



Power System of Ukraine: today and tomorrow

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Ukraine



Population – about 46 mln. people
The capital – Kyiv

Neighboring countries:

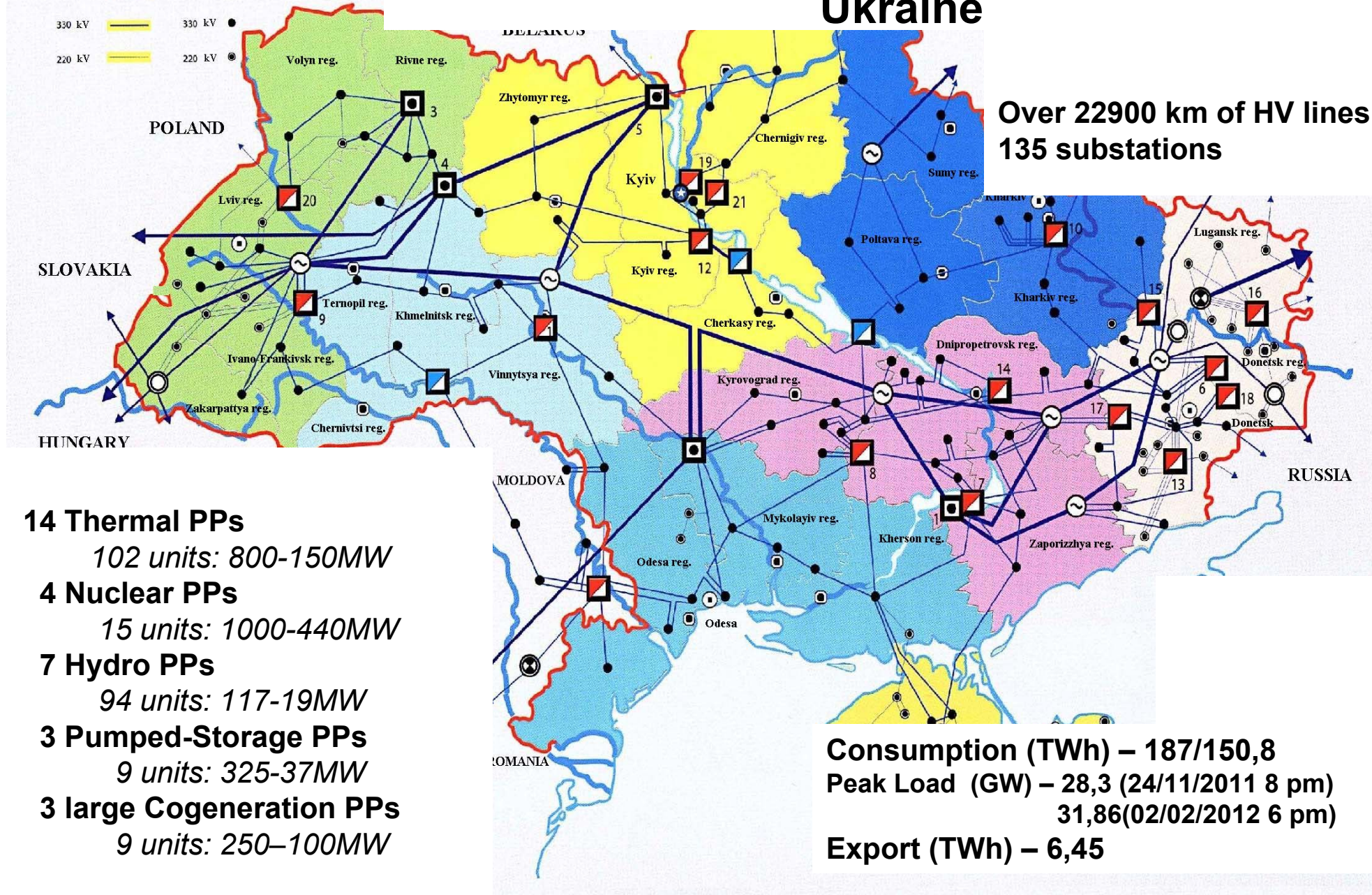
Belarus, Hungary, Moldova, Poland,
Romania, Russia and Slovakia

