



SIKKERHEDSGUIDE



NØDUDGANGE



HJERTESTARTER



SAMLINGSSTED

A decorative graphic on the left side of the slide, consisting of a complex network of thin, light teal lines forming a series of interconnected triangles and polygons, resembling a wireframe or a network diagram.

SHIPPER TASK FORCE #2

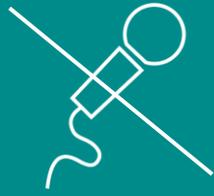
Data model to Balance Model 2022

10th of December 2020



WELCOME

Julie Frost Szpilman, Energinet Gas TSO



MUTE YOUR MICROPHONE,
WHEN YOU DON'T SPEAK



SWITCH ON YOUR CAMERA, ONLY
WHEN YOU ARE GIVEN THE
WORD TO SPEAK



USE THE 'RAISE HAND'
FUNCTION IF YOU WISH TO
COMMENT OR ASK A
QUESTION...



...YOU CAN ALSO WRITE YOUR
QUESTION USING THE CHAT -
THE HOST WILL ASK THE
QUESTION FOR YOU

PARTICIPANTS

SHIPPERS

- Ørsted
- SEAS-NVE
- PGNiG
- Norlys
- Axpo
- EnergiFyn
- Shell
- E.ON Sverige

ENERGINET AND NORDION

- Julie Frost Szpilman
- Christian Rutherford
- Esra Gencay
- Søren Balle Rasmussen
- Ylva Nordlund

EXTERNAL

- Jess Damm-Aunsbjørn, Evida

Agenda

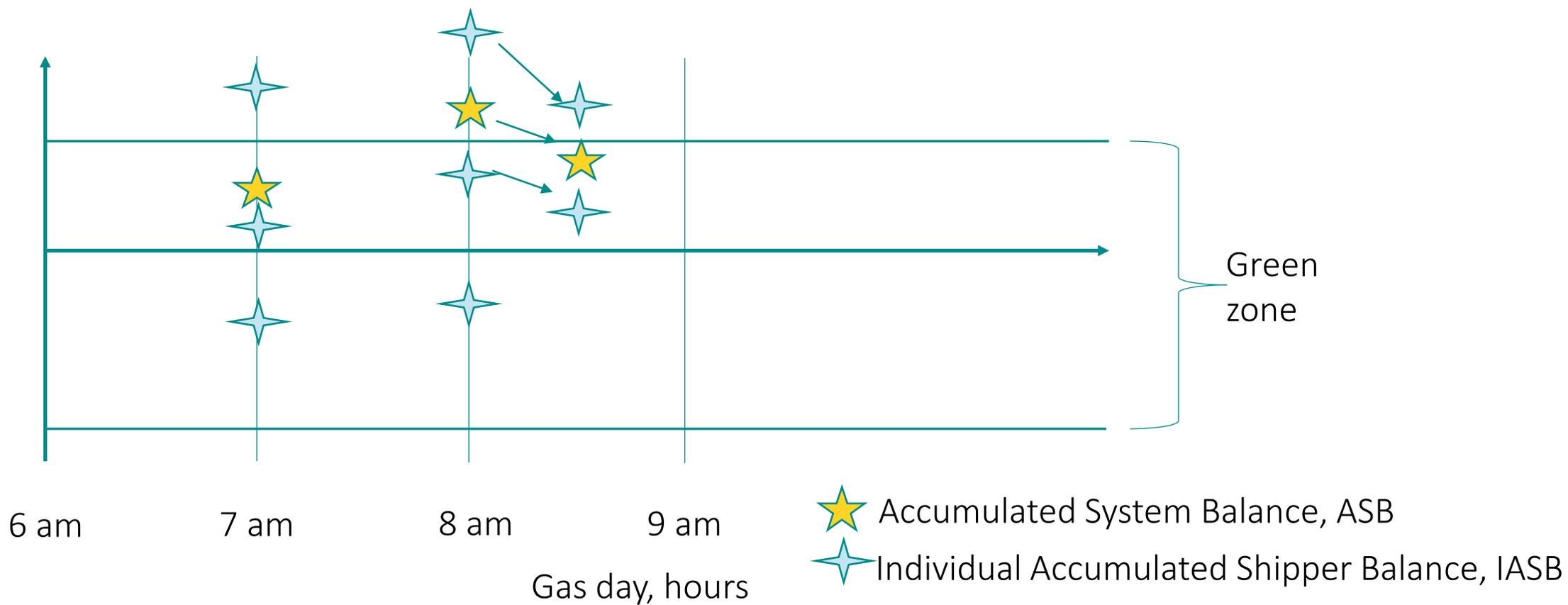


- Presentation of Data Method
- Presentation on smoothing/non smoothing
- Other topics
- Status and next steps



PRESENTATION OF DATA METHOD

THE MECHANISM BEHIND WDO AND HELPER-CAUSER



WHAT IS THE DATA MODEL?

