



ENERGINET

SHIPPERS' FORUM

13 September 2018



PROGRAMME

12.00	<i>Lunch and networking</i>
13.00	Welcome <i>Clement Johan Ulrichsen, Energinet Gas TSO</i>
13.15	Gas market developments <i>Thomas Egebo, Energinet</i>
13.35	General Market Update <i>Signe Louise Rasmussen, Energinet Gas TSO</i>
13.55	Interactive survey <i>Dorte Kristiansen, Energinet Gas TSO</i>

14.25 Coffee break and networking

14.55	Tyra redevelopment 2019-2022 <ul style="list-style-type: none">• PRISMA auction 2 July 2018 – <i>Christian Rutherford, Energinet Gas TSO</i>• Supply and demand without Tyra – <i>Christian Meiniche Andersen, Energinet Gas TSO</i>• Market measures – <i>Christian Rutherford, Energinet Gas TSO</i>
15.15	Tariff Projection Model <i>Jeppe Danø, Energinet Gas TSO</i>
15.25	Gas Storage Denmark <i>Hans-Åge Nielsen, Gas Storage Denmark</i>
15.40	Negotiation on Emergency Storage <i>Jeppe Danø, Energinet Gas TSO</i>
15.50	Final remarks <i>Clement Johan Ulrichsen, Energinet Gas TSO</i>

WELCOME

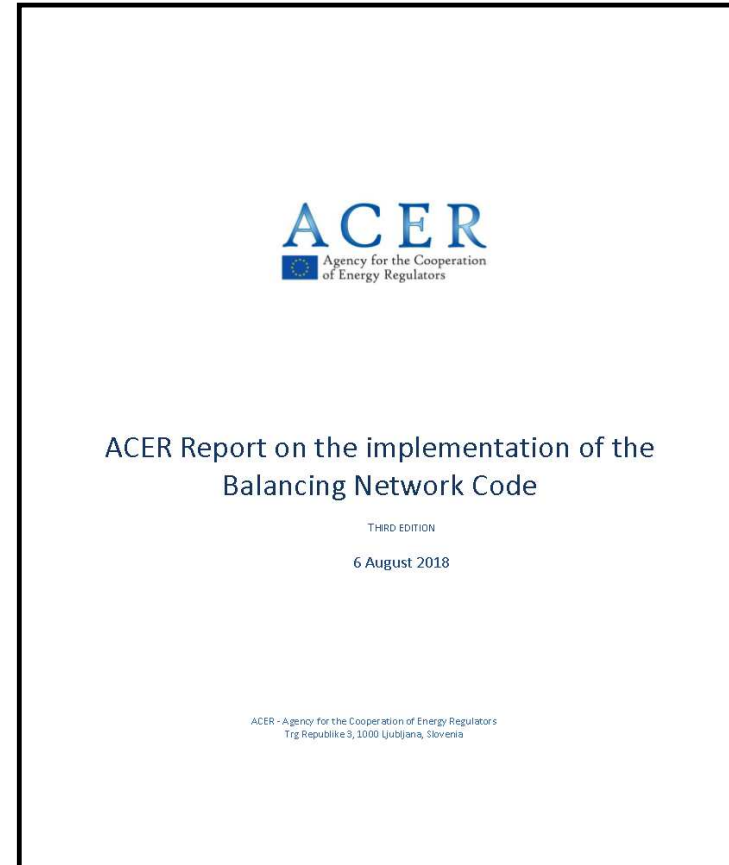
Clement Johan Ulrichsen

Head of Gas Market Development, Energinet Gas TSO

PROBABLY THE BEST BALANCING MODEL...

ACER report: Best practise balancing model in Denmark

“Denmark provides an excellent example of an implementation **built upon best practice** taken from the more developed North-West European countries and further evolved thanks to a continuous and inclusive **stakeholder engagement**” (page 50)



2/4

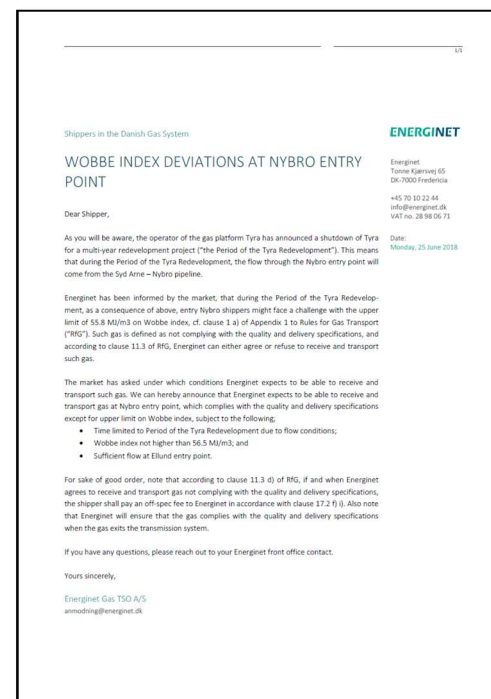
HANDLING SYD ARNE GAS QUALITY

To secure North Sea volumes during Tyra Redevelopment

How Energinet expect to handle any Syd Arne gas quality deviations:

- Today: Blending with Tyra gas in Nybro
- Expectation for 2019-2022: Blending with Ellund gas in Egtved

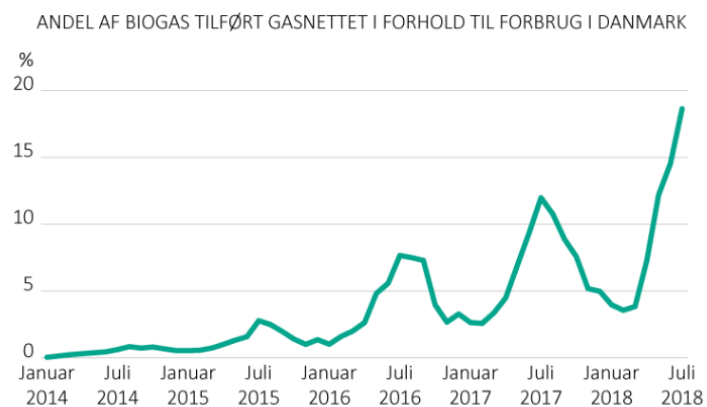
Off-spec fee paid by Nybro shippers with off-spec gas



18.6 % BIOMETHANE IN GRID IN JULY 2018

Biomethane and other flow data available on Energinet's Energi Data Service

Link: energidataservice.dk/dataset/gasflow



GRØN GAS SLÅR REKORDER I VARM SOMMER

PUBLICERET D. 31.8.2018 09.25

ENERGI DATA SERVICE

Search datasets

DATASETS ORGANIZATIONS GROUPS ABOUT GUIDES EN DK

Log in Register

Organizations / TSO Gas / Gas flow / Gas flow Data

Gas flow Data FILTER DOWNLOAD METADATA DATA API

Total number of rows: 32

Gas Day	Biomethane Flow	Denmark Flow	North Sea Flow	Storage Flow	Germany Flow	Sweden Flow
2018-09-02 00:00	6454995	-36941255	132231124	-57561463	-24158858	-14070772
2018-07-31 00:00	5623694	-31025080	118044611	-56850902	-24535290	-13681332
2018-07-30 00:00	5759871	-33220084	102004508	-47897661	-12547344	-14052432
2018-07-29 00:00	5888790	-23131147	116460794	-53920088	-13795102	-13703988
2018-07-28 00:00	5791210	-21623520	120872642	-78974111	-15859008	-12982404
2018-07-27 00:00	5454966	-28745071	130492126	-68811851	-30059112	-13801068
2018-07-26 00:00	5779746	-28648084	131891989	-69645670	-22745804	-13895352
2018-07-25 00:00	6004948	-30524418	134551127	-68090212	-28169832	-15235188

