CEGH & AGGM

Joint Information Day

28 November 2023

AGENDA

- **Welcome & Introduction**
- Update on CEGH VTP Operations
- CEGH GreenGas Platform
- CEGH GreenHydrogen Index
- News on EEX CEGH Gas Exchange
- 10 Years EEX CEGH Czech Gas Market

CEGH on the Path to a Decarbonized Future

Natural Gas

Gas trading places in Austria and in CEE:

- CEGH-VTP: benchmark hub for CEE region
- EEX CEGH Gas exchange markets in Austria and in the Czech Republic

Biomethane

Support the development of biomethane markets and its role in the future energy mix:

- CEGH GreenGas Platform
- EFET CEGH Standard Contract for Biomethane Certificates

Green Hydrogen

Support the development of hydrogen markets:

- CEGH Green Hydrogen Index
- Build-up of future hydrogen markets

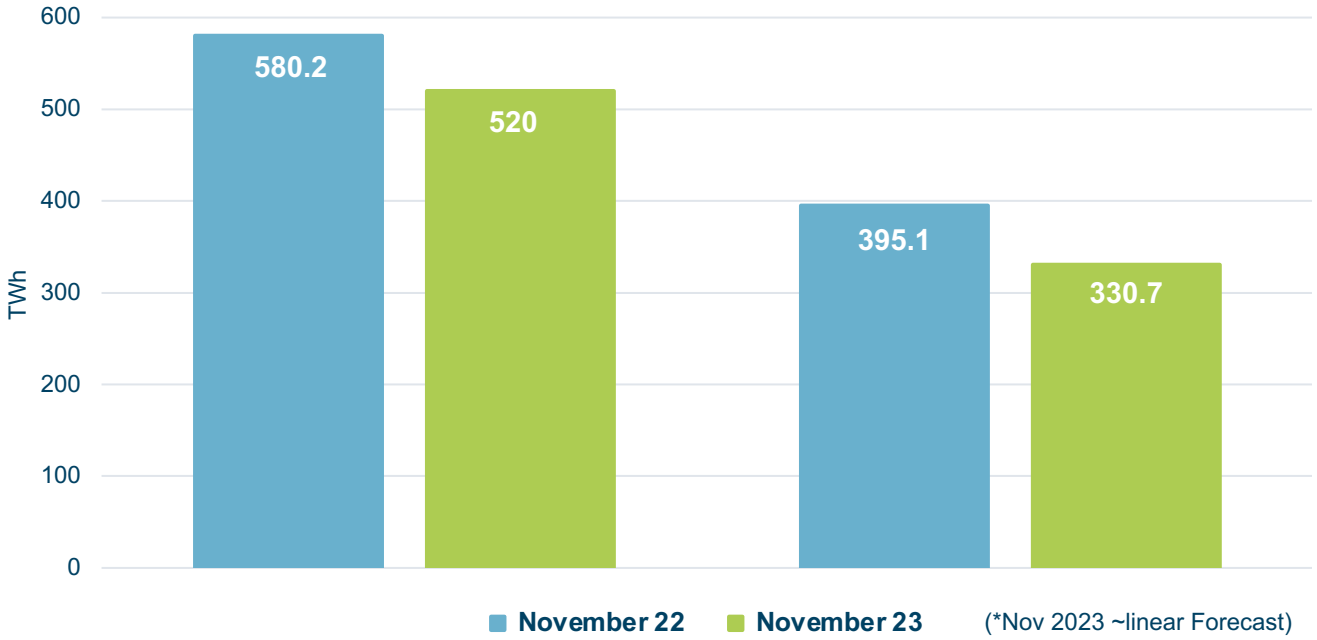
CEGH Volume Development 01-11/2023*

CEGH VTP Market:
01-11/2023*

520 TWh y-t-y: -10.4%

EEX CEGH Market AT:
01-11/2023*

330.7 TWh y-t-y: -16.3%

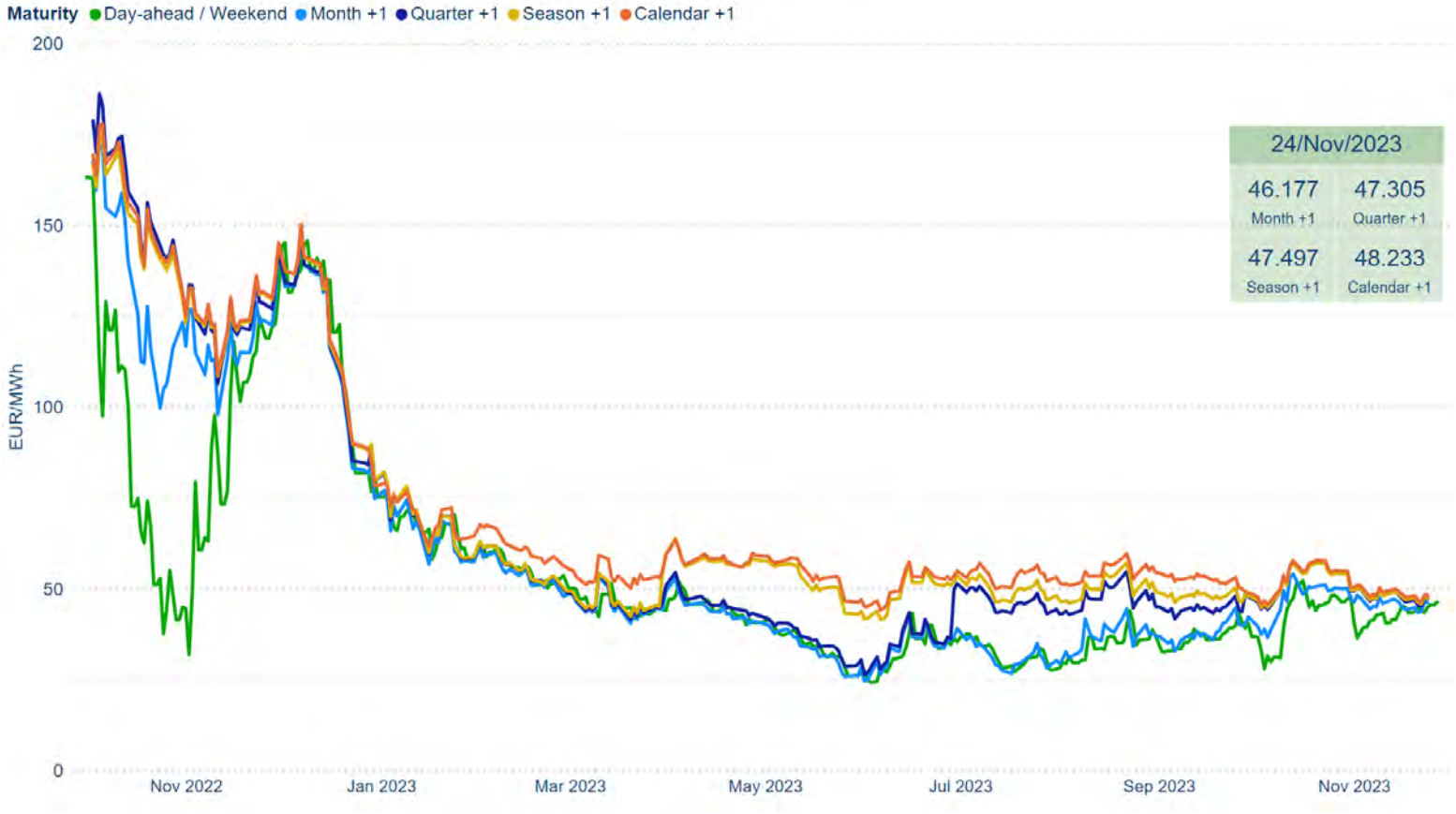


EEX CEGH Day-Ahead/Weekend Prices

Open-Low-High-Close (EUR/MWh)

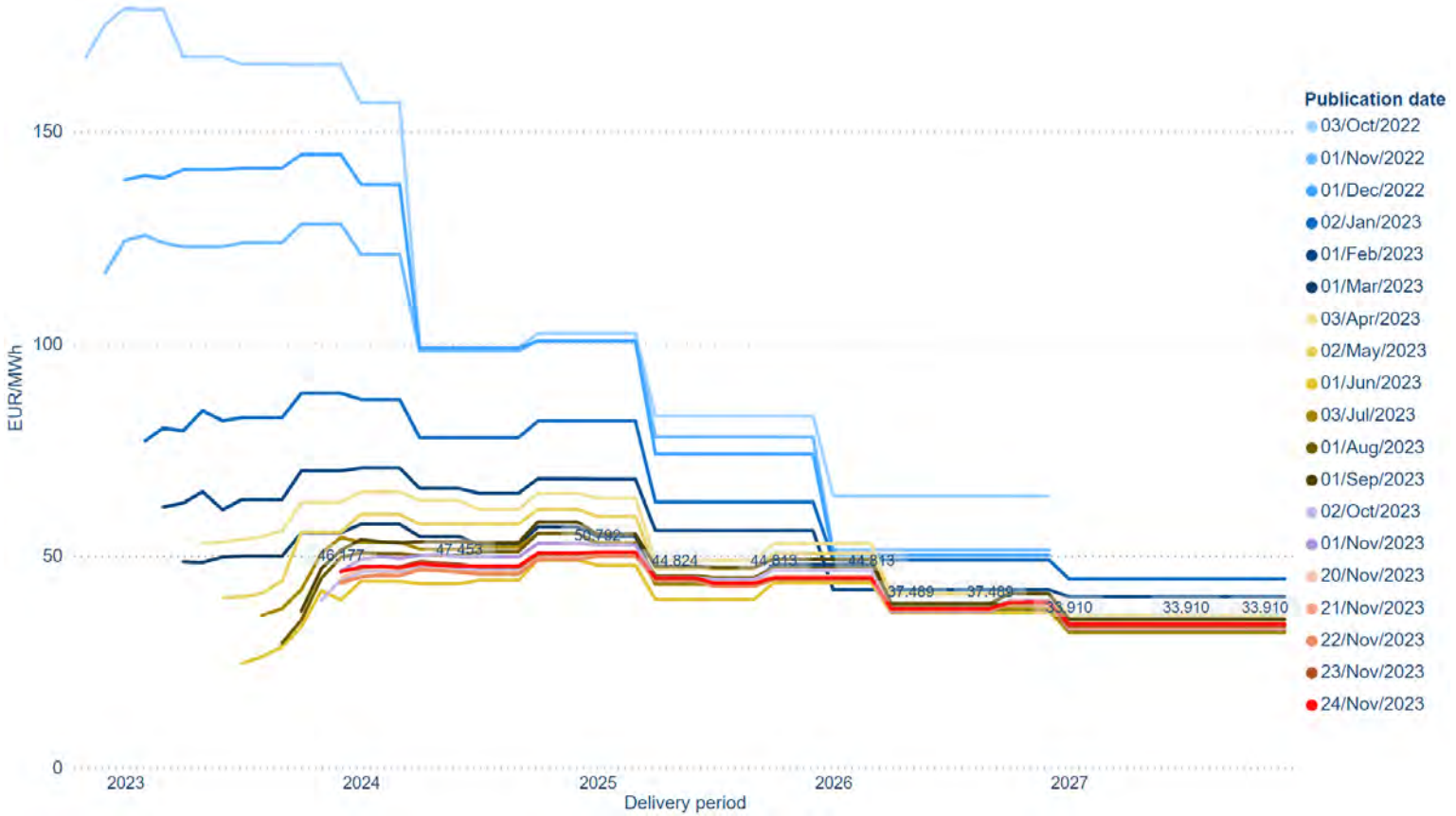
Historical EEX CEGH Prices

Spot and Futures Contract Prices



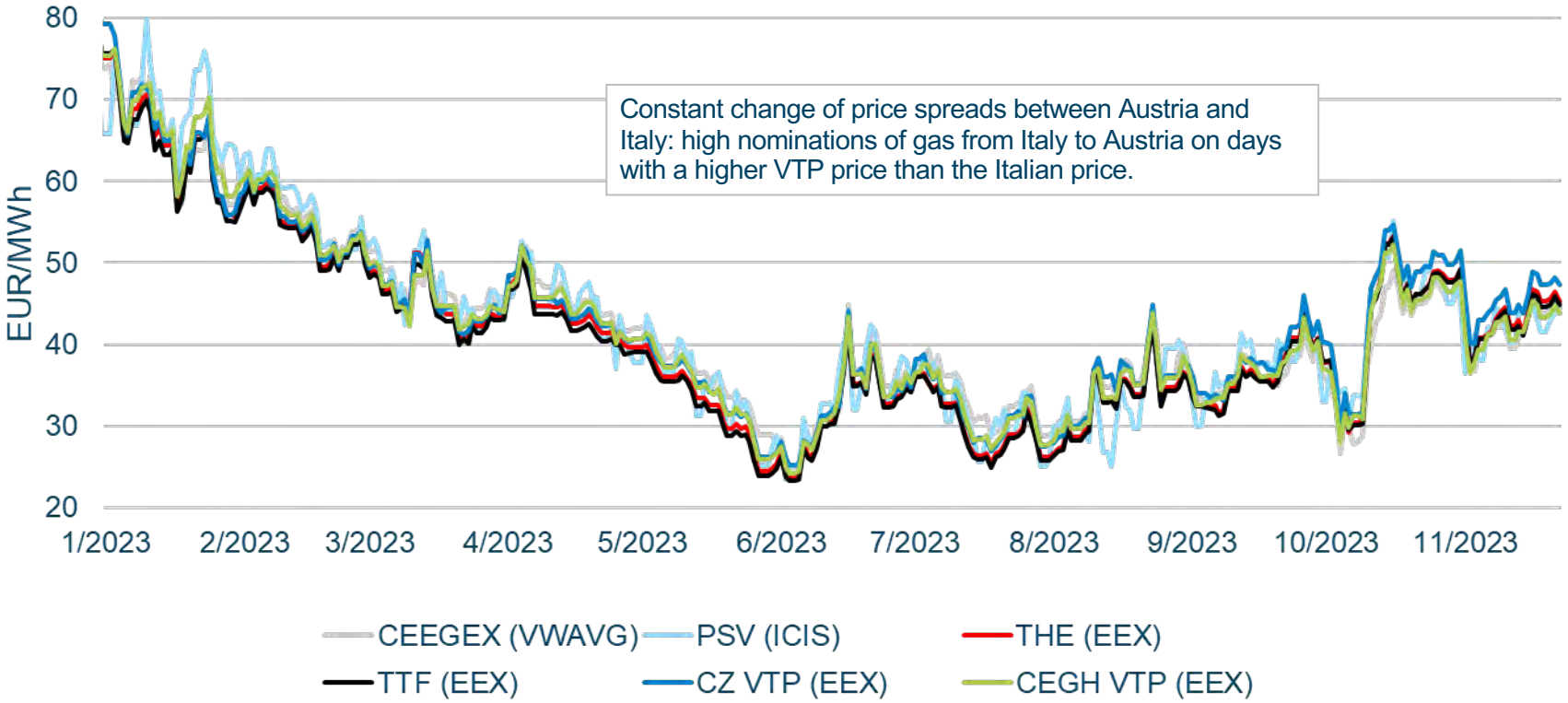
EEX CEGH Futures Price Curve

On the 1st Trading Day of the Month and the Last 5 Trading Days



European Spot (DA/WE) Settlement Prices

Enormous Price Spreads – Result of Volatile Market Environment



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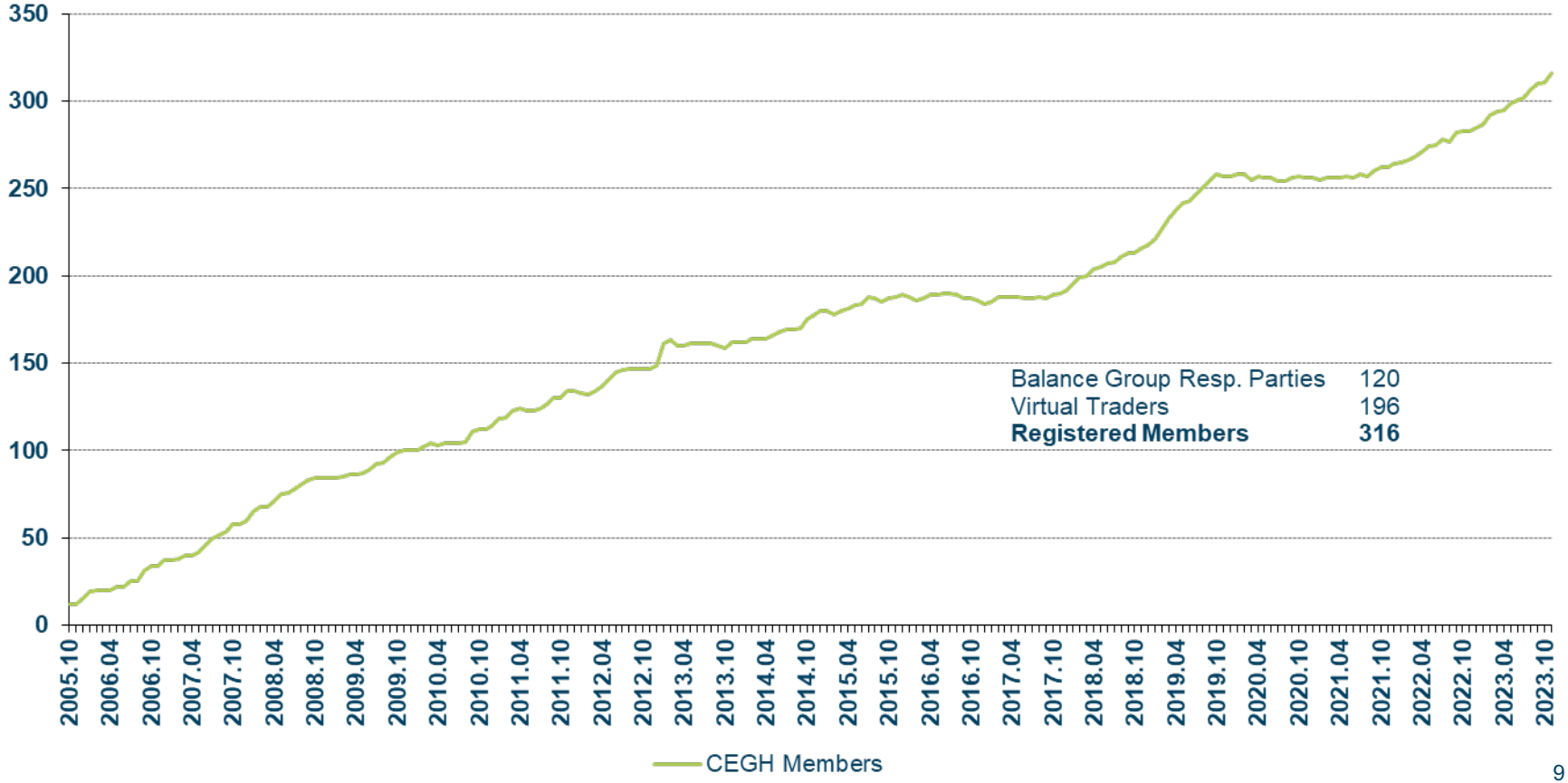
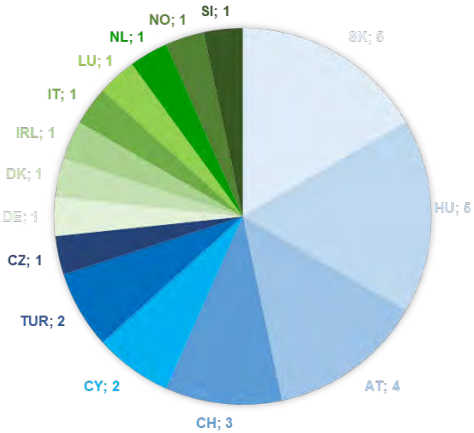
CEGH VTP: Number of Registered Members



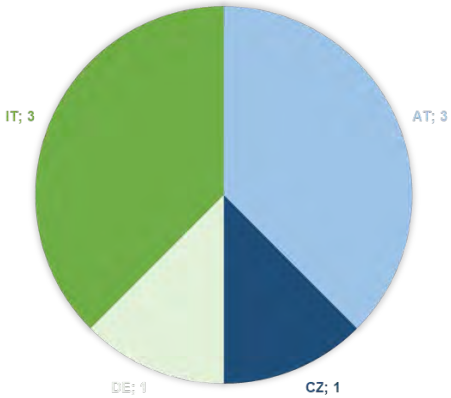
CEGH Customer Development

- **New members joining CEGH in 2022:**
  30 new members and 8 member terminations resulting in **285 members** in total at the end of the year.

NEW CUSTOMERS CEGH VTP 2022

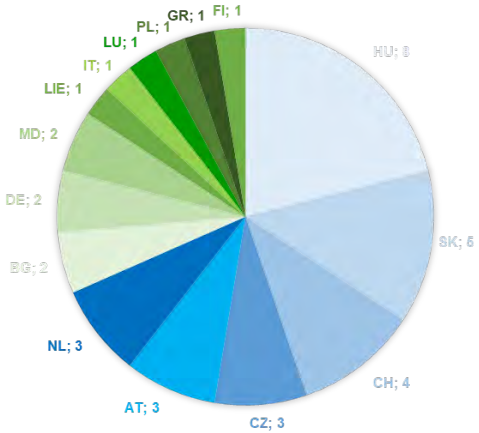


CUSTOMER TERMINATIONS CEGH VTP 2022

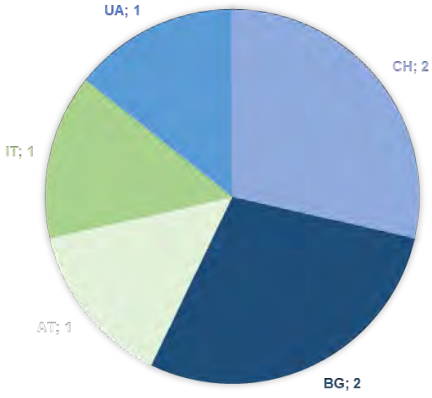


- **New members joining CEGH in 2023:**
  38 new members and 7 member terminations resulting in **316 members** in total by November 2023.

