



EARLY HYDROGEN CONNECTION AGREEMENT PROCESS

Process for the initial connection
agreements for the Danish Hydrogen
Backbone 1

26th August 2025 (Teams)

AGENDA

1. What is Early Hydrogen connection agreement process
2. Timeline for the connection process
3. A walk through the process
4. Next steps
5. Q & A

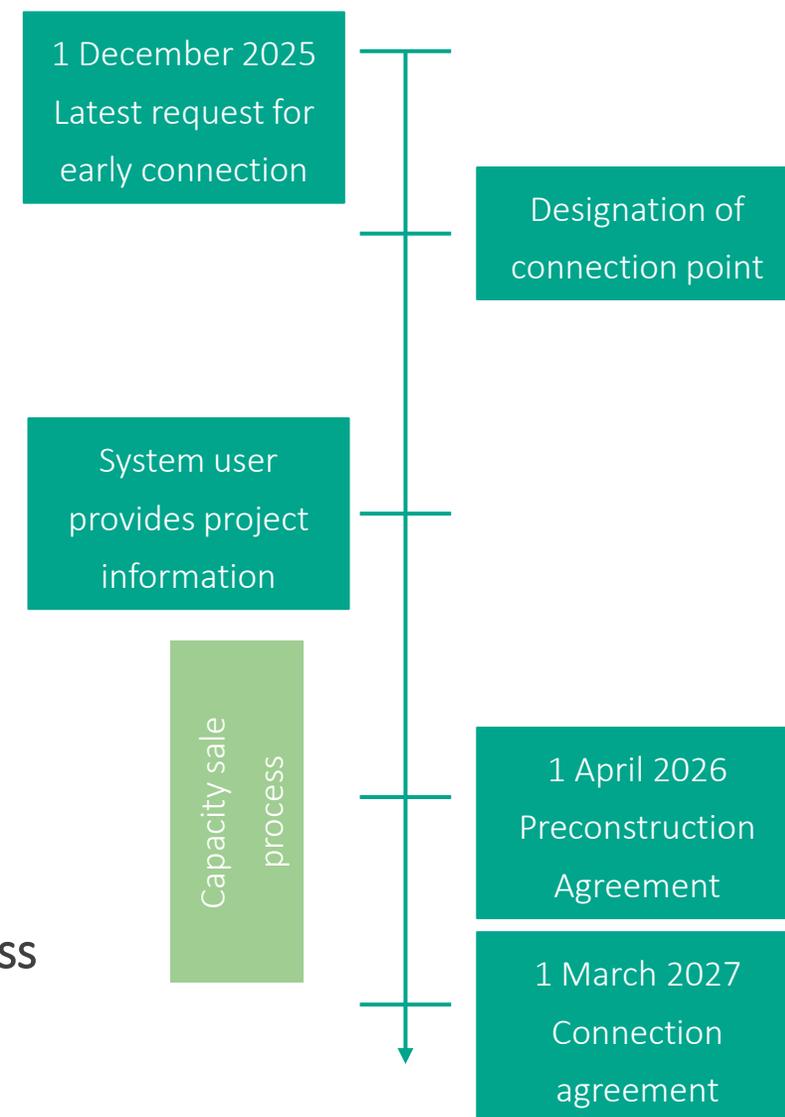
1. WHAT IS THE EARLY HYDROGEN CONNECTION PROCESS

WHAT IS THE EARLY HYDROGEN CONNECTION PROCESS?

It is the process for hydrogen producers or consumers to be connected to DHB1 during the construction phase

- It is a special process which follows the construction of DHB1 timeline
- For users who wish to connect to the DHB1 in **2030** or **2031**
- There is a set of strict deadlines to follow
- It ends with a connection agreement – the agreement which ensures that Energinet constructs a connection station and connects the user
- The process for later connections will be detailed later

It is not a capacity booking – the capacity purchase is a separate process



WOULD YOU LIKE TO LEARN MORE ABOUT CONNECTING TO THE HYDROGEN INFRASTRUCTURE?

Energinet has developed a process for prospective users, who wish to connect to the Danish Hydrogen Backbone 1 (DHB1) in 2030 or 2031, both for hydrogen production and consumption facilities.