The data model is every parameter used to calculate ASB and IASB

The Accumulated System Balance is defined as:

$$ASB = \sum_{h=1}^x Entry - \sum_{h=1}^x Exit - \sum_{h=1}^x JEZ,$$

Where data for *Entry* and *Exit* is known every hour via nominations, while *JEZ* is calculated every hour via MR data (city-gate flow)

The Individual Accumalated Shipper Balance is defined as:

$$IASB = \sum_{h=1}^x Entry(i) - \sum_{h=1}^x Exit(i) - \sum_{h=1}^x JEZ(i),$$

Where *i* is an individual shipper, and where *Entry* and *Exit* is known every hour via the shipper's nominations, while *JEZ* is not known for the individual shipper

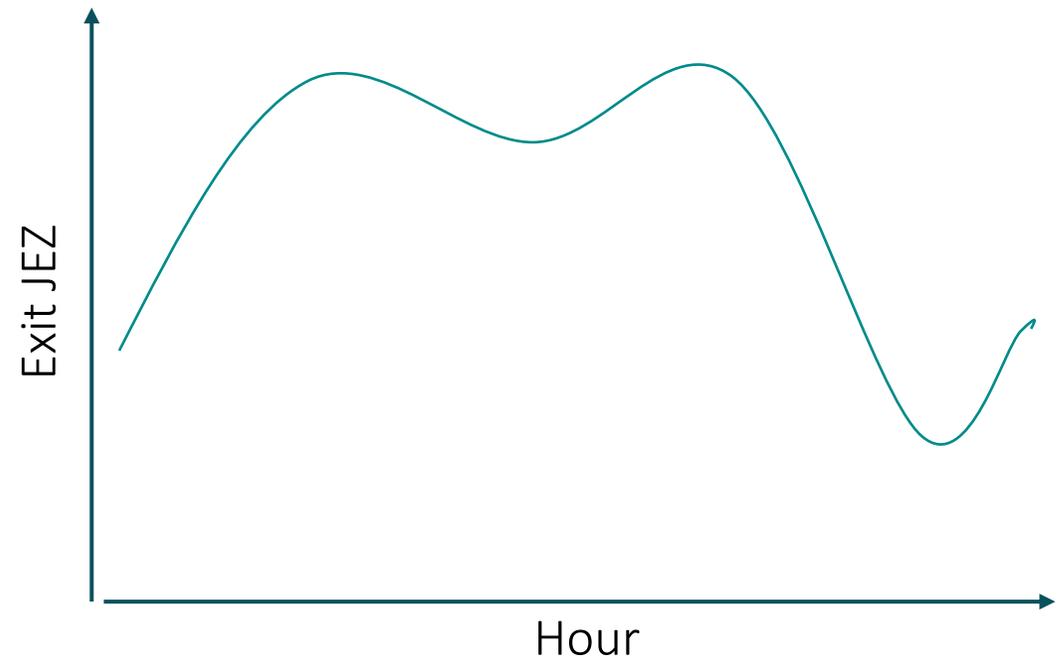
OUR SUGGESTION OF A MODEL TO DEFINE THE INDIVIDUAL JEZ PER SHIPPER

The aggregated JEZ per hour is defined as:

$$\sum_{h=1}^x \text{Residual} = \sum_{h=1}^x \text{MR} - \sum_{h=1}^x \text{DMS},$$

