

STATE ENTERPRISE “NATIONAL POWER COMPANY “UKRENERGO”



**SUSPENSION OF FIBER-OPTIC CABLE AND
RECONSTRUCTION OF THE EXISTING 330 KV OTL
FROM SS KHERSONSKA TO THE CROSS-SECTION
WITH THE EXISTING 330 KV OTL NOVOKAKHOVSKA -
KHERSONSKA AND BEGINNING OF THE DIVERSION
TO SS KAKHOVSKA**

**IN THE FRAMEWORK OF ZAPORIZKA –KAKHOVSKA
PROJECT**

NON-TECHNICAL SUMMARY

AF-MERCADOS EMI

December 2013

Project # C18219rev/SPA-2007-12-08

SUBPROJECT PURPOSES AND MAIN FEATURES

Works on suspension of fiber-optic cable and reconstruction of the existing OTL 330 kV with estimated length of 35.79 km from the tower #69 (the place of the cross-section of the existing OTL 330 kV Novokakhovska - Khersonska and the beginning of the diversion of TL 330 kV to SS "Kakhovska") to SS "Khersonska" (herein further referred to as Subproject) are part of the larger project Zaporizka NPP – Kakhovska, which includes the construction of 750 kV OTL from Zaporizka NPP to newly built SS 750/330 kV Kakhovska, construction of mentioned substation and, to connect the new substation to 330 kV grid, a construction of two 330 kV diversions from the SS Kakhovska to existing 330 kV transmission lines going to substation Ostrovska and Khersonska. One of these diversions will be connected to the existing OTL 330 kV Novokakhovska – Khersonska OTL, which has been into operation for over 40 years and has defects and damages, which are caused by natural wear.

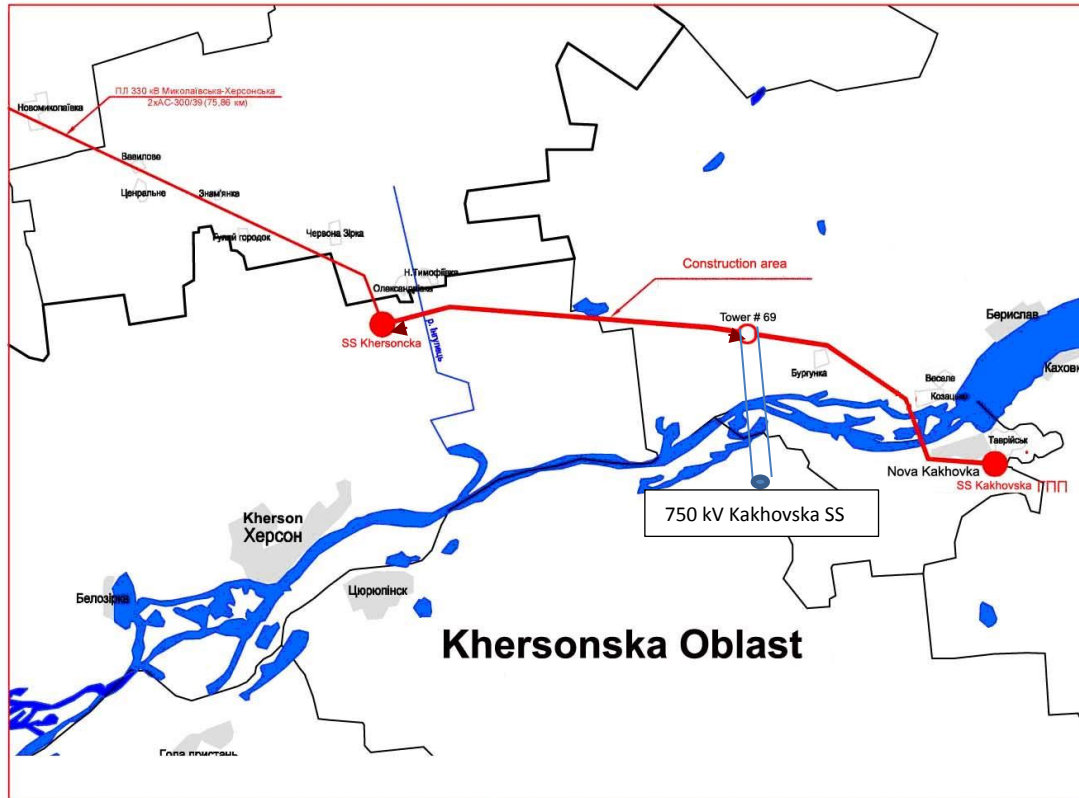
The Subproject was included into the Scope of Works, defined in the Technical Economical Due Diligence for the Project, completed by Mercados in April 2010, and into the Project design, approved by the Resolution of the Cabinet Ministers of Ukraine of 06.04.2011 № 276-r. Ukrenergo has included these works in the scope of work of the Project, which is funded by EBRD and the European Investment Bank (EIB).

