ANNUAL MONITORING REPORT OF THE JOINT IMPLEMENTATION PROJECT «RECONSTRUCTION OF THE ELECTRICITY GRID OF THE "SERVICE-INVEST" LLC» for the period 01.01.2008 – 31.12.2012

General Director

"Service-Invest" LLC. _____ Trifonov O.V.

Position of the head of the company, project owner, owner of the source | signature | seal. | name

Director "Eco-Elta"LLC _____ Rogoviy M.I.

Position of the head of the company, project developer | signature | seal | name

JOINT IMPLEMENTATION PROJECT MONITORING REPORT

CONTENTS

Background and Objectives of the Monitoring Report

According to paragraph 36 of the JI guidelines project participants "shall submit to an accredited independent entity a report in accordance with the monitoring plan on reductions in anthropogenic emissions by sources or enhancements of anthropogenic removals by sinks that have already occurred. The report shall be made publicly available."

The objective of the present monitoring report is to provide the complete, consistent, clear, and accurate calculation of the emissions reductions, within the boundaries of the **"**Reconstruction of the Electricity Grid of the "Service-Invest" LLC.**"** Joint Implementation Project, for the period 1st January 2008 – 31th December 2012.

SECTION A. General description of the project activity

A.1. Title of the project:

>>

Title: **"**Reconstruction of the Electricity Grid of the "Service-Invest" LLC.**"**

Sectoral scope 2: Energy Distribution.

Version: 1.1

Date: 17.01.2013

A.2. JI registration number:

>>

UA1000535

Latters of Approval:

- 3503/23/7 issued by the State Environmental Investment Agency of Ukraine 16.11.2012;
- 2012JI50 issued by The Minister of Economic Affairs, Agriculture and Innovation of The Netherlands 02.11.2012.

A.3. Short description of the Project Activity:

>>

The Project foresees the implementation of the electricity loses reduction measures at the transmission lines of the "Service-Invest" LLC. as well as the electricity transportation and loses registration precision increase measures.
Moreover, the Project foresees the implementation of the Automatic Electricity Registration System for the Company balance compilation and, starting from 2011, for the commercial accounting with the SE "Energorynok".

The electricity loses reduction measures at the transmission lines include the replacement of the power transformers with the installation of the more efficient ones

(with the less loses coefficient), the replacement of the depreciated and outmoded parts of the transmission lines to increase their capacity and reduce the transportation electricity loses.

There also the power transmission towers replacement will be implemented to ensure and increase the security and reliability of the equipment use.

Thus due to the above-mentioned actions the specific electricity loses at the grid will be lowered. That will lead to the electricity production reduction at the Ukrainian TPPs by the value of the electricity loses reduction that, in its turn, will lead to the GHG emission reduction. These measures included:

In 2008:

There were 11,6 kilometers of the 35kV wires replaced. The AS-150 wire was replaced with the AS-185; the AS-70 and AS-95 wires were replaced with the AS-120 wire; AS-120 wire was replaced with the AS-240 wire.

There was one CE6805V (accuracy class 0,5) electricity meter replaced with the EA02RAL meter (accuracy class – 0,2) at the Donetskaya-110 substation.

There were two CE6805V (accuracy class 0,5) electricity meters replaced with the EA02RAL meters (accuracy class – 0,5) at the Shvernika-110 substation.

There was one SA4U (accuracy class 2) electricity meter replaced with the EA02RAL meters (accuracy class – 0,5) at the Kuteynikovo-35 substation.

There were six CE6805V (accuracy class 0,5) electricity meter replaced with the EA02RAL meters (one with the accuracy class 0,2 and five with the accuracy class – 0,5) at the Novotroitskaya-110 substation.

There were twelve CE6805V (accuracy class 0,5) electricity meter replaced with the EA02RAL meters (accuracy class – 0,5) at the KHP-35 substation.

There was one CE6805V (accuracy class 0,5) electricity meter replaced with the EA02RAL meter (accuracy class – 0,2) at the Kramotorsk-gorod-110 substation.

There were two CE6805V (accuracy class 0,5) electricity meters replaced with the EA02RAL meters (accuracy class – 0,2) at the Leninskaya-110 substation.

In 2009:

There were 15,488 kilometers of the 35kV wires replaced. The AS-70 and AS-95 wires were replaced with the AS-120 wire; AS-120 wire was replaced with the AS-240 wire.