NEW CUSTOMERS CEGH VTP 2023

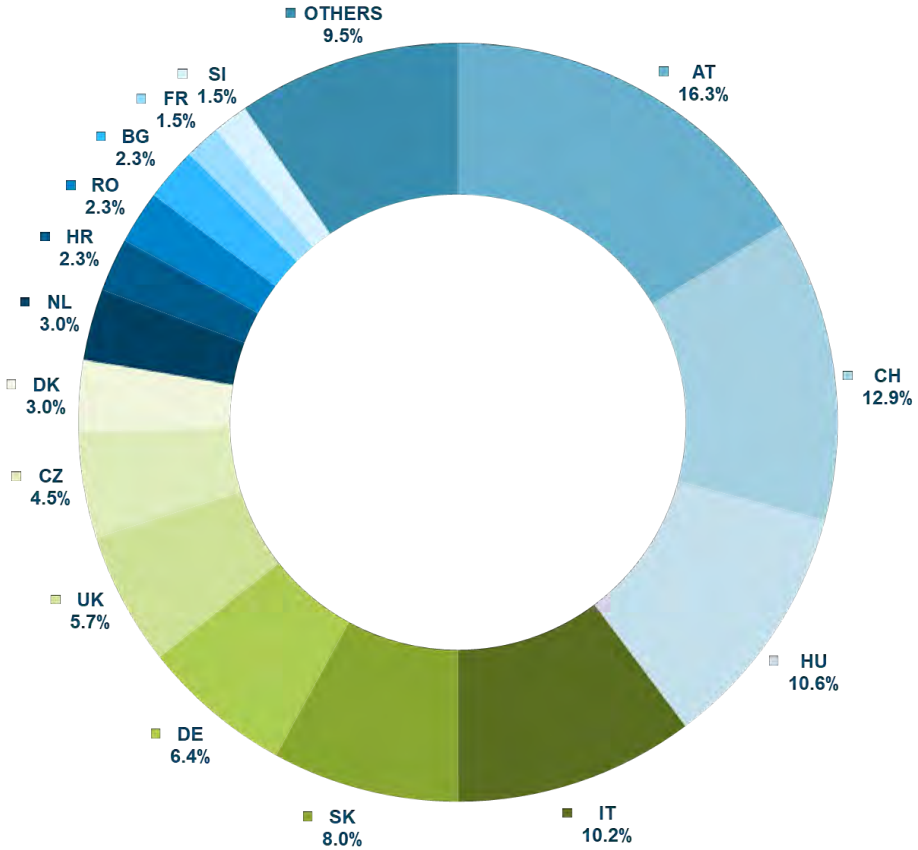


CUSTOMER TERMINATIONS CEGH VTP 2023



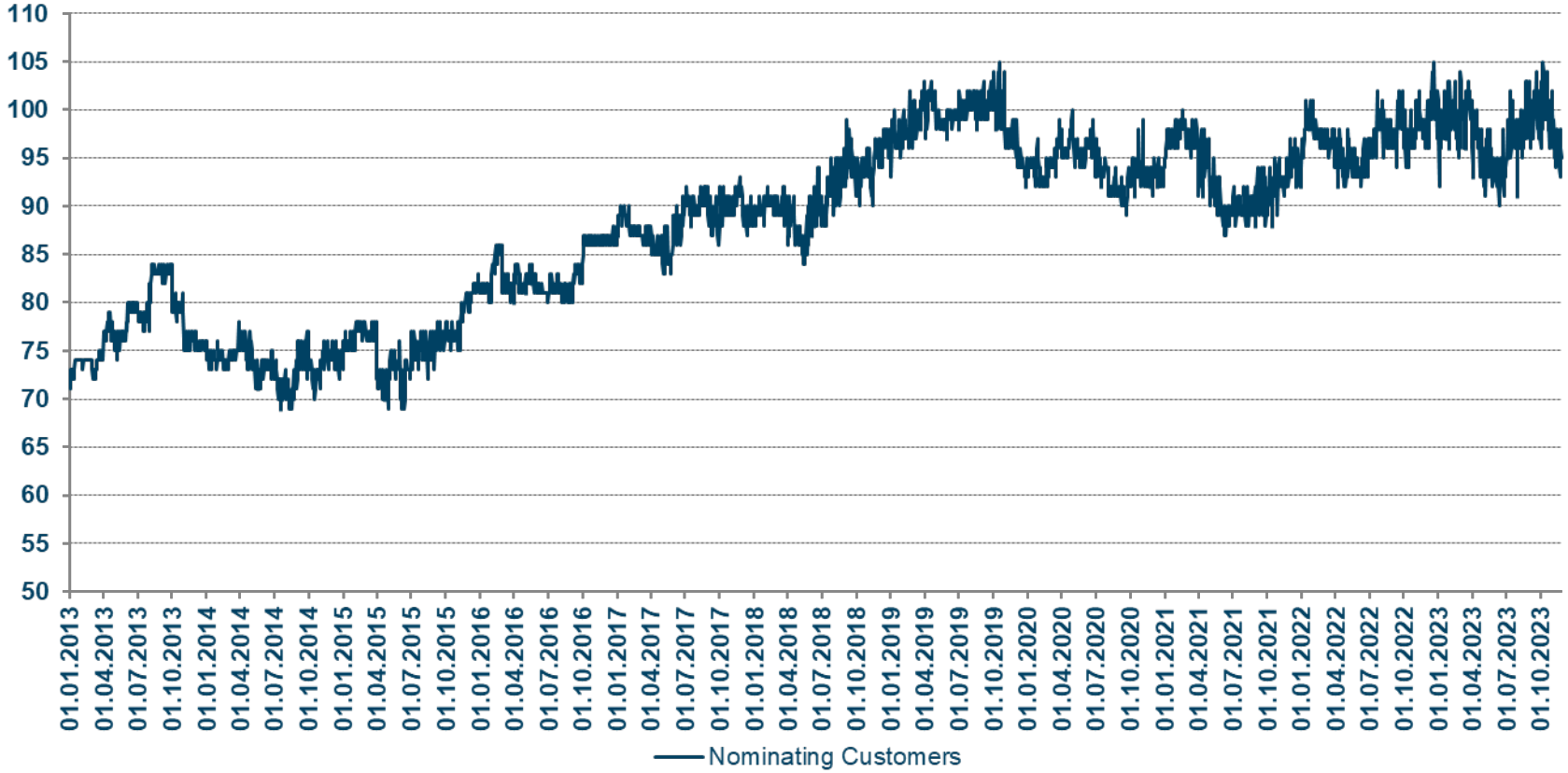
CEGH VTP: Diversity of Registered Members

316 Members
November 2023



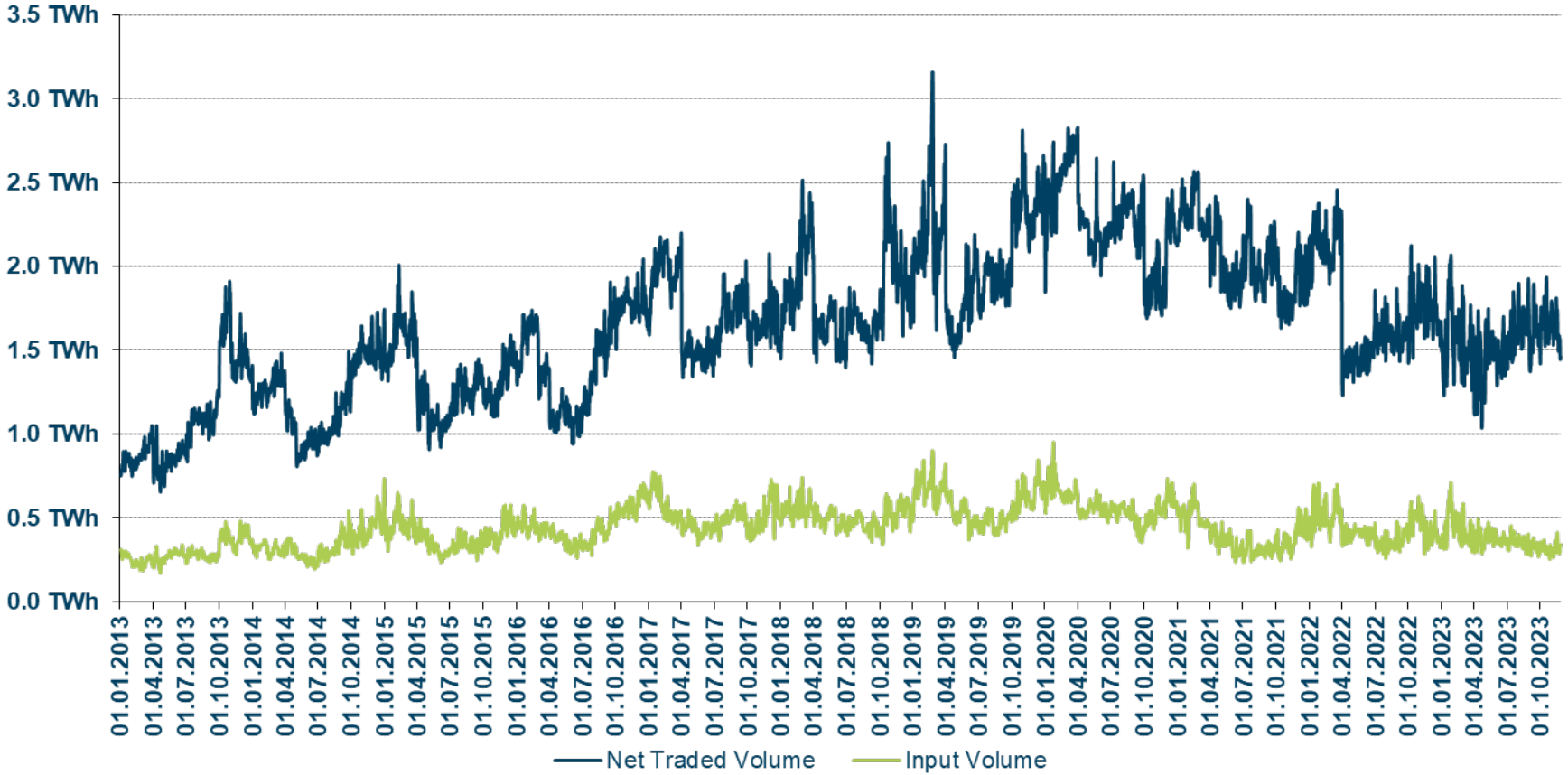
CEGH VTP: Nominating Customers on Daily Basis

Since January 2013



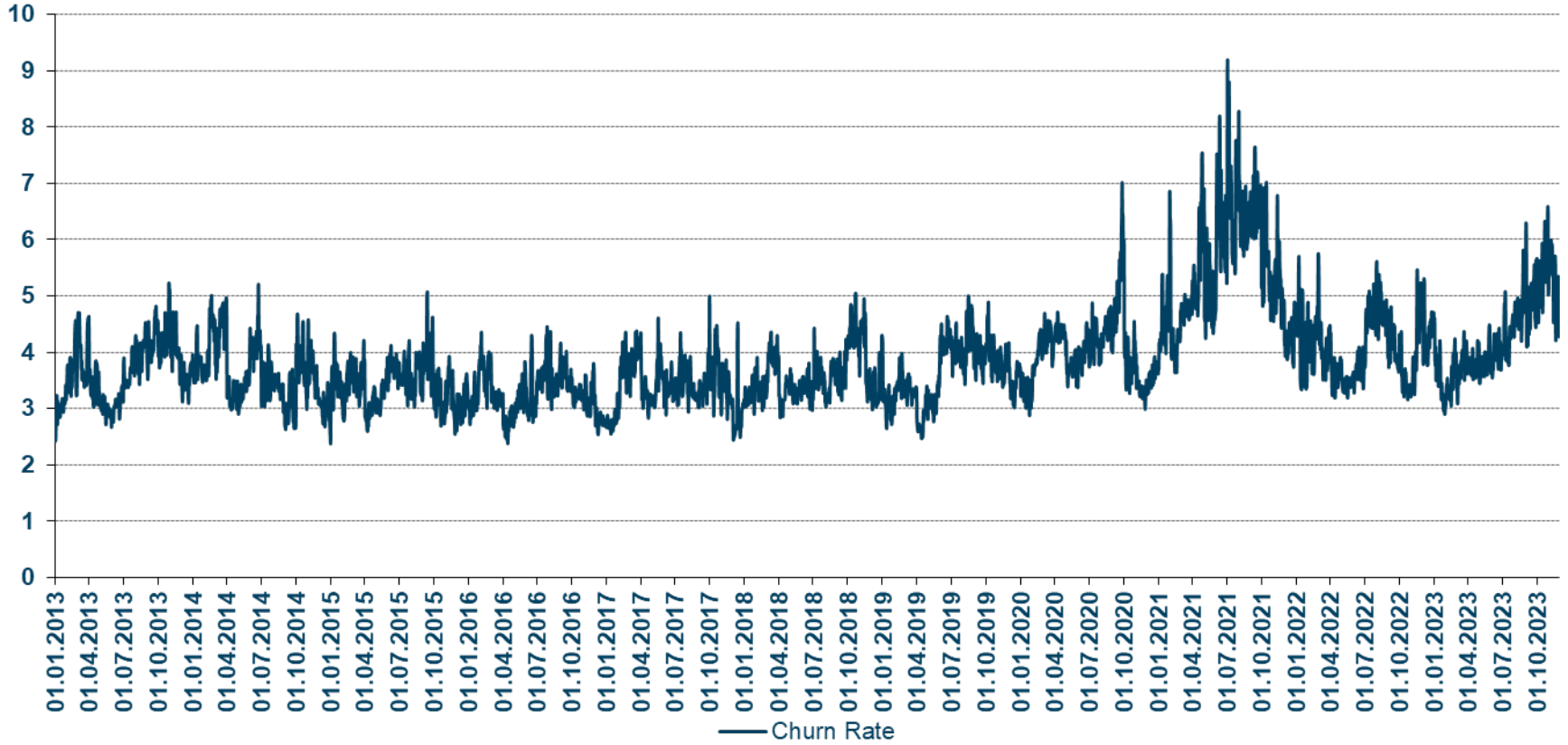
CEGH VTP: Daily Net Traded Volume

Since January 2013



CEGH VTP: Daily Churn Rate

Since January 2013



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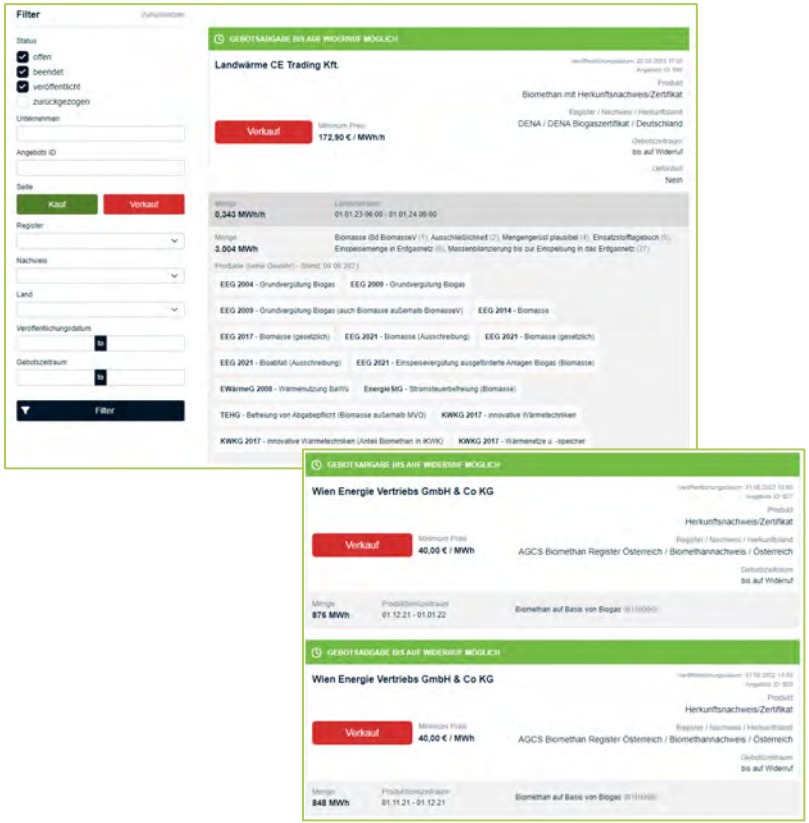
GREEN GAS

CEGH GreenGas Platform

Easy Access to Trading in Biomethane / GOs

- Platform was developed closely with market participants.
- According to market feedback Start as "bulletin board" and as "auction“.
- Easy registration and newsletter function
- CEGH GreenGas Platform allows buying and selling of (GOs) or bundled GOs together with biomethane or only biomethane without GOs.
- Connected Registers: E-Control and Biomethane Register Austria AGCS, DENA Germany.
- You can find the platform here:

  https://www.gashub.at/greengas/overview.xhtml



CEGH GreenGas Platform: Next Steps

CEGH is working on the following extensions:

- **Integration of Danish register with Energinet**

  Further extension of platform coverage to Denmark to support cross border trading in the future for GOs / Certificates.

- **Anonymous offers and bids**

  Offers only visible to members, anonymously also visible to the public. Members can also choose to post anonymously, information distributed by CEGH via CEGH GreenGas Platform.

- **“Simplified Biogas Standard Term Sheet”**

  Implementation of key elements of a Biogas Standard contract as a printable Term Sheet (pdf) and download function of the EFET CEGH Biogas Certificates Standard Agreement.

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GREEN HYDROGEN

CEGH

Development of the Austrian Hydrogen Market

CEGH GreenHydrogen Indices

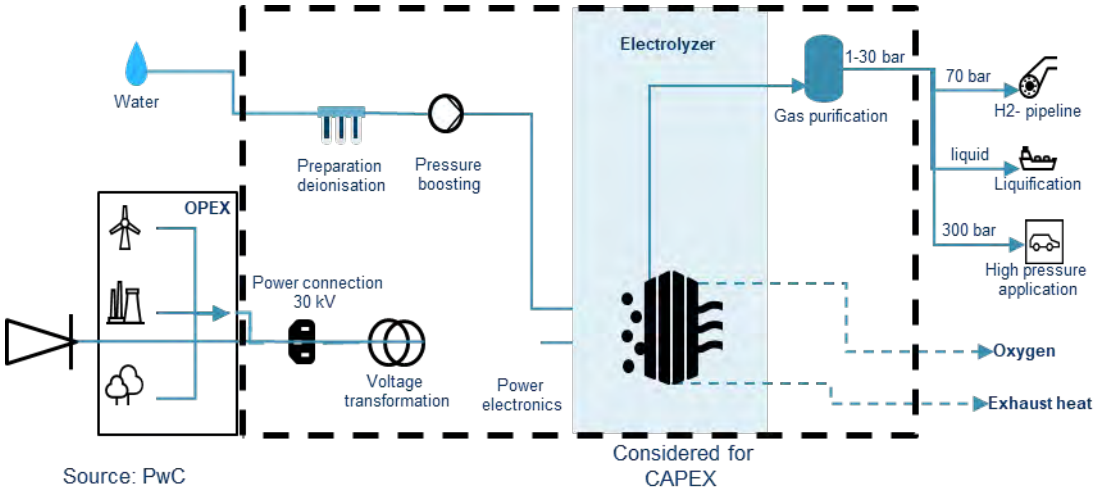
- **CEGH Hydrogen Indices facilitate** monitoring the „cost gap“ between hydrogen and alternative sources of energy supply and enables market participants to evaluate business cases for hydrogen projects.
- **Further enhancements of price assessments** planned once the hydrogen market becomes more liquid (e.g. benchmarking costs of supply, “net-back pricing”).

Stakeholder Dialogue

- **CEGH engages with key stakeholders** including politicians, regulators, producers and offtakers.
- Key areas for alignment include regulatory frameworks (e.g. third-party access to hydrogen infrastructure), market model (entry-/exit system vs. physical hub), balancing code, design of framework agreements etc.