The process is based on Energinet's standard for connection to Energinet's infrastructure, with the necessary adjustments required for being the first to connect to DHB1:

- A user requests connection via the Early Hydrogen connection agreement process
- Energinet designates a connection point
- A maturation agreement for the design of the specific station must be signed no later than 1 April, 2026
- A connection agreement must be concluded no later than 1 March, 2027

The Early Hydrogen connection agreement process is described in the concept paper, outlining the steps from now until connections are established when the hydrogen pipeline is put into operation. Energinet will later present a process for

CONTACT

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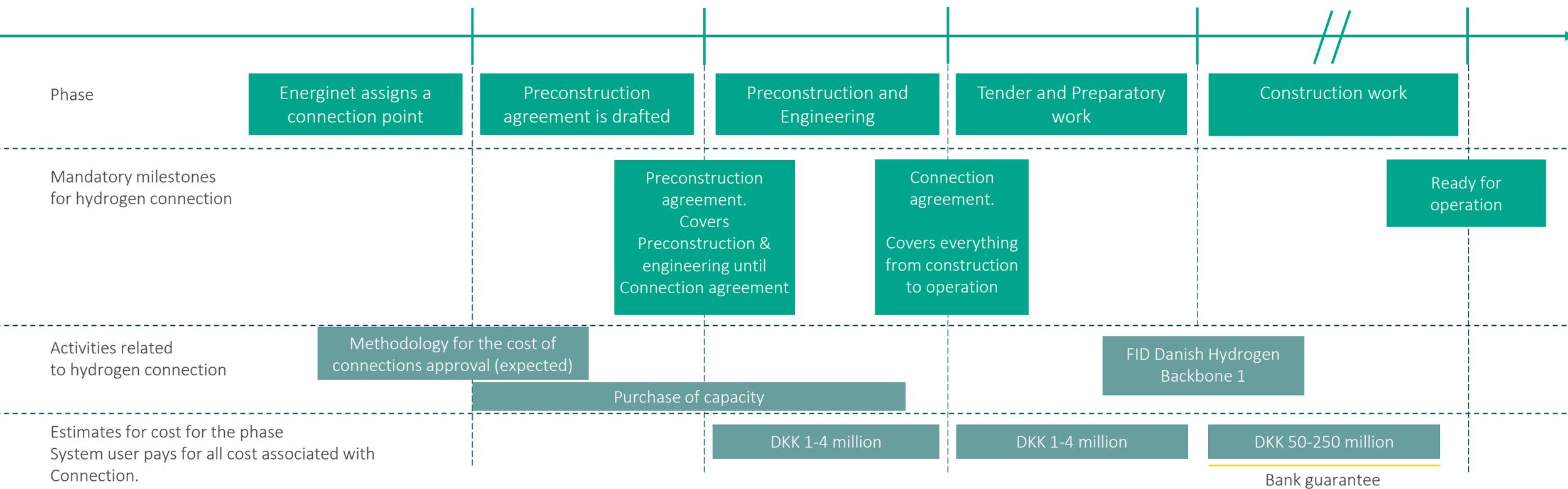
MATERIALS

[Concept paper: Early Hydrogen connection agreement process](#)

This presentation will walk you through our early connection process.

2. TIMELINE FOR THE CONNECTION PROCESS

TIMELINE FOR CONNECTION AGREEMENTS



HOW TO BECOME PART OF THIS PROCESS?

If you wish to be part of the *Early Hydrogen connection agreement process*, contact Energinet's single point of contact and request to be part of this. **No later than 1 December 2025.**

Requirements:

- You wish to produce or consume hydrogen in bulk quantities
- Planned operation start **2030** or **2031** and located in Denmark
- Needs connection to the DHB1
- Is ready to commit to a preconstruction agreement by **1 April 2026**

Mandatory even for organisations that Energinet previously have had talks with.

Contact information for Early Hydrogen connection agreement process

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WHAT DO WE NEED TO KNOW?

Energinet will at least need to know the following before we can assign a connection point and preconstruction can start

- a) A unique name/identifier for the project
- b) If production, consumption or local short-term storage is connected
- c) Is this for Injection, Extraction or both
- d) Geographical location and desired connection point**
- e) Requested capacity in MW according to lower heating value
- f) Requirements for redundancy, uptime or on-site spare parts
- g) Expected date for operation of the facility
- h) Any expansion plans in MW according to lower heating value

Energinet may also require other technical information regarding the project.

WHERE CAN YOU BE CONNECTED?

