



Power System of Ukraine: today and tomorrow

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Ukraine



Population – about 46 mln. people
The capital – Kyiv

Neighboring countries:

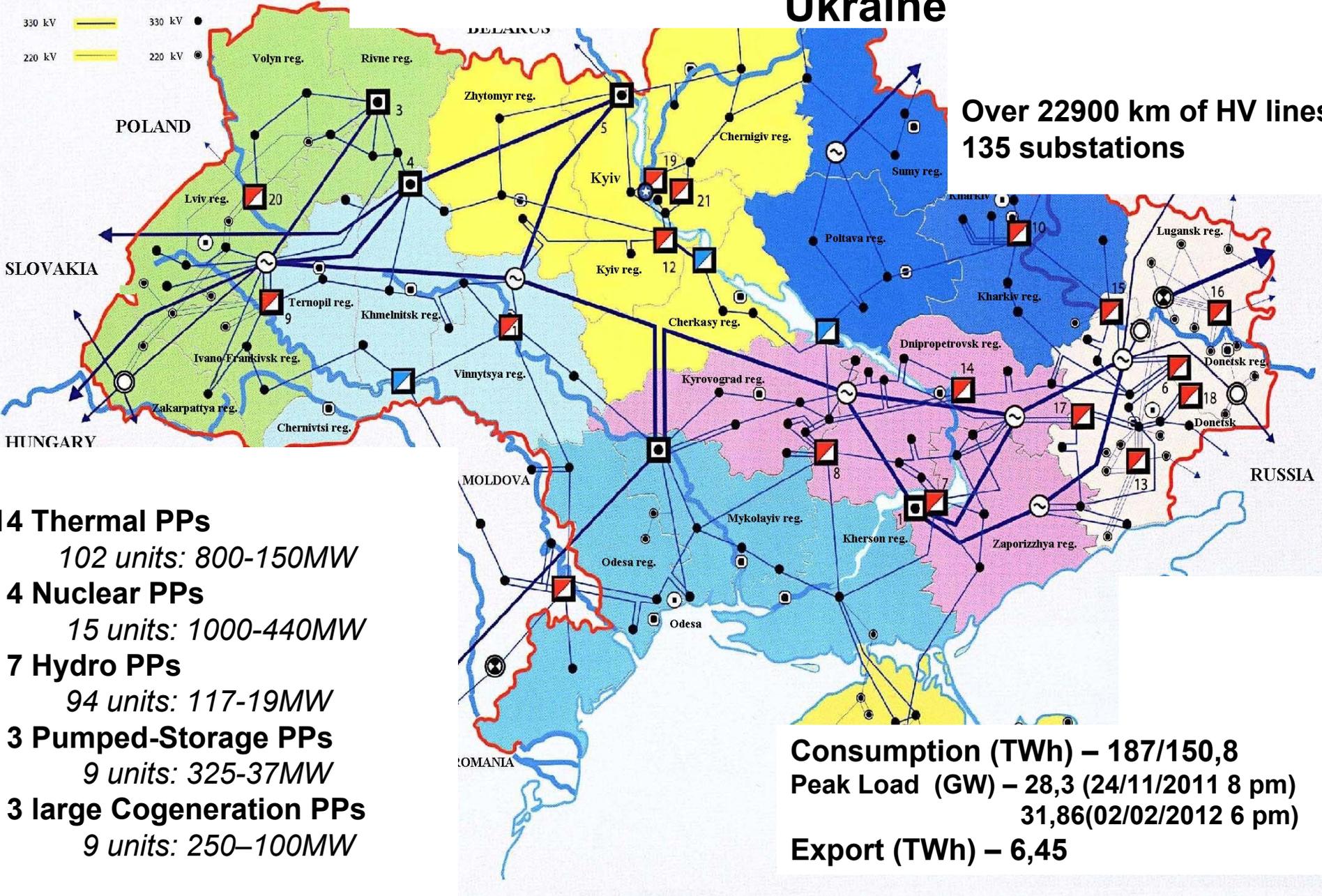
**Belarus, Hungary, Moldova, Poland,
Romania, Russia and Slovakia**