TWO TENDERS COMING UP

1. Emergency gas

- Deadline for bidding **2 October 2018, 12.00**
- Energinet expects to purchase up to 110 GWh
- Tender by a pay-as-bid auction
- You will receive an invitation and a spread sheet for bidding
- If you have any questions, please contact noedforsyning@energinet.dk

2. Individual filling requirements

- Deadline for bidding **3 October 2018, 12.00**
- Tender by a pay-as-bid auction
- You will receive an invitation and a spread sheet for bidding
- If you have any questions, please contact noedforsyning@energinet.dk

QUESTIONS

email: cju@energinet.dk



GAS MARKET DEVELOPMENT

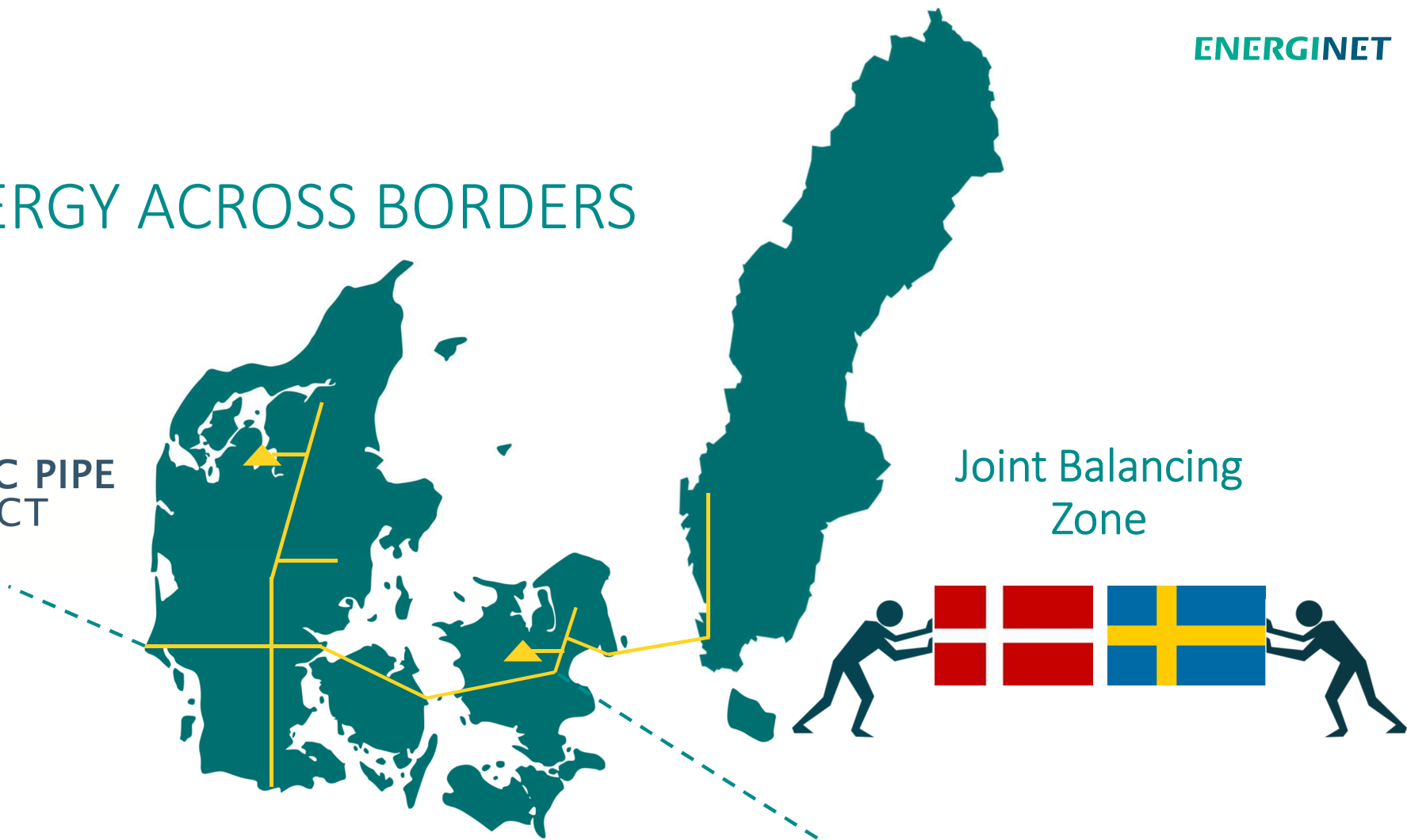
Thomas Egebo

CEO, Energinet

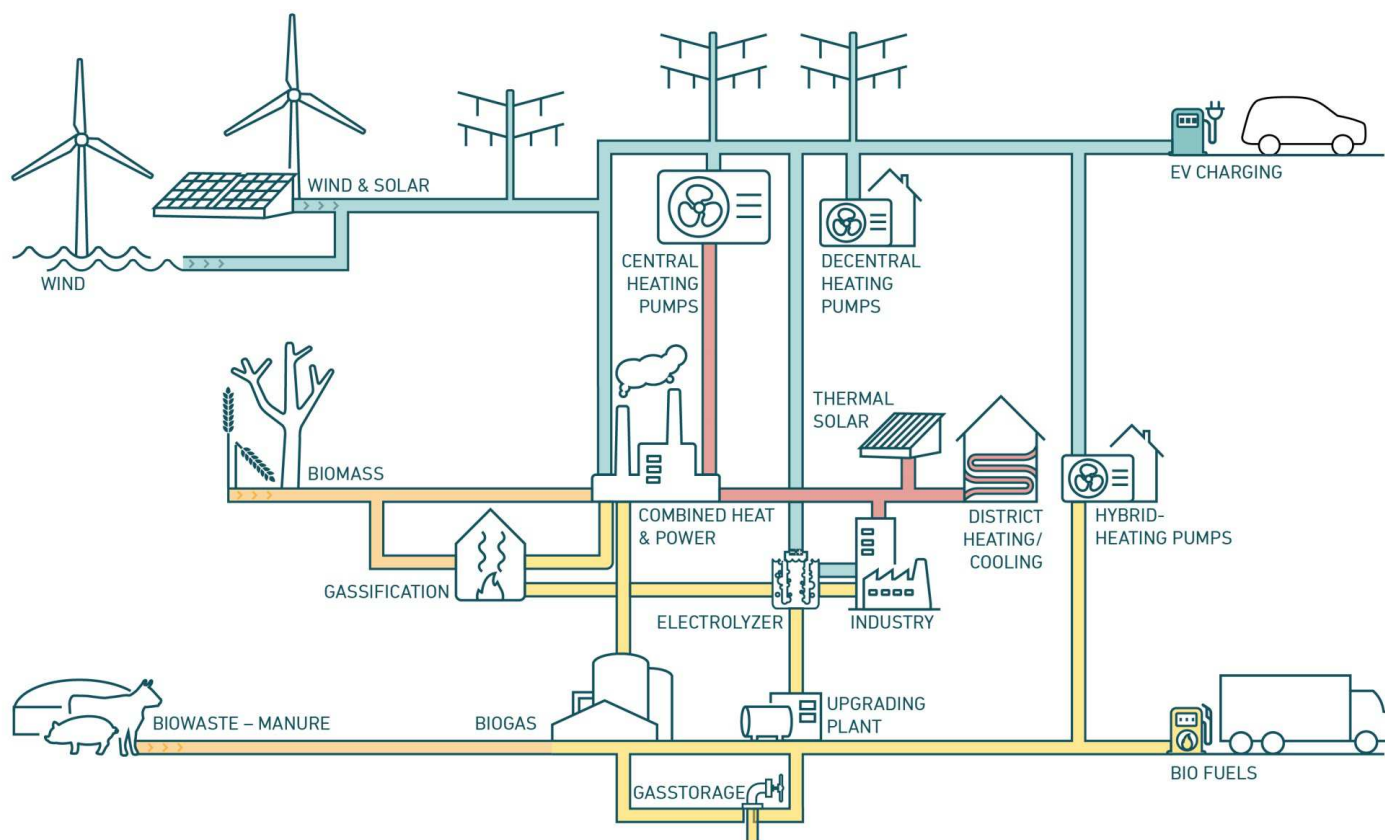
ENERGY ACROSS BORDERS

 **BALTIC PIPE PROJECT**

Tyra



IN THE MIDDLE OF A MAJOR TRANSITION



STRONG POLITICAL WILL FOR GREEN GAS



Reform of EU gas regulation

- *“The future energy system must be based on several forms of energy”*
- *“The gas sector must now prove that it is a part of the long term solution”*

- Klaus Dieter Borchardt, director, DG Energy



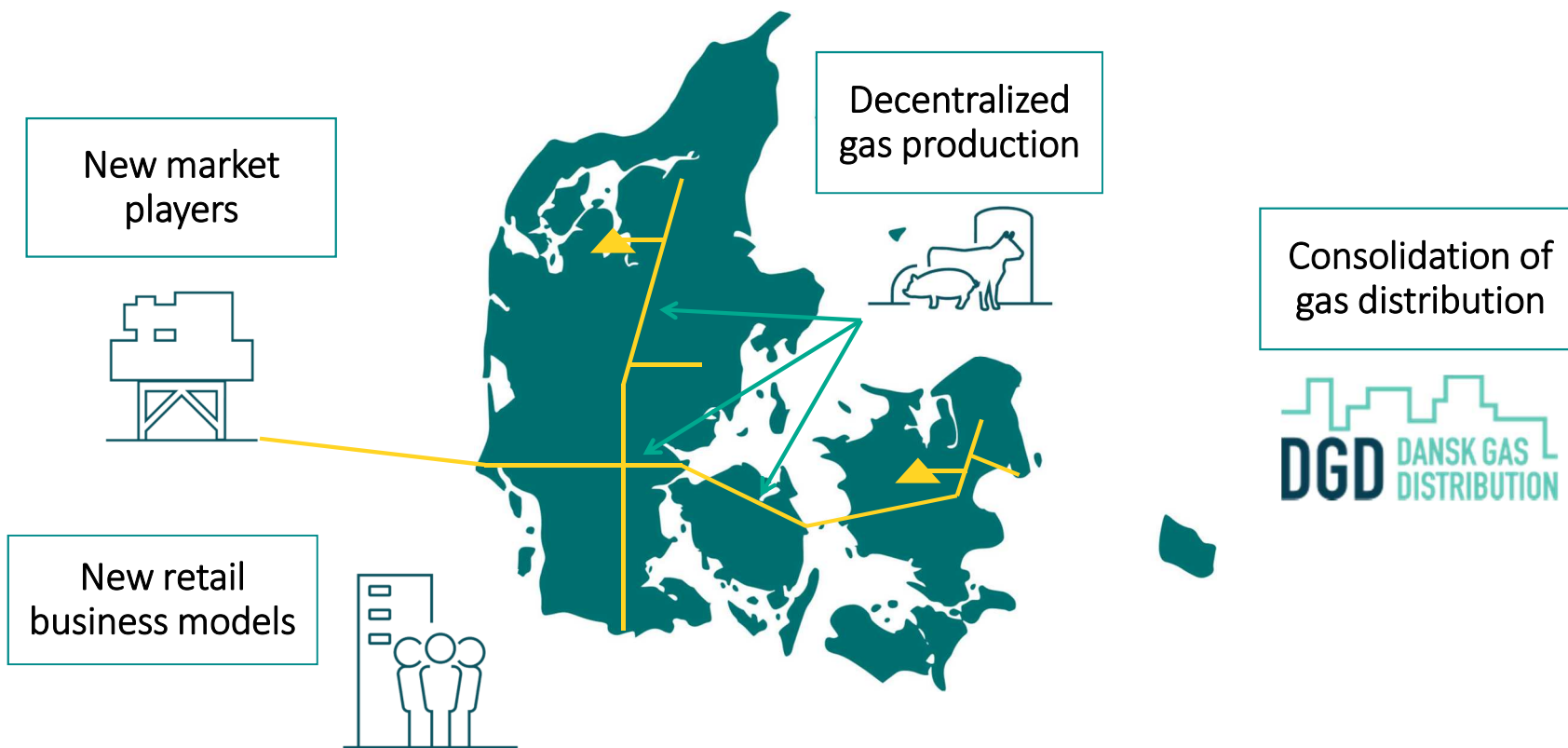
Danish gas strategy

