

EIA Addendum for the Re-Route of the 330 kV Usatovo – Adjalyk Transmission Line

Background to new route selection

This document is an addendum to the 2005 EIA for the Usatovo-Adjalyk Transmission Line, regarding a change in routing, related environmental and social issues, and mitigation measures.

Power for the Greater Odessa region is supplied from the Usatovo and Adjalyk 330 kV substations. Ukrenergo - Southern Power System - Odessa, on behalf of Ukrenergo Kiev, is constructing a new, second 330 kV transmission line to connect Adjalyk and Usatovo substations (2A-U). The objective of this Project is to increase the reliability of power supply to consumers in the Odessa region and to decrease dependency from the unstable power supply from Moldova.

At a later stage the long loop between Usatovo and Adjalyk will be cut open at the Northern end and extended with a double circuit line to the planned 750 kV Primorskaya substation to the North, so that one branch will lead from Primorskaya to Usatovo and the second from Primorskaya to Adjalyk. The Primorskaya substation will be connected by 750kV lines with different power plants and substations in western and southern parts of Ukraine. The new 2A-U line is thus not only strengthening the current power supply to Odessa and its region but is part of a broader plan to make the Odessa region independent from Moldova's electricity, and link it to different Ukrainian power plants through Primorskaya substation.

The original route selection for the transmission line, including notification of statutory stakeholders on the principal routing, was conducted in 2003, and detailed alignment and tower siting, including consultation with affected landowners was conducted in 2004. Consultation meetings with the relevant district and municipal authorities were held in 2005, including Bilyaivka District on 22 April 2005.

The Environmental Impact Assessment (EIA) was prepared in 2005 and went through permitting requirements and public consultation, in accordance with Ukrainian national legislation and European Bank for Reconstruction and Development requirements (EBRD Environmental Policy, 2003). At the time, the selected route was to by-pass all villages, including the villages of Usatovo and Nerubayskoe.

However, the original routing of the 2A-U line is not feasible anymore because, since approval by the EBRD Board in 2005, land ownership has significantly changed, and Ukrenergo has subsequently lost the court cases over the land that would allow constructing the line in the initial Right-Of-Way (ROW).

Ukrenergo has therefore sought to obtain permitting for another route over 13km from Usatovo substation. This new route also allowed rehabilitating another transmission line

(Moldovskaya GRES-Usatovo) by placing it in double circuit with the new 2A-U line, thereby reducing environmental impacts (only one right of way and one series of towers for two lines) and cost.

Throughout 2009, Ukrenergo obtained permits for the new route design and construction for this new alignment of 13 km part from Usatovo substation.

See satellite map of a new route in Annex 1.

Ukrainian permitting process

State Environmental Expertise based on the local Environmental Impact Assessment (OVNS) is a part of the Ukrainian project planning and permitting procedures. However, under national legislation (DBN A.2.2-1-2003) public consultations on OVNS for transmission lines are not obligatory, and can be done at the discretion of the project applicant (Ukrenergo). The information about the new route project was disclosed through the newspapers, and potentially affected by new route landowners were notified by letters in January 2009.

The following process was followed for the change in routing of the line through Usatovo and Nerubayskoe villages:

- After a decision on 2A-U line route change was outlined by Southern Power System of UE on 03.04.2008, 'Ukrenergomerezhpoeekt' Institute was ordered to prepare a new design and an OVNS.
- The OVNS was submitted to the Ministry of Environment Protection, which on 18.02.09 assigned Envitech to carry out the Environmental Expertise of the new OVNS.
- With all experts' recommendations integrated the expertise was complete on 10.04.09.
- Consequently, the new route project was approved by state environmental expertise on 13.05.09.
- The overall state expertise by Ukrderzhbudexpertisa – state construction authority – approved the project design on 30.07.09.
- The permit for construction works was obtained from state architect inspection authorities of Odessa region on 25.09.09 based on the Cabinet of Ministers decision 327-p of 09.08.2005 (initial routing).
- However, due to the re-routing of the project a new decision of CoM 1197-p, was issued on 07.10.09. Therefore, Ukrenergo applied for changes in a construction permit on 21.12.09, which were approved by Odessa region construction inspection on 24.12.09.

