energinet expects to take an investment decision on Danish Backbone West in Q1 2025 but understands the importance of a clear signal about the likelihood of the pipeline ahead of the upcoming offshore wind tenders and is therefore facilitating Step 1 in the user commitment process.
- b. Confidentiality: All submissions will be treated confidentially by Energinet.
- c. Terms and conditions for this user commitment process: *TBD*.
- d. Penalty: Any bidder may abandon their Step 1 capacity commitment between submission of this form and Step 2, but doing so will trigger a penalty (*see point 3.1 above*). Penalties will be reduced or cancelled if:
 - i. Energinet takes a negative investment decision between Step 1 and 2.
 - ii. Gasunie takes a negative final investment decision for Hyperlink 3 towards Denmark before Step 2.
 - iii. The Danish Utility Regulator does not approve Energinet's method for the intertemporal cost allocation mechanism and/or Energinet's method application for the user commitment concept before the commencement of Step 2.
 - iv. The bidder's capacity commitment is related to an unsuccessful offshore wind bid.
 - v. Material changes in market conditions or Energinet's timeline (*to be further determined*).

2. Bidder identity and requirements (*to be further determined*):

- a. Company name, address, and registration number
- b. Contact person(s), telephone number(s) email address(s)
- c. Latest financial statements
- d. Authorized persons, board of directors

3. Qualitative input:

- a. Are you submitting a bid for one or more concrete project(s)?
- b. Which municipality is the project located in?
- c. When is commissioning expected?
- d. How mature is the project today?
 - i. Electricity grid connection agreement(s) secured.
 - ii. Land agreement(s) secured.
 - iii. EIA(s) secured.
 - iv. Offtake secured.
 - v. Other: (Free text).

4. Quantitative input:

Price (EUR/MWh)	Entry DK (MWh/h)	Exit DK (MWh/h)	Exit DE (MWh/h)	Start year (2028-2035)	Duration (10-15 years)
Price 1, bid 1	100		100	2028	15
Price 1, bid 2	50		50	2030	15

<i>Price 1, bid 3</i>	10	10		2033	10
<i>Price 1, bid 4</i>					
<i>Price 1, bid 5</i>					
<i>Price 2, bid (1-5)</i>					
<i>Price 3, bid (1-5)</i>					
<i>Price 4, bid (1-5)</i>					
<i>Price x, bid (1-5)</i>					