There were six CE6805V (accuracy class 0,5) electricity meter replaced with the EA02RAL meters (accuracy class 0,2) at the Vozrozhdeniye-110 substation.

There were eleven CE6805V (accuracy class 0,5) electricity meter replaced with the EA02RAL meters (accuracy class – 0,5) at the Metallist-35 substation.

There were two SA4U (accuracy class 2) electricity meter replaced with the EA02RAL meters (accuracy class – 0,5) at the Styla-110 substation.

There were two TDNS-16000/35 (loses coefficient 0,75) transformers replaced with the TDTN-40000/110 (loses coefficient 0,092 and 0,101 respectively) ones at the Vozrozhdeniye-110 substation.

In 2010:

There were 11,9 kilometers of the 35kV lines were repaired.

There were seven CE6805V (accuracy class 0,5) electricity meter replaced with the A180505RAL meters (accuracy class 0,5) at the Yakovlevka-35 substation.

There was a TDTG-31500/110 (loses coefficient 1,5) transformers replaced with the TDTN-40000/110 (loses coefficient 0,07) ones at the Styla-110 substation.

In 2011:

There were 9,56 kilometers of the 35kV and 110 kV lines were replaced and repaired.

There was a TDTG-40500/110 (loses coefficient 3,5) transformers replaced with the TDTN-40000/110-U1 (loses coefficient 0,086) one at the Ugolno-Rtutnaya-110 substation.

In 2012:

There were 1,132 kilometers of the 35kV lines were replaced and repaired.

There was a TDTG-40500/110 (loses coefficient 3,85) transformers replaced with the TDTN-40000/110-U1 (loses coefficient 0,086) ones at the HSPKZ -110 substation.

There was a TD-15000/35 (loses coefficient 4,57) transformer replaced with the TDNS-16000/35 (loses coefficient 0,085) one at the Yelenovka-35 substation.

Figure 1. The Power transformer at the Substation before the reconstruction

Figure 2. The The Power transformer at the Substation after the reconstruction

Figure 3. The Circuit Breakers before and after the Reconstruction.

As the result of the foregoing measures, the average annual Transmission Losses Coefficient lowered from **1,2024 % (*PPER*)** in the **Baseline Scenario (2003)** to **0,6361% in 2011**.

The overall electricity supply in the Monitoring Period (01.01.2008 – 31.12.2012) was **98 975 380 MWh**.

A.4. Project participants:

>>

Party involved (*)	Legal entity project participants (as applicable)	Please indicate if the Party involved wishes to be considered as project participant (Yes/No)
Ukraine (Host Party)	SERVICE-INVEST LLC.	No
Ukraine	Eco-Elta LLC.	No
The Netherlands	ING Bank N.V.	No

* Please indicate if the Party involved is a host Party.

(1) Service-Invest LLC.
Project Owner, Owner of the emission reduction units

(2) Eco-Elta LLC.
Project Developer.

(3) ING Bank N.V.
The potential buyer of the emission reduction units.

A.5. Monitoring Period:

>>

Date of the Monitoring Period Start: 01.01.2008.

Date of the Monitoring Period End: 31.12.2012.

A.6. Baseline and Monitoring Methodology applied:

>>

For the Project the own Approach was provided and determined by the AIE.
A baseline for a JI project has to be set in accordance with Appendix B of the Annex to decision 9/CMP.1 (JI guidelines), and with the "Guidance on criteria for baseline setting and monitoring, version 0.3" [1] developed by the Joint Implementation Supervisory Committee (JISC) (hereinafter referred to as "Guidance"). A JI specific approach regarding baseline setting and monitoring has been developed in accordance with Appendix B of the JI Guidelines and with the JISC Guidance.
Project will use a baseline in accordance with the "Tool for the demonstration and assessment of additionality" (Version 05.2.1) [2].
In the proposed project CO2 emissions to the atmosphere will be reduced due to electricity loses reduction during its transportation, that will lead to the GHG emission from the fossil fuel combustion for the electricity production at the Ukrainian power plants by the volume of the loses.
The energy production and transportation depends on the demand of the market. The Project Owner can increase the energy transportation. It means that all the additional energy transported during the Project period will substitute the energy, which would

[1] http://ji.unfccc.int/Ref/Documents/Baseline_setting_and_monitoring.pdf

[2] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.1.pdf

have been transported by the Service-Invest LLC, but with the less efficiency and higher GHG emission (higher loses coefficient).

