



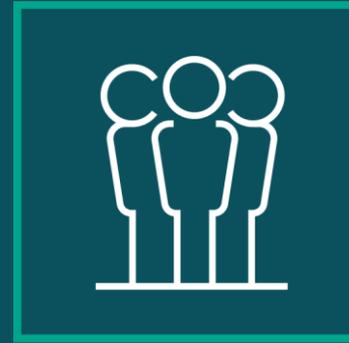
HOST



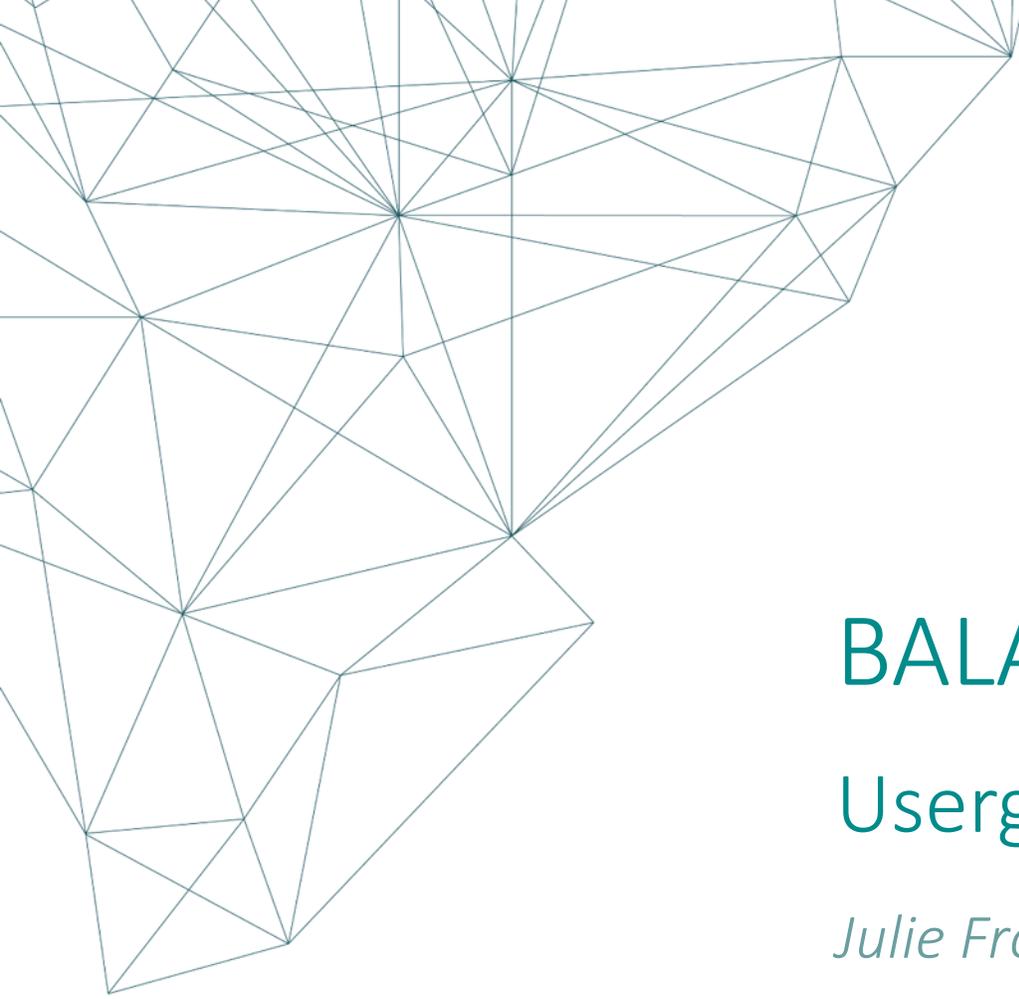
EMERGENCY  
EXIT



DEFIBRILLATOR  
(AED)



MEETING POINT

A decorative graphic on the left side of the slide, consisting of a complex network of thin teal lines forming various geometric shapes, primarily triangles and polygons, creating a wireframe effect.

# BALANCEMODEL 2022

## Usergroup # 2

*Julie Frost Szpilman and Christian Rutherford, 13 of May 2020*



MUTE THE  
MICROPHONE, WHEN  
YOU DON'T SPEAK



SWITCH ON THE  
CAMERA, WHEN  
YOU SPEAK



THERE WILL BE  
BREAKS FOR  
QUESTIONS



USE THE CHAT



DON'T SPEAK ALL  
AT ONCE



IT IS OK NOT TO  
SWITCH ON THE  
CAMERA

# Agenda



- Introduction and recap
- Presentation of suggested changes to the existing model
- Further work and invitation to dialouge

# THE CURRENT MODEL

The main rationale behind the current daily balancing model with no added obligations is the characteristics and parameters of the current physical system

In short, there are no normal flow scenarios or situations, that cannot be handled in the physical system within-day, and thus there is no need for restricting shippers in their daily input-offtake during the gas day