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	



14 Thermal PPs

102 units: 800-150MW

4 Nuclear PPs

15 units: 1000-440MW

7 Hydro PPs

94 units: 117-19MW

3 Pumped-Storage PPs

9 units: 325-37MW

3 large Cogeneration PPs

9 units: 250-100MW

Consumption (TWh) – 187/150,8

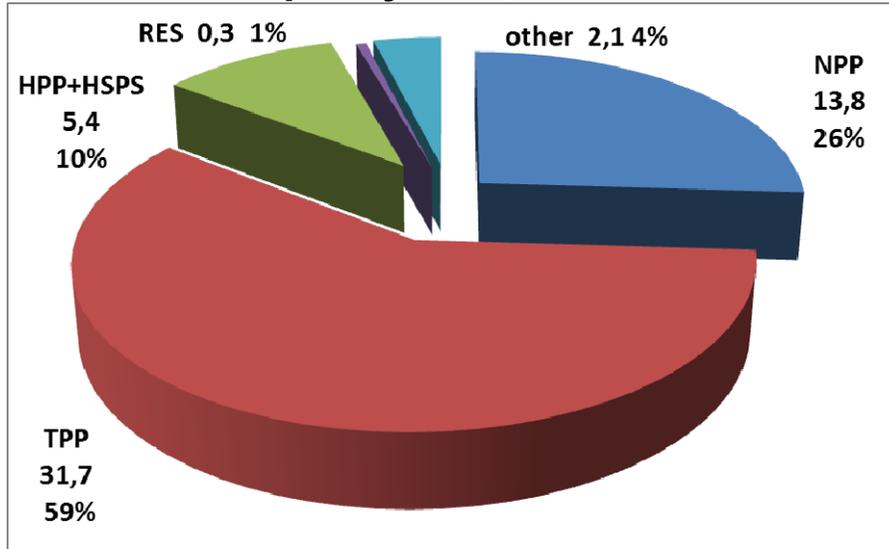
Peak Load (GW) – 28,3 (24/11/2011 8 pm)

31,86(02/02/2012 6 pm)

