

# NE-RS

9<sup>TH</sup> CONFERENCE ON NUCLEAR ENERGY, PRAHA  
NOVEMBER 9, 2016

State Energy Policy of the Czech Republic  
and  
the National action plan for nuclear energy development

Presented by Ján Štuller, State commissioner for nuclear energy

# STATE ENERGY POLICY (SEP)

## ROLE OF THE STATE IN THE ENERGY SECTOR

- ❑ State ownership in the country: electric transmission system (ČEPS), transport, storage and sale of oil products (ČEPRO), international oil pipelines (MERO), commodity reserves (SSHR), ...
- ❑ State control of the energy sector through legal and executive tools/mechanisms:
  - direct tools: licensing, authorization, penalties, emission limits, bounding rules and limits, etc.
  - indirect legal and executive tools – fiscal and tax policy: purchase prices, „green“ bonuses, state subsidies, ecology taxes, fees, etc. ...
- ❑ State regulation (e.g. ERÚ): regulation of electricity price, regulation of allowed costs and returns, regulation of heat energy price, etc. ...
- ❑ International framework - foreign policy
- ❑ Setting up national policies and strategies in energy sector 🇸🇰

# STATE ENERGY POLICY (SEP)

- ❑ State energy policy is a strategic document which includes state objectives in using energy in line with the principles of the energy security, sustainable development, environment protection and decarbonisation, competitiveness of the economy and acceptability for the public.
- ❑ The current SEP was approved by the Government in May 2015 and presented to the parliament for information. It was adopted for a period of 25 years.
- ❑ SEP is bounding for the state administration.
- ❑ SEP is also one of the inputs for preparing regional development plans and policies 😊

# STATE ENERGY POLICY

## SEP includes:

- A. Analysis of the national energy sector and major trends in energy developments (energy demand, availability of primary energy sources, optimal energy mix, security and stability of energy supply, energy infrastructure...),
- B. In-depth analysis of external and internal conditions impacting energy sector in long term perspective,
- C. Strategic goals for the energy sector (security of energy supply, % in energy mix, targets for emissions, energy savings, etc.)
- D. Optimal scenarios for energy developments 🍷

# STRENGTHS OF THE CZECH ENERGY SECTOR

- ❑ High quality, stability and reliability of energy supply
- ❑ On-going transformation/modernization of the electricity generation and transport infrastructure
- ❑ Developed system of heat energy distribution
- ❑ Full self-sufficiency in electricity and heat generation and positive balance of import dependence indicator
- ❑ Know-how in building complex industrial and technology systems.
- ❑ Public acceptance of nuclear energy 🚫

# WEAKNESSES OF THE CZECH ENERGY SECTOR

- ❑ Electric market deformations
  - ❑ Ageing of energy infrastructure
  - ❑ Limiting conditions for renewables
  - ❑ High portion of use of poor quality fossil fuels 😞
- 
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# NATIONAL ACTION PLAN FOR NUCLEAR ENERGY DEVELOPMENT (NAP NE)