## System Commercial Balance Chart

### Choose Gas Day

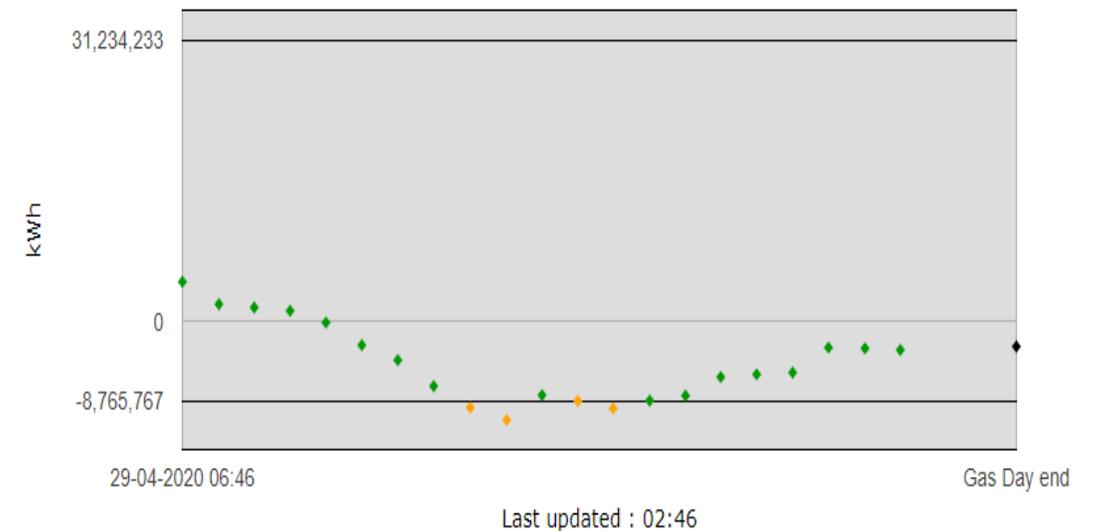
Gas Day

Prev 29-04-2020

Next

OK

Gas Day : 29-04-2020



◆ : 30-04-2020 11:16, SCB, Non valid ordinary, Balance kWh : -2,746,290

### Energinet.dk Yellow Zone trade list

### Energinet yellow zone marginal prices

Created (time for last calculation) : 30-04-2020 00:00

Marginal selling price Eur/MWh :

Marginal purchase price Eur/MWh : 7.000

## WHY DO WE NEED TO ADJUST OUR BALANCING MODEL?

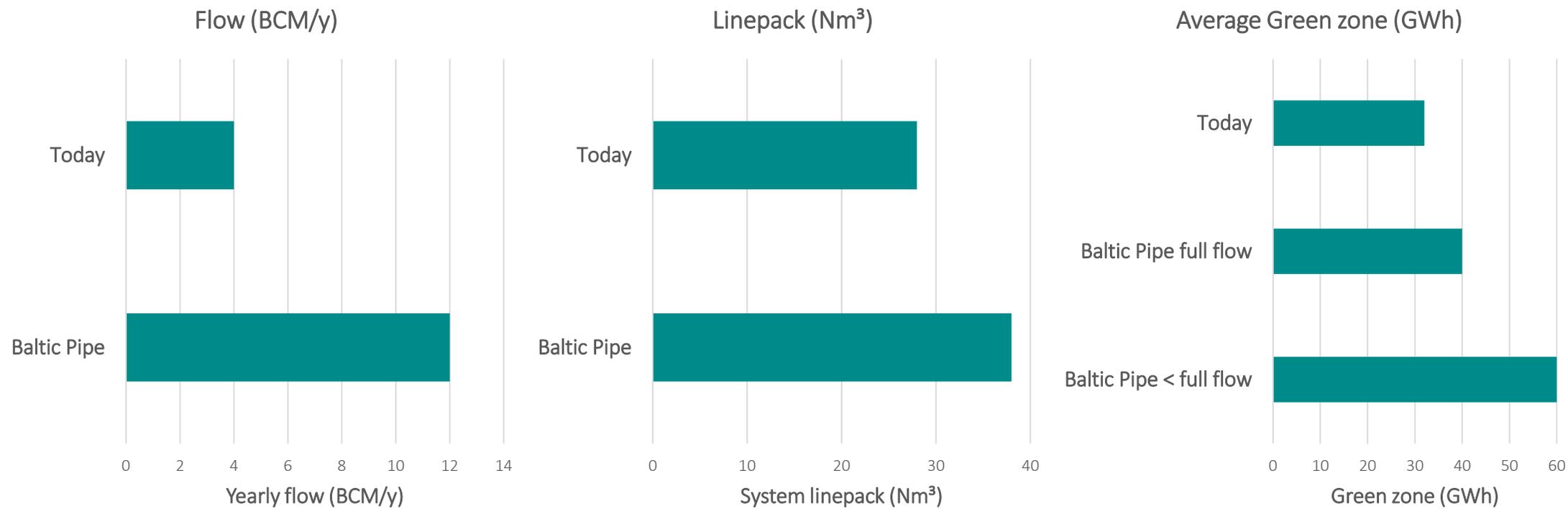
- In the current system, shippers are only required to be in balance at the end of the day
- With Baltic Pipe, Energinet needs that shippers help to balance the system during the day

- In the current system, volumes are small and there are only few entrances to larger markets
- With Baltic Pipe, Denmark can be an energy hub with possibilities to attract large volumes of gas to profit the existing market

- Today, the green transition of the Danish gas system is still in the early stage
- Energinet has to support the further development of this transition

# THE PHYSICAL CHARACTERISTICS

With Baltic Pipe in operation, we will see....