- *Regulatory framework for competitive development of biogas and other green gasses*
- *Possibilities for conversion and storage of electricity in gaseous forms*

- Danish Energy Agreement 29th June 2018



THE VALUE CHAIN IS CHANGING



TOGETHER TODAY AND ON FUTURE CHALLENGES



Photograph: Maersk oil and gas, Tyra field



Photograph: HyBalance, Electrolyzer



Photograph: NGF nature energy, Holsted biogas plant

2019-2022



Paris 2050

QUESTIONS



email: teg@energinet.dk

GENERAL MARKET UPDATE

Signe Louise Rasmussen

Economist, Gas Market Development, Energinet Gas TSO

INTRODUCTION OF EDIG@S VERSION 5.1

Network code on interoperability and data exchange rules

To day

- Edig@s 4.0

1 October 2018

- Edig@s 4.0
- Edig@s 5.1

Testing

- [Shipperguide](#) on Edig@s 5.1 will be published on website
- Contact backoffice@energinet.dk

RULES FOR GAS TRANSPORT VERSION 18.0

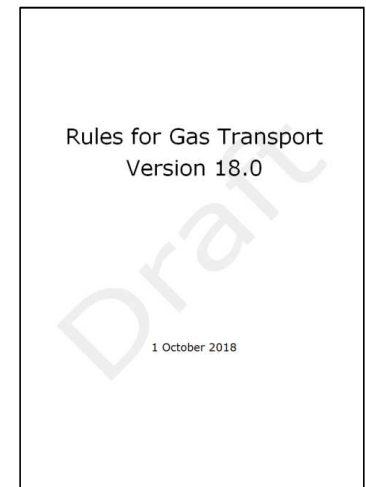
Enter into force on 1 October 2018

The changes are:

- BNG Entry point will change name to RES Entry (Renewable Energy Sources)
- Introduction of single sided nomination at Ellund
- Underrun charge will be removed
- Other minor changes