Cost-Plus-Approach for Hydrogen Indices

Battery Limits applied for Capex Calculation



Source: PwC

- Estimated Capex for electrolyzer is re-assessed on a regular basis
- Consideration of learning curve effects for „forward“ hydrogen price assessments

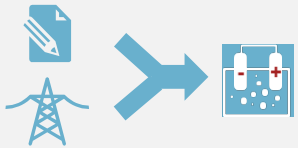
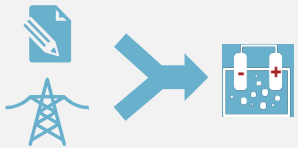
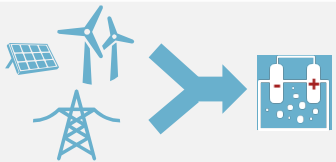
Cost of green power supply

+ Capex

“Cost-Plus”-Value of Green Hydrogen

CEGH GreenHydrogen Indices (since Dec 2022)

Measuring the Value of the Various “Shades” of Green Hydrogen

Index	Green Power Supply for Hydrogen Production	Product Definition
CEGH GreenHydrogen Spot Index	 • Sourcing of “grey” power in the day-ahead market • Sourcing of guarantees of origin via exchange / platforms	• Cheapest Day-ahead power prices optimized with a yearly hPfC
CEGH GreenHydrogen Forward Index	 • Sourcing of “grey” power in forward markets • Sourcing of guarantees of origin via exchange / platforms	• Cheapest Monthly, Quarterly, Seasonal and Yearly power prices optimized with yearly hPfC
CEGH GreenHydrogen PPA 40 Index	 • 40% of green power (renewable PPA) and 60% “grey” power (forward) • Sourcing of guarantees of origin via exchange / platforms	• Combination of 10 Years PPA and Optimized Grid Supply
CEGH GreenHydrogen PPA 100 Index	 • 100% sourcing of green power via power purchase agreements (renewable PPA)	• 10 Years PPA Pay as Produced

Update Reflects Changed Market Conditions

Two major changes:

- **RED III and delegated acts in place**, ie. separation of RED III compliant index and other (grid power plus GoO) indices
- **Changed market conditions re. CAPEX**, interest rates, power prices

Basic index approach stays, i. e.

- Cost plus index
- Battery limits
- Electrolyzer capacity: 10 MW
- Indices

Updated Calculation Parameters

Implemented by 23 October 2023

- WACC from 8% to 9%
- CAPEX increase on currently observed levels (by 14% due to general cost increases and delivery shortages; only partially offset by larger electrolyzer units)
- PPA update on current environment
- Grid Costs, OPEX furthermore not considered[1)], but indication given how much that would add to the hydrogen price

1) Grid cost exemption for electolyzers still valid, prolongation in discussion

Renaming of Index to Show RED II & III Compliance

Only the CEGH GreenHydrogen Index is RED II & III Compliant

Index	Green Power Supply for Hydr
CEGH GreenHydrogen Spot Index	• Sourcing of "grey" power in the day-ahead mark • Sourcing of exchange /
CEGH GreenHydrogen Forward Index	• Sourcing of • ng of exchange /
CEGH GreenHydrogen PPA 40 Index	• 40% of green power (renewable PPA) and 60% "g • Sourcing of exchange /
CEGH GreenHydrogen PPA 100 Index	• 100% sourc power purc (renewable PPA)

CEGH GreenHydrogen Index*

According to market feedback, the compliance with the Delegated Act (DA), RED 2 should be stronger visible within the set of CEGH indices.
The CEGH GreenHydrogen PPA 100 Index is the only CEGH Index – for the time being - that is compliant with the DA.
We therefore rename the index to
CEGH GreenHydrogen Index and will mark it accordingly in our publication (website, presentations, etc.).

- 100% sourcing of green power via power purchase agreement
- Price for 100% of "green" power
- Additional purchasing of guarentees of origins not necessary

Renaming of Indices not RED II / III Compliant

Index	Green Power Supply for Hydrogen Production	Product Definition
CEGH GreenHydrogen Spot Index	CEGH GreenHydrogen Spot Index*	• Spot market price of “grey“ electricity • Price of guarantees of origin for “Greenification” of “grey“ power
CEGH GreenHydrogen Forward Index	CEGH GreenHydrogen Forward Index*	• Forwards market price of “grey“ electricity • Price of guarantees of origin for “Greenification” of “grey” power
CEGH GreenHydrogen PPA 40 Index	CEGH GreenHydrogen PPA 40 Index*	• Price for 40% of “green“ power (renewable PPA) and 60% “grey” power (forward) • Price of guarantees of origin for “Greenification” of “grey” power
CEGH Green Hydrogen PPA 100 Index	• 100% sourcing of green power via power purchase (renewable PPA	

*) Not compliant with the Delegated Act RED II / III

Results of the CEGH GreenHydrogen Model Update

Published From 23 October 2023 Onwards

		Based on Trading Day 20th Oct 2023	
	in EUR/MWh	Old Model Calculation	New Model Calculation
CEGH GreenHydrogen Index		156.691	201.952
CEGH GreenHydrogen PPA 40 Index*		158.841	193.270
CEGH GreenHydrogen Spot Index*		200.766	208.053
CEGH GreenHydrogen Forward Index*	Month+1	206.249	213.536
	Month+2	212.495	219.782
	Quarter+1	234.130	241.417
	Season+1	214.924	222.210
	Season+2	226.385	233.672
	Calendar+1	220.654	227.941
	Calendar+2	198.196	204.463
	Calendar+3	181.010	187.277

*) not compliant with the Delegated Act (DA), RED 2

CEGH GreenHydrogen Indices on CEGH's Website

Publication date: 27.11.2023

download.CSV

CEGH GreenHydrogen Index *

Delivery Period	EUR/MWh
10-Year PPA Pay-as-Produced	193.337

* Based on 100% power purchase agreement (PPA) supply, **compliant with the Delegated Act, RED II.**

CEGH GreenHydrogen PPA 40 Index **

Delivery Period	EUR/MWh
10-Year Pay-as-Produced	186.985

CEGH GreenHydrogen Spot Index **

Delivery Period	EUR/MWh
27-Nov-2023	197.849

CEGH GreenHydrogen Forward Index **

Delivery Period	Maturity	EUR/MWh
December 2023	Month +1	183.902
January 2024	Month +2	199.881
Q1 2024	Quarter +1	204.229
Summer 2024	Season +1	191.282
Winter 2024	Season +2	209.714
Calendar 2024	Calendar +1	200.498
Calendar 2025	Calendar +2	193.020
Calendar 2026	Calendar +3	180.039

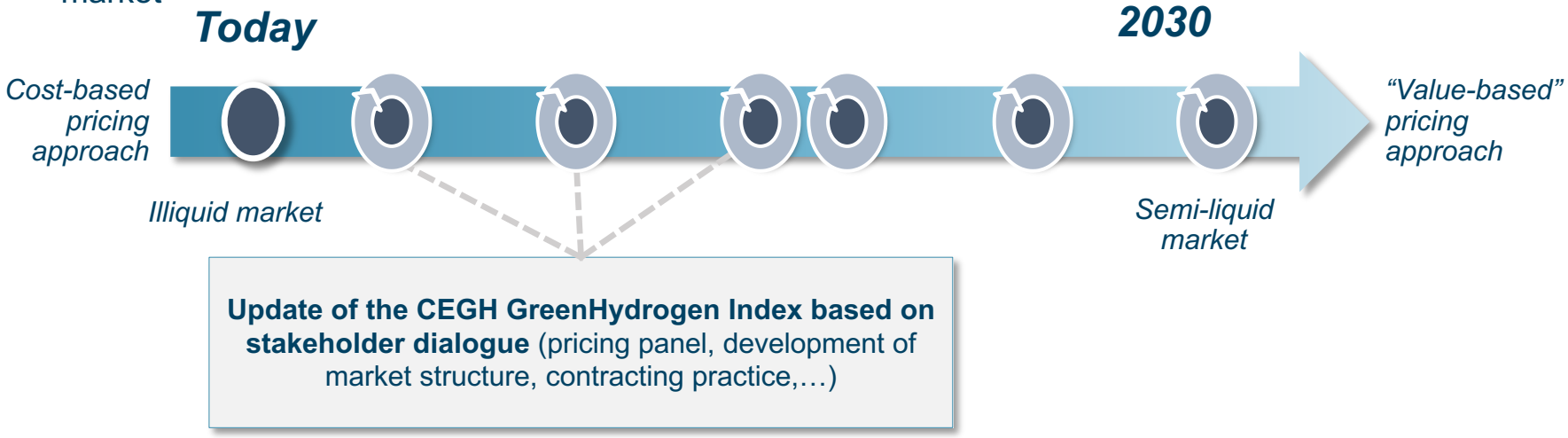
** Based on power supply, not compliant with the Delegated Act, RED II

Go to CEGH GreenHydrogen Index

Go to CEGH GreenHydrogen Index Specifications

Continuous Alignment of Index Design

- New specification documents (clean and track changes) available on CEGHs website
- Ongoing stakeholder dialogue ensures continuous alignment of index design to evolving hydrogen market



- Regular update of PPA prices and / or other parameters like CAPEX to smoothen the impact of parameter changes on the index results

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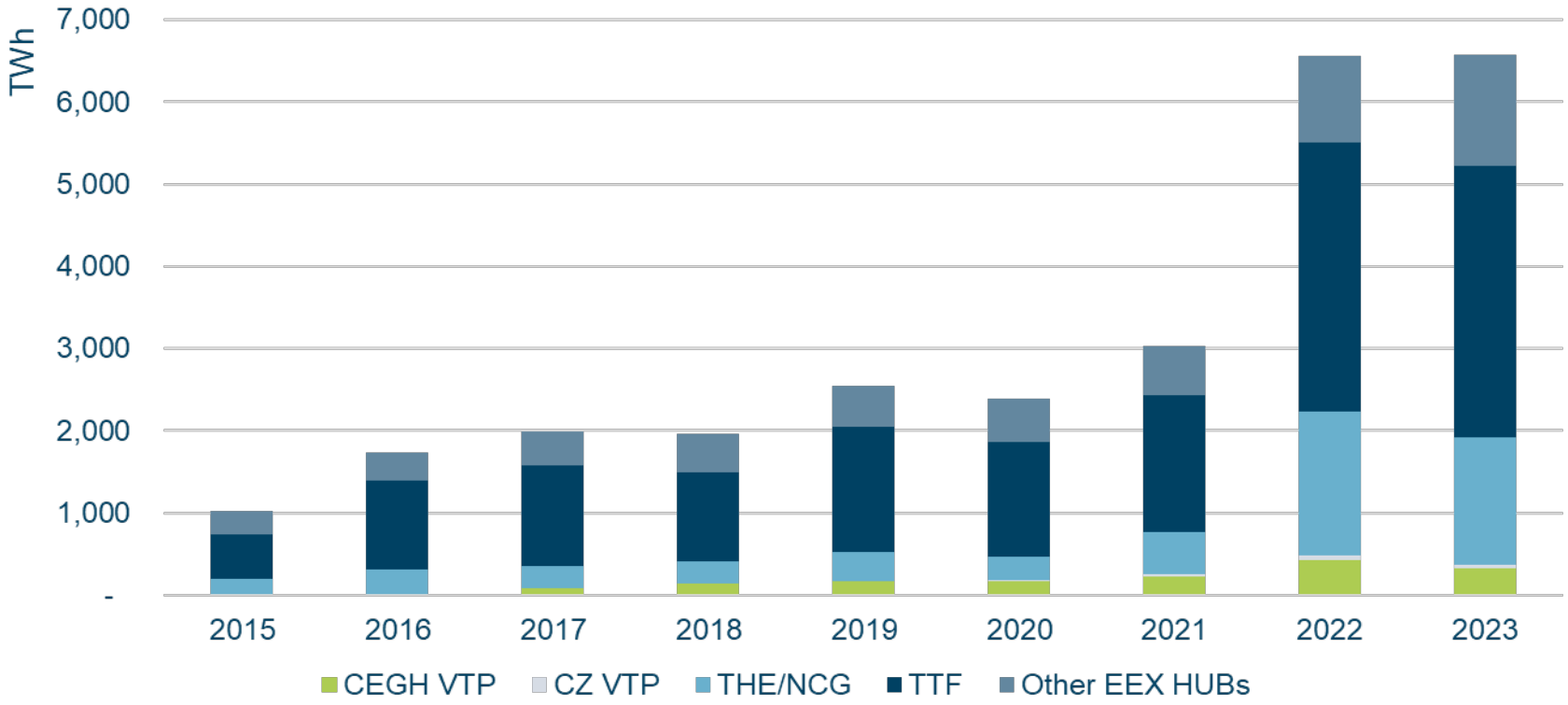
EEX Group Natural Gas Trading Volumes

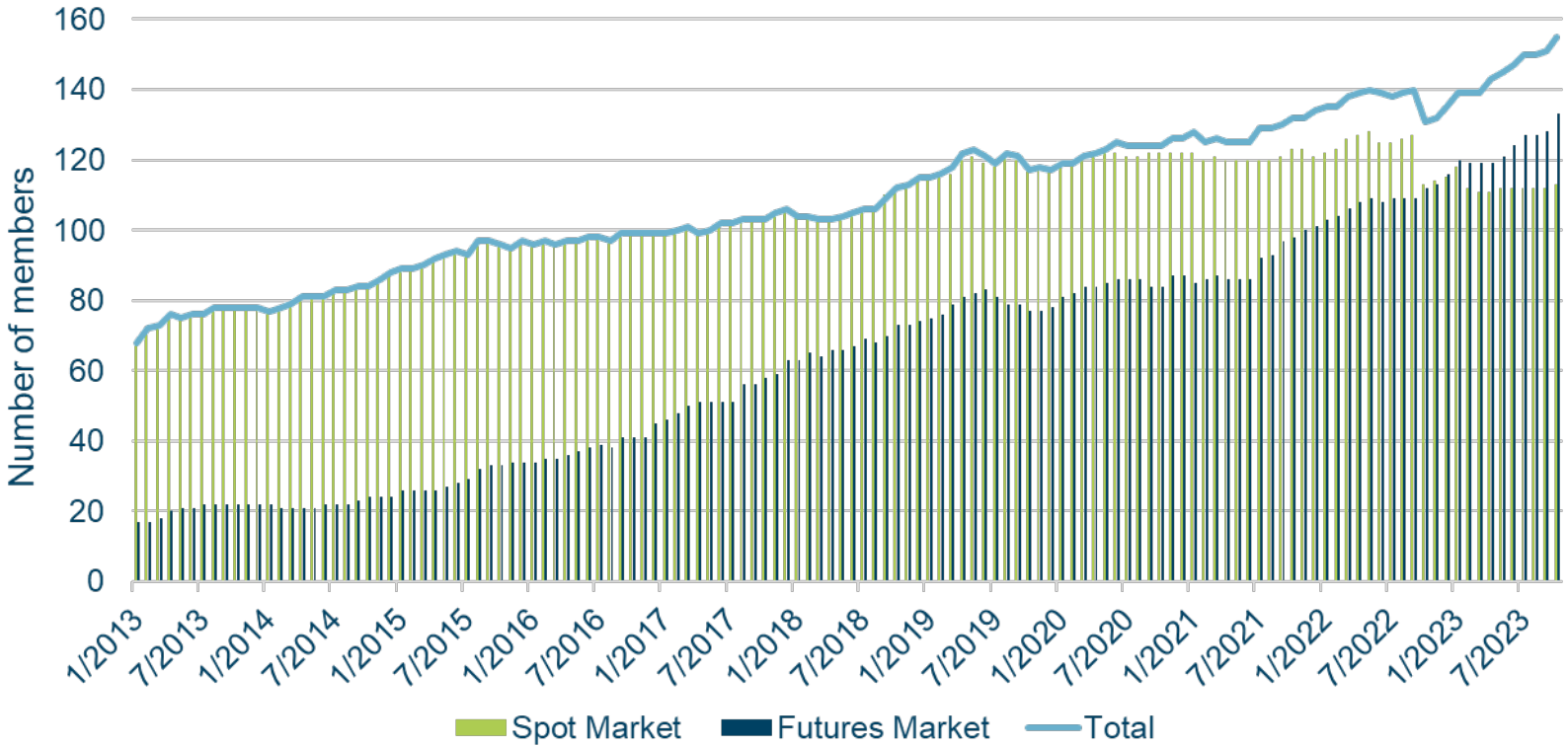
Yearly Trading Volume between January 2015 – November 2023*



*Forecasted at 22 Nov 2023

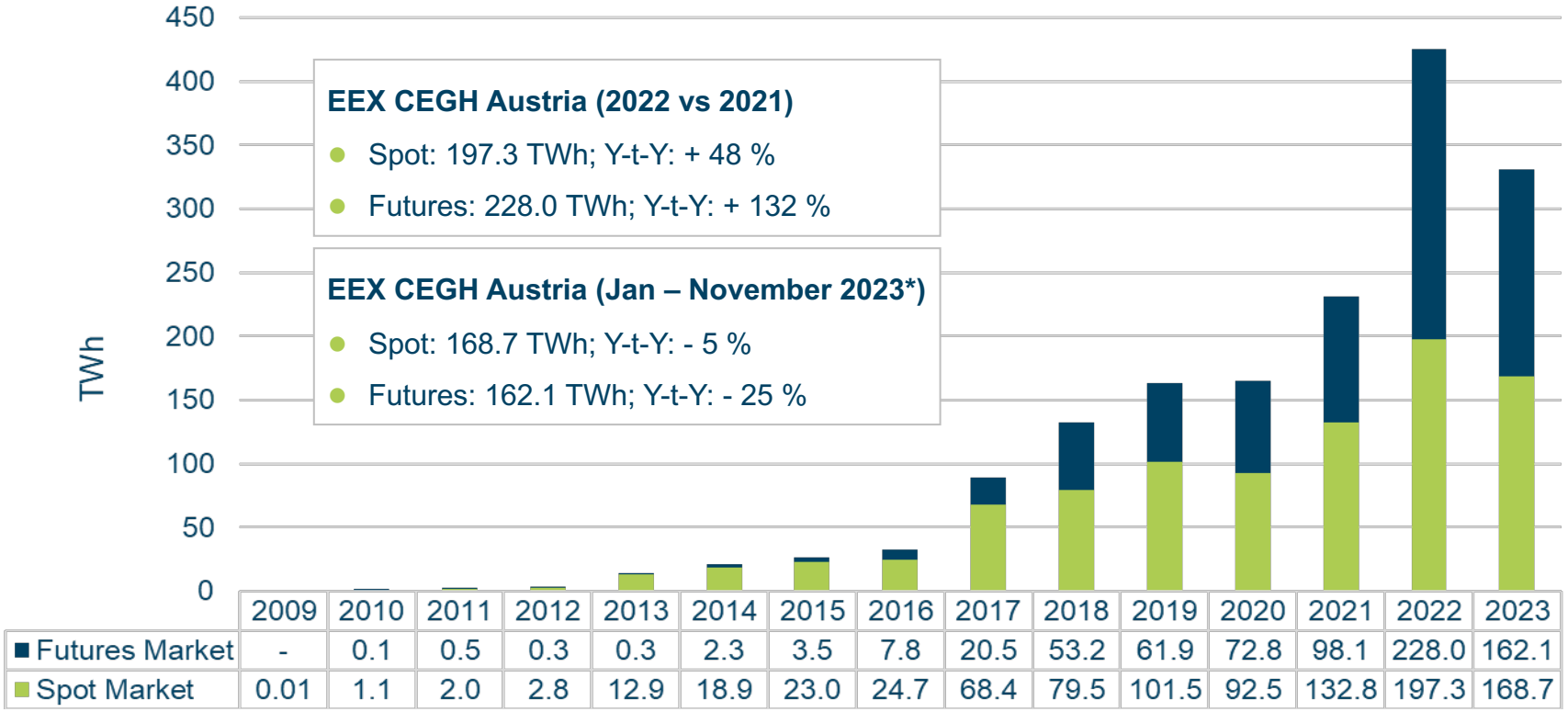
EEX CEGH Austrian Gas Market

Development of Members since January 2013



EEX CEGH Austrian Gas Market

Yearly Trading Volume between January 2009 – November 2023*

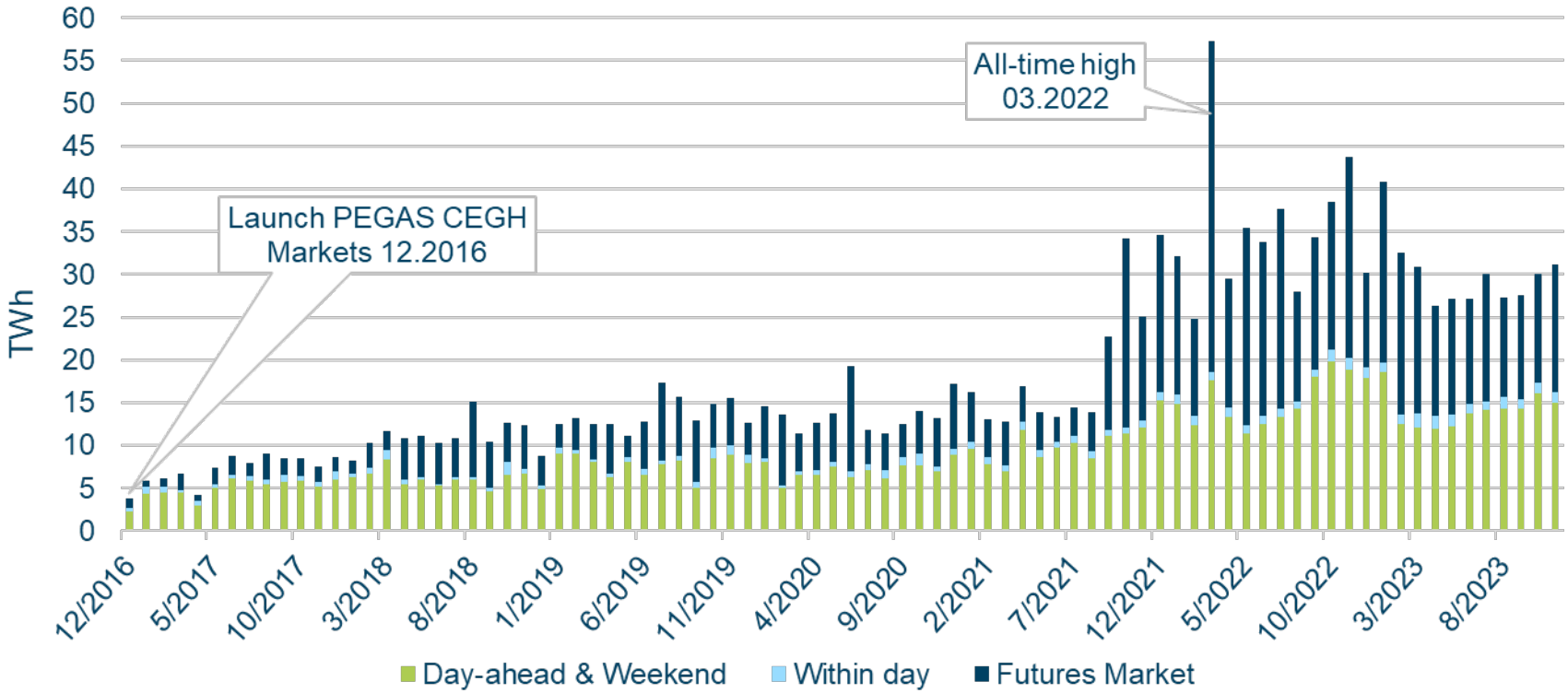


	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Futures Market	-	0.1	0.5	0.3	0.3	2.3	3.5	7.8	20.5	53.2	61.9	72.8	98.1	228.0	162.1
Spot Market	0.01	1.1	2.0	2.8	12.9	18.9	23.0	24.7	68.4	79.5	101.5	92.5	132.8	197.3	168.7

