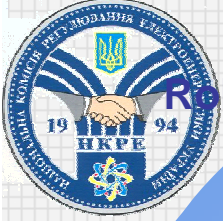


“Green” Tariff and Role of the Government in Promotion of Development of Alternative Energy in Ukraine



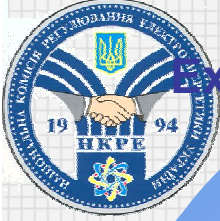
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Role of the Government in Promotion of Alternative (non-conventional) Energy

- Setting transparent rules in the field of non-conventional energy
- Setting long-term rules and reservation of budget funds for their enforcement
- Granting subsidies and credits
- Tax exemption
- Granting feed-in tariffs
- Formation of the green certificate system
- Formation of quota assignments for generation or consumption of energy generated from non-conventional sources (possibly)
- Information policy in the field of non-conventional energy
- Labeling of equipment and energy generated from alternative sources (possible)
- Setting technological standards and certification
- Other





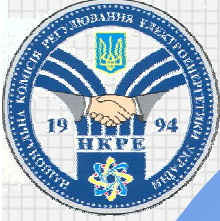
Existing National Legislation in the Field of Non-Conventional Energy (setting rules)

- Law of Ukraine on Alternative Energy Sources
- Law of Ukraine on Alternative Types of Fuel
- Law of Ukraine on Electricity
- Law of Ukraine on Energy Saving
- Law of Ukraine on Combined Generation of Heat and Electricity (Cogeneration) and Use of Waste Energy Potential
- Other normative-legal documents

State Power Bodies in the Field of Non-Conventional Energy (setting of rules)

- Cabinet of Ministers of Ukraine (CMU)
- Ministry of Fuel and Energy of Ukraine (MFE)
- National Electricity Regulatory Commission of Ukraine (NERC)
- National Agency for Energy Efficiency (NAEE)
- State Inspectorate on Power Plant and Network Operation (SIPPNO)

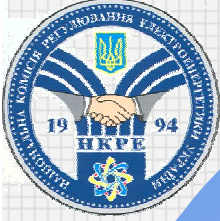




State Energy Strategies and Program (setting long-term goals)

- **Energy Strategy until 2030**
- **Program of construction of wind power plants** (approved by Decree of CMU of February 3, 1997, No. 137 “On Comprehensive Program for Construction of Wind Power Plants “)
- **Energy Saving Program** (approved by Decree of CMU of February 5, 1997, No. 148 “On Comprehensive State Energy Saving Program of Ukraine”)
- **Programs for Support of Development of Small Hydro and Thermal Energy** (approved by Decree of CMU of December 31, 1997, No. 1505 “On the Program of State Support to Development of Non-Conventional and Renewable Energy Sources and Small Hydro and Thermal Energy”)
- **National Energy Program** (approved by Decree of SR of Ukraine of May 15, 1996, No. 191/ 96-BPBP “On National Energy Program of Ukraine until 2010”)





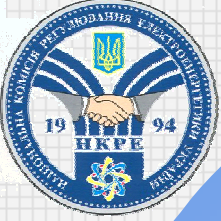
Incentive Mechanisms Existing Today for Development of Non-Conventional Energy

- Setting “green” (feed-in) tariff for electricity generated from non-conventional energy sources
- Legal obligation of the WEM to buy the whole volume of electricity generated from non-conventional energy sources
- Formation of the state energy saving fund
- Tax and customs benefits
- Beneficial crediting
- State subsidies

Additional factors for development of non-conventional energy

- Possibility to sell under direct agreements (prototype of “green” certificates) with consumers or at the WEM (obligatory purchase)
- Obligation energy suppliers to connect generators of electricity from non-conventional energy sources to networks (according to Decree of CMU No. 126 of February 19, 2009, on Specifics of Connection to Power Grid of Power Facilities that Generate Electricity Using Non-Conventional Sources”)





Formation of information space in the field of non-conventional energy

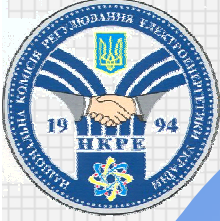
What are results of development of non-conventional energy?

- Ukraine has large potential of renewable resources
- Minimal or zero emissions of greenhouse gases to atmosphere
- Inexhaustible stock (in most cases)
- Growth of energy infrastructure and development of technologies

But there are also problems...

- High cost of technologies and construction
- Constraining factors: planning of energy infrastructure, remoteness from networks, possible legal obstacles on the local level and other
- Frequency
- The need of reserves
- Technological development





Formation of information space in the field of non-conventional energy.