The proposed Approach for the emission reductions' calculation uses the electricity loses coefficient in the Baseline Scenario (***PPER***) parameter. This parameter shows the efficiency level of electricity transportation through the grid in the Baseline year, which is 2003.

The Service-Invest LLC is one of the first private electricity transportation companies in Ukraine and the situation in the Ukrainian Energy Sector was quite bad. The lack of financing leads to the equipment degradation. The efficiency was getting lower and the loses were growing. 2003 was chosen as the Baseline, because the Service-Invest LLC in 2003 has developed the Investment Program for the Electricity Grids Rehabilitation and reconstruction. We assume that the ***PPER*** coefficient would have remained the same during the Project implementation period in the situation of the absence of the Project (the real situation was that the electricity loses coefficient was getting bigger).

$$PPER = \frac{Vybl}{Qybl} \quad \textbf{(1)},$$

where:

PPER – the electricity loses coefficient in the Baseline scenario;

Vybl – factual transportation electricity loses in year *y* in the Baseline Scenario, MW*h;

Qybl – the volume of the electricity supplied to the Grid in year *y* in the Baseline Scenario, MW*h;

The Baseline Scenario for the Project activity is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases (GHG) that would occur in the absence of the proposed project activity. For the proposed Project activity the JI specific approach was used.

For the proposed Project the Baseline Scenario is the continuation of the Grid use without any major repairs or reconstructions of the equipment. The calculation of the Baseline Emission is based on the assumption that the electricity loses coefficient (***PPER***) of the Grid will remain the same for the whole Project lifetime. It is determined in the PDD according to the data for 2003, the year which is prior to the Project Implementation.

The Baseline Scenario for the Project activity is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases (GHG) that would occur in the absence of the proposed project activity. For the proposed Project activity the JI specific approach was used.

For the proposed Project the Baseline Scenario is the continuation of the Grid use without any major repairs or reconstructions of the equipment. The calculation of the Baseline Emission is based on the assumption that the electricity loses coefficient (***PPER***) of the Grid will remain the same for the whole Project lifetime. It is determined in the PDD according to the data for 2003 **(1,2024%)**, the year that is prior to the Project Implementation.

A.7. Intended deviations or revisions to the determined PDD and Monitoring Plan:

>>

There are no deviations or revisions to the determined PDD and the Monitoring Plan.

A.8. Changes since determination:

>>

There are no deviations in the values of the Baseline, Project Emissions and the Emission Reductions in the Monitoring Report in comparison with the determined PDD.

A.9. Person(s) responsible for the preparation and submission of the monitoring report:

>>

Service-Invest LLC.

Mikhaylov Oleksiy Volodymyrovych,

DTEK

Electricity Generation Direction

Ecological Security Department

Manager

Tel: + 38 062 389 4339

Fax: + 38 062 389 4328

MikhaylovAV@dtek.com

“Eco-Elta” LLC

Rogovoy Maksym Ivanovich, Director.