*Forecasted at 22 Nov 2023

EEX CEGH Austrian Gas Market

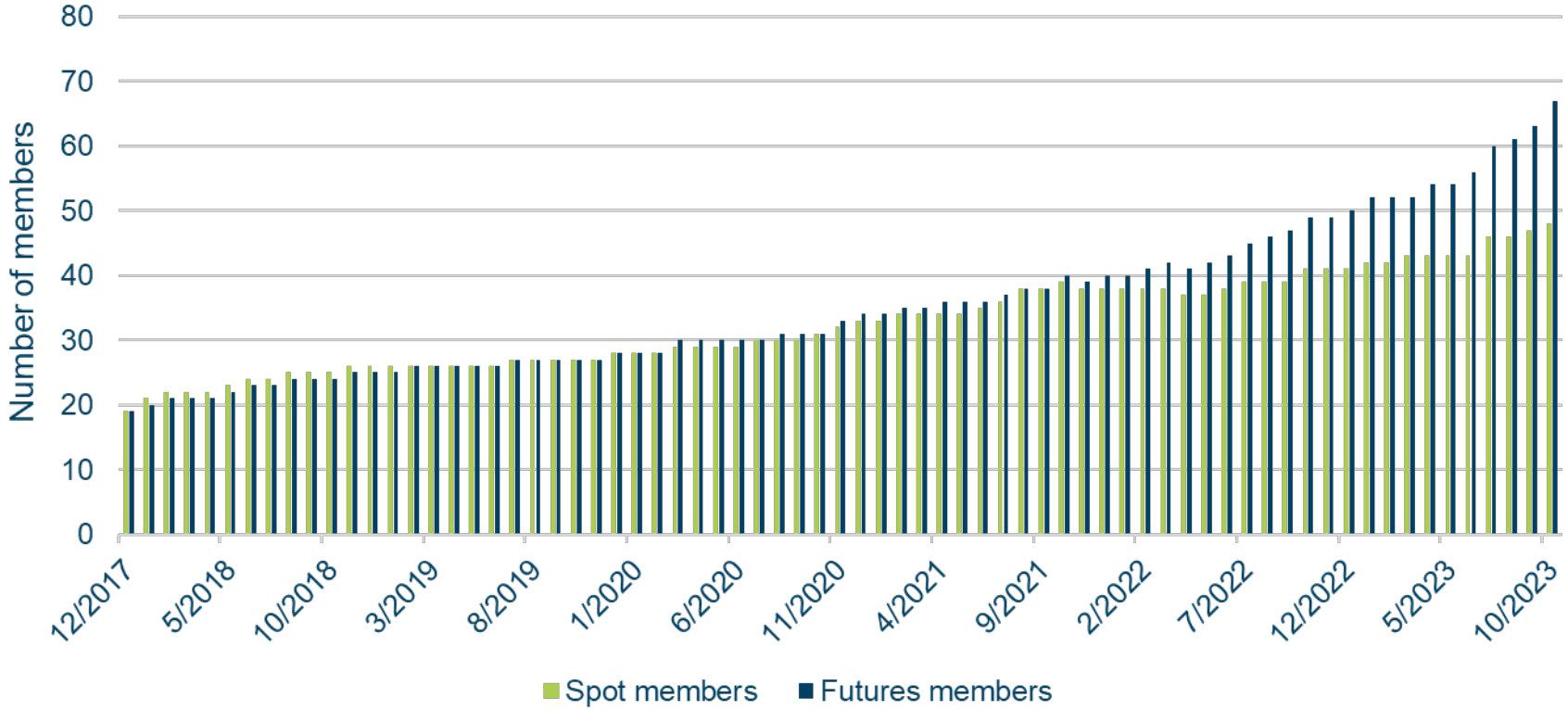
Monthly Trading Volume between December 2016 – November 2023*



*Forecasted at 22 Nov 2023

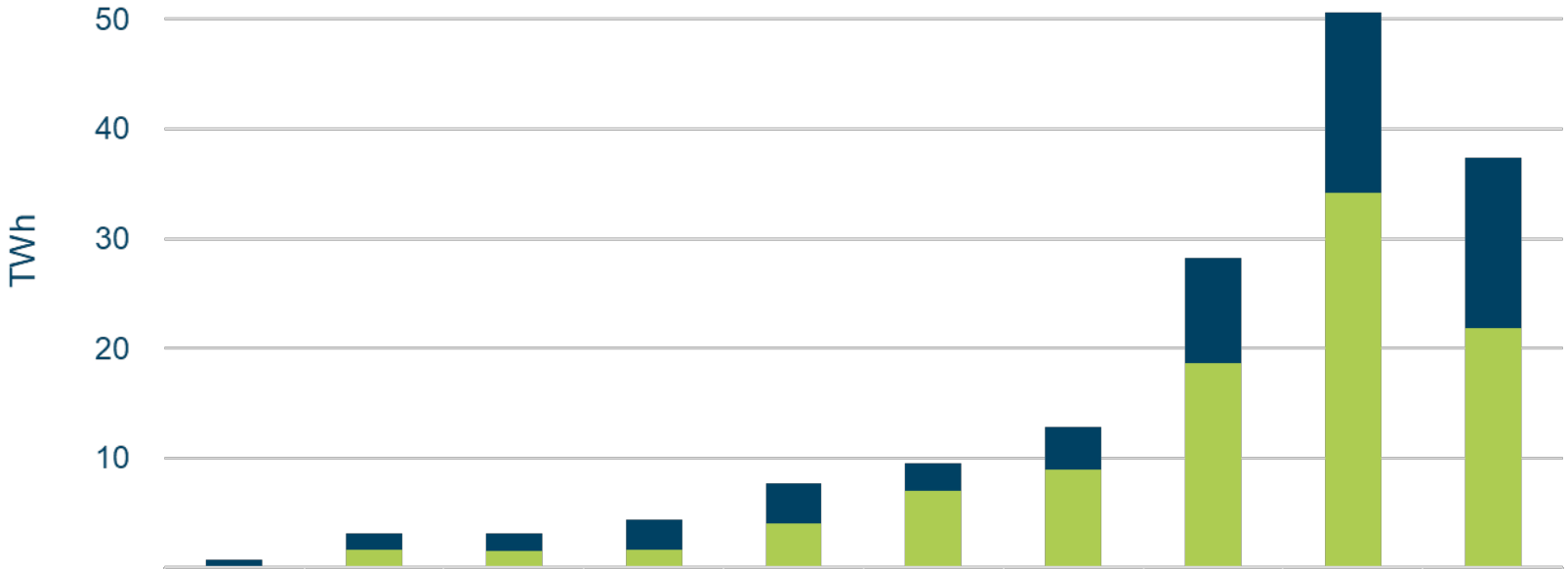
EEX CEGH Czech VTP Gas Market

Development of Members since December 2017



EEX CEGH Czech VTP Gas Market

Yearly Trading Volumes: February 2014 – November 2023*

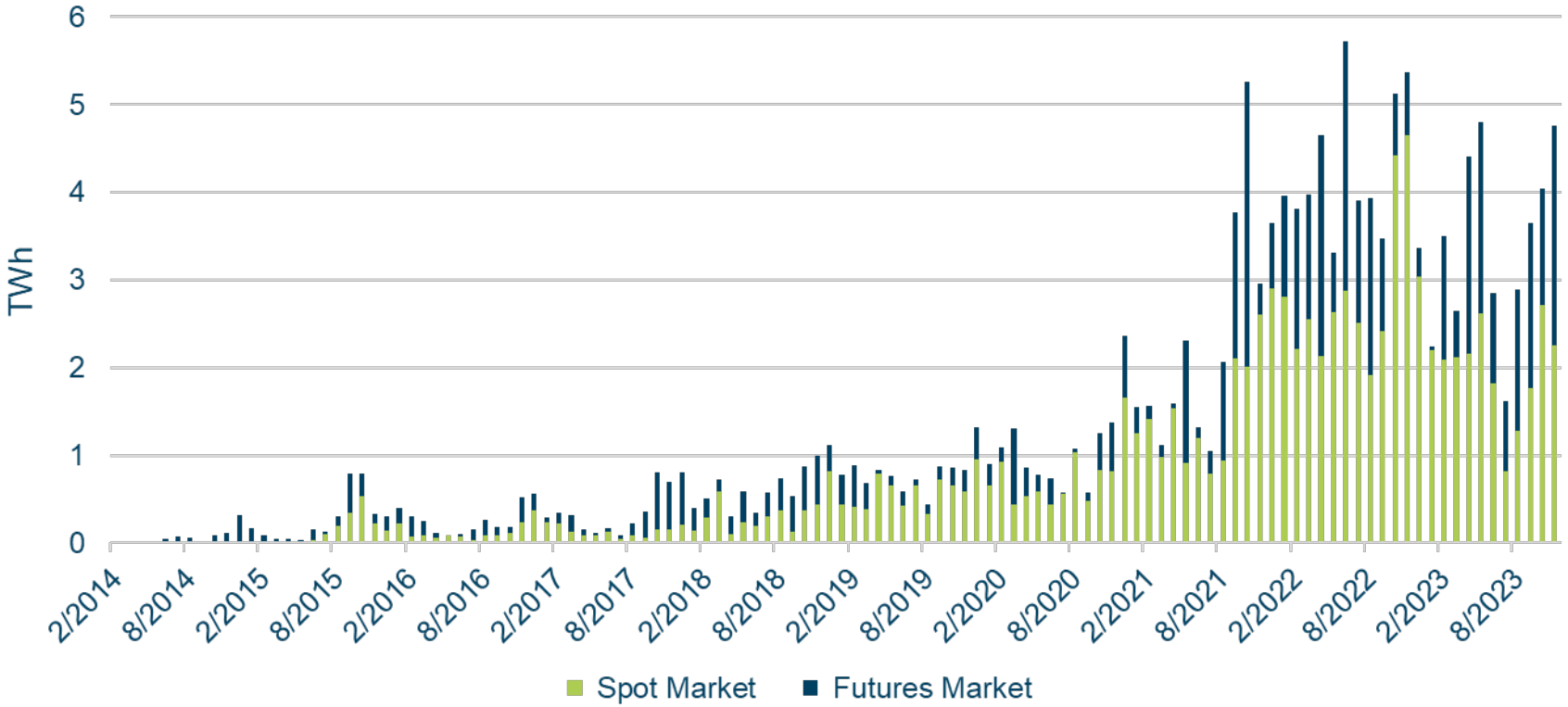


	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Futures Market:	0.7	1.6	1.6	2.7	3.7	2.6	3.9	9.5	16.4	15.5
Spot Market:	-	1.6	1.5	1.6	4.0	7.0	9.0	18.7	34.2	21.8

**Forecasted at 22 Nov 2023*

EEX CEGH Czech VTP Gas Market

Monthly Trading Volumes: February 2014 – November 2023*



*Forecasted at 22 Nov 2023

EEX-Update: Products & Services 1 (2)

New EEX Gas Futures and OTF Maturities

- EEX introduces additional maturities for natural gas derivatives trading on the following hubs: TTF, THE, CEGH VTP, PEG, PVB and PSV.
- New products suite: **next 12 Months**, **next 11 Quarters** and **next 11 Seasons.**
- Launch is scheduled for December 11, 2023.

Direct Clearing Participant (DCP)

- DCP Clearing Member is a Clearing Member that has a DCP clearing license and is exclusively entitled to clear own spot market transactions.
- DCP will be available for spot markets only and for companies based in a country approved by ECC for DCP Clearing.
- Launch is planned for Q2 2024, subject to legal and commercial feasibility.

EEX-Update: Products & Services 2 (2)

GET Baltic Update

- GET Baltic joined the EEX Group, marking a significant addition in Q2 2023.
- Access to GET Baltic markets to be launched by EEX in Q1 2024.

New Gas Futures Volume Program

- EEX will offer discount for transaction fees for members who trade above certain thresholds.
- The thresholds and discounts will be incorporated into the price list of EEX. Hence, it will be openly available to all EEX members, across all hubs in case volume thresholds are met. The start date is not fixed yet but scheduled for early 2024.

New Gas Futures Market Making Program

- EEX has run a market making tender in October and has selected several market makers on different hubs.
- The market makers will start in early 2024.

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10 Years of Gas
Exchange in Czech Republic
10 Years of Groundbreaking
Cross-Border Cooperation


CELEBRATING
10 YEARS
OF GAS EXCHANGE
IN CZECH REPUBLIC

10 Years of Trading With Czech Natural Gas

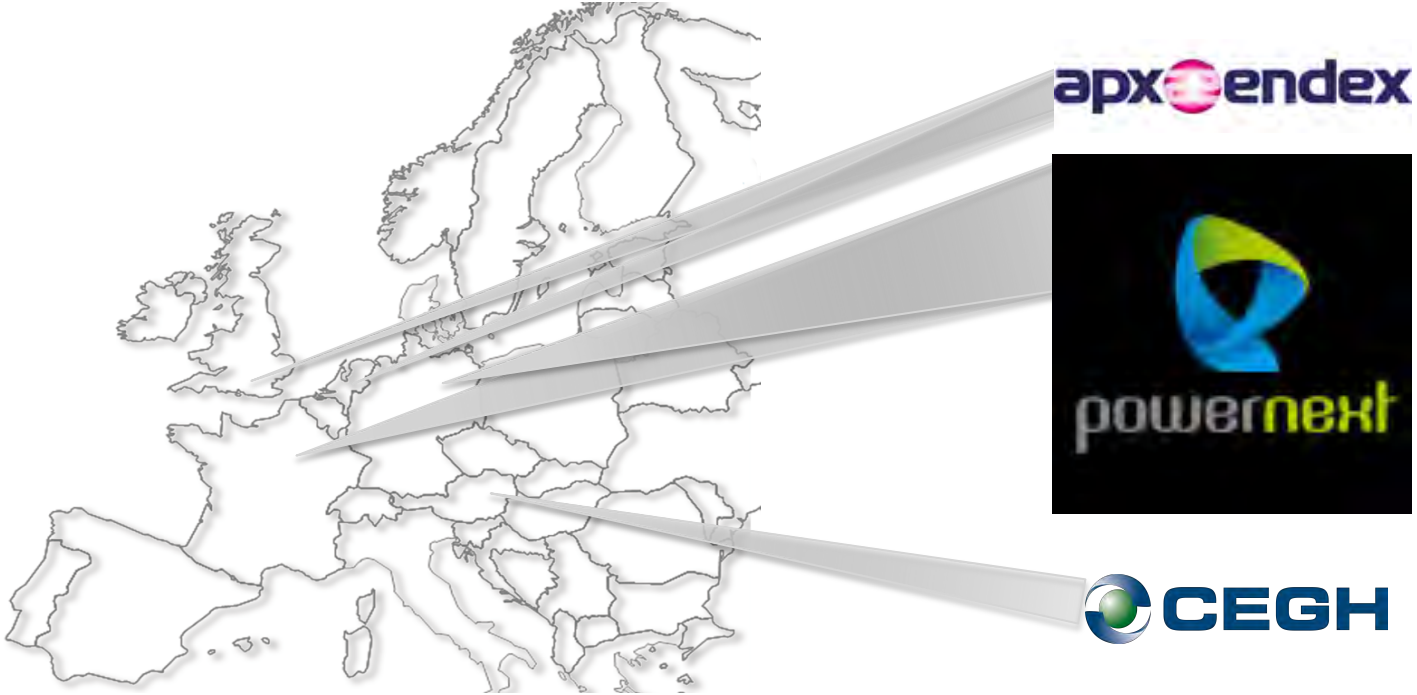
David Kučera, Gottfried Steiner

Vienna, November 28th, 2023

part of eex group

Europe 10 years ago

Natural gas exchanges



CEGH and PXE partnership

Best of both worlds

How did it start?