Consideration of Alternatives

Usatovo and Adjalyk substations are about 33 kilometres distance apart and are at present interconnected by a 330 kV and a 110 kV line going through Khadjubeyskiy liman (1A-U). As part of the initial route selection process 4 alternatives were developed to connect Usatovo and Adjalyk substations with a second 330 kV transmission line (2A-U). The finally selected routing approach was to pass through the hinterland to the North of Odessa, bypassing the liman northwards.

When it became clear that the preferred routing was no longer an option due to land ownership issue, Ukrenergo was forced to utilise the existing transmission line corridor through Usatovo, following the decommissioning and replacement of the existing 330 kV MGRES-U line.

During preparation of new route OVNS in 2009 two alternatives of the 13 km realignment from the Usatovo substation were considered:

- 1) By-passing the territory of the 'Fordon' enterprise from tower 547 to 573. The owners of land plots gave preliminary consent. However, in view of intensive construction and development in the area, this option was not optimal to ensure the sanitary and safety zones regime.
- 2) Double-circuit option for Adjalyk-Usatovo line to be installed on the towers of another 330kV Novoodesskaya-Usatovo line. This option was not feasible technically due to double crossings of the line 330kV MGRES-Usatovo.

Consequently, current alternative of putting 2A-U in double-circuit with MGRES-U was taken into further development as only feasible option.

Environmental appraisal of the new route

The total length of the new 2A-U transmission line amounts to 122.79 km and the re-designed part affects a 13.36 km section. The re-designed part does not have any significant environmental impacts on geology, flora, fauna or water resources during construction and/or operation stages. However, in more detail minor impacts and their mitigation measures are described in the new route OVNS. The noise can be an issue mainly during construction works and in wet weather conditions due to corona effect during line operation.

One of the concerns to many people is the visual impact of the towers, which are significantly larger at 13.36 km double-circuit part of the route than the towers of the old MGRES-U line and initially planned 2A-U one. The old suspension towers and current ones in the single-circuit part are double concrete poles with horizontal steel cross beam, and tension-angle towers - lattice steel towers. The new double-circuit towers are higher and have three cross arms to accommodate for all phase conductors of both lines. The new tower height range is 34- 49m with the conductor stringing point at 24m from the ground. See Annex 2 for the figures of new suspension towers in single- and

double-circuit design. Land requirement for the new suspension towers is 24 or 52 m², and for a tension-angle ones – 102, 128 or 164 m². Span length between towers is from 270 to 400 metres.

The width of the sanitary zone is 20 metres and the width of the safety zone is 30 metres from the outmost conductors on both sides of the line. Together with the 16 m wide footprint of the line, the sanitary zone will be 56 m wide and the safety zone 76 m in line with Ukrainian regulation. Houses and non-residential structures are not allowed in safety zone (that encompasses the sanitary zone). Agricultural activities are possible in the safety zone but with limitation due to the exposure to electro-magnetic radiation. The regime of safety zone and banned/allowed activities are outlined in Ukrainian sanitary norms (Ministry of Health order 476 of 18.12.2002) and rules of electric lines and stations technical exploitation (rules of 1986 and GKD 34.20.507-2003).

Health and safety appraisal of new route

The transmission of electrical energy lines pose potential risks and hazards to the public caused by electromagnetic radiation due to the energised conductors and the high voltage of the electrical current. However, applicable safety regulations and proven designs minimise potential risks and hazards, and make transmission lines reliable and safe infrastructures.

The established Ukrainian regulations about electrical safety rules and sanitary safety zones, distances applicable for the line and land use restrictions within these zones prevent energised conductors from influencing other objects.

The Ukrainian standard regarding Electromagnetic Field (EMF) has defined sanitary and safety zones for protection of the public from long term exposure. Outside of these zones the above EMF limits cannot be exceeded. The sanitary safety zone's extend depends on the voltage level. For this 330kV Project a safety zone of 30 metres from outmost conductors to both sides of the line is applicable.

Specialised laboratories inspect and certify workplaces of the Southern Power System for labour safety compliance every five years. The inspection includes metering of electric field strength of the existing 330 kV overhead transmission lines and substations. The results of the inspections are kept in the Odessa Main Power Networks Department of the Southern Power System. Electric field strength is metered with an INEP-2 type meter. Towers and foundations are designed according to applicable norms. This guarantees reliable and safe operation of the structures.