What is the conclusion?

Development of non-conventional energy ensures significant preferences:

- Reduction of greenhouse gas emissions
 - improvement of environment
 - possibility to sell quotas for greenhouse gas emissions
- Development and stability of the energy sector
 - reduced consumption of fossil resources
 - reduced import of natural gas
 - development of technologies
- Opportunities for business
 - new jobs
 - attractive conditions for investments
 - formation of the new energy sub-sector





NERC Regulation of Non-Conventional Energy

The main body that exercises the state regulation in the power sector of Ukraine is NERC

Volume of authorities of NERC in the sphere of non-conventional energy is set by the Law of Ukraine on Electricity, Law of Ukraine on Combined Generation of Heat and Electricity (Cogeneration) and Use of Waste Energy Potential and Decree of the President of April 21, 1998, No. 335/98 Issues of the National Electricity Regulatory Commission of Ukraine

On 01.04.2009 Supreme Rada of Ukraine adopted Law of Ukraine No. 1220-VI on Making Amendments in the Law of Ukraine on Electricity with respect to promotion of use of non-conventional sources of fuel according to which a model of differentiated (feed-in) tariffs for economic entities that generate electricity using non-conventional energy sources and for each power facility, they are valid until year 2030.

Concerning implementation of the said Law of Ukraine, NERC Decree of 16.07.2009 No. 828 introduced changes in the Procedure for setting, reviewing and termination of validity of “green” tariffs for economic entities, approved by Decree of 22.01.2009 No. 32, bringing it into compliance with the adopted Law



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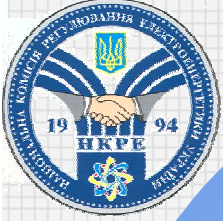


NERC Regulation of Non-Conventional Energy

Main authorities of NERC in the field of non-conventional energy are:

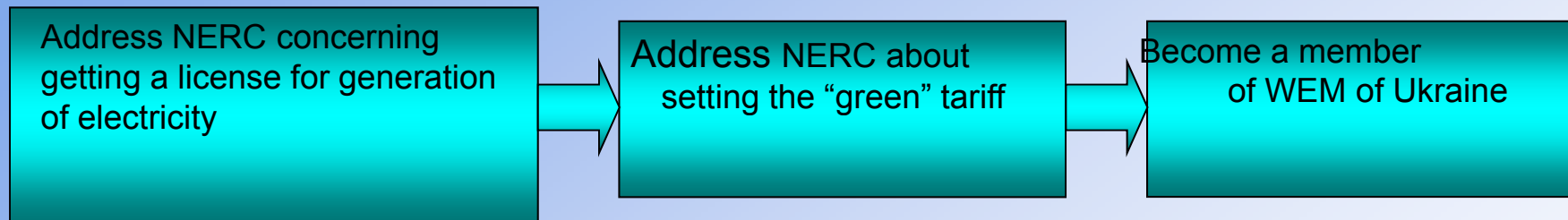
- Approval of the “green” tariff for electricity generated from non-conventional energy sources
- Formation and maintenance of a registry of non-conventional energy facilities
- Annual publication of information related to cost of connecting non-conventional energy facilities to power networks
- Issuance of licenses for carrying out activities related to generation, transmission and supply of electricity by means of approval instructions, conditions and rules separately for each type of licensed activities in accordance with the Law of Ukraine on Electricity
- Issuance of licenses for carrying out activities related to generation of electricity and heat at cogeneration units
- Setting tariffs for electricity and heat generated at cogeneration units
- Setting rules for connecting cogeneration units to power networks





NERC Regulation of Non-Conventional Energy

Sequence of actions of a generator of electricity from non-conventional energy sources in case he has a desire to work at the “green” tariff:



Main practical conditions for setting the “green” tariff:

- Availability in ownership or usage of power generating equipment operating on non-conventional energy sources (getting a license)
- Availability of a finished power generating facility connected to networks (in case of construction of a new facility)
 - certificate of compliance of the constructed power facility, which generates electricity using non-conventional energy sources, to design documents, requirements of state standards, construction norms and rules