# THE CHALLENGE!

The challenges with the Baltic Pipe in operation are:

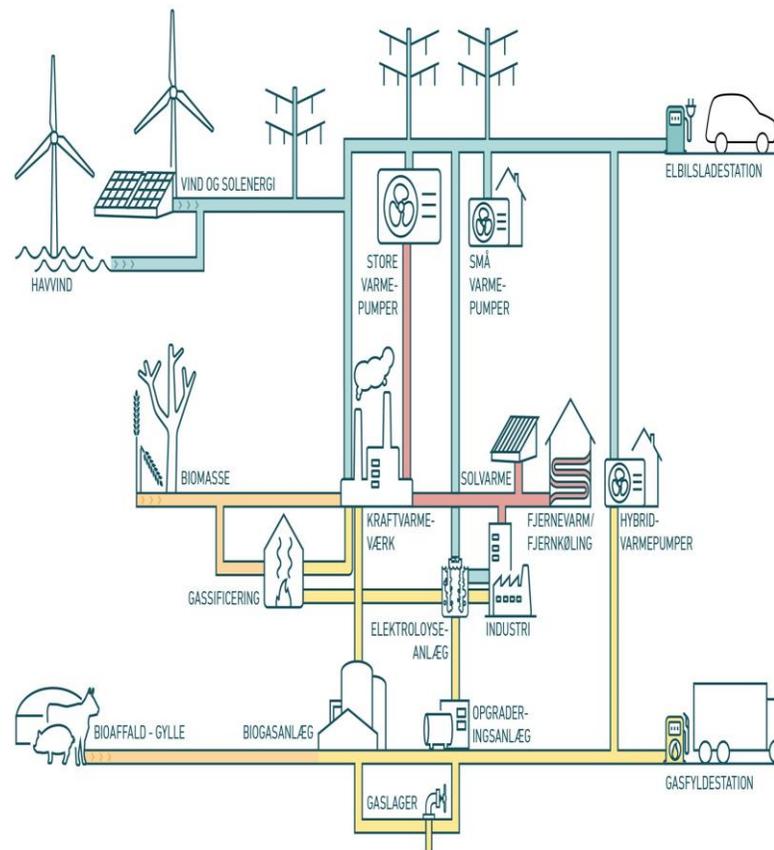
- the flow uncertainty, and
- the risk of large changes in the nominations during a gas day

The impact is a potentially drastic change in flexibility.

Therefore, we may need a faster reaction from the market **within day** in case of too large imbalances in the system.

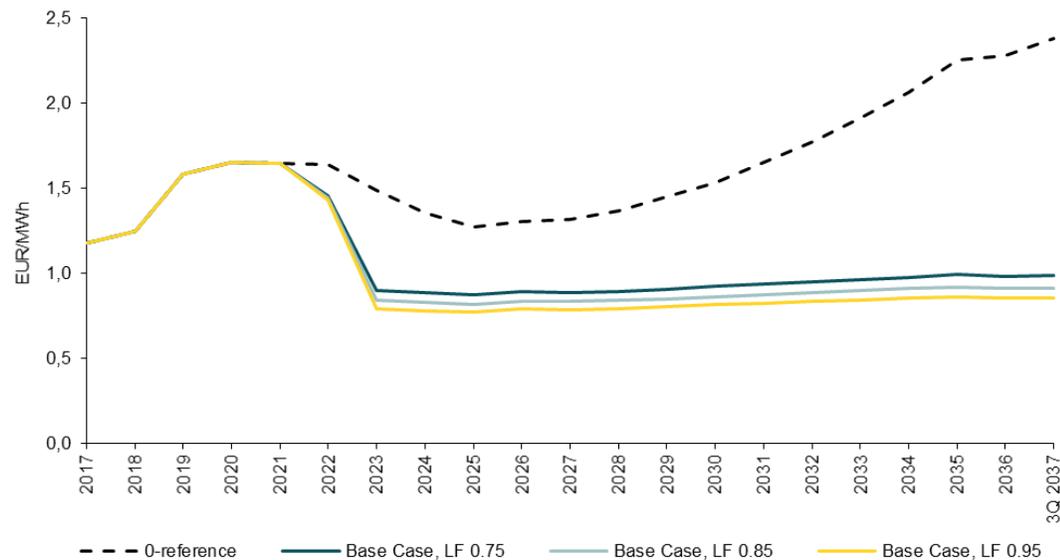


# .....ALSO THE MARKET SITUATION WILL CHANGE



# EXPECTED LOWER TARIFFS

Denmark will increase its transported volume by four times, which may stabilize tariffs in Denmark



Source: Information package to Open Season



# WHAT HAS BEEN DONE SO FAR?

We have.....