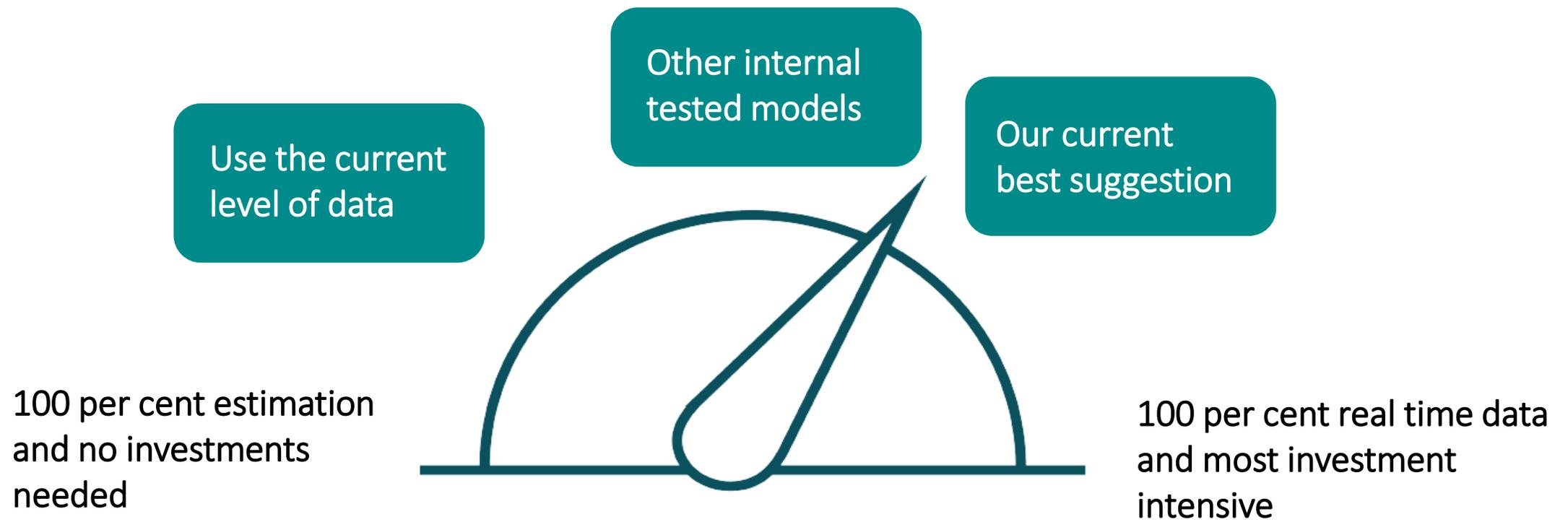
To calculate the individual JEZ value per shipper per hour, Energinet suggests:

- For DMS: To use DMS data for both Denmark and Sweden
- For nDMS: To allocate the residual based on most recent market shares



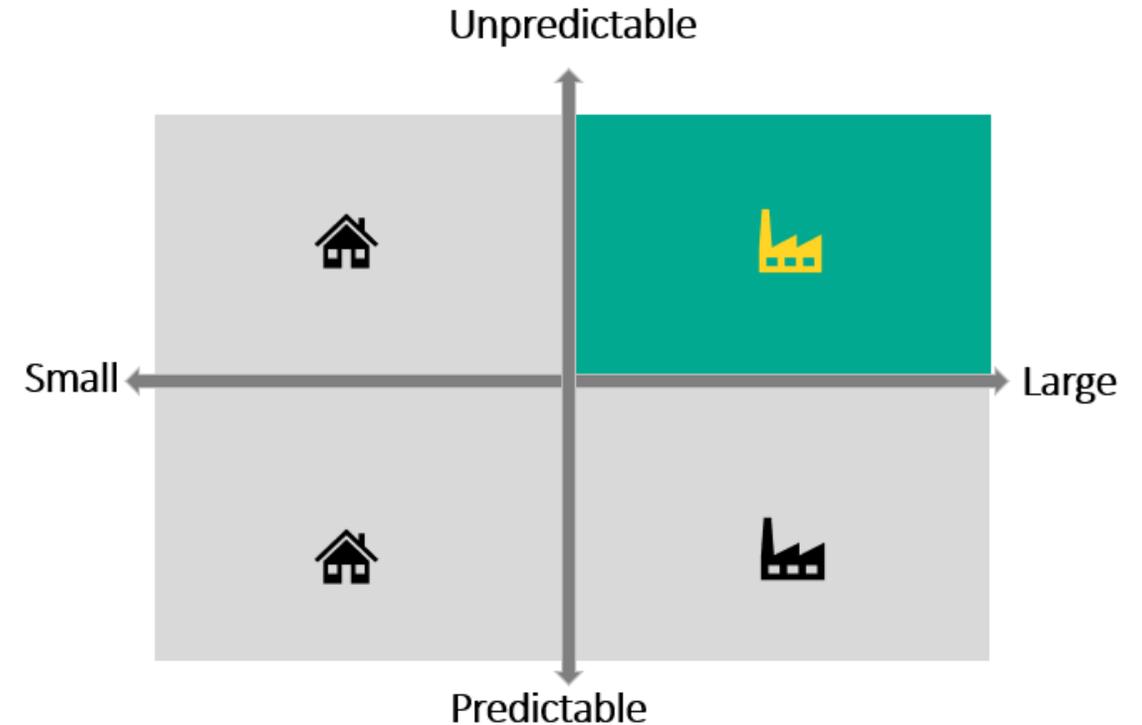
WE HAVE TESTED DIFFERENT TYPES OF MODELS

Overall, the different types of models can be grouped as: "HMC-model" and "Continuous collection of DMS-data method"



DEFINITION OF HMC MODEL

- Every hour: collecting of a specific group of DMS, also called HMC
- Five times every day: the whole DMS group
- This information is used to form the residual between the MR metering and information regarding the DMS group. Some hours it will be for the whole DMS group, other hours it will only be for the HMC group