Cooperation agreement signed on February 4th, 2013

Launch date

December 9th, 2013

Products

- 3 Months ahead
- 4 Quarters ahead
- 3 Seasons ahead
- 2 Years ahead

CEGH Central European Gas Hub

Brand name

POWER EXCHANGE CENTRAL EUROPE

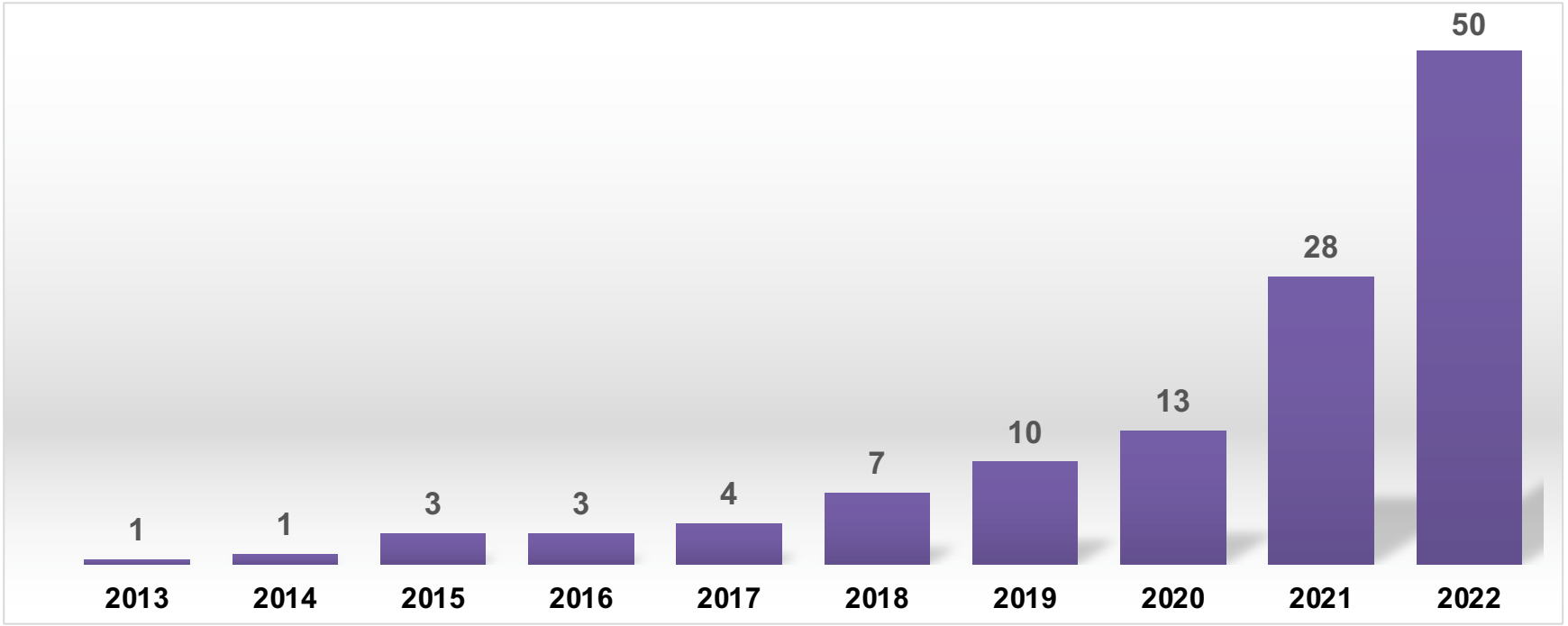
Operations

The Czech Market Exchange Pioneers

Companies that were ready to start with us…

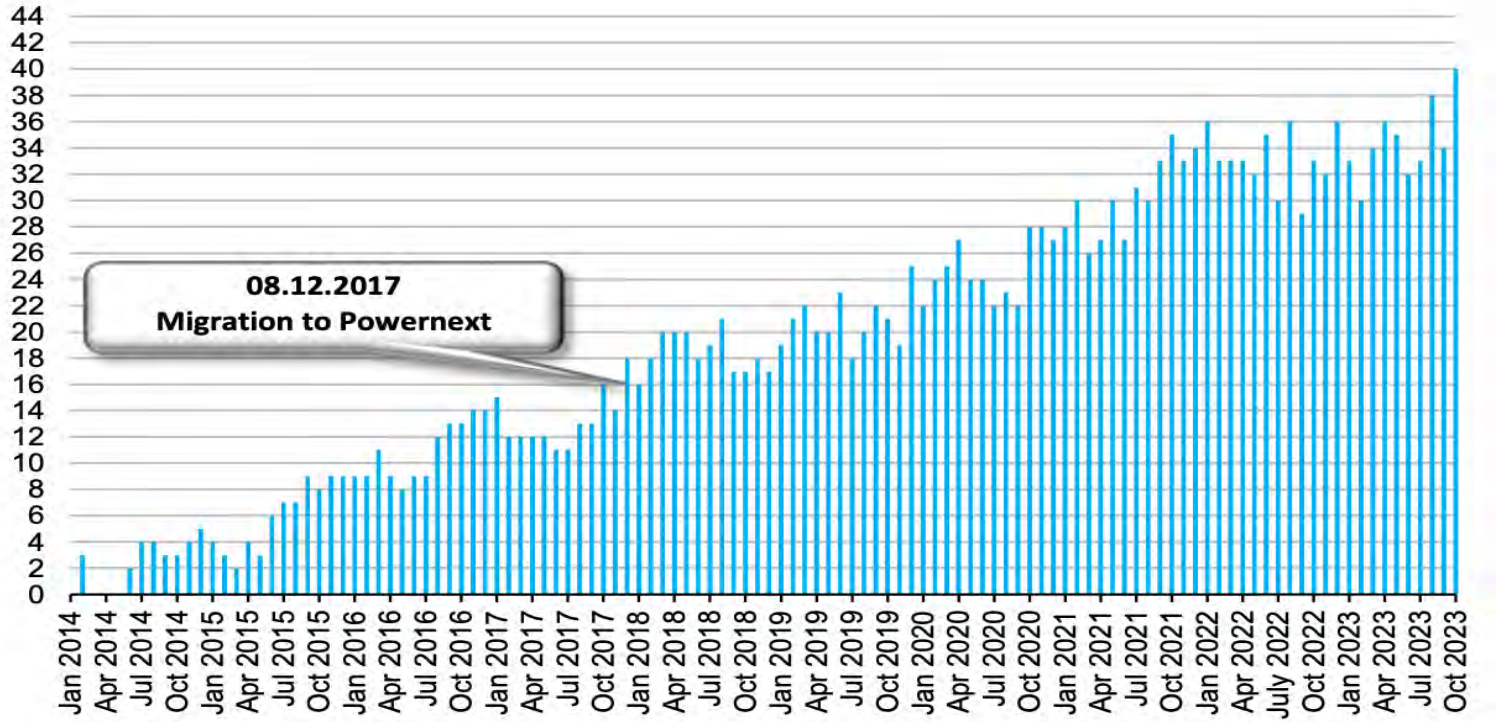
Market Development

Volume traded in TWh



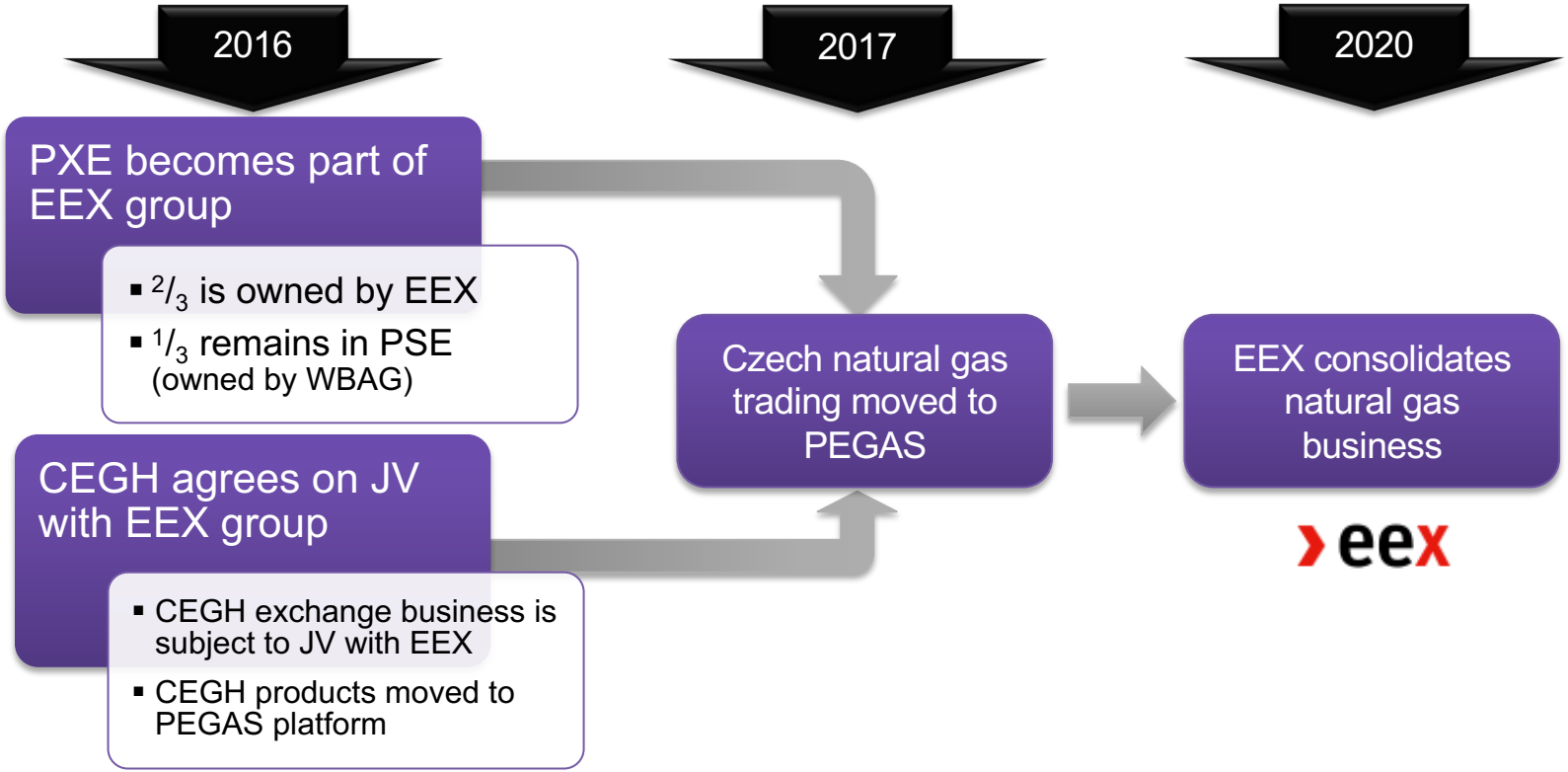
Market Development

Active market participants



Fundamental Developments

Becoming part of EEX group



Czech Market Became Part of EEX

Fully integrated within EEX group offering

Physical Futures Market (on-exchange and OTF)
Month, Quarter, Season, Calendar, TTF Options

Cash-settled Futures (EGSI Futures)
Daily, Weekend, Weekly, Month, Quarter, Season, Calendar

Spreads
Location spreads between different market areas
Time spreads (Futures only)

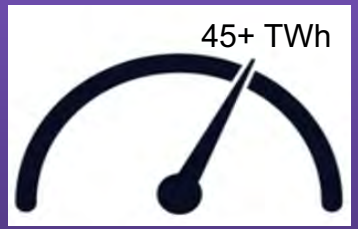
LNG Offer
Cash-settled JKM Futures

Trading Hours
Futures: 8:00am – 6:00pm CET

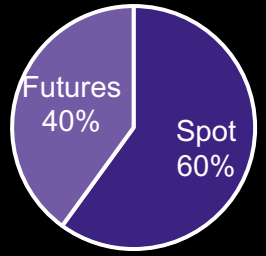
Czech Natural Gas Market Today

Fully integrated within European market

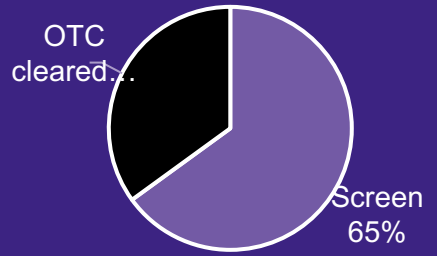
Volume Traded



Spot/Futures



Screen/OTC



35+ active market participants

Products:

- 1-3 Days ahead
- 1 Weekend ahead
- 6 Months ahead
- 5 Quarter ahead
- 5 Seasons ahead
- 6 Year ahead

CEGH

pxe

- Market overview
- Serving the clients

Thanks for your attention!

pxe

part of eex group

Q&A


AGGM
Austrian Gas Grid Management AG

Joint Information Day

Operational News

November 31st, 2023

AGGM

Agenda

- Current Supply Situation
- Individual Calorific Values for End-Consumer Invoicing
- One Year Integrated Balancing in Austria

Current Supply Situation

Strategic Gas Reserve in AT

on behalf of the Austrian federal government

- Procurement of 20 TWh in 2 Tenders until November 1st, 2022
  - by ASGM Austrian Strategic Gas Storage Management GmbH, a 100-percent subsidiary of AGGM
  - thereof 8,5 TWh from non-Russian sources
  - in 5 storage facilities (including Haidach and 7Fields) with storage contracts until 2025

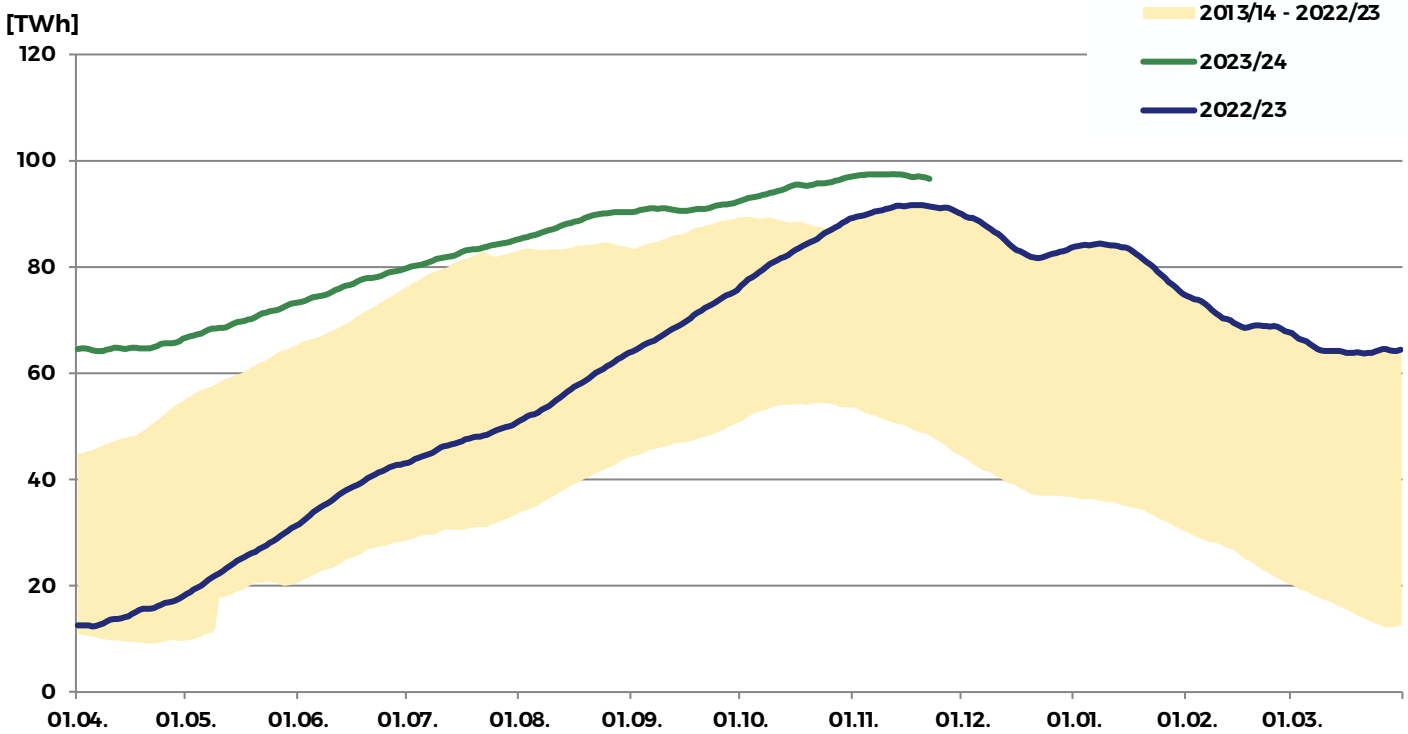
Implementation Storage Agreement GER - AUT

current status of discussion

- Operational objective: Security of gas transport from storages Haidach and 7Fields through GER for end consumer supply in AUT during emergency situations
- AGGM is foreseen to aggregate and ship all gas volumes for storage customers in Haidach and 7Fields with end consumer portfolios in AUT during emergency situations
- Next steps:
  - Assessment of demand
  - Transport service provision by AGGM for gas suppliers in the end consumer market in AUT
- **Fundamental reservation against announced curtailments of cross border transports during emergency situations in GER!**
  - Corresponding statements from BMK and E-Control filed at the competent Ministry in GER

Total Storage Level

of storages in Austria *



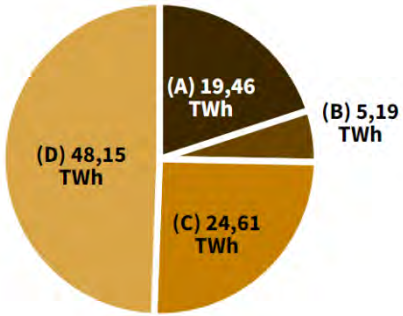
* Daily publication in the Lagebericht der AGGM as well as under AGGM-Plattform

Storage level of 96,6TWh corresponds to 99% related to total working gas volume of 97,6TWh

Total Storage Level

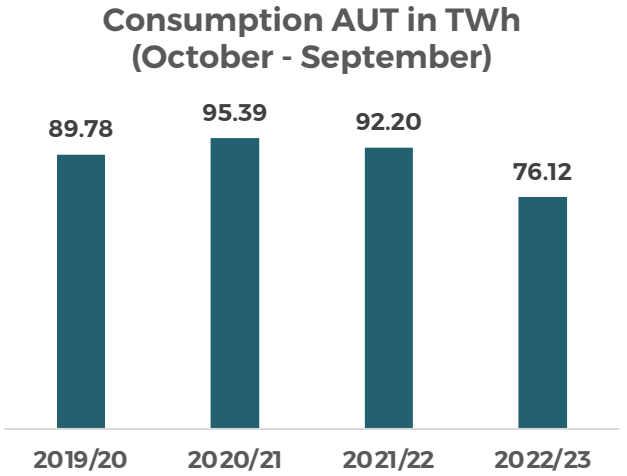
Compared to Annual Consumption

Gas volume ownership structure in Austrian storages

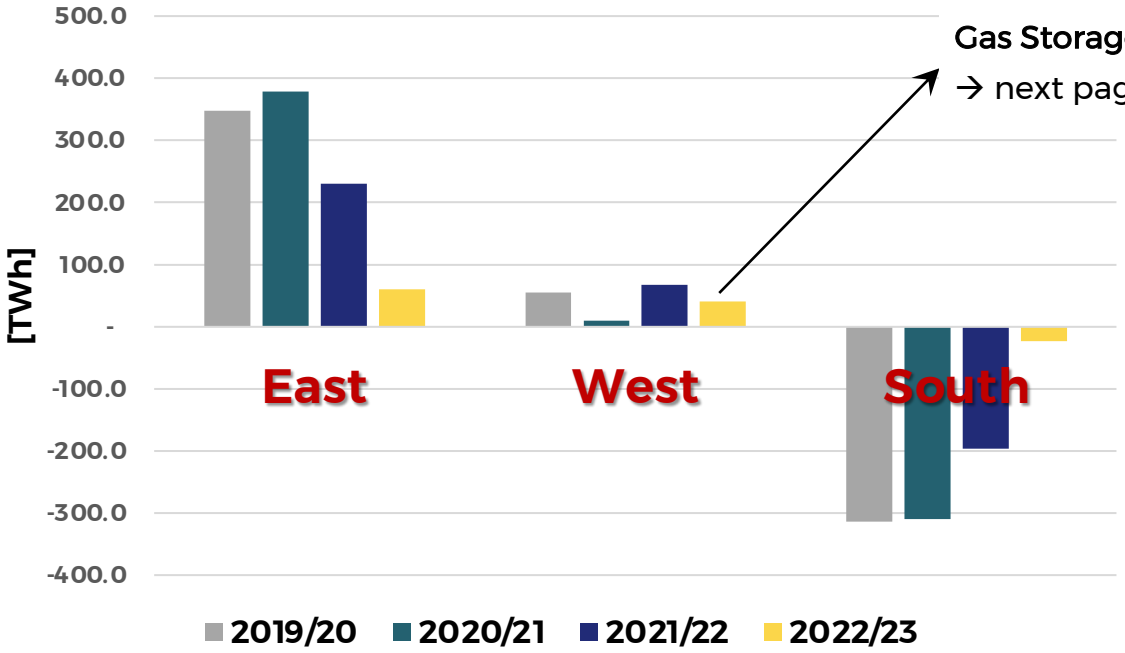


- A Strategic Gas Reserve
- B Immunized volumes
- C Austrian storage customers
- D Non-Austrian Customers

Source: BMK
https://energie.gv.at/

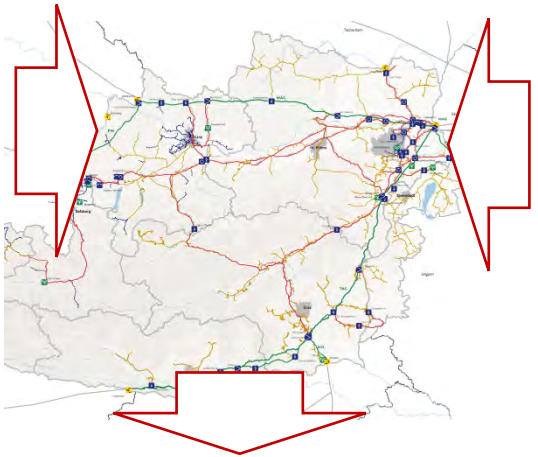


Entries and Exits Market Area East



Gas Storage Neutrality Charge (GER)

→ next page



German Gas Storage Neutrality Charge

- Represents a significant trade barrier and impedes diversification of gas sources for Austria
- Increased from 1,45 €/MWh to **1,86 €/MWh** as of January 2024
  - Additional costs for Austrian market participants in the gas year 2022/23: **€ 36,8 Mio.**
- AGGM and some other market participants have submitted complaints to the European Commission
  - Germany got the chance to submit its respective statement to the EC
  - Case is now under review by the European Commission

Additional Import Capacity Requirement

Import Outage via Ukraine

Period 1.4. bis 1.11.			[TWh]	[GWh/d]	Utilization	Comment
Entry	Slovakia	Baumgarten WAG, TAG & GCA	0	0	0%	no import via Baumgarten
	Germany	Oberkappel & Überackern WAG	53	246	100%	full capacity utilization from GER
	Italy	Arnoldstein TAG	41	193	100%	full capacity utilization from ITA
	Small Interconnectors	Freilassing & Laa/Thaya VG	0	0	0%	no import expected
	Domestic Production	OMV, RAG & Biomethane	4	17	100%	
Exit	Domestic Demand	Market Area East	38	177		
	Hungary	Mosonmagyarovar HAG	23	108	71%	
	Slovakia	Baumgarten WAG	9	44	18%	
	Slovakia	Baumgarten MAB	16	73	53%	
	Slowenia	Murfeld SOL	6	29	26%	
	Storage Filling	OMV (Schönkirchen & Tallesbrunn)	18	86		Storage filling from 20% up to 90% WGV
		RAG (Puchkirchen, Haidach 5, Aiglsbrunn)	10	46		Storage filling from 20% up to 90% WGV
		Haidach, 7 Fields	0	0		Storage filling 100% via GER
	Italy	Arnoldstein	0		0%	
Entry	**Sum**		**98**	**456**		
Exit	**Sum**		**120**	**562**		
	Delta		**23**	**107**		

Missing Import Capacity	**[GW]**	**4,4**
	[Sm³/h]	**386.000**

Import Capacity Requirement from GER and ITA

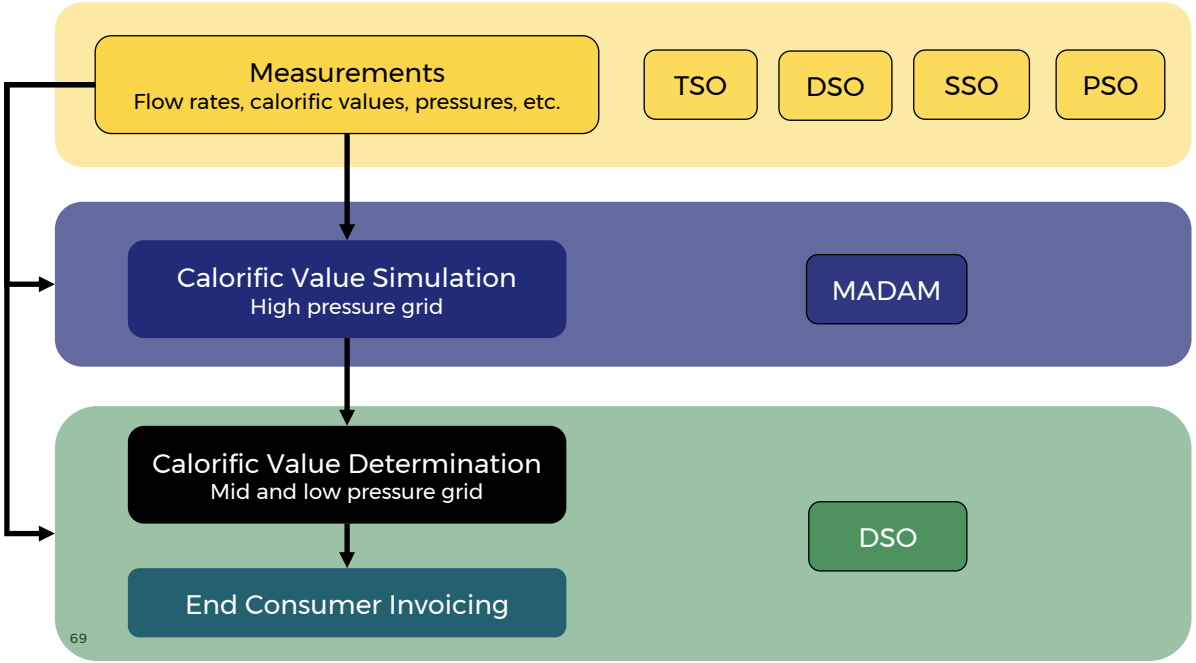
For security of supply reasons - Import capacity deficit must be resolved!