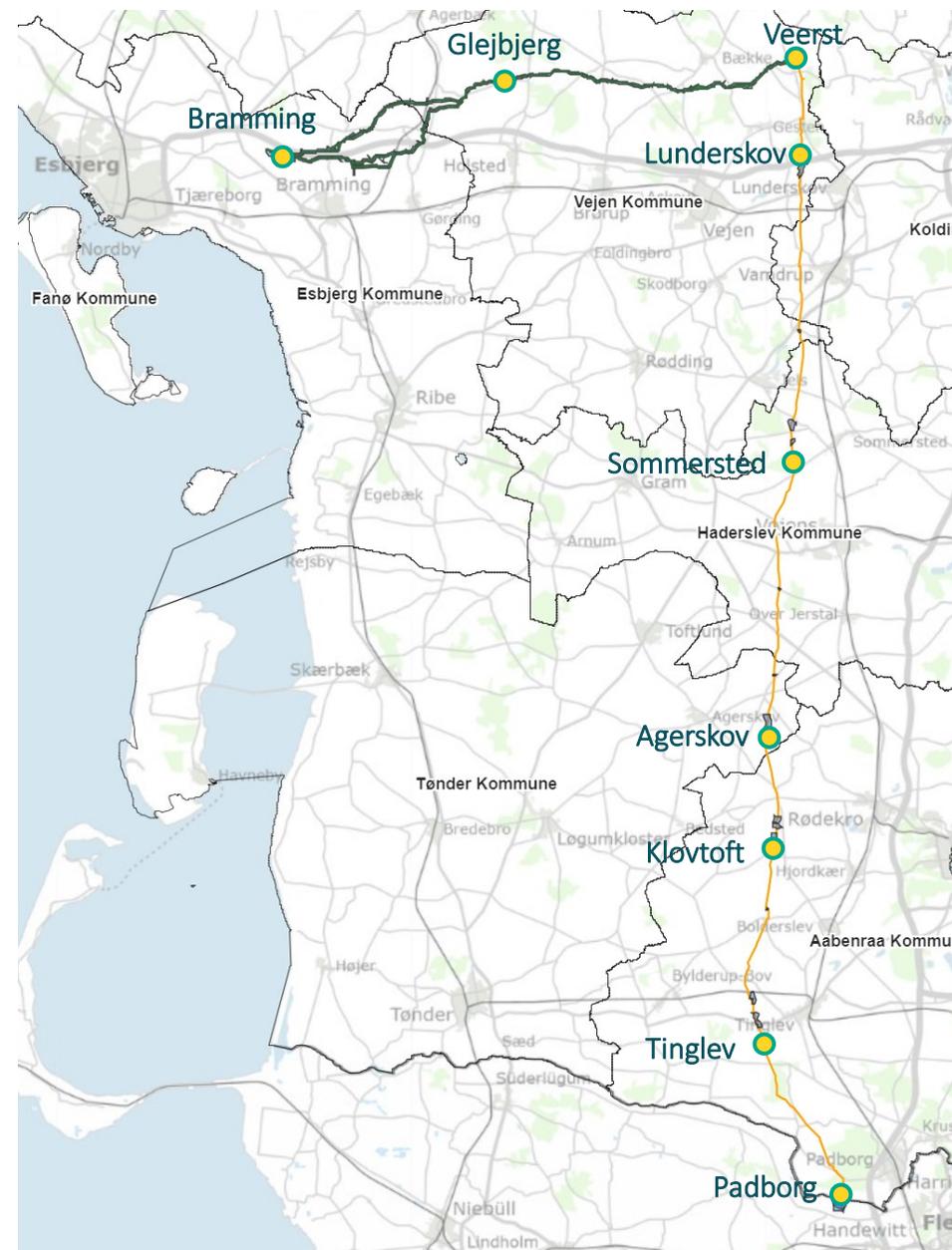
The potential locations for connection to DHB1 are predetermined