This regulation applicable in Ukraine is well within the range of international planning practices and with established planning guides derived from International Commission on Non-Ionizing Radiation Protection (ICNIRP) exposure limits. (e.g. in Germany the public exposure EMF safeguard minimum distance for 380 kV systems is 20 metres from outside of the conductors (German Radiation Protection Commission, LAI, May 1998).

The issue of primary concern to the local community with regard to the route change is the potential affect of EMF on health.

Taking consideration of this community concern, Ukrenergo, working with EBRD, has engaged an independent health expert to provide an independent opinion on potential health impacts of this rerouting change. The EMF and health impacts study was undertaken in December 2009. Its aim is to determine 1) whether the new line, extended from single-circuit to a new double-circuit, would impact on the health of people in the proximity of the corridor; and 2) what levels of electric and magnetic fields and audible noise will be generated by the new line in comparison with the existing single-circuit line.

The expert opinion will provide the following information:

- Analysis of the location of the proposed line in relation to existing and proposed buildings and land designated as residential by the local authority,
- Distribution of electric and magnetic field in selected spans of the proposed line
- Comparison of calculated values of the electric and magnetic field strength with permissible levels in effect in Ukraine and recommended values (IRPA/ICNIRP, EU standards),
- Comparing of an influence to the environment of the existing 330 kV single-circuit line and designed double-circuit line,
- Comparing the visual impact on environment of the existing 330 kV single-circuit line and designed double-circuit line.

The draft independent report was prepared at the end of 2009; and final report will be made publicly available to third parties when completed on Ukrenergo's Website and locally in the offices of the Nerubaiskoe and Usatovo Village Councils and Ukrenergo Offices in Odessa and Kiev (by 1 February 2010).

Social impacts and resettlement of the new route

The refurbishment of MGRES-U and installation of 2A-U conductors requires a review of land tenure and building ownership rights within the 76 meter safety zone of the MGRES-U corridor. This is the objective of the Commission created at Biliaevka District level on 24 November 2009 comprising the Heads of Village and District Councils, as well as a NEC UE representative and regional authorities. The Commission is in the process of reviewing on a case-by-case basis affected residents' claims to land ownership as well as the rightful ownership of the residential, agricultural or other structures built on these land plots. Residents have been called upon to submit documentation evidencing such claims with said Commission by December 30, 2009 and regular work meetings are currently being held locally that are open to the public. The Commission will shortly advertise this deadline and will publish the list of identified assets and households through the two interested village councils.

People who are directly affected by the routing, given their proximity to the line, will have their assets and impacts evaluated and will be compensated in accordance with a Resettlement Action Plan, which will be developed in the first quarter of 2010.

A temporary commission was also established in line with the Council of Ministers decree to review any claims of damages to crops, buildings or any other assets of residents during construction works. The amounts of compensation due for any such damages will be determined at the end of construction works and are to be paid by the Construction Contractor.

Public information

With reference to the Public Consultation and Disclosure Plan released in 2005, Ukrenergo acknowledges that additional public information on the rationale for the routing change is required, as well as studies on compensation and resettlement, and an independent opinion on health impacts and the adequacy of mitigation measures proposed, and that these documents need to be in the public domain.

At the corporate level, Ukrenergo (UE) has assigned to Mr. Kostantin Javorskyi, Deputy Director for Capital Development of UE, the overall responsibility for stakeholder engagement processes as they apply to all their operations in Ukraine. At the 2A-U project level, Mr. Anatoliy Shvedky, First Deputy Director of Southern Electric Power System, of UE (SES UE), has the oversight of consultation and disclosure activities related to the Adjalyk-Usatovo transmission line. Mr. Shvedky has assigned three principal technical specialists of the Capital Development Department who are interacting with the residents of Nerubaiskoe and Usatovo on a regular basis and serve as community liaisons for SES UE, subsidiary of Ukrenergo.

Information Disclosure

The following documents will be disclosed by Ukrenergo and by EBRD:

1. The present Addendum to Non-Technical Summary of EIA 2005 (EIA Addendum);
2. The Health Impact Assessment Report; and
3. The Resettlement Documentation:
 - (i) List of affected assets as established by the joint Commission as soon as available, in paper version at the Village Councils, and
 - (ii) Resettlement Plan.