HMC 

nHMC 

DMS 

nDMS 

HMC: Hourly metered and hourly collected

DMS: Hourly metered and daily collected

DEFINITION OF CONTINUOUS COLLECTION OF DMS-DATA METHOD

- The process of collecting data works every hour 24/7
- DSO's collect as much data as possible in prioritized order, so data from the largest DMS will come first
- The data will be more accurate as the day progresses, because the part of estimation will be smaller compared to all the accumulated data

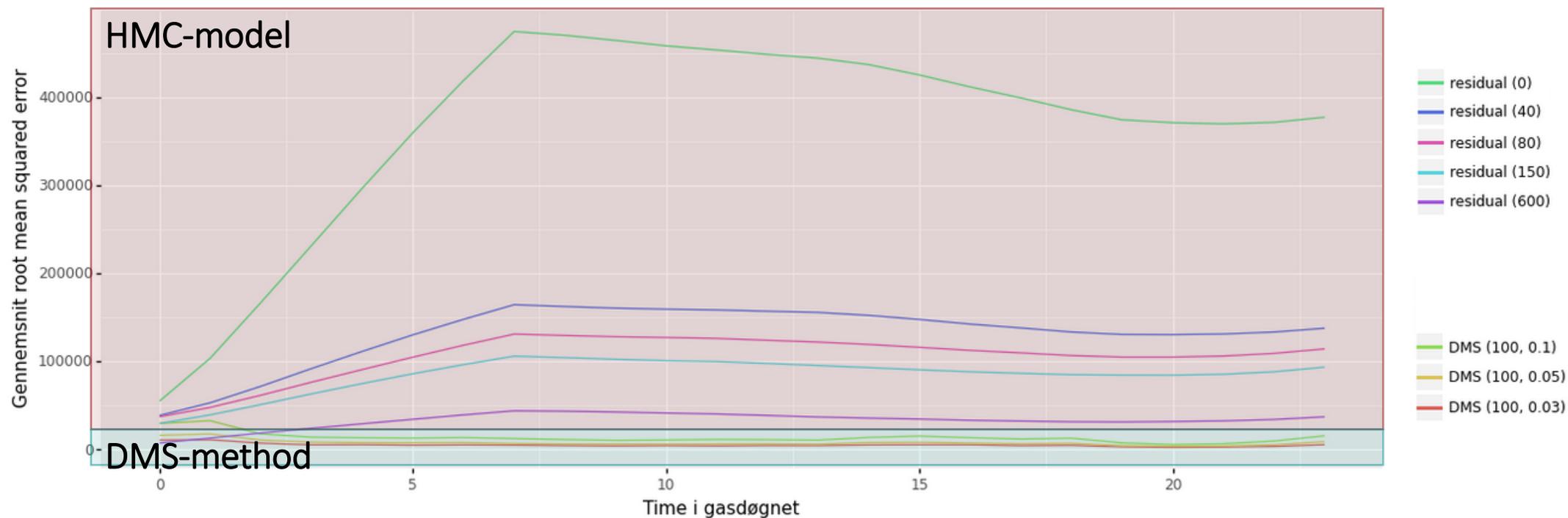


WHICH PARAMETERS SHOULD THE TWO TYPES OF MODELS BE EVALUATED UPON?