- Analysed the physical and market characteristics
- Had our first user group with an introduction to the topic and an evaluation of the future balancing needs
- Had individual dialogue with many shippers
- Been in dialogue with regulators in Denmark and Sweden
- Collected inspiration from other TSO's in Europe including visiting Fluxys
- Tested different data model solutions including dialogue with Evida and Nordion Energi

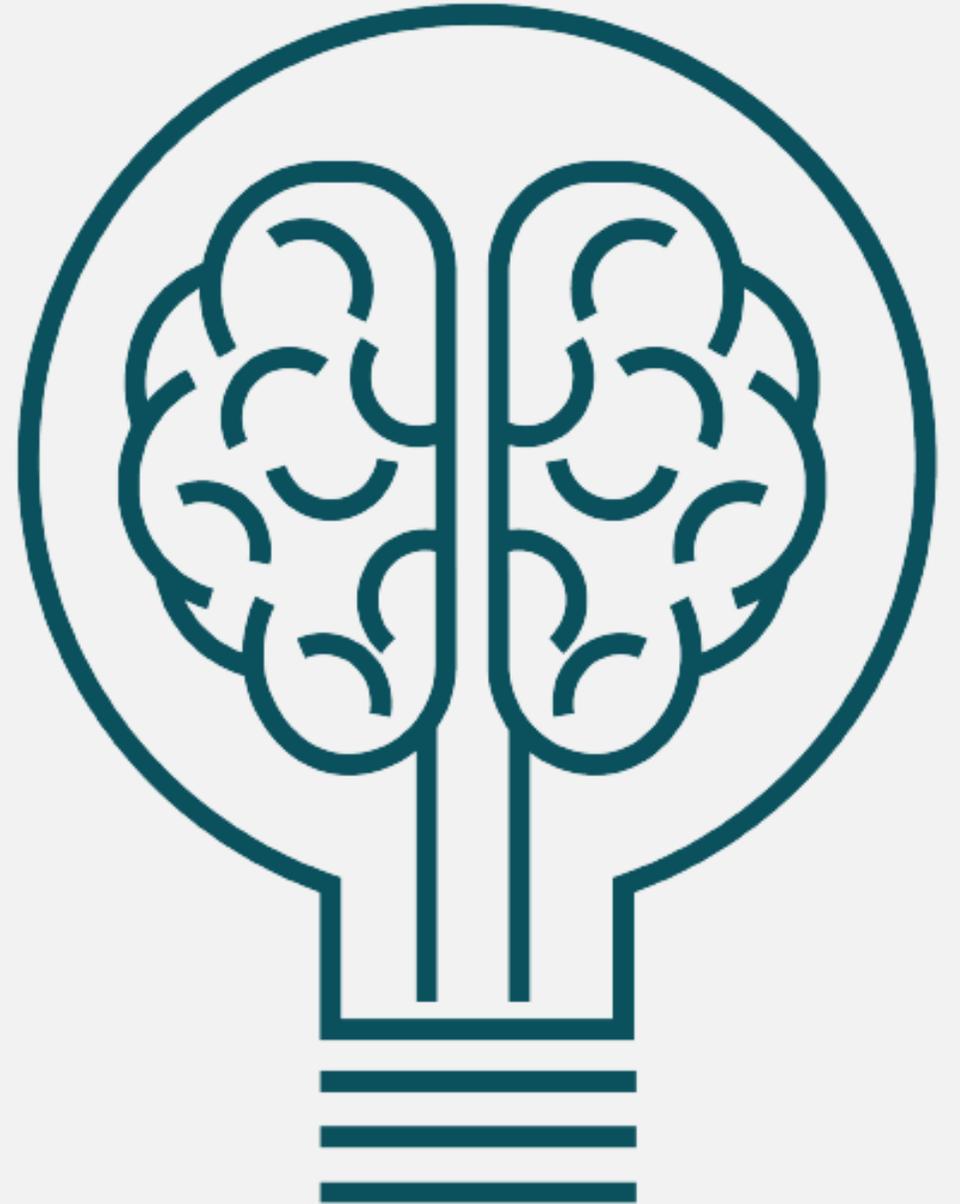


# QUESTIONS



# THE MAIN QUESTION

How can we create a balancing model with strong enough economic incentives for shippers to stay within the green band every hour of the gas day?



A photograph of an industrial facility, likely a refinery or chemical plant. The scene is dominated by large, silver-colored metal pipes and tanks. In the foreground, a large horizontal pipe curves upwards and then downwards, connecting to a vertical tank. To the right, another vertical tank is visible, surrounded by a network of pipes and metal walkways. The background shows a clear blue sky with scattered white clouds. The overall impression is one of a complex, large-scale industrial operation.

In the following, the overall model will be described – more investigation in details is still needed

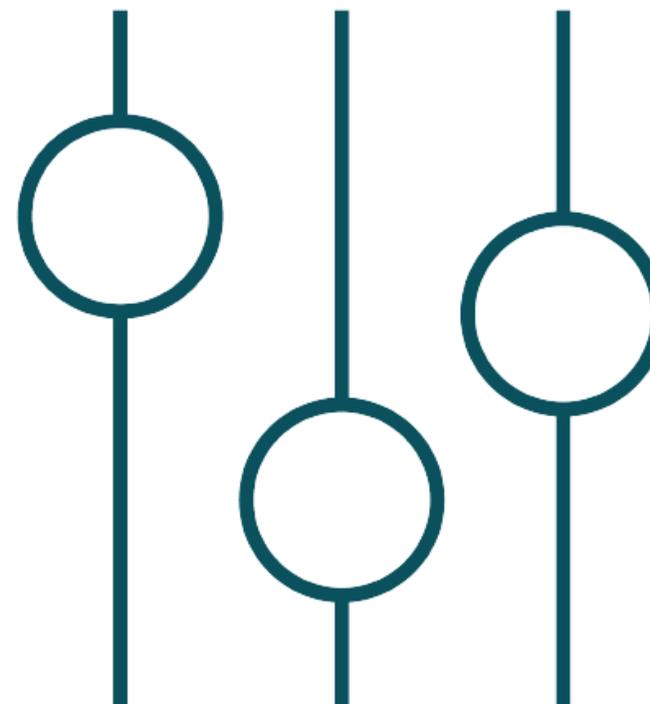
# TODAY'S MODEL WILL STILL EXIST....