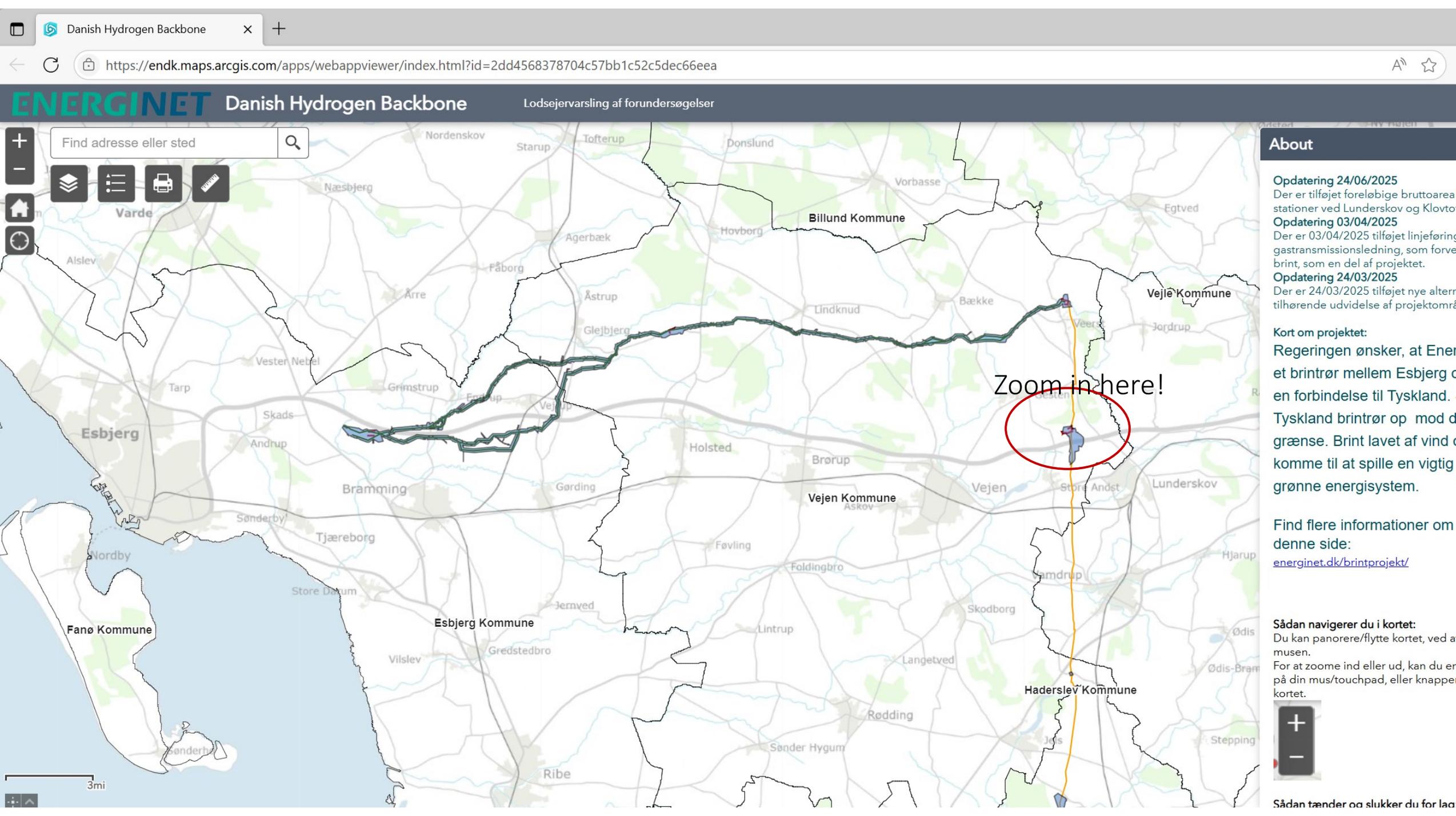
Energinet have reserved land for a number of connection points (CP's) along the backbone.

Each point will have a connection manifold with an extraction capacity of 2 GWh/h.

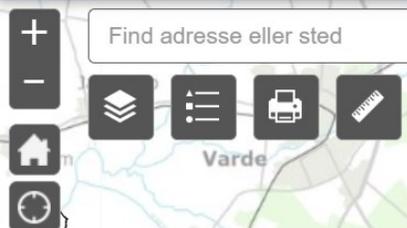
Sizing of CP's based on First Come First Serve – and Energinet may apply a use it or loose it principle.

The CPs can be viewed in detail on:
www.energinet.dk/brintprojekt

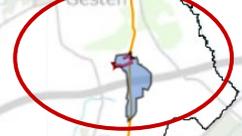




Find adresse eller sted



Zoom in here!



About

Opdatering 24/06/2025

Der er tilføjet foreløbige bruttoarea stationer ved Lunderskov og Klovtov

Opdatering 03/04/2025

Der er 03/04/2025 tilføjet linjeføring gastransmissionsledning, som forve brint, som en del af projektet.

Opdatering 24/03/2025

Der er 24/03/2025 tilføjet nye altern tilhørende udvidelse af projektomr

Kort om projektet:

Regeringen ønsker, at Ener

et brintrør mellem Esbjerg o

en forbindelse til Tyskland.

Tyskland brintrør op mod d

grænse. Brint lavet af vind o

komme til at spille en vigtig

grønne energisystem.