Total area - 603,700 sq. km

Total length of the borders – 7,590 km

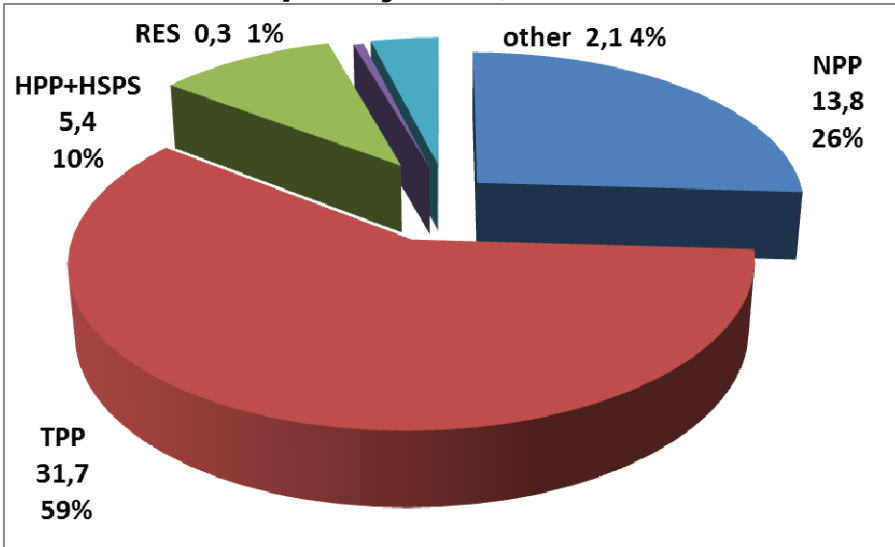
Interconnected Power System of Ukraine

Overhead lines	Substations	Power plants
800 kV	800 kV	NPP
750 kV	750 kV	TPP
400-500 kV	400-500 kV	HPP
330 kV	330 kV	
220 kV	220 kV	