Disclosure of all of the above information will occur both electronically and in the form of paper copies. The electronic versions will be available on the Ukrenergo Website in Ukrainian and English and on the EBRD Website in English and Ukrainian. Paper versions will also be made available at the Village Councils of Usatovo and Nerubaiskoe, the Ukrenergo Offices in Odessa and Kiev, and the EBRD Office in Kiev.

Grievance Procedure

There are several existing mechanisms allowing affected persons to submit complaints or voice their concerns, including the two above-mentioned temporary commissions. Besides these two formal entities, issues not related to compensation can be brought directly to the attention of SES UE staff on the ground, including the First Deputy Director of SES UE, Mr. Shvedky, and the three principal technical specialists of the Capital Development Department who are working locally on a daily basis. Where possible, issues are addressed immediately and, for more complex matters, within as short as possible a time frame or the periods of time indicated below. SES UE will create a register in order to track all grievances that may be audited by outside parties such as the EBRD.

A Public Grievance Form has been prepared (see Annex 3) that can be used to submit any complaint but the format suggested is not obligatory. Grievance statements may be provided via letter, email, fax, or telephone call. Contact information is presented at the end of this document. The receipt of any grievances will be acknowledged within one week and responded to within one month after receipt (Law of Ukraine “About appealing of citizens” dated 02.10.1996 No. 393/96-VR, Article 20). In complex matters where other parties are involved, this period may be extended subject to notification in writing to the aggrieved party.

Mr A.N. Shvedky can be reached at:

Southern Electric Power System, SES UE Office,

11 Koblivska Str., 65029 Odessa;

Tel.: 8(048) 730 1850; Fax: 8(048) 730 1860;

Email: kanc@rdc2.south.energy.gov.ua.

Should the need arise, Ukrenergo will consider the establishment of a conflict resolution "committee" (Ukrenergo representatives, village council and local public representatives) for the management of complex grievance issues.

If stakeholders wish to inform the EBRD of issues associated with the project, please copy the grievance to:

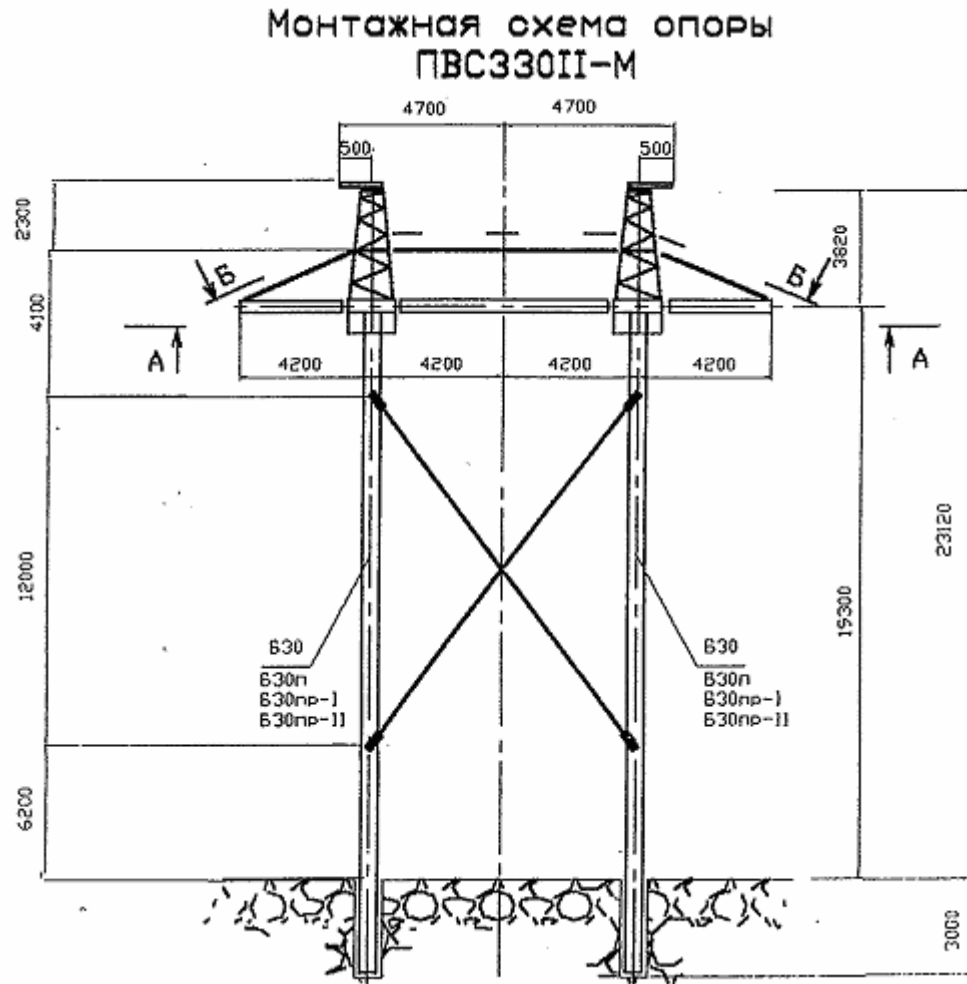
- Elizabeth Smith at smithe@ebrd.com and/or
- Alexandra Antsugai at antsugaa@ebrd.com.