Thus, the Subproject is subject to an environmental and social assessment to ensure that the existing published documents related to the main ESIA for the Project Zaporizka NPP – Kakhovska will be updated. The report is designed to ensure that ESIA is based on the best international practices in this area and in accordance with the Environmental and Social Policy of EBRD (2008) and the social and environmental principles and standards of EIB (2009).

Subproject "Suspension of fiber-optic cable at OTL 330 kV and scope of work for the rehabilitation of OTL 330 kV" was developed by the Kyiv branch of the institute "Ukrenergomerezhproekt" under the contract with Ukrenergo's branch "Pivdenna Electroenerhetychna Systema» (Southern Power System). The main scope of works comprises: construction of fiber-optic communication line by mounting a cable of OPGW type on towers of the existing OTL 330 kV Novokakhovska - Khersonska and reconstruction of mentioned line, including replacement of old, unsuitable for further use towers with new ones.

It is expected that the work will take approximately 5 months.

Construction area under the Subproject with total length of 35.79 km is shown in the Figure below.



Implementation of the Subproject will allow:

- to provide the consumers of the Southern region of Ukraine with reliable electrical power supply;
- to reduce accident rate associated with physical depreciation of TL 330 kV structure;
- to provide reliable connection through the creation of modern fiber-optic communication line;
- to reduce the cost of main fiber-optic communication line through the use of towers of restored TL 330 kV.

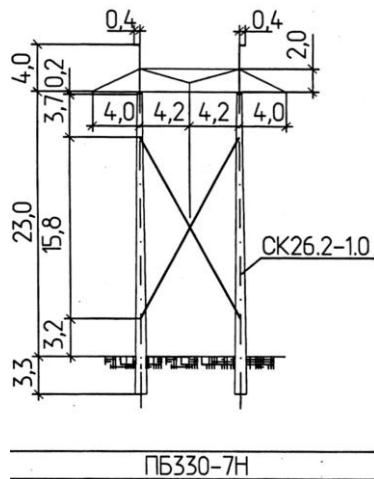
For the construction of fiber-optic transmission line, the subproject envisages suspension on the towers of the existing OTL 330 kV of grounding wires with built-in 16 optical fibers of OPGW type to replace the existing left (in direction from SS Kheron'ska) metal C70 grounding rope.

To determine the technical condition of the line, planned for suspension of fiber-optic cable, "Pivdenna Electroenerhetychna Systema" (Southern Power System) conducted examinations of tower structures in order to identify elements that need replacing or repairing. Also, towers, which are unsuitable for further, use, were determined. According to the examination results, it was decided to substitute 123 towers of 134 existing. New towers will be installed in place of the dismantled towers, but with replacement of tower type for modern, improved ones. Galvanized towers, made of metal with bolts will be used for anchor and partially intermediate towers. Most of the intermediate towers will be made of concrete.