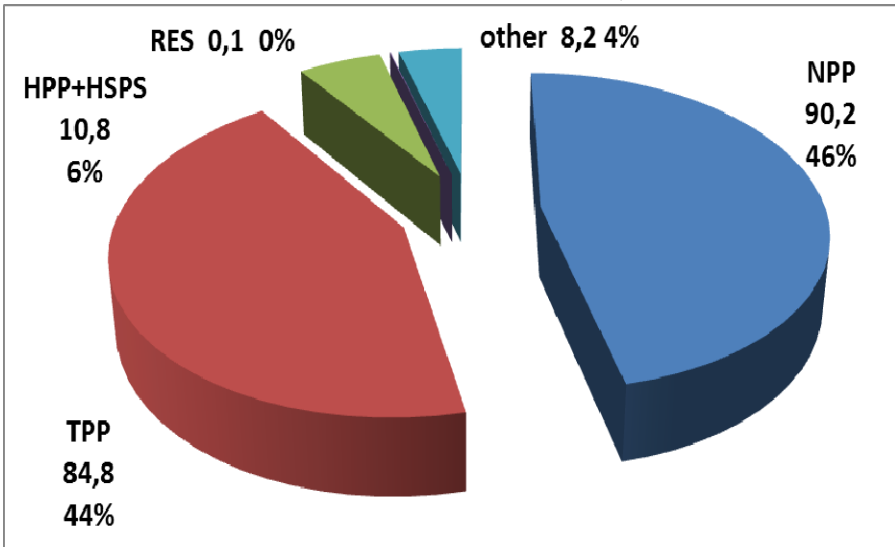


Generation

Installed capacity – 53,3GW



Production – 194,1 TWh



Substations – 135

Capacity of Transformers - 78192 MVA

Transmission Network

Length of UH+HVL: 22256 km

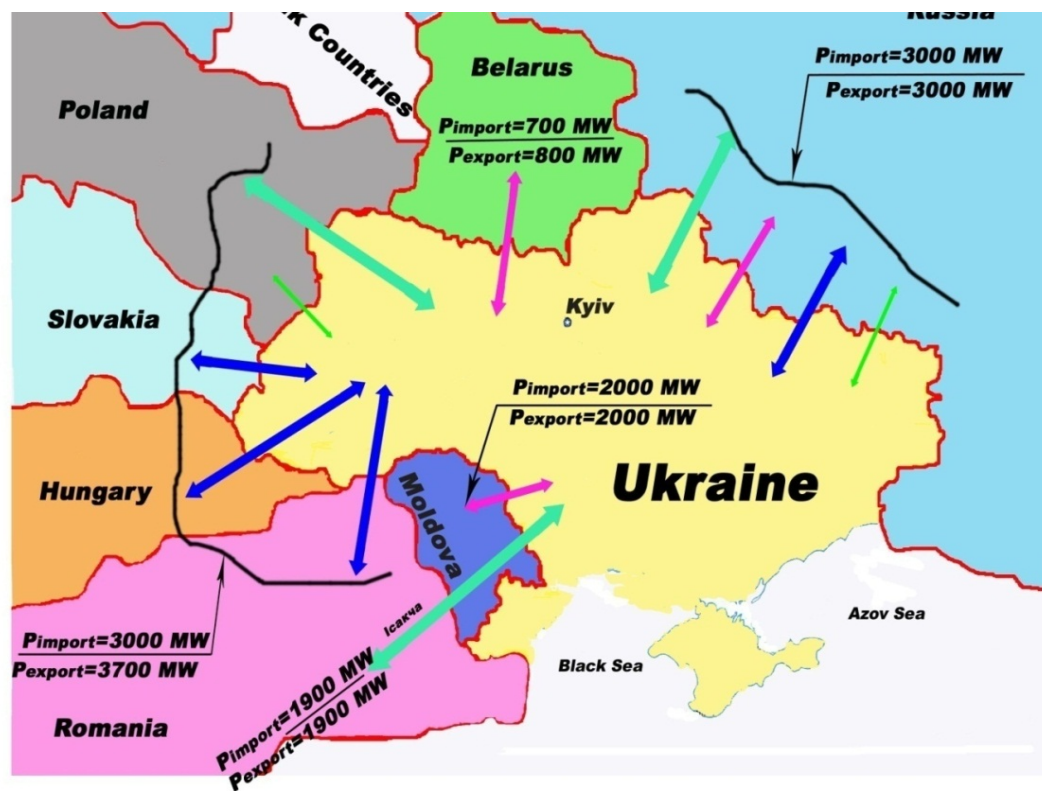
800	1	
750	8	16613
500	2	1753
400	2	1609
330	88	48616
220-110	35	9600



800	99
750	4121
500	375
400	339
330	13346
220	3976
110-35	667

4762 Circuit breakers of 6-750 kV

Import / Export Capability of Ukrainian IPS



Country	Interstate Lines (220-750kV)
Russia	14
Moldova	7
Belarus	2
Poland	2
Slovakia	1
Hungary	4
Romania	2
	32

Schedule export on 2012 to:

ENTSO-E (SL,HU,RO) – 545 MW

(PL) – 235

MW

Moldova – 700 MW

Russia – 0

Mode of operation with neighboring countries:

- most of Ukrainian IPS – synchronously with UPS of Russia / IPS of Belarus / PS of Moldova
- south-western part of Ukrainian IPS - synchronously with ENTSO-E



New UHV Lines and Substations will be put into operation:

**2013 – 2015: EUR 2,5 bln., including
EUR 935 mln. – from IFO (IBRD, EBRD,
EIB and KfW)**

2015 – 2020: EUR 0,7 bln.