However, the grievance should be sent to the Company (UE) first and only copied to EBRD for reference. It is the duty of UE to respond on the grievances related to the project.

Annex 1. Satellite map of the new route of 2A-U line

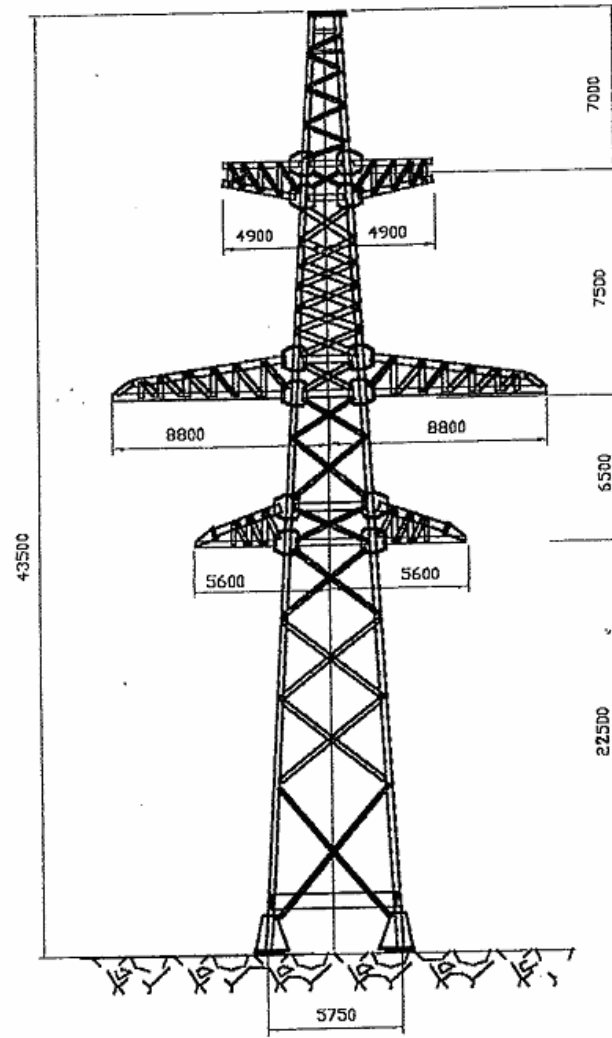


Annex 2. Schematic view of the suspension towers in single- (a) and double-circuit (b) parts of 330kV Adjalyk-Usatovo lines.



a)

Монтажная схема опоры П330-2



b)

Annex 3. Public Grievance Form

Public Grievance Form	<i>Reference No.</i>	
	<i>Received on</i>	
	<i>Received by</i>	

Full Name, Surname _____

Contact information (*please fill in how you want to be contacted*):

Post Address _____

Telephone _____

E-Mail _____

Preferred contact Language Ukrainian Russian English

Description of Incident or Grievance in relation to the construction and rehabilitation of the 330kV transmission line. (*What happened? Where did it happen? Who did it happen to? What is the result of the problem?*)

Date of Grievance: _____ 20____

One time incident/grievance (date _____)

Has it happened more than once (how many times? _____)

On-going (currently experiencing problem) yes no

What would you like to see happen to resolve the described problem?

Please send this form back by mail, fax or email to Mr A.M. Shvedkiy, First Deputy Director of Southern Electric Power System, NPC Ukrenergo office, 11 Koblivska Str., 65029, Odessa, Tel.: 8(048) 730 18 50, Fax: 8(048) 730 18 60, kanc@rdc2.south.energy.gov.ua