- Increasing Injection of Biomethane into the grid
  - www.aggm.at/en/energy-transition/ingrid/
- Increasing conventional domestic production
- Upgrading import capacity from Germany by realization of the **WAG- and Penta-West-Loops** as the most efficient infrastructure action
  - Lack of long-term bookings from shippers do not yet allow respective investments of TSOs → financial risks still have to be mitigated
  - WAG- und Penta-West-Loops are also necessary for the development of a powerful hydrogen infrastructure

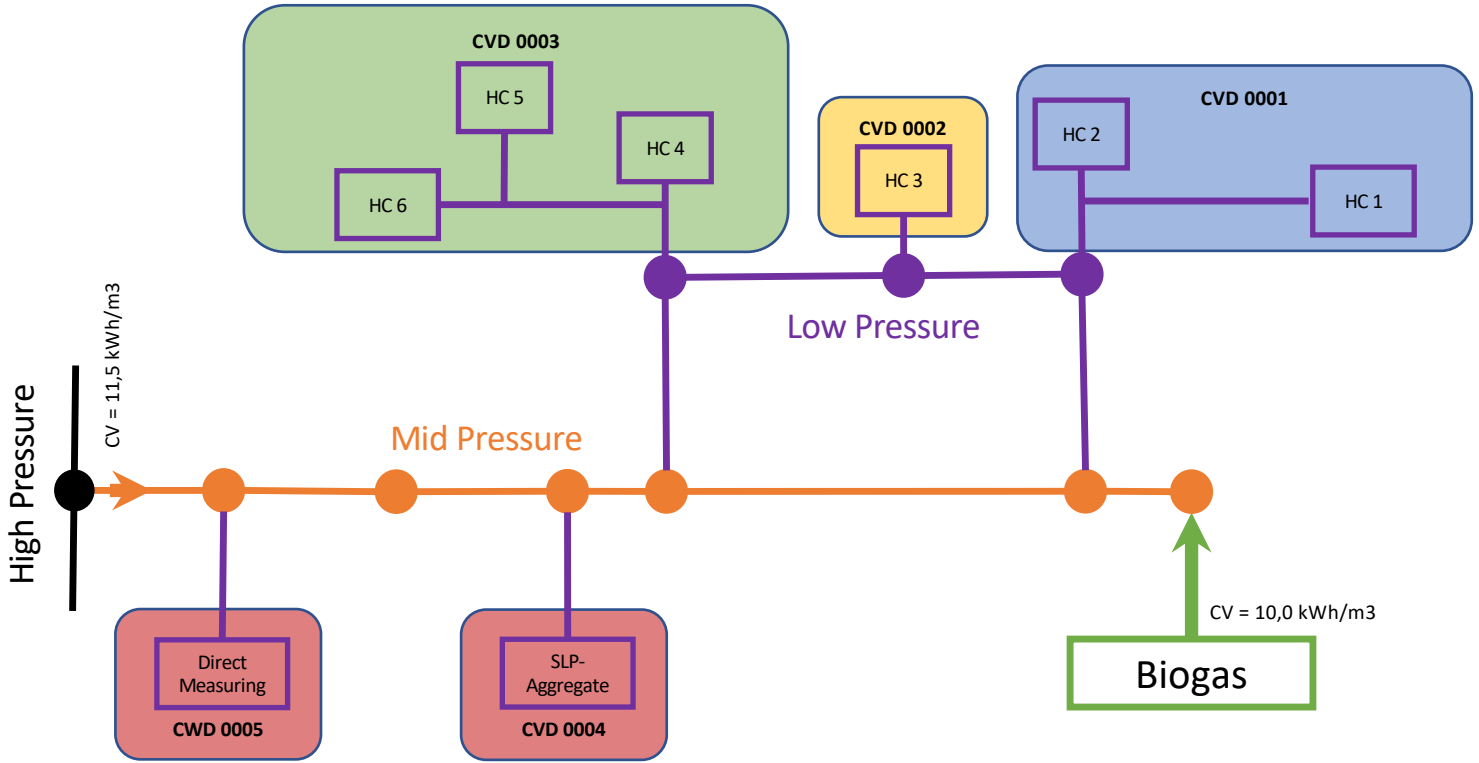
Individual Calorific Values for End-Consumer Invoicing

Individual Calorific Value Determination

for End-Consumer Invoicing as of January 1st, 2024



Calorific Value Districts



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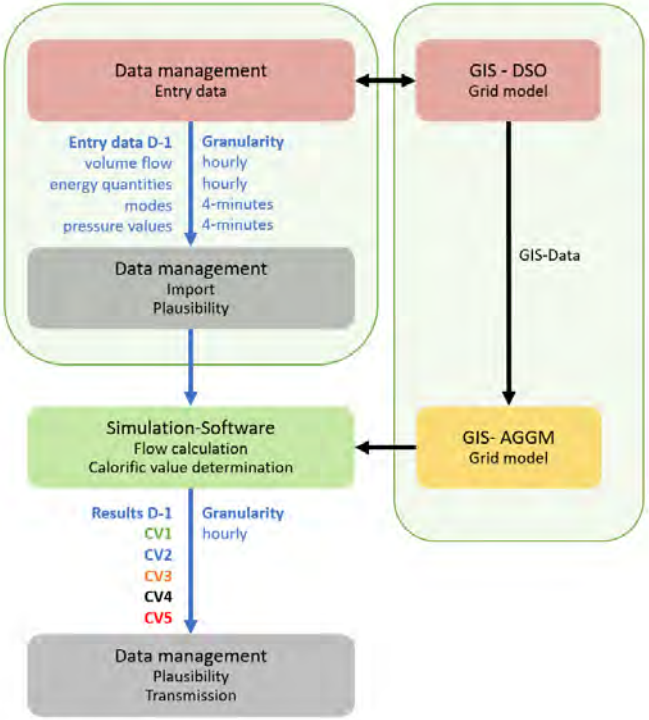
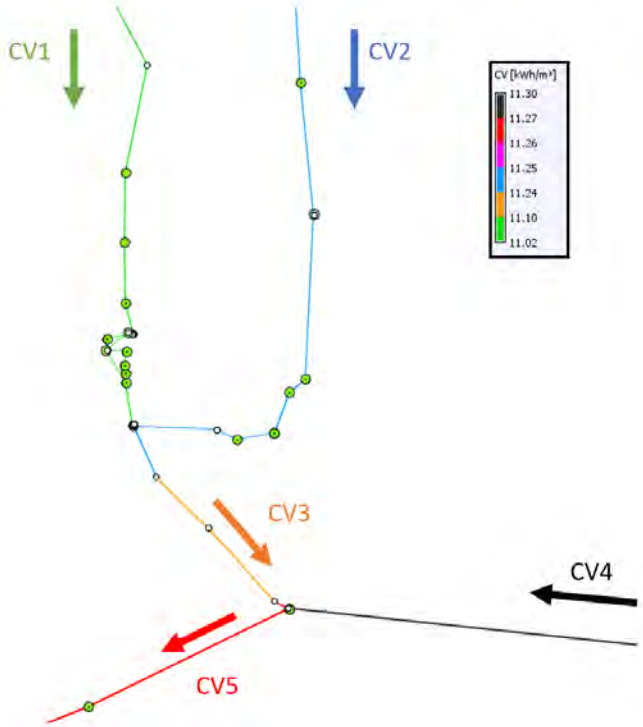
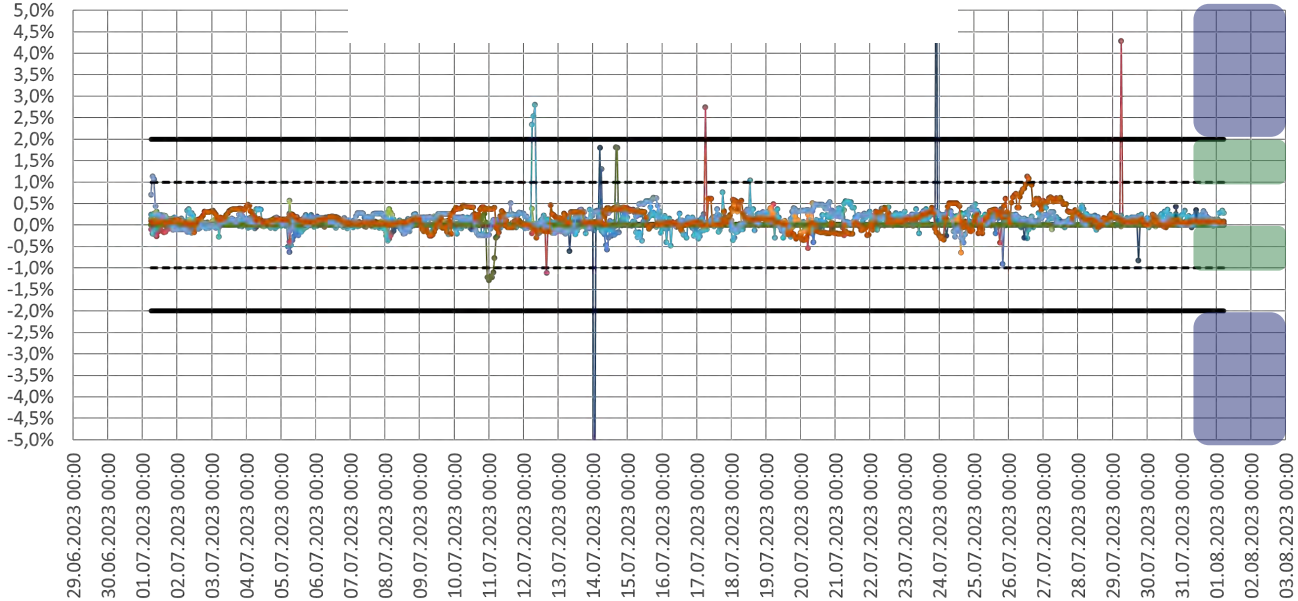
Calorific Value Simulation Process

at AGGM





Calorific Value Measurement Validation



1%-2% Deviation

>2% Deviation

Detail Information for End Consumers

as of January 1st, 2024

Calorific value district

Weighted average calorific value per month

Detailblatt zum Umrechnungsfaktor – Gas

Zählpunktbezeichnung: AT.000000.00000.00000001000098765432

Ablesedaten

Zählernummer: 3439 ; **Zählertyp:** G4; **Zählereinbauort:** innen; **zugrunde liegende Höhe** 200 m; **Druck:** 22 mbar;
Standardlastprofil: **Heizgas Einfamilienhaus**

Abrechnungszeitraum	Tage	Zählerstand alt	Ablesung	Zählerstand neu	Ablesung	Differenz	Umrechnungsfaktor	Verbrauch (kWh)
01.11.2023 - 30.10.2024	365	34.521	NB	35.909	NB	1.388 m³	10,893	15.119 kWh

Monatliche Werte

Abrechnungszeitraum	BwB	Ablesung	Aufteilungsschlüssel SLP	Verbrauch (Bm³)	Zustandszahl	Brennwert (kWh/m³)	Umrechnungsfaktor	Verbrauch (kWh)
01.11.2023 - 30.11.2023	B1	NB	12%	167 m³	0,957	11,30	10,814	1.801 kWh
01.12.2023 - 31.12.2023	B1	RE	19%	264 m³	0,957	11,30	10,814	2.852 kWh
01.01.2024 -31.01.2024	B1	RE	22%	305 m³	0,957	11,37	10,881	3.323 kWh
01.02.2024 - 29.02.2024	B1	RE	17%	236 m³	0,957	11,41	10,919	2.576 kWh
01.03.2024 - 31.03.2024	B1	RE	10%	139 m³	0,957	11,45	10,958	1.521 kWh
01.04.2024 - 30.04.2024	B1	RE	5%	69 m³	0,957	11,43	10,939	759 kWh
01.05.2024 - 31.05.2024	B1	RE	3%	42 m³	0,957	11,47	10,977	457 kWh
01.06.2024 - 30.06.2024	B1	RE	1%	14 m³	0,957	11,52	11,025	153 kWh
01.07.2024 - 31.07.2024	B1	RE	1%	14 m³	0,957	11,51	11,015	153 kWh
01.08.2024 - 31.08.2024	B2	RE	1%	14 m³	0,957	11,48	10,986	153 kWh
01.09.2024 - 30.09.2024	B2	RE	2%	28 m³	0,957	11,46	10,967	304 kWh
01.10.2024 - 31.10.2024	B2	NB	7%	97 m³	0,957	11,47	10,977	1.067 kWh
01.01.2023 - 30.10.2024			**100%**	**1.388 m³**	**0,957**	**11,382**	**10,892**	**15.119 kWh**

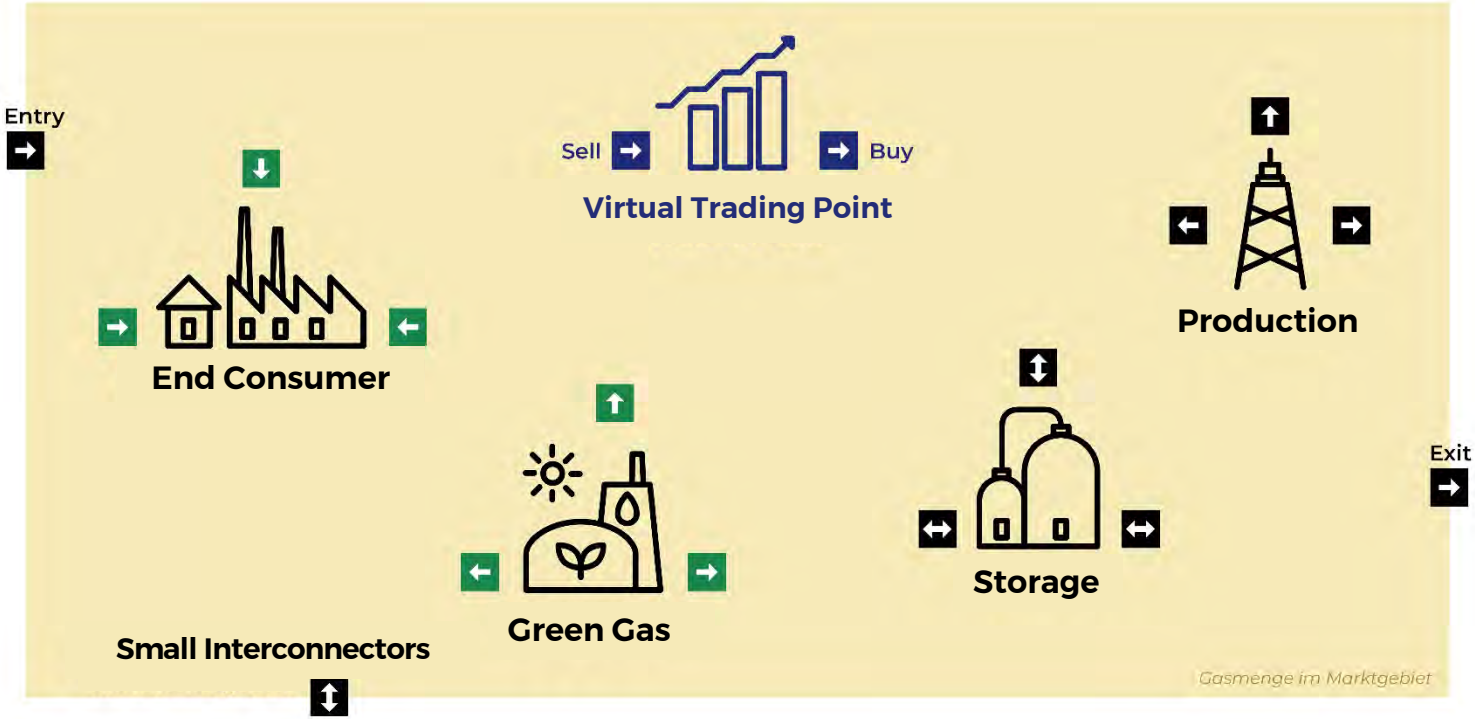
Durch kaufmännisches Runden des Abrechnungsbrennwertes und des Umrechnungsfaktors auf drei Nachkommastellen treten geringfügige Rundungsdifferenzen auf.

RE ... Rechnerische Ermittlung | NB ... Ablesung durch Netzbetreiber | S ... Selbstablesung
BwB ... abrechnungsrelevanter Brennwertbezirk

One Year Integrated Balancing in Austria

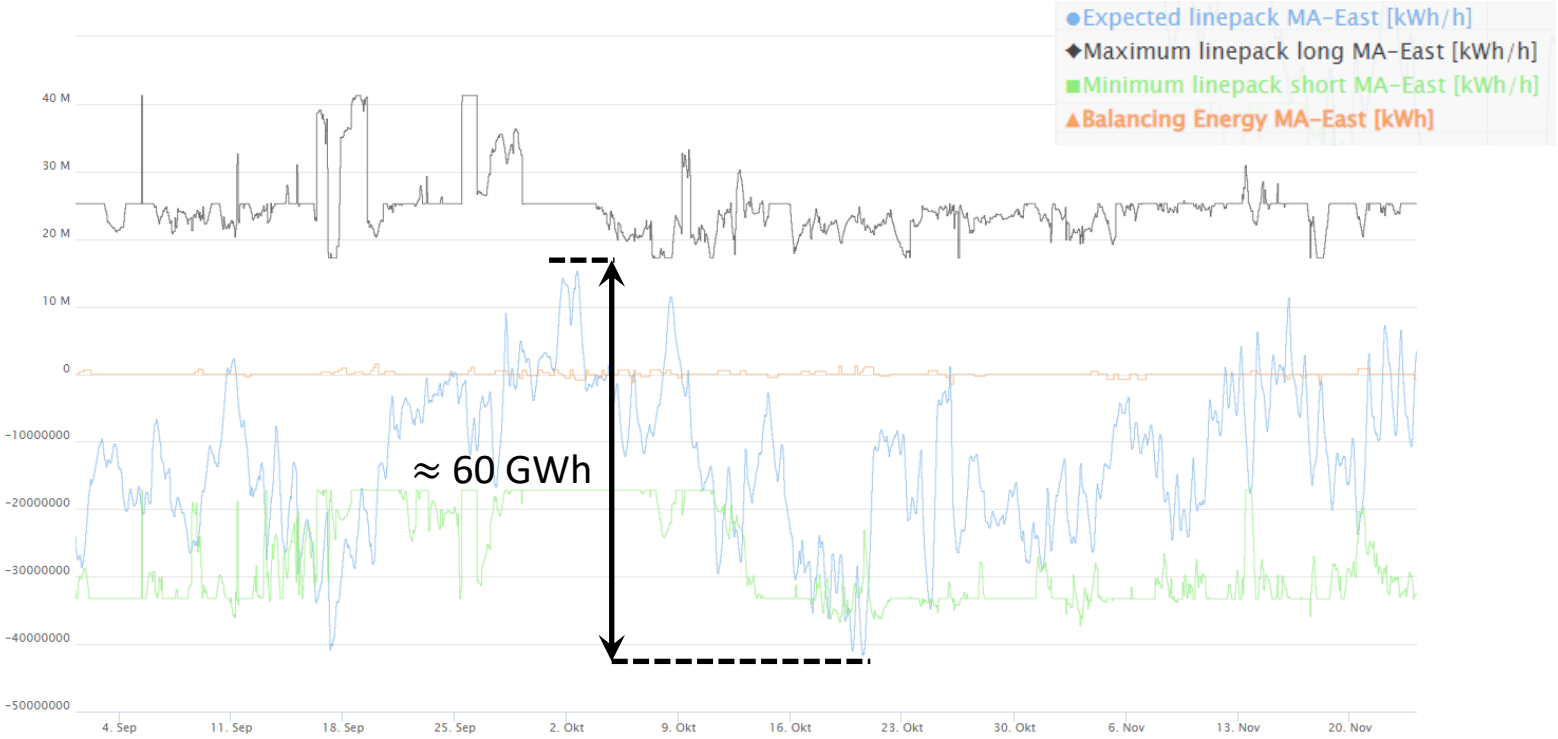
One Year integrated Balancing

Basics



Extensive Use of available Linepack

Transmission and Distribution System



Transparency

BG-Status

Forecasts
- Standard Load Profiles, Metered Load Profiles, Renewable Gas, ...
- Allocations on Entry/Exit Points

Intraday
- Standard Load Profiles, First Incoming Meter Data, ...
- Allocations on Entry/Exit Points

Day + 1
- Updated Meter Data
- Final Allocations on Entry/Exit Points

Clearing 1 & 2
- Final Meter Data
- Final Allocations on Entry/Exit Points

Transparency

Data Quality of BG-Status

- Extensive effort of system operators
- Still areas of improvement, which we are working on intensively with (distribution) system operators
- Visit our AGGM-Platform!