Find flere informationer om denne side:

energinet.dk/brintprojekt/

Sådan navigerer du i kortet:

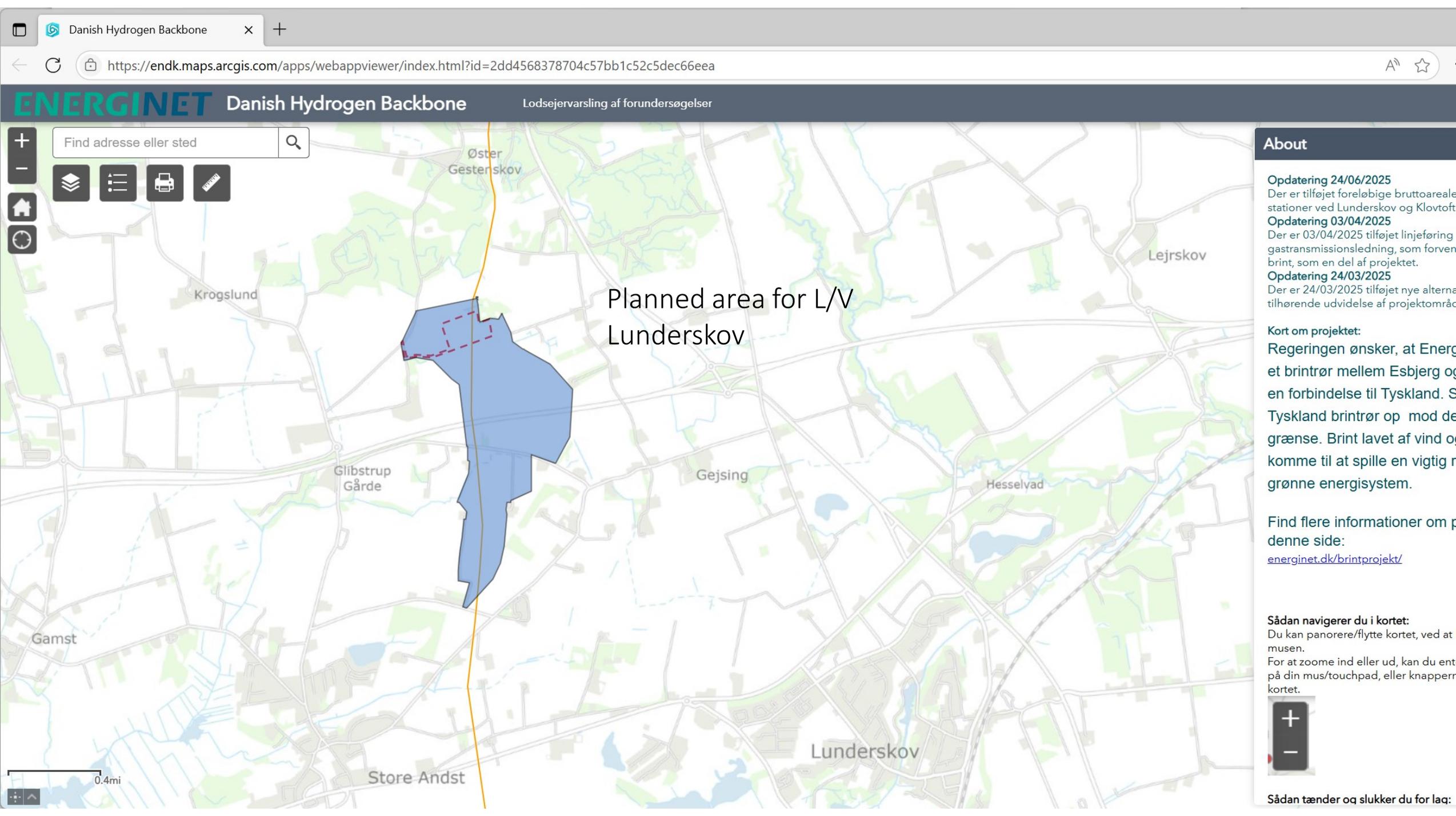
Du kan panorere/flytte kortet, ved a musen.

For at zoome ind eller ud, kan du er på din mus/touchpad, eller knapper

kortet.



Sådan tænder og slukker du for la



Find adresse eller sted



Planned area for L/V Lunderskov

About

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Opdatering 24/03/2025

Der er 24/03/2025 tilføjet nye alternativer tilhørende udvidelse af projektområdet.

Kort om projektet:

Regeringen ønsker, at Energinet skal bygge et brintrør mellem Esbjerg og Sønderborg som en forbindelse til Tyskland. Sønderborg og Tyskland brintrør op mod den danske grænse. Brint lavet af vind og sol vil komme til at spille en vigtig rolle i et grønt energisystem.

Find flere informationer om projektet på denne side:

energinet.dk/brintprojekt/

Sådan navigerer du i kortet:

Du kan panorere/flytte kortet, ved at trække musen.