But 4 new concepts will be introduced:

- System-wide within-day obligation (WDO)
- Helper-causer-methodology
- New flow of data to shippers intraday
- Less strict settlement pricing – deletion of adjustment 2 price

And one adjustment:

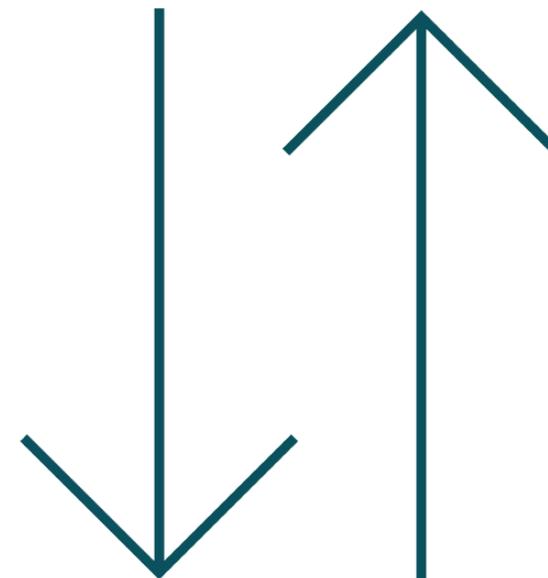
- Neutrality on balance economy



# WHY SYSTEM-WIDE WDO\*?

## The rationale behind

- The current green zone balancing system is already system wide, collecting and informing on the aggregated commercial balance position of all shippers
- When Energinet Gas TSO first implemented the current green zone model, it was very much inspired by the balancing systems in the Netherlands (GTS) and Belgium (Fluxys). Energinet Gas TSO implemented a similar model, but without including the system-wide within-day obligation, which is common in both systems, as this was not required given the parameters of the Danish physical system at the time. Instead, the Estimated System Commercial Balance was implemented, to create the system-wide daily balance.



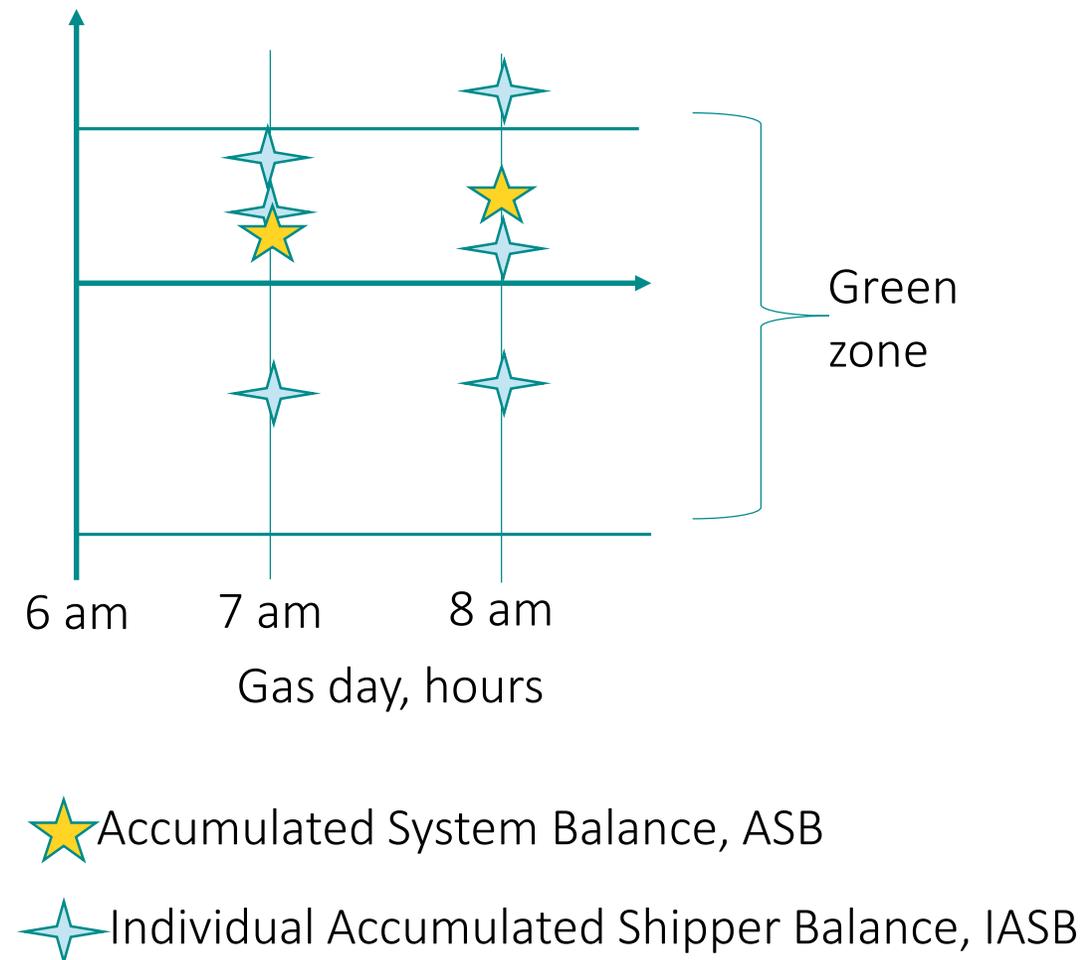
\* WDO = Within-day obligation

## System-wide within-day obligation

## System wide within-day obligation

Like the green zone of today's balancing model, but illustrating an accumulated hourly tolerance, *where today's balancing model illustrates an end-of-day tolerance*