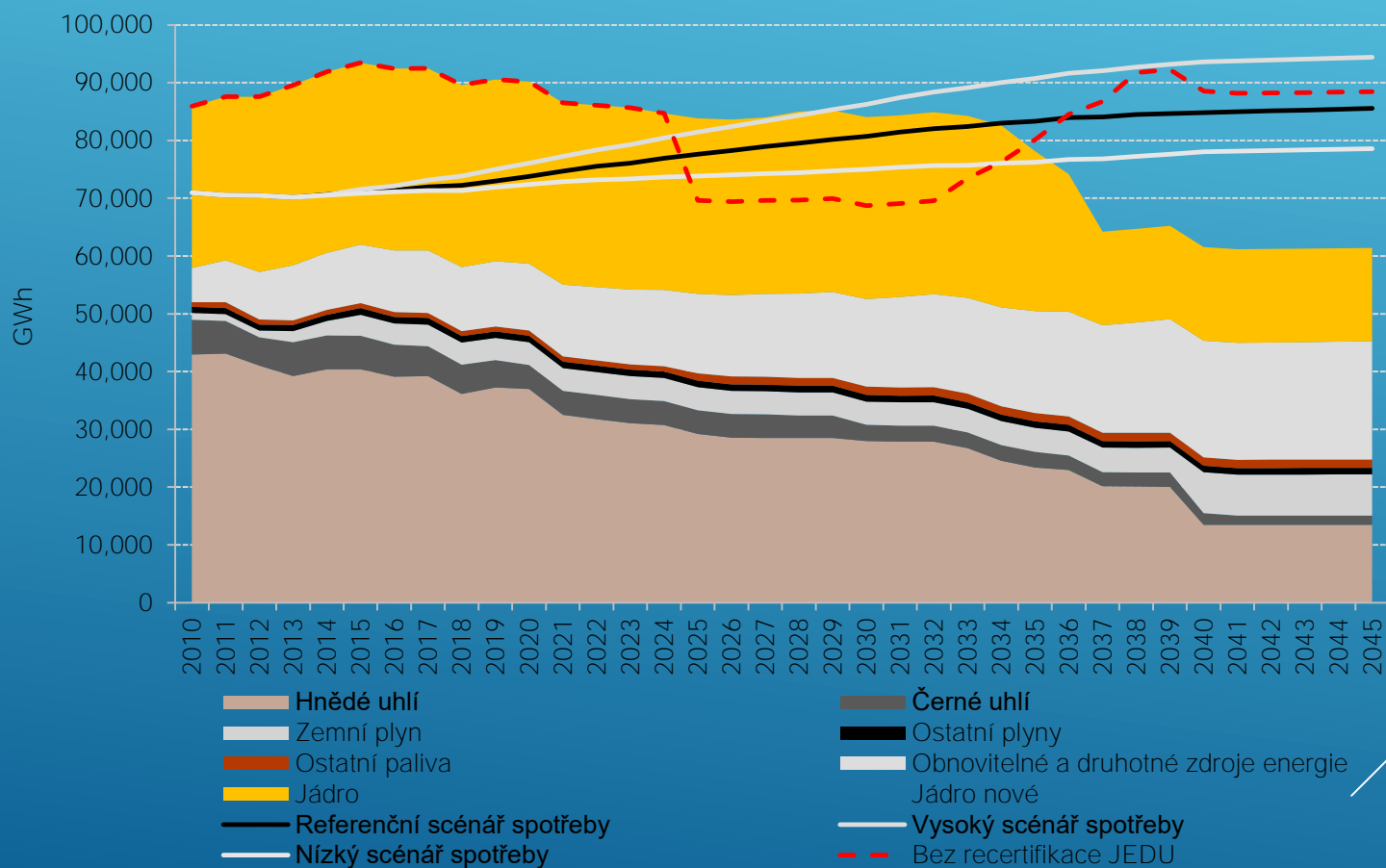
On June 3, 2015 the National action plan for nuclear energy development (NAP NE) was approved and adopted by the Government for its immediate implementation. NAP NE was prepared by the Ministry of Industry and Trade in cooperation with the Ministry of Finance.

## The NAP NE is based on:

- Risk analysis: high risk of energy generation deficit if no new (electric) energy sources were built.
- Strategic objective: to maintain energy security based on own reliable and modern electric energy sources (safe, reliable, stable, efficient, environment friendly) acceptable for the public.
- More than 30 years of experiences with NPPs being the backbone of the domestic electric power generation (nuclear represents 35 % the of the overall gross electricity production)
- Limited conditions for renewables: self-sufficiency in electricity production based solely on renewables is unrealistic 🚫

# NATIONAL ACTION PLAN FOR NUCLEAR ENERGY DEVELOPMENT (NAP NE)

- High risk of energy generation deficit if no new (electric) energy sources are built.





# NATIONAL ACTION PLAN FOR NUCLEAR ENERGY DEVELOPMENT (NAP NE)

➤ Self-sufficiency in electricity production based solely on renewables is unrealistic

❑ *NPP Temelin 1,2 (2x 1000 MWe WWER) occupies a surface of less than 1,8 km<sup>2</sup>*

