



# Assistance to NERC: Regulatory Support Program

## Connection of E-RES to the Network

Kiev, April 2 2013

AF-MERCADOS  
ENERGY MARKETS INTERNATIONAL  
*Finding new paths for energy markets*

# Objectives

---

- Making connection to the network a transparent, non-discriminatory, reliable and swift process, and at a fair price.
- This task contains two components:
  - Connection Rules, Procedures, Guidelines and Template Contracts
  - Mechanism for compensation of connection costs



# Connection Rules for E-RES

---

## Key Issues

- Increased penetration of RE generating capacity in next years because of high levels of feed-in tariffs;
- In order to maintain the net stability it is required to have better dispatch control of big primary energy driven generators;
- An increasing market opening will require best quality of electricity generation;
- No modern technical specifications, codes or requirements exist in Ukraine for certain E-RES generators



# Connection Rules for E-RES

---

## Main Objectives

- to define functional requirements for the RE generators that the produced electricity meets the established quality standards;
- Contribute to the reliability and security of supply curtailing disturbances, electricity overflows and reducing overall system quality;
- Developed requirements to allow high level of RE penetration in Ukrainian power system.



# Connection Rules for E-RES

---

## Methodology

- Take into account existing UA regulations has been taken into account (GOSTs, present market structure, present codes and standards) and International best practice (e.g. Danish Technical Code)
- Acquire relevant information from stakeholders (NERC, TSO, DSOs)
- Establish working group to discuss scope, structure and approaches
- Draft technical requirements for connection for Wind and Solar PV generators, and supporting documentation (explanatory notes, memos etc)



# Connection Rules for E-RES

---

## Technical code drafted

- Technical code “Requirements for wind and solar photovoltaic power plants with a power output greater than 150 kW regarding connection to external power networks” – final version delivered
- Explanatory note to the draft document « Requirements for wind and solar photovoltaic power plants with a power output greater than 150 kW regarding connection to external power networks» - final version delivered
- Summary report “Solar PV power plants: European experience in grid integration” – final version delivered
- All deliverables have been approved by beneficiary (NERC) and TSO



# Mechanism for Compensation

---

## Key issues

- Law defines that interconnection scheme should be constructed by grid owner, but grid owning companies have no funds for this;
- Absence of secondary legislation regarding cost compensation for connection;
- There is no determination in which stage project developer can apply for connection (to be constructed by grid owner);
- Legislation does not distinguish between /define "shallow connection" the direct connection costs from the plant to the nearest substation of the DSO which logically should be born by the plant owner (case in all countries) and the "deep connection" costs of grid reinforcement of the grid system of the DSO;
- There is a disconnect between the finishing of the construction of the RE-plant and the construction of the grid connection (because of procedure with investment programmes and expansion plans approval).



# Mechanism for Compensation

---

## Recommendations

- Introduce system approach for expansion plans of grid
- Ensure timing between grid owners constructing grid infrastructure and RE developers commissioning generators
- Introduce “shallow connection charge” and “deep connection charge”
- Introduce “cost per expected annual MWh “ranking of RE generators to be connected





# Mechanism for Compensation

---

## New Law Applied

- Payment for Connection of RE generators is regulated by Article 17(2) of Ukrainian law “About power sector” (changes has been introduced by Law N 5021-VI ( 5021-17 ) from 22.06.2012).
- According to this regulation, 50% of connection cost is paid by grid owner (source – transmission tariff), and 50% - repayable financial assistance from developer (to be repaid in 10 years, source of payment – transmission tariff).

New Mechanism for Compensation has the same issues as before:

- No funds from grid owners;
- Absence of secondary legislation;



---

# Thank You