An Accumulated System Balance (ASB) published every hour that illustrates the accumulated balance of all shippers for all previous hours of the gas day, *where the E(SCB) in the current model illustrates the expected balance position end-of-day*



# HOW IS ASB\* CALCULATED?

## First hour

The ASB is calculated the first time at 07:00, for the first hour of the gas day, based on the balance position for all shippers in the first hour.

## Second hour

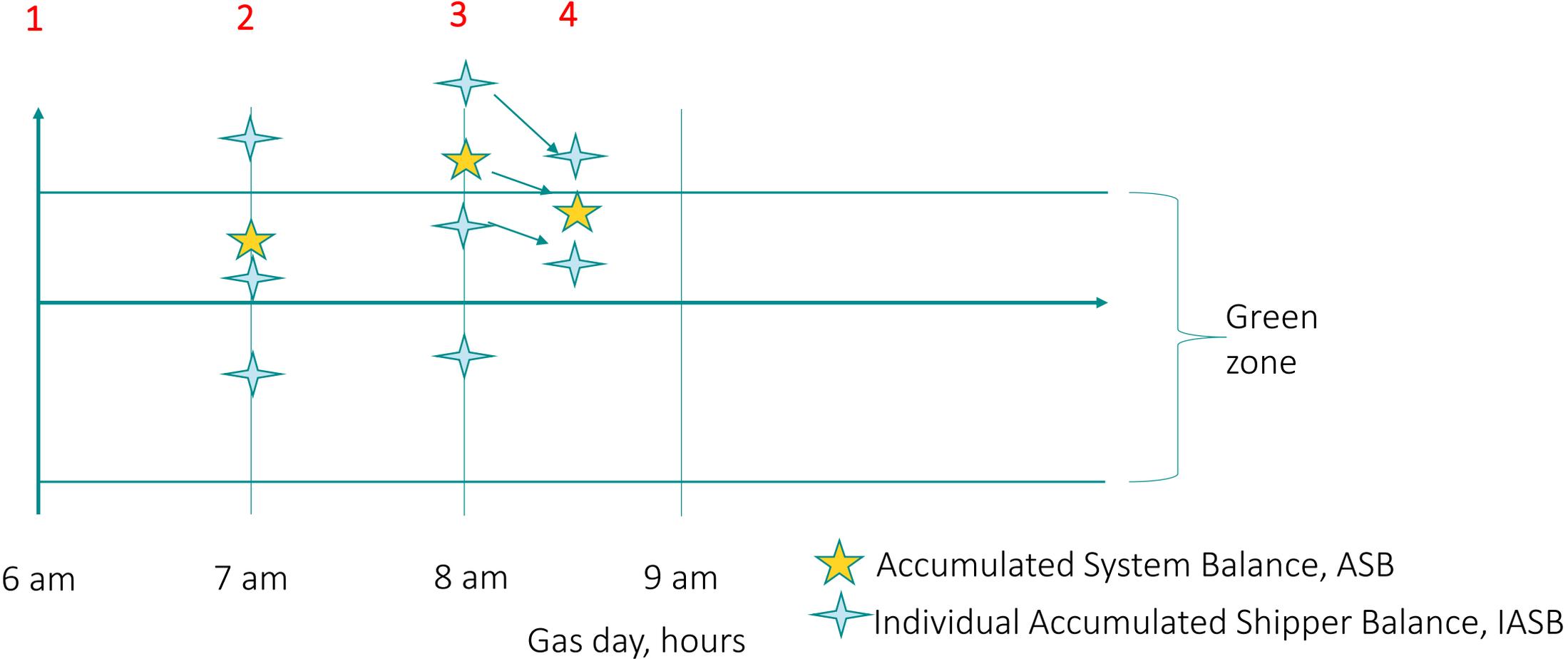
The second ASB is calculated at 08:00, based on the accumulated balance position for all shippers in the first 2 hours of the gas day (position hour 1 + position hour 2).

## Last hour

This continues every hour throughout the gas day, until the gas day ends at 06:00, where the ASB will include the full imbalance for the whole gas day (position hour 1 + position hour 2 +....position hour 24), and will be equal to the System Commercial Balance (SCB), also known in the current model.