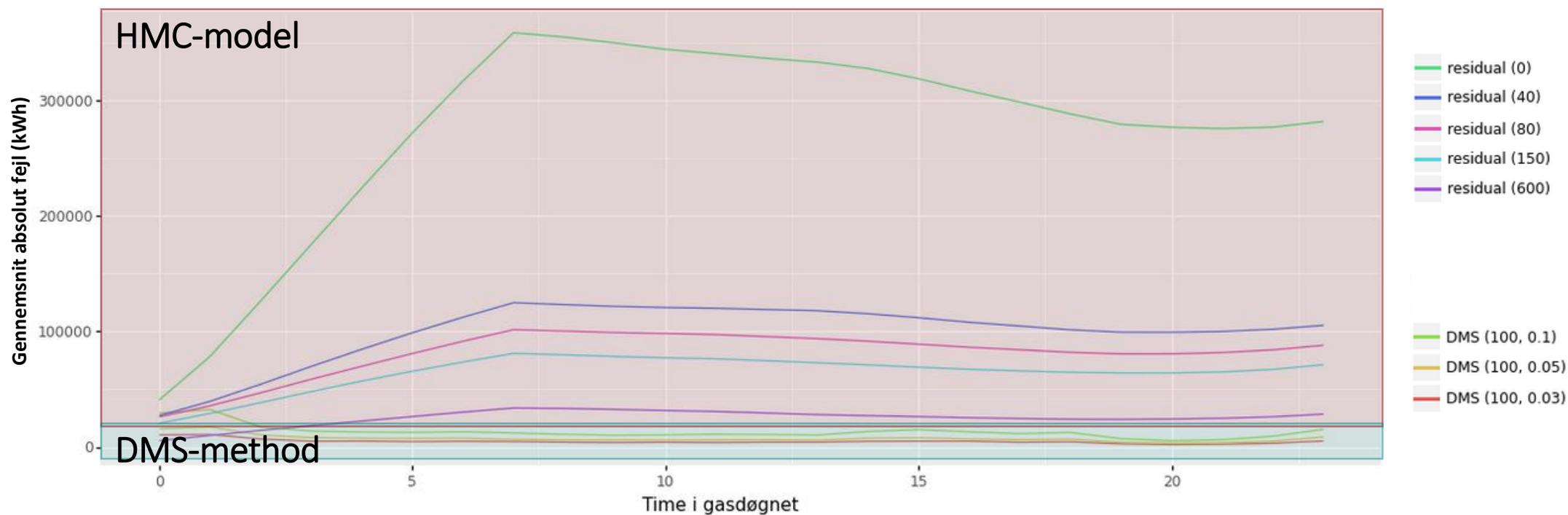
- Transparency (the level of needed assumptions)
- Terminology
- The level of accuracy
- Robust model (less need for following compensation)
- Future-proof
- ????
- Implementation cost (CAPEX)
- Operation cost (OPEX)

In general, the model should live up to the principles of non-discrimination, transparency and harmonization between Denmark and Sweden

HCM Model versus Continuous collecting of DMS-data method



HCM Model versus Continuous collecting of DMS-data method



COMPARISON OF THE TWO MODELS (EXPECT OPEX AND CAPEX)

HMC model

Disadvantages are:

- Only few data need to be collected every hour – however, it makes the success rate of the collection more important
- It is a model and therefore the assumptions that need to be taken make it less transparent
- New terminology is needed to be introduced
- Need a high level of HMC to be precise
- The group of HMC may change during time

Collecting of DMS method

Benefits are:

- Well known parameters and simple IT solution
- Consistency between daily data and billing data
- Use nearly real time data
- A precise method because mistakes are not accumulated during the day
- The model suits for a future where hardware to collect data will be modernized

SUMMARY OF THE COMPARISON OF THE MODELS

Collecting of DMS method seems to be preferable

	HMC Model	Collecting of DMS method
Transparency		X
Terminology		X
The level of accuracy		X
Robust model (less need for compensation)		X
Future proof		X
??????		

Sweden proposed solution BM 2022

- DMS reported every hour
- Preliminary calorific value set by TSO one day ahead
- DSO → TSO SE → BAM
- Preliminary Andelstal for nDMS calculated one day ahead
- Final values reported for DMS by DSO

	Today	Solution BM2022
IDM	73	0
DMS	168	168
sDMS	Calculated by TSO	-
Preliminary calorific value	TSO month ahead	TSO day ahead
Reporting	DSO-->TSO-->BAM	DSO-->TSO-->BAM
Preliminary andelstal nDMS	DSO month ahead	DSO day ahead
Final values for IDM	No	-
Final values for DMS	-	Yes

COMPARISON OF THE TWO MODELS/METHODS

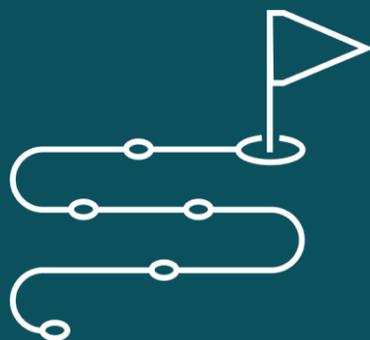
Both CAPEX and OPEX will be higher for the HMC model, which makes the Collecting of DMS method the preferable one

	HMC Model	Collecting of DMS method
CAPEX	More than than 7 mio DKK investment expected in total for Evida, Nordion and Energinet, as Evida will to change several meters	Less than 4 mio DKK investment expected in total for Evida, Nordion and Energinet
OPEX	<p>Evida and Nordion:</p> <ul style="list-style-type: none"> • Higher risk for 24/7 shifts • Queue setup is more complicated • Complicated model is weaker <p>BAM/Energinet: Expected higher cost due to needed 24/7 reaction time and more complicated model</p>	<p>Evida and Nordion:</p> <ul style="list-style-type: none"> • Less risks of 24/7 shifts <p>BAM/Energinet: Expected higher cost due to needed 24/7 reaction time</p>