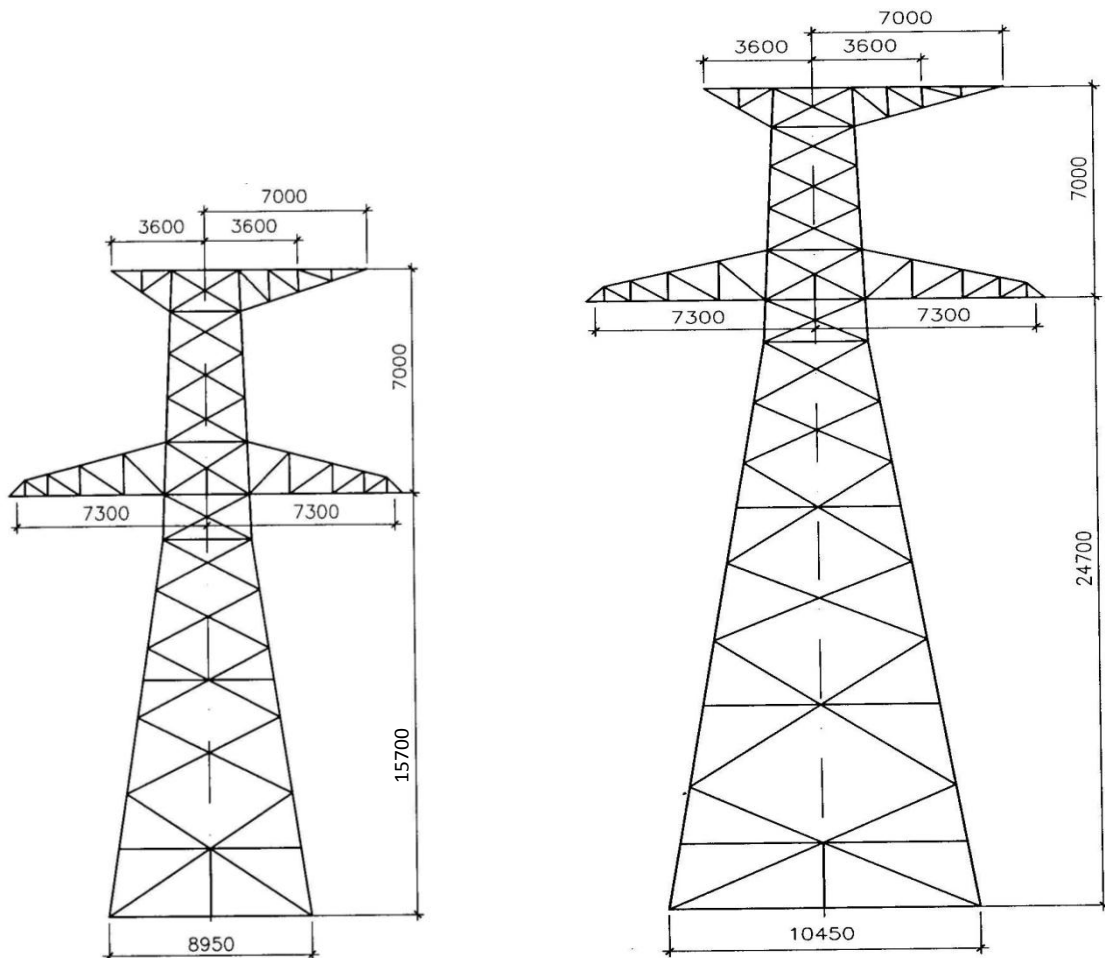
New towers are going to be installed in place the dismantled ones. Preliminary calculations, based on existing climate conditions, indicated that strengthening of tower structures is not needed.

Crossing of the Ingulets River is proposed to be done on existing towers with previously repaired tower structure and foundations, after the final examination.

Drawings of standard blueprints of angle-anchor and intermediate towers are provided in the figures below. Height of the towers varies depending on topography and objects, crossed by the OTL route.