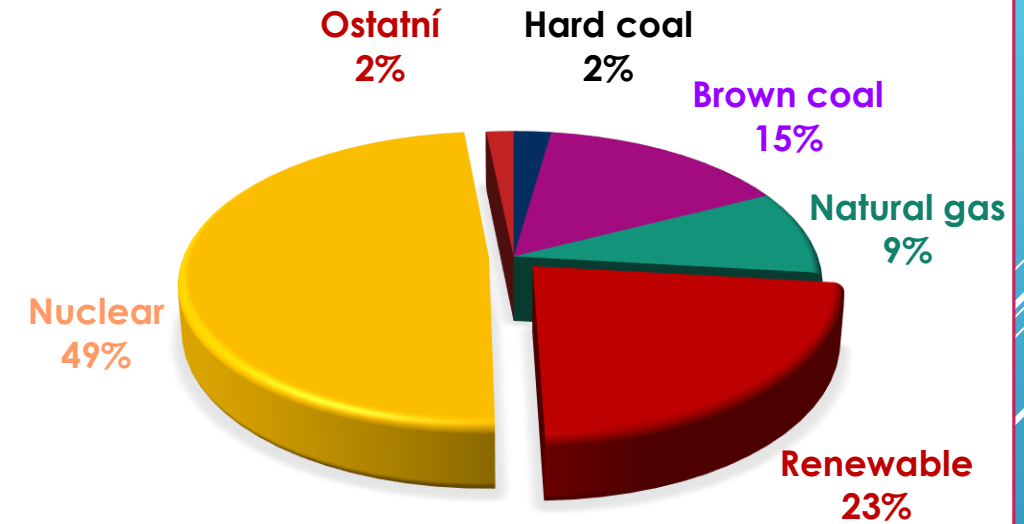
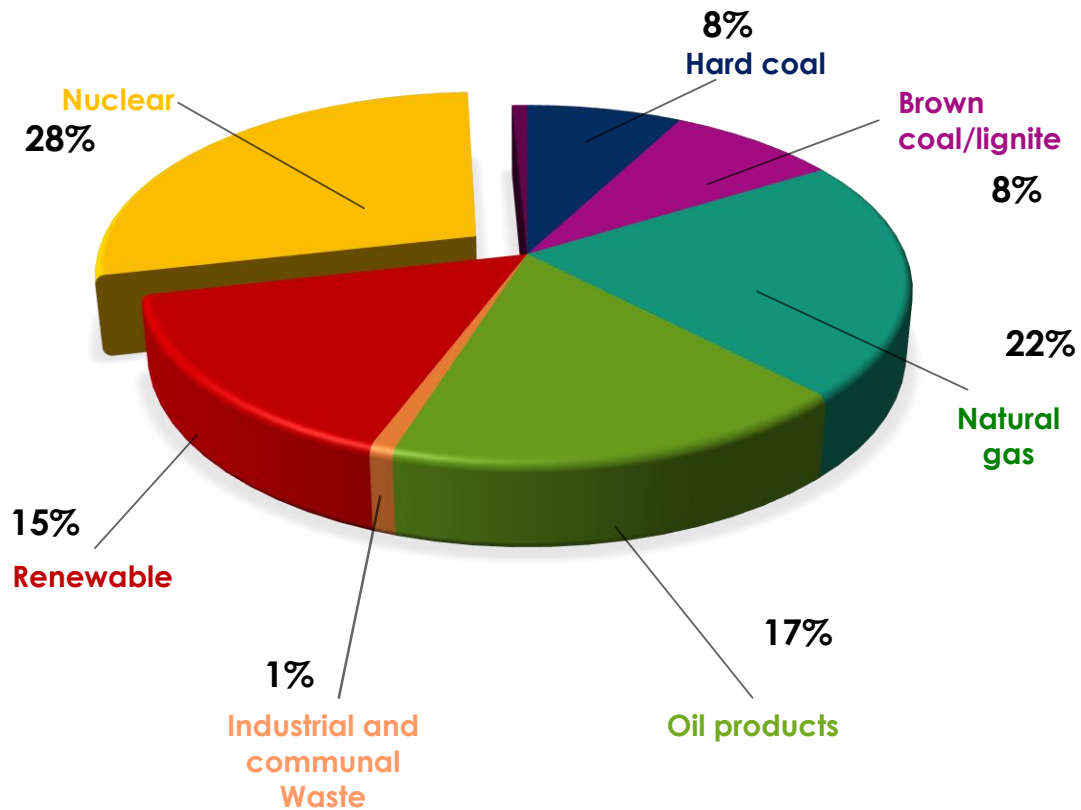
❑ *Solar equivalent of 2000 MWe would cover a surface of 3 300 km<sup>2</sup>*

❑ *Wind onshore equivalent of 2000 MWe would cover a surface of 6 300 km<sup>2</sup>*

➤ *Surface of the CZR = 78 866 km<sup>2</sup>*

*Replacement of 4000 MWe by solar would lead to a surface of 6 600 km<sup>2</sup> (8,4%) and replacement by wind onshore would lead to a surface of 12 600 km<sup>2</sup> (15%)*