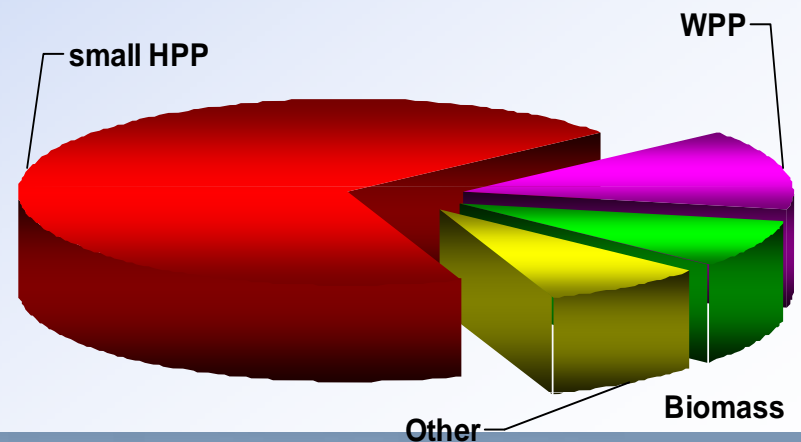
NERC Regulation of Non-Conventional Energy

As of 25.08.2010 “green” tariff was requested and obtained from NERC by

	Type of alternative energy source		
	WPP	HPP	Biomass
Number of economic entities – generators of electricity	5	20	2

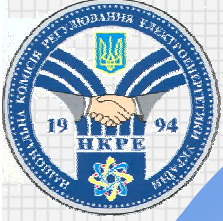
The registry of power facilities using RES contains 42 enterprises, among them there are:

- 7 facilities using wind energy
- 4 facilities using biomass
- 2 facilities using waste potential of technological processes
- 34 facilities using energy of small rivers
- 1 facility using mine gas
- 1 facility using visbreaking of oil



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■ small HPP ■ WPP ■ Biomass ■ Other



NERC Regulation of Non-Conventional Energy

- Fixed minimal size of the “green” tariff for economic entities is set by means of converting into Euro the size of the “green” tariff calculated according to the Rules of the said Law, as of January 1, 2009 at the official foreign exchange rate of the National Bank of Ukraine as of the said date (Article 17-1, Law of Ukraine on Electricity)
- The size of the "green" tariff cannot be less than the fixed minimal size of the “green” tariff, which at each date of setting retail tariffs for consumers is converted into the national currency at the official foreign exchange rate of the National Bank of Ukraine as of such date (Article 17-1 Law of Ukraine on Electricity)
- 1.6. The size of the "green" tariff cannot be less than the fixed minimal size of the “green” tariff, which at each date of setting retail tariffs for consumers is converted into the national currency at the official foreign exchange rate of the National Bank of Ukraine as of such date (Decree of NERC of 22.01.2009 No. 32 on Approval of the Procedure for Setting, Reviewing and Expiration of Validity of the “Green Tariff for Economic Entities)

If $\frac{N_{EBPO.XX.XX.XXXX}}{N_{EBPO.01.01.2009}} > 1$,

If $\frac{N_{EBPO.XX.XX.XXX}}{N_{EBPO.01.01.2009}} \leq 1$, =

$$\frac{N_{EBPO.XX.XX.XXXX}}{N_{EBPO.01.01.2009}} > 1,$$

$$B_{ТАРИФ.XX.XX.XXXX} = B_{ТАРИФ.01.01.2009} \times \frac{N_{EBPO.XX.XX.XXXX}}{N_{EBPO.01.01.2009}}$$

$$\frac{N_{EBPO.XX.XX.XXX}}{N_{EBPO.01.01.2009}} \leq 1,$$

$$B_{ТАРИФ.XX.XX.XXXX} = B_{ТАРИФ.01.01.2009}$$



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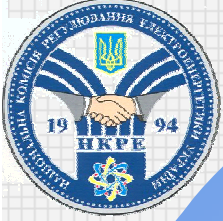


NERC Regulation of Non-Conventional Energy

- Decree of NERC of 23.07.2009 No. 857, the Commission set fixed minimal sizes of the “green” tariff (equivalents in the national currency):

Fixed minimal size of the “green” tariff, kop./kWh		
For electricity generated from wind energy		
The size of installed capacity under 600 kW	The size of installed capacity from 600 kW to 2000 kW	The size of installed capacity more than 2000 kW
70.15	81.84	122.77
For electricity generated from biomass		
134.46		
For electricity generated from solar energy		
By ground facilities	By units installed on roofs with capacity more than 100 kW	By units installed on roofs with capacity under 100 kW
505.09	484.05	463.00
For electricity generated by small hydro power plants		
84.18		





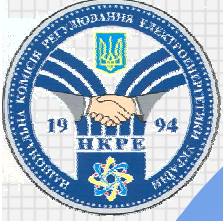
NERC Regulation of Non-Conventional Energy