Tel: +38 050 595 0311

Fax: +38 057 713 41 02

E-mail: m_rogovoy@elta.kharkov.ua

SECTION B. Key Monitoring activities

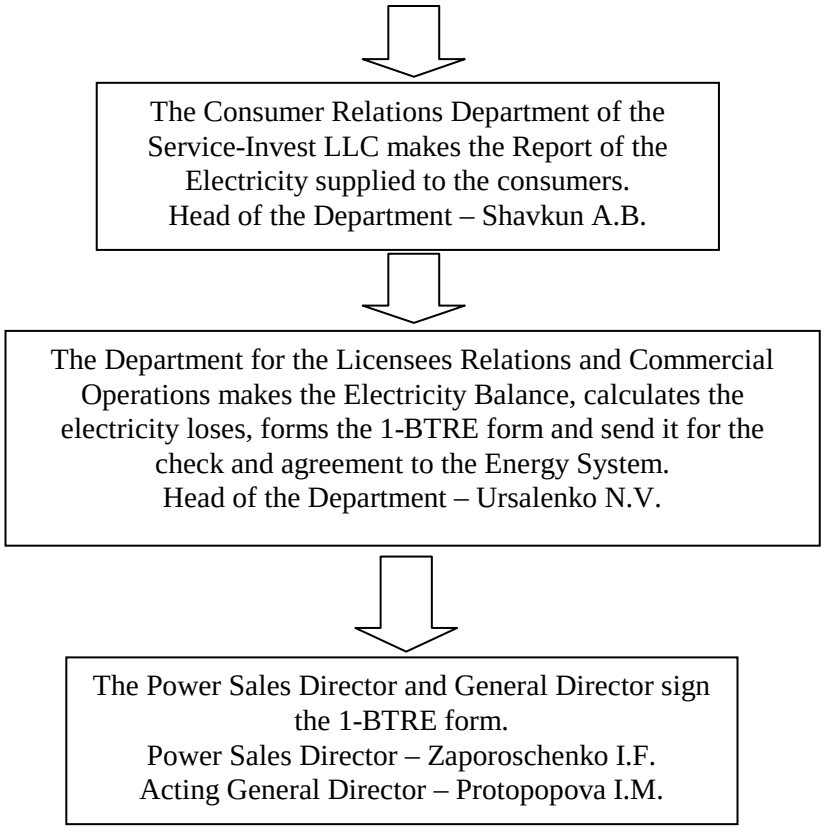
>>

The Project emission reduction monitoring system was implemented on the basis of the existing control system of the enterprise. Thus the data will be accurate and reliable to make the monitoring system more transparent and clear.

All the data needed for the Project Emission, Baseline Emission and the Emission Reductions is represented in the standard 1B-TVE Form “The Structure of the Ballance and the Technological Consumption of the Electricityfor the Transportation”, approved by the Ministry of Energy and Coal Industry of Ukraine Order #07/141-379 dated 08.04.1998.

Figure 4. The Monitoring Data control at the Service-Invest LLC

The data from the Automatic System for the Electricity Control and Recording
Head of the Department – Zabolotnyi D.I.



During 2003 – 2010 the electricity meters at all the electricity connections of the Service-Invest LLC were replaced by the new more accurate ones. All the meters re regularly calibrated (in accordance with the national requirements and the requirements of the manufacturer). The meters are EA02RAL, EA05RAL, A1805RAL and A180505RAL type. The accuracy type of the meters are mainly 0,5 type, but some of them are 0,2 and 2 accuracy type. The information on the installation dates, dates of calibration and total quantity of the meters will be provided in the Monitoring Reports for the exact time period.

All the uncertainties are taken into account.

All the data monitored and required for the ERUs calculation is available for the Project Developer, AIE and SEIA at the enterprise at all time. If the monitoring data is unavailable the calculation of the emission reduction interrupts and the all-necessary documents will be presented to the AIE, SEIA and JISC.

B.1. Monitoring equipment.

As it was mentioned, all the data, needed for the monitoring are shown in the 1B-TVE Form “The Structure of the Ballance and the Technological Consumption of the Electricityfor the Transportation”. But this information is being crosschecked by the metering equipment indications and calculations. The information about the crosscheck is provided below.

B.1.1. Electricity supply meters.

The information about the meters is provided in the table B.1 .

Table B.1. The measuring instruments, used for the electricity supply metering in the Monitoring Period.

The Object	Installation Date	The Equipment	The Type of the Equipment	The Manufacturer	The Calibration Interval, years	The Quantity	The Accuracy Class
SUBSTATION "Vidrodzhennya-110"	2009	Electricity Meter	EA05RAL	Elster Metronica	6	6	0,5
SUBSTATION "Donetska-110"	2008		EA02RAL	Elster Metronica	6	1	0,2
SUBSTATION "Shverinka-110"	2008		EA05RAL	Elster Metronica	6	2	0,5

SUBSTATION "Kuteynikovo-35"	2008		EA05RAL	Elster Metronica	6	1	0,5
SUBSTATION "Metalist-35"	2009		EA05RAL	Elster Metronica	6	11	0,5
SUBSTATION "Novotroyitska-110"	2008		EA02RAL	Elster Metronica	6	1	0,2
			EA05RAL	Elster Metronica	6	5	0,5
SUBSTATION "Styla-110"	2009		EA05RAL	Elster Metronica	6	2	0,5
SUBSTATION "KHP-35"	2008		EA05RAL	Elster Metronica	6	12	0,5
SUBSTATION "Yakovlivka-35"	2010		EA05RAL	Elster Metronica	6	7	0,5
SUBSTATION "Kramotorsk-misto-110"	2008		EA02RAL	Elster Metronica	6	1	0,2
SUBSTATION "Leninska-110"	2008		EA02RAL	Elster Metronica	6	2	0,2
SUBSTATION "Novorayska-110"	2011		A1805RAL	Elster Metronica	6	11	0,5
			A1140RAL	Elster Metronica	6	2	1
SUBSTATION "Airport-110"	2011		A1805RAL	Elster Metronica	6	10	0,5
			A1140RAL	Elster Metronica	6	2	1
SUBSTATION "DFI-35"	2012		EA05 RAL	Elster Metronica	6	4	0,5
SUBSTATION "Yubileyna-110"	2012		A1805RAL	Elster Metronica	6	2	0,5