Public consultation on 17 - 26 September

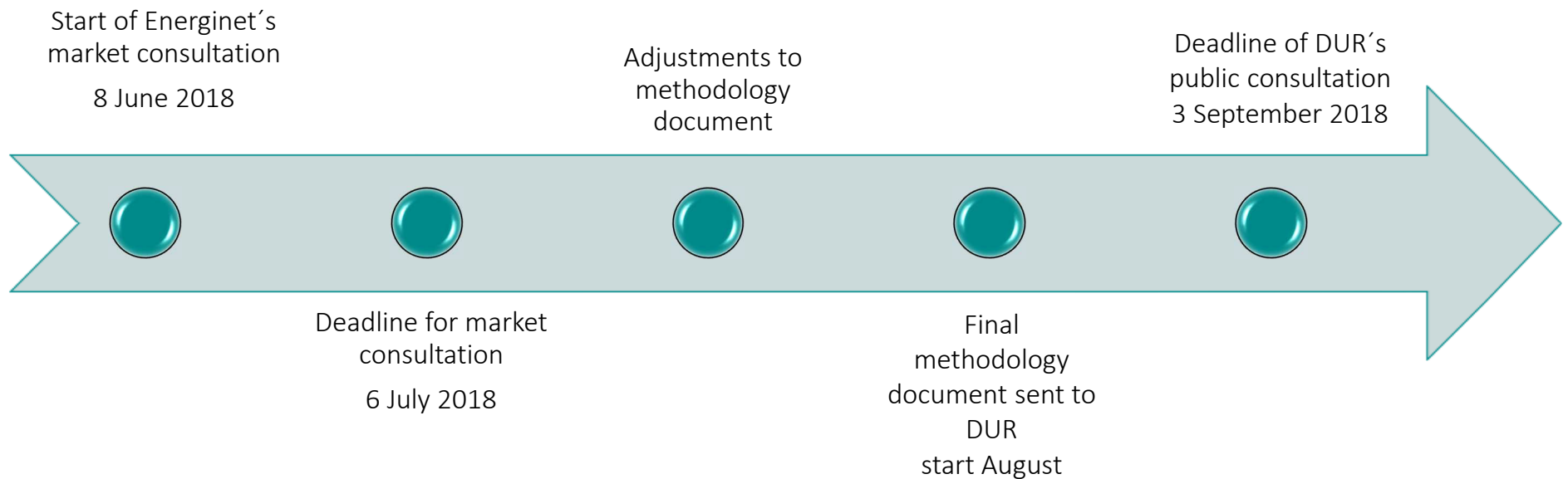
Anmodning@energinet.dk



JOINT BALANCING ZONE – METHOD APPROVAL

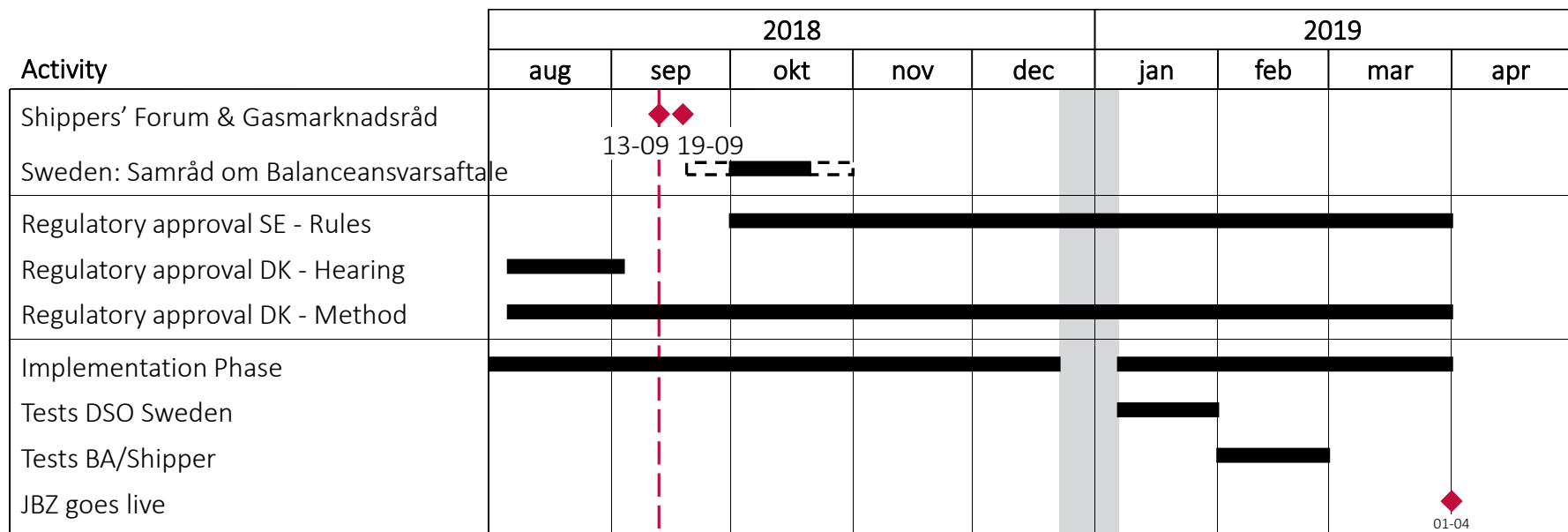
3 comments received during Energinet’s consultation

0 comments received during Danish Utility Regulation’s (DUR) consultation



JOINT BALANCING ZONE – NEXT STEPS

Timeline



QUESTIONS TO THE JOINT BALANCING ZONE

Or if you want to become a shipper in Sweden

Do not hesitate to contact us at JBZ@swedegas.se

QUESTIONS



email: slr@energinet.dk

INTERACTIVE SURVEY

Dorte Kristiansen

Senior Consultant, Gas Market Development, Energinet Gas TSO

YOU SPEAK – WE LISTEN

Your honest opinion is appreciated

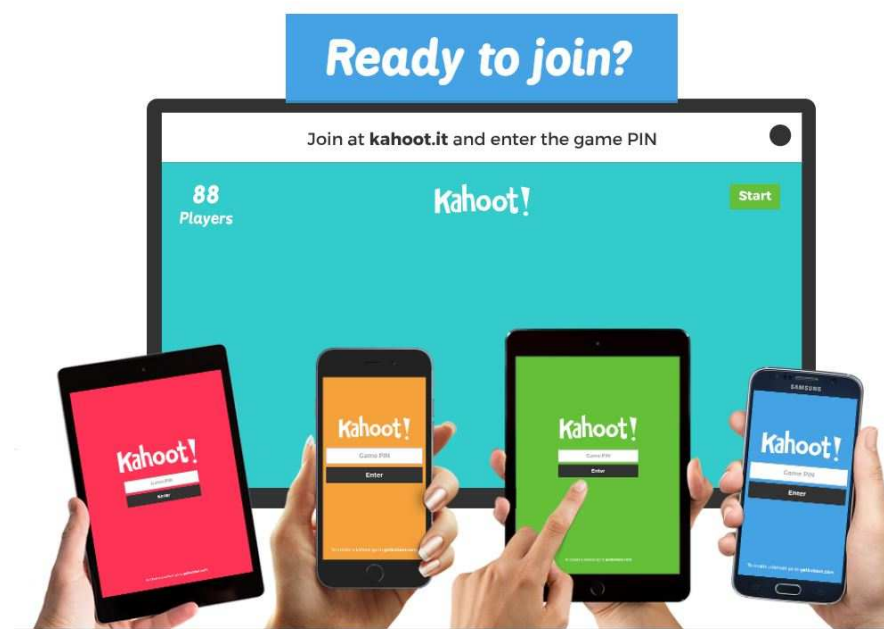
Energinet's reputation survey

Your view on:

- Our daily service
- Our decisions
- Market involvement

Warm up = This Kahoot survey

Follow up = Survey later this year



5 QUESTIONS

Link:

www.kahoot.it

Enter Game PIN

Level of anonymity:

Choose your nickname wisely



COMMENTS

email: dgk@energinet.dk





TYRA REDEVELOPMENT

2019-2022

PRISMA AUCTION 2 JULY

Christian Rutherford

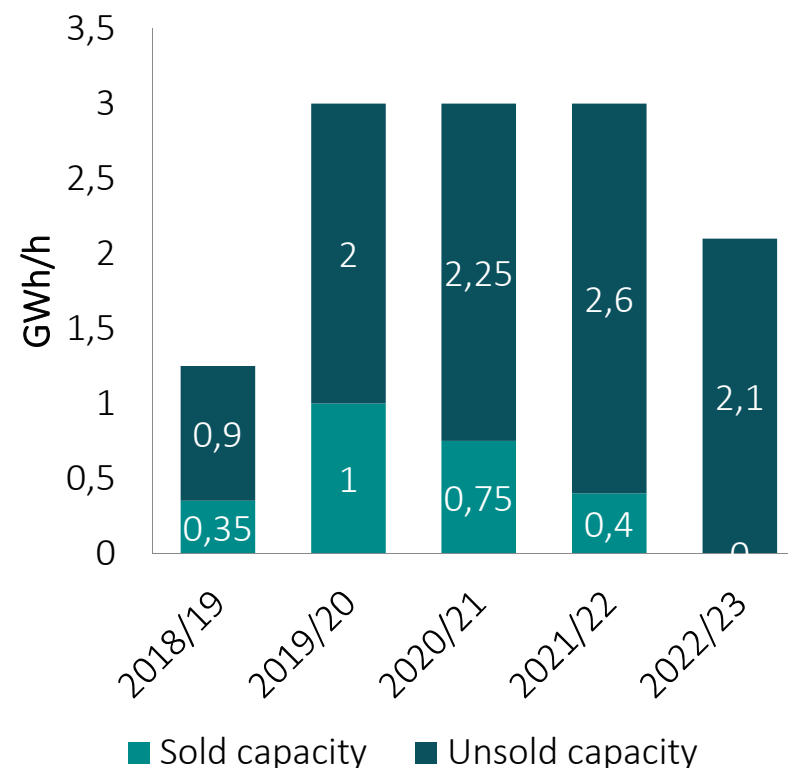
Chief Economist, Gas Market Development, Energinet Gas TSO

LOW CAPACITY BOOKING AT ELLUND

Shippers booked less than expected

- **Energinet:** Advised shippers to book capacity during the Tyra shutdown period.
- **Gasunie Deutschland:** 1 GWh/h extra would only be built and added to Ellund, if booked.
- **Result:** Existing capacity was far from sold out.
- **Capacity will not be established for Ellund:** but for Northern German market area.

Annual auction July '18,
Ellund DE (GUD)→DK



CAPACITY OVERVIEW ELLUND ENTRY

After auction 2 July 2018 – bundled capacity without extra 1 GWh/h at GUD

Point/GY (in kWh/h)	Gas Year 2018	Gas year 2019	Gas Year 2020	Gas Year 2021	Gas Year 2022
Technical firm capacity (GUD & OGE)	4.2 GWh/h	5.1 GWh/h	5.1 GWh/h	5.1 GWh/h	5.1 GWh/h
Total booked capacity (GUD & OGE)	3.2 GWh/h	3.7 GWh/h	3.3 GWh/h	3 GWh/h	-
Available capacity (GUD & OGE)	1 GWh/h (only GUD)	1.4 GWh/h	1.8 GWh/h	2.1 GWh/h	5.1 GWh/h