- Please, give us your feedback!

Contact

AGGM Austrian Gas Grid Management AG

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Floridsdorfer Hauptstraße 1
1210 Wien, Österreich

Gernot Haider

Prokurist / Abteilungsleiter

gernot.haider@aggm.at

managing the gas grid of today – shaping the energy infrastructure of tomorrow

Abonnieren Sie unseren Newsletter!
Nehmen Sie an unserem Competence Center Training teil!

Infrastructure News

November 28ht, 2023

AGGM

Agenda

- inGRID
- H_2-Roadmap
- CO_2 Transportation Grid

Background

§18 Abs. 1 Z 12a GWG

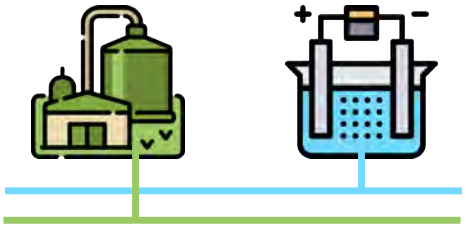
Identification and **publication** of potential entry points or suitability zones for renewable gases.

Together with the grid operators.

Renewable gases as a pillar of climate neutrality

Austria has a high potential for renewable gases:

- Biomethane from wet biomass
- Biomethane from solid biomass
- Hydrogen from electrolysis



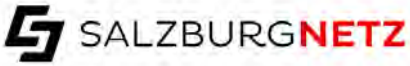
Where are the projects?

Only **14** out of **300** biogas plants are connected to the gas grid!

Only **150 GWh** of 1.500 GWh of biogas are upgraded to biomethane!

Icons created by Freepik - Flaticon

Who is inGRID?



What is inGRID?

Planning & Cost Efficiency

Producers can be directed to **more efficient connection points** through the categorized representation of **inGRID**.

Planning & Cost Efficiency

inGRID provides grid operators with a **quickly available and well-founded basis** a **qualitative and quantitative statements.**

Transparency & WebApp

Producers can carry out a targeted and **more efficient site selection** through **inGRID** and thus have a simplified planning of their plant.

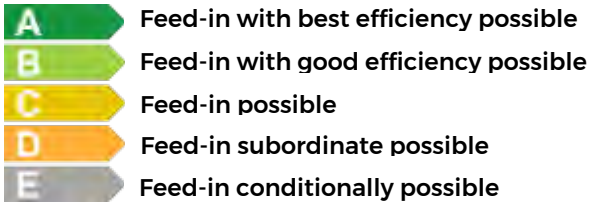
Contact & Networking

The **initial contact between producer and grid operator** can be done easily via a **contact form** with the most important information.

How did inGrid come into being?

Biomethane ← **inGRID** → **Hydrogen**

- Classification of the gas grid into **efficiency classes** for different entry capacities



- Efficiency classes represent the t**echnical effort** of the grid operators and the **efficiency** of the feed-in
- Representation of the resource potential
- Depiction of the future hydrogen network of the **H_2 Roadmap**
- **Timing** of H_2 feed-in according to the realization of the future **hydrogen grid projects**
- Representation of **suitable transformer stations** for hydrogen production by means of electrolysis
- Representation of **renewable electricity potential** from wind, PV & hydropower

inGRID online

https://www.aggm.at/en/energy-transition/ingrid/

- Project description
- FAQ

https://ingrid.aggm.at/

- Web Gis application for
  - Biomethane
  - Hydrogen

CO_2 Transportation Grid

- Tender of the Federal Ministry Climate Action, Environment, Energy, Mobility, Innovation and Technology:

  „Feasibility study on a CO_2 collection and transportation network”

- Consortium: Austrian Institute of Technology, AGGM, Montan University, Frontier Economics

- Finalization: Mai 2024

CO_2 Transportation Grid

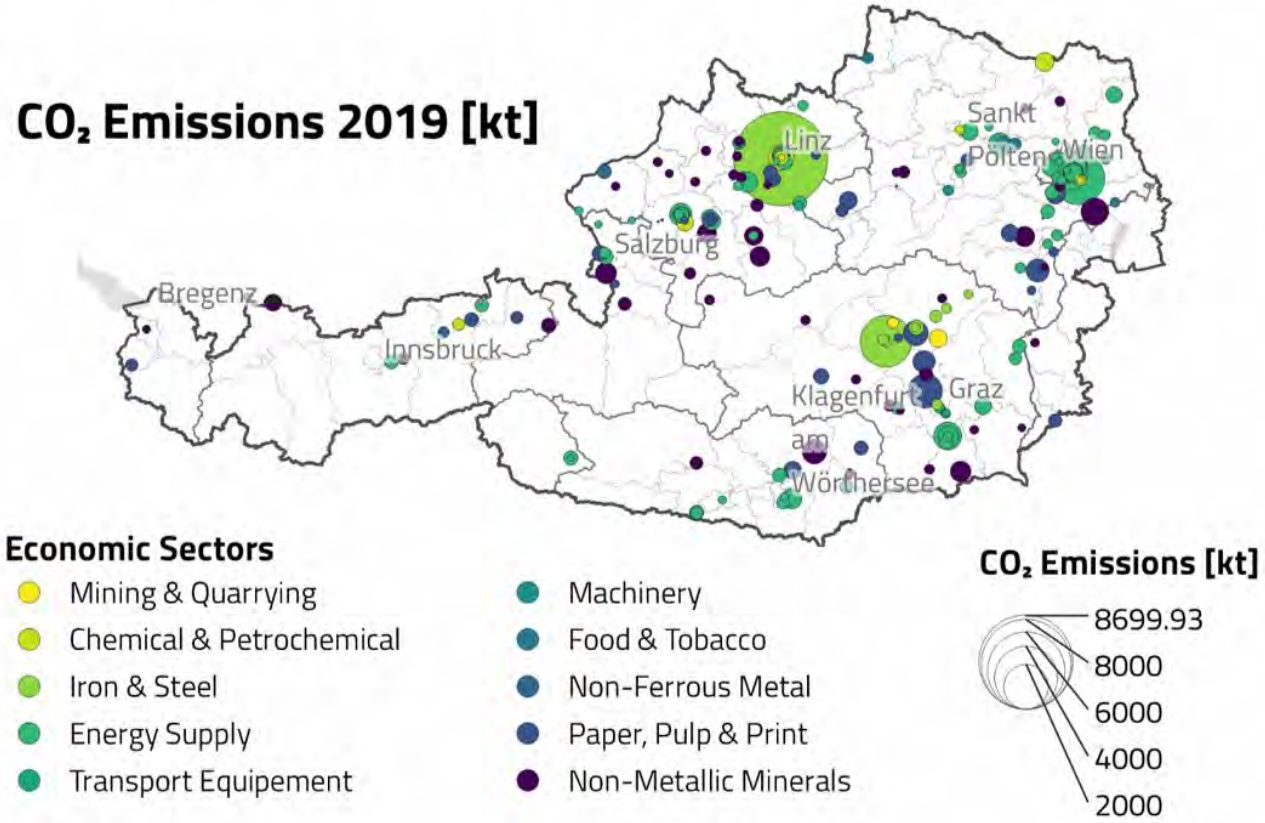
1 – Demand survey

2 – Szenario based Grid Planning

3 – Techno-economic analysis & evaluation

4 – Synthesis of results & derivation of recommendations for action

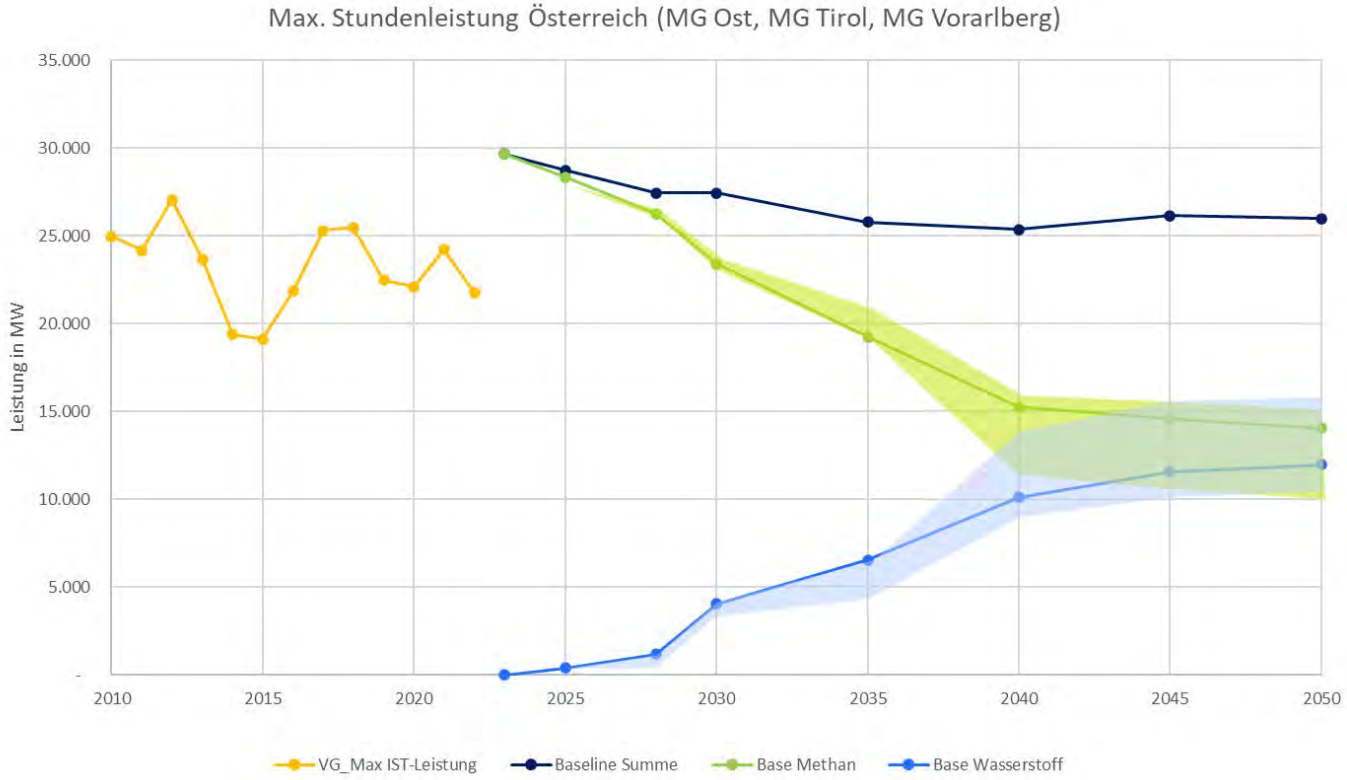
CO_2 Transportation Grid



inGRID

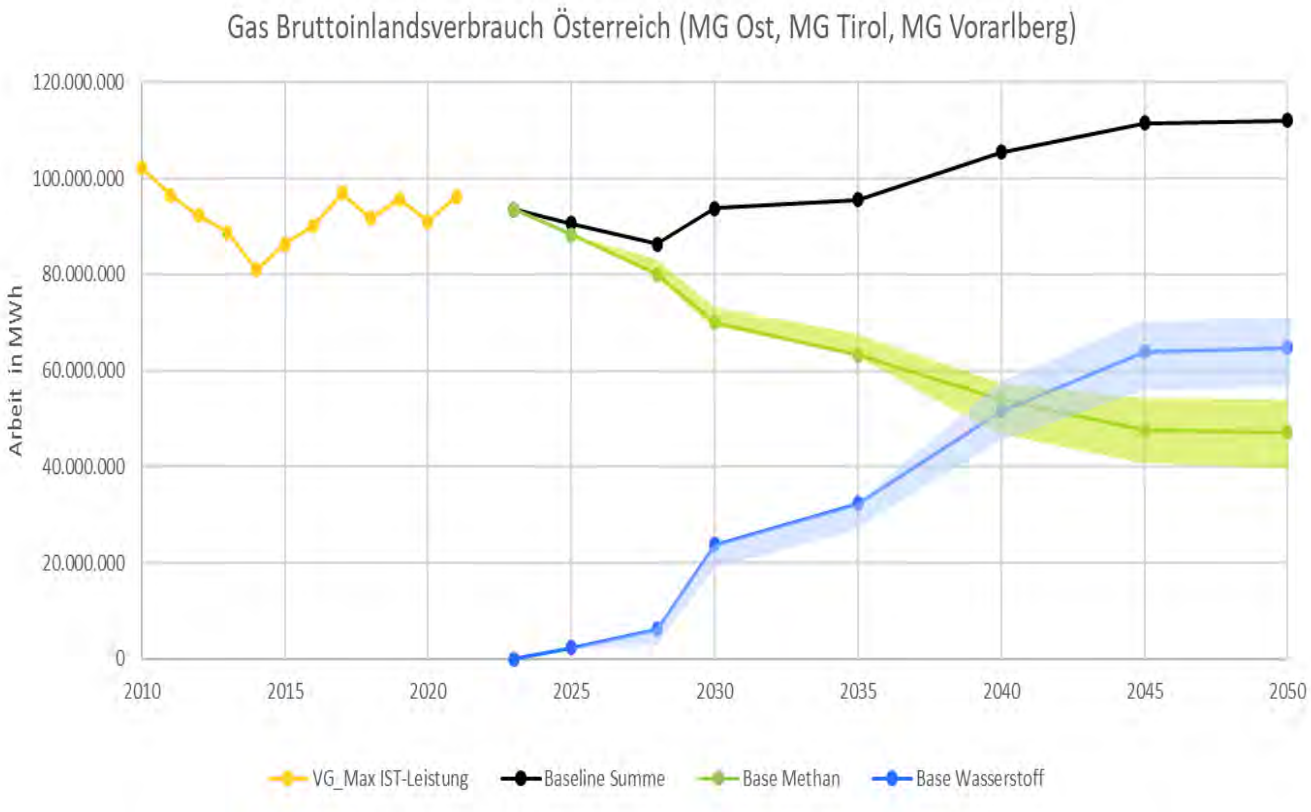
Injecting green Gas into the grid

Demand scenario – capacity



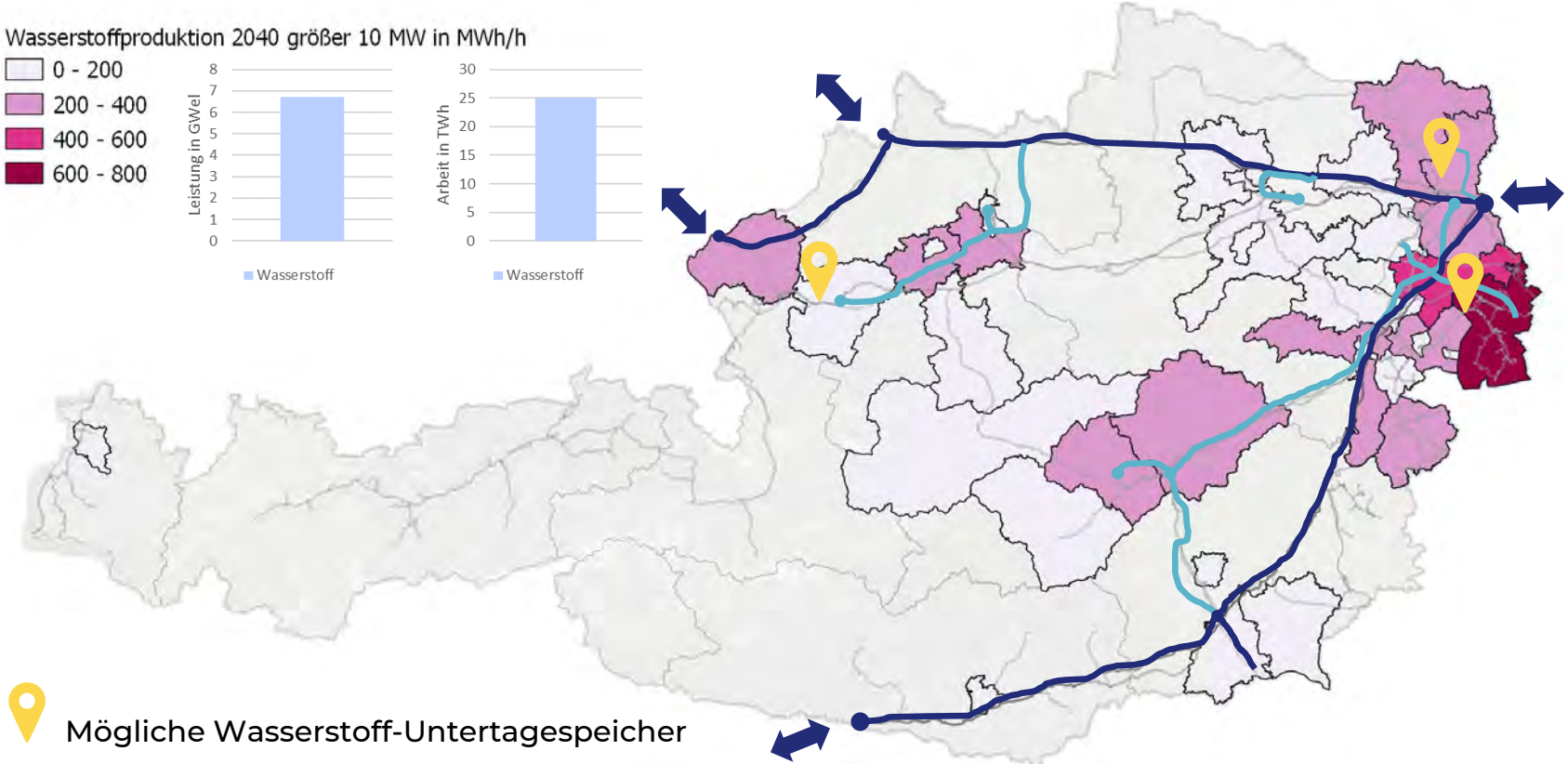
Langfristige und integrierte Planung 2022, Ausgabe 1 vom 9.1.2023, S.27ff: www.aggm.at/netzinformationen/netzentwicklungsplaene/lfp

Demand scenario – energy

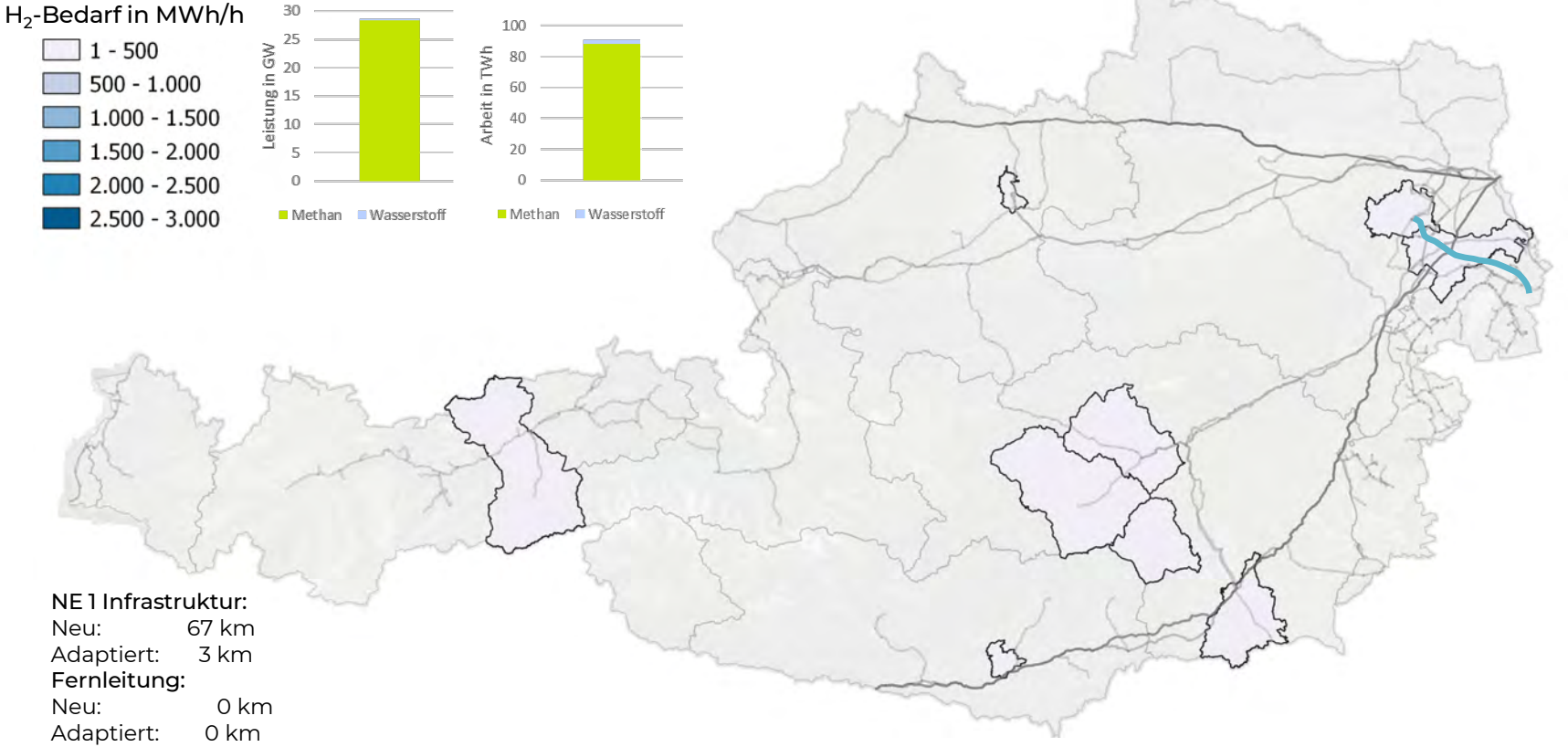


Langfristige und integrierte Planung 2022, Ausgabe 1 vom 9.1.2023, S.27ff: www.aggm.at/netzinformationen/netzentwicklungsplaene/lfp