B.2.2. QA/QC:

The equipment calibration is done by the SE «DSPCSMC» – State Enerprise “Donetsk Scientific Production Center for the Standardization, Metrology and Certification” and the Manufacturer.

All the Data monitored and required for the ERUs calculation will be stored during two (2) years after the last ERUs transfer according to the Service-Invest LLC Order #191/1 dated 05/04/2011.

B.3. The List of values, used for the GHG emission reduction calculation::

>>

Table B.2. Default values

Data/ Parameter	***PPER***
Data unit	% / 100
Description	The electricity loses coefficient in the Baseline Scenario. The share of the electricity loses during the transportation of the electricity through the Service-Invest LLC electricity grid that would have had occur in the absence of the Project.
Time of determination/monitoring	Determined in the PDD. Not monitored throughout the Crediting Period. Available at the Determination.
Source of data (to be) used	The calculations to be made using the volume of the electricity supplied to the Grid and the factual transportation electricity loses in 2003 - the year prior to the Project implementation. The value of this coefficient is determined in the PDD and fixed as the coefficient for the Baseline Scenario.
Value of data applied (for ex ante calculations/determinations)	0,012 (1,2 %)
Justification of the choice of data or description of measurement methods and procedures (to be) applied	For the *PPER* coefficient calculation the factual measured data was used. The volume of the electricity supplied to the Grid and the factual transportation electricity loses are being monitored by the Project Owner using the electricity meters and the data achieved is stored at the enterprise and is given to the national supervision authorities. The measuring equipment is regularly controlled and calibrated.
QA/QC procedures (to be) applied	All measurement equipment should be calibrated and regularly maintained and checked for it's functioning according to manufacturer's specification and relevant national or international standards. Measurement accuracies or other uncertainties in all of the variables need to be taken into account in calculating emission reductions.
Any comment	-

Data/ Parameter	***Vybl***
Data unit	MWh
Description	The factual transportation electricity loses in the Baseline Scenario
Time of	Determined in the PDD.

determination/monitoring	Not monitored throughout the Crediting Period. Available at the Determination.
Source of data (to be) used	Electricity meters. The difference between the volume of the electricity coming into the Service-Invest LLC grid in the year *y* of the Baseline Scenario and the value of the electricity supplied from the grid in year *y* of the Baseline Scenario.
Value of data applied (for ex ante calculations/determinations)	The electricity loses in the Baseline year (2003) were 172 521,6 MWh
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The volume of the factual transportation electricity loses is being monitored by the Project Owner using the electricity meters and the data achieved is stored at the enterprise and is given to the national supervision authorities. The measuring equipment is regularly controlled and calibrated.
QA/QC procedures (to be) applied	All measurement equipment should be calibrated and regularly maintained and checked for it's functioning according to manufacturer's specification and relevant national or international standards. Measurement accuracies or other uncertainties in all of the variables need to be taken into account in calculating emission reductions.
Any comment	-

Data/ Parameter	***Qybl***
Data unit	MWh
Description	The volume of the electricity supplied to the electricity Grid in year *y* in the Baseline Scenario (2003).
Time of determination/monitoring	Determined in the PDD. Not monitored throughout the Crediting Period. Available at the Determination.
Source of data (to be) used	Electricity meters
Value of data applied (for ex ante calculations/determinations)	The electricity supplied to the Service-Invest LLC grid in 2003 was 14 347 939 MWh
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The Project Owner is monitoring the volume of the electricity supplied to the Grid using the electricity meters and the data achieved is stored at the enterprise and is given to the national supervision authorities. The measuring equipment is regularly controlled and calibrated.
QA/QC procedures (to be) applied	All measurement equipment should be calibrated and regularly maintained and checked for it's functioning according to manufacturer's specification and relevant national or international standards. Measurement accuracies or other uncertainties in all of the variables need to be taken into account