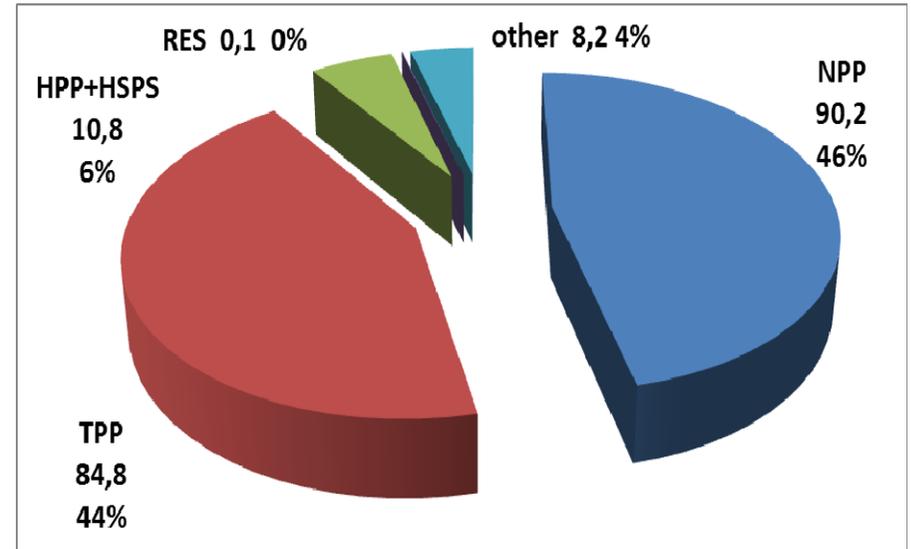
Export (TWh) – 6,45

Generation

Installed capacity – 53,3GW



Production – 194,1 TWh



Substations – 135

Capacity of Transformers - 78192 MVA

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

4762 Circuit breakers of 6-750 kV

Transmission Network

Length of UH+HVL: 22256 km



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

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

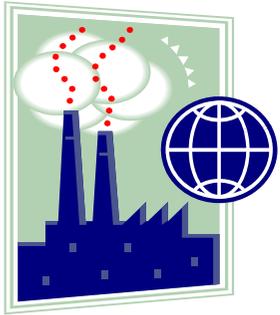
Moldova – 700 MW

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

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

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

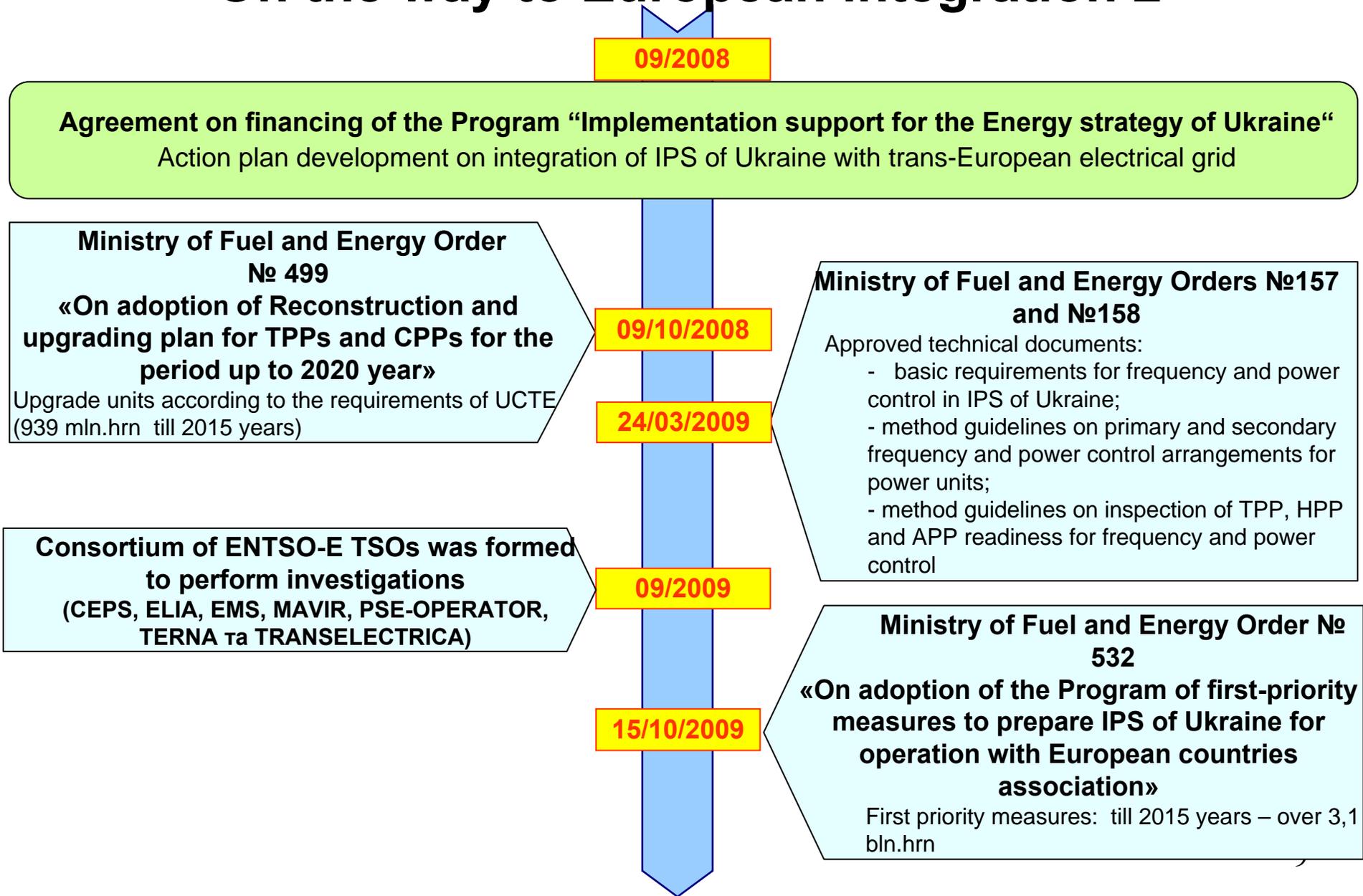
... in 2007-2008 years development of standards for the control of frequency, power, power flows, safety and reliability criteria for the IPS of Ukraine, that meet the requirements of power industry association of European countries

13/06/2007

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.

03/08/2011

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

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 !