QUESTIONS FOR SHIPPERS

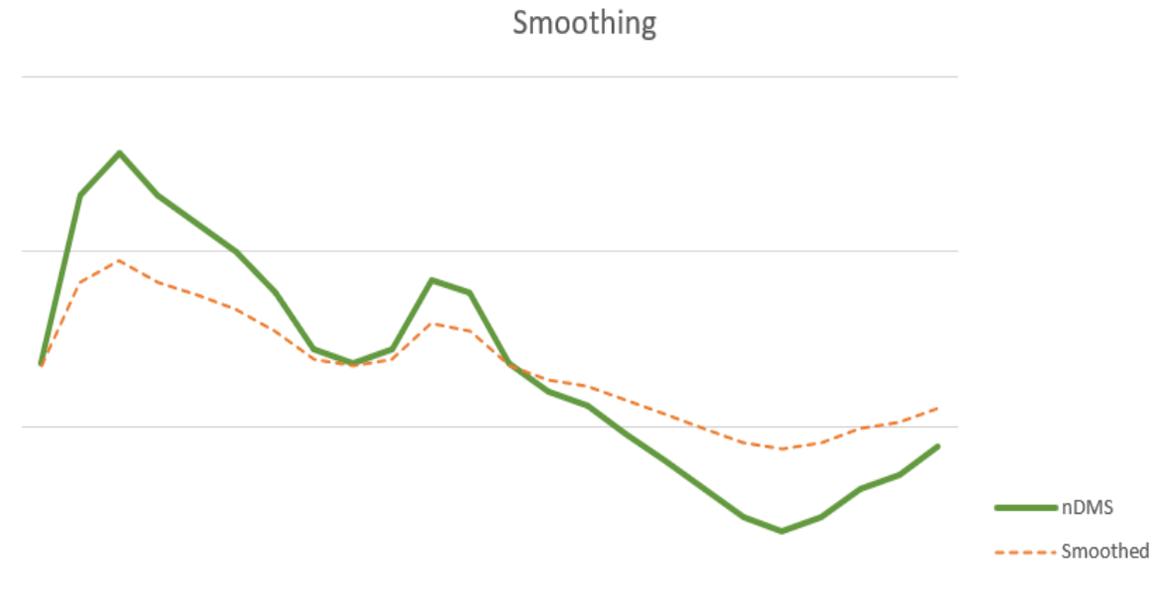
- What is your overall impression of the suggested model/method?
- Are there more parameters we should consider when we evaluate the model/method?



DISCUSSION OF SMOOTHING/NO SMOOTHING

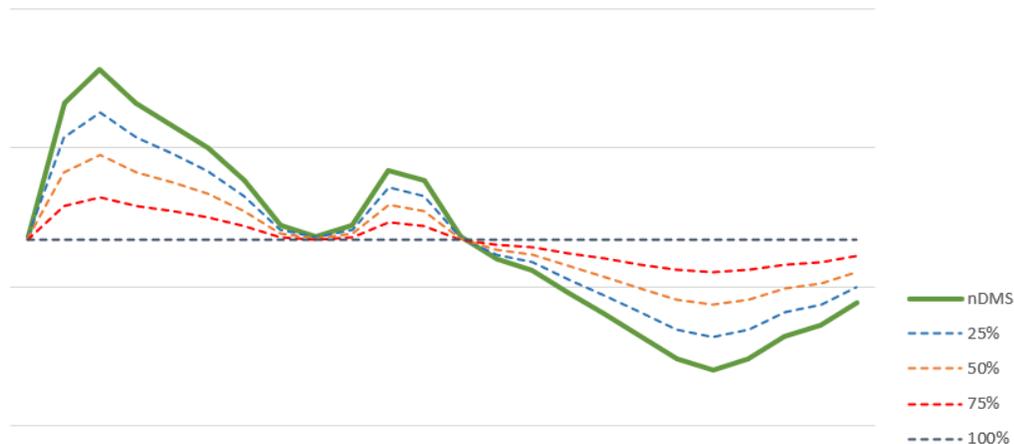
SMOOTHING THE NDMS PROFILE

By smoothing, the TSO smooths the nDMS allocated throughout the gas day. The smoothed dataset for nDMS is used for balancing only. Thereby the smoothed data will not be used for final allocation after the gas day.