QUESTIONS



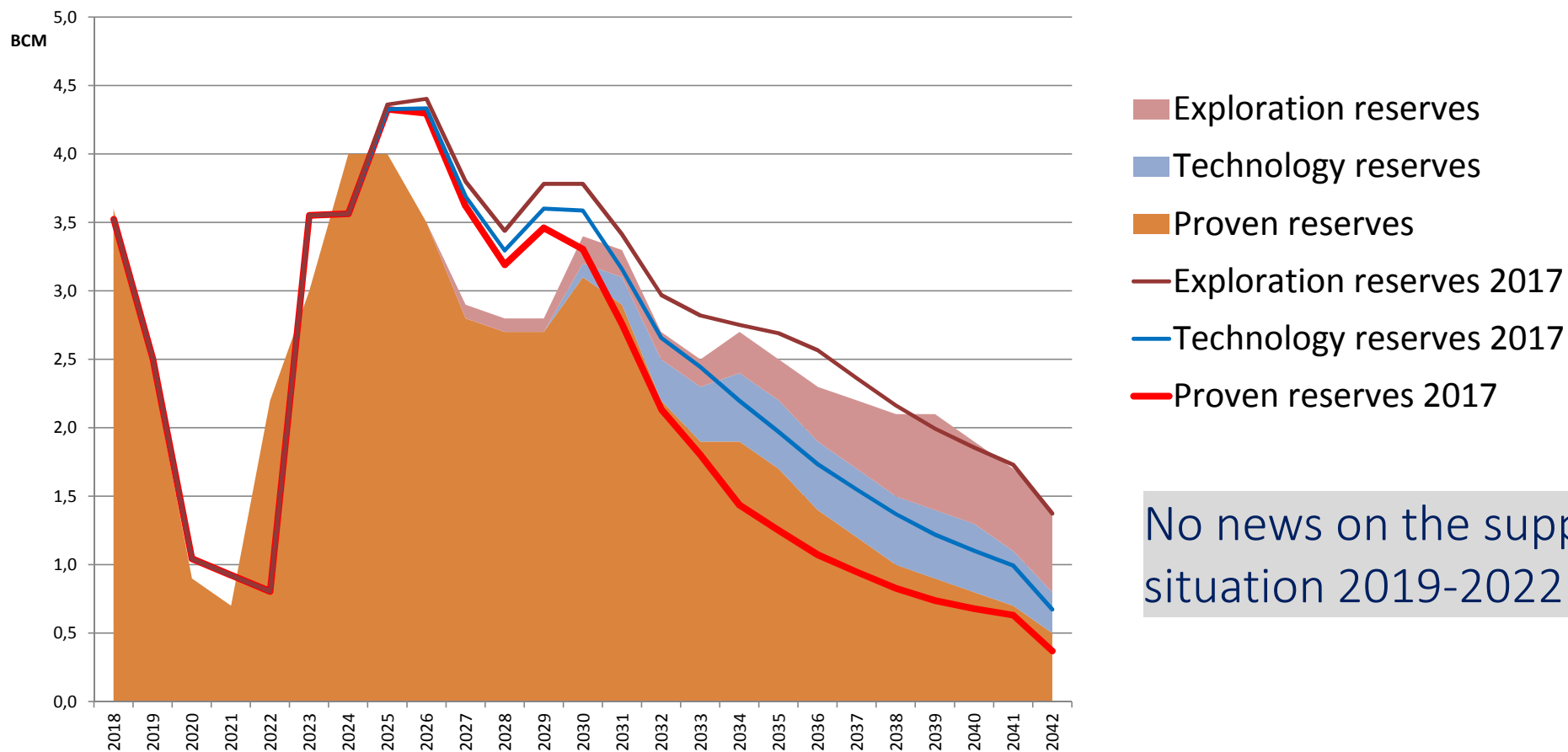
email: cru@energinet.dk

SUPPLY AND DEMAND WITHOUT TYRA

Christian Meiniche Andersen

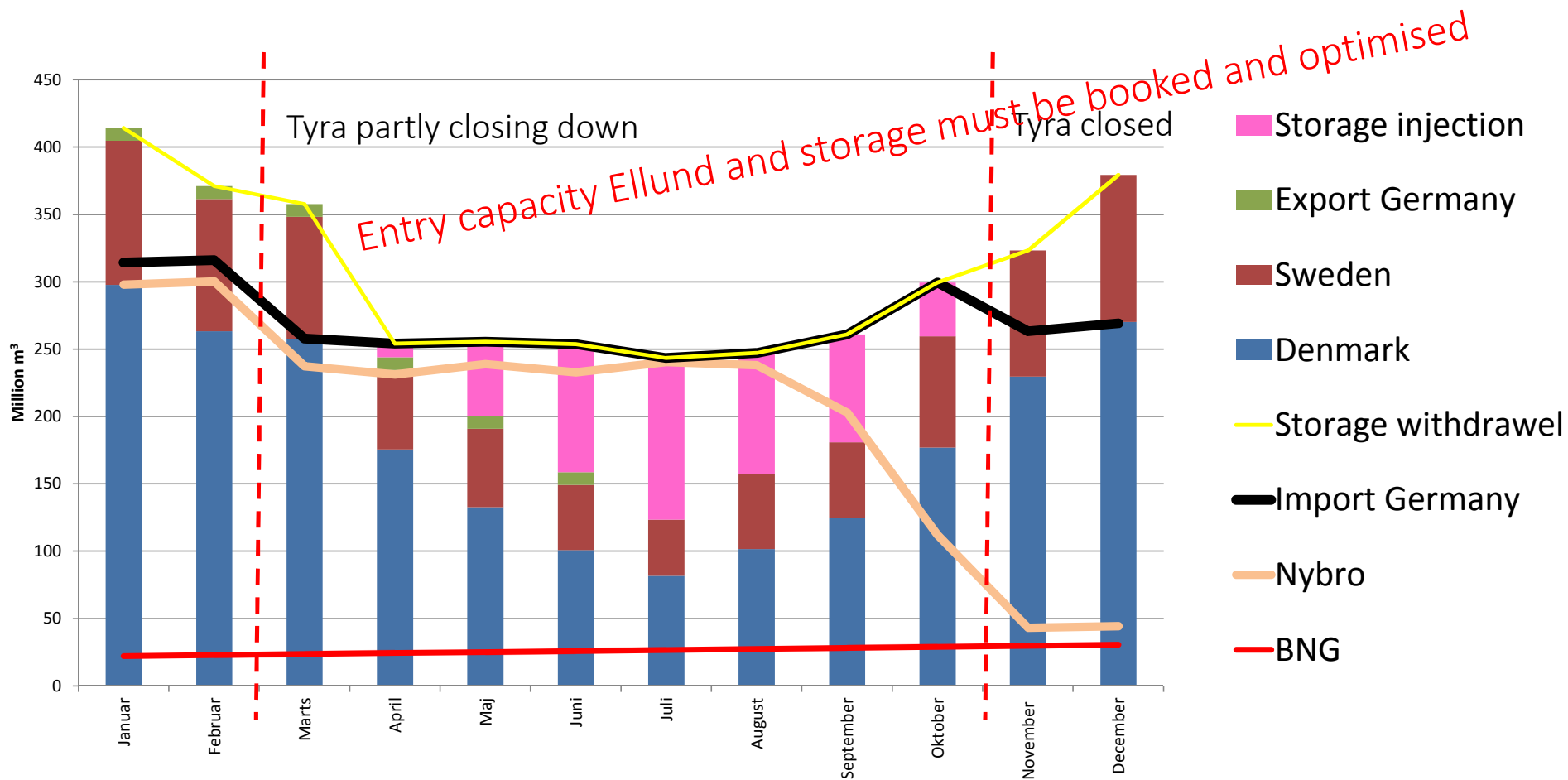
Head of Gas System Operations, Energinet Gas TSO

DANISH NORTH SEA 2017-2042, DEA AUGUST 2018



No news on the supply situation 2019-2022

POSSIBLE SUPPLY AND DEMAND 2019



SUPPLY AND DEMAND 2019-2022

Described in August 2017

Memorandum

To: The Danish and Swedish gas market		ENERGINET
Analysis		Energinet.dk Tonne Kjærvej 65 DK-7000 Fredericia
SUPPLY AND DEMAND 2019-2022 WITHOUT TYRA		+45 70 10 22 44 info@energinet.dk VAT no. 28 98 06 71
Contents		Date: 28. august 2017
1. Background.....	2	Author: JBJ/HOG
2. Conclusion	4	
3. Assumptions	5	
4. Supply and demand situation per month 2019-2022.....	6	
5. Supply and demand in extreme winter conditions.....	9	
6. Time schedule and future process	11	

PowerPoint



<https://energinet.dk/Gas/Tyra/Forsyningsbilledet>

WHAT HAS HAPPENED SINCE AUGUST 2017

1. The technical withdrawal capacity at the Lille Torup storage facility is being expanded in 2018 from 8 to 10 mcm/day to support the emergency supply capabilities of the overall system (N-1 incident). The necessary technical modifications at the plant are ongoing.
2. New Analysis *preliminary* Assumptions 2018 from the Danish Energy Agency in August 2018 with an expected decrease in Danish gas consumption 2018-2022.
3. Prisma Auction 2 July 2018 – limited bookings of entry capacity in Ellund

The supply situation seems improved. However the demand forecast is uncertain (closing of CHP plants)

The supply-situation depends on your bookings and utilization of storage capacity and Ellund entry capacity

QUESTIONS



email: can@energinet.dk

MARKET MEASURES

Christian Rutherford

Chief Economist Gas Market Development, Energinet Gas TSO

STATUS METHOD APPROVAL – BALANCING (TYRA)

Method application forwarded to DUR start July

3 measures have been forwarded to DUR for approval:

1. Removal of price caps
2. New method for calculating adjustment step 2
3. New formula for imbalance prices in Emergency

Status

- 0 responses to DUR market consultation
- 4 responses to Energinet market consultation – mainly addressing new formula for imbalance prices in Emergency
- Energinet response in appendix 1 of the application



TYRA – BUNDLED FILLING REQUIREMENTS

Joint concept between Energinet Gas TSO and Gas Storage Denmark

Reasoning for bundling filling requirements with storage volume

- Storage customers certain that Energinet Gas TSO will buy filling requirements when booking this storage capacity
- Increase options for buying and selling filling requirements for storage customers and Energinet Gas TSO

Next steps

- Energinet Gas TSO and Gas Storage Denmark is finalising concept
- Expected to be subject for method approval
- In any case, concept will be subject for market consultation

TYRA – OTHER MEASURES

Timeline for implementation – 4 measures

1. Emergency Workshop

- New workshop expected in March 2019

2. Minimal Storage Filling

- Plan to implement graphical view towards May 2019 (beginning of storage year)