For at zoome ind eller ud, kan du klikke på din mus/touchpad, eller knapperne på kortet.



Sådan tænder og slukker du for laq:

HOW CONNECTION POINTS ARE ASSIGNED

User supply information about the type of connection or connections if both extraction and injection is needed
When Energinet has received all necessary information, the assignment can progress to next phase.



Based on the following objective criteria's Energinet will assign a connection point:

- The system user's request, available capacity in the system, distance to system user's facility and the overall operation and safety of the Hydrogen backbone
- Energinet will discuss the connection point with other relevant hydrogen transmission-, distribution- or system-operators



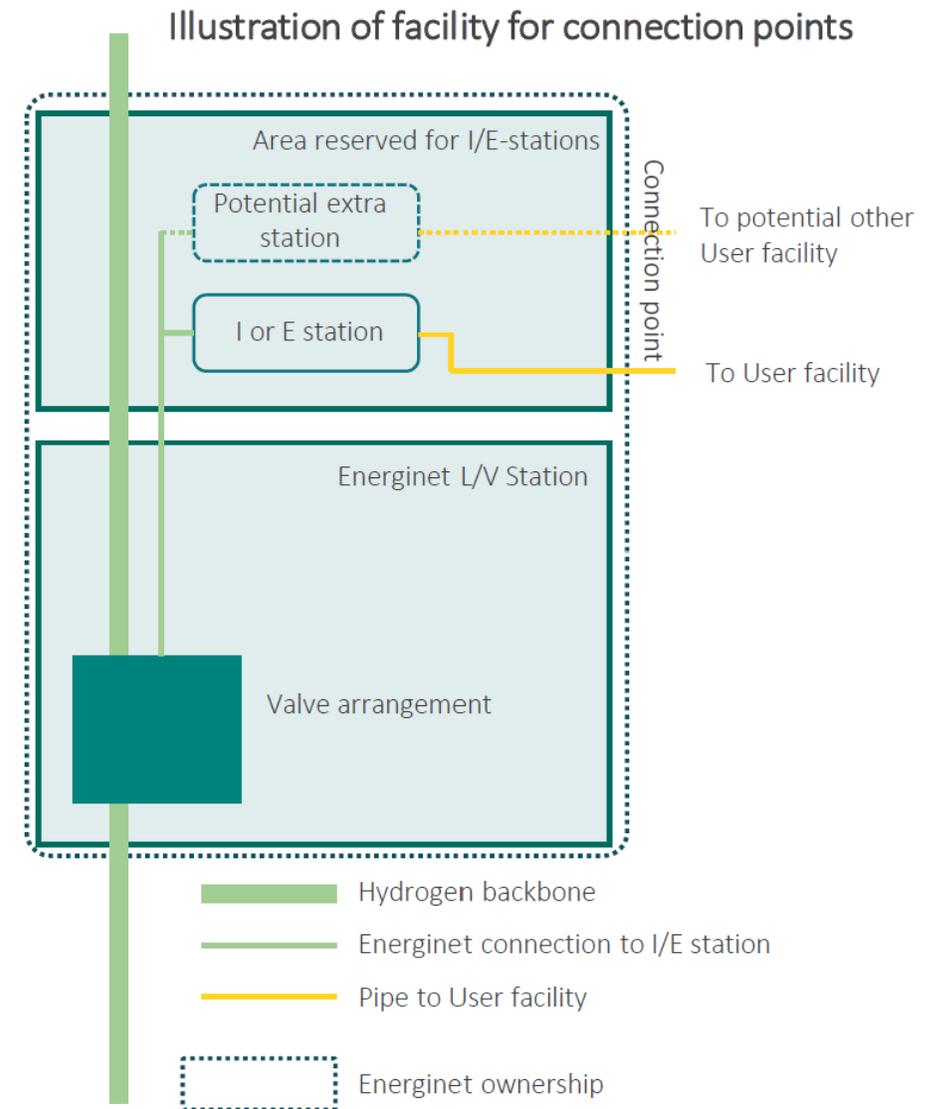
The assigned connection point is reported back to the system user.