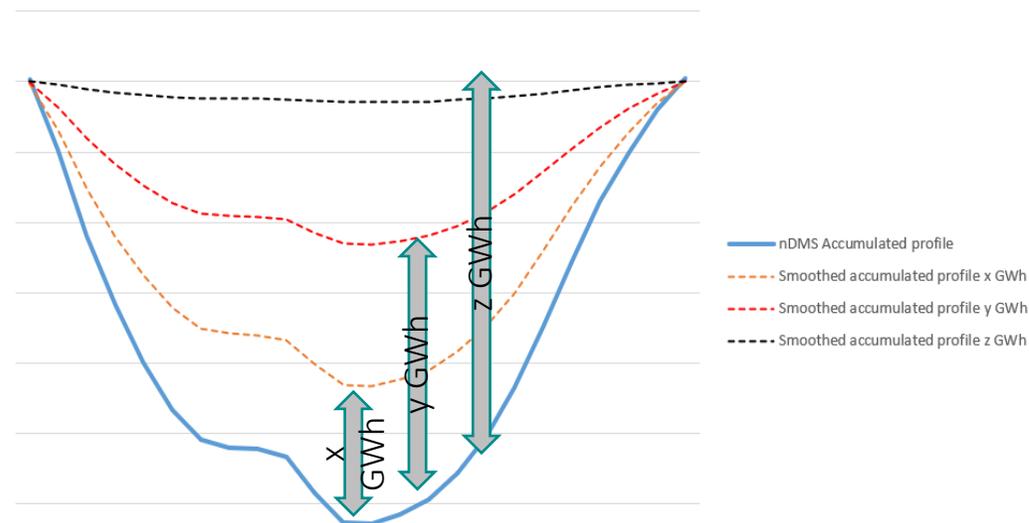


TWO SMOOTHING MODELS ARE CONSIDERED:

Smoothing percentage model



Absolute smoothing model



The absolute smoothing model seems to be easier to explain

WHICH IMPACT DOES SMOOTHING HAVE ON THE GREEN BAND?

Random checks on individual gas days on 2019 data has shown that reduction in green band by introducing 100 per cent smoothing is approximately 10-15 per cent

This number can change with:

- The size of the green band with Baltic Pipe
- Actual flow situation
- Weather conditions
- Consumption rates

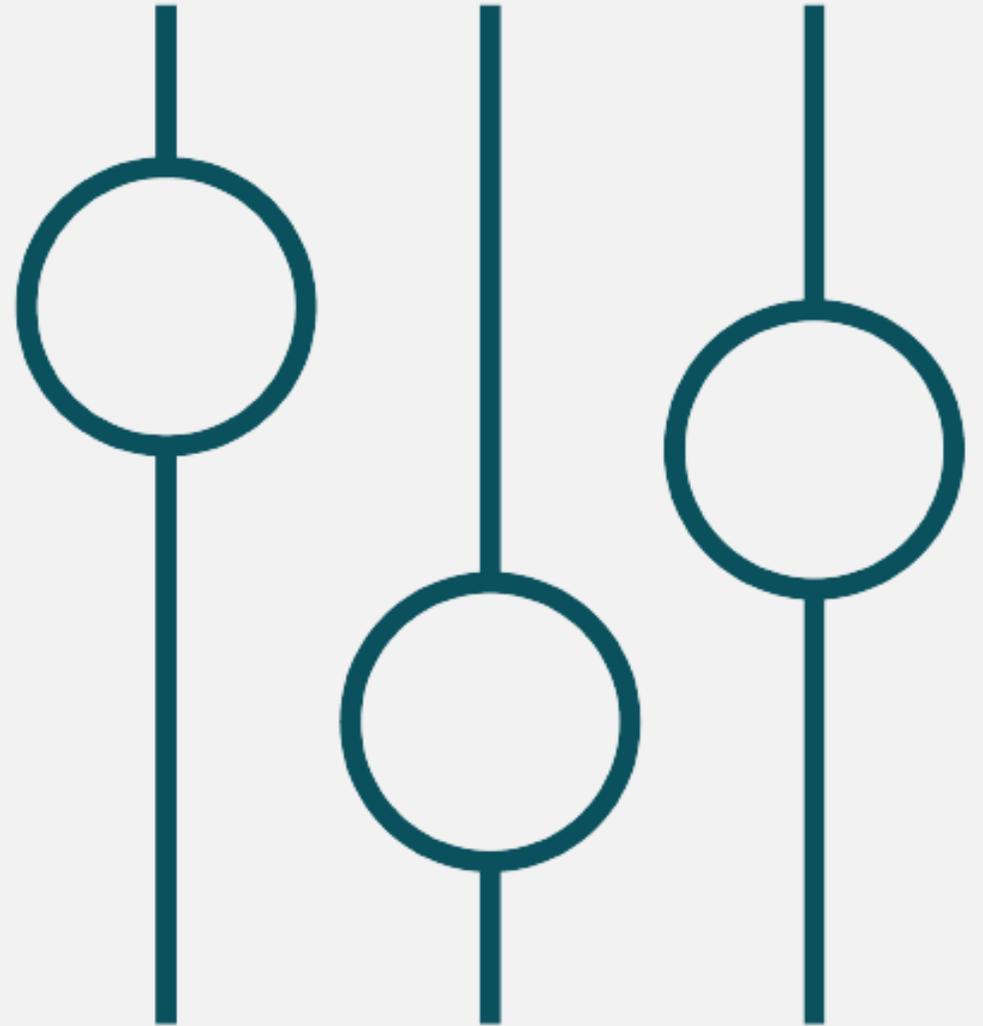


CONSIDERATIONS ON SMOOTHING

By introducing smoothing,

- shippers with a specific need, will be automatically allocated flexibility
- there will be a reduced need for flexibility within day
- Smoothed data will only be used to keep the balance, while non-smoothed data will be used to allocation end-of day
- ?????