Standard intermediate concrete tower PB 330-7N



Standard angle-anchor towers Y330-3V+5 and Y330-3V+14

SUBPROJECT ENVIRONMENTAL AND SOCIAL IMPACTS

According to EBRD standards, this Subproject does not belong to especially environmentally and socially hazardous projects which could result in potentially significant and adverse future environmental and/or social impacts and issues (Category A). It does not require permanent land withdrawal and does not involve any additional permanent environmental and/or social impacts, besides of already existing ones related with the operation of 330 kV OTL.

The Subproject impacts are temporary, site-specific, and are readily identified and addressed through mitigation measures.

For purposes of environmental impact assessment the following aspects were considered: impact on geological structure and soils, impact on the groundwater and surface water, impact on air, climate, flora, fauna and habitats. In none of these areas any significant impact from the Subproject construction works, physical structures and operation & maintenance is expected.

Due to long intensive agricultural land use in the area of construction, all natural steppe vegetation is destroyed, and existing fauna is very poor. The construction site is at a great distance from the limits of natural reserves and from the monument "Mykilske snake settlement", so the Subproject impact on them will be minimal or absent. The risk of bird collision with OTL is negligible as the construction site is not located on the migration routes of large and heavy birds, such as geese, swans etc., which are of concern in this regard.

The Subproject impact on land use is also very limited and insignificant. Design documentation requires the installation of new towers instead of dismantled ones, which are located on land plots that are already in permanent use of Ukrenergo, so there is no need to acquire the additional land for permanent use. It is expected temporary allotment of land owned by people for undertaking the construction work, without changing its existing assignment, based on agreements for establishment the temporary land easement. This land will be used for removing old and installing new towers and for unrolling a cable.

According to the State Construction Norms (SCN) V.2.5 -16 -99 the width of the area for unrolling the wire, grounding cable and fiber-optic cable is 14 meters. In order to compile and install temporary towers a 250 square meters area of land is alienated for each intermediate tower of PB 330- 7H type, and 450 square meters area for each angle-anchor tower of B 330- 3c type. In general, 53.53 hectares of land have to be allotted for limited temporary land use/ temporary easement along the route of fiber-optic cable suspension (including 45 hectares of arable land).

The typical timeframe for construction of foundation and installation of tower is about 5 days, including site preparation, construction works and site restoration. Agricultural and other activities on these construction sites and along access roads to them will be limited during construction. Damages caused by construction activities, such as damage to crops will be compensated.

According to the Law of Ukraine № 2480-VI "On the land of energy sector and legal regime of special zones of energy facilities " dated of 09.07.2010, Ukrenergo will sign with land owners agreements on establishing of temporary servitude for the period of construction and scheduled or emergency repair works of electric power

transmission facilities. Land owners and land users will get compensation for the damage caused to soil and other natural features of land or for making land unsuitable for use and for lost profit due to temporary land use/ temporary land easement.

According to Resolution of the Cabinet of Ministers of Ukraine N 284 "On Procedure for Calculation and Compensation of Losses to Land Owners and Land Users", dated 19.04.1993, the amount of damage is determined by commissions, created by municipal or local administrations. Land owners or land users (tenants), who suffered from damage, form part of these commissions.

Positive social impact during construction consists in creation of jobs for people living near the construction site and increase of opportunities for indirect income mainly associated with the consumption of goods and services by temporary workers.

IMPACT ON PUBLIC HEALTH AND SAFETY

Main negative impacts, which can be source of risk for human health, come from electromagnetic fields and noise, generated during transmission line operation. The audible noise is a result of the so-called "corona effect" which occurs in certain meteorological conditions and modes of line operation. The noise is especially loud in conditions of dampness and humidity.

To protect the population from the negative effects of electromagnetic radiation and noise, sanitary-protection (20 m from outermost cables) and safety (30 m from outermost cables) zones are established along the OTL route. The intensity of the electromagnetic field and the noise level outside the safety zone do not exceed the permitted values and are safe for human health.