- If the connection point deviates from the requested point Energinet will explain the criteria's for selecting another point
- If the system user objects to the assigned connection point the User can complain to the Danish Utility regulator
- The process will continue after the user have accepted to carry on

CONNECTION POINTS

Line-Valve stations and I/E-stations

- Each Connection Point consist of a connection manifold and area reserved for two connections.
- A connection can be either injection or extraction.
- Each user has an assigned I-station or E-station to ensure independent operation
- Owned by Energinet – all cost associated with the connection will be invoiced to the user
- Capex for either injection or extraction station 50-150 MDKK – depends on size and user requirements (250 MDKK for two-way station)
- User provides pipeline to user facility as well as any necessary compression equipment

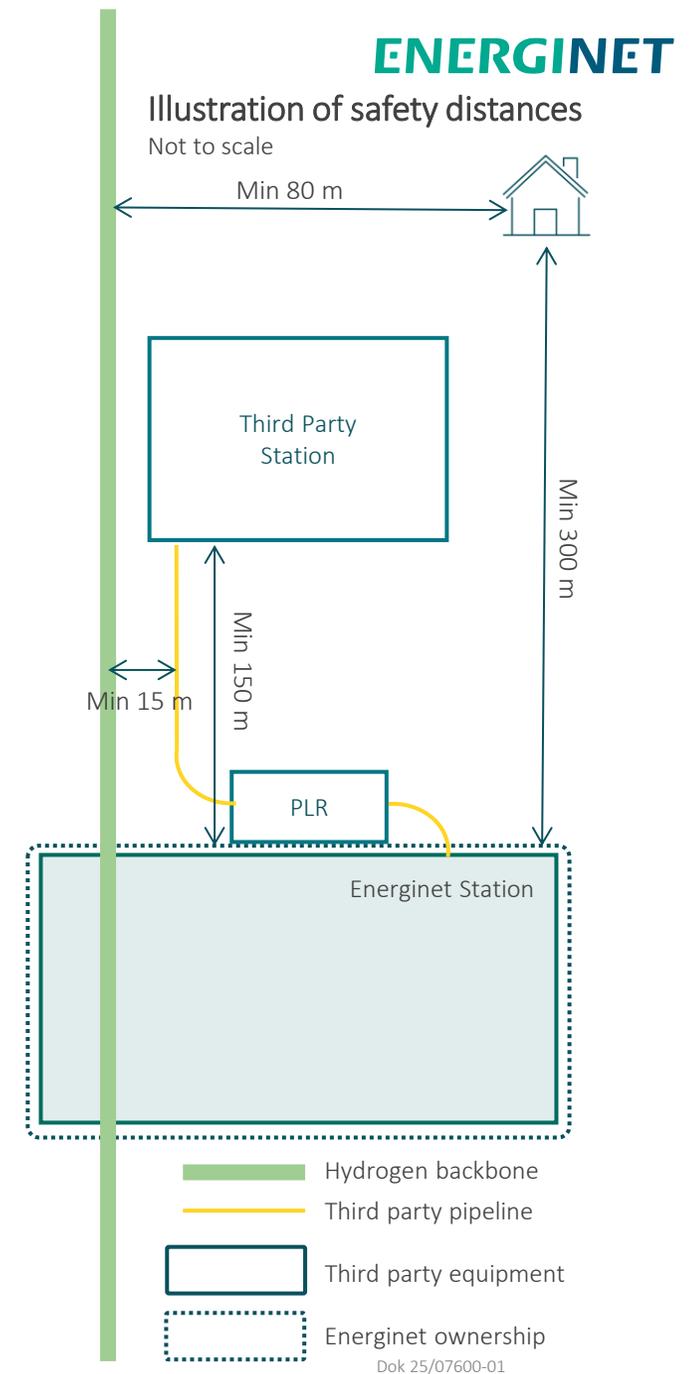


SAFETY DISTANCES

Safety distances to other facilities and buildings are still being **drafted**.

- **15 m general safety distance** between parallel pipeline or cables originating from the center of the pipeline.
- **80 m safety distance** between the center of a hydrogen pipeline to any facility containing personnel
- **300 m safety distance** from any surface facility perimeter fence to nearby structures containing personal.
- **150 m safety distance** from any equipment perimeter fencing containing hydrogen at transmission pressure
- Vent or flare facilities located so that ignited release **will not exceed 4.71 kW/m²** on Energinet properties