\*ASB = Accumulated System Balance

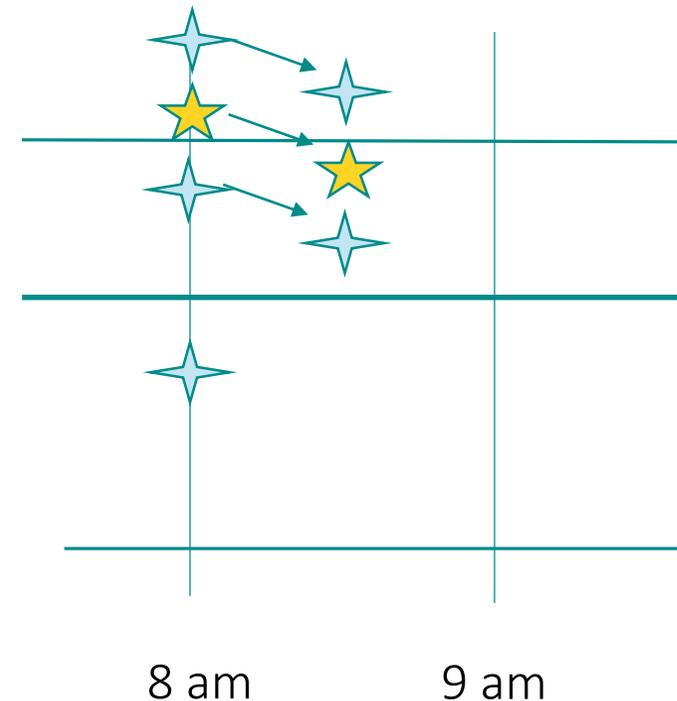
# THE MECHANISM BEHIND HELPER-CAUSER



# WHY INTRODUCING HELPER-CAUSER MODEL?

The rationale behind

- The shippers who are helping the system, will not have to pay
- It will give incentive to the causer to change behavior
- The possibility to speculate will be minimized, as causers can't "run away from the bill"
- This will also have a preventive effect to avoid bringing the system is into the yellow zone



## SOME WORDS ON HELPER-CAUSER

- If the ASB is in yellow zone, the TSO will trade in the within-day market a volume equal to the difference between the ASB position and the relevant green zone limit.
- The traded volume is then allocated pro-rata towards all shippers, who are in imbalance in the same direction (who are causers), at the marginal trade price in that specific hour.
- Even though, the TSO has traded and allocated the volume pro-rata to the causers, shippers can choose not to change their behavior (not to renominate), and therefore they may bring the system in imbalance again the next hour. However, that will cause a new reaction from the TSO.

# LEAD TIME WILL BE HANDLED IN THE MODEL

Lead time is a market condition, which it is not possible to avoid with the current legislation

- The TSO will show the full effect of a trade at once, despite 3 hours lead time for within-day trades.
- Therefore, the TSO will for the next hour show a picture where the whole amount of gas has been allocated to bring the ASB in green zone.
- During the night, after 2 am, the gas traded at the within-day market will first be allocated the next gas day, due to lead time. However, this will still be handled in the model.
- Remark, this only applies when the BAM has traded in the yellow zone



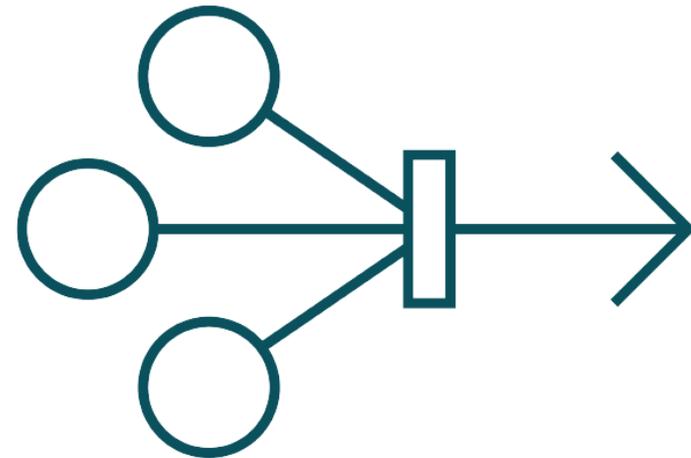
## NEW FLOW OF DATA IS NEEDED

To support the introduction of a system-wide within-day obligation, shippers need to be provided with new and more data from the TSOs

What kind of new data is needed every hour?

- Accumulated System Balance
- Individual Accumulated System Balance

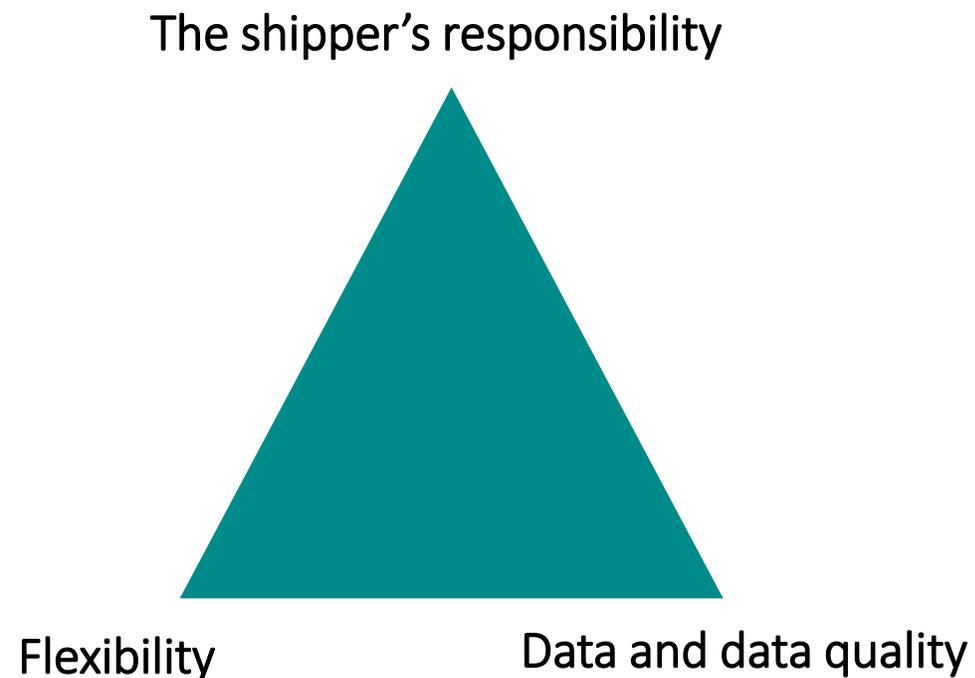
To be able to provide those data require that the BAM gets hourly data from metering and/or the consumption can be forecasted precise