3. New secondary products at PRISMA

- Expected towards October 2019

4. Interruptible within-day capacity at Ellund

- Expected towards October 2019

QUESTIONS



email: cru@energinet.dk

TARIFF PROJECTION MODEL

Jeppe Danø

Market Director, Energinet Gas TSO

PURPOSE OF A SIMPLIFIED TARIFF MODEL

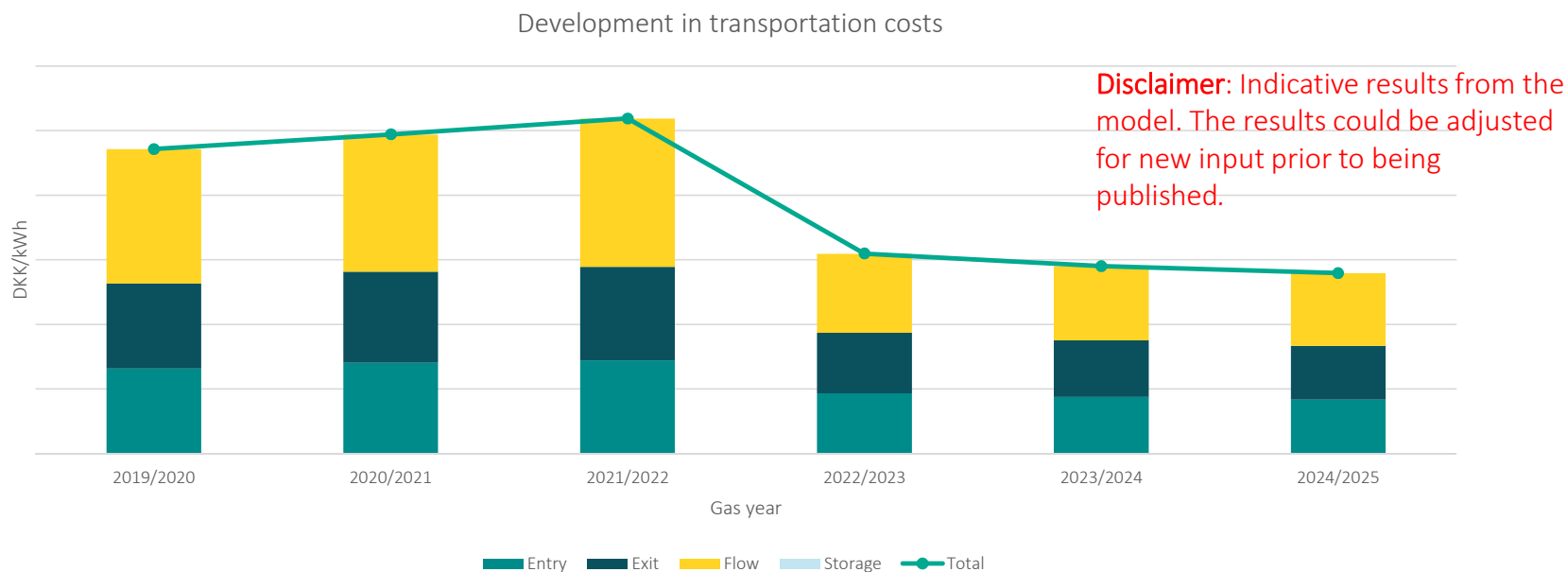
Network users have requested a transparent overview of the tariff calculations and methodologies. It is also a requirement of TAR NC

- Communicate updated budget forecasts.
- Provide a transparent tariff forecast for the Tyra renovation period and the Baltic Pipe project.
- Allow shippers and DUR an instrument to assess the impact of alternative cost allocation methodologies.
- Enabling network users to reproduce the calculation of reference prices and their accurate forecast in compliance with TAR NC Art. 7 and Art. 30 2 (b): *...a simplified tariff model, updated regularly, accompanied by the explanation of how to use it, enabling network users to calculate the transmission tariffs applicable for the prevailing tariff period and to estimate their possible evolution beyond such tariff period.*
- **The forecasted tariffs as well as the cost and flow input are non-binding and intended for indicative purposes exclusively.** Energinet will aim to update the model regularly.



PROJECTION OF TARIFFS AND TRANSPORTATION COSTS

The model will show the expected development in capacity tariffs, flow tariffs and average transportation costs



ADJUSTABLE ASSUMPTIONS

The user can adjust assumptions and discover the impact on expected tariffs

Scenario in use: **With Baltic Pipe** (selected) / Without Baltic Pipe

% change in simulation data		2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
	Unit						
CAPEX cost	%	0%	0%	0%	0%	0%	0%
OPEX cost	%	0%	0%	0%	0%	0%	0%
Capacity	%	0%	0%	0%	0%	0%	0%
Flow	%	0%	0%	0%	0%	0%	0%

Green = adjustable cell

Percentage adjustment in cost, capacity and flow assumptions

CALCULATION OF TOTAL TRANSPORTATION COSTS

The user can calculate his expected transportation costs given an expected flow and load factor

Calculation of total transportation costs: shipper

Load factor Entry	0,82
Load factor Exit	0,79
Flow in kWh	40.000.000
Entry capacity booking in kWh/h/y	5.569
Exit capacity booking in kWh/h/y	5.780

Adjustable load factor

Adjustable flow expectations

Shippers cost of transportation based on flow and load factor assumption above							
	Unit	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
Transportation cost, uniform	DKK	428.361	450.039	471.268	284.073	266.053	255.813
Entry	DKK						
Exit	DKK						
Flow	DKK						
Transportation cost, uniform	EUR						
Year on year development	%						

Disclaimer: Indicative results from the model. The results could be adjusted for new input prior to being published.

QUESTIONS



email: jda@energinet.dk

—
**GAS
STORAGE
DENMARK**
—



SHIPPERS FORUM

BALLERUP 14TH SEPTEMBER 2018

Hans-Åge Nielsen



AGENDA

- **Latest Gas Market Messages concerning storage**
- **New interruptible tariffs for SY-18**
- **Storage capacities SY-19**
- **Variable injection tariff for SY-19**
- **FCFS with price guarantee**
- **Other products for SY-19**

GAS MARKET MESSAGES - VOLUME CAPACITY SY18

GMM 24th April: 310 GWh reduction on volume capacity caused by prolonged maintenance of the caverns.

GMM 4th September: Update – the reduction is reduced with 75 GWh. The capacity is for sale. This is based on new calculations on calorific value.