## ENERGY FORECAST - PRIMARY ENERGY SOURCES CZ IN % (2040)



## ELECTRICITY PRODUCTION FORECAST - GROSS ELECTRICITY PRODUCTION IN % (2040)

# NAP NE and NEW NPPs

## NAP NE focuses on:

- Strengthening the role of the nuclear energy in electric energy mix of the Czech Republic: by 2035/2037 compensate the decreasing production in fissile (coal) power plants => **electricity production in nuclear increased up to 50% of gross electricity generation.**
- Accelerating preparatory activities related to construction of new nuclear units at existing locations with a total capacity up to 2,500 MW, respectively with the **annual production of around 20 TWh within the period of 2034-2035 with a priority on Dukovany site** (so as to compensate on time possible shutdown of Dukovany NPP in 2035-2037).
- Maintaining the safe operation of Dukovany NPP and Temelín NPP up to 50 (or 60) years 🚫

# ČEZ's PLANS FOR NEW NPP's



## **Dukovany**

- Construction of Unit 5
- Pressurized Water Reactor (PWR)

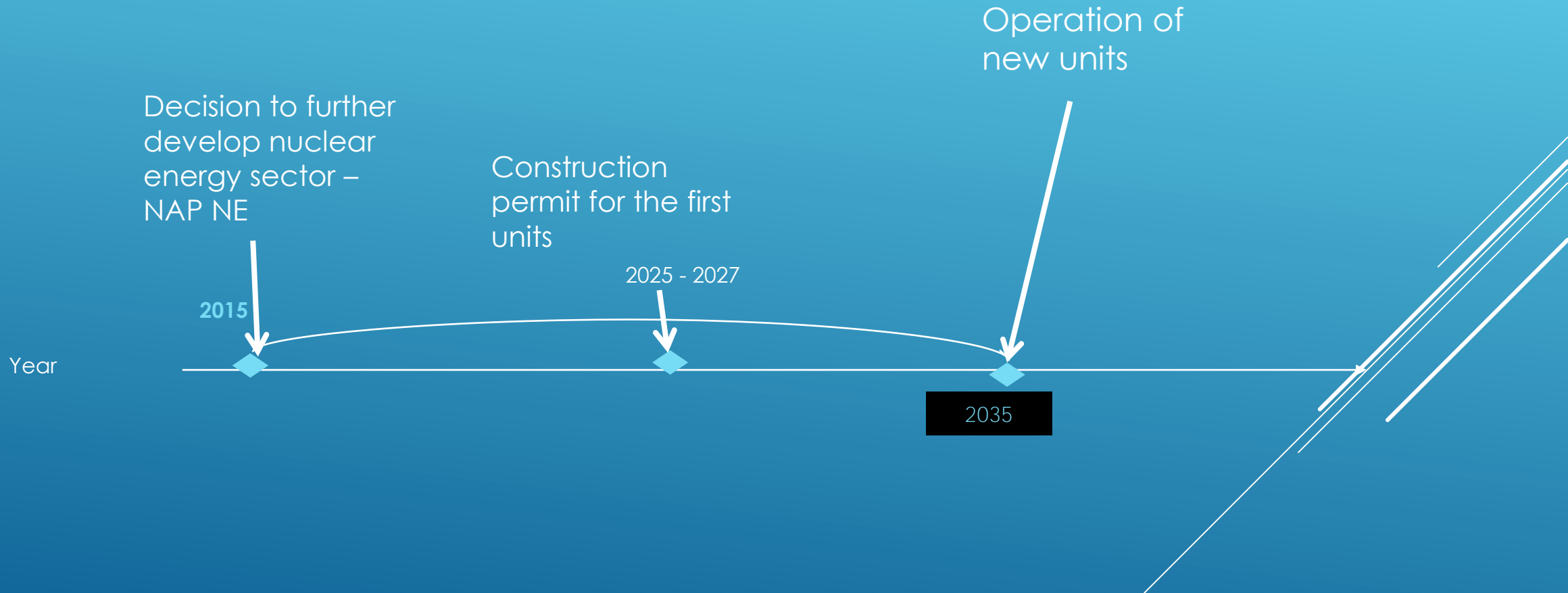


## **Temelín**

- Construction of Units 3&4
- Pressurized Water Reactor (PWR)



# NAP NE – SIMPLIFIED TIME SCHEDULE FOR THE FIRST UNIT OF THE NEW NPP



# NAP NE and NEW NPPs

NAP NE envisages following steps and activities to be completed:

before 2025:

- ▶ Decision by the Government on Investment model and financing model (2016-2017)
- ▶ Complete the EIA process for EDU 5,6
- ▶ Selection of the NPP supplier
- ▶ Starting the site licensing and construction licensing processes
- ▶ Issue of site and construction licenses for two units at each site

----- HOLD POINT -----

after 2025: construction of one to four new units depending on electricity needs and electric power of the new units 🇸🇪