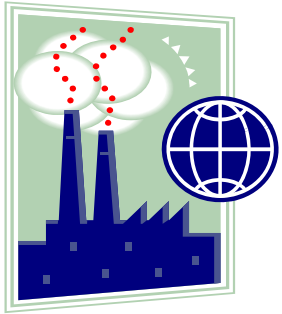


353 km of 750 kV line construction between Rivne NPP and Kyiv SS – for power transmission from Rivne and Khmelnytska NPPs (Eur 365 mln)



190 km of 750 kV line construction between Zaporizhia NPP and 750 kV Kakhovka SS (2x1000 MVA) – for power transmission from Zaporizhia NPP (Eur 500 mln)

Upgrading of IPS of Ukraine



- upgrading and rehabilitation of existing generation equipments for TPPs and HPPs (control systems), as well as backbone network entities, under obligatory performance of modern technical requirements

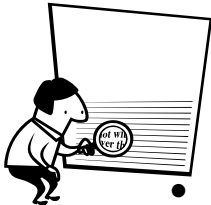
- creation of up-to-date telecommunication system
- development of automatic frequency and power control system, as also switching devices remote control



- connection of energy control center of IPS of Ukraine to the data transmission system Electronic Highway and to the coordination centre of European system operators

Implementation of power market, market of system services and balancing market

Legislation for power industry sector



- Adapt Ukrainian power industry legislation to international rules and standards, revise the regulatory basis and create normative-technical framework with proper approval of technical requirements for power industry objects

- Adapt technical regulations, rules and requirements that are acting in Ukraine, to the provisions of Operation Handbook by ENTSO-E
- Apply principles, stated in Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 and in the Regulation (EC) No 1228/2003 of the European Parliament and of the Council of 26 June 2003



On the way to European integration

01/12/2005

Memorandum of understanding on co-operation in the field of energy between Ukraine and the European Union

«... the parties will devote their best endeavours to contribute to the establishment of an interconnection between the UCTE system and the Ukrainian electricity grid system» .

«Recognising the need for technical standards of networks, generation equipments and network operation in Ukraine which are compatible with UCTE standards...»

Decree of the Cabinet of Ministers
№145-p “On approval of Energy strategy
for the period up to 2030 year”

15/03/2006

03/05/2006

UCTE accepted the request for extension
of synchronous zone by interconnection
of the power systems of Ukraine and
Moldova

UCTE launched the Project Group (PG)
“Ukraine/Moldova-UCTE”

