

# ENERGY STORAGE (ES) IN SLOVAKIA



# Public support for energy storage: R&I projects, national or regional action plans

**Partially solved. There is currently no direct support**

- ▶ The program Smart City – Ministry of Economy of the Slovak Republic
- ▶ Incentives to create new recharge stations (Ministry of Economy of the Slovak Republic , Administration SIEA)
- ▶ Electromobility Development Strategy of the Slovak Republic - Government Approved Material
- ▶ Currently we have incentives focused in energy efficiency measures and RES
- ▶ Preparing – Integration in Horizont 2020, IPCEI

**Participation of storage in the electricity market:  
Day ahead, intraday, balancing - access, product  
resolution, participation of aggregators, participation  
of active customers.**

**No, the electricity market is fully developed but without  
direct connection with ES.**

- ▶ The Legislation has created a space for providing Ancillary Services from accumulators, it is not used yet (there is no interest from investors)
- ▶ Market Day ahead, intraday in Slovak Republic is very active also thanks of 4MC (market - coupling SR-CZ-HU-RO)
- ▶ Regulation solution intraday, no balanced – more used with heat storage, not electricity; not used with storage of electricity trough Energy Storage

# **Other market products from storage services: Frequency control, black start, congestion management, grid investment deferral/avoidance, ...**

**No, The Ancillary Services are fully developed but without direct connection with ES.**

- ▶ The provision of support services in the Slovak Republic works entirely on the market principle. Any entity certified for this purpose by a certification authority may apply for the provision of these services. Tender is organized under the supervision of the NRA
- ▶ The prices for Ancillary Services as in other countries determines URSO (NRA)
- ▶ Black Start in Slovakia provides Pumped Storage Plant Čierny Váh
- ▶ Ancillary services– are procured by The National Transmission System Operator – SEPS (TSO)  
SEPS is also responsible for the specific deployment of individual for the activation request
- ▶ Postponing / avoiding network investments (eg at DS level) - currently unresolved
- ▶ Ancillary Services – integrated: Pumped Storage Plant Čierny Váh (capacity aprox. 720 MW), hydroelectric power plants, thermal power plants (coal, gas), steam-gas cycles, aggregates

# Capacity Remuneration Mechanisms: Type, status, participation of storage.

**The remuneration system is transparent and standard,  
There is not provider of Ancillary Services who uses ES.**

- ▶ So far, Slovakia is not providing such a service to any market participants. Legislation does not limit this services, but it will be necessary to amend the market rules - Decree no. 24/2013 and Decree with price regulation for electricity sector no. 18/2017 Z. z.
- ▶ The System of Remuneration for the deployment of the ES is also standard within Ancillary Services, under the principle: Reward = Availability + Activation

# **Grid connection and access: Special conditions (discounts), tariffs, double charging, splits (G/L, capacity/commodity) , network codes**

**The conditions for access and connection works under the system of supply and production connection. They are not directly developed for batteries.**

- ▶ The conditions for access and connection to the system are stipulated in the legislation. They are clear, understandable, transparent and non discriminatory. Control is performed by the URSO regulatory office.
- ▶ Currently stop status of the distribution system operator for the production side (electricity supply to distribution system) could not be applied for ES
- ▶ Tariffs for access and distribution of electricity are determined in accordance with Decree no. 18/2017 that regulates prices in the electricity industry. This decree also specifies the conditions for the application of electricity prices and individual tariffs.
- ▶ At present there is not "duplicate payment" for the use of DS. ES will pay higher charge from a) charge for reserved capacity (RC) by electricity customer or b) charge for G component - EE producer.
- ▶ There is not solved connection fee to DS. There should be "duplicate payment". The topic for discussion.
- ▶ The operating rules of all TSO and DS (network codes) operators are proposed by the operators and they approved by URSO (Regulation Authority of Slovak Republic) Users resolve any problems and disputes directly with the respective Operator.

# Taxation: Electricity consumption tax, investment grants, R&I expenditures, double taxation, ...

## Taxation is standard in terms of income taxes and other taxes.

- ▶ In Slovakia we paid consumption tax for electricity. This tax does not apply for households and electricity produced from renewables sources
- ▶ In Slovakia there are various supports and the incentives of innovations, technologies, for the provision of GES (Guaranteed energy service). Different entities can apply for “Eurofunds” etc.
- ▶ Consumption Tax for electricity EE = 1,32 €/MWh – The Law Consumption Tax for Electricity, coal Decree no.609/2007 - <https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2007/609/20160601> - So far there is no exception to electricity for batteries (either for their own consumption or for being returned to the grid - only if the so-called energy company solves it), but here you may come across the definition given in Act No 251/2012 on energy, since this law does not know the storage of electricity), there is an exception for produced electricity from RES, KGJ etc.

# Authorisation permits (i.e. environmental) : Special requirements, permit types, capacity threshold

## The Construction is designed as a standard construction, including connections

- ▶ Permission for the construction of power engineering works (lines, sources, RES, etc.) is issued by the Construction Authority (permit - the procedure is regulated by Act No. 50/1976). Also on the basis of a decision of the Ministry of Economy of the Slovak Republic / 2012 TSO, relevant DSO and URSO also evaluate the construction.
- ▶ It depends of the type, parameters (ex environmental and safety risks; but also capacity, voltage level of connection, function - complementary to the main construction, etc.) as well as locations ES (ex different protection zones, etc.) <https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/1976/50/20190501> - Building Act
- ▶ Degrees of authorization



# System operator unbundling: Ownership/management/operation authorised for storage/power-to-gas ?

## Unbundling is ownership, legal and accounting

- ▶ In Slovak Republic electricity sector is ownership unbundling,
- ▶ Slovak transmission operator – 100% Government joint stock company
- ▶ DSO – 3 regional DSO - diverse – usually 51% government joint stock company,  
Local DS – diverse – usually private property,
- ▶ We need also technical opinion of DSO – this also applies in case of connection inside an existing supply point – nowadays STOP STAV for connection of new RES (ex. Hydropowerplant over 500 kW etc) or KVET (cogeneration units)

# National definition of energy storage in legislation: Existence, definition

**In practice the Slovak Legislation does not include the regulation of ES.**

- ▶ **Gas Storage is regulated**
- ▶ **Nowadays the Legislation does not mention the activity of electricity storage – generally is a side activity of Energy Companies involved in generation, transmission, distribution and supply of electricity**

# Best practices to support energy storage deployment

**There is no direct incentives for the introduction of the ES.**

- ▶ **They exist only for gas storage included in Law, Decree and operation rules.**
- ▶ **At present, they do not exist – we have possibilities of application of individual types of ES into practice up to their economic evaluation and prospective testing of the relevant application model.**

# Other specific barriers hampering energy storage deployment

## Legislation does not incentive the Development of Energy Storage in Slovakia.

- ▶ In case of using ES product in practice, ex. providing Ancillary Services it is necessary to supplement the regulatory policy, define the concept of storage in the Energy Act, supplement the market rules (Decree No. 24/2013 Coll. and Decree establishing price regulation in the electricity industry No. 18/2017 Coll.)

# **Any other issues that you feel are preventing the roll-out of energy storage solutions**

**Keeping safety regulation, security of ES equipment against damage, reducing the environmental impacts.**

- ▶ **Direct and indirect financial support is important to make implementation of ES system economically more efficient. In Practice the Objective is to achieve short return of investment and adequate return on investment with the purchase of ES purchase and supply support of ES.**



# THANK YOU

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