Gas Market Messages

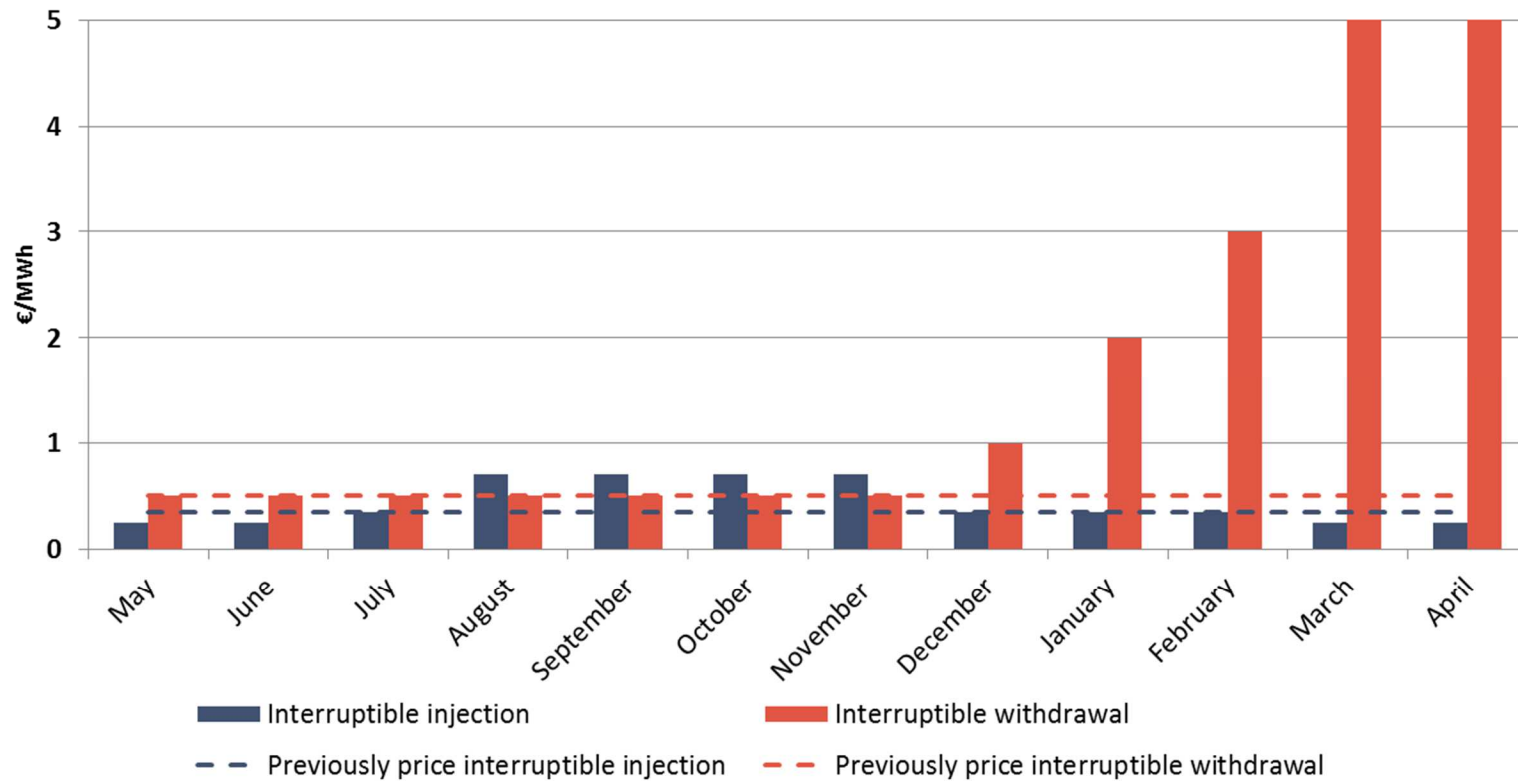
General market messages

The market participants may also disclose and receive other information of commercial relevance to the market participants in general, eg Energinet.dk's declaration of a supply crisis, information on mergers and acquisitions etc.



General Messages	Publishing date
Update to message "Reduction in the GSD volume capacity"	04-09-2018 13:16
Reduction in the GSD volume capacity	24-04-2018 10:59

NEW INTERRUPTIBLE TARIFFS



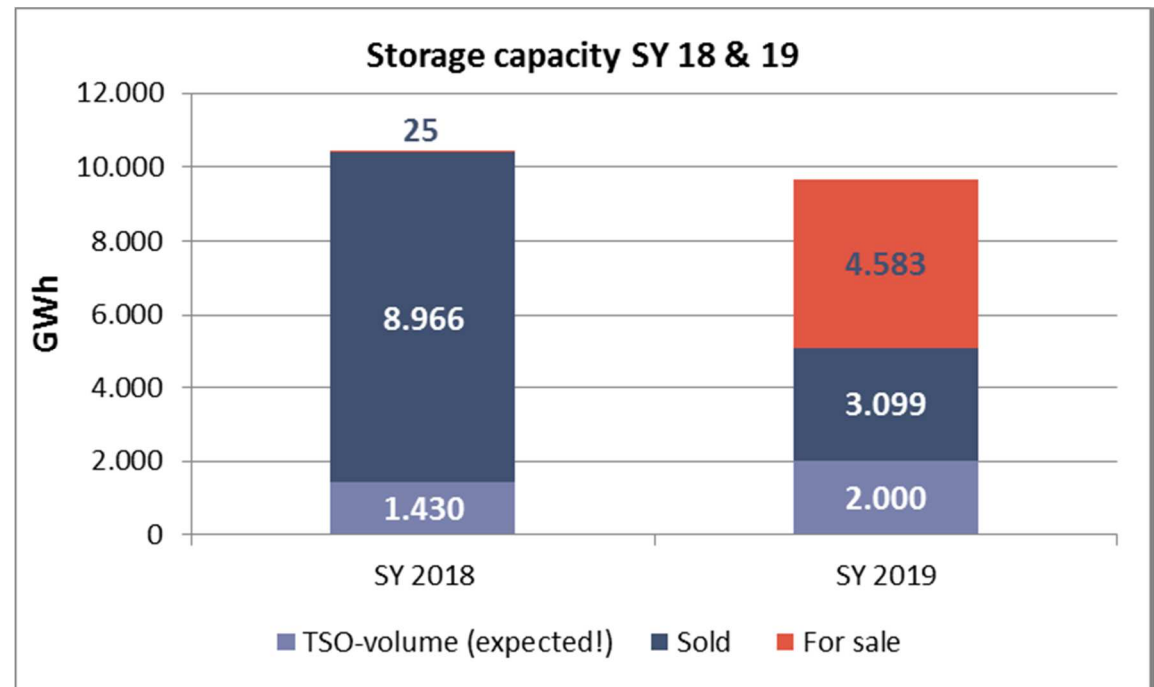
CAPACITIES FOR SY 2019

Difference between gas from Tyra and Germany reduces the volume capacity in SY 19 with app. 750 GWh.

- Less calorific value
- Less compressibility (Z-factor)



- Total capacity in 2018: 10,421 GWh
- Total capacity in 2019: 9,682 GWh



VARIABLE INJECTION TARIFF SY-19

The variable injection tariff will rise in SY-19 due to:

- Higher energy prices
- Lower calorific value
- Lower Z-factor

The new tariff for injection will be **0,00223 DKK/kWh**

or approx. **0,3 €/MWh**

For SY-18 it is **0,00173 DKK/kWh**



FCFS WITH PRICE GARUANTEE

FCFS prices for SY 2019, 2020 and 2021:

2,6 €/MWh/year for 170/170 days SBU

3,3 €/MWh/year for 170/85 days SBU

4,0 €/MWh/year for 120/60 days SBU

Injection: 750 €/MW/year

Withdrawal: 3,000 €/MW/year

Price garuantee:

GSD guarantees that the prices notified above are the best prices for corresponding SBU-product or for any other derived SBU-product, sold on auction or FCFS conducted by GSD in the period from today 24 August 2018 to 30 April 2019



OTHER PRODUCTS FOR SY 2019

Not decided yet – but we are looking at:

Bundled storage and filling requirements

Benefit - No uncertainty about payment for filling requirements when closing storage contacts.

Status - Work is ongoing with the TSO

Long term contracts

Benefit - Average estimated price for a longer period beyond Tyra outages

Status - We are still analyzing

NEGOTIATION ON EMERGENCY STORAGE

Jeppe Danø

Market Director, Energinet Gas TSO

NEGOTIATIONS WITH GAS STORAGE DENMARK

Energinet Gas TSO and Gas Storage Denmark (GSD) have not yet concluded an agreement on emergency storage for current storage year 2018/2019

- GSD has required a renegotiation of terms and conditions in the agreement on emergency storage (withdrawal and volume capacity) with Gas TSO
- Principle for pricing is shifted to cost plus for both withdrawal and volume capacity
- Legal opinion on the terms and pricing principle by law firm Horten
- Negotiations ongoing – still issues to be solved between parties
- Agreement and legal opinion expected to be finalised end September/beginning October 2018
- Result will then be presented to regulator (DUR) and published to market participants and consumers via Energinet homepage

QUESTIONS



email: jda@energinet.dk

FINAL REMARKS

Perspectives today

- Thomas Egebo on the gas market
- Your opinion on Energinet Gas TSO

Shippers' Forum on 13 December 2018

- "Towards a new gas regulation 2020", Jan Ingwersen, ENTSOG's General Manager



An abstract geometric pattern on the left side of the slide, composed of thin teal lines forming a complex network of interconnected triangles and polygons, resembling a wireframe or a stylized map.

THANK YOU

Next Shippers' Forum 13 December 2018