	in calculating emission reductions.
Any comment	-

Data/ Parameter	***EFy***
Data unit	kg of CO2 equivalent / kWh (tCO2eq. / MWh)
Description	The carbon dioxide emission factor for the electricity transported through the Ukrainian Electricity Grid.
Time of determination/monitoring	Determined in the PDD. Monitored throughout the Crediting Period. Available at the Determination for the period 2003-2011. For the next years the Emission Factor will be taken from the approved National Data sources (SEIA orders or other) and used in the Monitoring Reports.
Source of data (to be) used	To calculate the Baseline Emission such a data was used: 1. for the period 2003 – 2005 the data was taken from the Table B2 Baseline carbon emission factors for JI projects reducing electricity consumption, з документу Operational guidelines for project design documents of joint implementation projects (volume 1: general guidelines Version 2.3)[3]. 2. for the period 2006 – 2007 the data was taken from the "Carbon dioxide emission factors (for energy consumption according to the methodology "Ukraine - Assessment of new calculation of CEF", approved by TUV SUD 17.08.2007)[4]. 3. for 2008 the data was taken from the NEIA of Ukraine Order: "On approval of the carbon dioxide specific emission factors for 2008" # 62 dated 15.04.2011[5]; 4. for 2009 the data was taken from the NEIA of Ukraine Order: "On approval of the carbon dioxide specific emission factors for 2009" # 63 dated 15.04.2011[6]; 5. for 2010 the data was taken from the NEIA of Ukraine Order: "On approval of the carbon dioxide specific emission factors for 2010" # 43 dated 28.03.2011[7]; 6. for 2011 and 2012 the data was taken from the NEIA of Ukraine Order: "On approval of the carbon dioxide specific emission factors for 2011" # 75 dated 12.05.2011[8]; To calculate the Baseline Emission for the other years the data for the 2011 was used but it will be revised during the monitoring on the appearance of the new data available.

[3] http://ji.unfccc.int/CallForInputs/BaselineSettingMonitoring/ERUPT/index.html

[4] http://ji.unfccc.int/UserManagement/FileStorage/46JW2KL36KM0GEMI0PHDTQF6DVI514

[5] http://www.neia.gov.ua/nature/doccatalog/document?id=127171

[6] http://www.neia.gov.ua/nature/doccatalog/document?id=127172

[7] http://www.neia.gov.ua/nature/doccatalog/document?id=126006

[8] http://www.neia.gov.ua/nature/doccatalog/document?id=127498

Value of data applied (for ex ante calculations/determinations)	<table><tr><td>Year</td><td>2003</td><td>2004</td><td>2005</td><td>2006</td><td>2007</td><td>2008</td><td>2009</td><td>2010</td><td>2011-2012</td></tr><tr><td>EF_y, tCO2eq / MWh</td><td>0,770</td><td>0,755</td><td>0,740</td><td>0,807</td><td>0,807</td><td>1,082</td><td>1,096</td><td>1,093</td><td>1,090</td></tr></table>
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The data was taken from the most reliable and justified sources at the time of the PDD development.
QA/QC procedures (to be) applied	-
Any comment	-

Table B.3. Variables

Data/ Parameter	***Vy***
Data unit	MWh
Description	The factual transportation electricity loses in the year *y*
Time of determination/monitoring	Monitored throughout the Crediting Period.
Source of data (to be) used	Electricity meters. The difference between the volume of the electricity coming into the Service-Invest LLC grid in the year *y* and the value of the electricity supplied from the grid in year *y*.
Value of data applied (for ex ante calculations/determinations)	The is taken from the 1B-TVE Form "The Structure of the Ballance and the Technological Consumption of the Electricityfor the Transportation", approved by the Ministry of Energy and Coal Industry of Ukraine Order #07/141-379 dated 08.04.1998.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The volume of the factual transportation electricity loses is being monitored by the Project Owner using the electricity meters and the data achieved is stored at the enterprise and is given to the national supervision authorities. The measuring equipment is regularly controlled and calibrated.
QA/QC procedures (to be) applied	All measurement equipment should be calibrated and regularly maintained and checked for it's functioning according to manufacturer's specification and relevant national or international standards. Measurement accuracies or other uncertainties in all of the variables need to be taken into account in calculating emission reductions.
Any comment	-

B.4. Leackage:

>>

Not applicable.