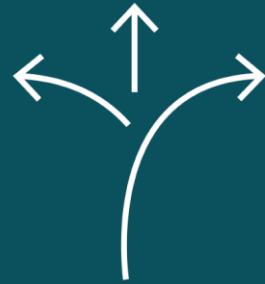
In general, there is an expected downward trend in the nDMS market





QUESTIONS FOR SHIPPERS

- Would you like that we introduce smoothing? Why or why not?
- If we introduce smoothing, should it be percentage or absolute value?
- And how much should we smooth? The total or less?



OTHER TOPICS

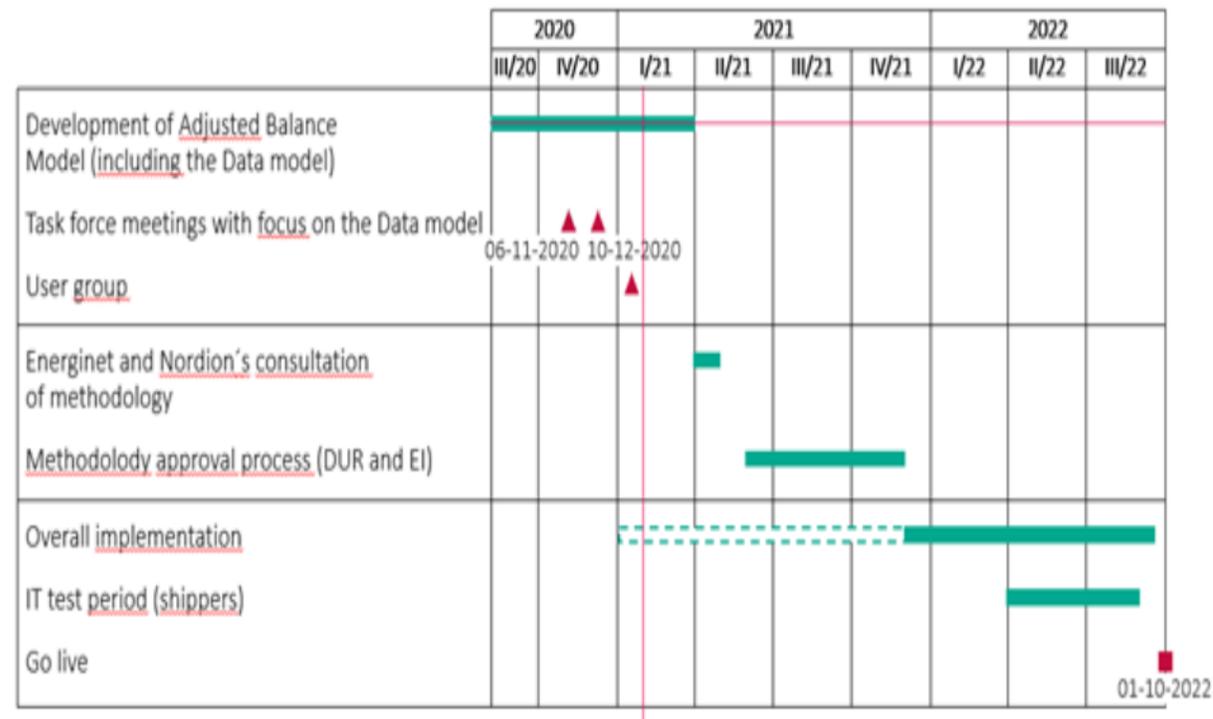
COMPENSATION MODEL

- Analysis of risks of incorrect and/or missing data
- Consideration of the need of a compensation model and how it should look like
 - If data is missing
 - If data is misleading



NEXT STEPS

- Follow our website with updated Q&A and presentations, <https://en.energinet.dk/Gas/Shippers/Gas-balancing-model>
- User group: 10th of February 2021 10 am
- Energinet and Nordion will prepare the methodology approval process
- Energinet and Nordion will together with the dsos start the implementation process





THANK YOU FOR YOUR PARTICIPATION

We will use the input to:

- The continuous regulatory work
- Further dialogue with dso's
- To strengthen our work



NEXT MEETING: 10 FEB 2021 10 AM

Please contact Julie Frost Szpilman,
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