H_2 production in Austria 2040



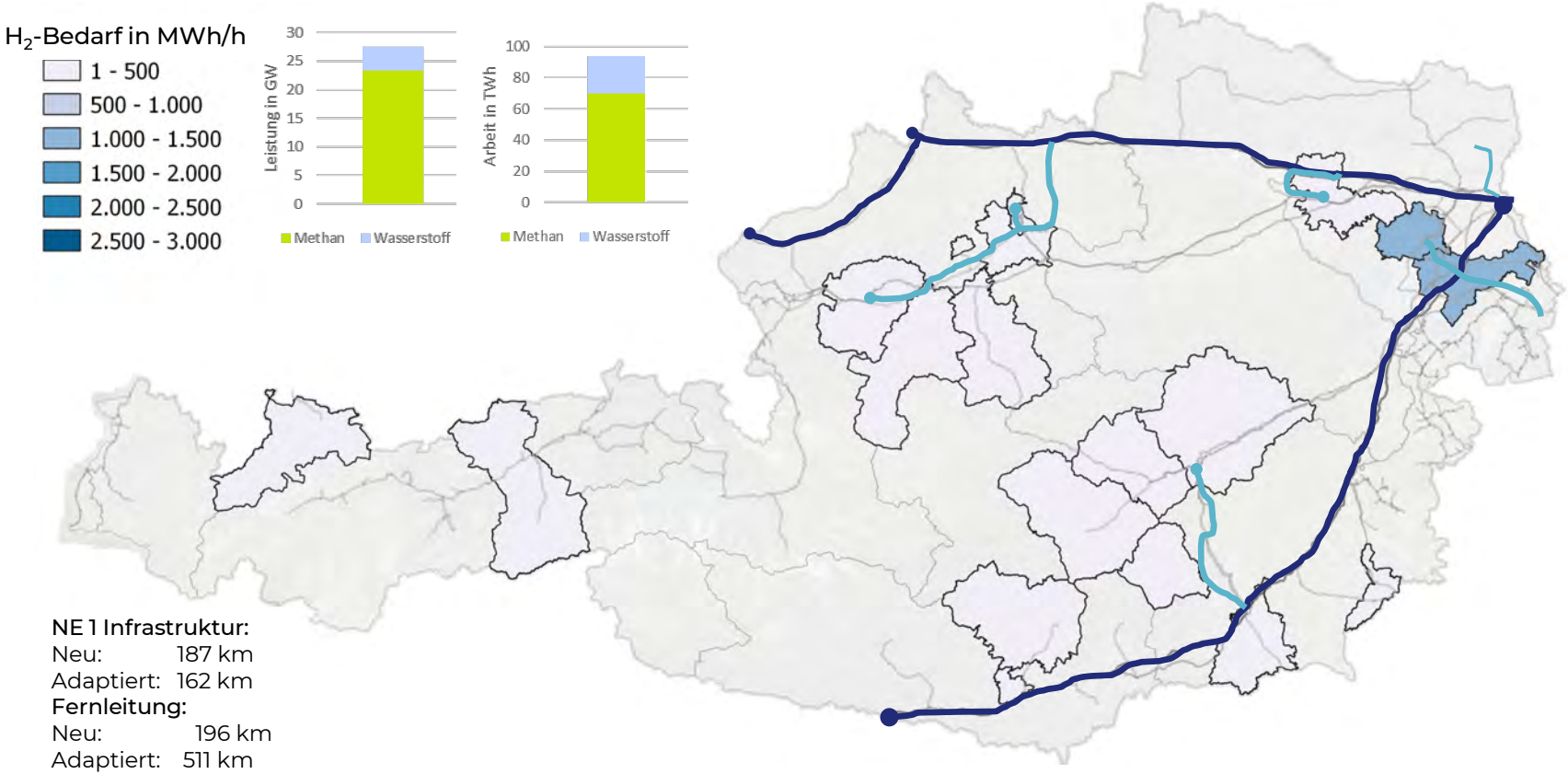
H_2-Roadmap for Austria: Hydrogen Peak-Demand 2026



NE 1 Infrastruktur:
Neu: 67 km
Adaptiert: 3 km
Fernleitung:
Neu: 0 km
Adaptiert: 0 km

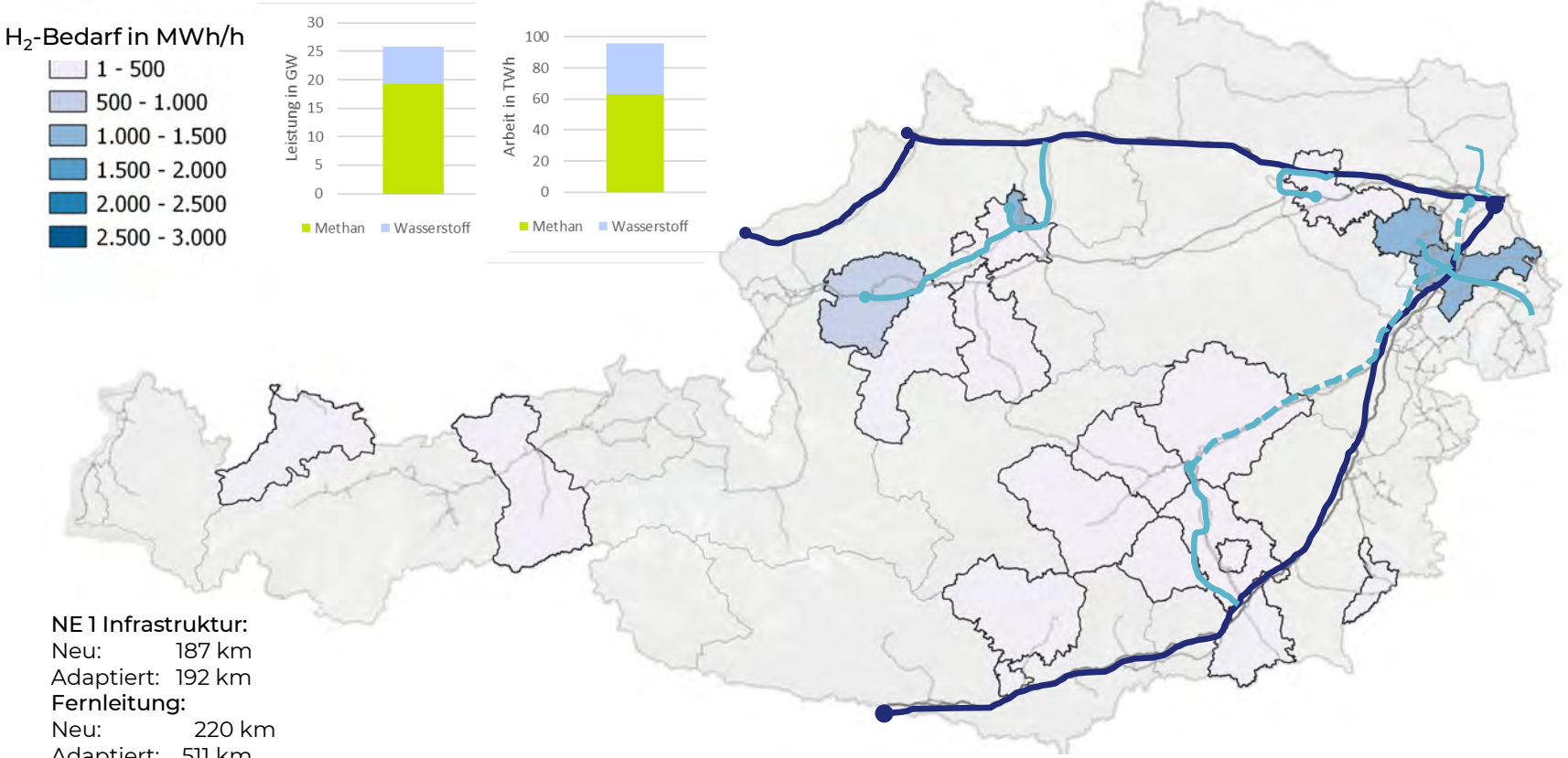
AGGM

H_2-Roadmap for Austria: Hydrogen Peak-Demand 2030



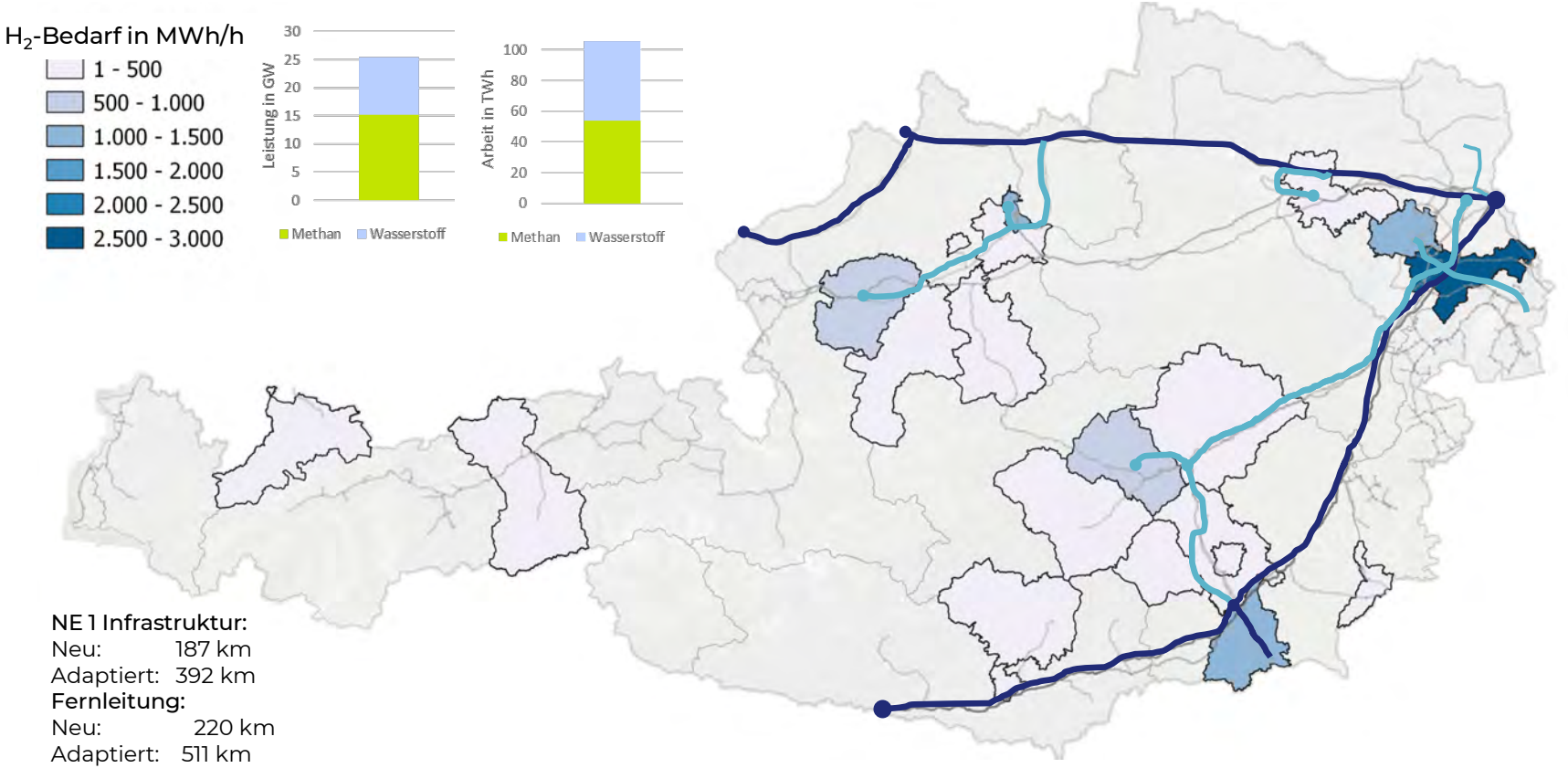
NE 1 Infrastruktur:
Neu: 187 km
Adaptiert: 162 km
Fernleitung:
Neu: 196 km
Adaptiert: 511 km

H2-Roadmap for Austria: Hydrogen Peak-Demand 2035



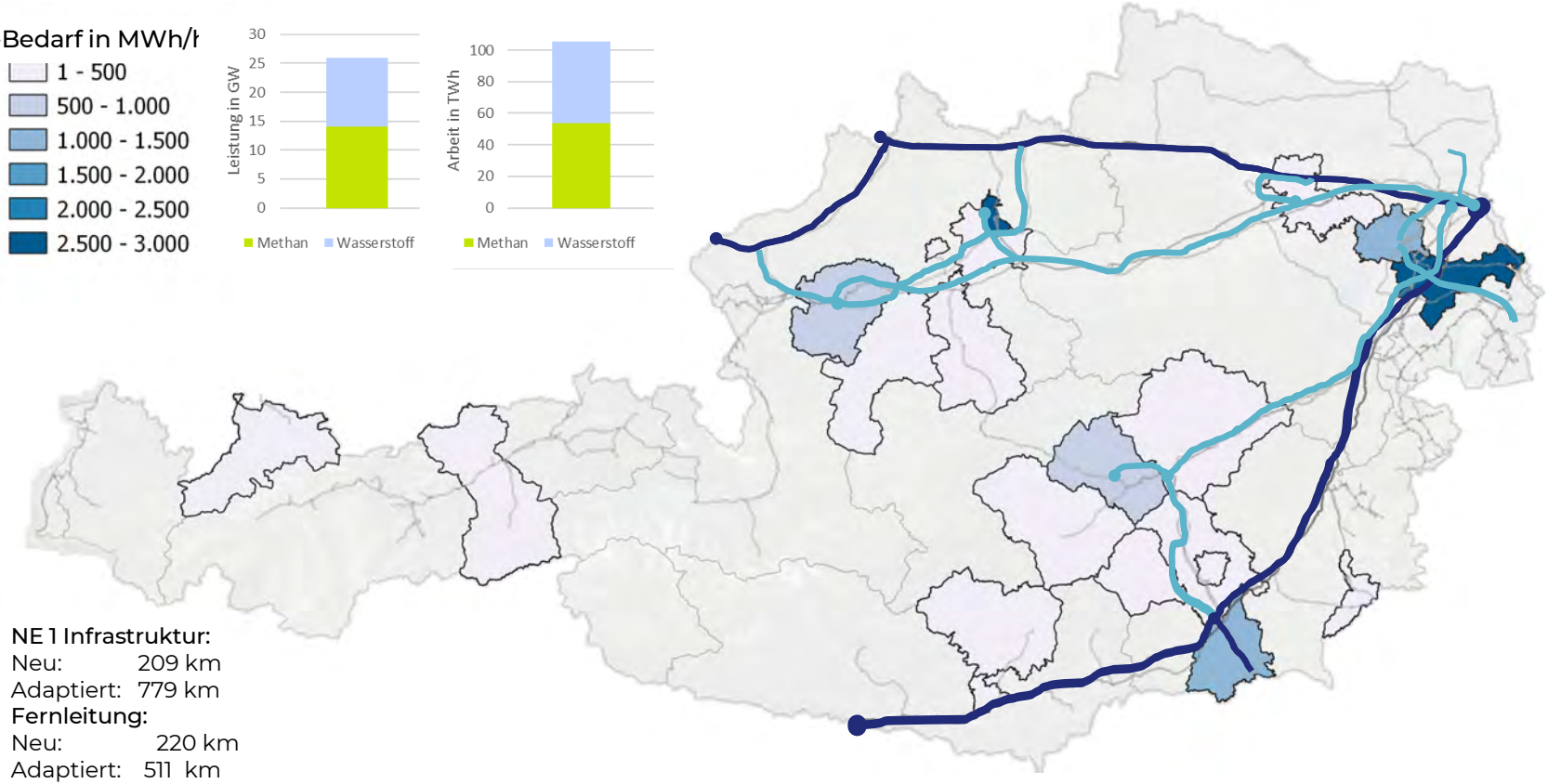
NE 1 Infrastruktur:
Neu: 187 km
Adaptiert: 192 km
Fernleitung:
Neu: 220 km
Adaptiert: 511 km

H_2-Roadmap for Austria: Hydrogen Peak-Demand 2040



NE 1 Infrastruktur:
Neu: 187 km
Adaptiert: 392 km
Fernleitung:
Neu: 220 km
Adaptiert: 511 km

H2-Roadmap for Austria: Hydrogen Peak-Demand 2050



NE 1 Infrastruktur:
Neu: 209 km
Adaptiert: 779 km
Fernleitung:
Neu: 220 km
Adaptiert: 511 km

H_2-Roadmap for Austria - Conclusions

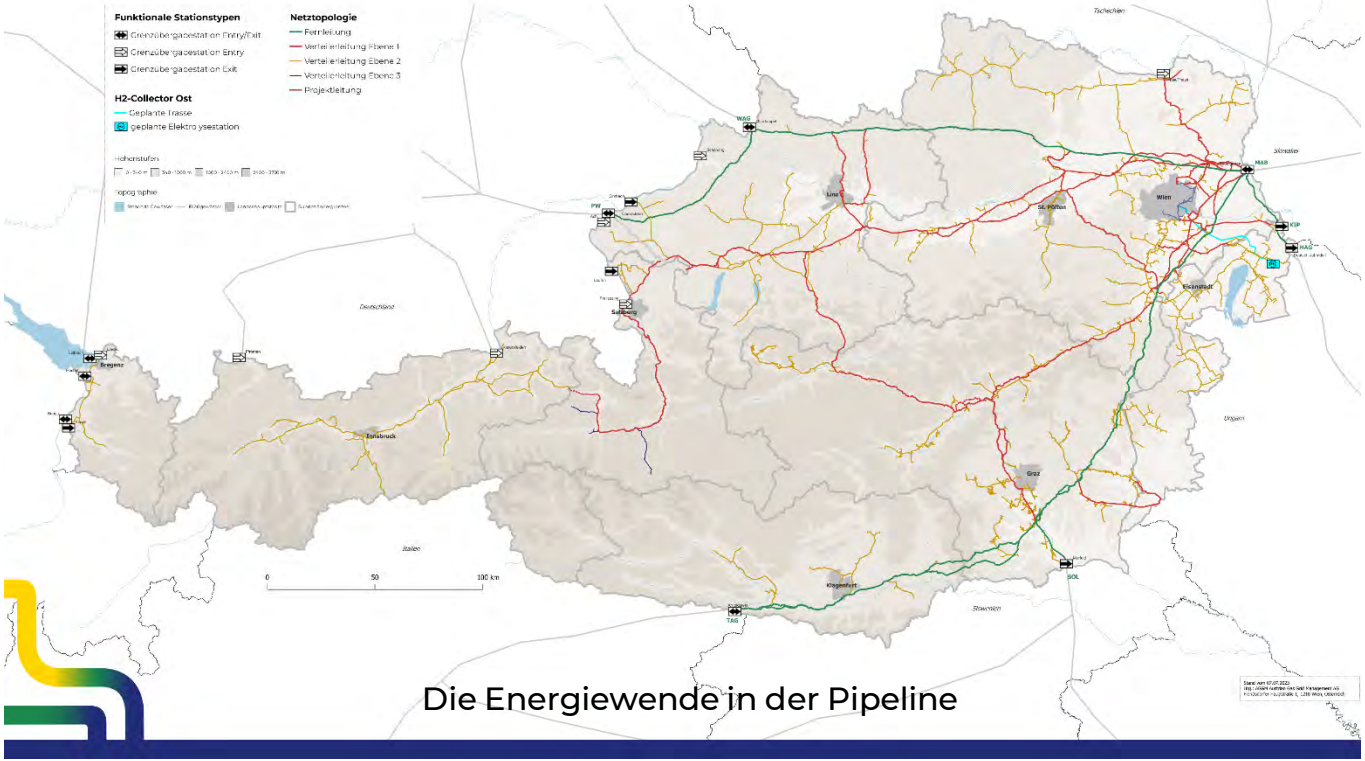
- The H2-Roadmap shows that the organic transformation from the existing gas grid to separated methane and hydrogen grids is possible and efficient
- The existing gas infrastructure is technically suitable for hydrogen transport with appropriate adaptations
- The repurposing of about 1,400 km of existing gas pipelines and about 300 km of new gas pipelines allow to cover the entire future transport needs for methane and hydrogen in Austria
- The storage of hydrogen in Austrian gas storage facilities enables the seasonal shifting of energy surpluses

- **Regulatory and commercial burden have to be removed to make this development happen in order to support the decarbonization of the energy system**

www.aggm.at/energiewende/h2-roadmap/

AGGM
Austrian Gas Grid Management AG

Die Gasnetzinfrastruktur in Österreich



Die Energiewende in der Pipeline

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managing the gas grid of today – shaping the energy infrastructure of tomorrow

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