There are following main restrictions in these zones:

- The construction of housing and other buildings in safety zone is prohibited.
- The maximum working hours are restricted due to electromagnetic radiation depending on the height of hanging lines, but it does not affect mechanized agricultural works (such as with tractor, combine etc.)
- In forested areas trees have to be cut on a regular basis to keep them to a pre-defined height.
- Owners and users of the land in the right of way of the line are obliged to allow maintenance and repair crews to have access to the transmission line. Any damage caused by Ukrenergo maintenance has to be compensated on a case-by case basis.

All mentioned restrictions have already been in force for over 40 years and will remain unchanged after the Subproject implementation.

The main public health and safety hazards during construction are related to increased road traffic and risk of accidents. Occupation health and safety hazards during construction mainly include risk of electric shock, working at heights,

exposure to electric and magnetic fields. The risk of traffic and work accidents will be reduced through compliance with safety rules.

During construction phase, noise effects will be inevitable. However, the construction activities for dismantling and installation of the towers will be neither extremely noise intensive nor of long duration at any one site (5 days for each tower).

Also, during construction phase, dust emissions from the working areas in the process of piles installation and from vehicles passing towns and going on unpaved roads will have place. However, these impacts will be short-term and localized. Besides, they can be controlled by setting speed limits and watering roads.

CONTACTS AND INFORMATION DISCLOSURE

A full ESIA report on the Subproject, together with all available information on the main Zaporizka NPP – Kakhovska Project, is available on websites of Ukrenergo and EBRD:

NPC "Ukrenergo"	http://www.ukrenergo.energy.gov.ua/
Ministry of Energy and Coal Industry	http://www.mpe.kmu.gov.ua/fuel/control/uk/index
EBRD	http://www.ebrd.com/pages/country/ukraine.shtml

In paper format a full ESIA report on the Subproject is also available at following local offices of state administration and self-government:

Kherson	Kherson Oblast State Administration (OSA) Head of Administration Kostyak Mykola 1, Freedom Square , Kherson Tel. (0552) 42-40-50 E-mail: kanc@oda.kherson.ua
Bilozirka town	Bilozirka District State Administration (DSA) Head of Administration Poddubny Valery 87, Karl Marx Str., Bilozirka, 75000, Kherson oblast, Tel. 3-40-20
Ingulets village	Ingulets Village Council 27a , Gagarina Str., Ingulets village, 75031, Bilozersky district, Kherson oblast, Tel. 44-4-35
Beryslav town	Beryslav DSA Head of Administration Yuri Sydorenko Peremohy Sq., Beryslav, 74300 , Kherson oblast, Tel./Fax: 7-56-48 E-mail: beradm@gmail.com
Tyahynka village	Tyahynka village council 1, Tsyurupy str., village Tyahynka, 74330, Beryslav district, Kherson oblast, Tel. 46-2-15
Tokarivka village	Tokarivsky Village Council Prydniprovska str., Tokarivka village, 75040, Kherson oblast, Beryslav district, Tel. 42-6-39

Lvove village	Lvove Village Council 63, Radianska str., Lvove village, 74331, Beryslav district, Kherson oblast, Tel. 45-2-69, 45-2-71
Mykolaiv	Mykolaiv OSA Head of Administration Igor Dyatlov 22, Admiralska str., 54009, Mykolaiv
Voznesensk town	Voznesensk DSA Head of Administration Oleksandr Kucher B. 1, Central Square, 56500, Voznesensk, Mykolaiv oblast phone 05134 3-20-20 4-23-87 fax.05134 vozesensk@mk.gov.ua
Oleksandrivka village	Oleksandrivka Village Council 208, Gene. Podzihuna str., 56530 Oleksandrivka, Voznesensk district, Mykolaiv oblast

Comments on the Subproject can be made in writing directly to Ukrenergo on contact details given below:

Mr. A.M. Shvedkyi, First Deputy Director,
Southern Power System of SE "NPC "Ukrenergo",
11 Koblivska Str., 65029, Odessa,
Tel.: 8 (048) 730 18 50, Fax: 8 (048) 730 18 60
E-mail: kanc@rdc2.south.energy.gov.ua.