23/11/2006

13/06/2007

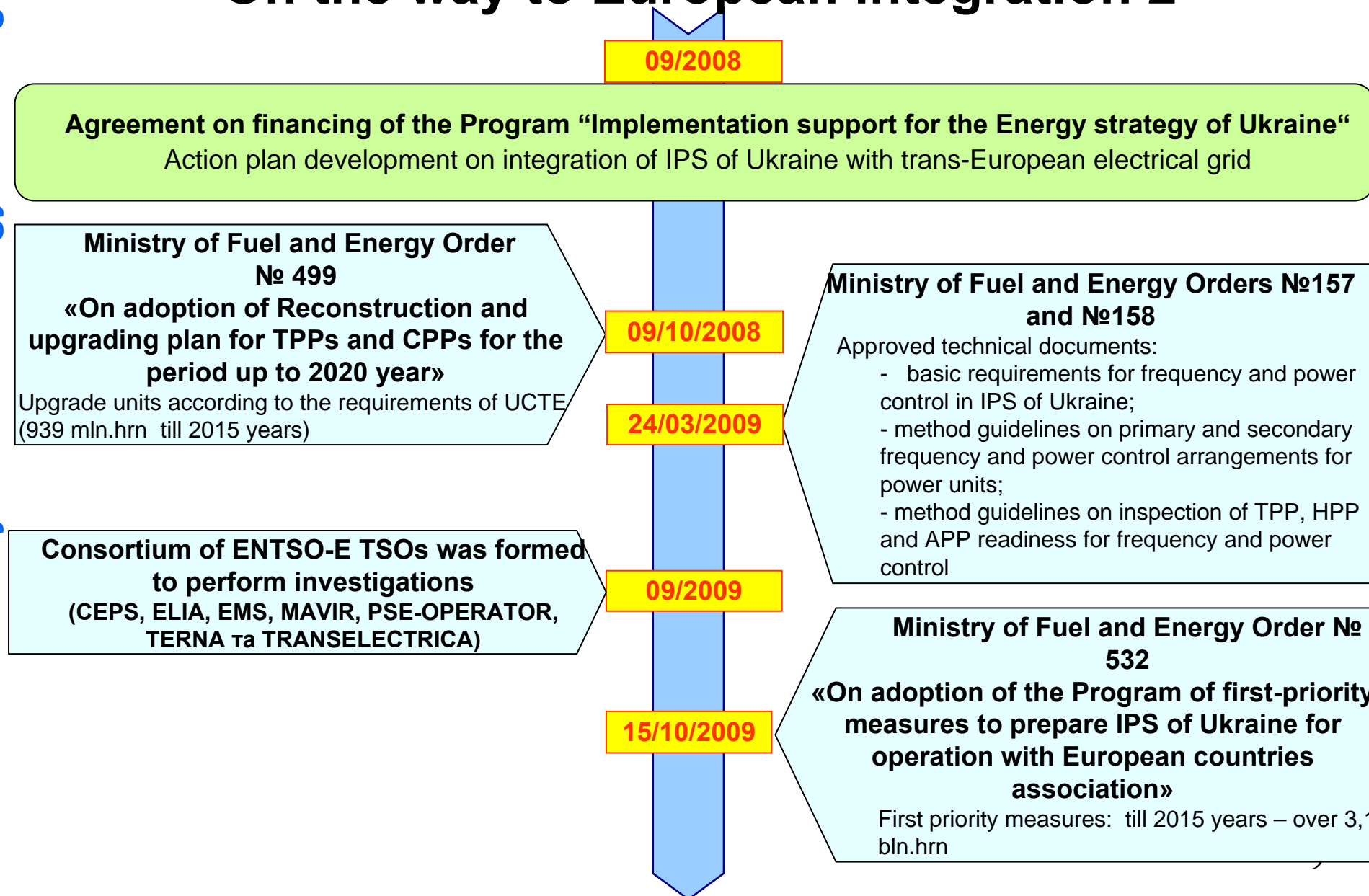
Decree of the Cabinet of Ministers №408-p
«On adoption of the action plan for energy
sector reformation and development»

... in 2007-2008 years development of
standards for the control of frequency, power,
power flows, safety and reliability criteria for the
IPS of Ukraine, that meet the requirements of
power industry association of European
countries

ToR of the PG for the interconnection of
Ukraine and Moldova with the Electrical
System of UCTE was adopted by UCTE

17/01/2008

On the way to European integration 2



On the way to European integration 3

24/11/2009

EU-Ukraine Association Agenda

to prepare and facilitate the implementation of the Association Agreement

Accelerate work towards integration of the integrated power system of Ukraine into the central European electricity network, in accordance with the requirements of UCTE

15/12/2010

Ukraine – is a party to the Energy Community Treaty

Verkhovna Rada of Ukraine ratified the protocol on Ukraine's accession to the Energy Community Treaty. In order to ensure compliance with Title II of the Energy Community Treaty was approved implementation timetable for Ukraine acquis communautaire (implementation of directives, regulations and decisions of the EU Commission to the legislation of Ukraine).

01/02/2011

The Energy Community Treaty entered into force for Ukraine.

Decree of the Cabinet of Ministers №733-p “On approval of a plan to implement the obligations under the Energy Community Treaty”

03/08/2011

Plan for 2012-2014

Feasibility Study on Synchronous Interconnection of Ukrainian and Moldovan Power Systems to ENTSO-E Continental Europe Power Systems

Power System of Ukraine



Thank you for attention !