Problematic Issues of the Law of Ukraine on Electricity Related to Promotion of Non-Conventional Energy

«Renewable energy sources, which include solar, wind, geothermal, wave, tide and flow energy, hydro energy, energy from biomass, landfill gas, gas from sewage treatment plants, biogases and secondary energy resources, which include blast-furnace gas and coking gas, methane gas from degassing of coal deposits, transformation of waste energy potential of technological processes”
(Law of Ukraine on Alternative Energy Sources)

but... the “green” tariff set by the Law on Electricity is applied only to certain categories of non-conventional energy facilities, in particular: generators of electricity from wind energy, from biomass, solar energy, and small hydro power plants





NERC Regulation of Non-Conventional Energy

Problematic Issues of the Law of Ukraine on Electricity Related to Promotion of Non-Conventional Energy

“In this Law biomass is represented by products, which fully or partially consist of vegetable matters, which can be used as a fuel for the purpose of transforming energy contained in them” (Law of Ukraine on Electricity)

“Biomass is a biologically renewable matter of organic origin, which experiences biological decomposition (agricultural waste (plant production and animal breeding), forestry and industrial sectors related to them, and also organic part of industrial and domestic waste” (Law of Ukraine on Alternative Types of Fuel)

“Non-conventional energy facilities are energy generating and other equipment, which generates energy using non-conventional energy sources , the part of which represents at least 50% of installed capacity of all energy sources used at the facility” (Law of Ukraine on Alternative Energy Sources)





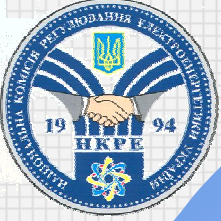
NERC Regulation of Non-Conventional Energy

Problematic Issues of the Law of Ukraine on Electricity Related to Promotion of Non-Conventional Energy

- *Starting with January 1, 2012, the share of raw materials, materials, fixed assets, works and services of Ukrainian origin comprises at least 30% of the cost of construction of the relevant power facility that generates electricity using non-conventional energy sources, and starting with January 1, 2014, - 50 per cent*
- *Starting with January 1, 2011, at solar module power facilities in whose production costs the share of materials and raw materials of Ukrainian origin comprises at least 30 per cent*
- *Within the three month period, the Cabinet of Ministers of Ukraine has to develop the procedure for determining the share of raw materials, materials, fixed assets, works and services of Ukrainian origin in the cost of construction of power facilities and their components*

Currently, the Procedure for determining the share of raw materials, materials, fixed assets, works and services of Ukrainian origin in the cost of construction of power facilities and their components has been developed, however, it has not been coordinated and has not been approved





NERC Regulation of Non-Conventional Energy

Problematic Issues of the Law of Ukraine on Electricity Related to Promotion of Non-Conventional Energy

- In this Law *significantly upgraded power facilities*, which generate electricity using non-conventional energy sources, are considered to be facilities whose cost of upgrading energy equipment comprises *more than fifty per cent of the initial cost of such equipment*
- *Initial cost of equipment - ?*
- *How can one determine the initial cost of equipment of facilities constructed during the time of the Soviet Union (1930-s, 20th century)?*





NERC Regulation of Non-Conventional Energy

- In 1999, the German Law on Feed-in Tariffs (The German Feed Law) was changed by the Renewable Energy Sources Act
- Then, the Renewable Energy Sources Act in Germany is revised every four years, necessary changes are made in the course of revisions

For economic entities that generate electricity using non-conventional sources of energy the “green” tariff is set until January 1, 2030

Advantages	Disadvantages
1. Guarantee of return of funds invested in non-conventional energy facilities for the investor	1. “Inert legislation”, impossibility of quick response 2. Impossibility of a differential determination of the “green” tariff depending on the size and resource of the project 3. Significant financial burden on end consumer 4. Some generators will get excessive profits, other are not profitable





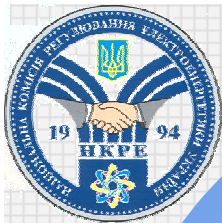
NERC Regulation of Non-Conventional Energy

- In case in the fuel mix part of renewable (non-conventional) types of fuel is used

Is the “green” tariff set for that part, for the whole volume, or is it not set at all?

The procedure is not applicable to economic entities that carry out activities related to generation of electricity at power facilities with simultaneous use of renewable energy sources and use of conventional types of energy (conventional types of fuel) (Decree of NERC of 22.01.2009 No. 32 on approval of the Procedure for setting, reviewing and termination of validity of the “green” tariff for economic entities





Slide title

Thank you for attention



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