# DETAILS IN THE MODEL WILL DEPEND ON THE FINAL DATA MODEL

According to the Network Code, shippers shall have as much responsibility to balance their portfolio as possible, so they can take their own actions rather than the BAM is making it.

Currently, Energinet and Nordion Energi are investigating how to design a future data model, which can provide hourly data.



# ADJUSTMENT STEP 2 WILL BE DELETED

At the end of the gas day, Energinet will cash-out all shippers like today. If the final ASB/SCB for the gas day ends outside the green zone, this volume will be traded in the same way as the rest of the gas day, before the cash-out is performed.

This means that the adjustment step 2 is replaced by the trade response possibility by the TSO in the last hours of the gas day.

## Balancing

### Purchase and sale of balancing gas

#### Definition of neutral price for balancing gas:

The within-day reference price at PEGAS ETF, expressed in DKK/kWh.

- Resulting price converted into DKK/kWh using the daily exchange rate as published by Danmarks Nationalbank (the Danish Central Bank)

### Purchase price for balancing gas

#### Adjustment step 1:

Neutral gas price minus 0.5 % of the neutral gas price

#### Adjustment step 2:

Neutral gas price minus the respective percentage in the given month of the neutral gas price

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
6%	6%	6%	10%	10%	10%	10%	6%	6%	6%	6%	6%

#### - Marginal purchase price:

Lowest price of either 1) lowest traded price by Energinet in the yellow zone during the relevant gas day, or 2) the relevant adjustment price (step 1 or 2).

### Sales price for balancing gas

#### Adjustment step 1:

Neutral gas price plus 0.5 % of the neutral gas price

#### Adjustment step 2:

Neutral gas price plus the respective percentage in the given month of the neutral gas price

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
6%	6%	6%	10%	10%	10%	10%	6%	6%	6%	6%	6%

#### - Marginal sales price:

Highest price of either 1) highest traded price by Energinet in the yellow zone during the relevant gas day, or 2) the relevant adjustment price (step 1 or 2).

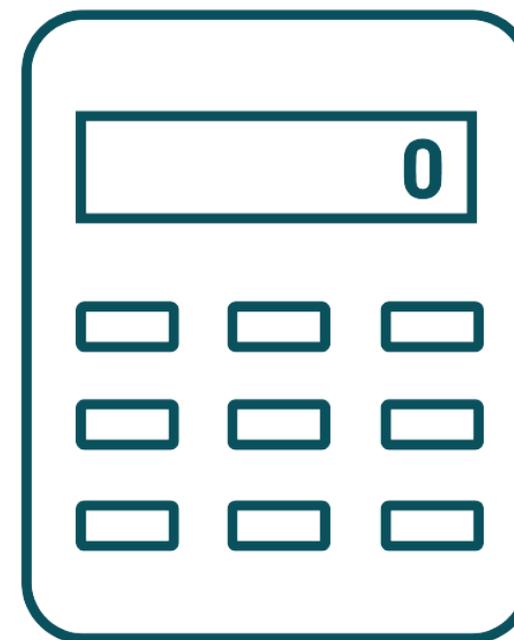
New settlement pricing of cash-out

# WHY UPDATE THE NEUTRALITY ARRANGEMENT?

- The neutrality arrangement is a requirement in the BAL NC
- In short, the neutrality arrangement should ensure neutrality in terms of the balancing economy for the TSO, securing that the TSO does not have any income or deficit, when performing the balancing requirements in the network code. Thus, the balancing economy must be neutral
- As Energinet today is a rest-in-itself economy, Energinet Gas TSO tariffs secure indirectly the neutrality requirement
- With new regulation to revenue cap economy coming into force in 2022, it is necessary to secure that the balancing economy continues to be fully neutral, in line with BAL NC

# HOW WILL THE UPDATED NEUTRALITY ARRANGEMENT WORK?

- To ensure the full neutrality of the balancing economy, and to secure full separation from the rest of the economy of both Energinet Gas TSO and Nordion, a separate balancing neutrality charge/payment will be implemented (depending on if the BAM has had an income or deficit). This will be addressed to all shippers, based on their transported volumes, in line with BAL NC.
- The neutrality charge/payment will be calculated and charged/paid once a year, in line with the general accounting period at Energinet Gas TSO.



# QUESTIONS







# WE ALWAYS LISTEN

Please book a meeting in May or June 2020

# Questions



Contact: Julie Frost Szpilman, 23 33 86 52, [jfs@energinet.dk](mailto:jfs@energinet.dk)