B.5. Environmental impacts:

>>

No negative environmental impacts of the project are expected and there are no special procedures required by Ukraine for this Project. No transboundary impacts are expected

B.5. Sustainable Development

>>

The Project implementation is very important for the region and also for the whole energy sector of Ukraine. The Project significantly improves the ecological situation due to the GHG emission lowering as far as the pollution level lowering. Besides, the Project is the leading and the pioneer one in the technological level and the equipment usage. It sets the reference point for the whole energy sector of Ukraine. The Project significantly improves the quality of the energy produced and the reliability of its supply. Moreover, the Project creates new jobs for the high qualification personnel in the region.

SECTION C. Calculations of the GHG emission reductions

C.1. Project emission:

>>

The calculation of the Project Emission (*PEy*) is made using the formula:

$$PEy = Vyp * EFy \quad \textbf{(2),}$$

where

PEy – the Project Emission in year *y*, tCO2eq.;

Vyp **–** the volume of the electricity loses in year *y* in the Project scenario, MWh;

EFy – the carbon dioxide emission factor for the electricity transportation through the Ukrainian Electricity Grid in year *y*, tCO2eq./MWh;

Table C.1. Project emission in the Monitoring period

Period	Project Emission (tCO2eq)
2008	148 624
2009	144 844
2010	137 304
2011	144 665
2012	142 472
Total	**717 909**

The example of the calculation:

In 2011 the volume of the electricity loses in the “Service-Invest” LLC grid (***Vyp***) was 132 720 MWh. The carbon dioxide emission factor for the electricity transportation through the Ukrainian Electricity Grid in that year (***EFy***) was 1,09 tCO2eq./MWh according to the NEIA of Ukraine Order: “On approval of the carbon dioxide specific emission factors for 2011” # 75 dated 12.05.2011[9]. Thus the Project Emission (***PE***) in 2011 was:

PE = 132 720 * 1,09 = **144 665** tCO2eq.

[9] http://www.neia.gov.ua/nature/doccatalog/document?id=127498

C.2. Baseline emission:

>>

The calculation of the Baseline Emission (*BEy*) is made using the formula:

$$BEy = Qy * PPER * EFy \quad \textbf{(5),}$$

where:

BEy – the Baseline Emission in year *y*, tCO2eq.;

***Qy* –** the volume of the electricity supplied to the Grid in year *y* in Project Scenario, MWh;

***PPER* –** the electricity loses coefficient in the Baseline scenario % / 100;

EFy – the carbon dioxide emission factor for the production of the electricity, supplied to the Grid in Ukraine in year *y*, tCO2eq./MWh;

Table C.2. Baseline Emission in the Monitoring Period

Period	Baseline Emission (tCO2eq)
2008	262 503
2009	240 017
2010	259 920
2011	273 465
2012	261 385
Total	**1 297 290**

The example of the calculation:

In 2011 the volume of the electricity supplied to the Service-Invest" LLC grid (***Qyp***) was 20 865 108 MWh. The electricity loses coefficient in the Baseline scenario was determined as 0,012 % / 100. The carbon dioxide emission factor for the electricity transportation through the Ukrainian Electricity Grid in that year (***EFy***) was 1,09 tCO2eq./MWh according to the NEIA of Ukraine Order: "On approval of the carbon dioxide specific emission factors for 2011" # 75 dated 12.05.2011[10]. Thus the Baseline Emission (***BE***) in 2011 was:

BE = 20 865 108 * 0,012 * 1,09 = **273 465** tCO2eq.

C.3. Leakage:

>>

Not applicable.

[10] http://www.neia.gov.ua/nature/doccatalog/document?id=127498

C.4. Emission Reductions:

>>

$$ERy = BEy - PEy \quad ,$$

Where:

ERy – the emission reductions achieved by the project activity in year *y*, tCO2eq;

BEy – the baseline CO2 emission in year *y*, tCO2eq;

PEy – the project CO2 emission in year *y*, tCO2eq.

The example of the monthly calculation:

In 2011 the Baseline emission (*BE*) was 273 465 tCO2eq. The Project emission for that period was 144 665 tCO2eq. Thus, the Emission Reductions in 2011 were:

ER = 273 465 – 144 665 = 128 800 tCO2eq.

Table C.3. Emission Reductions in the Monitoring Period

Period	Emission Reductions (tCO2eq.)
2008	113 879
2009	95 173
2010	122 616
2011	128 800
2012	118 913
Total	**579 381**