Safety requirements are the purview of the Danish Safety Technology Authority



Current best estimate of gas quality requirements for Hydrogen

Origin	Component	Abbreviation	unit	Value
H ₂ Generation	Hydrogen	H ₂	mol-%	≥ 99.5 ^b
	∑ of inerts	(e.g. N ₂ , He, Ar)	mol-%	≤ 0.5 ^b
	Carbon monoxide	CO	ppm ^c	≤ 20
	Carbon dioxide	CO ₂	ppm	≤ 20
	Ammonia	NH ₃	ppm	≤ 13
	Halogenated compounds	e.g. X-Cl/X-F	ppm	≤ 0,05
	Water	H ₂ O	ppm	≤ 20 or 60 ^b
	Oxygen	O ₂	ppm	≤ 1000 ≤ 10 ^{d,e}
NG Infrastructure ^a	∑ of hydrocarbons	C _x H _y	mol-%	≤ 0.5 ^b
	Hydrocarbon dew point	HCDP	°C	≤ - 2 at 1 < p < 70 bara
	Total sulphur	-	ppm	≤ 7
	Particles	-	mg/kg	Technically free
	Odorization	Hydrogen shall not be odorized in the Danish Hydrogen Backbone and hydrogen shall be delivered unodorized at the Entry Points to the backbone.		
	Contaminants	The hydrogen gas shall not contain other components and/or contaminants than those listed in the table to an extent which can compromise the safety or integrity of the infrastructure, or which can prevent its transportation storage and/or utilization without further adjustment of the quality or treatment of the hydrogen gas.		
	Wobbe index	WI	MJ/m ³ (15/15) (25/0)	42,0-46,0 ^f (44,3-48,5)
^a These components most likely have their origin in the previous use of the pipeline. Occurrence is only expected in partially or fully repurposed systems. ^b National departures from DS/CEN/TS 17977:2023. ^c ppm on a molar basis is equivalent to mol/mol which is used on DS/CEN/TS 17977:2023. ^d Max. 1000 ppm in grids with no exit point to UGS or to sensitive customers, otherwise max. 10 ppm. ^e Expressed as a moving 24-hour average. ^f In addition to the individual component limits the composition of the gas shall satisfy the Wobbe Index interval.				

PRESSURE AND GAS QUALITY REQUIREMENTS FOR HYDROGEN CONNECTIONS

All connections are exposed to pressure in DHB

- New built pipeline pressure: 50-90 barg
- Converted pipeline pressure: 35-58 barg
- Actual pressure is a function of linepack, flow, location etc.

The crossborder gas quality requirements are defined by the European authority, CEN.

Gas quality requirements may change with input from the Danish Safety Technology Authority.

4. NEXT STEPS



NEXT STEPS

- Draft pre-construction agreement published on: <https://energinet.dk/brint/for-markedsaktorer/vil-du-videre-om-tilslutning-til-brintinfrastrukturen/> October 2025
- 1 December 2025 latest – Users requests to be part of the Early hydrogen connection process
- January 2026 – Initial capacity booking begins
- 1 April 2026 latest – User agrees on pre-construction agreement
- February 2027 – Latest time for initial capacity booking
- 1 March 2027 – interconnection agreements

WHAT ABOUT LATER CONNECTIONS?

Energinet's current priority are the early connections – what about 2032 or later?

2032 connections may join the early connection process and abide to the same deadlines

Proces for later connections will be published later:

- Expect at least 4 years from pre-construction agreement to operation
- Connection point will be assigned as part of the of the pre-construction phase

5. Q&A

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QUESTIONS AND ANSWERS (1)

Q: Is it possible to receive the Connection Agreement at the same time as the Capacity Booking?

We would like to ensure that when we commit to purchasing capacity, we are also guaranteed a connection to the backbone. Ideally, we would like both agreements to be in the same "envelope".

ANSWER: When stakeholders enter a pre-construction agreement with Energinet in April 2026, they are guaranteed to receive a Connection Agreement and be connected in 2030 or 2031. However, there are certain exceptions: if stakeholders abandon their projects, or if it is decided—either politically or commercially—that DHB1 will not be realized, the Connection Agreement and guarantee on being connected in 2030 and 2031 will be cancelled or changed.

The Connection Agreement template, which includes all relevant

information, will be published in Q2 2026. The actual price of the designed station will be available from the contractor in March 2027 whereafter the Connection Agreement can be finalized.

Q: What is the earliest point in time to request a connection via the Early hydrogen connection process?

ANSWER: Earliest possible request can be handled from 8th of September 2025.

QUESTIONS AND ANSWERS (2)

Q: How does your process for connections to DHB1 align with the process for electricity connections? Many projects are unlikely to have certainty regarding their electricity connection by December 2025, when you expect to receive the formal connection requests.

ANSWER: The timelines for DHB1 and electricity grid connections are not aligned, although the processes themselves are quite similar. Energinet want to understand and support projects that may face challenges with their connection timelines although we cannot affect timelines and work processes of electricity grid connections. We encourage all projects aiming to be part of the 2030 and 2031 connections, and who are expected to submit a formal request by 1. December 2025, to initiate dialogue with us as early as possible. They can get in touch via contacts on our webpage/SPOC.