# NAP NE and NEW NPPs

## Investment models

NAP NE recognizes three possible investment models:

- I. Investment by ČEZ, a. s., construction costs covered solely by ČEZ, a. s., (this model is supposed to be opened to eventual investment partner/partners),
- II. Investment by a consortium of investors, consortium would include ČEZ, a. s., and additional investment partners,
- III. Investment by the state (by a state owned company created for that purpose) 🚫

# IMPLEMENTATION OF THE NAP NE

## Government level

- In January 2016 the Standing (Government) Committee for Nuclear Energy was established. The Committee is chaired by the Minister of Industry and Trade, Mr. Jan Mládek. The role of the Committee is to bring to the attention of the Government issues which require Cabinet attention and action.
- In June 2016 the Government Commissioner/Special envoy for nuclear energy was nominated (Mr. Ján Štuller) - his mandate started in mid July 2016. The role of the envoy is primarily to:
  - monitor NAP NE implementation,
  - provide early information about emerging problems to the Committee and its chair and also if necessary to relevant members of the Cabinet,
  - propose possible solutions,
  - the envoy is also empowered to hold and maintain negotiations on behalf of the Government and the Committee with internal and external partners.
- Three expert working groups are being formed to support the Committee: WG for legal issues, WG for financing strategy and WG for technical and investment issues 🇸🇰



# IMPLEMENTATION OF THE NAP NE

## Government – MIT – possible suppliers and partners

- In July 2016 the MIT sent to ten companies (potential suppliers of the new NPPs) a Request for Information (RFI). In response first parts of information packages (IP) related to investment and financial issues were sent to MIT in September 2016 and the second parts of the IP including NPP technical data were sent to the MIT in October 2016.
- This is not a start of a selection process, these are not selection activities! Obtained information will help us to consolidate our understanding of the situation in the investor sector and will help our experts to prepare optimal investment model, which will find approval of the Government and positive reaction of the European Commission.







# STRUCTURE OF THE RFI

## □ Structure of the RFI :




- ▶ **Chapter 1-6**      **Introduction** (generic information)
- ▶ **Appendix A**      **Financial a Commercial Issues**
- ▶ **Appendix B**      **Plant Description**
- ▶ **Appendix C**      **Plant Data**
- ▶ **Appendix D, E**   **Drawings**

# 10 potential suppliers were approached

AREVA, ATMEA, CGN, CNNC, KHNP, KEPCO, MHI, ROSATOM, SNPTC and WESTINGHOUSE.

Company	Type/Technology	Logo
AREVA NP, EDF - France	EPR	
ROSATOM - Russia	MIR 1200	
	TOI	
	VVER 1500	
WESTINGHOUSE ELECTRIC COMPANY Japan/USA	AP1000	
MITSUBISHI HEAVY INDUSTRIES, LTD - Japan	EUAPWR1700	
ATMEA, France + Japan	ATMEA1	
KEPCO, KHNP (Korea Hydro Nuclear Power)	APR1400	
	APR1000+	

# 10 potential suppliers were approached (cont.)

Company	Type/Technology	Logo
China General Nuclear Power Corporation (CGN), China	HPR1000	
State Nuclear Power Technology Company (SNPTC), China	CAP1400	
China National Nuclear Corporation (CNNC), China	ACP1000	

# 6 companies answered and sent info packages

ATMEA, EDF, CGN, KHNP, ROSATOM and WESTINGHOUSE

Company	Type/Technology
ATMEA, France + Japan	ATMEA1
EDF - France	EPR
China General Nuclear Power Corporation (CGN), China	1000 MWe 1400 MWe
KHNP (+KEPCO)	APR1400
	APR1000+
ROSATOM - Russia	MIR 1200
WESTINGHOUSE ELECTRIC COMPANY	AP1000

# IMPLEMENTATION OF NAP NE

## ČEZ, a. s.

- In May–July, ČEZ created two daughter organizations - special purpose vehicles (SPV); one for new builds at Dukovany site and one for new builds at Temelin site. At present these two SPVs are 100% owned by ČEZ, a. s., and the transfers of necessary equities are under the process.
- On July 20, 2016, ČEZ, a. s. initiated the EIA process for Dukovany 5,6 by submitting the relevant information to the Ministry of Environment.

**THANK YOU FOR YOUR ATTENTION**

The image features a solid blue background with a subtle gradient. In the center, the text "THANK YOU FOR YOUR ATTENTION" is written in a bold, white, sans-serif font. In the bottom right corner, there are several white, parallel diagonal lines that create a sense of motion or a modern design element.